ACKNOWLEDGMENTS

The College of Arts and Science wishes to thank the contributors to the Dean’s Undergraduate Research Fund for their generosity in establishing the following scholarships to support undergraduate research projects:

Ronald Abramson Research Scholarship
Harold Akselrad Research Scholarship
Angelic Foundation Research Scholarship
Samuel E. Q. Ashley Research Scholarship
Giuseppe Astorina Research Scholarship
Count Lorenzo Attolico di Adelfia Research Scholarship
William B. Baer Research Scholarship
Bailey Family Research Scholarship
Dr. Charles Barbieri Research Scholarship
Mary Rudie Barneby Research Scholarship
Joel and Shari Beckman Research Scholarship
Frances and Benjamin Benenson Research Scholarship
Peter Bergmann Research Scholarship
Herman Berkman Undergraduate Research Scholarship
Steffi Berne Research Scholarship
Max Bronner Research Scholarship
Roger and Beth Carlton Research Scholarship
Max and Cecil (Steuer) Chesin Research Scholarship
Nathan and Sarah Chesin & Bernard and Mollie Steuer Research Scholarship
Sorrell and Lorraine Chesin Research Scholarship
The Collaborate Dean’s Undergraduate Research Scholarship
College of Arts and Science Parents Research Scholarship
Tory Dent Research Scholarship in Creative Writing
Nathan Ende Research Scholarship
Benjamin P. B. and Fannie L. G. Feldman Research Scholarship
Norman M. and Ann C. Feldman Research Scholarship
Sidney Feldshuh and Lillian Kaplan Feldshuh Research Scholarship
Nicholas and Andrea Ferrara Research Scholarship
John G. Fleming Research Scholarship
Robert A. Fowkes Research Scholarship
Sylvia Engel Friedman Research Scholarship
Samuel and Lilyan Frome Research Scholarship
Arthur Frommer Research Scholarship
Hugh and Geraldine Fryer Research Scholarship in Classics
Dr. Molly S. Geller Research Scholarship
Daniel Getman and Leonard Marker Memorial Research Scholarship
Joseph Gilbride Research Scholarship
Dr. Milton Goldstein, D.D.S Research Scholarship
Jeffrey Gould Research Scholarship in American Politics
Marion Cohen Griffl Research Scholarship
Susan and Robert Grossman Research Scholarship
Eileen Guggenheim Research Scholarship
Russell and Diana Hawkins Research Scholarship
Hirschfeld Family Research Scholarship
Heights Alumni Association Research Scholarship
Holten Family Research Scholarship
Joseph J. Jerome Research Scholarship
Thomas Kane Research Scholarship in English
June Schlesinger Katz International Research Scholarship
Dr. Evan and Brooke Kaye Research Scholarship
Jurate Kazikas Research Scholarship
James Koch Research Scholarship
Myron Kove Research Scholarship
Kringstein Family Research Scholarship
Joan Kupersmith Larkin Research Scholarship
Howard Levene (WSC ’41) Research Scholarship
Barnet and Phyllis Liberman Research Scholarship
Lubman Family Research Scholarship
John and Julia Lindsey Research Scholarship
Linn-Cohen Family Research Scholarship
Walter and Phyllis Loeb Research Scholarship
Philip Alfred Lotz Research Scholarship
George Maker Research Scholarship
Rose and Barry Mcinerney Research Scholarship
William J. McKeon Research Scholarship
Dr. Astor McLaughlin Research Scholarship
Nicole and Joseph Meyer Research Scholarship
Miller Family Research Scholarship
Kurt M. Mislow Research Encouragement Scholarship
Mortimer J. Natkins Memorial Research Scholarship
The New York Community Trust Murray Hidary Research Scholarship
Arthur Noulas Research Scholarship
S. Okamura Research Scholarship
Ariel and Alaleh Ostad Research Scholarship

Anonymous Donors
Sidney and Judith Kraines Charitable Trust
Beta Chapter of New York, Phi Beta Kappa

Drs. Mayank and Amita Patel Research Scholarship
Wilfred L. and Ruth S. F. Peltz Research Scholarship
Sidney Probst Research Scholarship
Pudding Hill Research Scholarship
Marie and Anthony Rao Research Scholarship
Lydia R. Reeve Research Scholarship
Joseph A. Rice Research Scholarship
Richard Robins Entrepreneurial Research Scholarship
Daniel A. and Amy L. Rock Research Scholarship
Peggy and Bernard Sakin Research Scholarship
Salant Family Research Initiative in Pre-Health Studies
Ravi and Nalni Saligram Research Scholarship
Mary L. Santirocco Research Scholarship
Schachter Family Research Scholarship
Julie C. Schiefflin Research Scholarship
Robert Selander Research Scholarship
James A. Shea Research Scholarship
Sigal Family Research Scholarship
Seena and George Silbert Research Scholarship
Larry and Klara Silverstein Research Scholarship
J. S. Sinclair Research Scholarship
Jack Sitt Research Scholarship
Dr. Dorothy A. Starr Research Scholarship
Drs. Aaron A. and Francine M. Stein Family Research Scholarship
Joan C. Suttles Research Scholarship
Swartz Family Research Scholarship
Daniel A. Swick Research Scholarship
Varett Family Research Scholarship
Shirley Schmones Wallach Research Scholarship
Washington Square College Class of ’42 Research Scholarship in Humanities
Herman J. Wechsler Research Scholarship in Fine Arts
Howard M. Weisberg Family Research Scholarship
William F. Weld Research Scholarship in Ancient Studies
Horace Wendt Research Scholarship
Ellie and David Werber Research Scholarship in Social Science
Arthur L. Wolf Research Scholarship
## CONTENTS

### INTRODUCTION
Gene Andrew Jarrett, *Research as Educational Paradigm* .......................................................... 15

### FACULTY PERSPECTIVE
Professor Shanker Satyanath, *Researching Conflict* .................................................................................. 16

### HUMANITIES
Bayan Abubakr, Memory, Loss and Nubian Displacement: Contesting Constructions of the Aswan High Dam* ............... 19
Alyssa Ahn, The Hunter and the Prey: Precarity of the Worker’s Body in Latin America* .................. 19
Akshara Anirjita, Belonging and Un-Belonging: Looking at the Partition of India through the Lens of Gender............ 20
Natalie Behrends, Comrade Foreigner: Immigrants at the 1910 Congress of the Socialist Party of America* ........ 20
Daria Berman, House Arrest: Women in the Spanish Inquisition* .......................................................... 20
Karishma Bhagani, Decolonizing the Theatre: The Politics of Performance in Idi Amin’s Uganda (1971–1979)* ........ 20
Elise Bortz, Catherine Korren, Ha-Young Kwon, Richard Seeno, Taylor Upchurch, Dates: Sweet Fruit, Sticky History .................................................................................................................................................. 21
Keilia Brooks, Indigenous Bodies: Museo de La Plata and Narratives of Argentine National Identity Formation* .............. 21
Colby Browning-Doorn, Hiding, Rambling, Writing: The Psychic Role of the Secret in *L’Écriture Féminine* .............. 22
Cheyne Campbell, The Design of Dining Out: An Exploration of Adaptive Reuse in Restaurant Design in London* .......... 22
Korey Caron, Breaking the Mold: Augusto Boal and the Reframing of Theatrical Rehearsal Processes* ...................... 21
Danny Carpenter Balough, Cultural Capitalization: Trans-Western Identity in the United States Embassies in London and the Implications for Political Architecture in the West* .................................................................................................. 22
Gabriella Argueta-Cevallos, The Salvadoran Civil War Then and Now: Child Soldiers and Children of War* .............. 22
Tony Cui, Salvator Rosa’s Fantastic Beasts and Where to Find Them* .......................................................... 23
Yanqiu Deng, Holistic Consequentialism: Reuniting Animal Ethics and Environmental Ethics* ................................. 23
Tess Derby, *Moi-même*: Investigating the Life of Hélène Cuenat and the Memory of the Escape from Petite Roquette* .......................................... 23
Michelle Dicke, Misconceptions of “Denial” and “Exploitation:” Operation Matchbox and Operation Paperclip, 1945–1963* ........................................................................................................................................... 24
Grace Easterly, From Imperial Port City to Logistics Hub: The Production of Strategic Space in Djibouti ................. 24
Samantha Fritsch, Address, Action and Performance: Second-Person Multiplicity in Claudia Rankine’s *Citizen** .......... 25
Casilda García López, ”*Canciones Para Después de una Transición*” or “Songs for After a Political Transition”* ...... 25
Vienna Giacché, Dancing into the Cuban Revolution and Beyond* ............................................................................... 25
Ladan Jaballas, Re-Imaging Cleveland, Ohio: A Look at City Plans to Revitalize the Downtown Area* ...................... 25
Owen Koh, Milton’s Prelapsarian Meals: The Problem of Excess and Waste in *Paradise Lost** ..................................... 26
Dante Lariccia, The Manufacture of Migrants: Mobility, Social Didactics and the *Wohnheim* in the West German Guest Worker Program, 1956–1973* .......................................................... 26
Philip Matthew Mariano, Squatting in Kreuzberg: From Radical Urban Occupation to Urban Renewal* ...................... 26
Grace Maurer, Boston Marriages, Dangerous Lesbians and Sexology: Queer Women and the Pathologization of Deviant Sexualities, 1880–1920* ................................................................................................. 27

* supported by Dean’s Undergraduate Research Fund † winner of Phi Beta Kappa Albert Borgman Prize for Best Honors Thesis
SOCIAL SCIENCE

Carly Abraham, Melissa Rojas, *Eu shippo Spirk demais!*: An Exploration of English Loanwords in Brazilian Twitter......35
Nicole Acero, Anna Chessky, Shirley Eng, Grishma Patel, Dating Practices and Patterns among New York University Undergraduate Students*..........................................................35
Grace Adeyemi, In Context: Intersections of Race and Gender in Emotion Perception* ..........................................................36
Hashmita Agarwal, *To D° or Not To D°*: Nominal Structure in Hindi-Urdu*..........................................................36
Madeleine Ahlers, The Spillover Effects of Campaign Contributions in California State Assembly Elections* .................36
Alara Alagül, The Implications of Unconscious Bias* ............................................................................................................36
Christina Aldime, Commodity Price Shocks and Social Unrest: A Cross-National Study* ..........................................................37
Gabriella Ali, Music Is Easier to Read When the Notes Are Differently Colored to Alleviate Visual Crowding.................37
Gabriela Alves, Paige Selber, Making Movement Costly: Does Infant Exploration Pay the Price?*........................................37
Leigh Anderson, How Climate Change Is Changing Our Farms…and Our Food* ..........................................................38
Jaqui Angulo, Pushing Linguistic Boundaries: How Language and Culture Intersect with Disability* ........................................38
Ibitayo Awoyinfa, Minimal Groups and Instrumental Social Learning* ........................................................................................................38
Perri Beach, Caroline Myers, Jena Sohn, Meta-Motivational Knowledge and Goal Achievement* ..................................................38

Isha Mazumdar, The Meaning of Brownness: Racializing Diasporas in a Global City* ..........................................................27
Kelsey Alejandra Moore, “I Heard of You by Telling My Trouble:” Southern Black Women and Gossip during the Great Migration* ..................................................................................................................28
Taleena Nadkarni, Assessing the Effect of Neuroscience on Moral and Legal Responsibilities* .................................................28
Lucille Nual, Imagining Decolonized Worlds through Remediation, Collaboration and Dungeons & Dragons* ................28
Agne Oviedo Mena, Bombs and Bedtime Stories: The Effects of World War II on Family Life in the United Kingdom* ..........28
Katherine Platz, Disguised Ships and Manifest Profit: The Illegal Slave Trade and Cuban Annexationism in New York City, 1850–1859* ...........................................................................................................29
Danielle Roman, Inside-Out: Camille Saint-Saëns, Regional Culture and the Shaping of France ........................................29
Emma Rudd, Heloise’s Hypocrisy: A Renegotiation of Gender through the Erotic in the Letters of Abelard and Heloise* ........................................................................................................................................................29
Kelly Ryser, Calamity in the Capitals: Cairo and Paris, Art and Architecture and the Effects of the Black Death* ...............30
Ehud Sopher, Tonedeaf: The Unified Sound That Transcended Britain’s Clashing Identities* .................................................31
Elissa Sutherland, Protest Repertoire: Scenarios and Strategies of Transfer in the Spanish Historical Memory Movement* ..................................................................................................................................................31
Ernest Tjia, Desire and Subjectivity in the Postcolonial Self: Reflections on Culture, Memory and the Promise of the Good Life* ..................................................................................................................................................................31
Sabina Vitale, The Rape of the Sabine Women: Visual Representations from Antiquity to Modernity* ..................................32
Sarah Workman, Saturday Morning Cartoons: A Reflection on the Maternal Stripe* ....................................................................................................................................................................................................32
Xiaohui (Caroline) Xu, “What Kind of Idea Are You?”: Ayesha, the Woman in Salman Rushdie’s *The Satanic Verses* ..................................................................................................................................................................32
Xiangyue Xie, Shaping the Memory of a Crusade: The Fourth Crusade and the Translation of Byzantine Relics, 1204–1261* ..........................................................................................................................................................33
Lary Yau, Driving Forces: Factors That Drove Economic and Social Development in Hong Kong under Governor Alexander Grantham (1947–1957)* ........................................................................................................................................33

NEW YORK UNIVERSITY • COLLEGE OF ARTS AND SCIENCE

NEW YORK UNIVERSITY • COLLEGE OF ARTS AND SCIENCE
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catherine Bianco, The Development of Planning in Tool Use*</td>
<td>39</td>
</tr>
<tr>
<td>Oleg Biletsky, Economic Determinants of Corruption: The Case of Ukraine*</td>
<td>40</td>
</tr>
<tr>
<td>Joseph Cordell Blakely, Encountering Difference: Creativity and the Remaking of the “Wild West Side”*</td>
<td>40</td>
</tr>
<tr>
<td>Elise Blegen, An Experimental Analysis of Ballistic Trauma to Bone Following Forensic Cremation*</td>
<td>40</td>
</tr>
<tr>
<td>Jonelle Boafo, The Rural-Urban Disparity of Child Malnutrition in Ghana*</td>
<td>40</td>
</tr>
<tr>
<td>Alex Bollington, Closing Funding Gaps and Closing Yield Gaps</td>
<td>41</td>
</tr>
<tr>
<td>Alexander Burlin, Syrian Refugees as “Homines Sacri?”: Precarity, Illegality and Deportability in Protracted Displacement</td>
<td>41</td>
</tr>
<tr>
<td>Breanna Byrd, A Storm Is Coming: Reflections on Hurricane Fran*</td>
<td>41</td>
</tr>
<tr>
<td>Magnolia Byrne, Developmental Differences between Biracial and White Children’s Concept of Race and Gender*</td>
<td>42</td>
</tr>
<tr>
<td>Evelyn Castro, Laughter as an Honest Signal of Group Affiliation*</td>
<td>42</td>
</tr>
<tr>
<td>Madison Charlton, Juhi Dalal, Expectancy of Peer Backlash as a Consequence of Leadership Behaviors in Children*</td>
<td>42</td>
</tr>
<tr>
<td>Maria Clara Chen, Spotlight Children: A Documentary*</td>
<td>42</td>
</tr>
<tr>
<td>Hang Cheng, Foreign Financing and Employment: The Impact of Chinese Development Aid on Local Employment of Sub-Saharan Africa*</td>
<td>43</td>
</tr>
<tr>
<td>Keith Chong, The Relationship between Labor Productivity and Video Games*</td>
<td>43</td>
</tr>
<tr>
<td>John Andrew Chwe, A Dynamic Interactive Model of Trait Perception*</td>
<td>43</td>
</tr>
<tr>
<td>Katarina Clegg, Carmen Zhang, Trick or Twist: Lefty-Loosey, Righty-Tighty</td>
<td>43</td>
</tr>
<tr>
<td>Katarina Clegg, Carmen Zhang, Children’s Use of Everyday Artifacts: Cognitive and Perceptual-Motor Requirements of Unzipping a Zipper</td>
<td>43</td>
</tr>
<tr>
<td>Cameryn Cooley, Can Virtual Reality Help Understand Treatment for Anxiety: Studying Threat Response, Anxiety and Gender Using Virtual Reality*</td>
<td>44</td>
</tr>
<tr>
<td>Nidia Corona-Gonzalez, Coming Home: Reentry and Mental Health in New York City*</td>
<td>44</td>
</tr>
<tr>
<td>Katherine M. Craig, Domestic Political Polarization and International Legislative Participation*</td>
<td>45</td>
</tr>
<tr>
<td>Daniel Cueto, Homes Not Games: Coalition Opposition to the 2028 Olympics*</td>
<td>45</td>
</tr>
<tr>
<td>Amethyst Davis, “Anybody Here for 311?”: An Exploration of Volunteer Policing and Gentrification in BedStuy*</td>
<td>45</td>
</tr>
<tr>
<td>Alyssa DeFalco, The Effect of Government Shutdowns on National Parks: A Case Study of Joshua Tree</td>
<td>45</td>
</tr>
<tr>
<td>Alyssa DeFalco, Lauren Drabenstott, Luke Stuntz, Assessing the Potential for Cognitive Enrichment for Fish in a New York City Estuarium</td>
<td>46</td>
</tr>
<tr>
<td>Allie Degen, The Implication of Demographic Factors in Dyadic Dominance*</td>
<td>46</td>
</tr>
<tr>
<td>Noelle Desir, Medicalization of the Black Female Body in the United States*</td>
<td>46</td>
</tr>
<tr>
<td>Aniket Dhariwal, The Morality of Abortion: A Critique of the “Future Like Ours” View*</td>
<td>47</td>
</tr>
<tr>
<td>Jose Diaz, Stickball: A Dive into the Game*</td>
<td>47</td>
</tr>
<tr>
<td>Patricia Diaz, Public Arguments against the Establishment of Marine Protected Areas</td>
<td>47</td>
</tr>
<tr>
<td>Jason Dong, Aid-Driven Civil Conflict: A Sub-National Study of Chinese Aid in Africa</td>
<td>47</td>
</tr>
<tr>
<td>Conner Drennen, Lu cchiù fregno: Reclaiming Abruzzese and the Sociolinguistic Implications of a Standard Orthography*</td>
<td>48</td>
</tr>
<tr>
<td>Alejandra Estrada, Living Andean in NYC: An Ethnographic Project*</td>
<td>48</td>
</tr>
</tbody>
</table>

* supported by Dean’s Undergraduate Research Fund † winner of Phi Beta Kappa Albert Borgman Prize for Best Honors Thesis
NEW YORK UNIVERSITY • COLLEGE OF ARTS AND SCIENCE

Emily Fagel, An Analysis of Religious Rehabilitation within the Criminal Justice System* .......................................................... 48
Amanda Faynor, Exploring the Power of Ethnic Enclaves in an Age of Global Movement and “Gentrification” ............................. 49
Lily Gabay, Synchrony Effect for College Students with ADHD* .................................................................................................... 49
Nikki Gary, Different Strokes: Various Modes of Tiger Representation and Conservation Efforts in Tiger Reserves of India and Nepal .......................... 49
Tamas Gomori, Cognition and Culture: Intersections and Divides between Cognitive and Ethnographic Research* .................... 50
Sarmishta Govindhan, What Not to Wear: Ethnic Fashion, Political Subjectivity and Belonging for Diasporic Indian American Women* ........................................... 50
Christopher Hagan, The Impact of Performance Based Bonuses on Long Run Student Outcomes: North Carolina’s Teacher Salary Bonuses* .......................................................................................... 51
Michelle Hansen, Rehabilitated or Punished?: Analyzing Allegations of Crime Made against Girls in Residential Treatment ........................................ 51
Salman Hashim, Instrumental Learning in Social Interaction* ........................................................................................................ 51
Stephanie Hauck, The Effects of Sleep Deprivation on Mood and Impressions in Interpersonal Interactions* .............................. 52
Trevor Hill, A Neglected Metric: How Attention to Tourism Would Benefit San Diego’s Trolley System* ........................................ 52
Casey Hoffman, Attitudes toward Bisexual and Transgender Individuals within the LGBT Community* ........................................ 52
Mandy Hsu, Education or Job Force: Are Children of Displaced Workers Affected by the Added Worker Effect? ........................ 53
Elaine Huang, Soft Diplomacy and South Korea-Japan Relations* .................................................................................................. 53
Xiying Huangfu, China’s Aid to Africa: Do Corrupt Governments with More Oil Receive More Aid?* ........................................ 53
Krysta Hypolite, On the Topic of Immigration: To What Extent Does Information Influence Factual Beliefs, Attitudes and Policy Preferences?* .......................................................... 53
Peter Jin, The Effect of Economic Scarcity on Culpability-Based Racial Bias* ............................................................................ 54
Imani Johnson, Re-Entry in New York City: A Realistic Portrayal of Life Outside Prison* ............................................................. 54
Ziva Luddy Juneja, Before and after the Brexit Vote: European Union Voting Cohesion in the United Nations General Assembly* .................................................................................. 54
Seyoung (Lanie) Jung, Listener’s Perception of Speech Errors in Children .................................................................................. 55
Charlotte Kahan, JFK and Obama: Rhetorical Similarities in Foreign Policy* .................................................................................. 55
Rebecca Kao, Educate Her: Women in China and the Legacy of the One Child Policy* ................................................................. 56
Lindsay Karchin, Feminist-Branded Commodities and Capitalist Constraints ............................................................................. 56
Eden Keig, Politics and Private Life: American Voters’ Conceptualization of Boundaries in the Social Media Era* ...................... 56
Lexi Kennard, Media Discourse Analysis on Female Political Candidates in Local Elections in Iowa* .................................................. 56
Pragati Khandelwal, To Lessen the Learning Gap: How Parental Literacy and Socioeconomic Status Affect Children* ..................... 56
Julia Kharlamenko, Changes to Perceptual Assimilation following Training .................................................................................. 57
Jinny Kim, The Effect of Smiling on Fluctuating Facial Asymmetry and Facial Attractiveness Ratings* ......................................... 57
Colin Kimberlin, Risk and Responsibility: The Use of PrEP by Young Men Who Have Sex with Men (MSM) and Collapsed Categories* .............................................................................. 57
Jennifer Kleiman, Mixed Methods Study on Students’ Preferences for a Culinary Nutrition Program* ........................................ 58
Grace Klein, Against All Odds: Farm Worker Organizing in the United States* .................................................................................. 58
Prianka Koya, Resistance versus Nonresistance* .......................................................................................................................... 58
Nicolas Kugel, The Electoral Effects of Local Immigration Enforcement* .......................................................................................... 59
Ian Kumamoto, No Heat, No Water in the Upper East Side: Documenting the Fall of New York City Public Housing through the Lives of Its Tenants* ................................................................. 59
Surya Kumar, Intergenerational Perceptions of Mental Health among South Asian Immigrants* .............................................................. 59
Adi Kwiatek, Sheryl Zhang, Abstraction and Illusion: Getting a Closer Look at Top-Down Processing* ....................................................... 60
Natasha Ladhani, Reconciling Muslim American Identity Growing up in a Post 9/11 Era* .............................................................................. 60
Carolyn Lau, Separate and Not Equal Schools: New York City’s Specialized High School Reform and the Chinese-American Response* ........................................................................................................... 60
Rachel Law, History and Identity: Media Revival of Sino-Japanese Historical Disputes and the Politics of Ethnic Identity in Hong Kong* .................................................................................................................... 60
Amanda Lawson, Prison (and State) Abolition as a Necessary Policy Framework* ........................................................................................... 60
Jae Seung Lee, The Employment Effect of Minimum Wage on Self-Employers and Unpaid Family Workers* ........................................ 61
Keelia Lee, Economic Hard Times and Regulatory Compliance: The Effect of the 2008 Financial Crisis on EPA Enforcement* .......................................................................................................................... 61
Daniella Levine, Community Violence and Suicide Risk among Legal System-Involved Girls ................................................................. 61
Yichen Li, Predicting Human Decisions in a Sequential Planning Puzzle with Large State Spaces* .............................................................. 62
Olivia Limone, The 411 on 311: The Effect of Local Electoral Cycles on 311 Response Times in New York City* .................................................................................................................................................. 62
ZiQi Lin, The Myth of the Starving Artist: Affordability Crisis and Survival Strategies* ..................................................................................... 62
Colin Liu, Reimagining the Public-School Infrastructure: The Culturally Sustaining Pedagogy (CSP) Model ............................................. 63
Michael Liu, Working Memory: A Novel Approach to Reducing Negative Emotion during Memory Retrieval* ...................................... 63
Lauren Lloveras, Construal Level Orientation: Language Use in Sexual Goals* .......................................................................................... 63
Emma Lockman, The End of Life as We Know: Investigating Humanity in Spaces of Medicalized Death* .............................................. 63
Michael Loedel, The Legacy of Repression: Uncovering the Electoral Effects of Chilean State Violence* ................................................... 64
Miguel Lorenzo, Modern Creative Process of Recording Musicians in the Streaming Age* ........................................................................... 64
Arlene Lormestroire, Influence of Social Stress on Decision Making under Uncertainty* ........................................................................ 64
Shirley Luk, Sustainability in the Fashion Industry................................................................................................................................. 65
Kate Maguire, Justice Discouraged: The Effects of Anti-Immigration Presidential Rhetoric on Sex Crime Rates among Immigrant Populations in NYC* .......................................................................................... 65
Stefania Marchitelli, Semantic Predictability and the Use of Creaky Voice in Female Speakers .................................................................. 65
Alyssa Marshall, Between Frequency and Success: Examining the Supply-Side of International Conflict Mediation* ........................................ 65
Delaney Martin, An Investigation of Industrial Composting in New York City* ............................................................................................ 66
Carlee McGee, The Role of Non-Medical Personnel during Childbirth* ........................................................................................................ 66
Gabrielle Mendelsohn, Growing Resilience: Management and Meaning in Loisaida’s Community Gardens* ................................................ 66
Sara Méndez, The Impact of Civil War Ex-Combatants on the Communities They Inhabit* ................................................................. 67
Ashley K. Meyer, The Efficacy of Mental Contrasting with Implementation Intentions in the Improvement of Mood* ............................................. 67
Marta Migó, Abnormal Neuronal Motor Preparation in Patients with ASD and Symptoms of ADHD* ........................................................... 67
Olivia Miller, Can Infants Categorize Simple Visual Forms?* ........................................................................................................................... 67
Paignton Miller, A Bayesian Analysis to Determine the Prevalence of Barth Syndrome in the General Population* ........................................ 68
Miray Mirham, The Value of Time among Second and 1.5 Generation MENA Students and Its Effects on Mental Health and Well Being* .................................................................................................................. 68

* supported by Dean’s Undergraduate Research Fund † winner of Phi Beta Kappa Albert Borgman Prize for Best Honors Thesis
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laurens Montanaro, Greener on the Other Side: A Look at the Literature on “Green Gentrification”</td>
<td>68</td>
</tr>
<tr>
<td>Kelsey Moore, How Did We Get Here: The History of Desegregation and Failure to Integrate at Columbia High School*</td>
<td>68</td>
</tr>
<tr>
<td>Fatima Mubasher, The Self-Defeating War on Terror: Foreign Military Interventions and Domestic Terrorism*</td>
<td>69</td>
</tr>
<tr>
<td>Caroline Myers, Perceptions of Status-Based Coalitions and Policy Support in a Racially-Diverse Future*</td>
<td>69</td>
</tr>
<tr>
<td>Caroline Myers, Tribal Tunes: Is Ideology Associated with Differential Preferences for Popular Music?*</td>
<td>69</td>
</tr>
<tr>
<td>Anna Nguyen, A Sleepy Perspective: Does Accuracy of Social Perceptions Decrease after Sleep Loss?*</td>
<td>69</td>
</tr>
<tr>
<td>Sydnei Obando, Gender Discrimination in Group Decision Tasks, Women Newcomers vs. Male Newcomers*</td>
<td>70</td>
</tr>
<tr>
<td>Asantewaaah Ofosuhene, The Exodus of Black Students from Public Schools in the City of Newark</td>
<td>70</td>
</tr>
<tr>
<td>Sara Okun, Infants Differential Treatment of Objects versus Forms*</td>
<td>70</td>
</tr>
<tr>
<td>Gianna Paglia, Do the Main Policy Mechanisms of the US Endangered Species Act Work: A Case Study of US Fish Populations</td>
<td>71</td>
</tr>
<tr>
<td>Soaptarshi Paul, Pilot and Feasibility Test of a Mobile Health-Supported Intervention for Stopping Hypertension*</td>
<td>71</td>
</tr>
<tr>
<td>Dianna Alexandra Peña, The Role of Biologists in an Evolving Political Climate in Colombia</td>
<td>71</td>
</tr>
<tr>
<td>Laura Peralta, The Effects of Gender Threat on Gender Role Beliefs*</td>
<td>71</td>
</tr>
<tr>
<td>Emily Percy, Stop-and-Frisk as a Means of Voter Suppression in New York City*</td>
<td>72</td>
</tr>
<tr>
<td>Adrian Pietrzak, Local Carrots or Local Sticks: Election Cycle Effects on Rezoning in New York City*</td>
<td>72</td>
</tr>
<tr>
<td>Natalie Plotkin, Evidence That Mnemonic Prediction Errors Signal the Creation of a Separated Memory Trace*</td>
<td>73</td>
</tr>
<tr>
<td>Paola Elaine Ponce, When Should We Act? Perceptions of Appropriateness and Effectiveness of Ally Action*</td>
<td>73</td>
</tr>
<tr>
<td>Carlos Pons, The Effect of International Human Rights Pressure on Chinese Investment Flows*</td>
<td>73</td>
</tr>
<tr>
<td>Euan Prentis, Episodic Memory’s Role in Decision-Making across Development*</td>
<td>74</td>
</tr>
<tr>
<td>Piper Quinn, Fear and Political Participation*</td>
<td>74</td>
</tr>
<tr>
<td>Jennifer Hyewon Ra, Asian-American Men’s Precarious Manhood: Effects of Manhood Threats on Racial Identity Centrality*</td>
<td>74</td>
</tr>
<tr>
<td>Riya Ramesh, Countdown to the Election: The Impact of American Federal Elections on SEC Enforcement Efforts*</td>
<td>74</td>
</tr>
<tr>
<td>Camila Robalino, Migrant Mothers and the Children Left Behind*</td>
<td>75</td>
</tr>
<tr>
<td>Juanit Rodriguez, Community Perspectives on Health Organizations: Harlem Health Advocacy Partners*</td>
<td>75</td>
</tr>
<tr>
<td>Juritzi Rodriguez, Situational Code Switching in “Gay Mexican Spanish”*</td>
<td>75</td>
</tr>
<tr>
<td>Stephanie Rodriguez, Construal Level and Perceived Partner Responsiveness in a Dyadic Context*</td>
<td>76</td>
</tr>
<tr>
<td>Taylor Nicole Rogers, Of Jellyfish and Men: How the Carolina Lowcountry Seeks to Avoid Economic Disruption by Jellyfish Blooms*</td>
<td>76</td>
</tr>
<tr>
<td>Allie Rubeck, Gender and Power: The Effects of Ideology and Electoral Competition on the Election of Women in Latin America*</td>
<td>76</td>
</tr>
<tr>
<td>Brian A. Salazar, The Relationship between Adolescent Risk Taking in the Lab and the Real World*</td>
<td>76</td>
</tr>
<tr>
<td>Michelle Sanders, Last Chance Tourism at the Great Barrier Reef: Colonialism and Amnesia in Degraded Landscapes*</td>
<td>77</td>
</tr>
<tr>
<td>Sanya Sareen, Gender Differences in Cooperation: Experimental Evidence from a Laboratory Stag Hunt Game*</td>
<td>77</td>
</tr>
<tr>
<td>Soren Schwartz, Underrepresentation of Women in the United States House of Representatives*</td>
<td>77</td>
</tr>
<tr>
<td>Michaela Seferian-Jenkins, Have You Slept?: The Effects of Sleep Deprivation on Working Memory and Negotiation Ability*</td>
<td>78</td>
</tr>
</tbody>
</table>
Yannai Segal, Student Perspectives on Academic Cheating* ............................................................................................................... 78
Yannai Segal, The Effect of Individual and Neighborhood Characteristics on Reported Disorder* ........................................................................ 78
Abe Selby, Contested Heritage: Stakeholder Feuds over the Hunts Point Slave Burial Ground* ........................................................... 78
Anna (Hyeji) Shin, Is Barefoot Best? Effects of Shoes on Infant Walking* .............................................................................................. 79
Lavanya Shukla, Improving Visual Performance Using Rhythmic Transcranial Magnetic Stimulation* ............................................................... 80
Laiba Waqas, Spillover Effects of Congressional Spending* ...................................................................................................................... 85
Mai Tran, The Conservative Leanings of First-Generation Vietnamese American Refugees* ................................................................. 83
Shraman Sen, Assessment of Macroeconomic Indicators Using Principal Component Analysis: Economic Disparities among Countries in South Asia, Middle East and Africa .................................................................................... 79
Tanya Seth, Will Children Expect Ingroup Members to Curb Retaliatory Behavior in order to Maintain the Group, and Will These Expectations Change as They Develop?* ................................................................................. 79
Anna (Hyeji) Shin, Is Barefoot Best? Effects of Shoes on Infant Walking* .............................................................................................. 79
Lavanya Shukla, Improving Visual Performance Using Rhythmic Transcranial Magnetic Stimulation* ............................................................... 80
Lauren Simon, Cooperation in Narcissistic and Dependent Personality Disorders* ...................................................................................... 80
Samantha Sofia Sneider, Documentary Film on the Fishing Village of Tárcoles, Costa Rica* ........................................................................ 80
Mino Xiuzhu Song, Assessing Reasons for Using Beauty Products: Development of the Cosmetics Motivation Scale* ................................................................. 81
Isa Ananya Spoerry, An Island above the Land: How the Diasporas of Sri Lanka Use Digital Communication and Its Insights into the Limits of Diaspora’s Current Definition* ..................................................................................... 81
Liesel A. Staubitz, The Relationship between Subjective Socioeconomic Status and Feelings of Empathy in Encounters with Economically Disparate Targets* ............................................................................................ 81
Graham Streich, CIA’s Implementation of FOIA over 2008–2017* .................................................................................................................... 82
Simran Suresh, Children’s Identification of Linearity on Different Geometric Surfaces* .................................................................................. 82
Tiger Teng, Real-Time Postural Transitions in Infant Development ........................................................................................................... 83
Quinton Tilley, Investigating Connections between International Finance and Labor Market Outcomes* ........................................................................ 83
Mai Tran, The Conservative Leanings of First-Generation Vietnamese American Refugees* ................................................................................. 83
Ana Valeanu, Romanian Emigration and Political Participation: How Does Emigration Abroad Affect Voter Turnout Back Home?* ......................................................................................................................... 84
Yeon Jea Shin, Anshuman Sinha, Aastha Vasa, Locomotor Exploration at Home* ........................................................................................... 84
Andrew Voigt, Visual Attention Strategies and Running: The Importance of Focused Visual Attention at the End of a Run* ....................................................................................................................... 84
Buyl Wang, The Slowdown of Growth of College Wage Premium in the US since the 1990s ........................................................................ 84
Kaitlyn Wang, From the Ashes: Recovery in Redding* ................................................................................................................................. 85
Miaohan Wang, Attentional Capture Is Necessary but Not Sufficient for the Diffusion of Moral Ideas Online* ........................................................................ 85
Laiba Waqas, Spillover Effects of Congressional Spending* ......................................................................................................................... 85
Kailey Wasserman, Steadfast for Trump: Why Some College-Educated Women Are Standing Behind the President* ........................................................................ 85
Benjamin Weinger, An Etiology of Climate Denial: Oscillations between Recognition and Disavowal ............................................................................ 85
Joseph Weinger, A Hermeneutics of the Tourist State: Aotearoa/New Zealand ............................................................................................... 86
Claire Williams, God’s Country: The Proliferation of Evangelical Christendom and Its Impact on Voting Behavior in America* ......................................................................................................................... 86

* supported by Dean’s Undergraduate Research Fund † winner of Phi Beta Kappa Albert Borgman Prize for Best Honors Thesis
Natasha Williams, The Politics of a Super-Presidential State: The Use of Information and Communication Technology for Electoral Manipulation in Putin’s Russia* ................................................................. 87
Sidney Williams, Reconceptualizing Negotiations: Colombia, the FARC and Environmental Peacebuilding ................................................................. 87
Katrina Wilson, Politicization of Family Planning: Examining the Influence of Presidential Electoral Politics on Title X* .................................................................................................................. 87
Dylan Winchell, First Farmers: Constructing a Narrative of Italy’s Neolithic* .......................................................................................................................... 88
Tim Wongvibulsin, The Relationship between Considering Future Outcomes and Describing the Self* ......................................................................................... 88
Lily Wu, Social Mobility and Category Processing* .................................................................................................................................................... 88
Sammy Wu, Gender Differences in the Coping and Expression of Stress .................................................................................................................. 88
Madison Wulf Elbich, Auschwitz-Birkenau Memorial and Museum: Walking the Tightrope to Provide Accurate Holocaust Narratives .................................................................................................................. 89
Renee Yang, Safety Strategy Theory (SST): The Development of a New Scale for Measuring Safety Strategies* ................................................................. 89
Margaret Yannopoulos, Adopted from Birth: Asian Adoptees Form Ontological Adoptee Kinships in the Face of Society’s Insistence on Race-Based Identifications* ................................................................................................. 89
Hannah Yoo, A Growth Mindset Scale for Young Children* .................................................................................................................................................... 90
Gahyun Helen You, The Economics of Political Trust in Southeast and East Asia* .................................................................................................................. 90
Caroline Zemsky, Sleep and Motivation* .................................................................................................................................................... 90
Iris Zeng, The Use of Cementochronology in Paleodemographic Study* .................................................................................................................. 91
Ashley (Qingyang) Zhang, Do Representations of Social Groups Differ by Culture?* .................................................................................................................. 91
Danning Zhang, Intraparty Mobilization in Contemporary China: Examining the Effects of Party Mobilization on Attitudes toward Local Governments* .................................................................................................................. 91
Virginia Zhang, Adjusting to Automation: Workers’ Life-Cycle Occupational Trajectories and Inter-Cohort Learning* .................................................................................................................. 91
Yian Zhang, Atypical Weighting of Bottom-Up vs Top-Down Inputs in Autism Spectrum Disorder* .................................................................................................................. 92
Hunter Zwack, Ticket to Success: The Predictive Value of School-Level Academic and Demographic Factors on Specialized High School Acceptance .................................................................................................................. 92

STEM
Joanna Abouezzi, Bird’s Lung: Pumping without Valves .................................................................................................................................................... 94
Diana Abraham, Effect of A2AR Stimulation on Pediatric Cartilage Derived MSC* .................................................................................................................. 94
Aparna Alankar, HIV-Induced Suppression and Exhaustion in Pediatric Immune Systems* .................................................................................................................. 95
Abdulaziz AlHussein, Ruyof AlHussein, Harriet Chen, Screening of Protein Mimetics for the Modulation of Toxic Conformations of IAPP .................................................................................................................................................... 95
Samir Ali, Synthesis of Manganese Chelator Derived from 1,2-bis(o-aminophenoxy)ethane-N,N,N',N'-tetraacetic acid (BAPTA) and Determination of Binding Efficiency* .................................................................................................................................................... 95
Apeksha Ashok Kumar, Testing the Non-Interchangeability of Two Proneural Factors in Inducing Neurogenesis* .................................................................................................................................................... 95
Kaavya Ashok, Malini Basu, Adler Guerrero, Steven Ionov, Metabolic Engineering of Flavonoid Production for Industrial Applications* .................................................................................................................................................... 96
Kristen Avallone, The Effect of ER Stress on Translation in Mitochondrial Vicinity* .................................................................................................................................................... 96
Trevor Barker, Role of Candidate Genes in Sexually Dimorphic Morphogenesis* .................................................................................................................................................... 96
Skyler Barr, High Throughput Mapping of the miRNA-mRNA Interactome .................................................................................................................................................... 97
Asia Beal, Fadel Yerima, Salinity Tolerance and Antibiotic Resistance of Bacteria Isolated from the Turtle Pond in Central Park .................................................................................................................................................... 97
Nesma Belkhodja, Joan Jonas Knowledge Base*................................................................. 98
Joseph Boroda, The Role of Diaphanous 1 in Obesity, Insulin Resistance and Type 2 Diabetes*......................................................... 98
Ana Burris, The Diastereoselective Synthesis of Peroxide Bonds* ......................................................... 98
Lydia Cassard, Temporal Straightening Capabilities of Models of Human Vision ................................. 98
Stephanie Chan, Cecilia Delmer, Early Life Adversity Diminishes Rat Pups’ VTA and Reward Value of Mother*..................99
Anna Chen, Modulating the Cavity Sizes of Self-Assembled 3D DNA Crystals* ................................. 99
Ruonan Chen, Targeting Mechanosensitive Channel Piezo1 Mediates Protective Immunity Against Pancreatic Cancer and Activation of Myc* ................................................................. 99
Divija Chopra, Mental Health and Sociability: A Cross-Species Approach to Exploring Interventions for the Effects of Early-Life Adversity* ................................................................. 100
Nadjet Cornejal, Claudia Melo, Human Vaginal Fluid Components Do Not Interfere with Griffithsin Anti-HIV Properties........................................................................................................ 100
Nadjet Cornejal, Victor Cruz, Claudia Melo, Victor Sorel, Biological Activity of Guava (Psidium guajava) ................................................................. 100
Scott Cosgun, Directing the Synthesis of Monopatch Patchy Particles and Their Self-Assembly into Crystals*................................................................. 101
Or Dagan, Investigating Schwann Cell Nonautonomous Signaling in PNS Development and Maintenance* ................................................................. 101
Or Dagan, Predicting Students’ Engagement in Online Learning with Real-Time EEG* ................................................................. 101
Sreya Das, Study on the Unwinding Activity of E. Coli Repair Helicase RecQ and Its Implication on DNA Damage Recognition*........................................................................................................ 102
Rodrigo De La Torre, Completing the Cortico-hippocampal Circuit: Mapping the Long-Range Glutamatergic Projections from Lateral Entorhinal Cortex to Hippocampal Areas CA3 and CA1*........................................................................................................ 102
Maykel Dolorit, Testing the Importance T22C8.4 in the Dosage Compensation of C. elegans through RNA Interference Genetic Assays* ........................................................................................................ 102
Sophie Dvali, Variance Adaptation in Navigational Decision Making* ........................................................................................................ 103
Ian Edelman, A Closer Look into Genetic Recombination in S. cerevisiae* ........................................................................................................ 103
Jay Faris, Stochastically Modeling Vaccination on Scale-Free Evolving Networks* ........................................................................................................ 103
Tracey Freeman, HIV-1 Exposure Triggers Calcium Influx That Is Inhibited by a P2X Antagonist* ........................................................................................................ 103
Zachary Friedrich, Neural Connectivity Correlates of Inter-Individual Differences in Autism Severity and Expressive Language Ability in Young Children* ........................................................................................................ 104
Katherine Furman, Nature Versus Nurture: Maternal Responses to Infant Distress Cues* ................................................................................................. 104
Matthew Generoso, Blocking Inhibitory Receptors to Restore T Cell Proliferative Responses in Perinatally-Infected HIV+ Children* ........................................................................................................ 104
Maria Grba, Function of Neuronal Subpopulation in Medial Amygdala for Generation of Social Behaviors* ........................................................................................................ 105
Himari Gunasinghe, Investigating DNA Replication-Transcription Conflict on RNA Polymerase II Transcribed Genes in S. cerevisiae* ........................................................................................................ 105
Michael G. Hamilton, Molecular Abnormalities in Human Pluripotent Stem Cell-Derived Neural Precursor Cells and Neurons* ........................................................................................................ 105
Ishan Handa, Chemogenic Manipulations of Medial Prefrontal Cortex Affects Running in Adolescent Mice Exhibiting Anorexia Nervosa-Like Behavior* ........................................................................................................ 106
Syeda Isabel Hassan, Maintaining Synaptic Inhibition during Transient Hearing Loss Preserves Juvenile Auditory Perception and Learning* ........................................................................................................ 106
Antalya Jano, Design and Synthesis of Peptidomimetic Macrocyclic Peptoids as Aspergillus fumigatus Chitinase Inhibitors* ........................................................................................................ 107

* supported by Dean’s Undergraduate Research Fund † winner of Phi Beta Kappa Albert Borgman Prize for Best Honors Thesis
Libuše Janská, A Novel Enzymatic Tool for Targeted Amino Acid Deprivation of Cancer Cells* .................................................. 107
Shan (Frank) Jiang, The Hasse Minkowski Theorem .............................................................................................................. 107
Annette Kaminaka, Characterization of Transforming Growth Factor Type-β (TGF-β) Signaling in Small Excision and Large Excision Wound Healing in Mice* ........................................................................ 107
Paramesh Karandikar, Forster Resonance Energy Transfer and Intersystem Crossing as a Means of Characterizing Gadolinium-Based Contrast Agent Behavior* ........................................................................ 107
Jenish Karmacharya, Self-Assembly of Stressed Tensegrity Triangle* ..................................................................................... 108
Alexandra Kuznetsova, Neuronal Dynamics of Beat Perception ................................................................................................. 108
Soon Hoo Lee, An RNA Splicing Component Implicated in Cancer Plays a Role in Heterochromatin Formation Independently of Splicing in the Fission Yeast* .................................................. 108
Rimma Levina, Examining Bicoid’s Pioneering Ability in Enhancer Regulation during Drosophila Embryo Development* ........................................................................................................................................ 108
Grace Levinson, Amyloid Precursor Protein Is Required for Late-Term Survival and Proliferation of Melanoma Cells in the Brain Parenchyma* .................................................................................................................... 109
Ziqi Liu, Face Specific Staining of a 2-Turn Asymmetric Crystal Using Fluorophores (Cyanine 3, Cyanine 5)* ..................... 109
Diego Fernando Lorenzo Casabuena Gonzalez, Efficient Combinatorial K-Means Projective Clustering on J-Subspaces* ................................................................................................................................. 109
Yinglun Ma, Samuel Odeja, Molecular Beacon Probes for Assaying the Gut Microbiome .............................................................. 109
Olivia Maffei, The Comparison of Healthy and Diseased Microbiomes* .................................................................................... 110
Selamawit Moges, Engineering Toroidal Shaped Micro-Swimmers* ........................................................................................ 110
Maesoumeh Mohammadkhani, The Genetic Logic of Striatal Development* ........................................................................ 110
Erica Nebet, Mechanisms Constraining Inhibitory Dynamics in Hippocampal CA1* ................................................................. 111
Kimberly Nguyen, Defining Genetic Variation Associated with DNA Damage Sensitivity* ....................................................... 111
Michael O’Brien, Above and Beyond: Holographic Tracking of Axial Displacements in Holographic Optical Tweezers* ............................................................................................................................... 111
Lourania Oliver, Tamiflu: Computational Analysis of Drug Binding and Resistance* .............................................................. 112
Christie Passos, Crystal Growth Inhibition for Prevention of L-cystine Kidney Stone Formation by L-cystine Diamides* ................................................................................................................................. 112
Elijah Persad-Paisley, Exploiting Inclusions to Generate Screw Dislocations on Molecular Ionic Crystal Surfaces* .............. 112
Dennis Phan, Determining Efficacy and Efficiency of PORTL-iperoxo as a Selective M2 Receptor Agonist* ......................... 112
Christopher Porras, Neural Development of the Drosophila Visual System* ............................................................................. 113
Akshay Prabhushankar, Identifying High-Impact SNPs That Predict Susceptibility to Genetic Diseases .............................. 113
Margish Ramani, Stimulation of Innate Immunity via TLR9 to Ameliorate Cerebral Amyloid Angiopathy in Aged Non-Human Primates* ........................................................................................................... 113
Rachel Rios, Misophonia and Tech: A Study to Help Better the Wellbeing of Students Who Struggle with Focusing while Listening to Naturally Occurring Sounds.* ..................................................... 114
Prianka Saha, Phosphoproteomic Approach to Identifying PERK Downstream Targets Related to ER-Mitochondrial Interactions in Stress Conditions* ........................................................................ 114
Mira Sharma, Observing the Proteolytic Activities of Matriptase1 by a Novel Protease Sensor in Zebrafish* ......................... 115
Leizhen Shi, The Termolator, Terminology Extraction* ............................................................................................................... 115
Geet Shukla, Identification of Chromatin Remodeling Cofactors Responsible for SDC-2 Mediated Recruitment of the Dosage Compensation Complex* ................................................................. 115
Guanhua Sun, Study of the Unidirectional Flow in Avian Respiratory System* ................................................................. 115
Stephen Tan, Early-Life Trauma Reduces Flexibility in PFC Network Processing of Threat During Adolescence* .......... 116
James A. Tranos, From Chelate to Chromophore: Sensitizing Non-Luminescent Lanthanide Chelates for Use in Contrast Enhanced Magnetic Resonance Imaging* ................................................................. 116
Gayatri Venkataraman, Early Life Maltreatment Reduced the Role of Striatum in Threat Learning ........................................ 116
Ruoyu (Luie) Wang, Working Memory Deficit and Frontoparietal Network Abnormalities in Schizophrenia .................... 117
Alexandra Winter, Raman-Based Molecular Probes for pH and Metal Detection in Living Cells* ................................. 117
Joyce Woo, Maternal Presence Blocks Fear Learning in Infant Rats by Blocking Plasticity Molecules ......................... 117
Vivian Xu, The Role of Apolipoprotein E on Anti-Amyloid Beta Passive Immunization in APP Transgenic Mice .......... 118
Justin Yeung, Testing Promoter Specificity in Drosophila* ................................................................................................. 118
Ye Yuan, General Adversarial Networks for Image Inpainting* .......................................................................................... 118
Yvonne Zagzag, Monitoring the Kinetics of Molecular Binding Using Holographic Video Microscopy* ...................... 118
Kenny Zheng, The Genetic Role of Ire1 in Drosophila Eye Development* ................................................................. 118
Jeffrey Zhu, Exaggerated Cap-Dependent Translation as a Mechanism for Cortico-Striatal Dysfunction in Fragile X Model Mice* ........................................................................................................................................ 119
INTRODUCTION:
Research as Educational Paradigm

Research is disciplined inquiry. It is at the heart of human endeavor: we crave knowledge with every move we make. It is, of course, also at the heart of this University and the education we offer. The journal you are reading was made possible by donors who believe in our commitment to research. The following pages also emerge from the brilliance and dedication of our students and the faculty who mentored them during the academic year 2018–2019 in the College of Arts and Science at New York University. It is a celebration of the achievements of our most curious, driven students.

Research takes many shapes. The students featured in this publication spent time working in a lab with a team of scientists in order to understand brain development; they measured the dimensions of ancient human remains to understand cultural practices surrounding beauty; they picked through boxes in an archive, finding textual evidence to support a literary analysis; or interviewed living eyewitnesses to a major historical event in a foreign country. The benefits are many. Students work closely with a mentor, sharpen their problem-solving skills and learn about “the big ideas” of their chosen field. Students explore possible future careers, learn how to work independently and hone marketable skills such as effective written and oral communication. However, in personal terms, there is no greater achievement than meeting the challenges of a long-term project, following a passion to a wonderful conclusion and having completed work to show for it. It is a thrill and satisfaction like no other. The internal standard of excellence that our students discover within themselves is perhaps the most salient personal outcome of undergraduate research—a reward that keeps on giving no matter what one pursues after college.

This publication represents only a fraction of the research undertaken by College students, as individuals and in groups, under the close mentorship of faculty. For the most part, the projects featured here were supported by the Dean’s Undergraduate Research Fund, created through the generosity of alumni, parents and friends, providing the material support necessary to carry out their inquiries. (A list of the research scholarships that have been endowed in the Fund appears on page 2 of this journal.) These abstracts were also presented at the annual Undergraduate Research Conference, which was established over forty years ago and encompasses the natural and computational sciences, the humanities, the social sciences as well as creative writing.

At the start of this issue is the “Faculty Perspective,” in which we publish the remarks delivered by an NYU faculty member at the closing award ceremony of the previous Undergraduate Research Conference. The content of this issue underscores the crucial importance of independent inquiry as a paradigm for liberal arts education in the twenty-first century. We are very grateful to the students, their faculty mentors and the generous funders who have made this sort of educational experience, and this journal, possible.

Gene Andrew Jarrett
Seryl Kushner Dean of the College of Arts and Science
Professor of English
Congratulations to all of you for presenting some excellent papers. Once bitten, it is very difficult to cure one’s self of the bug of research. So, on the assumption that all of you have been bitten, I will speak a little about what I consider to be some of the most exciting developments at the frontier of research in the social sciences.

Specifically, I would like to talk a little about a subject at the core of my own research interests, namely the study of civil conflict. Of course, civil conflict is a pervasive phenomenon now, and even more so at several periods in the past. I want to give you an idea of the explosion of data on conflict-related variables that has made the study of conflict one of the most exciting areas in political science and in economics. This is by way of encouraging all of you who intend to pursue a career in research of any kind to think about studying this critically important phenomenon.

First of all, whereas in the past we only had crude indicator variables (those which take values of zero or one in a given year) on the incidence of conflict incidents, we now have data by day and in some places by minute and hour. We can also pinpoint the exact location of a conflict location. This means we can now study phenomena as detailed as the exact time and location at which the Taliban is most likely to blast bombs on election day in Afghanistan.

For those of you who are interested in the effect of climate on conflict, we now have satellite-generated images of clouds which can be converted into rainfall data at the micro-level. Data at a similar level of disaggregation are available for temperatures worldwide. In one of my papers I used this data to project the likely effect of global warming on civil conflict in sub-Saharan Africa. This exercise was, of course, facilitated by the availability of a large number of simulation models developed by climate scientists.

For those of you interested in dirty tricks in politics, the declassification of large chunks of data by the CIA now allows us to examine the effects of coups organized by the CIA on the democratic trajectory of a country and also on changes in trade patterns with the US following such coups. In one of my papers, my co-authors and I found that such coups are most beneficial to producers of uncompetitive products in the US.

For those of you who are interested in the analysis of written texts and also of social media, numerous big data techniques have emerged to study the movement of Twitter flows and Facebook posts in the lead up to, during and following major conflict incidents. For example, there are now important papers on how social media facilitated mobilization at Tahrir Square in Egypt, and also facilitated anti-Putin protests in Russia.

For the historians among you, imaging technology has made it remarkably easy to take data from ancient books and documents and convert them into a format where they can be subject to regression analysis. As long as the data from page to page is in the same format, all it takes is for someone to take photos of the pages with their phone and subject it to a procedure called OCR, which allows the data go straight into a program that conducts econometric analyses of the data. In this way, it is possible to gain a much deeper understanding of conflicts that occurred in the distant past.

The explosion of data and data extraction techniques can also be used for purely fun projects. For example, my co-authors and I scraped the number of yellow and red cards earned by each soccer player in the major leagues of Europe from the websites of these players on the ESPN website. We were then able to correlate these indicators of violence on the field to the extent to which the player was exposed to civil conflict at a formative age.

Aside from the above changes when it comes to the study of conflict, there are broader changes that are at work that should be of interest to scholars of any subject. Specifically, you should know that recent changes in technology

---

Shanker Satyanath is Professor of Politics at NYU. He received his undergraduate degree in Economics from Delhi University and his M.B.A. from Northwestern before eventually earning his Ph.D. in Political Science from Columbia University in 2001. He has served as the Director of the International Relations program and won the Golden Dozen Teaching Award in 2008. His primary area of research is political conflict. He has written on civil wars in Africa; CIA and KGB coups during the cold war; and on military repression in Argentina. He is currently studying strategies used by traditional elites in Latin America to retain political influence in the long term.
have broken down categories in the type of scholar you can be. In the past, people who worked in archives were almost entirely historians with fantastic skills in thick description of phenomena but almost entirely lacking in statistical skills and sophisticated conceptions of what constitutes causality. At the same time, most quantitative social scholars were almost entirely lacking in essential skills for conducting archival research. Now, thanks to the broadening of technical skills in the humanities, the development of skills in working in archives in the social sciences and not least the increasing acceptance of co-authorship as a mode of producing research, these differences are far less sharp. For example, there is a forthcoming paper in the *Quarterly Journal of Economics* in which a historian with skills in reading ancient tablets in a dead language collaborates with economists with skills in structural mathematical modeling to identify the precise location of “lost” cities in Anatolia thousands of years ago. This exercise helps assess the robustness of cities to phenomena like war.

I could go on and on, but let me summarize the main message of my talk. All of you are interested in research, and many of you are likely interested in the subject of civil conflict. For you, I want to send a message that there has been no more exciting time for the study of conflict. The reason for this are the incredible number of technological developments that are going on right as we speak that are making the rigorous study of conflict an even more diverse and fascinating field.

Professor Shanker Satyanath addressing the audience at the 2019 Undergraduate Research Conference at NYU College of Arts and Science.
Memory, Loss and Nubian Displacement: Contesting Constructions of the Aswan High Dam
Bayan Abubakr, History
Sponsor: Professor Michael Gomez, History

Through a historical analysis of Idris Ali’s Dongola: A Novel of Nubia, this paper challenges the prevailing idea that the Aswan High Dam was wholly experienced as a nationalist project, one designed for the benefit of the Egyptian “people.” In doing so, this thesis will historically analyze Idris Ali’s counternarrative to the Egyptian nationalist memory of the Aswan High Dam. It will acknowledge the violence that underpins the Dam’s existence, and it will center the voices of Nubian communities to tell this story. This paper directly confronts scholarly and Egyptian discourses that have ignored the lived realities of Nubian displacement. It will reflect upon the ways the Dam materially and psychically affected Nubian communities and determine how these experiences were processed, negotiated and/or resisted among Nubians. Ultimately, this paper situates Egyptian Nubian communities as actors, rather than groups acted upon, in the building of the Aswan High Dam.

The Hunter and the Prey: Precarity of the Worker’s Body in Latin America
Alyssa Ahn, Mathematics, Spanish
Sponsor: Professor Jens Andermann, Spanish and Portuguese

This thesis examines the precarity of the worker’s body in Latin American Culture from the mid-twentieth century to modern day through three works: “Mi tío el jaguareté” by Guimarães Rosa, Boca de lobo by Sergio Chejfec and Boi Neon, a Portuguese-language film directed by Gabriel Mascaro. The author argues the worker’s body is subject to a system of labor that seeks to control the body physically as well as socioeconomically. Through the process of work, the worker’s body experiences an animalization that ultimately creates an interspecies. The idea of this contamination of the human form with the presence of the animal further complicates the question of a hierarchy. At first, this “other” being, the interspecies, is not well received and eliminated for its inability to find belonging in the social order. With the passing of time, this contamination and the mixing of species are incorporated into the socioeconomic hierarchy as a means for the upper class to exert their control over the remaining classes while further distancing the working class. This form of class antagonism is figured through the relationship between the animal and the human as the hunter and prey dynamic. With the presence of this interspecies, the worker becomes the prey, a body to be conquered, while the role of the hunter is figured by system of labor. In the first two aforementioned texts of the corpus, the dynamic of the hunter and prey reveals how the body of the worker must be productive in order to subsist and any form of non-productivity leads to the elimination of this body. In the final work, we observe how the body of the worker is still in a precarious living situation with barely enough means to subsist; however, art allows for a means to surpass this dynamic while finding another form of productivity.
Belonging and Un-Belonging: Looking at the Partition of India through the Lens of Gender  
Akshara Anirjita, Politics  
Sponsor: Professor Manu Goswami, History

The Partition of British India in 1947 came at the eve of the Independence of the nation and resulted in the creation of two separate nation states. Memories of Independence for many in the region are sullied by the tragedies that came with it. More than half the millions of people killed, targeted and abducted during and in the aftermath of the Partition were women. This paper strives to understand this tragic and disproportionate targeting of women, the nature of this violence and the woman as the silenced or “subaltern” citizen. When the governments of India and Pakistan later passed treaties to “recover” abducted women from the other side of the border, many faced the double burden of being re-abducted, in a sense, from a country and from families they had grown to become a part of. Using interviews and archival materials including acts and treaties passed by India and Pakistan, this paper explores the woman as a citizen without boundaries and with no say in her own fate. These primary sources are understood through the lens of and juxtaposed with critical theories such as the Marxist sociological “reification” or objectification, Althusser’s (1970) power apparatuses, Berlant’s (2001) citizenship, and Nira Yuval Davis (1989) on the public-private divide. The paper, in the end, is able to understand the often forgotten woman in Partition historiography and how she was made to be a passive object in her destiny by three different actors, i.e., her own community, by the “other” or the communal aggressor, and by the State.

Comrade Foreigner: Immigrants at the 1910 Congress of the Socialist Party of America  
Natalie Behrends, History  
Sponsor: Professor Steven Hahn, History

Through an examination of immigration debates at the 1910 National Congress of the Socialist Party of America, this paper re-interprets a crucial period in the history of the Second Socialist International and the development of socialist movements in the United States and Europe. Previous scholarship on the Socialist Party of America has focused on the party within an American political context and has emphasized its distinctiveness from the European parties of the Second International. By highlighting exchanges between the Socialist Party of America and other Socialist parties at the 1907 Stuttgart Congress of the Second International and by connecting those exchanges to debates over migration at the 1910 National Congress, this paper argues understanding the Socialist Party of America’s negotiation of its position as both a national political party and a party of the Second International is crucial to understanding the rise and fall of the socialist movement in the United States and Europe at the turn of the twentieth century. The process of negotiation between nationalist and internationalist identities, which in the United States manifested in debates over migration, mirrored similar debates among French and German Socialists, debates that would eventually lead to the First World War and the effective collapse of the Second International. The decline of the Socialist Party of America, this paper argues, was not an American anomaly, but rather a casualty of a broad trend within the Second International.

House Arrest: Women in the Spanish Inquisition  
Daria Berman, English and American Literature, History  
Sponsor: Professor Sinclair Thomson, History

Inquisitors revived the Spanish Inquisition in the seventeenth century amidst a growing influx of Portuguese immigrants into Spain. Over one hundred years since the expulsion of Jews from Spain in 1492, Spanish Inquisitors continued to use similar methods of interrogation and trials since the Inquisition’s inception. However, the target group of Portuguese immigrants caused new patterns of defense narratives from the accusations of heresy in the early modern era. Women stood out as specific targets by the Spanish Inquisition, whether their indictment originated from peculiar actions of the individual herself or from the confessions of fathers, husbands or other male figures who admitted to observing Jewish practices. Crypto-Judaism in fact incriminated women as the main conspirators in allowing and promoting Judaizing within the home. Moreover, if an individual or family were to practice Judaism secretly, then the observances would ultimately take place in the home. As the overseer of household practices, the women would be the main suspects in observing heretical practices.

Decolonizing the Theatre: The Politics of Performance in Idi Amin’s Uganda (1971–1979)  
Karishma Bhagani, Drama, History  
Sponsor: Professor Robyn d’Avignon, History

This thesis explores the extent to which performance was used to build a nationalistic project in post-colonial Uganda. It argues Idi Amin’s Uganda was situated in a specific pan-Africanist postcolonial framework which largely shaped government policies and performances his regime supported. On the one hand, Amin used performance as a tool to legitimize his regime and promote traditional pre-colonial performances in a bid to arrive at a nationalistic project that was in line with his ideological beliefs. On the other hand, towards the end of his regime, performance was also used as a tool by individual artists and theater companies—that were eventually censored—to contest the government’s ideology and attempt to create a new nation-building project. Through this specific case study of Uganda, it is evident that performance was used both as a tool by central leadership to enforce power and promote pre-colonial culture and also by individual artist
groups to challenge the government and leadership. This tension highlights the challenges that come with building a post-independence nation that demands a consideration for different ethnic identities in the region. The focus on theater not only emphasizes the symbolic reclamation of the stage from Uganda’s former colonial masters but also adds a different perspective to the existing body of work by historians including Karin Barber, Kelly Askew, Jay Straker and Bob White, among others.

**Dates: Sweet Fruit, Sticky History**

Elise Bortz, Media, Culture, and Communications, Catherine Korren, Global Liberal Studies, Ha-Young Kwon, Media, Culture, and Communications, Richard Seeno, Global Liberal Studies, Taylor Upchurch, History, Politics  
Sponsor: Professor Peter Valenti, Middle Eastern Studies

In the face of rapid industrial development, how are the Arabian Gulf States reinstating the symbol of the date palm to affirm national identity? This project is a regional case study examining the material culture of the United Arab Emirates, claiming that the symbol of the date serves as a modern romanticization of a preindustrial Arabia. The discovery of oil in the twentieth century is both a catalyst to the economic development of the region but also a motive in the reestablished cultural symbolism of the date. Today, domestic date production represents less than 1% of the United Arab Emirates’ gross domestic product (GDP). Thus, the fruit continues to serve as a cultural figurehead, which brings to light an inherent contradiction: the date, while seemingly indicative of national values, is invariably excluded from national production. It is argued that this underscores the country’s emphasis on cultural capital as opposed to economic imperatives. The cultivation of the palm since its domestication approximately 5,000 years ago signifies the historic shift from nomadic to sedentary lifestyles. Predicated upon these socio-historical underpinnings, the date is commonly represented in cultural, religious and literary traditions of the region. As a comparandum to how the date is figured in the Emirati cultural imaginary, a correlative example in the American southwest is also considered. With the date as central to cultural orientalization, the thesis argues that in both the minds of the American public and Emirati citizens, the fruit symbolizes a cultural other and seemingly unattainable past, which is called upon in contemporary constructs of national identity. The date, a historically tethered and culturally restorative symbol, unearths a telling dimension of the history of the region.

**Indigenous Bodies: Museo de La Plata and Narratives of Argentine National Identity Formation**

Kelia Brooks, Global Liberal Studies, Spanish  
Sponsor: Professor Ana Alvarez, Spanish and Portuguese

The first case of restitution in Argentina occurred in 1994 when the remains of Chief Modesto Inacayal were returned to Chubut after being held in the Museo de La Plata for a little more than a century. Inacayal’s remains were part of a massive collection of Indigenous human remains in the museum during the nineteenth century. This historic moment of return came after decades of Indigenous communities, students in La Plata and members of the museum faculty fighting against the museum and the State in hopes of having the remains of their ancestors returned to their birthplace. Nonetheless, this is just one part of a history of abuse, exploitation, colonization and ethnicocide that the Indigenous communities of Argentina have endured from the moment the Spanish first stepped foot onto their territory until today. This thesis argues the act of exhibiting Indigenous remains in the Museo de La Plata formulates a national narrative that places the Indigenous communities of Argentina into a static state of prehistory while simultaneously erasing them from the postcolonial imaginary.

**Hiding, Rambling, Writing: The Psychic Role of the Secret in L’Écriture Féminine**

Colby Browning-Doorn, Comparative Literature, Economics  
Sponsor: Professor Mariela Dreyfus, Spanish and Portuguese

This project works to define a psychic relationship between secrecy and Hélène Cixous’ concept of l’écriture féminine, or feminine writing. The paper begins with a close reading of the portion of Cixous’ oeuvre dedicated to feminine writing, especially “Le Rire de la Méduse,” for its use of secrets and other themes linked to the concealment of knowledge and meaning such as silence, darkness and hiding. After arriving at a definition of the secret as both the historical locus of l’écriture féminine and one of its necessary products, the paper turns to the psychoanalytical models of Sigmund Freud and Jacques Lacan to question and elaborate on the relationship between secrecy and feminine writing. Examining works from The Uncanny to Seminar XX, the paper uses a Cixousian understanding of Freud and Lacan to locate the origin of the faculty of feminine writing within the secret of feminine sexual development. Looking to fiction for examples of this relationship, the paper continues with readings of Chilean writer María Luisa Bombal’s “El árbol” and peripherally, La última niebla.
The Design of Dining Out: An Exploration of Adaptive Reuse in Restaurant Design in London
Cheyne Campbell, Urban Design and Architecture Studies
Sponsor: Professor Mosette Broderick, Urban Design and Architecture Studies

This paper investigates the multifaceted role of adaptive reuse in high-end restaurant design in London. It addresses how historic architecture can be successfully implemented as a marketing tool for dining establishments and what design techniques are used to facilitate this. It also considers the implications that this trend—i.e., restaurants arising in adaptively reused spaces in London—has for urban issues such as neighborhood development and historic preservation. The paper addresses the history of restaurants and how this history has led to current market trends that permit adaptive reuse in restaurant design to be successful. Seven case studies varying in building type and location in London are examined to show the many ways adaptive reuse in restaurant design can be executed in various styles and contexts. Adaptive reuse in the upscale restaurant industry can be used to meet marketing needs, while also providing funding and purpose to historic buildings. This must be done in a way that is conscious of the existing, surrounding neighborhood and takes proper advantage of a building’s historic features. While historic preservation regulations can be beneficial in enforcing the protection of historic architectural features, they can also be restrictive in terms of creative freedoms available to designers and architects. Adaptive reuse restaurant projects require innovative design solutions to the unique challenges posed by their original buildings.

Breaking the Mold: Augusto Boal and the Reframing of Theatrical Rehearsal Processes
Korey Caron, Dramatic Literature
Sponsor: Professor Brandon Woolf, Dramatic Literature

This thesis argues there is an inherent link within any rehearsal process between the practices done in rehearsal and the understanding of hierarchy associated with that particular production. The danger to this link is when the practices serve to uphold the hierarchy more so than they serve the artistic quality of the production. This is precisely the problem defined in this thesis as the “common-practice” rehearsal process (the way scripted theatre is typically rehearsed in America): too many of the practices in the rehearsal room (including a rigid division of labor and an emphasis on time efficiency) exist primarily to uphold the hierarchy associated with scripted theatre rather than to increase the production’s quality itself. To develop strategies to reevaluate this link between hierarchy and rehearsal practice, this work draws on the rehearsal theories and practices of Augusto Boal and Urban Improv.

Boal, who worked in 1970s Brazil creating theatre with marginalized populations, was interested in an anti-hierarchical approach to rehearsal as a rejection of the oppressive practices of the bourgeois theatre. Urban Improv is a present-day Boston-based troupe that works with public-school students and takes a limited-hierarchy approach as a way to navigate the relationship between order and collaboration. The thesis concludes with a set of questions that, combined with its answers, show the beginnings of a reworking of the common-practice rehearsal.

Cultural Capitulation: Trans-Western Identity in the United States Embassies in London and the Implications for Political Architecture in the West
Danny Carpentier Balough, Urban Design and Architecture Studies
Sponsor: Professor Jonathan Ritter, Urban Design and Architecture Studies

For nearly sixty years, the US Embassy in London stood as the standard-bearer of the post-war Western order. The chancery building, designed by Finnish-American architect Eero Saarinen, was a synthesis of Modernist and Brutalist strains and created a wholly unique structure. The audacious building was indicative of the US’s privileged position in the world at the time and the optimism of the early post-war era. After 9/11, it was determined that the chancery was a liability, and in 2008 it was announced that a new embassy would be built south of the Thames River. The new structure, dubbed “the cube” by media outlets, was designed by Philadelphia-based architects Kieran-Timberlake around the principles of environmentalism and transparent democracy. The cube arrives at a time when fissures in the foundation of the West are being exposed, leaving profound questions as to what the state of Western identity is to be. Using art historian Jules Prown’s theory that art is a manifestation of latent cultural artifacts, a formal reading of the cube reveals that there is an emerging Trans-Western identity. This new identity may be tied to the tenets vested in the cube, in both its post-industrial, environmentally sound overtones and techno-liberal undertones.

The Salvadoran Civil War Then and Now: Child Soldiers and Children of War
Gabriella Argueta-Cevallos, Latin American Studies, Psychology
Sponsor: Professor Lourdes Dávila, Spanish and Portuguese

This project is primarily concerned with understanding the forms of trauma linked to the Salvadoran Civil War. The first chapter, through a historical analysis of the conflict and a literature review of psychological and sociological research, focuses exclusively on child soldiers and the psychosocial effects participating in war has on
this particular population. The second chapter explores the relationship between literature and trauma and the ability of literature to engage with and represent trauma in ways that formal psychology cannot. This section includes a close textual analysis of Claudia Hernández’s *Roza tumba quema*, a novel which weaves together a former child soldier’s reintegration into society with her own daughters’ stories of coping with the effects of the war. Drawing on an interview with artist Muriel Hasbun as its primary source, the final chapter turns to visual art for similar purposes, i.e., to understand how this medium interacts with trauma in ways that no other area can. Hasbun’s work centers around memory, identity and trauma with a particular eye towards El Salvador. Ultimately, the goal of this project is to bring attention to the lasting effects of the war as well as the ways in which both the individual and the collective can move forward.

**Salvator Rosa’s Fantastic Beasts and Where to Find Them**

*Tony Cui, Art History*

*Sponsor: Professor Louise Rice, Art History*

During his Florentine years from 1640–1649, Salvator Rosa (1615–1673) painted a number of witchcraft scenes that to this day have amazed and puzzled viewers. Though numerous scholars have explored the origins of the ghoulish witches and gloomy landscape in Rosa’s *strega* paintings, few have conducted any sufficient study of the fantastic monsters included in the same compositions. This thesis starts as an iconographic study of Rosa’s beasts, and it argues that Rosa’s monsters came from certain literary, scientific and artistic cultures popular up to the early Seicento. From Greek mythology, Ovid and Virgil, the witch-hunting frenzy of the sixteenth century, to the emergence of natural scientific studies, many sources may have informed and inspired Rosa’s monsters. After the iconographic quest, this thesis further draws up the story of Rosa’s own life and time and links the beasts to Rosa’s social circle, his artistic experience and patronage as well as his own literary works. The *wunderkammer* culture that fed and necessitated animal drawings and monstrous images brought together prominent aristocrats and literary figures. The light-hearted attitude towards witchcraft and demonology was acceptable only among a specific Catholic group of Italian intellectuals whose commissions of Rosa’s witchcraft paintings were no mere coincidences. In the 1640s, Rosa himself wrote many witch-themed poems and participated in plays featuring monsters and demons. From such grounds, the thesis argues that Rosa’s fantastic images were not matters of mere imagination or tradition; instead, they show a particular visual culture rooted in Rosa’s social life. Outlandish monsters can therefore enliven a story of worldly human affairs.

**Holistic Consequentialism: Reuniting Animal Ethics and Environmental Ethics**

*Yanqi Deng, Philosophy*

*Sponsor: Professor Dale Jamieson, Environmental Studies*

The fields of animal ethics and environmental ethics have had a long history of conflict. Even though both fields emerged in the mid-twentieth century as a response to the widespread devastation modern humans are causing as a species, their different starting points have led to a sharp dichotomy. On one hand, animal ethicists focus on demanding equal moral consideration and fair treatment for human and non-human animals. On the other hand, environmental ethicists focus on the protection of ecosystems as a whole. Many environmentalists argue that it is often necessary to cull or exterminate large populations of animals for the sake of conservation, regardless of the death and suffering caused. Moreover, they argue that if all prey animals were to be treated in ways animal ethicists endorse, then all predation must end, but that that sounds absurdly anti-nature. This paper examines Tom Regan’s animal rights view as a representative of animal ethics and J Baird Callicott’s eco-centrism as a representative of environmental ethics. It objects to both and argues neither is a sustainable ethical framework. Finally, it proposes an alternative view called Holistic Consequentialism as an improved version of classical utilitarianism that successfully reconciles the dichotomy between animal ethics and environmental ethics.

**Moi-même: Investigating the Life of Hélène Cuenat and the Memory of the Escape from Petite Roquette**

*Tess Derby, History*

*Sponsor: Ed Berenson, History*

On February 25, 1961, six women—Hélène Cuenat, Micheline Pouteau, Jacqueline Carré, Didar Fawzy-Rossanno, Zina Haraigue, Fatima Hamoud—escaped from Petite Roquette Prison in Paris. Hélène Cuenat’s life narrative *La Porte Verte* (2001) traces the year she spent in prison for aiding the Algerian National Liberation Front (FLN) while she worked in the Jeanson Network, an allied French resistance network to the Algerian War. In *La Porte Verte*, Cuenat wished not only to record the events of her year in prison (February 1960–February 1961) but also to dissect the image of the woman she became. This project is, primarily, a microhistory of how one woman’s modern understanding of her gender identity and her sexual orientation can shape the memory of the past. Furthermore, it is an exploration of how an ally to an anti-colonial struggle chose to define the movement they participated in. The timeline of Cuenat’s life and her journey from semi-visible public figure in the French left to a lesser known ally, suspected to be dead, represents the fears lingering within her narrative.
materialized—existence is contingent upon recognition. This paper contributes to a lopsided historiography on memory of the Algerian War to insert Cuenat’s concerns of gender identity, sexual orientation, and community ethics into a broader narrative of anti-colonial struggle.

**Misconceptions of “Denial” and “Exploitation:” Operation Matchbox and Operation Paperclip, 1945–1963**

*Michelle Dicke, History*

*Sponsor: Professor Steven Hahn, History*

Towards the end of World War Two, the British, Americans, Soviets and French began quests to investigate and acquire German science and technology. All four Allies came to the conclusion that German science and technology was more advanced than their own. This led them to initiate operations to secure German science and technology. The British and American’s created their own unilateral “denial” and “exploitation” operations. The British program, Operation Matchbox, recruited German scientists and technicians from occupied Germany, who were then kept as “consultants” in Germany or were funneled into the industry of the Western Zone of Germany, the U.K., its Dominions or the U.S. Matchbox was aimed at keeping these personnel out of Soviet hands in addition to securing intelligence from them on Soviet sponsored war-developments. Similarly, the US created Operation Paperclip to employ and naturalize German and Austrian scientists and technicians in America to enhance military and industrial capabilities and to “deny” these scientists and technicians to other nations. Unlike Matchbox, Paperclip has been widely examined. There is a lack of scholarly consensus about what Matchbox was and its relevance to Paperclip. This thesis seeks to rectify the implicit assumptions made about Matchbox through examining the differences in each operation’s underlying motivations, implementation schemes and results. In addition, the paper assesses the significant questions examined by Paperclip scholars on Paperclip: How did Matchbox fit into Britain’s developing Cold War strategy? How did the British incorporate Germans in their scheme to further their own objectives? What are the implications of Matchbox on the British occupation of Germany?

**From Imperial Port City to Logistics Hub: The Production of Strategic Space in Djibouti**

*Grace Easterly, Individualized Major*

*Sponsor: Professor David Ludden, History; Professor Frederick Cooper, History*

For Djibouti, it is said that “geography is the mother of history,” as the tiny port country in the Horn of Africa is located alongside one of the busiest maritime chokepoints for oil between the Middle East and Asia, the Bab el-Man-

**Address, Action and Performance: Second-Person Multiplicity in Claudia Rankine’s *Citizen***

*Samantha Fritsch, English and American Literature*

*Sponsor: Professor Julia Jarcho, English*

This thesis examines the way Claudia Rankine’s *Citizen: An American Lyric* utilizes the second-person pronoun “you” to make the reader aware of their individual role in the system of racism, ultimately creating a new mode of empathy. The crux of this argument is the way that the second-person creates a new mode of empathy, one with limits, which responds to many of the problems that Saidiya V. Hartman raises in her book, *Scenes of Subjection*. It shifts the reader from the role of “observer” to “participant” without obliterating the existence of the “other” or making black suffering a spectacle. Chapter one establishes the ambiguous identity of the “you” through several close readings, explains the reader’s role in activating the text and demonstrates how lyric theory accounts for readings centered around identity and addressability. Chapter two uses narratology to show how the “you” has the potential to house multiple subjects, i.e., the narrator, the protagonist and the reader. The “you” references its subjects in what critic Helmut Bonheim calls a “referential slither,” oscillating between an invitation to the reader to play the role of protagonist, an internal monologue of the speaker and the narrated actions of a character. Through the ambiguous and oscillating second-person, *Citizen* makes the reader aware of their social identity, their specific roles across different situations and how these roles constitute their own individual performance of race. With this awareness, they can re-write the role their identity has been assigned by society.
“Canciones Para Después de una Transición” or “Songs for After a Political Transition”
Casilda García López, Undeclared
Sponsor: Professor Jo Labanyi, Spanish and Portuguese

My investigation is centered around the Spanish music genre known as copla. This music movement was born at the turn of the twentieth century, yet reached its highest peak of popularity during Franco’s dictatorship. Due to the regime’s exhaustive radiophonic divulgation of copla, it is now ignorantly politically associated with Francoism. The investigation minutely analyzes the vast repertoire of hugely popular songs and how their controversial lyrics were passed by the censorship. These taboo topics vary from adultery, prostitution and bachelors and single mothers, all the way to visualizing silenced minorities such as gypsies or exiles. The genre’s recipe for success was the unification of different factors. First, the work of distinctly educated lyricists with the performance of visceral interpreters. Furthermore, copla combined new European musical tendencies with traditional styles from Spain. In such a way, the listeners rediscovered their regional musical legacy with pride. Therefore, Franco took advantage of the already existing popularity of the music movement to promote his own personal set of values.

Dancing into the Cuban Revolution and Beyond
Vienna Giacchè, Media, Culture, and Communication, Spanish
Sponsor: Professor Lourdes Dávila, Spanish and Portuguese

This thesis explores the topic of blackness in Cuba during the time directly after its independence and leading up to the Cuban Revolution. To approach the subject of the Afro-Cuban body and identity often represented in an exclusionary national discourse, this research looks at the entry of the black body into the artistic space of Alejo Carpentier’s La consagración de la primavera (1978). Carpentier’s novel follows the storyline of Enrique and Vera, a Russian ballet dancer who escapes the Russian Revolution and settles down in Havana after falling in love with Enrique. During her time in Havana, Vera wishes to recreate Igor Stravinsky’s Rite of Spring and in it feature the Afro-Cuban body. However, Cuba, a politically unstable and racially divided country, struggled to fit Afro-Cuban identity within its national one, which makes Vera’s endeavor all the more challenging. This presents an interesting dichotomy that my thesis aims to explore; Cuba’s representation of Afro-Cuban culture was unfavorable, while European avant-garde intellectuals and artists experienced a fascination for so-called “primitive” cultures. Vera, an adamantly apolitical character, has no political motive behind this artistic project, but a central question that I raise is the extent to which aesthetics can exist outside of politics. By applying the theoretical frameworks of Gabriele Brandstetter’s heteropolitics of dance and Andrew Hewitt’s social choreography, I argue that although dance in La consagración de la primavera is not inherently political, it does offer us a model for thinking about an ideal type of Cuban social order. Moreover, I conclude that Vera’s Rite of Spring, and the circumstances surrounding it, force the movement of dance, politics and history to intersect.

Re-Imagining Cleveland, Ohio: A Look at City Plans to Revitalize the Downtown Area
Ladan Jaballas, Urban Design and Architecture Studies
Sponsor: Professor Jonathan Ritter, Urban Design and Architecture Studies

Cleveland, Ohio was once a thriving industrial city with manufacturing jobs that attracted workers and families to the area. For years it prospered in automobile and steel production. With the fall of industry, however, Cleveland fell into despair. Many living in downtown Cleveland moved out to the suburbs for more space, larger homes, close-knit communities and jobs the downtown area could no longer provide. In 1988, the Cleveland City Planning Commission drafted a city plan titled The Civic Vision 2000 Plan to revitalize the central city. Using the theories of Jane Jacobs, a sociologist and writer critical of New York’s urban development, and William H. Whyte, an urbanist known for his work with public spaces, Cleveland established criteria designed to help the downtown area reinvent itself with increased population and attractions. The plan aspired to more than double the population by the year 2000, but this goal was not reached for a variety of reasons. Today, Cleveland continues to struggle economically and the city has embarked on a new plan (The Citywide 2020 Plan), managed by Freddy Collier, Jr. current director of the Cleveland City Planning Commission. This research compares and contrasts the two plans, hypothesizes what constitutes successful city development and looks at case studies of recent urban projects in order to assess prospective outcomes of the current plan for Cleveland.

Color and Construction: Le Corbusier and the Decorative Arts of the French Avant-Garde
Owen Klinkon, Art History, Film and TV
Sponsor: Professor Carol Krinsky, Art History

In the wake of the First World War, modernist architecture replaced Cubist painting as the artistic focus of the French avant-garde. Scholars often explain this development theoretically, comparing side-by-side the pre-war Cubist paintings of Pablo Picasso and the post-war architecture of the modernist Le Corbusier. Focusing on phenomenal similarities instead of establishing a formal genealogy, the resulting art-historical discourse is rarely satisfying. This study, rather than concentrating solely on the archetypal works of modern art and architecture, examines the unrecognized intermediary ensembles of the French
avant-garde—interior spaces where painting and architecture were quite literally combined. Built from 1912–1927, a series of exhibition pavilions, artist residences and film and theater sets demonstrate how Cubist pictorial language was physically, not just theoretically, translated from two dimensions to three. Against the established art-historical canon, this study reinterprets key tenets of modernist theory and concludes that the Parisian avant-garde’s significant engagement with the decorative arts determined the post-war development of French art and architecture. The sensory, ornamental arts of the avant-garde—dealing with color, pattern and surface effect—were just as influential to Le Corbusier’s modernism as those fine arts related to form and construction.

Milton’s Prelapsarian Meals: The Problem of Excess and Waste in *Paradise Lost*
Timothy Koh, Drama, English and American Literature
Sponsor: Professor John Archer, English

Based on the groundwork presented by Milton in Books Five through Eight of *Paradise Lost*, this essay investigates some problems posed by the language of food and eating. Two sustained issues are brought to the fore. The first is prelapsarian gustatory excess, which is established in relation to Milton’s language of temperance in eating. The natural tension found between excess and temperance is chiefly being explored through the heavenly banquet prior to Satan’s rebellion and the earthly banquet where Raphael visits Adam and Eve in paradise. In both, Milton employs a language of temperance in the face of extravagant feasting, signifying how surprisingly sinful a world before sin might seem to be. However, since both of these feasts existed before disobeying God, neither can be considered truly sinful, though they would be if they occurred in a postlapsarian sense. A turn to the reader’s postlapsarian condition is also considered, alongside the nature of illustrating events whereby sin only exists as potential. The second major project of this essay concerns waste in a perfect world. Two key types of bodily waste arise as a direct result of food. The first is wind, typically interpreted to be flatulence. Though the critical consensus suggests this means flatulence may exist in a prelapsarian world, this study demonstrates how this is a consequence of sin. Therefore, flatulence would be one consequence of eating the forbidden fruit. The final type of waste are bodily vapours, commonly attributed to sweat. Vapours occur in a prelapsarian sense and remain difficult to reconcile with the Miltonic universe. However, a final turn to the reader’s fallen condition is once more established. What seems to be a wasteful, imperfect vapour actually exists harmoniously in a sinless world. It is the postlapsarian reader’s inability to accept an apparent imperfection that weighs interpretations down.

The Manufacture of Migrants: Mobility, Social Didactics and the *Wohnheim* in the West German Guest Worker Program, 1956–1973
Dante Lariccia, History, Politics
Sponsor: Professor Stefanos Geroulanos, History

From 1956–1973, the West German guest worker program brought millions of foreigners to the Federal Republic to participate in the unexpected *Wirtschaftswunder*. This influx of foreign, mobile labor engendered a series of problems for the West German state and the guest workers themselves. A central locus of concern for both parties crystallized around the *Wohnheim*, or company-run dormitories in which many guest workers lived. This thesis proposes a reexamination of the guest worker program and its imperatives around the issue of the *Wohnheim* and housing more generally. Such a reappraisal reveals a program of social didactics undertaken by state and corporate administrators, discordant economic imperatives that ruptured the postwar
ordinoliberal agreement and a space of disjuncture between these two administrative parties. It was within this space of disjuncture that guest workers organized across ethnic and national boundaries in order to challenge the imperatives of perpetual movement, political disenfranchisement and pedantic housing regulations they often lived under. What emerges is a picture of the guest worker program in which the Wohnheim was of central importance in organized activities to subvert the governing apparatus of the guest worker program. This issue of housing was, in many cases, the bedrock upon which arguments for residential permanency, political rights and socio-economic integration were laid.

**Squatting in Kreuzberg: From Radical Urban Occupation to Urban Renewal**

*Philip Matthew Marino, Urban Design and Architecture Studies*
*Sponsor: Professor Jonathan Ritter, Urban Design and Architecture Studies*

This thesis investigates the squatting movement of the West Berlin neighborhood Kreuzberg in the late 1970s and early 1980s. This movement resulted in the creation of the “Cautious Urban Renewal” adopted in Berlin’s Internationale Bauausstellung 1984. Kreuzberg, on the border between West and East Berlin, was surrounded by the Communist East on three sides. Alexander Vasudevan, in his work, *Metropolitan Preoccupations: The Spatial Politics of Squatting in Berlin*, called Kreuzberg a near mythical place. It was a hodgepodge of communities inhabited by anarchists, bohemians, dropouts, punks, intellectuals, students and Turkish immigrants. A sign of life in the otherwise depressed neighborhood was that of the squatted buildings and their inhabitants. The squatters of Kreuzberg cultivated a leftist society separated from the capitalist status quo. Their struggle resulted in the creation of a new status quo in West Berlin, which caused a massive shift in urban design philosophy and provided a lens through which to discuss the motives of the German state in integrating squatters into larger society.

**Boston Marriages, Dangerous Lesbians and Sexology: Queer Women and the Pathologization of Deviant Sexualities, 1880–1920**

*Grace Maurer, Social and Cultural Analysis*
*Sponsor: Professor Julie Livingston, Social and Cultural Analysis*

Rose Cleveland was the First Lady of the United States from 1885–1886; she was also a lesbian. Rose, sister to bachelor President Grover Cleveland, existed in a Boston marriage with her partner, Evangeline Marrs Simpson, from the late 1800s to the early 1900s. Boston marriages were a Victorian formation where two unmarried women lived together as a man and wife would. The women in Boston marriages in the nineteenth and twentieth centuries, however, were exclusively white, often wealthy and generally well-educated career women. Simultaneously, the racialized “threat” of female homosexuality began circulating in cultural discourse. Homosexuality was revealed as prevalent in reform schools and women’s prisons, yet it was only the interracial lesbian relationships that drew institutional concern. This interracial quality marked incarcerated queer relationships as legibly “deviant” before homosexuality was itself a marker. Across the Atlantic in 1886, Richard von Krafft-Ebing established sexology as a “scientific” discipline directly descended from earlier racial classification “science.” The sexologists’ theories, grounded in racist and sexist frameworks, combined with the institutional discourse on “deviant” lesbianism over the course of the nineteenth and twentieth centuries to situate the pathologization of queer women within a matrix of race, class, social status and criminality. This thesis first explores different forms of female queerness in 1880s–1920s American Northeast to examine how lesbianism was first identified as a “problem.” Secondly, it analyzes the sexologists’ theories and the institutional discourse of reform schools to reveal how these frameworks interacted to solidify female queerness as a “threat” to society by the 1920s.

**The Meaning of Brownness: Racializing Diasporas in a Global City**

*Isha Mazumdar, Spanish*
*Sponsors: Professor Tomás Urayoán Noel, English, Spanish and Portuguese; Professor Ascension Mejorado, Global Liberal Studies*

This investigation analyzes the current racialization model in the United States by dissecting the meaning of “brown” identity for South Asian and Latin@ communities in New York City. It examines how “brown” identity is constructed in social, economic and juridical spheres from both institutional and community levels for each of these groups. Moreover, it investigates the shortcomings and benefits such an umbrella term implies for mobilization efforts. For the purpose of this study, the term “brown” is used as a strategic way to address the commonalities between people with a shared experience of racialization beyond the black and white racial binary in US rather than a reference to physical attributes that have the power to exclude certain groups. Together, Latin@, South Asians and Middle Easterners account for an estimated 20% of the national population, with Latin@s making up a large majority. So, what exactly do these groups have in common? They eat different foods, speak different languages and, in many cases, practice different religions; yet, they are brown sometimes to the world, themselves, or both. More importantly, in today’s context these groups are under constant and explicit attack from President Donald Trump, his administration and arguably society at large.
Hence, examining the construction of brown identity in the United States not only bares extraordinary relevance to current discussions about national race relations but also serves to fill a gap in the extant research.

“I Heard of You by Telling My Trouble:” Southern Black Women and Gossip during the Great Migration
Kelsey Alejandra Moore, Africana Studies, Public Policy
Sponsor: Professor Jennifer Morgan, Social and Cultural Analysis

Historians have fashioned the Great Migration as a Black man’s movement, positioning Black masculinity at the center of newfound urban geographies. This project looks to answer the question: how and to what extent did gossip allow Black women to create new lifeways during the Great Migration? The project reveals how a mundane social activity transformed both imagined and material spaces for southern Black women. The intrinsic connection of gossip with space and time serves as a starting point to understand Black women’s senses of place. The multiplicity of senses of places requires alternative methods to locate and imagine geographies of Black women. First, this project examines the conditions of the late-nineteenth century to understand how racialized, gendered and classed violence forced Black women to contest geographies of domination in unique ways. Then, this project introduces a new concept “sandscapes” to deepen the conceptual analysis of the Great Migration as a practice of Black feminist geography and then locates particular sites where gossip proved to be significant for Black women. Finally, this project explores the consequences of gossip in relation to social and moral deviance in the Northern cities. By studying the complex relationship between southern Black women and gossip, this thesis imagines how disenfranchised folks conceptualized freedom through alternative pathways.

Assessing the Effect of Neuroscience on Moral and Legal Responsibilities
Taleena Nadkarni, Journalism
Sponsor: Professor Daniel Fogal, Center for Bioethics

Advances in neuroscientific technology have added substantially to our knowledge of the human brain, and therefore, our understanding of humanity. In 2011, scientists at the University of California, Berkeley developed a way to reconstruct movies based on the activity in a person’s visual cortex, suggesting a future in which we might be able to record memories. In 2008, a courtroom in India used electroencephalography (EEG) to determine when a person recognizes certain sights or sounds, such as the muffler on a getaway car or the handle of a knife. Neuroscience has the potential to transform criminal investigations as much as DNA evidence did, but for now, there still isn’t enough information about the brain to use it as proof of intent. In the future, the use of neuroscience in the courtroom is inevitable. So, how can the law be interpreted in light of such clinical evidence? To what extent can brain activity be used to justify immorality? Do brains harm people, or do people harm people? Considering the rate at which scientific discoveries are being made on the brain, legal experts must be open to reform and take steps now to ensure that future use of neuroscientific evidence will be ethical and serve justice. This thesis seeks to add to this understanding by approaching the question from a moral perspective that could, ideally, guide legal practices.

Imagining Decolonized Worlds through Remediation, Collaboration and Dungeons & Dragons
Lucille Nual, English and American Literature
Sponsor: Professor Simón Trujillo, English

Dungeons & Dragons (D&D) is a fantasy tabletop roleplaying game system that utilizes non-visual, improvisational and oral storytelling. Built on traditions of European wargaming and Western popular fantasy literature, D&D reproduces and normalizes Eurocentric structures of whiteness, patriarchy and the colonial imaginary. Focusing on the actual play of D&D within two pieces of media (the d20 Dames podcast and the streaming show Critical Role), this project examines how players of color decolonize their gameplay and collaboratively imagine non-colonial worlds. First, this thesis identifies the continued prevalence of a Eurocentric imaginary within recently published D&D guidebooks. By analyzing how the women of color in the d20 Dames podcast rework the content of these guidebooks for use in their own D&D campaign, it is argued that storytelling mediums built upon racist histories are not necessarily doomed to reproduce racism. This thesis then focuses on characters created by two of Critical Role’s guest players of color. By placing José Esteban Muñoz’s theory of disidentification in conversation with Daniel Mackey’s conceptualization of D&D character creation as an act of remediation, this thesis argues player characters function as the main tool by which players of color reimagine narratives that have historically silenced them before prompting their fellow players into investing in these alternative narratives. Ultimately, it is proposed that these collaborative processes of remediation can serve as a model for understanding collaboration’s essential role in anti-racist and decolonizing projects.

Bombs and Bedtime Stories: The Effects of World War II on Family Life in the United Kingdom
Agne Numaitė, History
Sponsor: Professor Gay Ortolano, History

The chaos and terror caused by World War II shaped a generation and irreversibly altered families. Fear of a future even worse than the present led to families reconsidering having children. The evacuation of millions of chil-
Refugees of an Invisible War
Aura Oviedo Mena, Latin American Studies, Politics
Sponsors: Professor Amanda Kennard, Politics; Professor Laura Torres-Rodriguez, Spanish and Portuguese

This paper closely explores and attempts to disentangle the causal relation between US foreign drug policy and its effects on Central American migration with a particular emphasis on Honduran migrants. An investigation into the demographic origins of recent Latin American migrant waves reveals the majority come from an area of Central America known as the Northern Triangle—Honduras, Guatemala, and El Salvador. The strategically situated region has been characterized by its violent organized crime, high rates of impunity and widespread poverty. More importantly, the Triangle has also been the recipient of millions of dollars a year in US aid for the “War on Drugs” as well as a subject to other US interventions in past decades. In this project, it is argued the US-led War on Drugs—building on legacies of failed US interventions—has provoked a surge in drug-related violence and crime, which in turn has led to a mass exodus of individuals. This project sheds light on the complexities of US-Latin America relations while also deconstructing these recurring migration narratives that fail to account for the influence that American foreign policy has historically played in the ongoing migration crisis.

Disguised Ships and Manifest Profit: The Illegal Slave Trade and Cuban Annexationism in New York City, 1850–1859
Katherine Platz, History, Language and Mind
Sponsor: Professor Ada Ferrer, History

During the first decades of the nineteenth century, the foreign slave trade was abolished in the US, Cuba and Brazil, with pressure for suppression by the British government. Despite this criminalization, the illegal Atlantic slave trade remained an enormously profitable venture for groups of merchants, slaveholders and government officials with vested interests in its continuation. The 1840s and 1850s saw increased participation in illegal slave trading by US nationals, who financed, fitted out and captained slave trading ships bound for Brazil and Cuba under minimal levels of government prosecution. British pressure on the Brazilian government finally succeeded in implementing suppression efforts in 1850. Although Cuba had already been the trade’s secondary destination, groups of Brazilian and Portuguese slave traders began to shift their bases to New York City after 1850 and the majority of their activities to Cuban ports. This project illuminates this shift and its contribution to movements for Cuban annexation by the US. It examines the communication and alignment of interests between groups of Portuguese and Brazilian slave traders, New York merchants and Cuban annexationists in lower Manhattan. As ambitions for US expansionism remained intimately tied to the transatlantic slave trade’s continuation, widespread corruption and Democratic political power in New York City meant that slave traders operated at the base of a complex network of proslavery interests who sought to strengthen and extend the institution of slavery in both the US and Cuba.

Inside-Out: Camille Saint-Saëns, Regional Culture and the Shaping of France
Danielle Roman, English and American Literature, Music
Sponsor: Professor Brigid Cohen, Music

French composer Camille Saint-Saëns (1835–1921) was a contradictory figure who vacillated between positionalities of insider, outsider, liberal and conservative in his role in the formation of a French national musical identity. In addition to his more popular works which represent exoticized depictions of foreign music, Saint-Saëns also represented the folk music of his native France in a few key compositions. His Trois Rhapsodies sur des cantiques bretons op. 7 (1866) and his Rhapsodie d’Auvergne op. 73 (1884) presented the folk traditions of Brittany and the Auvergne respectively, two regions of France with distinctive ethnic and musical traditions. These pieces were the products of extensive travels and interactions with rural communities and stemmed from Saint-Saëns’s nationalist vision of a France united in its differences. This paper examines how folk and agrarian regions, cultures and musics in France influenced this vision as well as the tensions between Parisian Saint-Saëns’s representations and the anti-Nationalist leanings of these regions. This project also studies these pieces alongside some of his “exotic” works representing the musical traditions of the French colonies, which were included in Saint-Saëns’s conception and depiction of French national music. However, his representations of the non-Western “Other” and his representations of the French folk “Other” contain many of the same elements of abstraction, exoticism and profitability, allowing
them the malleability necessary to fit shifting aesthetic and political goals. Investigating these compositions and their political ideologies leads to an exploration of Saint-Saëns’s own role as an outsider in his development of a French national music and in his relationship with folk and rural communities.

**Heloise’s Hypocrisy: A Renegotiation of Gender through the Erotic in the Letters of Abelard and Heloise**  
*Emma Rudd, Journalism, Social and Cultural Analysis*  
*Sponsor: Professor Carolyn Dinshaw, Social and Cultural Analysis*

This thesis addresses the questions of how gender, in its reiteration across time, may be renegotiated or re-experienced so as to break from previously established notions. By examining the Letters of Abelard and Heloise, this thesis observes the processes through which gendered identity comes into being as a “natural” aspect of identity, specifically with regard to medieval womanhood. Previous research by medieval scholars has produced divergent analyses of Heloise’s contributions. While a significant faction of contemporary critics has designated Heloise’s writing as inauthentic, a male-authored forgery meant to express a conversion narrative, others, more recently, have acknowledged her writing as an authentic display of recalcitrant passion. Here it is argued that the correspondence is not a male-authored conversion narrative but rather an exploration of the elsewhere, the discontinuous and the feminine erotic by means of a discourse that both seeks authorization in pre-established notions of gender and renegotiates the terms of these notions.

**Calamity in the Capitals: Cairo and Paris, Art and Architecture and the Effects of the Black Death**  
*Kelly Ryser, Art History, Urban Design and Architecture Studies*  
*Sponsor: Professor Carol Krinsky, Art History*

The Black Death struck Mamluk Cairo in the spring of 1348. In the summer of the same year, the disease reached Valois Paris. One could reasonably assume that the devastating effects of a calamity so large would put on hold any artistic or architectural commissions, yet this was not the case. Many conspicuous examples of Mamluk art and architecture—such as the Sultan Hasan complex (1356/7–1364)—can be dated within the thirty-year period after the outbreak. In Paris, too, the famous International Style of painting was in its embryonic stage. This thesis analyzes medieval artworks and buildings to determine whether the Plague affected patterns of patronage and art-making in Cairo and Paris and how these patterns compare during the thirty-year period following the Black Death, i.e., 1348–1378. This thesis examines the economic, political and social conditions of both Cairo and Paris that may have contributed to similarity or divergence. The omnipresence of the mid-fourteenth-century Black Death is well documented; this comparative analysis will contribute to the limited scholarship focused on distinctive ways in which urban centers recovered from or reacted to—in the form of cultural production—this medieval catastrophe.
**Tonedef: The Unified Sound That Transcended Britain’s Clashing Identities**  
*Elissa Sutherland, Global Liberal Studies, Spanish*  
*Sponsor: Professor Guy Ortolano, History*

The most disproportionately commercially successful regional music of the twentieth century emerged from an isolated and traumatized generation. Those in Britain born during World War II, and its aftermath, endured an especially significant generational gap with their parents hardened from the war. Further, they came of age in the remains of dismally war-torn cities, dissimilar from another English-speaking country, the United States. How did this musical transformation from isolation to universality, or as this thesis terms it, “transcendence,” occur? Further, how did the constant reinvention of sound—representing the clashing and dissenting voices of British society—find an underlying harmony both socially and sonically? This thesis contends there was a distinct British sound—born from its dissonant subcultures and uniting in the contrasting voices of a band—that offered an alien harmony to the world. Many prominent American musicians including Bruce Springsteen, Billy Joel, Tom Petty, Nancy Wilson and Gene Simmons marked the Beatles’ famous 1964 appearance on the Ed Sullivan Show as a life-changing event in their musical aspirations. The Beatles, four non-musically trained boys from working-class backgrounds in Liverpool, showed the world that any average person could transcend their mundane lives with musicianship.

**Protest Repertoire: Scenarios and Strategies of Transfer in the Spanish Historical Memory Movement**  
*Elissa Sutherland, Global Liberal Studies, Spanish*  
*Sponsors: Professor James Fernández, Spanish and Portuguese; Professor Joyce Apsel, Global Liberal Studies*

This thesis explores the Spanish civil society protests following Franco’s death in 1975 to the present day. Expanding on previous analyses, it utilizes performance studies and memory theory to analyze how past atrocities have manifested in the present, specifically through Spanish civil society actions. The first chapter explores the role of Spanish civil society in the discussion and assertion of “truth,” emphasizing the significance of embodied knowledge. Chapter 2, using JL Austin’s concept of “performative utterance,” analyzes the extent to which language alone can be understood as a performance. Specifically, how the term “disappeared,” which has legal roots in Argentina and Chile, acts as a significant catalyst in Spain’s historical memory movement. Chapter 3 expands on previous chapters to explore the influence of technology on memory strategies in a comparison with the Mothers of the Plaza de Mayo in Argentina.

**Militant versus Capitalistic Democracy: The Rise of the AfD Thought Constitutional Precedence**  
*Mahalia Thomas, Politics*  
*Sponsor: Professor Gabriella Etmektsoglou, NYU Berlin*

After the 12.7% victory of the right-wing populist party Alternative for Germany (AfD), Germans were left to wonder how Nazi-like symbolism and nationalism found its way back into national discourse. Much of the work done to explain the AfD’s ascendance has focused on ideology, propaganda and psychology. Even those who have undertaken a more rigorous analysis of constitutional law have only answered half the question by demonstrating that the recent rulings of the Constitutional Court have shifted Germany away from “Militant Democracy,” i.e., the employment of constitutional restrictions that prevent the misuse of democratic institutions by those seeking to achieve undemocratic ends. This thesis will accomplish two tasks in an effort to provide an explanation for the rise of AfD. First, it will define the counterweight to Militant Democracy “Capitalistic Democracy,” which encourages the use of free market principles in the realm of politics. Second, it will contextualize and explain Germany’s shift toward this newly defined Capitalistic Democracy through an analysis of recent legal changes that reduced the Constitutional Court’s power to ban parties believed to stand against the basic democratic order. By analyzing the historical practice of party-banning in German constitutional law, this thesis demonstrates Germany’s move toward Capitalistic Democracy provides both a symbolic and material protective victory for the AfD, solidifying its future in German politics. The spectrum defined by Militant and Capitalistic Democracy will provide a new comparative analytical tool for researchers to further their understanding of the global phenomenon that is right-wing populism.
ing that allows for the effects of surprise, shock, horror and discomfiture to participate in the ensemble of postcolonial critique. It proceeds to offer a method of reading that engenders and embraces abjection as generative for a cultural counter-politics. It further takes up questions of the promises of the “good life” as it has been scripted and refutes the narrow pathways that are offered as narratives of how a “good life” is structured and attained. Adapting Sara Ahmed’s conceptualization of the “feminist killjoy” for postcolonial critique, this thesis concludes in suggesting ways in which a “postcolonial killjoy” might be theorized and what the responsibilities of inhabiting such a subject-position might be. Considering, among others, the theoretical work of Eve Sedgwick, José Muñoz, Veena Das and Stuart Hall, this thesis offers a wayward and necessarily promiscuous method of understanding the cultivation of the postcolonial self.

The Rape of the Sabine Women: Visual Representations from Antiquity to Modernity
Sabina Vitale, Art History
Sponsor: Professor Louise Rice, Art History

This thesis investigates how and why the myth of the rape of the Sabine women became such a frequently depicted narrative throughout the history of art. The story was incorporated into the origin story of Rome by both Livy and Plutarch and became a cornerstone of the early literary and visual history of the Empire. This paper traces the development of the scene in Western art from antiquity to the modern era. In so doing, it paints an ongoing narrative of how the Rape of the Sabines has been perceived and represented in the visual arts. From the historical approach of the artists of antiquity, to satirical interpretations of the twentieth century, from dainty, sanitized Medieval versions of the scene to dramatic, erotic Baroque pictures, this paper discusses how and why different artists chose to interpret this myth, taking into account the artistic modes of their time and place. It considers how literature and current events during each artist’s time affected the way in which they depicted the scene, revealing larger cultural tendencies from each era. Finally, it suggests certain implications of the unremitting interest in the fierce narrative of the Sabine women, in terms of the treatment of women from antiquity to the present.

Saturday Morning Cartoons: A Reflection on the Maternal Stripe
Sarah Workman, Social and Cultural Analysis
Sponsor: Professor Sukhdev Sandhu, Social and Cultural Analysis

This project is a self-reflection through comic book story-telling, poetry and prose on one human’s lived experience with the maternal. The maternal, normatively restricted to the female human who physically gives birth, or the femme who nurtures children, is reimagined. Unreduced to gender, or even humanness, the frame of maternal energy explodes. One can mother their child, their friend, their painting, their poem or their classroom. Humans can mother each other, a place can mother a human, a human can mother an animal and the list goes on. The maternal does not refer to a person (the mom) but a praxis—a way to reimagine our interactions with one another and the spaces we trespass upon and share energy with and within. In this work, I explore the processional ruptures that lead me to frame the maternal in this way. These ruptures explore my reckoning with growing up in a single-mother household, healing from the societally enforced shame, my discovery of the cartoon series Steven Universe and the ultimate embrace of all my outlets for the maternal, an embrace of all my mothers.

“What Kind of Idea Are You?”: Ayesha, the Woman in Salman Rushdie’s The Satanic Verses
Xiaohui (Caroline) Wu, Economics, English and American Literature
Sponsor: Professor Rajeswari Sunder Rajan, English

This study, instead of debating the controversy between the fictional Mahound and the historical Muhammad in Rushdie’s novel The Satanic Verses, focuses instead on the female character, Ayesha, specifically on part 8 of the novel The Parting of the Arabian Sea whose plot is based on the 1983 Hawkes Bay Incident. It is argued that contrary to the popular and simplifying view that Ayesha represents the Islamic fundamentalism or absolutism, the character and her story of marching into the Arabian sea represent the most important idea and the revolving question in the novel “What kind of idea are you?” although without providing a concrete answer to it (Rushdie, 1988). Ayesha is constructing and simultaneously deconstructing herself and the ideas she represents, therefore forever remaining in an ambiguous uncertainty. She represents the construction of multiple identities and deconstructs the idea of identity, thus revealing the complexity and variability of identity and human condition. Ayesha also represents the construction of multiple realities and thus deconstructs the idea of reality, obliterating the boundary between the profane and the sacred, the secular reality and the mystic faith. Ayesha represents the construction of historical discourses like religion and politics and deconstructs them by failing to provide a concrete answer or description of the solution. Through construction and deconstruction, Ayesha reveals the unreliability and danger of monological thinking. In this sense, The Satanic Verses becomes a novel of forever homelessness and orphan-ness, which are best represented by the non-believer and the migrant.
Shaping the Memory of a Crusade: The Fourth Crusade and the Translation of Byzantine Relics, 1204–1261
Xiangyue Xie, History
Sponsor: Professor Brigitte Miriam Bedos-Rezak, History

The Fourth Crusade (1202–1204) is usually seen as a failure. The crusaders’ original plan was to sail for the Levant via Egypt and recover the Holy Land from the Muslims. However, after the crusaders began their journey, they attacked two Christian cities, Zara and Constantinople. In 1204, the crusaders plundered Constantinople and took numerous holy relics from its churches and royal treasuries. They established a Latin empire but did not continue their expedition to reclaim Jerusalem. One of the significant outcomes of the Fourth Crusade is the remarkable influx of Byzantine relics and reliquaries into the Western Christendom. Many *translatio* narratives explaining the relocation of Byzantine relics were produced in the Latin West from 1204–1261. Using *translatio* narratives, this paper explores the complexities of the Latin acquisition and transportation of Byzantine relics following the year 1204. Furthermore, it examines contemporary understandings and interpretations of the Byzantine relics and how they helped construct a certain memory of the Fourth Crusade. This paper shows that the crusaders obtained and transferred Byzantine relics through plundering, gift-giving and trading. Different modes of transportation show that the relics bore various meaning for the crusaders and their posterity. Moreover, Latin authors interpreted the Western acquisition of Byzantine relics either as a justification of the Fourth Crusade or one of the reasons why the crusaders failed to recover Jerusalem. In most cases, the Latin acquisition of Byzantine relics was believed to be the proof of divine blessings and that it greatly enhanced the religious status of the Western Christendom.

Driving Forces: Factors That Drove Economic and Social Development in Hong Kong under Governor Alexander Grantham (1947–1957)
Lary Yau, History, Politics
Sponsors: Professor David Ludden, History; Professor James Peck, History

The Grantham Administration (1947–1957) provides an opportunity to examine multiple challenges to the economic order: e.g., the residual effects of WWII, the Chinese Communist Revolution and the Korean War. The instability in China that drove significant capital and human capital to Hong Kong was a key factor in the colony’s industrial development. Therefore, the Grantham Administration also provides an opportunity to examine the challenge that the refugee crisis posed to the social order. The literature on Hong Kong’s economic development from 1947–1957 primarily focuses on the role that the Governor Grantham’s ideology played in shaping government policy. This study pushes back against the limits of this “top down” analysis and uses a holistic “bottom up” analysis approach that combines the effects of external factors with the governor’s ideology to better understand policy making. On the micro scale, this thesis explores the factors that drove Hong Kong’s economic and social development. On the macro scale, it attempts to push back against the literature that focused on top down analyses and instead propose that both economic and social historians embrace bottom up analysis. This study reconstructs the motivations behind policy decisions through an analysis of correspondences, speeches and reports from both the Hong Kong government and officials in London.
Eu shippo Spirk demais!: An Exploration of English Loanwords in Brazilian Twitter
Carly Abraham, Computer Science, Linguistics, Melissa Rojas, Psychology
Sponsor: Ernesto Cuba, Latin American, Iberian and Latino Cultures, CUNY Graduate Center

This study explores the case of online creation and diffusion of the Brazilian Portuguese neologism *shippar*. This new verb is based on the slang English term “ship”, a verb stemming from the word “relationship,” that fandom communities use to express endorsement of fictional relationships among TV or movie characters. For instance, “I super ship Spirk! (Kirk and Spock)” is expressed when a fan is supportive of a romantic relationship between the two characters from the television show *Star Trek*. Later, Brazilian Portuguese-speaking fans adopted “ship” and adapted it to the verbal morphology of their language. Following the former example, a Brazilian fan would say *Eu super shippo Spirk!*, where *shippo* corresponds to the singular first person conjugation, i.e. “I ship.” We used the Twitter post aggregator software Twarc to collect all uses of the different conjugations of *shippar* around São Paulo, Brazil starting from its first use on Twitter. In total, we found 21,372 posts including the word *shippar* or its conjugations. Of these items, we found that *shippo* was the verbal form most used (48%) in the corpus, with a total of 10,269 uses. Our research shows that English neologisms can be and are adapted to the verbal morphology of their language. Following the former example, a Brazilian fan would say *Eu super shippo Spirk!*, where *shippo* corresponds to the singular first person conjugation, i.e. “I ship.” We used the Twitter post aggregator software Twarc to collect all uses of the different conjugations of *shippar* around São Paulo, Brazil starting from its first use on Twitter. In total, we found 21,372 posts including the word *shippar* or its conjugations. Of these items, we found that *shippo* was the verbal form most used (48%) in the corpus, with a total of 10,269 uses. Our research shows that English neologisms can be and are adapted to the syntax of the receptive language rather than retaining their original form. This research gives us another point of view when looking at loanwords, where we now should pose the question of whether *shippar* should even be called a loanword. Considering that the term is almost exclusive to those in fandom communities, a theoretical question can be if the term is better identified as a community-specific word rather than simply an English loanword in Brazilian Portuguese. Furthermore, this calls into question where fandoms’ linguistic loyalties reside: is it more so with their native language or their community of practice?

Sugar dating is defined as an arrangement in which intimacy and companionship are commodified and exchanged for money or gifts. The arrangement is typically made between pairs of individuals with a marked imbalance in both age and socioeconomic status. The specific details of the arrangement can differ on a case by case basis. Participants in this arrangement distinguish their activities from prostitution in that the rules and behaviors of the relationship do not necessarily include sexual acts or solely sexual acts. However, the line between sugar dating and prostitution is blurred and necessitates further research. Additionally, the sugar dating phenomenon is reported in non-academic media, mainly in the form of anecdotes, yet there is a dearth of research on sugar dating, particularly in the United States. The primary objective of this study is to determine the prevalence and practice patterns of sugar dating among students at the undergraduate level at New York University. Secondary objectives are to determine the demographic factors of students who participate in sugar dating practices.
dating, to determine the practice patterns of sugar dating, whether abuse and/or trauma is associated with sugar dating, whether sugar dating is associated with STI/STDs, to determine stated incentives for and the rationale behind participation in sugar dating, how sugar babies and sugar daddies/mommies negotiate the terms of their relationships and to capture perceptions towards the sugar dating phenomenon amongst students on campus. The study was conducted in two phases. In Phase 1, participants took an electronic survey in order to obtain quantitative data. In Phase 2, participants were interviewed over the phone in order to obtain qualitative data.

In Context: Intersections of Race and Gender in Emotion Perception
Grace Adeyemi, Neuroscience, Psychology
Sponsor: Professor Jon Freeman, Psychology

People possess multiple interacting social categories which activate various stereotypes, goals and attitudes. Therefore, an intersectional approach is key to the study of perception. We hypothesize that we can activate racial or gender social identities and their emotion stereotypes in a face with an image. We predict that activated emotion stereotype will then bias the facial emotion perceived by the participant (i.e. for Black Women, activating “Black” will lead to a partial Angry categorisation and activating “women” will lead to a partial Happy categorisation). We performed a mouse tracking experiment using faces varying in race, gender and facial emotions and recorded the split-second emotion perceived by the participants. We found Black people (men and women) were significantly perceived as more angry than East-Asian people (men and women); and men (Black and East-Asian) were perceived as significantly more angry than women (Black and East-Asian). We did not find a significant difference in the emotion perceived due to the image activating race or gender identity. We found an interaction effect between race and gender for angry faces. Our findings suggest race and gender can interact and bias how others view our emotions. However, in our study we could not activate stereotypes to alter the perception of emotional states. In order to understand racial and gendered disparities in phenomena such as unarmed shootings of Black people in the US, we require more research on visual perception through an intersectional lens.

To D* or Not To D*: Nominal Structure in Hindi-Urdu
Hashmita Agarwal, Food Studies, Spanish and Linguistics
Sponsors: Professor Stephanie Harves, Linguistics; Professor Lucas Champollion, Linguistics

Since Abney (1987), nominals are commonly thought to be Determiner Phrases (DPs) cross-linguistically. However, in our study we could not activate stereotypes to alter the perception of emotional states. In order to understand racial and gendered disparities in phenomena such as unarmed shootings of Black people in the US, we require more research on visual perception through an intersectional lens.

The Spillover Effects of Campaign Contributions in California State Assembly Elections
Madeleine Ahlers, Politics
Sponsor: Professor Christopher Dawes, Politics

The influence of money in politics has been a subject of much research in political science for decades. However, it is inherently difficult to determine a causal relationship between contributions to candidates and their vote shares in elections. This difficulty is due to endogeneity; it is impossible to isolate donors’ expectations of an election outcome from the outcome itself. This research bypasses the endogeneity issue by looking at the spillover effects of campaign contributions to candidates on the vote shares for propositions rather than the vote shares for the candidates themselves. The data include contributions to candidates in California State Assembly races and vote shares for California statewide propositions broken up by Assembly District. The research design uses statistical analysis including fixed effects models for Democratic and Republican candidates and propositions.

The Implications of Unconscious Bias
Alara Alagül, Neural Science, Psychology
Sponsor: Professor Madeline Heilman, Psychology

A growing number of companies invest in methods to reduce biases in employees and create more diverse workspaces. One widely used type of diversity training focuses on unconscious bias and relies on the idea that making people aware of their biases will lead to less ste-
reotyping and discrimination. However, achieving a more inclusive workplace remains an ongoing issue, and such trainings have had questionable results. We propose that describing bias as unconscious could backfire and make people feel like biases are outside of their control. Indeed, experiment 1 demonstrated that when participants were told that bias is unconscious they judged perpetrators of bias as less to blame for their actions, found it less justifiable to conduct an investigation and indicated perpetrators should be penalized less than individuals in the bias or in the control conditions. In experiment 2, we gave participants an opportunity to engage in a stereotypical description of either a male or a female professor of a male gender-typed course. Preliminary results show that only participants in the unconscious bias condition were more likely to stereotype the female professor as less competent than the male professor, and they were more likely to believe that a course would be less difficult if it is taught by a female professor than by a male professor. These results lend support to our prediction that telling people bias is unconscious will make them less likely to try to control their biases.

**Commodity Price Shocks and Social Unrest: A Cross-National Study**

*Christina Aldime, International Relations*

*Sponsor: Professor Amy Catalinac, Politics*

How do income shocks affect social unrest? This paper is an extension of the arguments made by Dube and Vargas (2010), who analyze how income shocks affected conflict in the Colombian Civil War. They suggest two opposite effects: the opportunity cost effect and the rapacity effect. The opportunity cost effect claims that as the prices of labor intensive goods increase, labor that could be used to violently expropriate resources will be spent exploiting the price of the export, thus lowering conflict by reducing the labor supplied to armed groups. Contrastingly, the rapacity effect suggests that a rise in the prices of natural resources or an increase in disputable income will lead to more violence because there is more to gain from expropriation. They tested this theory by examining the price changes of the largest labor intensive and natural resource goods in Columbia. They found that participation in the Colombian Civil War was consistent with the opportunity cost and rapacity effect. This paper seeks to determine whether this theory holds on a cross-national level, using social unrest as the phenomena affected by the two effects. Analysis shows that as prices in labor intensive goods increase participation in mass demonstrations are not consistent with the opportunity cost effect. On the other hand, as the prices of natural resources increase the amount of mass demonstrations decrease the opposite of the rapacity effect.

**Music Is Easier to Read When the Notes Are Differently Colored to Alleviate Visual Crowding**

*Gabriella Ali, Neuroscience*

*Sponsor: Professor Denis Pelli, Psychology*

Crowding limits the visual processing of objects by inducing the feature integration of nearby clutter. Limitations in the perception of musical notation is a result of the nearby notes and staff lines that crowd each music note. The alleviation of crowding is evident when targets are surrounded by dissimilar objects. This study tested whether musicians experienced less crowding in music reading when the notes were distinctly colored. According to the mean and standard error evaluation of the data, the visual spans increased from 1.73±0.16 to 2.35±0.23 when color was implemented. This 36% increase suggests an efficient and facilitated improvement of musical performance and accuracy.

**Making Movement Costly: Does Infant Exploration Pay the Price?**

*Gabriela Alves, Psychology, Paige Selber, Psychology*

*Sponsor: Professor Karen Adolph, Psychology*

Independent locomotion is one of the most significant achievements of infancy. Through spontaneous locomotor exploration, infants accumulate vast amounts of locomotor experience and encounter numerous opportunities for learning. But what incites a stationary infant who can locomote to get up and go? For typically developing infants, locomotion appears to be self-motivating. Most bouts of locomotion do not end near discernable destinations (toys, caregivers or climbable surfaces), and infants walk just as much in an empty room as in a room full of toys (Cole et al., 2016; Hoch et al., 2018). Here, we asked whether infants still “move to move” when movement is made more costly and effortful. To answer this question, we dressed 15-month-olds in a weighted snowsuit loaded with 15% of their body weight and an unweighted snowsuit with the padding removed. Using a within-subjects design, we collected standard measures of walking proficiency using a pressure sensitive carpet and observed infants as they played independently in each condition for 10 minutes. We find that the weighted snowsuit decreased walking proficiency—infants moved slower, and took shorter, wider steps, *p* < 0.05. Moreover, during free play, infants in the weighted condition spent less time in motion, fell more frequently and walked to fewer destinations, *p* < 0.05. Thus, making movement costly appears to decreases infants’ interactions with distant people, places and things. These findings have implications for children with limited mobility who face higher costs for locomotor exploration relative to their typically developing peers.
How Climate Change Is Changing Our Farms…and Our Food
Leigh Anderson, Cinema Studies, Journalism
Sponsor: Professor Brooke Kroeger, Journalism

This project addresses the questions: What wild plants—specifically wheat alternatives—are now being researched and analyzed for use in the agricultural industry? How can they change current US agricultural practices? What is their potential for making farming and production more environmentally sound? And what effects would such a conversion have on diet, farming and the environment? How is today’s industrial agriculture accelerating climate change and can the move toward sustainable practices slow this advance? And lastly, how does the way sustainability is defined change from region to region? My project’s goal is to increase awareness of the benefits of sustainable agriculture and to inform readers about the ongoing scientific research and findings that seek both to make agriculture more environmentally friendly and, in the long run, to prevent mass famine.

Pushing Linguistic Boundaries: How Language and Culture Intersect with Disability
Jaqui Angulo, Anthropology
Sponsor: Professor Faye Ginsburg, Anthropology

Many scholars who study children with disabilities explore the impact of race and culture on diagnosing disability or establishing structural hierarchies. When they address language in particular, they tend to focus on language use in special education settings, including how to distinguish between ESL and learning disabilities. They also address language barriers and the relationship between healthcare providers and caregivers and how race and culture affect trust and parental involvement. However, the specific use of language amongst service providers, parents and children has not been investigated in a therapeutic context nor the role of language in everyday practices with these social partners. This thesis focuses on this intersection of language and disability to examine how English, Spanish and bilingual speakers in therapeutic settings use language and how these daily encounters impact the way language is learned, relationships are created and capital is accumulated. Building on research addressing the importance of race, culture and ethnicity in conversations about disability and hierarchy, this thesis takes a more linguistic approach. Through participant observation and semi-structured interviews, this study examines the impact of language on how parents, service providers and children navigate their journey within the healthcare system. The findings show that in an English-dominant therapy center, the participants flexibly use Spanish and English which both breaks down structural barriers and reinforces some existing gaps between monolingual and bilingual speakers. Understanding informal daily practices can reveal how individual agency functions with a larger system and how language choices shape the patient experience.

Minimal Groups and Instrumental Social Learning
Ibitayo Awoyinfa, Psychology
Sponsors: Professor David Amodio, Psychology; Jeffrey J. Berg, Psychology

Intergroup bias is the pattern of favoring members of one’s own group (ingroup members) over people outside of their group (outgroup members). The Minimal Groups Paradigm (MGP) helps to explain the minimal conditions required to create such discrimination between groups. The effects of minimal group membership on intergroup bias have been well-documented. However, no studies have examined how group membership may shape how we learn instrumentally (i.e., through feedback-based interactions) about others, despite the ubiquity of this learning in everyday life. In this study, participants were assigned to minimal groups using a standard bogus personality test procedure. Following the minimal group induction, participants completed an instrumental learning task in which they interacted with individuals—both from their ingroup and from their outgroup—who shared at differing rates. Through their choices and feedback contingent upon those choices, participants learned to approach “good” individuals (i.e., those who shared on most trials) and to avoid “bad” individuals (i.e., those who did not share on most trials). We then examined whether participants’ learning of approach and avoidance differed for in-group versus out-group members—in other words, whether participants displayed intergroup bias in their instrumental social learning.

Meta-Motivational Knowledge and Goal Achievement
Perri Beach, Psychology, Caroline Myers, Psychology, Jena Sohn, Psychology
Sponsor: Professor Emily Balcetis, Psychology

The ways in which people approach meeting their goals can be ineffective and even detrimental if not executed correctly. While scientists have evidenced-based knowledge of tactics that facilitate successful goal pursuit, such knowledge may or may not align with what lay individuals believe to be true. In this study, we examined individual differences in meta-motivational knowledge, or knowledge of what tactics are most effective for pursuing a goal in a particular setting. We assessed meta-motivational knowledge of the effectiveness of two different mindsets that can be applied when completing a task—a wide focus and a narrow focus, both of which are effective for particular tasks. We predicted that each of the two meta-motivational mindsets would yield greater success at
different points in participants’ goal stages. We conducted three studies in pursuit of our hypothesis. We investigated the goals of raising GPA, applying to graduate school and eating healthier. Given our overall findings, our hypothesis was supported. Yet, two other unexpected findings were revealed: contrary to our hypothesis, most will find ways to complete their goals despite the ordered stages—wide frame then narrow frame. Consequently, the effectiveness of the two mindsets is situationally dependent. We interpret these findings to illustrate that there are a multitude of ways in which people can approach to meeting their goals effectively. Furthermore, we discuss implications for goal setting, planning, and striving in areas that people consider most important to their lives.

**The Development of Planning in Tool Use**

*In many everyday actions, the movement to be performed is not immediately apparent, so planning must stretch multiple steps into the future. For example, if a hammer handle points away from their dominant hand, adults use an initial underhand grip that—two steps into the future—smoothly leads to efficient hammering. Children, however, use a habitual initial overhand grip, which leads to an awkward position for hammering and requires after-the-fact modifications to accomplish the goal. Recently, the Adolph lab used simultaneous eye-tracking, electroencephalography (EEG), motion-tracking and video in a hammering task and found that developmental improvements in multi-step planning are driven by rapid shifts of visual attention toward task-relevant areas, earlier neural processing of the perceptual information and consistent reach trajectories toward the hammer. Here, we build on these findings and test what environmental factors facilitate the development of efficient planning. We performed 3 experiments with preschoolers (3- to 5-year-olds) and adults with a similar hammering task. We examined 1) whether a sparkly, golden hammer immediately shifts participants’ visual attention to task-relevant areas (the hammer) and thereby improves planning; 2) whether behavioral modeling (showing participants an adult-like initial grip) improves planning; and 3) effects of handle orientation on planning by shifting the handle orientation in 5° increments. All three experiments included the same combination of technologies to assess effects of each environmental factor on each component of planning from 1) visual fixation on task-relevant objects; to 2) neural representation of the action; and 3) appropriate action implementation.*

**Tools Assessing Mental Health Outcomes**


*The Global Public Health (GPH) Undergraduate Experiential Learning is a team-based course that tasks students with researching a prevalent topic on campus and to suggest an intervention to impact said topic. Fall 2018’s topic was “Hookup Culture”. While the dynamics and behaviors shift for varying participants of hookup culture, the potential negative mental health outcomes one might experience remain the same. In a survey of New York University undergraduate students (N = 354), students’ level of participation in hookup culture and the negative mental health outcomes potentially resultant from it were investigated. Findings indicated that 76.8% of participants had experienced at least one negative mental health outcome—defined as anxiety, depression or regret—yet only 5.17% used wellness services to help with these outcomes. Therefore, the recommended intervention is the Life Engagement Test (LET). This validated instrument measures one’s life engagement and positive emotional affect with a quick, self-scored, six question survey, which can function as a means by which students can assess—if their LET score is low—if they ultimately need to seek help.*

**Economic Determinants of Corruption: The Case of Ukraine**

Oleg Biletsky, Economics

*Sponsor: Professor Karl Storchmann, Economics

This study estimates the effect of economic conditions on the level of corruption in developing countries. Using bribery as a measure of corruption, the level of bribery across various regions of Ukraine is approximated by first observing that the country’s public sector employees make around 30% less in wages than workers in the private sector. Accounting for debt, no significant differences were found in consumption and asset holdings between the two sectors, suggesting the existence of unofficial income in the public sector. Using regional unemployment rate as a measure of economic conditions, no significant change in estimated levels of bribery between rich regions and poor regions were observe when excluding Kiev from the analysis. Then, public and private sector differences in income, consumption and wealth were compared between Kiev versus the rest of the country. Applying a regional variable for Kiev, it was found that household income is 23% higher when adding one more private sector employee in
Kiev versus one more private sector worker from another region, but that difference is then transferred to a 166% increase in household wealth. Interestingly, when looking at households with workers in state owned enterprises (SOEs), household income does not differ significantly when adding one more SOE worker in Kiev compared to one more SOE employee from the rest of the country, but household spending increases by around 35% and asset holdings rise by 315%. This could suggest a greater presence of unofficial income in Kiev versus the rest of the country.

Encountering Difference: Creativity and the Remaking of the “Wild West Side”
Joseph Cordell Blakely, Anthropology
Sponsor: Professor Anne Rademacher, Anthropology

Decades of austerity following New York City’s fiscal crisis left the neighborhoods of Manhattan’s Far West Side, particularly the Meatpacking and Chelsea, underserved and partially abandoned. With low rents and a peripheral geographic location, these neighborhoods became a haven for artists, sex workers and other non-normative lives. The High Line, then an abandoned railway, was overgrown with self-seeded nature. Upon moving back into the city, middle-class urban professionals and developers narrativized these disorderly pasts to convey the neighborhood’s cultural vitality and creative potential. This thesis traces the transformation of the Far West Side into the commercial and creative heart of the city. Building on the work of political ecologists, critical race theorists and gender studies, this work seeks to develop a new way to analyze the inequities of urban change. Methodologically, this thesis uses ethnography and archival research to focus on the initial encounters between developers and residents to reveal the interplay of creativity and difference in the gentrification of urban space. The creative products of design professionals and the inventive solutions of entrepreneurs are celebrated for their ability to sanitize a raucous neighborhood, thus attracting investment. On the other hand, artistic performances on the High Line are used to mask the transformation of the Far West Side into a white, wealthy, homogenous neighborhood. As the Meatpacking turns into a bastion for technology behemoths, this thesis attends to the past of the West Side to understand the ever-shifting nature of difference and an emerging quality of creativity and invention in urban change.

An Experimental Analysis of Ballistic Trauma to Bone Following Forensic Cremation
Elise Blegen, Anthropology
Sponsor: Professor Pam Crabtree, Anthropology

When a body is subjected to burning following perimortem ballistic trauma, a number of factors become relevant in determining what, if any, evidence of ballistic trauma can be located. Previous studies have conducted experimental cremation in order to replicate fires observed in both forensic and archaeological contexts. Current literature concludes that trauma, perhaps especially ballistic trauma, is generally identifiable following burning depending on the circumstances of the scene. This experimental analysis sought to further explore whether the type of ballistic weapon used impacts identifiability in a context that controls for other factors. Put generally: which types of ballistic trauma are identifiable following cremation? In this experiment, pork shoulders were shot with a range of firearms and burned in a fire fueled by charcoal and wood, after which the partially calcified bones were examined for evidence of ballistic trauma. Ultimately, this experiment found that low velocity handguns, which leave relatively uniform entrance and exit wounds, are easier to identify than high velocity rifles, although mid-to-high velocity shotguns, which use shell ammunition and are less likely to perforate bone, may be identified due to their unique ballistic signature. High velocity rifles produce an extreme amount of cavitation, highly fragmenting any bone in their path but not necessarily “entering” or “exiting” the bone in the traditional sense. While this fragmentation may in itself point to a high velocity ballistic weapon, it is difficult to determine from the burnt remains alone.

The Rural-Urban Disparity of Child Malnutrition in Ghana
Jonelle Boafo, Global Public Health/Sociology
Sponsor: Professor Chris Dickey, Global Health, College of Global Public Health

According to the World Health Organization, malnutrition is defined as insufficient, excessive or imbalanced consumption of nutrients which can further develop into several other disorders. Child malnutrition in particular has burdened many countries in Sub-Saharan Africa, however, in comparison to other countries in the region, child malnutrition in Ghana has improved over the years. Yet, according to UNICEF, while child malnutrition levels have dropped in Ghana, nutrition in the rural upper regions remains very poor, with statistics indicating that 2 in 5 children are stunted. Due to the disparities in these regions, the rates of child malnutrition remain above internationally accepted levels. This research investigated measures taken by the Ghanaian government to decrease these high rates and found that various efforts are being conducted with the aid of major donors and key partners such as US-Aids and UNICEF. One such effort, the Community-based Management of Acute Malnutrition Program (CMAM) has been quite successful in identifying cases of acute child malnutrition and adequately treating children through a community based intervention. However, donor dependency has been a major challenge in the sustainability and continuation of the program, indicating a greater need for
financial independence within these interventions through funding allocation and governmental support.

Closing Funding Gaps and Closing Yield Gaps
Alex Bollington, Environmental Studies
Sponsor: Professor Jennifer Jacquet, Environmental Studies

The push for a global food transformation has gained a lot of recent attention due to growing concerns about human and planetary health. While agricultural production has kept pace with an increase in population, it has been argued that the shift towards increasing homogeneity in global food supplies has contributed to poor diet diversity, micronutrient deficiencies and high rates of malnutrition and obesity. In addition, agriculture has been listed as a major contributor to environmental changes with food production accounting for 19–29% of human-induced greenhouse gas emissions, 60% of terrestrial biodiversity loss and 70% of fresh-water use. With this in mind, general consensus emerging from recent sustainable dietary guidelines suggest that future systems of production will need to support enhanced consumption of crop groups like pulses (beans, peas and lentils), legumes and coarse grains that are not just nutrient rich but are also restorative in terms of their environmental impact. The problem, however, is that the development of these crop groups has lagged significantly behind cereals that are less nutrient dense such as rice, wheat and maize. By focusing on the trend of increasing homogeneity in agriculture, this paper presents an overview of how the global agricultural landscape has changed since the 1960s, highlights nutritional and environmental benefits of underdeveloped crops and ultimately pushes for the reorientation of agricultural investment.

Syrian Refugees as “Homines Sacri?”: Precarity, Illegality and Deportability in Protracted Displacement
Alexander Burlin, Arab Crossroads Studies, NYU Abu Dhabi
Sponsor: Professor Nathalie Peutz, Arab Crossroads Studies, NYU Abu Dhabi

This paper examines the extent to which development planning can provide solutions to protracted displacement crises by looking at the case of the “Jordan Compact,” a multi-stakeholder policy agreement that promised to turn the Syrian “refugee crisis” in Jordan into a “development opportunity.” Since its adoption in February 2016, the compact has been widely debated, largely because of its supposed failure to reach its macroeconomic targets and empower refugee beneficiaries. While scholars have provided an important critique of the technical implementation of the compact’s various development programs few have examined the underlying assumptions of the root cause of Syrian disempowerment. Drawing on fieldwork conducted in Jordan over the summer of 2018, it is argued that Syrian refugees do not just suffer from “underdevelopment” but also from a lack of socio-economic, legal and political rights. This rightlessness has pushed them into a socio-political condition of illegality and deportability that facilitates exploitation, abuse and discrimination, particularly in the context of labor and livelihood. In this way, a critique of the Jordan Compact should not just look at the technical failure in implementing economic development, but, more importantly, it should highlight the political failure of the compact to offer an adequate framework for refugee protection and a durable, long-term solution to the refugee crisis.

A Storm Is Coming: Reflections on Hurricane Fran
Breanna Byrd, Social and Cultural Analysis
Sponsor: Professor Julie Livingston, Social and Cultural Analysis

In September of 2018, Hurricane Florence hit the Carolina Coast, carrying with it tornadoes and flash floods. Though the dynamics of its recovery are still unfolding, it is evident the initial response to the storm was heavily mediated through North Carolinians’ previous experience with Hurricane Fran in 1996. As such, this project investigates Hurricane Fran’s (1996) living memory among those who lived inland in North Carolina at the time of the storm. My research is particularly interested in which factors affect southern Black families’ navigation of natural disasters as this population is historically disproportionately affected in their aftermaths. My project builds on the oral traditions of the south and in writing post-Katrina. This project is able to consider Fran’s impact and the subsequent damage as a part of a larger racial politic of engagement between the US and Black southerners. Lastly, through considering Fran and its aftermath as emblematic of the historical erasure of Black Peoples and their experience, the Black
Laughter as an Honest Signal of Group Affiliation
Evelyn Castro, Psychology, Sociology
Sponsor: Professor Lawrence Ian Reed, Psychology

Laughter is an enduring and universal human behavior. However, there is not yet a consensus regarding its function. Among the ultimate explanations of laughter exist two recurrent ideas. The first is that laughter is a signal. The second is that the transmission of this signal can facilitate prosocial behavior in receivers. Here, we test both ideas. Participants viewed a brief video clip of a confederate responding to a joke told at the expense of an opposing group or of an allied group with either a neutral expression or laughter. Participants then decided whether to cooperate with the confederate in an incentivized sender-receiver game. In the opposing group, participants were more likely to cooperate in response to the laughing clip in comparison to the neutral clip. In contrast, in the allied group participants were less likely to cooperate in response to the laughing clip in comparison to the neutral clip. Taken together, these findings suggest that laughter directed toward an opposing group may signal an affiliation with an allied group. Additionally, the lack of laughter directed towards an allied group may signal an affiliation with that group. These context-specific effects suggest laughter may function to signal group affiliation.

Expectancy of Peer Backlash as a Consequence of Leadership Behaviors in Children
Madison Charlton, Psychology, Juhi Dalal, Psychology
Sponsor: Dr. Andrea Vial, Psychology

From the overwhelming majority of male professors on campus to the leaders of large companies around the world, we see a lack of female leaders in our day-to-day life. Research with adults has indicated that it is likely that backlash effects contribute to gender gaps in leadership roles, with women often facing discrimination for exhibiting the same agentic qualities that are valued in men (Rudman, 1998). However, it has yet to be established at what point in development gender stereotypes become salient enough that children will begin to lash out against peers who do not conform to typical gender roles (e.g. girls in leadership positions). As such, the present study examined if kids expect that children who step up to take the lead will receive backlash from their peers, and if greater backlash is expected for girls than for boys. Overall, girls anticipated significantly more backlash for leaders than did boys (p = .010). Surprisingly, girls expected significantly more backlash for boys leaders than for girl leaders (p = .032). This was not consistent with the findings from a sample of 184 adults we collected from Amazon Mechanical Turk (MTurk). It is possible that this difference in children’s backlash expectations is related to their views of in-group and out-group members. However, it is unclear if this same in-group view is present in adults towards children, who may not consider children of the same gender part of their in-group.

Spotlight Children: A Documentary
Maria Clara Chen, Journalism
Sponsor: Professor Jason Samuels, Journalism

Child performers are an essential part of the entertainment industry today: they go from playing the lead in a Broadway musical to solely making up the cast of one of Netflix’s most popular original shows. But, who are these kids and how did they get here? Spotlight Children is a raw look into the daily personal and professional lives of three different child actors trying to make it in this cutthroat industry. This documentary film takes place in New York City, the heart of the entertainment industry and a more-than-appealing hub for eager (child) actors dreaming of their big break. In a business where starting young...
gives you an advantage—that big break can take a long time—children and their parents flock from their homes to endless auditions in the City, looking for their next job. The film follows 6-year-old Yanna (Brooklyn), 10-year-old Robert (Long Island) and 8-year-old Willow (Maryland) as they tackle obstacles of rejection, unusual education and commitment to a career as a child.

Foreign Financing and Employment: The Impact of Chinese Development Aid on Local Employment of Sub-Saharan Africa
Hang Cheng, Economics, International Relations
Sponsor: Professor Amanda Kennard, Politics

Has Chinese aid brought more job opportunities to sub-Saharan Africa? This paper investigates whether Chinese development aid is effective in improving employment rates via job creation and knowledge transfer. Since 2000, China has bolstered economic ties with African states through multilateral initiatives, recently pledging $60 billion in aid and loans at the 2018 Forum on China-Africa Cooperation (FOCAC). This study evaluates the impact of Chinese development aid on employment by deploying a range of measures of job growth and employment opportunities. Exploiting exogenous variation in Chinese total steel production, the likelihood of exposure to aid and geographical proximity to recipient countries as instruments for Chinese aid allocations, it is found that Chinese aid has a positive impact on the employment-to-population ratio. The effect is statistically significant and substantively large: a one-unit increase in Chinese aid is associated with an increase in the employment-to-population ratio of over 30%. The results are robust to additional instrument and three-year running average outcome variation.

The Relationship between Labor Productivity and Video Games
Keith Chong, Economics
Sponsor: Professor Timothy Roeper, Economics

This research explores the implications and outcomes that video games have on the US labor market. Specifically, it investigates the extent to which the relationship between labor productivity and time spent playing video games is causal. Using data from the National Longitudinal Study of Adolescent to Adult Health, which contains multiple waves of survey data on a group of youth from 1994 till 2008, the author created regression models to shed light on the aforementioned relationship. This is an especially pertinent topic in today’s largely digital society, as video gaming continues to occupy increasing portions of our leisure time. This is compounded by the fact that much of the same population demographic that plays video games also comprises a significant portion of the US labor force, that is to say, young males. As such, it is hoped that this project expands the research surrounding the nebulous area of the economic and societal impacts of video games through my research.

A Dynamic Interactive Model of Trait Perception
John Andrew Chwe, Psychology
Sponsor: Professor Jon Freeman, Psychology

Existing research on perceiving others proposes a dynamic interactive model of person construal, where high-level influences, such as stereotypes and categories, continuously interact with low-level facial and bodily cue processing to ultimately form a person construal (Freeman and Ambady, 2011). This theory was formalized in a computational model using recurrent excitatory and inhibitory connections between nodes representing, stereotypes, categories and visual cues. The combination of excitatory and inhibitory connections leads to dynamic competition between nodes, ultimately resolving into a stable person construal. This model is able to account for many major findings in the field, including the interaction between categories and stereotypes and high-level constructs and low-level visual perception (Freeman and Ambady, 2011).

In a similar vein, research on the perception of personality traits has recently proposed a similar framework, where the structure of traits (i.e. the correlational structure between traits) depends on idiosyncratic beliefs, context, stereotypes, etc. (Stolier, Hehman et al., 2018). Using a connectionist model, we are able to demonstrate how differing beliefs across perceivers can impact the perception of traits in faces.

Trick or Twist: Lefty-Loosey, Righty-Tighty
Katarina Clegg, Psychology, Carmen Zhang, Psychology
Sponsor: Professor Karen Adolph, Psychology

Many everyday objects have specific designed actions for use. Experienced adults implement such actions within split seconds. But children frequently encounter novel and hard-to-implement objects (e.g., tightly closed water bottle). Without instructions, how do children recognize the designed actions, decide when to seek alternative strategies, and determine when to ask for help? We tested 20- to 60-month-old children with a series of cylindrical twist-off containers that 1) either opened by twisting to the left as is conventional or unconventionally twisting to the right; 2) endlessly twisted to the left or right, but never opened; 3) did not twist or open. Preliminary results show that older children were quick to open the conventional and unconventional lids, never asked for help, and were always on task. Perceptual feedback (feeling the lid twist) is a driving factor in children’s actions. Presumably, children know the “lefty-loosey/righty-tighty” principle, and they were faster to open the conventional left-twist lid compared to the right-twist, but also succeeded with the right-twist. They first twisted to the left, perceived the tightening lid and then immediately twisted to the right. Moreover, chil-
Children persisted longest with the endless-twist lid. For the no-twist lid, children of all ages tried alternative strategies (e.g., shaking), and the youngest children quickly requested help. Results indicate that perceptual-motor feedback aids in discovering and implementing the designed action of everyday artifacts. With age, children are faster in perceiving the features of the artifacts and consequently behave more adaptively.

**Children’s Use of Everyday Artifacts: Cognitive and Perceptual-Motor Requirements of Unzipping a Zipper**

*Katarina Clegg, Psychology; Carmen Zhang, Psychology*  
*Sponsor: Professor Karen Adolph, Psychology*

Many objects used for activities of daily living require specific designed actions for use. Such designed actions are obvious to adults but pose a complicated motor problem for children. We examined the cognitive, perceptual, and motor requirements of operating a ubiquitous everyday artifact—a zipper—and asked whether children recognize and implement the appropriate object-specific properties. We encouraged children, 12–60 months, to open a transparent zipper pouch to retrieve a toy inside. Preliminary analyses revealed a sophisticated sequence of actions required to unzip the zipper. First, children needed to have one hand on the pouch and one hand on the zipper tab. Second, children needed to pull the tab. Third, children needed to pull the tab in the correct direction, inward along the teeth. Fourth, children had to position their stabilizing hand as close to the zipper as possible to apply opposing force to the inward pull. And last, children had to pull with enough force to open. Almost all children pulled the tab at least once, but they did not succeed until 24 months of age. Moreover, the rapidity of implementing each step in the sequence increased dramatically with age. The youngest successful “unzippers” required at least 10 seconds to open, whereas the oldest children succeeded in about 5 seconds. This study shows that something as seemingly simple as unzipping a zipper has sophisticated cognitive, perceptual and motoric requirements. Although zippers are common on children’s clothing, using the zipper as designed involves a protracted period of development.

**Can Virtual Reality Help Understand Treatment for Anxiety: Studying Threat Response, Anxiety and Gender Using Virtual Reality**

*Cameryn Cooley, Psychology*  
*Sponsors: Alexa Hubbard, Psychology; Professor Yaacov Trope, Psychology*

Classical conditioning is thought to be the process by which anxiety disorders are acquired, whereas exposure therapy, a treatment, is believed to operate based on a process of updating one’s threat response, known as fear extinction (Laborda and Miller, 2013). This research seeks to increase our understanding of how contexts affect fear extinction learning by combining virtual reality with more traditional methods of classical conditioning. We hypothesized that when participants undergo extinction learning in a variety of contexts, they will learn more effectively than if they undergo learning in only one context. Because women are more susceptible to anxiety disorders than men (Xu, Xie et al., 2017), we hypothesized that there would be gender differences in extinction learning but that these would be explained by differences in general levels of anxiety. Our results indicated that participants in the multiple content extinction showed less threat anticipation to the CS Minus than participants in the single context condition. Because the CS Minus was never paired with a negative outcome, higher responses to it could possibly be a form of threat anticipation generalization. In this sample, threat responses were not associated with state or trait anxiety, and this is a possible limitation. We also did not find gender differences in threat responding. Women did report higher levels of trait and state anxiety than men, however, women also exhibited a greater reduction of generalized threat anticipation in response to the experimental manipulation than men.

**Coming Home: Reentry and Mental Health in New York City**

*Nidia Corona-Gonzalez, Social and Cultural Analysis*  
*Sponsor: Professor Cecilia Márquez, Social and Cultural Analysis*

Mental health is a crucial component to reentry, yet there exists such limited literature on the subject. This study analyzes how New York City’s (NYC) network of formalized reentry resources approaches mental health by answering two sub-questions: 1) To what extent do prison reentry organizations and policies in NYC focus on the mental health of those reentering? 2) What experiences have formerly incarcerated individuals in NYC had when addressing mental health challenges through reentry services? These questions are answered through a series of qualitative, semi-structured interviews with staff from reentry organizations, local reentry advocates and NYC residents who have been formerly incarcerated. This paper finds that NYC’s current formalized network of reentry resources do not adequately address mental health concerns. This occurs because these organizations fail to recognize the psychological traumas of incarceration. These formalized networks have embraced the mainstream conceptualization of reentry, which treats reentry as a physical process in which only physically remaining out of the justice system indicates success. However, by adopting this mainstream logic and thereby ignoring the psychological costs of incarceration, NYC’s network of formalized reentry resources continue to neglect the mental health needs of those reentering. This study presents the promising alter-
native—proposed by a participant at an anonymous group interview with formerly incarcerated youth—of framing reentry as coming home. People who have experienced the traumas of incarceration need to come home not just physically but also mentally. Using the familiar term “coming home” helps lessen the alienation of those who are othered as “criminals” and makes the term—and its attached policies—more accessible to those most affected.

**Domestic Political Polarization and International Legislative Participation**

*Katherine M. Craig, Drama, Politics*

*Sponsor: Professor Amanda Kennard, Politics*

Literature and intuition hold true that domestic politics and international participation are intrinsically linked. The logical extension of this idea is that as domestic governments and constituencies play host to increasing amounts of far-right parties and candidates, a country’s international participation will be impacted. As the rise in far-right electoral strength continues, this paper investigates the relationship between far-right strength in domestic elections and participation in the international legislative system, as measured through U.N. Draft Proposal support. Using an ordinary least squares regression, a significant and negative relationship was found between far-right electoral strength and U.N. draft proposal support counts. With controls, lags and standardization, this relationship results in a negative coefficient of between -0.0642 and -0.0919 depending on how far-right electoral strength is measured.

**Homes Not Games: Coalition Opposition to the 2028 Olympics**

*Daniel Cueto, Metropolitan Studies*

*Sponsor: Professor Sophie Gonick, Social and Cultural Analysis*

Today, the Olympic Movement’s century-long dominance over host cities and those wishing to host the sporting spectacle is in question. While hosting the Olympics has come to be associated with unused venues, cost overruns and bankrupted municipalities, the allure to welcome the world has remained unwavering. From Hamburg to Calgary to Boston, disenfranchised citizens from various backgrounds have organized to fend off Olympic bids. This paper examines current anti-Olympic activism in Los Angeles as a means to better understand coalition-building in contemporary cities. While similar coalitions in other cities have found success as a result of widespread support and consensus-driven ideologies, NOlympics LA is a leftist organization, started by the LA chapter of the Democratic Socialists of America. Led primarily by White Angelenos, the group works to mobilize a diverse, working-class base. To understand how political ideology determines coalition building in a deeply divided city, a variety of methods is employed including a historical approach, media analysis and ethnography. Using a right to the city framework to guide my analysis, this inquiry extends beyond the Olympics to understand how the opposition to mega-projects represents a new frontier of urban activism, serving as a roadblock for an equitable “right to the city” (Lefebvre, Mayer, Baiocchi). Once a representative of peaceful competition, my research argues that the Olympics jeopardize the liveability of the urban poor, not just in Los Angeles but in cities around the world.

**“Anybody Here for 311?”: An Exploration of Volunteer Policing and Gentrification in BedStuy**

*Amethyst Davis, Politics*

*Sponsor: Professor Patrick Sharkey, Sociology*

Recently, several videos have gone viral on social media, showcasing White citizens calling the police on Black citizens for mundane reasons such as sleeping in a college study room or trying to enter an apartment building they actually reside in, especially in gentrifying areas. There is an influx of higher-income, (usually) White residents in a cheaper, lower-income, (usually) predominantly Black or Latino neighborhood (DiNapoli and Bleiwas, 2017). Much scholarship has been dedicated to the ways gentrification shapes policing tactics, however, there is scant research on how it shapes departments’ community outreach programs. The New York City Police Department Auxiliary Police Officers (NYPD APOs) serve two purposes: crime deterrence through show of force and public relations as the “eyes and ears” of the community (New York City Police Department, 2008). Through participant observation as an NYPD APO at the 79th Precinct in the rapidly gentrifying Bedford-Stuyvesant neighborhood, the author explored the socialization of NYPD APOs, attended the NYPD’s community engagement events within the 79th Precinct, unpacked the relationship between housing affordability and neighborhood change and conversed with anti-gentrification organizers. It was found that APOs are socialized to be careful of who they trust in “the streets.” APOs may engage persons who seek to provoke, though it is assumed this may not happen as much in the 79th precinct because it is gentrifying. Thus, an influx of White residents in BedStuy implies 1) White residents are more compliant with law enforcement and 2) Black residents are less complaint or not compliant at all and, therefore, a danger to law enforcement.

**The Effect of Government Shutdowns on National Parks: A Case Study of Joshua Tree**

*Alyssa DeFalco, Environmental Studies, Journalism*

*Sponsors: Professor Jennifer Jacquet, Environment Studies; Professor Dale Jamieson, Environmental Studies*

The 35-day government partial shutdown between December 2018 and January 2019—the longest in US history—caused myriad problems. One of these prob-
lems that was highlighted by the media was vandalism at Joshua Tree National Park (JOTR), which included a chopped-down Joshua tree, the ATV tracks in the sensitive crypto-biotic crust of the Mojave Desert and locks cut off entrance gates that caught national attention. The National Park Service (NPS) struggled to protect the parks that serve as a haven for wilderness, wildlife and iconic landscapes as the number of workers in the parks dramatically decreased during the shutdown while the majority of parks were left open, leading to overflowing sewage and immense trash accumulation. By reviewing media articles and conducting primary interviews, this paper presents an overview of damage to national parks with the government shutdown and possible reasons why this shutdown (one of 20 in US history) was uniquely destructive for national parks, looking closely at JOTR as a case study. Finally, recommendations are made for the public, NPS and US government to consider.

Assessing the Potential for Cognitive Enrichment for Fish in a New York City Estuarium
Alyssa DeFalco, Environmental Studies and Journalism, Lauren Drabenstott, Environmental Studies, Luke Stuntz, Environmental Studies
Sponsor: Professor Becca Franks, Environmental Studies

Cognitive enrichment is increasingly recognized as important to animal welfare, but little is known about its role in fish welfare. We explored the potential of a cognitive stimulation intervention for fish at The River Project (a Hudson River estuary), focusing on the behavior of approximately 70 fish (silversides, striped bass, and perch) housed in 4 tanks (440 gallons on average). Cognitive stimulation was introduced by presenting fish with two buckets: one from which the fish were always fed (marked with vertical stripes) and one from which the fish were never fed (marked with horizontal stripes). Feeding consisted of 2 experimenters simultaneously carrying buckets to opposite sides of a tank (randomized), after which, a third experimenter collected 10 seconds of video before indicating that feeding could begin. The aim of this study was to determine whether the fish could learn to swim to the side of the tank with the correct bucket. Our analyses show that visibility in this system was low, with no fish visible 30% of the time due to high water turbidity. This result indicates that fish likely had difficulty seeing out of the tank. Nevertheless, by the third week of training, one of the tanks showed a trend in the appropriate direction (p<0.01). In sum, while we only found modest evidence that the fish learned the cue, the absence of learning is potentially due to the limitations of the system. Future work should investigate longer training periods and/or use non-Visually based cues such as sound or taste.

The Implication of Demographic Factors in Dyadic Dominance
Allie Degen, Psychology
Sponsor: Professor Tessa West, Psychology

In the workplace, there is typically one person who manages others, putting them in a higher position of power. People with high power typically exhibit dominance behaviors, or attempts to manipulate subordinates' thoughts, feelings or actions (Huston, 1983; Rollins and Bahri, 1976; Thibaut and Kelley, 1959). Today, it is unlikely that people with power differences will share identical demographic backgrounds, yet little research has examined the combined effects of racial and power differences on behavior. The aim of this study was to investigate how power affects behavioral dominance in same-race versus cross-race dyads. Participants (Nindividuals = 190; Ndyads = 95) were paired with a same-race or cross-race partner. In each dyad, one person was randomly assigned to a position of high power and one to a position of low power. Participants then completed a problem-solving task together, followed by individual questionnaires asking them to rate how dominant, persuasive or “in-charge” they felt they and their partner acted during the interaction. These responses were operationalized on a scale of behavioral dominance. The results indicated that same- and cross-race dyads did not significantly differ in their perceptions of behavioral dominance. Additionally, high- and low-power individuals across dyads did not significantly differ in their perceptions of their own behavioral dominance. The second finding has not been replicated in the literature, suggesting that further research might explore this interaction in larger, more representative samples.

Medicalization of the Black Female Body in the United States
Noelle Desir, Social and Cultural Analysis
Sponsor: Professor Renée Blake, Linguistics, Social and Cultural Analysis

This project explores the relationship between conceptualizations of the Black American woman and the history of American medical institution. The key question at stake here is: Does the racialized and gendered history of the American medical institution affect contemporary disproportionately worse health outcomes for Black women and infants, paying particular attention to: 1) pre- and post-partum health and 2) low birth weight (LBW)? This study finds that, current disproportionate health outcomes for Black American women and infants result from the generations of systemic racism and sexism originating in American slavery. This thesis argues that both intersectional scholarship and historical analyses are imperative in efforts to reconcile these public health concerns. Since Black women are regularly exposed to unique risks asso-
associated with their race and sex, it would be negligent to exclude the historical impact of their identity intersection as a contributing factor to disproportionate health outcomes for Black American women. This paper suggests a two-fold intervention. First, the cultural proficiency of physicians should be increased through both educating practicing doctors and medical students about the racialized and sexualized history of the American medical institution as well as increasing the number of Black physicians. Only 6% of doctors today are Black, only one-third of them are women, but Black Americans make up roughly 13% of the population. Second, we should look to groups that have successfully restructured medical treatment for black people outside of the current medical institution.

The Morality of Abortion: A Critique of the “Future Like Ours” View
Aniket Dhariwal, Philosophy
Sponsor: Professor Amanika Kumar, Obstetrics and Gynecology, Mayo Clinic College of Medicine

Don Marquis, in Why Abortion Is Immoral, offers very compelling argument against abortion. This argument is secular and does not rely on proving the personhood of the fetus. Marquis’s central claim is that killing a fetus deprives it of the same valuable future that an adult is deprived of when they are killed. This, according to Marquis, renders abortion morally wrong. This paper proposes that, in an adult life, there are many losses of futures of value that are not morally wrong. It is proposed that these are neutral losses and that the loss a fetus incurs when aborted incurs exactly this type of neutral loss. It is also shown how Marquis fails to sufficiently defend his reasoning against other important objections. The argument here for the existence of neutral losses and my further examination of effective objections against Marquis will support the conclusion that Marquis’s argument that abortion is immoral is, ultimately, unsuccessful.

Stickball: A Dive into the Game
Jose Diaz, Latino Studies
Sponsor: Raechel Bosch, Social and Cultural Analysis

This project considers the cultural formation of Stickball in El Barrio, East Harlem. Growing up, East Harlem has been a place that my family and I would visit for cultural celebrations and community gatherings. A little over two years ago I visited my Uncle Carlos’ museum, The Stickball Hall of Fame, with a friend. She had suggested that I begin to think of stickball as more than a game and start researching its roots. Through my research, I have come to learn that Stickball, a game that nearly all of my relatives play, has a place of cultural significance, and is a means to understanding people in relation to public space and history, but also to theorize about colonialism and “cultural remittance” as defined by Juan Flores, The Diaspora Strikes Back. My uncle’s museum is located in the Tainos Towers, where he lives, a predominantly Latino and low-income housing complex. Thoroughly interested in the relationship between stickball and East Harlem, I searched for evidence of the game’s origins, but found no academic historical accounts. I question why did stickball come into being and popularity rather than baseball in El Barrio. What is at the root of this vernacular cultural production? What is at stake for the people and community housing the game? What story does that tell? Was stickball a way in which race relations and struggles for urban space played out? I am researching this through film, ethnography and interviews. It is the start of an archive that uses stickball as a living memory because there is still a chance to document a historical perspective of race, class, and political strife from the 1950’s onward. The game of stickball, as a cultural practice, is fading from El Barrio by means of gentrification and the passing of older generations, thus highlighting the cycles of disparate housing policies, carceral agendas and investment initiatives that have made East Harlem and its inhabitants a diasporic place and people.

Public Arguments against the Establishment of Marine Protected Areas
Patricia Diaz, Applied Psychology, Environmental Studies
Sponsor: Professor Jennifer Jacquet, Environmental Studies

Marine protected areas are important conservation tools for the restoration of fish biomass and biodiversity. Some marine protected areas also provide spillover benefits to adjacent fisheries. In addition, they improve countries’ social and economic practices through the support of local communities and by attracting tourism. Yet, even though countless studies have empirically demonstrated the positive ecological and socioeconomic effects of marine protected areas, some factions of society, including fishermen, local villages, climate deniers as well as some scientists, have argued against their establishment. This paper analyzes scholarly journals, the English and Spanish-speaking mass media and other popular publications to understand who is arguing against their designation and the kinds of arguments they are making.

Aid-Driven Civil Conflict: A Sub-National Study of Chinese Aid in Africa
Jason Dong, International Relations
Sponsor: Professor Amy Catalinac, Politics

Does Chinese aid increase the risk of civil conflict in Africa? In recent years, China has rapidly expanded its operations on the continent. As China increases its presence in the region, doubts have been cast about the helpful-
ness of its aid. This paper argues that Chinese aid is likely to cause civil conflicts in Africa because of the incentives that aid provides to rebel groups. My study finds that a one percent increase in aid per capita leads to a 0.268% increase in civil conflict in recipient regions. A highly cited mechanism in which aid incites conflict is that aid expands a government’s access to financial resources, thus incentivizing rebels to seize the resources of the state. In other words, aid increases civil conflict by turning government control into a more valuable prize. This study tests this causal mechanism by using night-time lights as a proxy for economic activity, arguing that higher levels of wealth in a region will exacerbate conflict by increasing the stakes of the political contest. Existing literature has focused heavily on Western and official Organization for Economic Co-operation and Development (OECD) aid. However, since China does not release aid data to the OECD, the effects of Chinese aid have been understudied. By using the newly released AidData dataset from the College of William and Mary, this thesis seeks to apply existing theories about aid to a new donor country.

_Lu echiù fregno: Reclaiming Abruzzese and the Sociolinguistic Implications of a Standard Orthography_

_Conner Drennen, Italian and Linguistics, Psychology_  
_Sponsor: Professor Nicola Cipani, Italian_

The graphic representation of a language contains within it captured glimpses of the people and culture by which it was formed. This is even more true for a language with no standardized orthography, like the Abruzzese dialect native to Abruzzo, Italy. When literary figures toward the end of the nineteenth century began to study, catalogue and compose works in local varieties of their native Abruzzese, they were actively fashioning orthographies that each believed best for transcribing the dialect. The subsequent decline of dialectal literature saw the abandonment of these systems. In recent years, however, with the advent of social media, many Abruzzesi are writing in dialect again. This time, their motivations are characterized by the reclamation of regional identity, associating pride and belongingness with the use of dialect. To understand these changing attitudes and the contemporary orthographic influences on those writing in Abruzzese, a sociolinguistic survey of modern speakers was conducted. Through the analysis of nearly seven hundred responses, the ongoing story of the dialect becomes clearer. The Abruzzesi are aware of the changing social environment surrounding the use of their dialect, and the question of orthography has been raised again. Today, the majority of those writing in Abruzzese are not using the orthographies proposed by the literary figures of the past, and through the increased connectivity between members of the region and the sheer visibility of written dialect in this new context, linguistic effects are beginning to be imparted on the language variety itself.

_Living Andean in NYC: An Ethnographic Project_

_Alejandra Estrada, Anthropology, Latin American Studies_  
_Sponsor: Professor Arlene Dávila, Anthropology_

Despite their experiences in the US being vastly different, indigenous immigrants from Latin America are often considered as having similar racial, ethnic and cultural characteristics as other Latinxs in the US and have scarcely been studied. Since colonization, indigenous people from Latin America have experienced major challenges to maintaining their cultures and languages. When they migrate to the US, they are often swept under the larger category of “Latino” or “Hispanic,” further leading to the erasure of their indigeneity. The little research that exists on indigenous migrants has centered on the US Southwest/Mexican border region. This thesis focuses on the experience of Andean migrants in New York City. Although Andean communities face enormous challenges in maintaining their language, culture and traditions, they still persist, and their efforts to reproduce community reflect their resistance and determination to exist as a culturally distinct community. The study will be guided by a theoretical framework of issues such as colonial power struggles, cultural hierarchy and identity ambiguity. It explores survival practices among Andean people through community formation, language maintenance, networks of support and the developing of identities. Through participant observations and personal interviews, this paper seeks to illuminate how ongoing colonial logic shapes indigenous migrants’ incorporation into the US and emergent identities. Through this work, the author hopes to add to broader understandings of the flexibility of indigeneity, how it is not a fixed category but rather an identity that is constantly being negotiated and renegotiated.

_An Analysis of Religious Rehabilitation within the Criminal Justice System_

_Emil Fagel, Sociology_  
_Sponsor: Professor Ruth Horowitz, Sociology_

This project focuses on a Christian prison education organization that purports to rehabilitate by transforming the inmate’s self. It was found that the transformation Prison Fellowship Academy (PFA) participants undergo is inadequate, and this shortcoming ultimately outweighs the program’s beneficial aspects. The program’s curriculum is lacking. This program and this research are an extension of existing literature focusing on therapeutic justice. Lynne Haney’s _Offending Women_ (2010) and Jill McCorkel’s _Breaking Women_ (2013) reveal a criminal justice system that, in some facets, attempts to alter what is seen as the
“corrupted thinking” of a criminal and encourages inmates to take full responsibility for their wrongdoings. The program studied here evaluates inmate success through the use of a Criminogenic Cognitions Scale and the TCU Criminal Thinking Scale. These are meant to measure a respondent’s crime-causing moral cognitions, such as entitlement, power orientation and cold-heartedness. They were regulated in the field sites of Haney and McCorkel, and they are what PFA believes it can fix. This research looked at how PFA attempts to transform who inmates are and whether those transformations are consistent with what sociologists know about the criminal justice system. More specifically, this research answers the question: Is the PFA’s vision of success consistent with its staff and participants’ knowledge of outside crime structures? Participants understood that there are structural barriers to making transformations of “character” outside prison walls. These barriers invalidate the transformations that occur within their program. In examining PFA and its effects, positive aspects were also found such as community-building and the teaching of leadership skills. However, the inconsistencies found compel the author to label PFA as inadequate. PFA is demonstrative of the complexities that come with rehabilitative programs and the amount of work left to do to succeed.

Exploring the Power of Ethnic Enclaves in an Age of Global Movement and “Gentrification”
Amanda Faynor, Global Liberal Studies
Sponsor: Professor Phillip Washburn, Liberal Studies

In recent years, we have seen a nationally rising amount of hate speech and openly xenophobic rhetoric as well as an increase in global migration and movement. With this movement, identity and network ties become paramount to an individual’s and its group’s success in their new home. With a history rooted in racism as well as a historical marketing as “the land of opportunity,” the cities in the United States, (as well as many cities in the “West”), find themselves struggling with the incoming of foreigners and if they have a right to the city. A city’s growing overall diversity becomes rooted in different concentrated identity groups in different places, due to migration flows and segregation practices. Within the city, the formation of neighborhoods, particularly immigrant ethnic enclaves, create the positives of economic opportunity and community aid for its residents, while living within the containment of segregation housing practices. The proposed aim of migration becomes assimilation to be able to attain more opportunities but within different immigrant ethnic groups. This assimilation finds itself at risk with housing practices, like urban renewal and gentrification. These racialized and discriminatory practices must be combated and replaced with community involvement which then can lead to an increase in integration.

Synchrony Effect for College Students with ADHD
Lily Gabay, Psychology
Sponsor: Dr. Monica Lewin, College Core Curriculum

A person’s chronotype refers to his or her individual time-of-day preference for optimal functioning. Individuals with a morning chronotype prefer to wake up early and often feel that their optimal cognitive performance occurs earlier in the day, whereas individuals with an evening chronotype prefer to sleep later, wake up later and feel that they perform best later in the day. Similarly, cognitive performance varies with circadian fluctuations in arousal based on an individual’s chronotype. For individuals with evening chronotype, cognitive performance tends to be impaired in the morning relative to their own performance at night. This chronotype-dependent discrepancy in cognitive performance that occurs with time of day-dependent changes in arousal is called the synchrony effect. Since ADHD is thought to be a disorder of arousal regulation, we predicted that students with ADHD would experience a greater discrepancy in cognitive performance between morning and evening test sessions, in comparison to healthy controls. Here, we tested how working memory and attentional vigilance of individuals with evening chronotype changed from morning to evening test sessions. Then, we compared the magnitude of this change between those with ADHD and non-ADHD controls. Our results revealed significantly greater discrepancies in cognitive processing for individuals with ADHD, suggesting that evening-type students with ADHD are at a greater disadvantage when having to perform at times that are not aligned to their circadian rhythm compared to their neuro-typical peers.

Different Strokes: Various Modes of Tiger Representation and Conservation Efforts in Tiger Reserves of India and Nepal
Nikki Gary, Environmental Studies
Sponsor: Professor Jennifer Jacquet, Environmental Studies

Human-tiger conflict is the most pressing threat facing tiger conservation efforts in India and Nepal. In recent years, the incidences of human-tiger conflict have increased, leading to an unprecedented era of social unrest in villages living close to tiger reserves. Living in fear of these apex predators, local people have tried to make sense of the issue ideologically, drawing from long histories of human-tiger interaction (Boomgard, 2001). At the same time, people around the globe that live apart from tigers are condemning retaliatory or preventative killings of tigers as reducing the likelihood of survival for the critically endangered species (Sinha, 2018). Human-tiger conflict cannot be resolved by reliance on one framework of understanding, as so many factors influence each encounter and fallout. This paper explores the history of ideological
The Gender Achievement Gap: Do Teacher-Student Relationships and Temperament Matter?
Peter Goldie, Applied Psychology
Sponsor: Professor Erin O’Connor, Teaching and Learning, Steinhardt School of Culture, Education and Human Development

Boys’ lacking academic achievement is of serious concern, as it has noteworthy implications for both individuals and larger society. By early adolescence, girls consistently outperform boys. Research in early childhood demonstrates that variations by gender in quality of teacher-student relationships may partly explain the gender achievement gap. Girls tend to have higher quality teacher-student relationships (i.e., high levels of closeness and low levels of conflict). There is also evidence to suggest that temperament impacts the relation between gender and teacher-student relationships, yet this literature is underdeveloped. The current study aims to fill gaps in knowledge by investigating the gender achievement gap in early adolescents and whether temperament style and teacher-student relationships are mechanisms which drive it. Moreover, it extends previous work by centering low-income Black and Latino adolescents, populations which are vastly understudied yet at-risk for poor achievement. Simple linear regression, mediation and moderated mediation models were utilized to address the proposed research questions: 1) Does gender relate to math and literacy achievement among early adolescents? 2) Do teacher-student relationships (i.e., closeness and conflict) mediate associations between gender and achievement? 3) Is the described path between gender and teacher-student relationship moderated by temperament? Analyses reveal a significant association between gender and ELA achievement. Additionally, mediation effects were found for both teacher-student conflict and closeness on associations between gender and ELA and math achievement. No significant impact of temperament was found. Results have the capability to inform future interventions aiming to increase the utility of adolescent education and decrease school dropout.

Cognition and Culture: Intersections and Divides between Cognitive and Ethnographic Research
Tamas Gomori, Anthropology
Sponsor: Professor Fred Myers, Anthropology

Both ethnographic and cognitive research focus on explaining human behavior and diversity in thought. Despite this common interest, collaboration between these two modes of collecting knowledge has been limited, despite the efforts of researchers interested in making causal understanding based in cognition a way to bring different social sciences toward “consilient” explanation. Most of these efforts come in the form of critiques aimed at the way cultural anthropology presents and collects knowledge about cultures but don’t necessarily map the goals and motivations closest to researchers on both sides. Since literature concerned with bringing these two fields together has focused on the way generalized knowledge can be produced through joint efforts, it would be important to examine what assumptions exist in this literature that might be in conflict with the research goals of ethnographers. This project hopes to contribute to framing the debate by exploring the ontological assumptions and epistemological strategies that might separate the researchers in these fields and investigate how these define what kinds of goals researchers in these fields have. Through in-depth interviews with researchers in anthropology, who are situated on opposing ends of the meeting between ethnographic and generalizing sources of data, this project aims to demonstrate that the differences in knowledge production in these fields is due to concerns over who owns and benefits from knowledge and for what purpose it is being produced. By understanding this, it might be possible to gain insight into how these fields’ discrete research interests could be integrated for collaboration.

What Not to Wear: Ethnic Fashion, Political Subjectivity and Belonging for Diasporic Indian American Women
Sarmishta Govindhan, Social and Cultural Analysis
Sponsor: Professor Andrew Ross, Social and Cultural Analysis

Throughout the field of social anthropology, fashion and clothing has emerged as an important category for analysis of personal, political, cultural and social connections created within nations and across global borders. In the specific context of Indian ethnic fashion, clothing has always been a deeply gendered personal and political experience, particularly for Indian women. In fact, gender acts as a kind of constraint on cultural experiences and political subjectivity and is experienced through the clothing itself, and such questions of constraint, and its converse, agency, are central to both examinations of diasporic as well as gendered personal experience are central to this thesis.
While the works of some of the most prominent scholars in current literature about Indian ethnic fashion—including Daniel Miller and Mukulika Banerjee in “The Sari”, Emma Tarlo in “Clothing Matters: Dress and Identity in India”, and Vanita Reddy in “Fashioning Diaspora: Beauty, Femininity, and South Asian American Culture”—analyze and theorize on the many ways in which fashion and identity are intertwined, there is not yet a space carved specifically for Indian-American women to speak for themselves on these issues. As such, the aim of this thesis is to center the voices of Indian-American women within this broader constellation of scholarly work and to seal their words into this conversation on their terms.

The Impact of Performance Based Bonuses on Long Run Student Outcomes: North Carolina’s Teacher Salary Bonuses
Christopher Hagan, Economics
Sponsor: Professor Timothy Roeper, Economics

Since the 1990s, there has been a rise in policies that provide bonuses to teachers based on the performance of their students on standardized tests. Previous research on the impact of these policies on student test scores has in many cases found significant positive increases in test scores. However, the relatively recent creation of these policies means that there is a lack of research on the long term impacts for students. Focusing on the teacher salary bonuses which North Carolina began providing to teachers during the 1996–1997 school year, this paper attempts to determine whether providing bonuses based on test score growth led to improved long term outcomes for students, specifically with regards to their years of education, poverty rate and income. Using a difference in difference design, this paper compares the long term outcomes of students who attended school before and after the policy’s implementation in North Carolina to students from the same time periods in Virginia, South Carolina and Georgia.

Rehabilitated or Punished?: Analyzing Allegations of Crime Made against Girls in Residential Treatment
Michelle Hansen, Applied Psychology
Sponsor: Professor Shahnam Javdani, Applied Psychology, Steinhardt School of Culture, Education and Human Development

Long-term residential treatment establishments (RTEs) are the most restrictive form of care for juveniles with behavioral disorders outside of inpatient psychiatric hospitals. RTEs have a stated focus of rehabilitating youth with conduct problems or mental health needs rather than punishing them. Notably, RTEs are the second most common holding place for youth who have been caught for engaging in illegal behaviors. However, youth residing in RTEs frequently re-offend after discharge, raising concerns about RTEs’ effectiveness at rehabilitating youth or reducing youth arrest rates over time. Girls are disproportionately more likely to be placed in such facilities for non-criminal acts (i.e., status offenses) and are at higher risk for re-offending after their first placement in a facility. This contradicts the notion that RTEs are facilities supporting or “rehabilitating” youth. Moreover, there is a lack of literature regarding youth offending during their placement in an RTE. Therefore, this study examines the extent to which the frequency, type and severity of allegations of crime made against youth in RTEs differ from those made against youth in the community. Further, this study disaggregates these findings by gender. This study utilizes the full set of 314 petitions, or allegations of crime, against youth in one New York county over an 18-month period. Analyses have shown significant differences in the proportion of petitions filed, in the types of offenses committed and in the severity of offenses between genders. These findings have the potential to inform future policy changes.

Instrumental Learning in Social Interaction
Salman Hashim, Neural Science
Sponsors: Professor Leor Hackel, Psychology, Rutgers University; Professor David Amodio, Psychology

The purpose of this study is to test how people learn about others through interaction. We tend to use different learning systems based on our needs in order to prospect into the future. Often times, people learn by forming trait associations and forming reward associations. In our study, we described two major types of associations one can have with others. It is possible to meet someone once and then never again. However, it is just as possible to meet with someone and expect to meet them again in the future. The former meeting has no need to develop trait association due to the lack of any future expected contact—there is no need to develop a reward association with this person. The latter category is one where an effort will be made to develop this association, in expectation of a future reward scenario. In the present work, we will test how striatal-based reward learning supports social behavior in the presence of cognitive load. Past work suggests that 1) feedback-based instrumental learning relies on the ventral striatum, whereas passive associative learning does not (Poldrack et al., 2001), and 2) cognitive load disrupts declarative learning but not striatal-based learning (Foerde et al., 2006). We will administer a social learning task in which 1) participants learn about others through instrumental feedback or passive observation, and 2) participants learn with or without the presence of cognitive load. In this ongoing study, we will test whether instrumental learning is more robust to cognitive load, suggesting a role for a striatal instrumental learning system in social behavior. Traits provide stability to the representations of other people, and by understanding how people make associations with others based on
their projection of the future, we can see how and why they come to their perceptions of others.

The Effects of Sleep Deprivation on Mood and Impressions in Interpersonal Interactions
Stephanie Hauck, Psychology
Sponsor: Professor Tessa West, Psychology

A large body of research has shown that after a period of acute sleep loss one is more likely to experience negative mood (Cutler and Cohen, 1979; Tempesta, Coutoumidjian et al., 2010; Haack and Mullington, 2005). Additionally, there is evidence that negative mood states affect the judgments one has about others in social interactions (Forgas and Baron, 1987; Baron, 1987; Abele and Petzold, 1994). The purpose of this study was to investigate the effects of acute sleep loss on one’s impression of another person in a social interaction and the potential mediating role of mood in this relationship. Participants were randomly assigned to one of two sleep conditions: four hours of sleep for two nights (sleep deprivation), or eight hours of sleep for two nights (well-rested). Participants were paired with another participant from the well-rested condition for an 11 minute social interaction. During this interaction, their physiology was measured via electrocardiography. Afterwards, they completed questionnaires measuring their mood and impressions of their interaction partner. Our results indicated that sleep had no direct influence on participants’ impressions of the person they interacted with. However, sleep had an effect on participants’ mood, and mood greatly influenced participants’ impressions of their interaction partner. These findings suggest that while sleep had no direct effect on impressions of others, it may still have an indirect effect on impressions by influencing mood, which in turn influences one’s impressions of others in social interactions.

A Neglected Metric: How Attention to Tourism Would Benefit San Diego’s Trolley System
Trevor Hill, Public Policy
Sponsor: Professor Neil Kleiman, Public Policy

This research project was centered around designing a policy proposal recommending revisions to the San Diego Association of Governments (SANDAG) 2050 Regional Transit Plan. These recommendations stemmed from interviews with local stakeholders, research concerning best practices in mass transit and research concerning the structure of San Diego’s economy and political composition. Based on these factors, my proposal recommended that SANDAG should first and foremost switch from a transit planning model based solely on population and job density to one that also accounts for the need for connectivity to desirable destinations (e.g., tourist attractions or sites for leisure). Second, SANDAG should invest in the construction of more capital-intensive but low operation-cost transit like trolleys as opposed to buses, because they are preferable across the board but particularly to tourists. Third, SANDAG should establish a “Tourism Liaison” at SANDAG responsible for reaching out to tourist facilities in the city and communicating their needs to SANDAG’s regional planning team during the planning process. And finally, to fund these proposals, SANDAG should submit to the voting public a ballot measure to increase the popular and long-running half-cent TransNet sales tax to a full cent. Such an increase would increase its operating budget by roughly ten percent, which would absorb most if not all of the costs associated with the recommended policy adjustments.

Attitudes toward Bisexual and Transgender Individuals within the LGBT Community
Casey Hoffman, Psychology
Sponsor: Professor Maureen Craig, Psychology

In recent years, increasing social change and acceptance, along with the legalization of same-sex marriage, have opened up narratives and conversations about attitudes toward members of the LGBT community. Unfortunately, despite growing acceptance, acts of discrimination against members of the LGBT community are still pervasive, particularly toward those who identify as bisexual or transgender. While there is research within the field of psychology on attitudes towards the LGBT community, generally, biphobia and transphobia are often understudied. Two exceptions to this include Dodge et al. (2016) and Billard (2018), which discuss attitudes towards bisexual and transgender people, respectively. While there is considerable overlap between homophobia and biphobia and transphobia, each of these communities face unique prejudices and stigma. The present research used an experimental manipulation to examine the possibility of increasing solidarity and feelings of acceptance towards bisexual and transgender individuals. Two experimental manipulations were used. The inclusion-exclusion mindset paradigm (Yaniv et al., 2002) was used to unconsciously prime participants to be either more exclusive or inclusive towards these two groups. Afterwards, participants were either shown an infographic with information about the challenges the LGBT community faces or control information. Subsequently, participant attitudes were measured; these included scales of attitudes and bias towards bisexual and transgender individuals. Scales of bias towards racial minorities were also included, to determine if any correlates exist. We hypothesize that participants who experienced the exclusionary mindset and were shown the experimental infographic will hold significantly more positive attitudes and beliefs towards bisexual and transgender individuals.
The study of displaced workers is rather unique when it comes to the unemployed labor force. A displaced worker is a category specified uniquely from the group of unemployed as anyone who is 20 years of age or older and who lost or left jobs because the company of plant closed or moved, there was insufficient work or the position or shift was abolished (Bureau Labor Statistics). Currently for most displaced workers, there is no way to predict when and how they would lose their jobs. It is a well-established fact that once a worker has been dislocated, there is almost always a significant decrease in wages even after reemployment. For a worker that experiences a one-time dislocation, it takes about 5 years to return to the original wage level before dislocation (Stevens, 1997). This means that displacement is an unexpected and sudden external income shock to the family unit. It then brings the question of how the parental displacement would affect children’s decision on the next steps after completing secondary education. One can hypothesize that a sudden income loss and unemployment can either result in the following scenarios: the need for immediate replacement income causes the child to start working directly after high school or the need to avoid a displacement in child’s future career pushes for some form of post-secondary education. This thesis aims to understand the dynamics of between parental displacement and children’s aspiration and expectations of their post-secondary decisions.

**Soft Diplomacy and South Korea-Japan Relations**

*Elaine Huang, Economics, International Relations*

*Sponsor: Professor Amy Catalinac, Politics*

South Korea and Japan have a puzzling relationship. Besides being close neighbors, they have similar institutions, and bilateral tourism and trade have grown considerably, which should suggest that they would be, at the very least, cooperative. On the contrary, the two countries have an unstable relationship, due to unresolved historical conflicts including the annexation and colonization of South Korea by Japan in 1910 until 1945, Korean comfort women who were forced into sexual slavery by the Imperial Japanese Army, white-washing of history textbooks and territorial disputes (Panda, 2017; Pollmann, 2015). Despite these unresolved issues, there is also evidence that in recent years, South Koreans have started to view Japan more favorably. Understanding this variation is important, as theorists have expected cooperation but have failed to explain it with previous theories of International Relations. Additionally, it is in the interest of the US to keep track of Korea-Japan relations, as a trilateral security alliance could significantly impact regional stability. Iwabuchi finds that soft diplomacy through shared media and culture can influence international public opinion of a country (Iwabuchi, 2015). This project tests this by using Hankook Research’s Korean East Asia Surveys and running ordinary least squares (OLS) regressions and finds that getting more information about Japan or Korea-Japan relations directly from Japan is associated with Koreans viewing Japan more favorably.

**China’s Aid to Africa: Do Corrupt Governments with More Oil Receive More Aid?**

*Xiying Huangfu, Economics, International Relations*

*Sponsor: Professor Amy Catalinac, Politics*

Critics often argue that foreign aid fails to stimulate growth and is rarely driven by altruist motivations, condemning donor countries for taking advantage of aid to fulfill their own political or economic interests. Recently, the growing presence of Chinese aid in Africa has incited even more heated debates. Despite the limited studies on China’s aid allocation patterns, an overwhelming number of policy makers, journalists and scholars have accused China of giving aid to corrupt leaders and undermining aid effectiveness. In response to the recent controversies on China’s aid-giving in Africa, this paper explores whether China gives aid to oil-rich countries in Africa that are more corrupt. Using a recent dataset compiled by AidData, which records all Chinese aid activities in Africa from 2000–2013, it was found that not only does Chinese aid target oil-rich countries, but it also disproportionately flows into oil-rich countries that are simultaneously corrupt. Corruption in oil-rich countries seems to give China certain privileges that help it reach its main objective of aid-giving in Africa—the acquisition of oil. This finding provides a solid quantitative support for prevailing criticism on China’s distorted aid incentives and urges international agencies to monitor China’s future aid activities to avoid the abuse of aid by oil-rich and corrupt recipient governments.

**On the Topic of Immigration: To What Extent Does Information Influence Factual Beliefs, Attitudes and Policy Preferences?**

*Kyra Hyppolite, Cello Performance, Politics*

*Sponsor: Professor Amanda Kennard, Politics*

Whether citizens take an interest in politics or have no desire to stay up-to-date on daily political occurrences, it is impossible for anyone to have perfect or complete information when it comes to any political topic. Even so, US citizens often make political decisions (e.g., voting for national and state officials, signing petitions, donating to interest groups) without vital information regarding the issues at hand. When people have to suddenly fill informa-
tion gaps to make a decision, they often rely on their partisan biases to infer information they do not know. Thus, the purpose of this paper was to investigate whether receiving relevant political information can mitigate partisan biases in political perceptions and the formation of policy preferences, particularly in instances where knowledge gaps or widespread misperceptions exist. In order to address this topic, subjects were randomly assigned to treatment and control groups in an online survey experiment. Participants answered questions indicating their knowledge of factual matters on the topic of immigration—a controversial subject matter around which there are widespread misperceptions and lack of information. They also answered questions about their attitudes and policy preferences. Those in the treatment group received an article providing factual, unbiased information about US immigration before answering some of the questions in the survey. The results revealed that respondents update their factual beliefs after receiving information, however the receipt of information alone does not influence attitudes and policy preferences. When information interacts with partisanship, shifts in attitudes and preferences are observed.

The Effect of Economic Scarcity on Culpability-Based Racial Bias
Peter Jin, Economics, Psychology
Sponsor: Professor David Amodio, Psychology

In times of economic recession, African Americans suffer more than other racial group members. Previous research investigating the underlying causes of this phenomenon suggest that racial majority group members may view racial minorities in more biased ways during times of economic scarcity. However, the nature of this bias remains unknown. In our current study, we hypothesized that the bias triggered by economic scarcity affects perceptions of culpability, such that under scarcity, non-African American are more likely to see African American as more culpable (i.e., deserving of punishment). We tested our hypothesis using a face perception paradigm. We first generated visual representations of African American’s faces for subjects under scarcity or in control condition using a reverse correlation method. Subsequently, we asked a new group of subjects to rate these faces on indices of perceived culpability. We found that the faces created by subjects under scarcity were generally rated as more culpable than those created by subjects in control conditions, which supported our hypothesis. We believe the result from our current study will enable future researchers to more fully address intergroup bias during future economic recessions and ultimately mitigate exacerbated inequalities between racial groups in such contexts.

Re-Entry in New York City: A Realistic Portrayal of Life Outside Prison
Imani Johnssonm, Africana Studies, Journalism
Sponsor: Professor Lynne Haney, Sociology

My documentary thesis is a profile of a transitional community called Exodus in Harlem, New York. Exodus is operated by mostly formerly incarcerated people in order to provide services and necessities to people returning home from prison. They also serve the community as an Alternative to Incarceration program, which prevents hundreds of 14- to 28-year old youth from spending time in prison. My documentary focuses specifically on the mentor programs that Exodus provides for both youth on parole or probation and youth in vulnerable neighborhoods to reduce their risk of entering the system. The mentors are all previously incarcerated and are considered credible messengers. They are considered credible due to their life experiences and are praised as the best suited people to help stop the cycle of mass incarceration. This documentary tells the stories of Exodus mentors Sade Dixon and George Bailey. It was found that not only does their mentorship provide a real connection to youth that helps them stay out of jails and prisons, but being a mentor uplifts them as previously incarcerated and aids in the transition of reentering society. George and Sade both had a difficult time looking for employment after being incarcerated. They were both barred out of the formal economy because of their felony convictions, however were uplifted and empowered by their experience of navigating the justice system. They were hired for the same reason many employers would not give them a serious chance. Being a mentor is as much of a tool to stop recidivism as receiving the resources a mentee would. Doing this work helps the mentors to heal from the trauma of incarceration and ease their transition back home.

Before and after the Brexit Vote: European Union Voting Cohesion in the United Nations General Assembly
Ziva Luddy Juneja, International Relations, Journalism
Sponsor: Professor Amanda Kennard, Politics

The unprecedented outcome of Britain’s Referendum on European Union (EU) membership in June of 2016 brought on vast speculation about the supranational bloc’s future. Commentators have gone so far as to posit the “End of Europe,” highlighting similar anti-establishment and anti-immigration sentiments in other EU member states to those which produced the referendum outcome. Some propose that the Brexit vote has weakened Brussels’ central authority over EU membership. Yet, there is little systematic evidence of how the vote has shaped the behavior of other member states. To assess the effect of the
Brexit vote on the EU, this paper focuses on evaluating the bloc’s major aim of coherence as an international actor through a measurement of EU voting cohesion in the United Nations General Assembly (UNGA). Specifically, using a difference-in-difference technique to study votes cast by EU member states on UNGA resolutions before and after the Brexit vote, this paper tests the hypothesis that EU voting cohesion levels have decreased significantly in issues of importance to Brexit’s “Leave” campaign relative to others since the referendum. Results show that the Brexit vote caused a significant decrease in EU voting cohesion on highly contested issues in external policy. This suggests a raised incentive for country-level deviation from Brussels, which poses a threat to the bloc’s overall legitimacy like current discourse would suggest. Finally, this study presents the need for further research into methods of measuring EU influence so that such causal inferences can be cross-checked.

**Listener’s Perception of Speech Errors in Children**
Seyoung (Lanie) Jung, Communicative Sciences and Disorders
Sponsor: Professor Maria Grigos, Communicative Sciences and Disorders, Steinhardt School of Culture, Education and Human Development

Auditory perception is an essential tool used by speech language pathologists to judge speech errors during the assessment and treatment of children with speech sound disorders. It can take years of training, however, for clinicians to adequately refine their listening skills to accurately and consistently identify fine details in errored speech. To better understand auditory perception skills in inexperienced listeners, this study examined the reliability of graduate student clinicians judging speech errors in children. The graduate students listened to single words produced by children with typically developing speech and language skills as well as children diagnosed with a speech sound disorder. They rated the productions using a three-point scale ranging from 0–2, where “0” was an accurate production, “1” was a close approximation and “2” was an inaccurate production, as this method of rating has been used in prior research to assess child speech. Graduate student ratings were compared to those by experienced speech language pathologists. On average, graduate student clinicians reached substantial agreement with the expert ratings. In addition, students reached the highest reliability when rating accurate productions and the lowest reliability when rating inaccurate productions. These results support the use of a three-point rating scale with graduate student clinicians and highlight the need for students to receive perceptual training as part of their graduate coursework to refine their clinical judgements.

**JFK and Obama: Rhetorical Similarities in Foreign Policy**
Charlotte Kahan, Public Policy
Sponsor: Professor Timothy Naftali, Public Policy

Although the presidencies of John F. Kennedy and Barack Obama were separated in time by half a century, they utilized particular patterns of diplomatic rhetoric and oratorical flourishes as strategic tools in foreign affairs. Close readings of speeches delivered by Kennedy and Obama during their respective administrations reveal striking similarities in their approaches to international relations. The two presidents conveyed a stubborn idealism and commitment to peace. While evidencing cautious skepticism regarding American involvement in a tangle of commitments abroad, they nevertheless embraced a vision of globalism and common humanity over isolationist nationalism. Their speeches were aspirational yet realistic, idealistic yet pragmatic. Stylistically, Kennedy and Obama also made extensive use of alliteration, anaphora and other
rhetorical devices in their addresses to inspire and arouse a
global consciousness; their prose was often distinctly po-
etic and represented a call to higher ideals. Just as Obama
extended an olive branch to the Muslim world in 2009 in
his first speech abroad by appealing to shared values and
goals, so too did Kennedy in his commencement address
at American University nearly five decades prior in which
he expressed the necessity of peace and emphasized the
universal threat of nuclear warfare to humanity. As they
grappled to handle international crises and define the
role of the United States as a global power, Kennedy and
Obama conveyed a clear and markedly similar dedication
to liberalism and peace around the world.

Educate Her: Women in China and the Legacy of the
One Child Policy
Rebecca Kao, International Relations
Sponsor: Professor Amy Catalinac, Politics

Following the Cultural Revolution, the Chinese
government implemented the One Child Policy (OCP) in
October 1979 and claims the policy was responsible for
preventing 400 million births and significantly decreasing
population growth. This fundamental reshaping of family
structure in China, where multiple-children households
were previously the norm, has profound implications for
the population, especially for women. Meanwhile, in re-
cent decades, China has experienced a rapid increase in
female education and a convergence of the gender gap
in education. Within this context, the following research
question, which forms the quantitative core of this proj-
et, is posited: did the implementation of the OCP, which
limited families to having one child and was most strictly
enforced in urban areas, have a positive, negative, or no
impact on the level of education that women attained? Util-
izing China Household Income Project data from its 2013
survey wave, the causal relationship between the OCP and
female education was examined through a quasi-experi-
mental regression discontinuity design, which randomizes
observations around a known cutoff point and controls for
all alternate causes and problems of endogeneity. Through
this research design, the findings indicate that the OCP did
have a positive impact on women’s education, while pro-
ducing an opposite, negative impact on men’s education.
These results were corroborated with secondary measures
in order to investigate the OCP’s long-lasting impacts on
Chinese women’s lives and their positioning in Chinese
society.

Feminist-Branded Commodities and Capitalist
Constraints
Lindsay Karchin, Individualized Major
Sponsor: Professor Louise Vasvari, Linguistics

This paper addresses the commodification of the
subversion of women’s language at Bulletin, a female-run
company that features products by female-owned brands
and donates ten percent of their in-store profits to Planned
Parenthood. While scholars including Zeisler (2016), Hunt
(2017) and Goldman et al. (1991) have written about the
commodification of feminism through marketing cam-
paigns and advertising, there is limited scholarship on the
ways in which the language featured on feminist-brand-
ed commodities directly subverts stereotypical women’s
speech. Through interviews with Bulletin employees and
partners as well as through an analysis of Bulletin’s prod-
ucts, the following five elements that suggest the subver-
sion of women’s language were examined: 1) profanity; 2)
the celebration of female sexuality; 3) reclaimed semantic
derogation; 4) the explicit rejection of societal expecta-
tions of women; and 5) humor. It was concluded that the
commodification of this language through the sale of
feminist-branded products succeeds in supporting female
entrepreneurship but ultimately does not accomplish its
disruptive goals in the political sphere.

Politics and Private Life: American Voters’
Conceptualization of Boundaries in the Social Media
Era
Eden Keig, Sociology
Sponsor: Professor Ruth Horowitz, Sociology

Today, some American political candidates choose
to live-stream their breakfasts, their morning jogs and their
dentist appointments. Whether one cares to tune in or not,
it is clear there has been a marked change from eras past
when politicians’ personal matters including FDR’s para-
lysis and JFK’s mistresses were rarely even discussed. By
conducting a series of in-depth qualitative interviews with
American voters born before and after 1980, this study
aims to illuminate the differences and similarities between
how digital natives and non-digital natives conceptualize
their politicians’ right to privacy or lack thereof. Here it
is argued that the symbolic boundary between public and
private information about politicians’ lives has blurred
with the popularization of internet and social media use
as the data suggests that voters who were born after 1980
perceive a weaker or more porous boundary than those
born before 1980 do. Although respondents from both age
groups admitted to wanting to know information about
politicians’ private lives, voters that grew up with the inter-
net expressed less hesitation when declaring their desire to
cross that boundary than older voters did.

Media Discourse Analysis on Female Political
Candidates in Local Elections in Iowa
Lexi Kennard, Social and Cultural Analysis
Sponsor: Professor Renée Blake, Linguistics, Social and
Cultural Analysis

This thesis examines the linguistic discrepancies in
the coverage of women running for local elected office in
Iowa compared to men. By conducting a sociolinguistic analysis in the media coverage of three specific state level races in the 2018 midterm election in Iowa, this study uncovers how women are treated differently by seemingly “objective” reporters. The three-month period before the election and the two days after were studied to discover discrepancies in the coverage for all three women candidates when compared to the men they were running against. By creating an archive of television and print coverage from specific local news sources and developing a standardized linguistic framework for analysis, the author rated the neutrality of the published news items for each candidate based on a multi-part standardized test and found differences in coverage for the women candidates. This thesis proves that there were significant discrepancies in the women’s coverage that placed them at a disadvantage. By recognizing the differences in coverage of women and men, at a minute level, it is possible to have a greater understanding of why women continue to under populate political spaces.

To Lessen the Learning Gap: How Parental Literacy and Socioeconomic Status Affect Children
Pragati Khandelwal, Language and Mind
Sponsors: Professor Lourdes Dávila, Spanish and Portuguese; Dr. Anne Seery, NYU School of Medicine

Poverty affects how children grow and develop, especially in cognitive development and language acquisition. Children who come from economically disadvantaged backgrounds and families generally enter school, as early as kindergarten, at a lower level of readiness and literacy than do their more affluent counterparts. The Bellevue Project for Early Language, Literacy and Education Success (The BELLE Project) at Bellevue Hospital investigates this phenomenon, and practices methodological interventions to alleviate this disparity. Data was collected through interviews, psychological screenings and self-assessments and video recordings of mother-child interactions. Rather than simply catalogue these systemic disparities, this study also implements behavioral methods to bridge the learning gap, educating both parents and children and helping to improve their cognitive and literacy abilities. This is done through the lab’s three initiatives—SMART Beginnings, the Video Interaction Project, and the Family Check Up Program. The families/participants of the study stay with the program from the child’s birth until the child enters the first grade. Researchers of the study continue to gather data through literacy testing, cortisol testing and cognitive tasks to assess the child’s development. Comparing this data against that of the families in the control group can assess how useful the lab’s interventions are in accomplishing their goal. Though this longitudinal study is still in progress, and no definite conclusions have been made, the program has received outstanding feedback from the families involved, who have already begun to see the difference it is making in their lives.

Changes to Perceptual Assimilation following Training
Julia Kharlamenko, Communicative Sciences and Disorders
Sponsor: Professor Susannah Levi, Communicative Sciences and Disorders, Steinhardt School of Culture, Education and Human Development

Learning to perceive the speech sounds of a second language is difficult for adult learners and is heavily influenced by the speech sounds of their own native language. One method to improve the perception of nonnative speech sounds is through perceptual training. In the current study, two groups of native English listeners were trained to learn the French vowels /œ-œ/. The difference in training among these two groups was in how often they heard different versions of those sounds. To see how perceptual training impacts the way nonnative speech sounds are mapped onto native sounds, the two trained groups and a third untrained (control) group completed a perceptual assimilation task, in which they heard French vowels (/œ-o-i-y-ɛ-u/) and were asked which English vowels were the closest match. Results showed perceptual learning for the French vowel /œ/, in which both trained groups differed from the control. However, for the French vowel /œ/, one group of trained listeners differed more from the untrained control group, suggesting that this method of training may be especially useful for individuals learning sounds in a second language.

The Effect of Smiling on Fluctuating Facial Asymmetry and Facial Attractiveness Ratings
Jinmu Kim, Psychology
Sponsor: Professor Lawrence Ian Reed, Psychology

Attractiveness is a multifaceted construct that has been deeply researched. Studies have shown the influence of factors such as facial expressions of emotion and facial symmetry on perceived attractiveness levels (Grammer and Thornhill 1994; Perrett et al., 1999). In particular, smiling has been shown to increase rated attractiveness as well as other qualities such as sincerity and competency (Reis et al., 1990). Perhaps smiling influences fluctuating facial asymmetry in such a way that it is temporarily decreased for the duration of the smile, thus creating a more attractive appearance. This current study will examine the link between smiling and fluctuating facial asymmetry measurements in the context of attractiveness. By comparing pictures of smiling and neutral stimuli, it is expected that smiling faces will have lower fluctuating asymmetry levels than neutral faces. Furthermore, it is expected that the smiling faces will be viewed as more attractive than the neutral faces. Together, these expected findings suggest that smiling lowers fluctuating facial asymmetry levels, which in turn increases perceived attractiveness. We dis-
cuss the implications of these results for how asymmetry may play a role when some developmental design is upset.

Risk and Responsibility: The Use of PrEP by Young Men Who Have Sex with Men (MSM) and Collapsed Categories

Colin Kimberlin, Global Public Health/Anthropology
Sponsor: Professor Helena Hansen, Anthropology

Medical discourses surrounding human immunodeficiency virus (HIV) prevention have engaged both contemporary science and politics of new prevention methodologies in a mutually stabilizing process to reaffirm the categorization of men who have sex with men (MSM) as “risky” by clinical designation. In understanding how pre-exposure prophylactic (PrEP) exists as a novel HIV prevention tactic, public health literature sets the background for this medical anthropology research aimed at investigating: 1) how scientific knowledge about prophylactic use is presented to users, 2) if there is any contention to such presentation of knowledge, and 3) how such knowledge is subsequently translated by users. These questions were investigated through ethnographic work conducted over a series of semi-structured interviews with 10 informants/participants who currently utilize PrEP or who have stopped using PrEP within the past 6 months. These interviews contested current public health paradigms established by clinically informed HIV prevention strategies. Such contention dissects how PrEP solidifies logic models linking high “sexual risk” with MSM, and how the use of PrEP generates new patterns of negotiating risk and pioneering novel subjectivities mediated by such pharmaceutical intervention.

Mixed Methods Study on Students’ Preferences for a Culinary Nutrition Program

Jennifer Kleiman, Nutrition, Psychology
Sponsor: Professor Jessica Bihuniak, Nutrition and Food Studies, Steinhardt School of Culture, Education and Human Development

College students are at risk for obesity and its associated health complications. Prior work has shown that one of the primary obstacles faced by students with overweight/obesity is a lack of confidence in meal planning and production. The goals of the present study were to assess cooking skills and behaviors of students with overweight/obesity and evaluate their interest in and preferences for a culinary-focused weight loss program. NYU and LCC students with overweight or obesity (BMI > 25), ages 18–24, were recruited. Participants completed a Qualtrics survey that included a culinary program preference questionnaire and the Cooking Behaviors Subscale; those who scored in the lowest quartile of this subscale were invited back to participate in focus groups. Most of the 91 students (19.6±1.6 years; BMI 31.7±5.6) who completed the Qualtrics survey reported interest in a culinary intervention program (NYU 68%, LCC 68%) with a nutrition-focused culinary education component (NYU 82%, LCC 59%). The majority of participants from both institutions expressed interest in a weekday program (NYU 68%, LCC 63%) led by both a student and a professional (NYU 52%, LCC 49%) with a total duration of 6 weeks (NYU 50%, LCC 39%). NYU students preferred a class duration of 1 hour per week (42%), while LCC students preferred less than 1 hour per week (46%). Information gained from the focus groups (such as current barriers to meal planning and specific skills students wish to learn) will be used to further develop the intervention programs.

Against All Odds: Farm Worker Organizing in the United States

Grace Klein, Metropolitan Studies
Sponsor: Professor Andrew Ross, Social and Cultural Analysis

How do workers fight for their autonomy after systematic exclusion from labor legislation leave them vulnerable to workplace abuse and without the right to recourse through collective bargaining? This thesis explores the nature of agricultural labor organizing as implemented by the United Farm Workers of America (UFW) in their 1965 Delano Grape Strike and the Coalition of Immokalee Workers (CIW) through their Campaign for Fair Food. Although classical labor theorists have often speculated that so-called “unskilled” workers would never move past bread-and-butter workplace issues to question and threaten larger mechanisms of control, examination of both the UFW and CIW shows the fundamental focus of shifting workplace power in farm worker labor organizing. Precisely because of the agricultural exclusions in labor laws like the Fair Labor Standards Act of 1938 and the National Labor Relations Act of 1935 that do not guarantee farm workers access to overtime hours or collective bargaining rights, farm workers’ labor organizations have had to be militant, adaptable and place far-reaching issues of workers’ rights at the forefront of their struggles.

Resistance versus Nonresistance

Prianka Koya, Psychology
Sponsor: Professor Jay Van Bavel, Psychology

According to Pettit and Knobe (2009), judgments of whether or not someone acts intentionally may be influenced by how the action is perceived from a moral standpoint. However, researchers have yet to analyze the way people distribute the responsibility for an immoral action among multiple actors who take on different roles.
when implementing the action. We used original footage of the Milgram experiment on obedience to authority figures and slightly edited the footage in a way that either emphasized the participant’s resistance when administering the shocks or his compliance with the experimenter’s orders to shock the learner. Participants watched one of the two versions. Afterwards participants attributed responsibility to each actor for the ostensibly caused harm to the learner. We hypothesized that participants will attribute relatively more responsibility to the experimenter when the teacher was resistant while they will attribute relatively more responsibility when the teacher is nonresistant.

The Electoral Effects of Local Immigration Enforcement
Nicolas Kugel, Politics
Sponsor: Professor Christopher Dawes, Politics

Significant attention has been paid to the ways in which public opinion shapes patterns of immigration enforcement in the United States. Little has been done, however, to determine what effect, if any, enforcement has on public opinion toward immigrants. To explore this relationship, a difference-in-differences design was employed to determine the effect of detainment facility-use by immigration enforcement agencies on the rate at which residents of a county vote for the Republican candidate for president between 1980 and 2016. In order to track the geographical presence of immigration enforcement agencies, the author used a list of all facilities Immigration and Customs Enforcement (ICE) and its predecessor agency, the Immigration and Naturalization Service (INS), have used since 1980, obtained through a Freedom of Information Act Request by the National Immigrant Justice Center (NIJC). Contrary to expectations the recent rise of anti-immigrant rhetoric and policy would prime voters to support punitive immigration policy, it was concluded that when the issue becomes localized and ICE or the INS initiated use of a facility in a county, Republican vote-share will decrease when controlling for demographic traits which tend to influence party support. Additionally, each subsequent facility in a county has a significant, though smaller, negative effect on Republican vote-share. Potential socio-cultural explanations for this result are then explored to investigate the link between the presence of immigration enforcement and decreased support for the Republican Party.

No Heat, No Water in the Upper East Side:
Documenting the Fall of New York City Public Housing through the Lives of Its Tenants
Ian Kumamoto, Global Liberal Studies, Journalism
Sponsor: Professor Brooke Kroeger, Journalism

The thesis investigates how the current $32 billion deficit plaguing the New York City Housing Authority, or NYCHA, has affected public housing tenants as their buildings deteriorate and their social services dwindle (Ampron-Samuelsen and Torres, 2018). Over the course of eight months, the author interviewed fifty-three public housing residents from a variety of backgrounds across four boroughs and seven developments, documented their living conditions and asked them questions about their experiences in public housing. The thesis focuses primarily on the lives of an elderly tenant and a mentally ill resident in Manhattan; nearly 20 percent of all public housing residents are over sixty years of age, while nearly one quarter of tenants in some buildings suffer from mental illness (Parton, Greene et al., 2011). The thesis finds that while several beneficiaries are spared from homelessness through NYCHA, the often poor living conditions they endure are testament to the city’s inability to care for its most vulnerable low-income residents.

Intergenerational Perceptions of Mental Health among South Asian Immigrants
Surya Kumar, Biochemistry, Sociology
Sponsor: Professor Ruth Horowitz, Sociology

This project examines how perceptions of mental health among South Asian immigrant parents compare to those of their college-aged children. It was initially hypothesized that the parents would hold onto “traditional” South Asian attitudes towards mental illness—which conceptualize it as something shameful to be kept under wraps—while the young adults would espouse the Western notions that mental health is best dealt with by seeking professional help. However, interviews reveal that both the parents and young adults hold similar, Western views of mental health. It appears as though a “bottom-up” educational approach challenges the parents’ more traditional views; when the young adults experience mental illness, they tell their parents how they are feeling and explain that they need professional help. As sympathetic parents, this, in turn, encourages the parents to align their views with the young adults.
Abstraction and Illusion: Getting a Closer Look at Top-Down Processing
Adi Kwiatek, Psychology, Sheryl Zhang, Psychology
Sponsors: Professor Yaacov Trope, Psychology; Ethan Ludwin-Peery, Psychology

Construal Level Theory (CLT) proposes that scope, abstraction and several similar concepts are closely related to one another, synthesizing forms of uncertainty under the metaphor of “psychological distance” (Liberman and Trope, 2014; Trope and Liberman, 2010). Additionally, the “predictive coding” approach proposes that systems model predicts their inputs for efficient processing. At each layer, top-down expectations from the model above is compared to a set of new bottom-up evidence—attempting to come to an agreement about the state of the world in the “perceptual handshake” (Kleinschmidt, Sterzer et al., 2012). The theory is consistent with many traditional visual illusions studied in psychology (e.g. Muller-Lyer, 1889). If the predictive coding account is an accurate model of how we use abstraction to interpret and interact with the world, then we should find it to be consistent with what we already know about abstraction. In our research we have examined the effect of construal manipulation on the use of bottom-up and top-down processing. In order to test this, we manipulated the perceived distance of a figure in a scene and found its effects on the perceived strength of a Filled Space Oppel-Kundt (FSOK) illusion as an operationalization for bottom-up processing. We found an increased illusion strength when the figure is perceived as further away in space—an effect of the increased level of spatial abstraction.

Reconciling Muslim American Identity Growing up in a Post 9/11 Era
Natasha Ladhani, Social and Cultural Analysis
Sponsor: Professor Crystal Parikh, Social and Cultural Analysis

The history of Muslim oppression in America resides in policy, the coded language of terrorism and an overarching narrative of Muslims being an other in American society. This othering is reinforced by the lack of representation of Muslims in mainstream society. The narrative of Islam is rarely controlled by Muslims, but through an ethnography, the author focuses on how American Muslims describe their experience. The study aims to inspire these participants to explore and frame how they view their identity, especially given the recent emergence of Muslims in mainstream media. From the basis of how they identify and what labels they use and why, going into how their navigation has progressed and changed over the years. Invoking self-reflection for Muslim Americans to understand their reconciliation of belonging in these communities would begin to heal the wounds of isolation from national and religious identity. Furthermore, it would allow for insight into the repercussions of Islamophobia, not for the physical safety of Americans but in terms of the emotional safety and well-being of Muslim Americans.

Separate and Not Equal Schools: New York City’s Specialized High School Reform and the Chinese-American Response
Carolyn Lau, Metropolitan Studies
Sponsor: Professor Dean Saranillio, Social and Cultural Analysis

This paper analyzes how Chinese-Americans have responded to the debate over the New York City’s Specialized High School admissions process, a test-based pathway to New York’s most-coveted, top-ranked public high schools. To answer this question, the author examined the history of segregation in the New York City public school system and how that is directly tied to the Chinese-American response through an analysis of interviews with activists, news articles, social media posts and other forms of online media. Results have shown that Chinese-American neoconservative views and the ethnic group’s support for a test-based admissions policy is overrepresented in mainstream media. Results have also revealed that a test-based admissions system is not conducive to a specialized high school student body makeup that reflects the overall diversity of the New York City population. This study emphasizes the need to take into account the impact of a history of segregation in the overall debate of public school reform.

History and Identity: Media Revival of Sino-Japanese Historical Disputes and the Politics of Ethnic Identity in Hong Kong
Rachel Law, Politics
Sponsor: Professor Anna Harvey, Politics

This study examines the relationship between the revivals of Sino-Japanese historical controversies related to WWII responsibilities, the Diaoyu/Senkaku islands disputes in Hong Kong media and the direction and strength of local citizens’ ethnic identification. More specifically, the questions asked were: does the media revival of Sino-Japanese historical conflicts increase Hong Kong citizens’ strength of identification as a Chinese citizen? What about their strength of identification as a Hong Kong citizen? Using biannual public opinion poll results on Hong Kong citizen ethnic identity over the course of ten years (2008–2017), this study identified a statistically significant, positive relationship between media coverage of these conflicts and the strength of Hong Kong citizens’ national and/or regional identities, with a particularly strong correlation between media accounts that highlight high civilian political participation, for instance anti-Japan demonstrations in cities, and Hong Kong citizens’ strength of national and/or regional identity. At a time when nativist and nationalistic sentiments are both on the rise in the region and around the
The Employment Effect of Minimum Wage on Self-Employers and Unpaid Family Workers

Jae Seung Lee, Economics, Mathematics
Sponsor: Professor Christopher Flinn, Economics

This paper examines the impact of minimum wage on self-employers in the United States. There have been many fruitful discussions on minimum wage since the mid-twentieth century. However, self-employers, one of the most vulnerable demographic groups, are underrepresented in past literature, which largely focuses on teenagers involved in the juvenile legal system. The current research attended to the impact of gender among legal system-involved youth (Lewinsohn et al., 2001). The current research attended to the impact of gender among legal system-involved youth (Scott et al., 2015). Adolescent girls in particular are at higher risk of suicide ideation and attempts both within the juvenile legal system and in the general population (Lewinsohn et al., 2001). The current research attended to the impact of gender among legal system-involved youth.
Predicting Human Decisions in a Sequential Planning Puzzle with Large State Spaces

Yichen Li, Computer Science, Mathematics
Sponsor: Professor Weiji Ma, Neural Science, Psychology; Dr. Zahy Bnaya, General Motors

We study human sequential decision-making in large state spaces using a puzzle game called “Rush Hour”. The puzzle consists of a dense configuration of rectangular cars on a 6x6 grid. Each car moves only horizontally or vertically. The goal is to move a target car to an exit. In a given state (board position), a subject \( n=86 \) could move a car, restart the puzzle or surrender. A move is correct if it reduces the distance (number of moves) to the goal. Using mixed-effects logistic regression modeling, we find that the probabilities of an error, a restart or a surrender are higher if that increase is more or less prevalent in districts an incumbent would perhaps want to gain votes. Results from this study suggest that there is a slight, statistically significant positive relationship between days until an election and response time. For every year closer to an election, response time decreases on average by approximately 3 to 4 days. However, the partisanship of a district is statistically insignificant to response time.

The Myth of the Starving Artist: Affordability Crisis and Survival Strategies
ZiQi Lin, Economics, Journalism
Sponsor: Professor Brooke Kroeger, Journalism

Popular narratives surrounding artists have often gravitated to that of the “starving artist,” a figure who is guided by creative desires rather than practical necessities and concerns. The “starving artist” either lacks knowledge on how to market and sell artworks or refuses to compromise authentic personal expression in favor of material gratification. While this expression has captured certain aspects of artists’ financial situations throughout history, it fails to take into consideration prevailing economic conditions and technological advancements. According to research by the Center for an Urban Future, the creative sector is arguably New York’s greatest competitive edge as it constitutes the largest share of total national jobs across the city’s 20 major industries. My research focuses on innovative solutions that have emerged as a result of high studio and residential rents in NYC. They include the creation of shared studio rentals and membership programs, the prevalence of pop-up art events instead of permanent exhibitions and the formation of crafts villages away from the city for displaced artists. This research and reporting hopes to answer these questions: Are artists young and old struggling with high rents and on the verge of being priced out of the city? Can arts communities and hipster neighborhoods be considered victims of their own success when they invite gentrification which drive the artists out? How are artists utilizing physical and technological resources and how effective are their novel survival strategies?
In the context of a long-term, committed relationship, partners can hold relationship goals that differ in their focus; some goals can be focused on individual-level needs, while others can be focused on the needs of the couple as a whole. Construal Level Theory (CLT) states that an individual’s mental representations of their goals and behavior can be categorized into psychological high-level and low-level mental states that differ in goal representation—ranging from abstract and superordinate (high-level) to myopic and subordinate (low-level) (Trope and Liberman, 2003). In this study, as CLT can account for goal-specific behavior, we used this concept as a framework to understand how partners think about their sexual goals and whether the language they use in describing these goals is reflective of these mental representations. More specifically, I examined whether high-level construal states influence more collectivistic language use when describing sexual goals (we/us), as opposed to individual language use (I/me) in a low-level construal state. By operationalizing goal focus with language usage, I hypothesized an association between individual-focused language use (I/me/my) with a low construal orientation and dyadic language use (i.e. us/we/our) with a high construal orientation in descriptions of sexual goals. Analyses of language abstraction have confirmed a non-trivial variation in pronoun language use (i.e. us/we/our) with a high construal orientation in the written descriptions that may be explained by construal orientation. These findings suggest that construal level orientation impacts language use in describing sexual goals, with high-level states producing collectivistic language, whereas low-level states produce individualistic language.

The End of Life as We Know: Investigating Humanity in Spaces of Medicalized Death
Emma Lockman, Global Public Health/Anthropology
Sponsor: Professor Ranya Rapp, Anthropology

One hundred years ago, life and death were in a seemingly divine hand. In America today, the process and act of dying are deeply intertwined with our medical system. In the ongoing medicalization of death, we have struggled to find the line between too much and not enough medicine at the end of life. This line has been constructed from intricate social and cultural drivers that affect how dying patients, their families and medical professionals all relate to death. Based on guided conversations, interviews and general observations conducted in metropolitan hospital settings, end of life activist groups and upper-class suburbia in the northeast region of the US, this project ex-
amines the ways that we shape death and in turn how death shapes us. Death masked by modern medicine renegotiates ancient, universal practices. Using an ethnographic lens, this study shows how in the sterile, bleak spaces of medicalization, people are searching for space to be human. In these human spaces, death is not dark and morbid. It is a space of deep authenticity and light; places where humans meditate on their most personal meanings of love and completion. These ideas are not new. They are a renegotiation, and rediscovery of humanity in our current time and culture.

The Legacy of Repression: Uncovering the Electoral Effects of Chilean State Violence
Michael Loedel, Politics
Sponsors: Professor Amanda Kennard, Politics; Rafael Ch, Politics

The Pinochet regime, in power from 1973 to 1990, oversaw a period of widespread state terrorism in which over three thousand Chilean individuals were killed or forcibly “disappeared” by the government. The 1991 Report on Truth and Reconciliation, commissioned by then-President Patricio Aylwin, detailed an extensive list of individual incidents of violence. The report provided, among other descriptors, the exact longitude and latitude of 81% of the recorded incidents. QGIS mapping of each incident listed within the report reveals significant spatial variation in the rate of state violence that occurred across Chile, even after accounting for population size. This research utilizes the spatial variation in incidents of violence to assess the effect of state terrorism on right-wing vote share in the 1989 election, the first presidential election to take place in Chile since Pinochet’s ascent to power. By conducting an Ordinary Least Squares regression and a Two-Stage Least Squares regression, this thesis was able to uncover a negative relationship between state violence and right-wing vote share in the 1989 election. The results of this thesis contribute to the preexisting body of research on the relationship between violence and electoral outcomes by confirming that unilateral state violence, much like civil conflict and terrorism from non-state actors, can directly impact elections.

Modern Creative Process of Recording Musicians in the Streaming Age
Miguel Lorenzo, Sociology
Sponsor: Professor Ruth Horowitz, Sociology

The recorded music world is a dynamic and rapidly changing environment where numerous technological innovations have set the stage for lower access barriers toward music creation, music access and distribution. Prior studies have been made that focuses on the impact and transmission of the end music product, the “finished song” within audience networks, but seldom have explored the social relationships in the creation and recording process which predates the release of the product into the listener market. This research focuses on the “artist-side” of cultural production and outlines and analyzes the creator’s “lens,” common practices and habits of early-to-mid level recording musicians who have committed to their practice. Through ethnographic interviews of twenty early-to-mid stage musicians in the New York and D.C. area, the study hints at shared ideals behind the practice of music creation in the early twenty-first century. It reveals the importance of “components” within musical recordings, and suggests a primitive content hierarchy with “sounds-used” being of utmost importance to contextualize the product within a greater, modern listening community. The study also explores the increasing creative independence of modern artists and suggests a fundamentally different creative network structure than prior music eras.

Influence of Social Stress on Decision Making under Uncertainty
Arlene Lormestoire, English, Psychology
Sponsor: Professor Elizabeth Phelps, Psychology

Everyday stressors often arise in social contexts that do not offer the decision maker enough information to determine the likelihood of an outcome. Risk and ambiguity, two types of uncertainty, do not provide information about future outcomes. Risky decisions have a known probability distribution of possible outcomes, while ambiguous decisions do not disclose these probabilities at all. Previous research has established the modulatory influence of emotion on subjective value or how valuable an option is to an individual, under risk and ambiguity using physiological arousal. Although arousal—a multifaceted indicator of emotional intensity—has been linked to decision-making under uncertainty in the past, it remains unclear how it predicts such decisions in social contexts. To examine this relationship, participants underwent a psychological stressor, the Trier Social Stress Task (TSST), or a control condition. Next, participants completed a gambling task that featured a variation of monetary amounts on lotteries that revealed either the full (risk) or partial probability (ambiguity) of winning that amount. We assessed levels of cortisol at various points throughout the task; additionally, we measured arousal levels by assessing pupillary response. Subjective value was examined using a computational model to account for participants’ choices per trial as a function of ambiguity level, probability and reward amount. Across both groups, there was no significant difference in gambling behavior across uncertainty types. These findings suggest that arousal, when regulated by social stress, does not induce behavioral differences in decisions made under uncertainty.
Sustainability in the Fashion Industry
Shirley Luk, Environmental Studies
Sponsor: Professor Jennifer Jacquet, Environmental Studies

Fast fashion has emerged in upper middle-class markets worldwide as an inexpensive way for the average consumer to purchase the glamor and trends associated with the fashion world. However, the 52 micro-seasons of clothing from some brands, such as H&M, Zara and Mango, have led to serious environmental impacts, including the pollution of local water sources through the release of untreated chemical dyes, the millions of tons of textile waste from clothes that have outlived brief fashion trends and the energy-intensive process of mass manufacturing, which has implications for greenhouse gas emissions. In the past few decades, increased awareness of social and environmental issues has brought attention to overconsumption patterns in the fashion industry, especially in fast fashion. In this study, content analysis is used to compare the 2017 sustainability reports from ten global fashion companies, particularly noting their drivers, practices and self-reported performance. I highlight differences and similarities in approach between fast fashion and slow fashion companies that have made a commitment to sustainability. These findings are then placed into the context of recent news reports that have surfaced regarding ethical or environmental controversies certain companies have been involved in, providing an opportunity for discussion on the potential disconnect between talk and action. Demand is changing as consumers have become more conscious of sustainability in their wardrobes, and although fast fashion companies claim to be incorporating sustainable measures into their brands, more work is required to ensure transparency in reporting and that there is reliable evidence to support companies’ claims.

Justice Discouraged: The Effects of Anti-Immigration Presidential Rhetoric on Sex Crime Report Rates among Immigrant Populations in NYC
Kate Maguire, French, Politics
Sponsor: Professor Christopher Dawes, Politics

Over the past year, New York City has experienced a notable drop in crime rates. From 2017 to 2018, murders decreased 36%, shootings decreased 8% and burglary, robbery and felonious assault collectively dropped 4%. These declines, however, are counterbalanced by one genre of crime that is ever-rising: rape and sexual assault. Dermot Shea, the head of New York City’s Office of Crime Control Strategies, speculates that the increase in sex crime report rates is due to the #MeToo movement and high media attention paid to sexual assault, which peaked during President Trump’s first year in office. But has the strength of the #MeToo movement and all its media attention also incited people from marginalized communities to increase report rates as well? Using the microcosm of New York City, one of the nation’s most diverse metropolises, my research seeks to answer the following question: Are non-citizens as comfortable reporting sex crimes as citizens reporting the same? And have sex crime reporting trends among immigrant communities changed with the presidential administration’s continued anti-immigration rhetoric? This paper provides data-driven insight into how a president’s words and policies, whether they are actual policy shifts or mere oratory, can escalate feelings of fear and anxiety that decrease reporting rates. After a thorough examination of existing literature, I use American Community Survey (ACS) and New York City Police Department (NYPD) Open Data to arrive at my conclusion.

Semantic Predictability and the Use of Creaky Voice in Female Speakers
Stefania Marchitelli, Communicative Sciences and Disorders
Sponsor: Professor Susannah Levi, Communicative Sciences and Disorders, Steinhardt School of Culture, Education and Human Development

In recent years, a particular mode of phonation, often referred to as creaky voice or vocal fry, has received considerable attention in the media. Various media outlets suggest this mode of phonation has recently begun to enter people’s stylistic way of engaging in conversational discourse due to celebrity influence (e.g., Britney Spears, the Kardashians). The purpose of this study was to investigate the prevalence of creaky voice in sentence-final position as a function of semantic predictability of the final word. If speakers were concerned about clarity of their speech, they may be less likely to use it in sentences with little semantic support (e.g., “Mr. Black knew about the pad” compared to “Tear off some paper from the pad”). In the current study, 11 young female speakers without any vocal pathologies produced sentences from the Speech Perception in Noise (SPIN) test. Fourteen final words that appeared in both high and low semantic predictability sentences were selected for analysis. Three outcome measures were examined for these final words: presence versus absence of creaky voice, duration of creaky voice and type of creaky voice. Contrary to our expectations, the results indicated that semantic support does not significantly predict the existence, amount or type of creaky voice used in young female speakers.

Between Frequency and Success: Examining the Supply-Side of International Conflict Mediation
Alyssa Marshall, International Relations, Middle Eastern and Islamic Studies
Sponsor: Professor Amy Catalinac, Politics

Much of the current literature on mediation focuses on the success rates of mediation across various types of
conflicts, actors and circumstances; however, there is a noticeable lack of information, both theoretical and empirical, on what causes states to mediate in the first place. There exists a great deal of work on what the “ideal mediator” looks like—that it is democratic, impartial, resource rich, to name few—though states that do not fit these descriptions often successfully participate in mediation efforts nonetheless. This thesis explores the reasons why some countries participate in mediation more frequently than others and the characteristics which make certain states mediate with more likelihood. Once this is determined, the thesis delves into whether the characteristics that predict frequency are the same characteristics that predict success. I ultimately conclude that these two sets of characteristics often do no match up, leading to the observation that the states which mediate with higher frequency are often not the states which experience the most success in mediation.

An Investigation of Industrial Composting in New York City
Delaney Martin, Environmental Studies, Mathematics
Sponsor: Professor Jennifer Jacquet, Environmental Studies

Composting is often touted as a successful strategy for mitigating multiple issues related to waste, and much literature has been published about these benefits. For example, composting offers solutions for food packaging, as organic food waste is more likely to be diverted from landfill if it is in compostable packaging. Yet, because compostable food packaging requires different processing mechanisms and specialized machinery, the industrial composting industry is often underdeveloped or not fully optimized in regions where establishing new facilities is difficult due to factors like population density, land scarcity and residents’ concerns about proximity to waste processing plants. In New York City specifically, there is also a lack of information about these facilities, which often manifests in parties shifting responsibility for this waste down the line until accountability vanishes, exacerbating existing issues and thwarting improvement of this process. Researching this industry further can provide insight for improving and ultimately optimizing these processes and can elucidate potentially valuable solutions or applications to other systems. This study compares messaging of industrially compostable packaging to actual disposal of this packaging to determine whether the messaging food service retailers send to consumers accurately reflects their commitment to waste issues. Using content analysis of various food service retailer’s branding of their waste disposal practices as well as interviews conducted to determine the level of knowledge food service retailers have about their company’s waste disposal practices, this study assesses whether these food service retailers’ branding of waste disposal practices align with the reality of these practices.

The Role of Non-Medical Personnel during Childbirth
Carlee McGee, Sociology
Sponsor: Professor Ruth Horowitz, Sociology

Doulas are birth workers without formal obstetric training that assist women during pregnancy, childbirth and beyond. Doulas have become an increasingly popular mechanism to combat the rising infant and maternal mortality rates for Black women in America caused by systemic racism. This is a qualitative study that explores how doulas perceive their role and how they use their positioning at the intersection of the medical and social worlds in order to dismantle inequalities and de-medicalize childbirth, back to a physiological process. I argue that the role of doulas varies by the race of the doula and the race of the client, with doulas of color being more likely to adopt a birth justice framework for their clients and participate in birth justice related activism because of their “outsider-within” status (Collins, 1986). Thus, there is a class divide between doulas of color and White doulas, since doulas of color are more likely to have low income clients of color that need them to take on the role of an advocate.

Growing Resilience: Management and Meaning in Loisaida’s Community Gardens
Gabrielle Mendelsohn, Environmental Studies
Sponsor: Professor Jennifer Jacquet, Environmental Studies

Since the birth of the community garden movement in the 1970s, gardens in New York City have served as restorative spaces for the communities that steward them. The Loisaida neighborhood in the Lower East Side, where the first community garden was formed, contains the highest density of gardens in the city and remains an active gardening community. Community gardens are vulnerable to various socio-ecological threats as climate change increases risks of extreme temperatures and flooding, particularly for these coastal communities, and as community compositions continue to shift due to constant real estate and development pressures. However, despite the internal and external challenges gardens face, these community-managed green spaces persist and continue to provide services to communities that often lack access to them elsewhere. The political and ecological narrative for these gardens suggests that the management of these spaces can influence the social and ecological benefits they provide, and in turn may be a determinant of their ability to be resilient in the face of obstacles. The mechanisms for knowledge-sharing and the processes for decision-making are core to how management is shaped and practiced by members of the garden. Therefore, through the lens of the
city as a socio-ecological system, this research will study how the management of community gardens in Loisaida is a determinant of its social and ecological benefits. Furthermore, through semi-structured interviews and a documents review, this study will attempt to determine how social meaning is created and leads to different forms of management and resilience.

The Impact of Civil War Ex-Combatants on the Communities They Inhabit
Sara Méndez, International Relations
Sponsor: Professor Amy Catalinac, Politics

Current research on the success of reintegration programs and the odds of recidivism among civil war ex-combatants is largely based on analysis of survey responses and other sorts of inherently subjective data. I seek to deepen our understanding of this subject by studying the relationship between the presence of civil war ex-combatants and the occurrence of violent crime in Colombian municipalities. To strengthen the validity of my results, I conduct a micro-level analysis of strictly quantitative data and show that Colombian municipalities with higher levels of ex-combatant presence tend to experience higher rates of certain types of violent crimes. I conclude with an effort to portray the highly complex nature of the civil conflict in Colombia and argue for the importance of keeping an open mind and considering various perspectives before placing the responsibility of this outcome on any one group involved.

The Efficacy of Mental Contrasting with Implementation Intentions in the Improvement of Mood
Ashley K. Meyer, Psychology
Sponsors: Professor Lawrence Ian Reed, Psychology; Professor Gabriele Oettingen, Psychology

Depression is associated with decreased mood and difficulties in performing goal-directed behavior. Mental Contrasting with Implementation Intentions (MCII) has been shown to facilitate the attainment of goals and promote active self-regulation. However, no research has examined whether MCII improves mood. Here, we examined the efficacy of a streamlined four-step version of MCII (Wish, Outcome, Obstacle, Plan), in the improvement of mood within a non-clinical sample. One hundred and sixty participants were randomly assigned to the MCII (experimental) or indulging (control) condition. Changes in mood were assessed after one week. Positive mood increased in both the MCII and indulging control conditions, while negative mood decreased in the indulging condition. We discuss the implications of both conditions in improving mood over momentary and extended time periods.

Abnormal Neuronal Motor Preparation in Patients with ASD and Symptoms of ADHD
Marta Migó, Drama, Psychology
Sponsor: Professor Francisco Castellanos, Child and Adolescent Psychiatry, NYU School of Medicine

Autism spectrum disorder (ASD) is a common neurodevelopmental disorder with motor impairments as a common problem that is pervasive across ages. Biomarkers for ASD have not yet been discovered. Here we examined the Lateralized Readiness Potential (LRP), neurophysiological signals prior to the onset of voluntary motor activity, to assess the motor preparation response that may contribute to the behavioral profile of ASD. Many patients with ASD (30–50%) are comorbid for Attention-Deficit/Hyperactivity Disorder (ADHD); however, the effects of ASD and ADHD comorbidity on untriggered motor predictive neuronal processes have not yet been studied. The present study examines neurophysiological preparation of untriggered voluntary motor activity in patients with ASD displaying a range of ADHD symptomatology. A sample of 16 typically developing (TD) controls, and 16 ASD participants (ages 8–17) was studied in a simple button-pressing task. As hypothesized, our results suggest that ASD is associated with atypical motor preparation and that ADHD symptoms are associated with longer motor preparation periods. Confirmation of these results could reveal LRP to be a biomarker potentially useful for assessing ASD and stratifying ASD in relation to ADHD comorbidity.

Can Infants Categorize Simple Visual Forms?
Olivia Miller, Psychology
Sponsor: Professor Moira Dillon, Psychology

By their first birthday, infants are capable of grouping objects into broader, more abstract categories based on shape or function. Objects are entities that follow specific physical principles: they move as cohesive wholes; move separately from one another as distinct bodies; maintain their motion along a smooth and continuous path; act upon each other; and only exist in a single place at a time (Spelke, 1990). However, if entities violate these principles of objecthood, can infants still use shape to categorize them? Twenty-three (out of 64 planned) 10.5-to-12.5-month old infants were presented with simple visual figures such as 2D open figures of different angle sizes that did or did not follow the physical principles that define objects. By evaluating infant looking patterns, we examined whether infants could successfully detect differences in these angle sizes when angles followed or violated object properties. The results of this study aim to define the conditions under which infants might use shape information to categorize the spatial world.
A Bayesian Analysis to Determine the Prevalence of Barth Syndrome in the General Population

Paighton Miller, Global Public Health/Chemistry  
Sponsor: Professor Colin Phoon, Pediatrics, NYU School of Medicine

Barth syndrome is a rare mitochondrial disease caused by mutations in tafazzin. Patients demonstrate cardiomyopathy, neutropenia, skeletal myopathy and growth delay. Population-based data on the prevalence of Barth syndrome is incomplete. Our objective was to determine the prevalence of Barth syndrome in the general population. Data was collected from the Barth Syndrome Foundation (BSF) Registry and relevant literature. With the advent of genetic testing and whole-exome sequencing, a multi-pronged Bayesian analysis was used to estimate the prevalence of Barth syndrome based on published data on the incidence and prevalence of cardiomyopathy and neutropenia, and the respective subpopulations of patients with Barth syndrome. Based on 6 published studies of cardiomyopathy and 2 published studies of neutropenia, the estimated prevalence of Barth syndrome is 1.07±0.2 (mean±SD) cases per million population. This contrasts with 99 cases in the BSF Registry and only ~200 cases known worldwide. It is evident that Barth syndrome is greatly underdiagnosed. There is a need for better education and awareness of this rare disease to move toward early diagnosis and treatment.

The Value of Time among Second and 1.5 Generation MENA Students and Its Effects on Mental Health and Well Being

Miray Mirham, Global Public Health/Sociology  
Sponsor: Professor Ruth Horowitz, Sociology

My research question is does the “value of time” vary among students that ethnically identify as Arab that are second generation and students that migrated from MENA (1.5 Generation). I investigated how they perceive “valuing time” in terms of the Western culture perspective, where time is perceived through an economic lens and is seen as a commodity and a scarce resource that is not to be “wasted.” I examined the diction used in relation to topics like punctuality and adherence to strict schedules, planning/scheduling and whether the diction is dependent on nativity and varies by the degree of assimilation or acculturation to American society and the how actively they engage in the cultural traditions. I used semi-structured interviews and performed a language analysis. The strength of ethnic identity only impacts how students look at or perceive private time, whereas public time, which is structured by an institution, does not give the individual agency to determine how they talk/treat time due to the strict requirements set in place such as assignment dead-lines and the start and end of class. Therefore, both groups used diction about perceiving time as a currency when talking about school. When investigating immigrant’s diction about time as a currency used in reference to public time and private time, the value of time as a commodity led to increased diction about stress and anxiety about how they should “spend time” so as to “not waste it” due to its limited nature.

Greener on the Other Side: A Look at the Literature on “Green Gentrification”

Laurens Montanaro, Computer Science, Environmental Studies  
Sponsor: Professor Jennifer Jacquet, Environmental Studies

Urban environmental initiatives, such as park development and brownfield restoration, are seen as crucial steps as city governments transform urban environments into “green” and “eco-” cities. It is important to critically consider who benefits from the creation of environmental amenities. The notion of “green gentrification” (Gould and Lewis, 2012) suggests that urban environmental initiatives may cause and/or exacerbate gentrification processes around their respective areas, leading to the ultimate displacement of the residents who would most benefit from these environmental improvements. I present a review of the literature on green gentrification including the history, methodological evaluation and conclusions of this research effort. In addition, I highlight the salient ideas that have come out of this research and discuss current gaps in the field.

How Did We Get Here: The History of Desegregation and Failure to Integrate at Columbia High School

Kelsey Moore, Public Policy  
Sponsor: Professor David E. Kirkland, Education, Steinhardt School of Culture, Education and Human Development

This research focuses on Columbia High School (CHS) in Maplewood, New Jersey. CHS is desegregated but not integrated, due to an entrenched system of academic leveling, whereby students are divided into classes based upon perceived ability. The community has debated the merits of de-leveling for decades, never with a concrete understanding of when either desegregation occurred or when leveling, referred to more accurately as “tracking,” was first implemented. This research found that while the school has been desegregated for at least a century and has maintained a practice of leveling beginning at least in 1975, leveling was not a recorded policy until 2002, when the school had become majority-Black and the practice had evolved to become tracking. These findings contribute to the community’s historical understanding, as well as af-
The Self-Defeating War on Terror: Foreign Military Interventions and Domestic Terrorism
Fatima Mubasher, International Relations
Sponsor: Professor Amanda Kennard, Politics

Are countries undergoing foreign military interventions more likely to experience subsequent domestic terrorist attacks? If so, do different types of interventions have distinct impacts on terrorism? Using data on international military interventions for 154 countries during the time period from 1970 to 2006, this study examines the effects of military intervention on domestic terrorist attacks. It also tests the impact of interventions motivated by politico-strategic objectives and socioeconomic objectives on terrorism in the intervened-in country. By employing Ordinary Least Squares regressions with country and time fixed effects, I find a statistically significant increase in domestic terrorist attacks in the short-term in the target country. The results for politico-strategic and socioeconomic interventions are inconclusive. This study presents the need for further research to better understand the relationship between different types of interventions and domestic terrorism. Furthermore, the empirical evidence presented can guide decision makers on what policies and actions they should consider in order to combat terrorism.

Perceptions of Status-Based Coalitions and Policy Support in a Racially-Diverse Future
Caroline Myers, Politics, Psychology
Sponsors: Professor Maureen Craig, Psychology; Michelle Lee, Psychology

The racial demographics of the US are projected to undergo significant changes in the next few decades. Often characterized as a “majority-minority shift” whereby all racial minorities in the US combined will outnumber White Americans by mid-century, this demographic change is driven by one of the largest and fastest growing racial/ethnic minority groups: Hispanic Americans. Previous studies show that when information about Hispanic American population growth is made salient, White Americans may perceive this as a threat to their racial ingroup and subsequently perceive that their status and Asian Americans’ status may decline over time, which may result in perceiving coalitions to form between groups of similar status (e.g., White and Asian Americans as a high-status coalition). How might this impact political voting behavior? At present, little is known about how status-based coalitions may influence perceptions of policy support across different racial groups. In this study, 208 White American participants were randomly assigned to view either information about the growth of Hispanic political power in the US or control information about the rise of an underdog sports team. They then read a series of vignettes describing proposed policy changes that did not invoke race, and then were asked to gauge the extent to which White and Asian Americans were likely to support each proposed policy change. Our findings indicate that White Americans may expect status-based concerns to inform common voting patterns between White and Asian Americans when primed for Hispanic political power growth, which has implications for future intergroup dynamics.

Tribal Tunes: Is Ideology Associated with Differential Preferences for Popular Music?
Caroline Myers, Politics, Psychology
Sponsor: Professor Pascal Wallisch, Psychology

Music is known to engage brain and mind in powerful yet largely understudied ways. Here, we explore how different ideological positions translate to distinct signatures of musical preferences. To address this question, we exposed a large sample of research participants to a representative corpus of musical stimuli and also elicited their ideological position. Doing so, we found that ideological differences are linked to specific patterns of musical appraisal, both in terms of self-reported listening behavior as well as appraisal judgments, yet systematic discrepancies exist between these two. Here, we show that music can be used to reliably predict ideological orientation. Specifically, it seems to be the case that ideology manifests as differential appraisal of complex yet ambiguous stimuli such as music. Whether such a stimulus is experienced as aversive or enjoyable depends on non-sonic factors, such as ideological preference. We therefore conclude that ideological positions are more deeply rooted than suggested by a discourse model of political exchange.

A Sleepy Perspective: Does Accuracy of Social Perceptions Decrease after Sleep Loss?
Anna Nguyen, Psychology
Sponsor: Professor Tessa West, Professor

Sleep deprivation affects the mind (Poh, Chong et al., 2016), body (Lautenbacher, 2018) and sociability (Haack and Mullington, 2005), but little is known about how sleep affects social relationships and how others react to individuals with sleep-restriction. We investigate how sleep deprivation affects perception of social interaction. Our hypothesis stated that with less sleep, participants would be perceived as more unfriendly than they perceive themselves. Sleep-deprived individuals could potentially be more preoccupied with their state of exhaustion than with social perception. Eligible participants were randomly assigned into either a sleep-restriction condition, where they slept for four hours a night for two consecutive nights or a sleep-normal condition, where they slept for eight
Gender Discrimination in Group Decision Tasks, Women Newcomers vs. Male Newcomers

Sydney Obando, Psychology
Sponsor: Professor Tessa West, Psychology

This study will investigate the relationship between gender and interpersonal perception in individuals who join groups as newcomers. Research in social psychology has long been concerned with studying gender as a source of discrimination and studies thus far indicate that women tend to be disadvantaged in multiple contexts compared to men. The research on newcomer status has found that newcomers often have to negotiate their status when entering a new group (Overbeck, Correll et al., 2005) and they may be considered threatening by high status others (Cheng, 2007), who might retaliate by withdrawing their contributions to group discussions (Millet, 2001). However, research has also shown that there are instances when being a newcomer is advantageous. For instance, if the initial group does not perform well, the newcomer is more likely to be accepted into the group (Choi and Levine, 2003). Furthermore, newcomers who are assertive and highly motivated have been found to be more likely to influence group decisions (Hansen and Levine, 2009; Choi, 2005). In this poster I am going to present a novel methodological approach to studying interactions when newcomers join a group. We employ psychophysiology and self-report methods to study how individual newcomers are integrated in the group as well as how much influence they have in decision making.

The Exodus of Black Students from Public Schools in the City of Newark

Asantewaah Ofosuahene, Social and Cultural Analysis
Sponsor: Pamela D’Andrea Martinez, Teaching and Learning, Steinhardt School of Culture, Education and Human Development

There has been a shift in the sector of education where public education is becoming devalued and private education is becoming valued, especially in urban African-American neighborhoods. Signifiers such as “failing,” “under-resourced” and “ghetto” are associated with schools in Black neighborhoods while “affluent,” “successful” and “safe” are associated with White neighborhoods. Signifiers such as these are embedded in education and impact the school choice of many African-American students. This problem in education led me to my research question which is why are African-American students in the low-income, urban, predominately Black greater area of Newark leaving their neighborhood and public schools to attend predominately White, independent day and private boarding schools in affluent suburbs. In my research, I consider two enrichment programs that highly encourage and prepare Black students in the greater Newark area in the public-school system to attend independent day and private boarding schools in predominately White, affluent suburbs. I analyze their methods and beliefs, while also analyzing student, teacher and parent testimonials regarding these programs as well as the debate between public and private education. My research is important because it will help us understand why those in and outside of the Black community consciously and subconsciously equate Whiteness with “better” and Blackness with “worse.”

Infants’ Differential Treatment of Objects versus Forms

Sara Okun, Psychology
Sponsor: Professor Moira Dillon, Psychology

Throughout our lives, we keep track of shape information to categorize objects. Even by 12 months, infants are able to use shape information to recognize whether an individual object might belong to a particular category (Dewar and Xu, 2007; Xu and Carey, 1996). Critically, objects abide by certain physical principles: they move as cohesive wholes; maintain movement in a continuous path; directly act upon other objects; move separately from one another as distinct bodies; and only exist in a single location at a time (Spelke, 1990). When verbal labels are paired with objects of different shapes, this helps infants form categories of objects (Balaban and Waxman, 1997; Dewar and Xu, 2007; Futó, Tégás et al., 2010; Waxman and Braun, 2005; Xu and Carey, 1996). Our study investigates whether 10.5-month-old to 12.5-month-old infants can
use shape information to distinguish forms that violate the physical principles of objects. And so, infants in our study are presented with two of the same or two different pairs of angles, which are displayed stochastically in a video so that they do not move on continuous paths. Infants hear the same or different verbal labels. By evaluating patterns of looking time, we examine whether infants successfully use language to categorize the angles. Such findings would illuminate how general the use of shape information is in binding with language to create categorical knowledge.

Do the Main Policy Mechanisms of the US Endangered Species Act Work: A Case Study of US Fish Populations

Gianna Paglia, Environmental Studies, Public Policy
Sponsor: Professor Jennifer Jacquet, Environmental Studies

The US Endangered Species Act (ESA) aims to prevent extinctions. It has helped stabilize species populations, and in some cases even led to species recovery. In recent years, there has been an increase in fish species listed as either endangered or threatened on the ESA. Today, there are 210 listed fish species, which includes subspecies and distinct population segments. However, a comprehensive analysis of their recovery trends is lacking. The ESA utilizes three policy mechanisms to protect a species: funding, critical habitat designation and recovery plan objectives. Here, I have gathered the best available annual abundance estimates for the 126-fish species that occur predominately in US waters listed under the ESA to quantitatively analyze population trends and the effectiveness of the ESA's main policy mechanisms.

Pilot and Feasibility Test of a Mobile Health-Supported Intervention for Stopping Hypertension

Soaptarshi Paul, Computer Science
Sponsor: Professor Devin Mann, Population Health, NYU School of Medicine

The seminal Dietary Approaches to Stopping Hypertension (DASH) study demonstrated the effectiveness of diet to control hypertension; however, effective implementation and dissemination of its principles have been limited. We hypothesized that a smartphone version of the DASH diet that uses automatic data collection, social networks and “in-the-moment” feedback will be an effective medium for the delivery of DASH. We conducted a single arm pilot study from August 2015–August 2016 with a pre-post evaluation design to evaluate the feasibility and preliminary efficacy of a smartphone version of DASH incorporating human health-coaching. Seventeen patients participated. They had a mean age of 59 years (SD=6 years). 60% were women. Engagement was high: out of 90 days, the mean number of logged blood pressures was 63 (SD=46), recorded weights was 52 (SD=45) and recorded steps was 55 (SD=36). 73% of coaching phone calls were completed. The mean number of servings documented per patient for the dietary assessment was 709 (SD=541), and patients set a mean number of 5 (SD=2) goals. Mean systolic and diastolic blood pressure, heart rate, weight, body mass index or steps did not significantly change over time. Successful lifestyle change interventions require substantial patient motivation, engagement and access to experts. Our study was underpowered to evaluate for change in clinical outcomes; however, the high engagement of DASH mobile suggests that the “in-the-moment” delivery of DASH mobile may be a way to integrate and sustain behavioral change in HTN management. Future implementations of DASH can include integrated calendars, alarms, GPS or other smartphone tools to allow the delivery of behavioral feedback and education to the specific to the user’s behavior.

The Role of Biologists in an Evolving Political Climate in Colombia

Dianna Alexandra Peña, Environmental Studies
Sponsor: Professor Jennifer Jacquet, Environmental Studies

The Colombian government, under the administration of President Juan Manuel Santos, signed a peace agreement with Latin America’s largest guerrilla group, Armed Revolutionary Forces of Colombia (FARC), ending a fifty-year period of civil conflict and unrest on November 24, 2016. FARC primarily occupied Colombia’s rainforests. The final agreement for the ending of the conflict claims that peace enables protection of the environment through respect for nature and its biodiversity. However, new developments, markets, industries and human settlements demonstrate greater negative impacts now, during peacetime, on Colombia’s forests and biodiversity, which remains mostly unexplored by biologists. Moreover, since 2016, public funding for science has also declined. Using literary analyses of articles and personal interviews with prominent biologists in Colombia, this paper explores the evolving role of biologists and the greatest threats to science since the inception of the civil conflict to the present day political arena. The intent is to provide recommendations for the role biologists should assume in policy that is environmentally relevant, given that ten percent of the world’s total biodiversity is at stake.

The Effects of Gender Threat on Gender Role Beliefs

Laura Peralta, Psychology
Sponsors: Professor Eric Knowles, Psychology; Sarah Di Muccio, Psychology

The tenuous nature of precarious manhood provokes men to constantly prove their manhood, especially when they experience a threat against their masculinity. Gender threats impact gender role discrepancy, which refers to the
observed failure to comply with the typical gender role. In order to restore their lost manhood after a gender threat, men may adopt more strict beliefs about gender roles (i.e. a more traditional view of gender). The purpose of this study is to see how gender threats to a man’s manhood affects their gender role beliefs. We threaten men’s masculinity by having them paint their nails with pink nail polish, which is a typically feminine task. Afterwards, the men complete a survey which we will use to assess the extent to which the men endorse a more traditional view of gender roles in the threat condition as compared to a control condition. Specifically, the hypothesis is that men in the threat condition will attempt to repair their manhood by endorsing more traditional views on gender roles than men in the control condition. The results found that men who experienced a gender threat experienced stricter gender role beliefs.

**Stop-and-Frisk as a Means of Voter Suppression in New York City**

*Emily Percy, Politics*

*Sponsor: Professor Christopher Dawes, Politics*

My research asks whether “Terry” stops, better known in New York City as the Stop, Question, and Frisk (SQF) policy, increase in advance of close elections. I will analyze the 2009 New York City mayoral election between Independent incumbent Michael Bloomberg and Democratic challenger Bill Thompson. This election is ideal for analysis because Mayor Bloomberg was running for reelection, and hence his administration had authority over the NYPD during the electoral cycle, and because the election was fairly competitive. Using the election cycle in conjunction with the NYPD’s SQF incident reports, I will observe if stops increased in advance of the election, especially in neighborhoods deemed to be Democrat-supporting based on census indicators of race and income-level. I will test for increases in per capita stops as well as frisks, searches, arrests, stops using force and stops on people of color. I hypothesize that evidence that SQF was increasingly administered in these Democratic and minority neighborhoods by an Independent but Republican-backed administration suggests this tactic was a means of voter suppression. I will also analyze the 2013 New York City mayoral election using the same empirical design. Unlike 2009, in the 2013 mayoral election no incumbent was running and Mayor Bloomberg, who as the then-current mayor controlled the NYPD throughout the election cycle, did not endorse any candidate. Hence I do not hypothesize to see a similar increase in stops in 2013, as the incumbent mayor had no apparent reason to suppress any particular votes.

**Local Carrots or Local Sticks: Election Cycle Effects on Rezoning in New York City**

*Adrian Pietrzak, Economics, Politics*

*Sponsors: Professor Christopher Dawes, Politics; Professor Anna Harvey, Politics*

Zoning’s distributional impacts are often understated, especially considering the frequency of rezonings and the laborious process surrounding approval. In this paper, I examine the motivations of local policymakers in New York City between 2009 and 2018 by testing whether rezoning decisions are made as a function of policymakers’ re-election cycle, using a differences-in-differences design. In addition, I analyze the causal impact of density-altering rezoning on property values by using an instrumental variable design. Results indicate that as elections approach, the probability of rezoning increases, with rezoned lots being more likely to be downzoned. Of the lots rezoned, the average density due to rezoning decreases significantly as an election nears, suggesting that local policymakers may take advantage of rezonings to improve their chances of re-election. Moreover, in those lots affected by rezoning,
Evidence That Mnemonic Prediction Errors Signal the Creation of a Separated Memory Trace
Natalie Plotkin, Psychology
Sponsor: Oded Bein, Psychology

A mnemonic “prediction violation” occurs when we expect one outcome based on our memory but experience another. When we encounter such violations of expectations, it is adaptive to remember the violation for better predictions in the future. Theoretical frameworks propose that mnemonic prediction violations are encoded as a separated memory trace to prevent memory interference. But data examining these hypotheses are scarce. In the current behavioral study, we investigated whether mnemonic prediction violations improve memory, which would provide evidence that they are encoded as a separated trace. In a statistical learning paradigm, participants were presented with sequences of objects with interspersed A-B pairs. The B-item always followed the A-item. This created a prediction. After training on Day 1, we manipulated the sequences. Half of the B-items in these A-B pairs were replaced with novel items, eliciting prediction violations. We also presented novel items between intact pairs, not violating any predictions. Later, item memory was tested for novel items that violated or did not violate predictions. Memory was also tested for the Day 1 A-B associations. Analyzing all items, we did not observe memory enhancement for violation items compared to no-violation items. When only analyzing items for which the original A-B pair was remembered, where a strong prediction violation was made, we found memory enhancement for violation compared to no violation items. This result provides evidence that prediction violations enhance memory via the creation of a separated memory trace but also that strength of prediction modulates this effect.

When Should We Act? Perceptions of Appropriateness and Effectiveness of Ally Action
Paola Elaine Ponce, Psychology
Sponsor: Professor Maureen Craig, Psychology

In this study, I sought to contribute to the work on collective action to assess both 1) what different groups perceive as the more effective types of action and 2) who is the appropriate actor. What types of collective actions are seen as effective and appropriate? Does the perception of the action (as effective or appropriate) shift whether an advantaged or disadvantaged group is doing the action? Do advantaged and disadvantaged group members have different perceptions of actions as effective and appropriate depending on the status of the actor? To do this, we measured, according to effectiveness and appropriateness scales, how people perceive different kinds of supportive and collective action used in combating racial inequality. The specific populations targeted in this research were Black and White Americans, and collective actions were categorized as done online or offline. Results showed that offline collective action is seen as both the most appropriate and most effective method of collective action. Specifically, Black Americans find offline action more effective and appropriate no matter the race of the actor whereas White Americans find it more effective for a Black actor to do the collective action rather than their counterpart. Thus, we concluded that offline collective action is perceived as more effective and appropriate by both Black and White Americans but especially seen as such by White Americans, if the actor is a Black person.

The Effect of International Human Rights Pressure on Chinese Investment Flows
Carlos Pons, International Relations
Sponsor: Professor Amanda Kennard, Politics

The goal of this paper is to determine if China’s development and investment strategies in Africa are receptive to international human rights pressure. I hypothesize that certain investment flows would be affected, while others would remain unaffected. I expected transparent (more representational flows) to be more affected than non-transparent flows (strictly commercial). This study has not been attempted before, but there is a plethora of literature regarding China role in the international human rights community. Some literature suggests that China’s standing as a superpower has made it more susceptible to condemnation from the international community, while other literature suggests that China’s concept of human rights has allowed it to support questionable regimes in Africa. To test China’s susceptibility to human rights pressure, I analyzed China’s investment statistics over the period 2003–2009. I used U.N. Sanctions of the Sudanese Government in response to the Darfur crisis in 2006. I compared China’s investment trends before and after the crisis into countries with a good human rights standing and a bad human rights standing based of a human rights index. I looked at these trends for transparent and non-transparent flows. For this study, I controlled for GDP and polity for each African country that received investment flows. After controlling for these factors, I found that overall investment had decreased over the period, with a notable decrease in 2007. However, the most notable decrease in investment was in non-transparent, commercial flows rather than the transparent flows that I had predicted.
Episodic Memory’s Role in Decision-Making across Development
Euan Prentis, Psychology
Sponsor: Professor Catherine Hartley, Psychology

Classic learning models state that people gradually update their beliefs about a choice’s value according to the difference between its expected and actual outcome; this is known as incremental reinforcement learning (RL). Recent work has demonstrated that a choice’s value can also be estimated by “sampling” and comparing rich memories of distinct and potentially distant past choices and outcomes. Compared to RL, using episodic memory to guide choice may allow people to reduce uncertainty resulting from inexperience. As such, children’s and adolescents’ relative inexperience with many choices they encounter might bias them towards a memory sampling strategy. We adapted for a developmental sample a task designed to measure memory sampling. Participants chose between point-machines that paid out rewarding or non-rewarding tickets with trial-unique images. At intervals, past choices were evoked in memory by displaying a previously encountered ticket and asking participants whether they had received it. If participants relied on memory sampling, we expected the evoked choices and outcomes to influence their subsequent choices. Our first iteration of this task failed to show evidence of memory sampling in adults. We hypothesized that this was because the evoked outcomes were not predictive of subsequent trial outcomes, thus rendering memory sampling ineffective. We therefore redesigned the task to make the evoked outcomes 100% predictive of subsequent trial outcomes. This second version also did not show evidence of sampling, raising questions about why participants did not use memory sampling in either iteration of this task.

Fear and Political Participation
Piper Quinn, International Relations
Sponsor: Professor Amanda Kennard, Politics

The intention of this study is to investigate the effects of citizen fear on their immediate perceived risk level of political participation. In modern western politics, “fear” has become a kind of buzzword, as people try to discern how exactly the elicitation of emotions impacts a candidate’s or regime’s support. As elites across Europe and the United States increasingly use fear based rhetoric in order to garner support and drive home their points, it seems apt to question: what impact, if any, does the elicitation of this emotion have on a person’s likelihood to become involved in political events?

Asian-American Men’s Precarious Manhood: Effects of Manhood Threats on Racial Identity Centrality
Jennifer Hyewon Ra, Psychology
Sponsor: Professor Eric Knowles, Psychology

Manhood has been studied and shown to be a precarious social status that can be threatened when provided false feedback indicating femininity in men’s innate characteristics. The Asian-American male population is particularly vulnerable to such manhood threats. Despite being a huge heterogeneous group with diverse backgrounds, they are often perceived in rigid, stereotypical ways—particularly with respect to their lack of masculinity and sexual/physical inadequacies. Given the nature of avoidance of femininity in manhood, these feminized racial stereotypes may put Asian-American men’s racial identity centrality at risk. The current research examined whether making gender threats to East Asian-American men’s manhood induced them to distance themselves from their stereotypically feminine Asian racial identity in an attempt to reaffirm their manhood. White and East Asian-American men’s manhood was threatened with false feedback on physical handgrip strength tests, and their consequent responses on a racial identity centrality questionnaire were assessed. Results showed that in comparison to Asian-American men whose manhood was not threatened, those whose manhood was threatened reported significantly lower racial identity centrality. The present research provides preliminary evidence that threats to Asian American men’s manhood influences the extent of their identification with the Asian racial group.

Countdown to the Election: The Impact of American Federal Elections on SEC Enforcement Efforts
Riya Ramesh, Politics
Sponsor: Professor Christopher Dawes, Politics

The explosive growth of the securities industry has corresponded to an expanded need for federal oversight. The creation of the Securities and Exchange Commission (SEC) was an institutional solution to regulate capital markets. However, despite being created as an independent agency, SEC enforcement efforts may still be susceptible to partisanship. This study serves as an opportunity to understand the extent to which the SEC remains susceptible to internal and external influence. Specifically, this study evaluates how many SEC litigation releases were filed each day across six presidential election cycles to determine if litigation efforts are changed in any way by upcoming elections. Understanding the historic abilities granted to this agency as well as fluctuations in complaint filings can
shed light on the factors that may cause enforcement activity to change. Results of this study indicate a significant relationship between upcoming elections and complaint filing rates when party affiliation is set as a control, suggesting that the election timeline does interact with the bureaucracy’s enforcement efforts. The results also show that the SEC has filed more complaints under Republican Presidents than under Democratic Presidents and finally, results of this analysis suggest that partisanship within the SEC Commission has an impact on the number of complaints filed by the SEC. Comparing trends in complaint rates in relation to presidential election cycles could be indicative of undue political influence on what was created to be an objective organization and could raise significant questions about the independence, effectiveness and credibility of the United States Securities and Exchange Commission.

Migrant Mothers and the Children Left Behind
Camila Robalino, Global Liberal Studies, Journalism
Sponsor: Professor Brooke Kroeger, Journalism

Migration tends not to be the will of individual actors but of family groups or entire communities. Émigrés find jobs throughout foreign countries. Such transnational households are becoming increasingly common, characterized by a family member working in a foreign country while her/his dependents remain in the country of origin. In the past, when a parent left the home country for work or opportunity abroad, it almost always was the father; or, traditionally, women in migration scenarios have been passive actors who follow husbands or sons and are relegated to a second place in the theoretical elaboration of migratory dynamics (El Universal, 2017). Yet recent abrupt shifts in the economic, social, cultural and political spheres have injected women into these migratory flows, upending the old concept of the female emigration as strictly engaged in family reunification. Today, large numbers of women move abroad, many to escape domestic and exterior violence, or simply to seek better paid employment or an improved quality of life for their families, while leaving their children behind in the care of others. Migration, or planned familial separations, strain or rupture relationships, specifically the mother-child dyad. In those instances, some children do not even recognize their mothers when they reunite, because of protracted separation and being under the care of other family members, often by the other parent, but also frequently by older children, grandparents or other members of the extended family during the women’s time of absence. But the women who migrate without their offspring often say, valió la pena, “it was worth it.” But was it? How do these women and children cope with this life-altering separation? To what extent does female migration influence intra-household dynamics and the psychosocial impact of family separation and fragmentation?

Community Perspectives on Health Organizations:
Harlem Health Advocacy Partners
Juanit Rodriguez, Global Public Health/Sociology
Sponsor: Professor Joyce Moon Howard, Community Health Science and Practice, College of Global Public Health

In 2014, the Department of Health provided resources to improve the health of Harlem residents by connecting them to community health workers and health advocates through the Harlem Health Advocacy Partners (HHAP). This organization serves 5 housing developments with a total population of 12,720 residents. This organization is organized around a “one-stop shop”, “warm handoff”, preventative and community-based health model that aims to reduce negative population health outcomes in Harlem. This study delineates and examines the strategies used by Community Based Organizations to achieve their aims of reducing health disparities in populations with high risk for poor health outcomes on the perspectives of the affected community to determine the effectiveness of the organization. Using HHAP as the observable model, this study observes how senior citizens benefit from this organizational model. Data is collected from two community focus groups and one focus group made up of community health workers. An administrative perspective is also obtained by key informant interviews with the program manager as well as the community health advocates.

Situational Code Switching in “Gay Mexican Spanish”
Juritzi Rodriguez, Liberal Studies
Sponsor: Ernesto Cuba, Latin American, Iberian, and Latino Cultures, CUNY Graduate Center

The purpose of this study is to explore the importance of situational code-switching as related to the so-called “gay Mexican Spanish” (Eller, 2013). I will analyze the speech of rising star, Fabian Murillo, to demonstrate that gay men in Mexico negotiate their gender identities based on their social environment. Murillo, at nineteen years old, is a singer from Tamaulipas, Mexico who has been open about his sexual orientation and caters to a middle-aged fanbase. By comparing his speech in two videos, a formal interview with a local newspaper and one from a comedic YouTube channel, I intend to highlight how varying levels of social pressure vastly influence Murillo’s register and linguistic negotiation. In the comedic and relaxed setting, Murillo expresses himself with inverted appellation and frequently utilizes the term jota/jotilla (“fag”). However, in the formal interview, Murillo abstains from these linguistic choices to gain credibility on behalf of his targeted audience. I argue that Murillo consciously chooses his distinctive dialectal features according to the social setting due to the patriarchal values present in Mexican society.
Of Jellyfish and Men: How the Carolina Lowcountry Seeks to Avoid Economic Disruption by Jellyfish Blooms

Taylor Nicole Rogers, Journalism, Politics
Sponsor: Professor Brooke Kroeger Journalism

 Summers on Hilton Head Island feel hotter than they did two decades ago. The hurricanes are more harrowing, fewer loggerhead turtles crawl along the beachfront and the shrimpers return to shore with smaller catches. Yet no impact of climate change has upset this sleepy South Carolina island more than the scourge of 2018—hoards of jellyfish, just like those that have invaded more touristy destinations from Texas to Australia over the past couple of years. Some 2,300 people were stung on Hilton Head’s 10 miles of beaches in the first week of July 2018 alone, local NBC affiliate WSAV News 3 reported. The danger was so severe that the National Weather Service, in the warning statements it issued to swimmers, called the scourge a “biological hazard.” As Hilton Head prepares for its population to balloon to four times its normal size as tourists return, locals show no sign of having addressed or even acknowledged the growing jellyfish threat, despite the fact that last July, jellyfish stung an average of 600 Hilton Head beachgoers each day in a single week. Through conversations with dozens of tourists, business owners and public officials and a review of hundreds of pages of documents from various regulatory agencies in the state of South Carolina obtained through the Freedom of Information Act, this journalistic project seeks to understand why. Tourism and seafood are the region’s biggest sources of revenue, according to the South Carolina Department of Employment and Workforce. Another jellyfish infestation could damage both.

Gender and Power: The Effects of Ideology and Electoral Competition on the Election of Women in Latin America

Allie Rubeck, International Relations, Spanish
Sponsor: Professor Amy Catalinac, Politics

Women’s political representation in Latin America has increased dramatically in recent decades; however, a wide disparity still persists not only across countries but subnational as well, from electoral districts to political parties. Such discrepancies between theoretical and actual gains imply that national-level initiatives such as gender quotas do not solely determine women’s political representation, pointing to sub-national trends at work. This paper examines district-level factors of ideology and electoral competition in Argentina, Brazil, Chile, Peru and Uruguay and their effects on the decisions of political parties to nominate, and thus elect, women. Using a dataset spanning three decades, this paper finds evidence that the ideology of a district, more so than other elements of electoral competition, is a significant determinant of the election of women to the legislature. This conclusion provides evidence that factors at the district level determine both national and party-level decisions in choosing to nominate and elect women to political office.

The Relationship between Adolescent Risk Taking in the Lab and the Real World

Brian A. Salazar, Psychology
Sponsor: Professor Catherine Hartley, Psychology

Adolescence is a period of heightened risk taking, but this pattern is not always observed in the lab. A recent study in our lab highlighted these different patterns. Sixty-two participants (ages 8–27) completed a computer task to measure risk taking tendencies within a lab setting. Participants also completed the Domain Specific Risk Taking Scale (DOSPERT; Weber, Blais et al., 2002), a psychometric scale that assesses risk taking in five content domains (ethical, finance, health, social and recreational) to assess risk taking in the real world. Adolescents took fewer risks than adults and children in the lab task. In contrast, adoles-
cents reported taking more risks than children and adults on the DOSPERT. The differences between risk taking in a lab setting and the real world may be associated to the disparity between the processes that contribute to risk taking in the real world and those that the task elicits. In our study, we asked whether lab risk taking patterns might better resemble specific domains being measured by the DOSPERT rather than real world risk taking overall. The lab task involves taking monetary risks, and prior research showed that financial risk taking in a lab corresponds to financial decisions on the DOSPERT (Kennison, Wood et al., 2016). Therefore, we hypothesized that the financial portion of the DOSPERT would most closely resemble the results of the study in our lab. Consistent with our hypothesis the financial portion of the DOSPERT was the only domain that significantly predicted task-based risk-taking results ($p < .05$).

**The Impact of Government Policies on Renewable Energy Production**

*Jacqueline Samuel, Economics*

*Sponsor: Professor Sharon Traiberman, Economics*

Using panel data across 50 US states from the year 1990–2016, this paper seeks to analyze the effectiveness of federal and state clean energy policies on the total generation of domestic renewable energy. On the federal level, the effects of the solar and wind subsidies, both expanded under the 2009 American Recovery and Reinvestment Act, are analyzed. Two state policies, Renewable Portfolio Standards and Utility Green Pricing, are evaluated. Some results are consistent with previous research such as the effects of GDP per capita and coal consumption. However, this paper finds that when controlling for the state sensitivities to different government programs, the effects of the programs become less significant. This indicates that the policies might not have the intended effects when accounting for demand and renewable energy potential. Understanding government subsidies and programs is critical as renewables and their complementary technologies, like energy storage, become bigger actors on the public and private sector stages.

**Last Chance Tourism at the Great Barrier Reef: Colonialism and Amnesia in Degraded Landscapes**

*Micelle Sanders, Anthropology*

*Sponsor: Professor Amy Zhang, Anthropology*

This paper explores the phenomenon of “last chance tourism” in Port Douglas, Queensland, Australia, which lies along the northern section of the Great Barrier Reef. Through interviews, participant observation and visual materials collected during three weeks of fieldwork in December of 2018, the paper examines how the tourism industry is interacting at a time when the reef has been transformed by back-to-back bleaching events rendering their section 50% dead. The paper is placed in dialogue with anthropological literature on colonialism, tourism and climate change, arguing that tourism in Port Douglas continues narratives of colonialism—both of indigenous people and of the natural world. Simultaneously, it creates a space of amnesia on the topic of climate change, even though many tourists are visiting the Great Barrier Reef because they want to “see it before it’s gone.” This account of Port Douglas articulates paradoxes produced through the interaction of tourism and climate change, and the disjoined ways these narratives are both created and erased.

**Gender Differences in Cooperation: Experimental Evidence from a Laboratory Stag Hunt Game**

*Sanya Sareen, Economics, Psychology*

*Sponsor: Professor Guillaume Frechette, Economics*

The emergence of cooperation among individuals with no relation to each other, and the factors affecting that, is an issue of global importance that has been studied both theoretically and experimentally. Within the question, a less explored issue relates to the effect of gender—both the individuals’ and his or her partner’s—on cooperation. Gender has been shown to be relevant in several game theoretical measures of cooperativeness like the prisoners’ dilemma and dictator games, but there is still no consensus on the direction of the effect. More importantly, there have been no studies on this effect using the stag hunt game—an economic game that is based solely on the application of coordination and trust between the players and assesses those factors more than other games. We will test the impact of the gender of the partner on the rates of cooperation in the stag hunt game using conditions in which the gender is known, and when it is not. We hypothesize that in the condition with awareness of the partners’ gender, same-sex cooperation rates will be higher than opposite-sex cooperation rates.

**Underrepresentation of Women in the United States House of Representatives**

*Soren Schwartz, History, Politics*

*Sponsor: Professor Christopher Dawes, Politics*

This thesis examines the impact partisanship has on the underrepresentation of women in the United States House of Representatives through a study of primary and general elections between 1980 and 2014. Using the Database on Ideology, Money in Politics, and Elections (DIME), I seek to understand the effect electing a Democratic representative has on increasing the likelihood that women subsequently run for office, and win in that district. My model contains two research designs: 1) a Regression Discontinuity Design (RDD) using close election victories of a Democratic representative for quasi-random treatment assignment and 2) a Difference in Difference model, allowing for the as-if random assignment of the treatment.
variable, and then a pre/post evaluation of the frequency with which women ran and were elected in close election districts, in both primary and general elections. This thesis challenges the argument that district characteristics are the best predictors of women’s electoral success, and provides a new model to avoid previous issues of endogeneity. The paper finds that no firm conclusions can be drawn because of the modest sample size of observable close elections. The results reveal that the close election of a Democratic representative produces non-significant results in predicting the likelihood that women run and win in subsequent elections.

**Have You Slept?: The Effects of Sleep Deprivation on Working Memory and Negotiation Ability**  
*Michaela Seferian-Jenkins, Psychology*  
*Sponsor: Professor Tessa West, Psychology*

Sleep deprivation can affect interactions individuals have with others and can affect how sleep deprived individuals process information around them. Past research has shown that working memory, flexible thinking and decision making abilities are compromised when someone is sleep deprived (Chee and Choo, 2014; Hinson, Jameson et al., 2003). In our research, we looked at the effects of sleep deprivation on working memory ability and negotiation ability. In our study, two participants interacted, one participant who is sleep deprived (4 hours) while the other is sleep healthy (8–9 hours). The sleep-deprived and the sleep-healthy individuals completed two working memory tasks. Later, the two participants interacted in a negotiation task with each participant having different assigned motives for the negotiation but with both wanting to have a large difference in negotiation outcome. A score was calculated for the memory tasks and for the negotiation difference for each participant. We did not find a statistically significant difference between full-sleep and sleep-deprived individuals in their working memory task or negotiation difference.

**Student Perspectives on Academic Cheating**  
*Yannai Segal, Global Public Health/Sociology*  
*Sponsor: Professor Ruth Horowitz, Sociology*

This study examines how students perceive and frame cheating, other students who cheat and the techniques of neutralization that they use to justify cheating. Students’ beliefs about how many other students cheat is a frequently cited factor in explaining why students cheat. However, the majority of the research on the topic focuses on students who cheat or on professors’ explanations for why students cheat. I am hoping to understand what students think about other students who cheat. I interviewed fifteen students using snowball sampling. The interviews were analyzed using vocabularies of motives. Cheating was often defined by students as activity that resulted in an unfair advantage over other students. This could include using resources that others did not have access to or operating outside the accepted guidelines of behavior. For many students, the fundamental underlying factor that affected cheating was their social experience in regards to cheating. Students who did not cheat tended to not have friends who cheated, while those who did cheat usually had friends who cheated, or knew of a significant group of fellow students who cheated. Hypotheticals revealed that in many cases the choice not to cheat was affected by the social context rather than moral decisions. Students who cheated used techniques of neutralization in order to justify their cheating. This study helps explain some students’ attitudes towards cheating and how students perceive cheating among their peers.

**The Effect of Individual and Neighborhood Characteristics on Reported Disorder**  
*Yannai Segal, Global Public Health/Sociology*  
*Sponsor: Professor David Abramson, Social and Behavioral Sciences, College of Global Public Health*

Reported disorder may be affected by many factors, and is mediated through the lens of the person reporting the disorder. As such, steps must be taken to understand how individual characteristics and an individual’s relation to their community will affect the way in which they report disorder. There are also some community factors that may affect the perceived disorder, which would act as means of expressing discomfort with the current situation of the community. This is especially important in a post-disaster setting where community tensions are magnified by the challenges that everyone faces. Data about individuals was drawn from Sandy Child and Family Health Study (S-CAFH), while community data was drawn from American Community Survey (ACS). Variables were operationalized from the data and imputation was used when less than four variables were missing. The data was regressed against reported physical and social disorder in nine counties in New Jersey after Hurricane Sandy. Poverty, sense of community and the dominant race all affected the reported social disorder. Racial concordance did not have any statistically significant impact on the reported disorder. Some interactions, even though the result is small are still interesting in that they operate in unexpected ways, such as a higher sense of community leading to more reported social disorder after a disaster. Due to the relative lack of disorder in the aftermath of Hurricane Sandy there was little variability in the data. This limited the effects of variation in personal and communal circumstances on disorder.
This paper focuses on a contemporary feud between two groups, fighting for the right to research and memorialize a recently “rediscovered” slave burial ground in the Bronx. Since 2013, the Hunts Point Slave Burial Ground (HPSBG) has been the site of non-destructive investigations to confirm the presence of human remains likely to be enslaved New Yorkers. After a rise in community and media attention surrounding development of the HPSBG, stakeholders with varying claims to the land began to contest each other’s right to steward an official memorial. The ongoing conflict, between educators of P.S. 48 and grassroots preservationists, is one deeply embedded with racial and socio-economic tension. Both parties seek to build a memorial, conduct further research and provide educational opportunities. But, the development has come to a standstill as the contest over this piece of Bronx heritage rages on. To demonstrate the ways in which traumatic history of slavery has an effect on contemporary Bronx residents, this report will rely on ethnographic and archival research to contextualize archaeological findings. Then, we will discuss how modern industrialization, immigration and resource distribution issues have impacted the communities currently in conflict over the HPSBG.

**Assessment of Macroeconomic Indicators Using Principal Component Analysis: Economic Discrepancies among Countries in South Asia, Middle East and Africa**

*Shraman Sen, Economics and Mathematics*
*Sponsor: Professor Jihui Lee, Healthcare Policy and Research, Weill Cornell Medicine*

Economists specializing in quantitative research are often faced with the task of classifying and finding parallels between developing economies. Such classifications can provide significant insight into the factors that lead to the economic discrepancies that exist today among various regions. However, the factors that account for the maximum significance can vary from country to country across regions. In this project, macroeconomic indicators for certain selected countries from South Asia, Africa and the Middle East are statistically analyzed to determine the most significant determinants for economic variability. Data is obtained from World Bank Open Source Data; for each country, 10 key macroeconomic indicators including GDP, population and mean income are recorded. The first part of the project endeavors to use different distance metrics to find the relative economic discrepancies between the countries being studied and how the discrepancies might alter depending on the distance metric being used. The second part consists of a Principal Component Analysis which endeavored to further investigate the macroeconomic indicators which contributed to the greatest variation in the data. Principal components (PCs) point to the direction of greatest variation and the magnitude of the contributions of each variable in the PC’s are evaluated using PC loadings. Using such a method, we are able to unveil the statistically significant macroeconomic indicators and form a graphical representation of the classification of the countries.

**Will Children Expect Ingroup Members to Curb Retaliatory Behavior in order to Maintain the Group, and Will These Expectations Change as They Develop?**

*Tanya Seth, Psychology*
*Sponsor: Dr. Ryan Lei, Psychology*

This research examines whether children expect that group members will curb retaliatory behaviors as one form of sociomoral reasoning. From an early age, children expect people who are affiliated to act in ways that sustain the group, such as giving support (Baillargeon et al., 2014). One facet of group functioning that has been unexplored is whether children understand it is sometimes necessary to curb retaliatory behavior in order to maintain the group—versus the alternative of retaliating and risking the dissolution of the group. In other words, are children able to override expectations of reciprocity and limit negative behaviors? In this research, we will examine if children have sociomoral expectations that group members will curb retaliatory behavior to sustain the group’s existence. We hypothesize that younger children may primarily operate by a reciprocity principle (i.e., retaliate in response to a negative behavior) (Baillargeon et. al., 2014). However, with age, children may gain a greater understanding of how groups function and thus be more likely to curb retaliatory behavior in order to better facilitate group functioning.

**Is Barefoot Best? Effects of Shoes on Infant Walking**

*Anna (Hyeji) Shin, Psychology*
*Sponsor: Professor Karen Adolph, Psychology*

Parents, doctors and shoe manufacturers have strong ideas about what footwear makes babies walk best. The current consensus is that barefoot is best, but a generation ago, a sturdy, supportive shoe was believed best for infant walking. This study is the first to test whether different footwear affects infant walking—specifically, how well and how much infants walk. Infants (12–20 months of age) walked for 10 minutes in each of three footwear conditions—barefoot, wearing a thin-, flexible-soled shoe and wearing a stiff-, rigid-soled shoe. A pressure-sensitive floor recorded the timing and distance of each footstep and video recorded their activity in a playroom. Preliminary results suggest that footwear has little effect on how well infants walk: infants’ step length, step width and speed were
similar while walking in stiff shoes compared to walking barefoot. Ongoing analyses will determine whether stiff shoes affect how much infants walk (how many steps they take, distance they travel, etc.) and what types of play they chose to engage in (how much time they spend climbing or engaging with stationary toys).

**Improving Visual Performance Using Rhythmic Transcranial Magnetic Stimulation**

*Lavanya Shukla, Neural Science*

*Sponsors: Professor Marisa Carrasco, Psychology; Dr. Yong-Jun Lin, Psychology*

An external rhythm produced by transcranial magnetic stimulation (TMS) can be used to entrain alpha, an intrinsic oscillator in the brain associated with many processes including visual perception. TMS is a non-invasive brain stimulation technique in which a changing magnetic field induces electric current at the site of stimulation. Covert spatial attention—selective processing of visual information without eye movements—has been shown to enhance visual sensitivity. This project investigates whether rhythmic TMS can improve visual performance in human participants, and if covert attention can potentiate the effects of TMS. Rhythmic TMS was administered on healthy human participants while they performed an orientation discrimination visual task. The visual cortex (V1/V2) was stimulated to achieve successful entrainment of the parietal-occipital alpha oscillatory system. A simultaneous electroencephalography (EEG) recording was conducted to confirm that entrainment had indeed occurred. The behavioral effect was assessed via task performance. The preliminary data (n=8) showed a trend of visual sensitivity improvement with rhythmic (regular) than arrhythmic (irregular) pulses. We will manipulate covert spatial attention and assess joint effects of attention and entrainment. In the future, rhythmic TMS could serve as a potential clinical application for people with visual perceptual deficits.

**Cooperation in Narcissistic and Dependent Personality Disorders**

*Lauren Simon, Psychology*

*Sponsor: Professor Laurence Ian Reed, Psychology*

A recent breakthrough in modeling social behavior has come from the integration of behavioral economics into psychological science. Here, we use the two-person, two-choice Battle of the Sexes (BoS) game to model selfish and cooperative behaviors in individuals with narcissistic and dependent personality disorders respectively. Participants were given the Narcissistic Personality Inventory and the Dependent Personality Questionnaire to assess narcissism and dependence, then learned a two-person, two-choice BoS. In the BoS, participants share an interest in coordinating an outcome (either A or B). However, participants differ in their preferred outcome. Participants were either given the first move, stating their choice to their partner (Experiment 1), or the second move, responding to their partner’s stated choice (Experiment 2). Each game was played for real money, resulting in behavioral responses for each participant. When given the first move, neither narcissism nor dependence significantly predicted behavior. However, when given the second move, participants with higher levels of narcissism were significantly more likely to defect, and participants with higher levels of dependence were significantly more likely to cooperate. This suggests that in situations that require cooperation with others, individuals with dependent personality disorder are likely to act selflessly, and individuals with narcissistic personality disorder are likely to act selfishly. These findings continue the promising line of research integrating behavioral economics and psychological science in providing support for the idea that personality disorders can be successfully modeled using economic games. Furthermore, these results provide a behavioral index in which these personality traits might be assessed.

**Documentary Film on the Fishing Village of Tárcoles, Costa Rica**

*Samantha Sofia Sneider, Journalism, Photography and Imaging*

*Sponsor: Professor Jason Samuels, Journalism*

My documentary film, *Tárcoles*, is the story of two Costa Rican fishermen, Mario and Omar, whose perspective on life inspires amidst socio-economic marginalization and the environmental issues of overfishing and industrial contamination. Tárcoles is a small-scale artisanal fishing village that is highly marginalized. The Tárcoles River is allegedly the most contaminated river in Central America. The mouth of the river is on Tárcoles beach, which has created a lasting reputation of contamination that stifles their development. The river flows from the capital city and metropolitan center bringing the trash to the coast, which has devastated the local and international tourism in their village. This break in infrastructure has also lead to the abandonment of the village by the police—there is no law in Tárcoles. Two cooperatives are involved with the fishermen in efforts to support them. Coope Tárcoles, located on the beach, finances the fishing supplies and sells their fish. Another, Coope SoliDar, based in San José, has stepped in to combat overfishing by the industrial fishing trawlers which were wiping out the ecosystems in the Gulf of Nicoya. They succeeded in working governmentally to move the fishing trawlers a mile away from the coastline, which resulted in recuperation of the ecosystems. I spent three weeks filming in January 2019. My investigations focused on evidencing the relationship between city and coast, with a keen interest in the local fishermen’s perspectives. The interrelatedness between coastal communities and urban centers is something that cannot be overlooked.
Within Tárcoles as a community, the fishermen are focused on survival and living life, more than anything else. Mario and Omar role-model happiness as a decision amongst the adversities they face.

Assessing Reasons for Using Beauty Products: Development of the Cosmetics Motivation Scale

_Mino Xiu Zhu Song, Psychology_  
_Sponsors: Professor Patrick Shroout; Elizabeth R. Mutter, Psychology_

Many people use make-up and other beauty products, but what are their reasons for doing so? Per self-determination theory (SDT), motivation for performing a behavior can be more or less autonomous, with more autonomous motivation predicting better outcomes (Ryan and Deci, 2000; Ryan and Deci, 2017). We created a scale that measures motivation for purchasing beauty products by adapting an existing scale based on SDT (Gravel, Pelletier et al., 2016). In an online study, 305 undergraduate student participants who reported ever having worn makeup were asked to rate their agreement with 34 items comprising six subscales along a continuum from more autonomous to less autonomous motivation: intrinsic, identified, introjected, integrated, external and amotivation. Preliminary results support the theorized pattern of relations among the subscales, with strong positive associations between subscales adjacent along the continuum of relative autonomy (0.55 ≤ rs ≤ 0.80), except for external-amotivation (r = -0.02). Each subscale exhibited strong internal consistency reliability (0.80 ≤ αs ≤ 0.91). We also found, in support of the scale’s validity, that each subscale predicted the proportion of $100 participants indicated they would spend on beauty products, with the intrinsic, integrated, and identified subscales as moderate, positive predictors (rs = 0.38, 0.35, 0.30, respectively; ps < 0.001); introjected and external subscales as small, positive predictors (rs = 0.18, 0.19, respectively; ps ≤ 0.002); and the amotivation subscale as a moderate, negative predictor (r = -0.31, p < 0.001). This measure has implications for further understanding and prediction of consumer behaviors in the beauty and make-up market.

An Island above the Land: How the Diasporas of Sri Lanka Use Digital Communication and Its Insights into the Limits of Diaspora’s Current Definition

_Isa Ananya Spoerry, Social and Cultural Analysis_  
_Sponsors: Professor Autumn Rain, Social and Cultural Analysis; Professor Karen Karbiener, Liberal Studies_

The island of Sri Lanka is approaching the one-decade mark since the conclusion of a 26-year-long civil war, punctuated by the traumatic 2004 Indian Ocean Tsunami. These unique circumstances prompted—even forced—many of the island’s inhabitants to disperse, forming a diaspora that spans the world. Following the language and conceptual frames conveyed to me through my research, I refer to these communities as the “island diaspora” out of respect for its diverse descendants and their preferred identities. The island diaspora has relied on digital communication to maintain connections to the island at times when geographic mobility was impossible or undesirable. The messaging application WhatsApp is popular with Sri Lankans in the diaspora and on the island. Sri Lankan blogs and Instagram accounts have also emerged in light of the recent tourism influx. Facebook and YouTube remain favored among diasporans as well as websites dedicated to citizen journalism and political organizing. I trace communication from analog to digital beginning at telephones, through early internet use, to the rise of social media, all of which informs a modernized understanding of transnational mobility and diaspora. Ultimately, I argue the island diaspora’s relationship to digital communication reveals the limitations of imposed rigidity in scholarly definitions of diaspora, which necessitate the concept of permanent relocation. Instead, diaspora as it exists in the digital stratosphere means none of its members ever truly “permanently” relocate; thus, diasporas’ use of digital communication to achieve transnational mobility engenders a long-overdue acknowledgement of all diasporas’ dynamism, constituents and influence.

The Relationship between Subjective Socioeconomic Status and Feelings of Empathy in Encounters with Economically Disparate Targets

_Liesel A. Staubitz, Psychology_  
_Sponsors: Professor Eric Knowles, Psychology; Shahrzad Goudarzi, Psychology_

Economic inequality is at its record high in the US, yet many Americans seem ambivalent towards this widening gap between rich and poor. Additionally, redistributive policies are not as broadly endorsed as might be expected. Does subjective socioeconomic status, how we view ourselves within the system, influence how we feel in the face of others’ economic advantage or disadvantage? Prior findings suggest that people of lower subjective socioeconomic status tend to be more prosocial and other-oriented than those of higher subjective socioeconomic status. Furthermore, other research points to the possibility that those of low subjective socioeconomic status may harbor feelings of resentment towards the rich. In this study we examined the relationship between subjective socioeconomic status and feelings of empathy in response to exemplars of economic inequality in daily life. We used an ecological momentary assessment methodology in order to capture emotional responses to encounters with poor and rich exemplars in daily life over a nine-day period. We predicted that in encounters with a much poorer target, those of lower subjective socioeconomic status would report feeling more empathy than those of higher subjective socioeconomic status.
status. In encounters with a much richer target, we predicted that those of high (vs. low) subjective socioeconomic status would report feeling more empathy. Upon analysis, we found that our results were not statistically significant, though they were trending in the predicted directions. Implications and future directions for investigating the psychological factors that perpetuate economic inequality are discussed.

**CIA’s Implementation of FOIA over 2008–2017**

*Graham Streich, Politics*

*Sponsor: Professor Anna Harvey, Politics*

I look at whether the Central Intelligence Agency (CIA) is responsive to the electoral cycle guided by the research question: Does the election cycle affect the Central Intelligence Agency’s response to FOIA requests? I discuss the literature on political influences on federal agencies during election cycles. Then I discuss traditional theories of congressional and presidential oversight of agencies and provide a thorough history of the CIA and Freedom of Information Act (FOIA). I use FOIA data from the CIA and election outcome data from the Federal Election Commission in fixed effects models to analyze the relationship between the election cycle (IV) and the CIA’s response to FOIA requests (DV). I expect there to be no relationships across my models given the CIA’s tremendous secrecy and political insulation.

**Children’s Identification of Linearity on Different Geometric Surfaces**

*Simran Suresh, Psychology*

*Sponsor: Professor Moira Dillon, Psychology*

Formal geometry is at the foundation of our most important cultural achievements, including science, technology and mathematics. The geometric content underlying some of formal geometry’s rules and axioms is nevertheless intuitive. For example, previous research from our lab demonstrated that adults were surprisingly able to make accurate judgments about linearity on different geometric surfaces, like spheres. Since adults typically have little to no prior formal education about spherical geometry, this research suggested that formal instruction in spherical geometry does not predicate adults’ success. If this is the case, might such successful judgments about linearity emerge in childhood, long before we encounter any formal geometry in school? Our current study explores this question by testing 6–8-year-old children’s identification of straight and curved lines on a subset of the trials on which adults were previously tested. To help children understand the task, the objective was presented as a task about efficient navigation in which children were asked to make judgments about an agent that traverses different planes and spheres to reach a goal. Children demonstrated a robust planar bias across planes and spheres. Regardless, they were also successful identifying geodesics as the most efficient path on spheres. The results of this study suggest that our intuitions about the basic but essential elements of formal geometry are gained long before adulthood through everyday acts of navigation and object recognition.

**MORE’s Militant Minority: A Case Study of the 2018–2019 #RedforEd Movement**

*Nina Svirsty, Gender and Sexuality Studies, Mathematics*

*Sponsor: Professor Andrew Ross, Social and Cultural Analysis*

Across the twentieth century, socialist organizers have played a crucial role as part of the “militant minority” of the US labor movement (Moody, 2000). And yet, both the Left and the labor movement have become marginalized under recent decades of neoliberal austerity in the US. With this in mind, McAlevey (2016) argues that education is one of the key “strategic sectors” for “whole-worker organizing” in the US right now. Indeed, rank-and-file teacher-organizers have forged an important political opening in the past decade, stirring unprecedented levels of mass worker militancy from Chicago to West Virginia to Oklahoma to Los Angeles. Interviews were conducted with six militant socialist organizers who are active members of the Movement of Rank and File Educators (MORE), a rank-and-file caucus within the New York City teachers’ union. This ethnographic fieldwork was informed by the analysis of labor scholars like Kim Moody and Barry Eidlin, who conceive of a Rank and File Strategy in which militant organizers strive to help deepen and broaden the US labor movement in specific strategic ways. Within MORE lies a case study of a contemporary “militant minority” in action, presenting key questions about how socialists engage in rank-and-file labor struggle today.

**The Political Consequences of Globalization in Hungary: An Analysis of International Trade and Party Support**

*Petra Szepesi, Economics, International Relations*

*Sponsor: Professor Amy Catalinac, Politics*

Hungary’s leading right-wing party, Fidesz KDNP, has retained political control in Hungary ever since its landslide victory in the 2010 National Elections. Prior to the electoral success of Fidesz, Hungary ran a massive trade surplus, which benefited the country’s manufacturing and industrial sectors. Hungary’s export sector is dominated by low-skill, labor-intensive industries; hence, the manufacturing workers of these industries have greatly benefited from international trade. This thesis seeks to examine the underlying economic factors driving this shift to the right and the overall effect of international trade on the political behavior of export workers. The time period of interest for the purpose of this study is from 2006 to 2014 when Fidesz’s most salient policy proposals were strong
right-wing economic policies. Through quantitative analysis, this research finds that individuals benefiting from increased exports are more likely to vote for right-wing parties for their economic policies such as decreased social welfare benefits and lower taxes.

Real-Time Postural Transitions in Infant Development
Tiger Teng, Psychology
Sponsor: Professor Karen Adolph, Psychology

Despite long-standing research showing how and when infants learn to sit, crawl, stand, walk, and so on, little is known about the quantity and frequency of infants’ transitions from one posture to the other in real time. Moreover, it is unknown whether these transitions facilitate, impede or are inconsequential to the advancement of motor milestones. Here we describe the quantity and frequency of postural transitions in 15, 10-month-old crawlers during 20 minutes of free play. At the time of the recording, all infants could crawl on hands and knees but none could walk independently. Parents then informed us about when their infants began walking. Preliminary findings from 5 infants show that postural transitions are abundant and ubiquitous—infants transition between postures on average 91 times in 20 minutes and do so at an average frequency of 5 times/minute. However, infants showed tremendous inter-individual variability (51–156 transitions, 2–8 transitions/minute). The most common transitions were on the floor, between crawling and sitting. We hypothesize that infants with more real-time transitions during the crawling period begin walking earlier. These findings demonstrate the immense doses of postural transitions in infants and the potential impact on developmental motor outcomes. The quantity and frequency of postural transitions could be used as a measure for assessment and also considered as a reference standard to compare the effectiveness of training in children with disabilities.

Investigating Connections between International Finance and Labor Market Outcomes
Quinton Tilley, Economics, Mathematics
Sponsor: Professor Gerald McIntyre, Economics

Research concerning international capital flows has seen much attention since the early 1990s. Much of the literature focuses on determinants of these flows, their effects on growth or their behavior around financial crises. This paper looks to contribute to the financial globalization literature by examining whether inflows of capital may affect local labor market outcomes, especially in more vulnerable economies. To achieve this, an empirical investigation is conducted which is restricted to a panel of advanced and emerging economies. There are three key results of the paper. There is evidence that emerging economy labor markets are much more sensitive to capital inflows than those of advanced economies. Subsets of countries separated by economy type or region in the panel exhibit varying significance and magnitude of common sensitivity to capital inflows. Most coefficients on capital inflows are negative, indicating that an increase of capital inflows is usually associated with a subsequent fall in unemployment rates.

The Conservative Leanings of First-Generation Vietnamese American Refugees
Mai Tran, English and American Literature
Sponsor: Professor Thuy Linh Tu, Social and Cultural Analysis

During the 2016 elections, there were a surge of news reports such as “Asian-Americans Continue to Drift Away from the GOP,” “A California Congressional Race
they left? I seek to find answers by running several dif-
-
-fication, particularly electoral participation, in the nation
-
elsewhere. How do these migrants affect political partic-
-
torial freedom of movement to find opportunity
-
the Ceausescu regime in 1989, Romanians have utilized
-
Romania has faced some of the highest levels of migration
-
levels of displacement. The Eastern European nation of
-
economic growth. This paper explores the impact of an im-
-
sion of building permits prior to an election to foster the
-
seeking to secure more votes can manipulate the provi-
-
importance in a world facing high
-
the goal gradient hypothesis, motivation to pursue a goal
-
itive distance to the goal decreases. For
-
attention techniques to improve exercise efficiency among
-
exercise. In this study, we aimed to uncover some visual
-
importance at the end of a Run
-
Building by the Ballot Box: The Effects of Impending
-
-
Sponsor: Professor Christopher Dawes, Politics
-
Local mayors face incentives to manipulate urban
-

to upset motions in past years. Among these policies is the
-
building permit process. Incumbent mayor candidates
-
seeking to secure more votes can manipulate the provi-
-
lop of building permits prior to an election to foster the
-
appearance of an efficacious government that stimulates
-
This paper explores the impact of an im-
-
eld mayoral election on waiting periods for building
-
permit applications in San Francisco from 1995 to 2015.
-
Using a difference-in-differences model with fixed effects
-
to explore if latency periods decrease as an election nears,
-
initial results from robust regressions indicate a small, but
-
statistically significant, relationship: as an election nears,
-
average latency periods decrease. However, this relation-
-
ship becomes insignificant in all but one electoral cycle
-
when a fixed-effects model is used. Permit type,
-
previous voter turnout, previous incumbent vote share, the
-
presence of an incumbent and the type of electoral system
-
used in a given cycle do not affect latency periods.
-
Romanian Emigration and Political Participation:
-
How Does Emigration Abroad Affect Voter Turnout
-
Back Home?
-
Sponsor: Professor Amanda Kennard, Politics
-
Migration’s influence on political participation is an
-
increasingly important question in a world facing high
-
levels of displacement. The Eastern European nation of
-
Romania has faced some of the highest levels of migration
-
of any nation for the past three decades. Since the fall of
-
the Ceausescu regime in 1989, Romanians have utilized
-
their increased freedom of movement to find opportunity
-
elsewhere. How do these migrants affect political partic-
-
ipation, particularly electoral participation, in the nation
-
they left? I seek to find answers by running several dif-
-
ference-in-differences designs comparing voter turnout
-
-between Romanian municipalities facing high levels of mi-
-
-ation to those facing low levels of migration. I compare
-
voter turnout in the two groups before and after “shocks”
-
to migration that have allow increased movement. In order
-
to increase robustness, I utilize two “shocks”: the 2002 lift-
-
ing of visa restrictions to the Schengen area and the 2007
-
enlargement of the European Union to include Romania.
-
In analyzing political participation at the municipal level,
-
I seek to paint a larger picture of how migration has affect
-
Romania long-term politically.
-
Locomotor Exploration at Home
-
Sponsor: Professor Karen Adolph, Psychology
-
A century of research on the development of walking
-
has examined how well infants walk and how adaptively
-
infants navigate obstacles. But researchers still know little
-
about infant’s spontaneous locomotor activity. Previous re-
-
search is limited primarily to single visits in structured “lab
-
playgrounds” for relatively short periods of time (10–30
-
minutes). Thus, previous work cannot reveal whether in-
-
fants’ activity in a novel playroom is representative of what
-
they do at home, of what they do over longer time periods,
-
and of what they do from day to day. We video-recorded
-
18 walking infants (13-, 18-, and 23-month-olds, 6 per
-
age group) during 2 hours of everyday activity at home on
-
each of two days (within a week). In addition, we collected
-
room dimensions and open space to describe environmen-
-
tal opportunities for locomotion. Our preliminary analyses
-
will: 1) characterize how much infants walk during natural
-
activity in their homes; 2) test whether infants’ locomotor
-
activity is stable across time—from one hour to the next
-
and one day to the next; 3) test whether the quantity and
-
distribution of activity changes across development; and
-
4) determine whether the amount of available space in the
-
home influences infants’ locomotor activity. Our findings
-
may have practical implications and clinical relevance for
-
the design of children’s play environments and therapeutic
-
interventions to facilitate locomotor activity in infants with
-
typical development and disabilities.
-
Visual Attention Strategies and Running: The
-
Importance of Focused Visual Attention at the End of
-
a Run
-
Sponsor: Professor Emily Balcetis, Psychology
-
A major contributor to rising obesity rates is lack of
-
exercise. In this study, we aimed to uncover some visual
-
attention techniques to improve exercise efficiency among
-
individuals running towards an end goal. According to
-
the goal gradient hypothesis, motivation to pursue a goal
-
increases as proximal distance to the goal decreases. For
exercise tasks, such as running, we propose that there is a visual attention component behind this behavior. When individuals approach an end goal, they may visually focus on their target, which in turn may increase their approach behavior. Previous research found that when individuals adopted a focused visual attention strategy, they completed an exercise-walking task more efficiently. Considering these findings, we tested whether the experimental results are congruent with running out in the real world. We had experienced runners complete a survey, in which they indicated their preferred visual attention strategy throughout various points in a race. Our results found that runners tend to use a focused visual attention strategy significantly more at the end of a race than they do at the beginning. Additionally, short distance runners tend to use a focused strategy marginally more than long distance runners overall. Furthermore, competitive runners tend to use a focused visual attention strategy significantly more overall than non-runner comparison athletes do while running. We discuss our findings as well as implications for the design of interventions that shape visual attention patterns to improve physical activity for athletes and non-athletes alike.

The Slowdown of Growth of College Wage Premium in the US since the 1990s
Bupei Wang, Economics
Sponsor: Professor Michael Gilraine, Economics

The slowdown of growth of college wage premium in the US since the 1990s is a crucial phenomenon to study. It has important implications on US higher education and its students. College wage premium refers to the extra wage that a worker with a college degree earns compared to one with only a high school degree. While the majority of research explains the slowdown through labor demand and supply, this research explains it through changing student qualities. Meanwhile, this research combines the National Longitudinal Study of 1979 (NLSY’79) dataset with the National Longitudinal Study of 1997 (NLSY’97) dataset to enable a long-term analysis. The research discovers that students with lower academic abilities are more likely to become college students in the NLSY97 dataset. This leads to the conclusion that from 1980s until today, the expansion of college education has caused average student quality to fall and depressed the growth of college wage premium.

From the Ashes: Recovery in Redding
Kaitlyn Wang, History, Journalism
Sponsor: Professor Jason Samuels, Journalism

In this past year, multiple major wildfires have burned through northern California and captured national attention. The Tubbs Fire of October 2017 destroyed Sonoma County. Cities like Santa Rosa are still picking up their pieces, one year later. The Carr Fire burned through Shasta County, north of Sacramento, in July and August of 2018. And residents of the area barely got to breathe when the Camp Fire, which became the state’s deadliest and most devastating wildfire in history, killed 88 people and burned through almost 14,000 homes. After the fire’s warpath: what’s left of the people it damaged? How do people move on? How does a community rebuild? This research project examines the twisting and grueling road to recovery—physically, emotionally, spiritually—in the tight knit community of Shasta County devastated by the Carr Fire. Through interviews and analysis, this multimedia journalism project grapples with questions of home, resiliency and healing.

Attentional Capture Is Necessary but Not Sufficient for the Diffusion of Moral Ideas Online
Miaohang Wang, Mathematics, Psychology
Sponsor: Professor Jay Van Bavel, Psychology

With over 2 billion active users, social media is now a major marketplace for the exchange of moral and political ideas, but with so many users it is “easy to speak, but difficult to be heard.” Recent research found that the expression of morally-framed emotion in political messages increases social media engagement, an effect called “moral contagion.” The present research hypothesized that the moral contagion effect is partly driven by attentional capture. The first part of the study (N = 50) tested this hypothesis using a modulated version of an Attentional Blink paradigm and found that morally-framed emotional language captured significantly more attention than neutral language. In the second part of the study (N = 56), we improved the ecological validity of the study by framing stimuli in a Twitter-form so word stimuli appear in a more naturalistic context. Follow-up analyses showed that the second study replicated the result of the first study. There was a significant main effect (p < .001) that morally-framed emotional language captured more attention than neutral language. These results further support that attentional capture is necessary but not sufficient for retweet decisions and suggests that other functions of moral emotions like in-group signaling also influences retweet decisions.

Spillover Effects of Congressional Spending
Laiba Wajas, Politics
Sponsor: Professor Christopher Dawes, Politics

Political campaigns in the United States can be characterized as money-raising machines. From the inception of the campaign, to fundraising for the next term, candidates spend much of their time fundraising, evident in candidate expenditures which have skyrocketed in the past few years, regardless of what position the candidate is running for. In an attempt to uncover the nuances of spending, this project is primarily focused on the spillover effects of congressional spending. As attempting to understand the
when political divisiveness is often at odds with our ability in conversation with these important voters during a time rapidly approaching, my reporting allows the reader to be archetype nor receive equal media coverage. With 2020 through my characters’ many similarities, differences and women to illustrate the complexity of their demographic Republican Club and traveling to highly educated, conservative areas in Ohio and Florida, I’ve interviewed enough Trump while others like them have since turned their entire campaign was riddled with scandals involving sexual harassment and extramarital affairs. Two years into Trump’s presidency, in the November 2018 midterm elections, educated, white, suburban women were one of the key voting blocs to watch. And while they did swing left, 59 percent of them voted for democratic congressional candidates compared to 49 percent in 2016 (Tyson, 2018), my research found that educated women in some of the country’s most politically significant states and counties didn’t budge. And they don’t plan on moving from the President’s side in 2020. My story answers the question of who these women are and why they continue to support President Trump. Exit polls in 2016 found that Trump carried 45 percent of white women with at least four-year college degrees—a notable outcome considering his opponent was the first female presidential candidate in history and his own campaign was riddled with scandals involving sexual harassment and extramarital affairs. Two years into Trump’s presidency, in the November 2018 midterm elections, educated, white, suburban women were one of the key voting blocs to watch. And while they did swing left, 59 percent of them voted for democratic congressional candidates compared to 49 percent in 2016 (Tyson, 2018), my research found that educated women in some of the country’s most politically significant states and counties didn’t budge. And they don’t plan on moving from the President’s side in 2020. My story answers the question of who these women are and why they continue to support President Trump while others like them have since turned their backs. By frequenting Manhattan’s Women’s National Republican Club and traveling to highly educated, conservative areas in Ohio and Florida, I’ve interviewed enough women to illustrate the complexity of their demographic through my characters’ many similarities, differences and personal challenges. They neither fit the Trump-voter archetype nor receive equal media coverage. With 2020 rapidly approaching, my reporting allows the reader to be in conversation with these important voters during a time when political divisiveness is often at odds with our ability to listen to one another.

Steadfast for Trump: Why Some College-Educated Women Are Standing Behind the President

Kailey Wasserman, Journalism, Social and Cultural Analysis
Sponsor: Professor Brooke Kroeger, Journalism

My research seeks to understand and illuminate a dwindling demographic of American voters who wield significant power: college-educated women who support President Trump. Exit polls in 2016 found that Trump carried 45 percent of white women with at least four-year college degrees—a notable outcome considering his opponent was the first female presidential candidate in history and his own campaign was riddled with scandals involving sexual harassment and extramarital affairs. Two years into Trump’s presidency, in the November 2018 midterm elections, educated, white, suburban women were one of the key voting blocs to watch. And while they did swing left, 59 percent of them voted for democratic congressional candidates compared to 49 percent in 2016 (Tyson, 2018), my research found that educated women in some of the country’s most politically significant states and counties didn’t budge. And they don’t plan on moving from the President’s side in 2020. My story answers the question of who these women are and why they continue to support President Trump while others like them have since turned their backs. By frequenting Manhattan’s Women’s National Republican Club and traveling to highly educated, conservative areas in Ohio and Florida, I’ve interviewed enough women to illustrate the complexity of their demographic through my characters’ many similarities, differences and personal challenges. They neither fit the Trump-voter archetype nor receive equal media coverage. With 2020 rapidly approaching, my reporting allows the reader to be in conversation with these important voters during a time when political divisiveness is often at odds with our ability to listen to one another.

An Etiology of Climate Denial: Oscillations between Recognition and Disavowal

Benjamin Weinger, Individualized Major
Sponsor: Professor Karen Holmberg, Gallatin School of Individualized Study

The impervious western production of everyday life provokes and prevents humanity from confronting unprecedented climate change. Despite scientific consensus and prescient warnings on anthropogenic forcings that destabilize climatic conditions, the industrialized global North—generalized here but recognizing the inherent nuance and radical inequalities between and among peoples in this category—continues to live far from a sustainable reality. In one dimension exists a collective construction of habitual everyday life, in the other lies knowledge of climate change. These two landscapes rarely collide, simultaneously incomprehensible yet also common knowledge. Seeking to uncover the historical interdeterminacies that underlie and engender the phenomenon of western inaction and nonresponse, this study presents an interdisciplinary dialogue and etiology of climate denialism. Building on historiography, this paper begins with a brief review of the Anthropocene, the proposed current geological epoch of pervasive and profound anthropogenic influence on Earth systems. This study then investigates the dynamic conditions of the Anthropocene including neoliberalism, individualism, the accumulation of capital by dispossession and globalization. Finally, this study proposes that these conditions emerge as distinct instantiations of how capitalism, colonialism and modernity encroach on social spheres and daily life to produce denial and provoke oscillations between recognition and disavowal. As a critical and urgent subject, this analysis highlights the need for interdisciplinary research to make sense of the impending environmental crisis.

A Hermeneutics of the Tourist State: Aotearoa/New Zealand

Joseph Weinger, Individualized Study
Sponsor: Professor Meredith Theeman, Gallatin School of Individualized Study

This research analyzes bilingual discourses (te reo Māori/English) as they relate to tourism in constructing and narrating a national multicultural identity in Aotearoa/New Zealand, classified in academe as a “tourist state” (Werry, 2011). Pulling from sociology, sociolinguistics, cultural studies and post-colonial theory, I critically consider interpellation of the tourist in a highly constructed experience. My thesis focuses on the dialectic between tourist and host in a country where identity is constantly being negotiated through hybridity in a site of contestation. A linguistic modality of knowledge operates through social constructionism; the tourist comes to understand a place/nation partly by and through interactions with language. I observe how
New Zealand as a nation is continuously being produced through discourses of language that attempt to form a singular identity when, in fact, “national cultures help to ‘stitch up’ difference into one identity” (Hall, 1996), thereby emphasizing socio-cultural hegemony particularly in a nation grappling with a complex settler-colonial past (and, arguably, present). Synthesizing my experiences travelling and researching in New Zealand with multidisciplinary texts including New Zealand’s national tourism website, I engage with a long line of scholarly argumentation surrounding tourism, identity formation and globalization. Questions I examine include: How does language, particularly the state’s use of bilingualism, shape the experience of the tourist? How might New Zealand’s expression of shared cultural heritage, and emphasis on multiculturalism, define the tourist state? In what ways does the tourist come to understand the tourist state through language?

God’s Country: The Proliferation of Evangelical Christendom and Its Impact on Voting Behavior in America
Claire Williams, Politics
Sponsor: Professor Christopher Dawes, Politics

As of 2012, America is no longer majority mainline-Protestant. Evangelical-Protestantism, alongside non-Christian religions, continues to rise in popularity, with nearly 25% of the population self-identifying as evangelical-Protestant Christian today (Liu, 2013). This phenomenon of shifting religious influence is critical to the study of politics in the United States and understanding why the evangelical vote is considered such an important aspect of a successful Republican campaign. Observing that evangelical Christians demonstrate a tendency to vote in higher proportions for Republican presidential candidates than mainline-Protestants and other Christians, this study aims to answer the question: What is the impact of the proliferation of evangelical Christendom on voting behavior in America? The study examines the effects of the spread of evangelical Christian churches on a county’s tendency to vote for Republican presidential candidates. To analyze the physical impact of a religious institution’s opening or closing on voting behavior at the county level, the study utilizes a difference-in-difference design including time and geographically fixed effects for 2,710 counties in the US over seventeen presidential elections. This study finds a statistically significant, positive relationship between greater shares of evangelical churches and higher vote shares for Republican presidential candidates within counties between the 1980 and 2012 Presidential elections. The study also finds that this relationship is emphasized further in southern counties than in non-southern counties.

The Politics of a Super-Presidential State: The Use of Information and Communication Technology for Electoral Manipulation in Putin’s Russia
Natasha Williams, Economics, International Relations
Sponsor: Professor Amy Catalinac, Politics

Over the course of Russia’s political transition from the end of the Cold War, national democratic elections have been subject to increased stipulation of political manipulation and influence by the Russian federal government, known as the Kremlin. As Russia has fallen from being a democracy into a semi-authoritarian regime type during the twenty-first century according to the Polity IV Project, electoral outcomes have become a barometer for the purported democratic backslide taking place within Russian society. Notably concurrent with Russia’s decline has been the country’s nearly twenty-year retention of Vladimir Putin in the executive, a reality prolonged by dramatically favorable, and oftentimes questioned, supermajority electoral vote shares. To secure such overwhelming and “Super-Presidential” support for Putin, this study finds through quantitative analysis that a realm of illegitimate “virtual politics,” born from the information tactics and counterintelligence measures of the Soviet Union, is alive and active in Russia today (Linn, 2006; Wilson, 2005). Through the enablement of the internet and modern information and communication technologies (ICT), the Kremlin actively engages in manipulative information operations to induce voter intimidation, to generate economic consequences and opportunity costs for its citizenry and to create societal disinformation as a means to monopolize power over the Russian executive, eroding future democratic outcomes in the country.

Reconceptualizing Negotiations: Colombia, the FARC and Environmental Peacebuilding
Sidney Williams, Global Liberal Studies, Spanish
Sponsors: Professor Peter Diamond, Liberal Studies; Professor Laura Torres-Rodriguez, Spanish and Portuguese

The thesis examines the efficacy of diplomacy in international relations and the emerging field of environmental peacebuilding through a case study of the peace negotiations with the Revolutionary Armed Forces (FARC) in Colombia. Classical theories concerning negotiations with terrorist organizations will be analyzed in order to disprove arguments that posit violent groups as insurmountable impediments to peace. The current implementation of a bilateral peace accord with the FARC guerrilla group represents an opportunity to understand the consequences of a non-violent agreement that reflects a break with policies historically held by Western nations. These policies prevented
significant or systematic exploration of how negotiations with violent insurgent groups took place. The thesis looks to disrupt the field of conflict resolution with the incorporation of an environmental peacebuilding framework, providing an intersection between transitional justice and land tenure that can be used by governments and institutions alike to establish sustainable economic, political and social developments in the post-conflict society. Recognizing that natural resources and conflicts are linked and therefore demand further deliberation in the peacebuilding process will provide an element that has been missing thus far in resolution efforts, and be a potentially propitious catalyst in conflicts around the world.

**Politicalization of Family Planning: Examining the Influence of Presidential Electoral Politics on Title X**  
*Katrina Wilson, Politics*  
*Sponsors: Professor Anna Harvey, Politics; Professor Christopher Dawes, Politics*

Following Donald Trump’s victory in the 2016 US General Presidential Election, a variety of concerns in the milieu of women’s reproductive rights have emerged among experts and members of the public alike. While abortion is often the hot-button word in these discussions, broader threats exist to family planning and uncontroversial reproductive health services as well. Implicated in this issue is the little-known Title X Family Planning Program, which allows poor and uninsured individuals to access a wide variety of free or affordable family planning services. Access to this care is largely determined by the administration of Title X grants by the Office of Population Affairs (OPA) within the Department of Health and Human Services (HHS). While attention is often paid to Congress’s role in allotting a certain amount of the federal budget to Title X through the annual appropriations process, less discussed is how this pot of funds is divided among localities and distributed between individual clinics—a complicated and opaque process involving decision-making by OPA and HHS leaders appointed by the president. Despite these agencies’ claims of impartiality, I posit that they are highly politicized by their executive appointees. My research uses a difference-in-differences design to investigate this claim. I ultimately find evidence to support the idea that both the political party of the president and voting behavior on the county level are significant predictors of the spread and distribution of Title X clinics across US counties in the years following a presidential election.

**First Farmers: Constructing a Narrative of Italy’s Neolithic**  
*Dylan Winchell, Anthropology and Classical Civilization*  
*Sponsor: Professor Pam Crabtree, Anthropology*

No attempts have been made during this decade to synthesize archaeological evidence from Italy’s Neolithic and Chalcolithic period, roughly 6000 BCE to 2500 BCE. The last attempt to do so is now outdated, since advances have been made in the nature of archeological analysis. This has in turn brought new evidence into the conversation about Italy’s earliest farmers. However, at the moment, none of this evidence has been used to form a cohesive narrative. Indeed, much of what has been published has been published in both Italian and English in seemingly equal amounts, and not all educated individuals can access all of the disparate data due to language barriers. All of this leaves the average, non-specialist reader with dated information and a slim chance of learning the basic socio-cultural narrative of Italy’s Neolithic period. The present project has aimed to remedy this by pulling authoritative sources from recent years together to form such a narrative, which is ready to be presented to the average, educated and interested reader. It is hoped that this project can be used to both generate interest in and knowledge of Italy’s Neolithic, which in the wake of Greek, Roman and Etruscan scholarship is left largely unknown by the public.

**The Relationship between Considering Future Outcomes and Describing the Self**  
*Tim Wongvibulsin, Psychology*  
*Sponsor: John Sciarappo, Psychology*

This study explores the relationship between psychological distance and how an individual describes themselves. Previous studies have found that psychological distance affects how we think and categorize ideas. For example, a study found that the farther removed an event is to themselves, the higher (more abstract) the individual tends to think of that event. In contrast, the closer an event is to themselves, the lower (more concrete) the individual tends to think of that event (Trope and Liberman, 2011). In addition, other studies have supplemented this finding by showing that traits can be primarily categorized by two specific content, agentic and communal. When observing those farther away, individuals tend to place a greater emphasis on agentic content. In contrast, when observing those closer to themselves, individuals tend to place a greater emphasis on communal content (Abele and Wojciszke, 2014). In this study, we wanted to research how different distances affect one’s attitude towards traits when describing themselves. We measured psychological distance using the Consideration for Future Consequences (CFC), a measurement of one’s orientation for the future. In addition, we asked individuals to rate their perception of 21 different traits on a set of different scales including implicit quantification, diagnosticity, stability, desirability, valence and more. We then examined the relationship between CFC and these different elements using statistical analysis.
Social Mobility and Category Processing  
Lily Wu, Psychology  
Sponsor: John Sciarappo, Psychology  

Social mobility is an individual’s ability to traverse social distance within a social hierarchy and as such, has been shown to be an important indicator of system legitimacy. Previous research by Day and Fiske (2017) suggests that individuals who believe a system possesses social mobility are motivated to maintain it, while individuals who believe a system lacks social mobility are motivated to change it. Understanding the cognitive process behind perceived social mobility beliefs and its effect on social relations, then, is an important psychological question. Extending this research, the present study examines this effect through the relationship between perceived social mobility beliefs and inclusiveness of categories. We hypothesize that individuals who believe in high social mobility will be less inclusive of categories than those of lower social mobility beliefs. Understanding the mechanisms through which perceived social mobility affects individuals can provide insight into facilitating appropriate social change.

Gender Differences in the Coping and Expression of Stress  
Sammy Wu, Sociology  
Sponsor: Professor Ruth Horowitz, Sociology  

Each day college students are inundated with various amounts and types of stressors. The stress can be practical such as a heavy academic workload or troubles finding an internship or emotional such as conflicts occurring between family members or friends. Although stress by itself seems to be a constant for both types of genders, how individuals express their stress and choose to cope differs, and it can be said that such behavior is influenced by their gender. Previous research has shown that males tend to be more problem-oriented, preferring to deal with the problem at hand through a logical and strategic way rather than focusing too much on the emotions attached to the problem. They also tend to turn inward rather than outward and reach for social support, preferring to keep their problems to themselves. Women, however, have been shown through previous research to be more emotional and more willing to reach out for social support from peer groups. While such general statements have a blanket truth to it, this research, which is a qualitative study done with 20 undergraduate college students at NYU, has found that there are nuances to the situation in that not all men are emotionally distant and not all women are prone to emotion. It is also especially interesting to take into consideration that the younger age of the cohort under study might play a significant factor, as the younger generation tends to distance itself from gender norms and stereotypes.

Auschwitz-Birkenau Memorial and Museum: Walking the Tightrope to Provide Accurate Holocaust Narratives  
Madison Wulf Elbich, Anthropology  
Sponsor: Professor Jane Anderson, Anthropology  

The Auschwitz-Birkenau State Museum (ABSM) is the largest Holocaust museum in the world, a UNESCO world heritage site and a dark tourism destination. Dark tourism—tourism occurring at sites of suffering—is a relatively new academic topic. Anthropologists seek to comprehend how people interact with, understand and, through their interest, create dark tourism sites. Much dark tourism anthropological ethnographic research takes place in de-commissioned prison museums, and, some, in the genocide museums. These ethnographies are relevant to understanding how the narrative at a dark tourism site can influence understanding at the site. The ABSM has two main narratives, Polish Martyrdom—Poland’s national mythology that states the Polish people suffered as much as any other group during the Holocaust—and Jewish suffering. My research seeks to address how the competing Polish Martyrdom and Jewish suffering narratives influence tourist interaction and understanding of the site and their ability to bear witness and understand to what they bear witness. The Polish Martyrdom narrative circulated within and by the Museum makes it difficult for the average visitor to interact with the Museum in the way they had hoped. This creates a disconnect for non-Polish visitors that makes the individual uncomfortable and unable to feel an emotional connection to the site and its victims. The Museum’s main goal is to prevent future genocide, but it could better accomplish this goal if it designed productive and engaging spaces within the tours for discussion with visitors about current xenophobia and the modern-day ramifications of the Holocaust that remain visible. It is my hope that Poland will come to terms with its troubled history and allow Auschwitz-Birkenau to be a site of transparency and conscience, so it can fulfill its mission of preventing future genocide and xenophobia.

Safety Strategy Theory (SST): The Development of a New Scale for Measuring Safety Strategies  
Renee Yang, Psychology  
Sponsor: Professor John Jost, Psychology  

Attachment styles in social psychology suggest fundamental ways of functioning in interpersonal relationships. They have been measured in terms of the presence versus absence of avoidant and anxious attachment, where the absence of both indicates secure attachment. The current research uses attachment theory as a basis for proposing four safety strategies that individuals use beyond an interpersonal context: accommodation and coercion correspond to avoidant and anxious attachment, respectively, and informing and understanding together constitute a
strategy corresponding to secure attachment. Rather than focusing on how one attaches to people, this scale aims to assess how individuals manage safety and wellbeing in a larger sense. To develop a scale to measure the four strategies, 187 participants were asked to indicate their agreement with 367 statements on a 7-point scale ranging from “strongly disagree” to “strongly agree.” Items that were significantly correlated (p < 0.05) with avoidance or anxiety, as well as applicable to both avoidant/non-avoidant accommodation and needy/non-needy coercion were selected for the next round of testing. This produced two scales for continued development, one anchored by accommodation and informing, and the other by coercion and understanding. This scale helps make sense of what strategies people are using and not only how to resolve conflict given their current strategy but also increase their repertoire of strategies in the long-term to increase instances of collaboration. This model can then be used to predict various outcomes and interventions in many contexts, including application to organizations.

Adopted from Birth: Asian Adoptees Form Ontological Adoptee Kinships in the Face of Society’s Insistence on Race-Based Identifications
Margaret Yannopoulos, History, Social and Cultural Analysis
Sponsors: Professor Tatiana Linkhoeva, History; Professor Thuy Linh Tu, Social and Cultural Analysis

For Asian adoptees raised in White families, the discrepancy between how they identify culturally and how their race is read by others can be the source of psychological and emotional stress. The struggle for these adoptees to label themselves stems from society’s rigid, pre-existing categorizations which suggest that an individual’s most salient identity is also their most visible. Through an examination of the history of transracial, international adoptions from South Korea to the United States and an analysis of contemporary adoptee communities, this thesis finds that adoptees have been able to construct a new ontological adoptee identity. The establishment of adoptee communities in digital arenas, such as China’s Children International’s Facebook groups, allows users to locate others with shared histories of adoption and to connect across various distances. Through communication facilitated by social media, adoptees are able to find a community and carve out a space to identify themselves as adoptees. Thus, as a result of their forced disidentification with normative classes of personhood, adoptees demonstrate an ontological distinctiveness through the production of an identity that is not dependent on merely demographic or biological sameness—paving the way for similarly conflicted groups to do the same.

A Growth Mindset Scale for Young Children
Hannah Yoo, Psychology
Sponsor: Professor Andrei Cimpian, Psychology

Mindsets about intelligence affect which goals people undertake and therefore have downstream consequences for behavior and learning in achievement contexts. Interventions that teach students that abilities can change and grow with effort and application have been shown to improve academic performance. These studies rely on scales that can reliably and validly measure students’ mindsets. However, the only validated mindset scale is not recommended for use with children younger than ten. Early childhood may be a critical time to measure and intervene on children’s mindsets, given that beliefs about achievement and attitudes about school begin to take shape in preschool and kindergarten. The goal of this project was to create a reliable and valid scale to measure young children’s (4- to 6-year-olds’) mindsets. The mindset scale comprises six story-like vignettes; children are asked to assess whether individuals who are skilled (or unskilled) in math, drawing or reading will always be skilled (or unskilled) in that domain. To establish the predictive validity of our scale, we measured children’s performance vs. learning goals and their self-assessments and persistence after experiencing failure. Compared to children with fixed mindsets, we expected those with growth mindsets to orient toward learning goals, maintain positive self-assessments after failure, and redouble their efforts after failure. This scale will ultimately be of use to researchers who wish to measure and shape early mindsets in order to optimize each child’s academic potential.

The Economics of Political Trust in Southeast and East Asia
Gahyun Helen You, International Relations
Sponsor: Professor Amy Catalinac, Politics

In recent years, the question of what causes political trust has attracted renewed attention in scholarly literature, primarily due to its structural decline in the United States. Current research demonstrates that citizens’ political trust is determined by their demographic traits, such as gender and age, whereas economics plays a lesser or even negligible role. Utilizing the Asian Barometer four wave survey data from thirteen Asian countries, this thesis finds that evaluations in national economic performance has a statistically significant and positive effect on political trust. Furthermore, the results suggest that individuals interpret objective economic values, such as their actual monthly income, and that these subjective judgements inform their political trust levels. This thesis broadens the scope of the current economy-trust nexus from the western case to the rapidly economically developing Asian region while also contributing to the small, but growing body of quantitative scholarship on Southeast and East Asia.
Sleep and Motivation  
**Caroline Zemsky, Psychology**  
*Sponsors: Professor Tessa West, Psychology; Tina Sundelin, Psychology*

Past research has produced results suggesting that an insufficient amount of sleep may deteriorate achievement motivation and academic performance. I extend this research by looking at sleep and various types of motivation it may affect, such as social activities as well as sleep-related activities. To test this relationship, I recruited NYU undergraduate students who were randomly placed into a sleep sufficient group (sleeping 8 hours/night for two nights) or a sleep insufficient group (sleeping 4 hours/night for two nights). When participants come to the lab, two of them are paired together in a dyadic interaction where they are instructed to do a negotiation task. After the negotiation, participants are separated and given a questionnaire to fill out asking them a series of motivation questions. I found an interaction effect between sleep and motivation; in other words, people who were in the sleep-insufficient group were more motivated to do sleep-related activities than participants in the sleep-sufficient group, and less motivated to do social-related activities compared to participants in the sleep-sufficient group. This suggests that insufficient sleep negatively affects motivation to do social-related activities and positively affects motivation to do sleep-related activities. This data adds to the extant literature on sleep and motivation.

The Use of Cementochronology in Paleodemographic Study  
**Iris Zeng, Anthropology**  
*Sponsor: Professor Stephan Naji, Anthropology*

One of the continuing problems in paleodemography is the inability to accurately age adult skeletons while age estimation is critical to the proper evaluation of the population health. Traditionally, biological anthropologists have used morphological traits of bones and teeth to estimate adult age at death. Cementochronology is the analysis of histological thin-sections of dental roots, where we can observe and count cementum increments, the interface between the dentine and the alveolar bone, in transmitted polarized light microscopy to precisely estimate adult age-at-death. This research is a preliminary analysis of Early Bronze age burials of semi-nomadic hunter gatherers at the site of Shamanka II in the Lake Baikal region in Russia. Cementochronology will be used to estimate the age-at-death of the human sample and the results will be used to tentatively investigate competing mortality models.

Do Representations of Social Groups Differ by Culture?  
**Ashley (Qingyang) Zhang, Applied Psychology, Computer Science**  
*Sponsor: Professor Andrei Cimpian, Psychology*

A basic understanding of how people think about social groups is critical to our understanding of how people function in social settings. Previous literature demonstrated an intuitive taxonomy of social groups. However, existing research was primarily set up in an individualistic, Western context. The current study examined how this layman theory of group typology may differ as a function of the cultural context. Specifically, we compared Americans and Indians as we expected cross-cultural differences between these two populations, including how tolerant they are of group deviance and how collectivistically-oriented they are. 391 participants from the United States and 352 participants from India were recruited to evaluate 40 sample groups on 19 different dimensions of group functioning. The perceivers’ classification of social groups was examined by cluster analysis methods on two data sets. The NbClust package in R was used to determine the number of clusters. The algorithm suggested four as the optimal number of clusters for the American sample and three for the Indian sample. Cluster analysis results conceptually replicated the typology model proposed by previous literature in a Western, individualistic culture (e.g. American) with more advanced statistical methods and larger sample size, yet yielded different solutions for people from different cultural backgrounds (e.g. Indian). Such discrepancies suggested that the way people from different cultures organize their mental space of social grouping might fundamentally vary, hence providing a valuable cross-cultural perspective on an intuitive typology of social groups.

Intraparty Mobilization in Contemporary China: Examining the Effects of Party Mobilization on Attitudes toward Local Governments  
**Danning Zhang, Politics**  
*Sponsors: Professor Christopher Dawes, Politics; Professor Anna Harvey, Politics*

Intuition tells us that partisan co-optation in authoritarian states is successful. To what extent do relevant material benefits and ideological discourse change behavioral loyalty, however, remains to be tested empirically. To answer this question, this research studies the political effects of mobilizations within the Chinese Communist Party (CCP) and the Chinese Communist Youth League (CCYL). Through cross-sectional analyses, scholars have studied the case of CCP and produced inconsistent results of the relationship between party membership and political behaviors in contemporary China (Chen et al., 2013; Dickson, 2013). Building on their methodology, I incorporate CCYL membership as an indicator for another dimension
of the party-state’s political mobilization in my analyses. Besides population-level models, I adopt fixed-effects models on the individual level. These models test the causal impacts of CCP or CCYL mobilization on one’s attitudes toward one’s local government. This research has four major findings. CCP or CCYL mobilization increases one’s approval of one’s local government, at least in the short term. CCYL mobilization appears to be an amplifier for the effects of future party mobilizations in both directions. Individual approval of local governments decreases when time progresses, and younger generations are less satisfied with local governments’ performances. This research helps to confirm the salience of the political effects produced by CCP and CCYL mobilizations. It also incentivizes us to study the effects of political mobilization on Chinese youths for a more concrete understanding of China’s political climate.

Adjusting to Automation: Workers’ Life-Cycle Occupational Trajectories and Inter-Cohort Learning
Virginia Zhang, Economics, Sociology
Sponsor: Professor Elena Manresa, Economics

Literature on the effects of automation on industry-level trends in the US labor market has been expanding rapidly. However, there is limited research at the worker-level, especially in longitudinal studies; yet this research is crucial to informing targeted and timely policy interventions. This paper provides methodological and empirical contributions to address these limitations. I present a life-cycle framework for studying workers’ displacement risk due to automation, using data from the National Longitudinal Survey of Youth 1979 and the occupational routine task intensity (RTI) index (Autor and Dorn, 2013). I use a random effects model to predict US workers’ relative displacement risk throughout the life-cycle, based on demographic, socioeconomic, and resource endowment characteristics. While all workers are able to reduce their displacement risk through “occupational adjustment” by transitioning into relatively lower-RTI jobs throughout the career, the extent of this adjustment varies significantly by group. Lastly, I conceptualize displacement risk as a component of the worker’s dynamic occupational choice problem. I demonstrate how this concept may be used to explain observed differences in inter-cohort occupational adjustment across industries when exposed to varying levels of automation in the recent decades.

Atypical Weighting of Bottom-Up vs Top-Down Inputs in Autism Spectrum Disorder
Yian Zhang, Neural Science
Sponsor: Professor Jennifer Foss-Feig, Psychiatry, Icahn School of Medicine

Autism spectrum disorder (ASD) is defined by social deficits and restricted, repetitive behaviors. Underlying these symptoms are impairments in perceptual processing, which occur along associated bottom-up and top-down pathways. Prediction error is the extent to which these two pathways disagree, and it helps us attend to salient events in our environment and refine previously-made generalizations. Prior research supports the notion that prediction error bias is present in ASD and that people with ASD rely more on incoming stimuli than do typically-developing (TD) individuals. Therefore, we hypothesized that ASD participants would have attenuated N1 event-related potential (ERP) response to subthreshold tones compared to TD participants. Participants included 7 ASD adults (Mean=26.1 years, 6 male), and 10 TD adults (Mean=21.8 years, 7 male). Starting with three practice blocks, participants heard tones paired with a checkerboard visual and responded whether or not they heard the sounds. Each participant then underwent an individual auditory thresholding task to establish four auditory stimuli conditions: 0%, 25%, 50%, and 75% of threshold. During the four main blocks, electroencephalography (EEG) was recorded while participants responded whether or not they heard tones on trials that evolved from more 75% threshold stimuli in early blocks to more 0% and 25% trials in later blocks. All participants exhibited “conditioned hallucinations,” hearing subthreshold tones when paired with visual stimuli. However, N1 response in the frontocentral region did not differ between ASD and TD. More research is needed to further elucidate neural correlates of prediction error bias.

Ticket to Success: The Predictive Value of School-Level Academic and Demographic Factors on Specialized High School Acceptance
Hunter Zwack, Education Studies
Sponsor: Professor Pascal Wallisch, Psychology

What are the determinants of student success? One key predictor seems to be the particular school that students attend. While this fact is well understood, little is known about which specific factors related to the schools students attend underlie differential student outcomes. To answer this question, we determined the predictive value of school-level data (both academic and demographic characteristics) of 594 New York City middle schools in terms of gaining admission of their students to New York City’s “Specialized High Schools.” These schools are highly selective and entrance is governed by performance on a single standardized test. We present results as to which demographic factors (such as race, special education rate, class size, or socioeconomic status) and academic characteristics (such as math or reading test scores, levels of school trust, engagement or leadership) best predict elite high school admission. We discuss these results in light of limitations such as self-selection effects.
Bird’s Lung: Pumping without Valves
Joanna Abouezzi, Mathematics
Sponsor: Professor Leif Ristroph, Mathematics

Birds are quite different than mammals in ways other than the obvious. The avian lung has various significant differences compared to the mammalian lung. The most significant being that it is able to conduct unidirectional flow. Mammals breathe in oxygen with an alternating current, and this persists throughout the whole lung in a branching process. Birds also breathe in oxygen using an alternating current, but in the lung, oxygen becomes a directing current. This is especially significant because it occurs without the use of valves, which can be extremely beneficial in engineering and mechanics. This project studies the fluid dynamics in the avian lung to determine if and how this occurs. The lung was simulated using a model built from tubes, a pump and water. The velocity of the fluid was measured, and the measurements were varied based on frequency and amplitude. The velocities of flow were then analyzed using particle velocimetry imaging and MATLAB. It was concluded that this system does in fact change alternating current to directing current without the use of valves, however, the reason for why this happens is still under investigation.

Effect of A2AR Stimulation on Pediatric Cartilage Derived MSC
Diana Abraham, Biology
Sponsors: Professor Lukasz Witek, Biomaterials, NYU College of Dentistry; Professor Paulo Coelho, Biomaterials, NYU College of Dentistry; Dr. Amel Ibrahim, Plastic Surgery, NYU School of Medicine

Mesenchymal stem cells (MSC) are multipotent cells that can be derived from a variety of tissues. Hence, they are an attractive option for skeletal regeneration. One such area that would greatly benefit is the treatment of cartilage defects caused by congenital, traumatic or degenerative diseases and where current gold standard treatment requires use of autologous tissues that are limited in size and require invasive surgery. This investigates whether cartilage derived MSC can be directed to form mature cartilage tissues using Adenosine A2A Receptor (A2AR) stimulation. MSC were isolated from surplus cartilage tissues from consented patients. These cells were characterized using biomolecular techniques then cultured and, finally, analyzed at sequential time points (1, 2 and 3 weeks). Cartilage derived cells were found to express markers typical of MSC when characterized using flow cytometry, polymerase chain reactions (PCR) and immunocytochemistry. Based on preliminary data, it is anticipated that the effect of direct A2AR agonism with CGS2160 will be to enhance proliferation of undifferentiated cells and facilitate chondrogenic maturation of differentiated cells. It will also be possible to demonstrate the mechanism for this is mediated by FOXO transcription factors. This work will show that cartilage tissues are an easily accessible source of MSC which using A2AR stimulation can be directed to undergo chondrogenic maturation. These findings can
be used to design pharmacologic therapies to regenerate cartilage defects.

**HIV-Induced Suppression and Exhaustion in Pediatric Immune Systems**

Aparna Alankar, Biology, English and American Literature  
Sponsor: Professor Alka Khaitan, Pediatric Infectious Disease, NYU School of Medicine

HIV+ children progress more rapidly to late-stage infection and AIDS than do adults (Tobin and Aldrovandi, 2013). HIV-induced perturbations in a developing immune system may contribute to this rapid disease progression. Immunosuppression in HIV+ adults is partially mediated by soluble CD40 ligand (sCD40L) and indoleamine 2,3-dioxygenase (IDO) catabolism of tryptophan (Jenabian et al., 2014). Exhaustion of CD4 and CD8 T cells similarly encourages HIV disease progression. During T cell exhaustion, effector cytokine and granzyme release decreases and expression of inhibitory receptors PD-1 and CD160 increases, promoting evasion of the immune response by HIV-infected host cells (Peretz et al., 2012). PD-1 blockade has been successful in cancer treatment and has potential for novel HIV vaccine development (Stecher et al., 2017). However, there is limited data in children. This project aims to (1) quantify sCD40L and IDO in HIV+ plasma samples and determine correlations to immunosuppression and disease progression and (2) quantify cytokine and granzyme response (TNFa, IFNg, GZB) in supernatant of T cells blockaded (PD-1 and CD160) and stimulated (HIV gag peptide and OKT3) to determine potential rescued function. The study cohort consisted of 77 perinatally-HIV+ Kenyan children and 43 HIV uninfected-unexposed controls between 5 and 19 years old. Although no significant associations were found, pediatric HIV-induced suppression and exhaustion remain crucial processes for further research. Blockade vaccine therapy shows similar promise in the literature.

**Screening of Protein Mimetics for the Modulation of Toxic Conformations of IAPP**

Rayof AlHussein, Biology, Abdulaziz AlHussein, Biology, Harriet Chen, Global Public Health/Biology  
Sponsor: Professor Andrew Hamilton, Chemistry

The aggregation of proteins is associated with a number of diseases including neurodegenerative disorders and organ-localized diseases. One example is the aggregation of Islet Amyloid Polypeptide (IAPP), which is implicated in the onset of Type 2 Diabetes (T2D). It has been shown that the aggregation pathway of IAPP is toxic to insulin-secreting β-cells in the pancreas. Therefore, strategies that could manipulate the aggregation pathways of IAPP could be potential therapeutic intervention for the treatment of T2D. The Hamilton group has designed oligopyridylamide-based ligands to disrupt the aggregation pathways of IAPP. The authors studied the library of oligopyridylamides to determine their effect on the aggregation, oligomerization and cytotoxicity mediated by IAPP self-assembly. From the ThT results, it was possible to determine potent antagonists to IAPP aggregation. Subsequent cell toxicity assay results were in agreement with the ThT findings as the potent antagonists of IAPP aggregation decreased cell toxicity. Furthermore, 2D NMR results determined the binding sites between the small molecules and the protein, confirming that the decrease in cell toxicity/aggregation is indeed due to the binding of the small molecules to the IAPP.

**Synthesis of Manganese Chelator Derived from 1,2-bis(o-aminophenoxy)ethane-N,N,N′,N′-tetraacetic acid (BAPTA) and Determination of Binding Efficiency**

Samir Ali, Biochemistry  
Sponsor: Professor Daniela Buccella, Chemistry

Previous attempts to create a fluorescent metal ion sensor specific to one ion have led to the synthesis of compounds such as 1,2-bis(o-aminophenoxy)ethane-N,N,N′,N′-tetraacetic acid (BAPTA) (Tsien, 1980). BAPTA, originally created from ethylene glycol bis(o-aminoethyl ether)-N,N,N′,N′-tetraacetic acid (EGTA), has a high specificity for Ca2+ over Mg2+. Further experimentation with compounds similar to BAPTA have led to the synthesis of a compound with two pyridine coordinators along with carboxylic acids in order to selectively “poison” the binding affinity against calcium (Liang and Canary, 2010). This compound substitutes in pyridines for two of the oxygen donor arms and was found to have a greater specificity for Mn2+ over Ca2+. However, this compound had a higher than acceptable affinity to Zn2+ as well. In order to selectively poison against zinc, a rationally designed compound was synthesized which had both pyridines on one side of the molecule and both carboxylic arms on the other side to create an entirely different binding signal if zinc binds to the sensor. In addition to a lower binding affinity, this will make it possible to screen out false signals for manganese binding.

**Testing the Non-Interchangeability of Two Proneural Factors in Inducing Neurogenesis**

Apeksha Ashok Kumar, Biology  
Sponsor: Professor Esteban Mazzoni, Biology

Proneural factors are those that are necessary and sufficient to induce neurogenesis in embryonic stem cells. Ascl1 and Neurog2 are two integral proneural genes involved in the development of the nervous system. However, the mechanisms by which these two factors work have not yet been elucidated. The ventral spinal cord is a region where these factors specify different subsets of neurons:
Neurog2 specifies spinal motor neurons, while Ascl1 specifies interneurons. Studies have shown that Ascl1 acts as an instructive determinant while Neurog2 acts as a permissive determinant. To test their interchangeability, this experiment replaced Neurog2 with Ascl1 in the Neurog2-Is11-Lhx3 gene construct, which is known to induce spinal motor neurons, and tested the formation of neurons. It was found that the Ascl1-Is11-Lhx3 (AIL) construct was able to induce neuron formation in embryonic stem cells. There was also a decrease in the amount of spinal motor neuron markers in the Ascl1 construct as compared to the Neurog2 construct. The results demonstrate that although these two proneural factors share similar functions in inducing neurons, they are not interchangeable. Ascl1 cannot replace Neurog2 in the formation of spinal motor neurons. It is anticipated that further research can be done to determine the specific type of neurons induced by the AIL construct, which will increase understanding of the mechanisms by which these factors induce specification of different types of neurons.

Metabolic Engineering of Flavonoid Production for Industrial Applications

Kaavya Ashok, Biology, Malini Basu, Biomolecular Science, Tandon School of Engineering, Adler Guerrero, Biology, Steven Ionov, Biology/Chemical and Biomolecular Engineering
Sponsor: Professor Jin Ryoun Kim, Chemical and Biomolecular Engineering, Tandon School of Engineering

Flavonoids, a large group of plant compounds, have broad applications ranging from therapeutics and food industry to dyes and cosmetics. Established methods for flavonoid production in industry involve plant extraction or organic chemical synthesis, resulting in high costs and massive amounts of environmentally toxic substances. The global flavonoids market is projected to reach $1.06 billion by 2025, providing motivation for novel methods of flavonoid synthesis. The NYU International Genetically Engineered Machines (iGEM) team aims to metabolically engineer pathways for recombinant flavonoid production in order to virtually eliminate waste and synthesize flavonoids more efficiently. Central to the team’s synthesis methods is the use of optogenetic gene regulation, which has recently been validated as a viable method for efficient metabolic engineering. Due to the breadth of flavonoids produced from naringenin, metabolic pathways can be combined and edited to produce a wide array of commercially relevant products. The team has validated the production of naringenin and is working to produce flavonoids using a prototype bioreactor; the performance of the “photo-bioreactor” is under analysis. The results of this work may be applicable to the global flavonoids market as a viable alternative to current synthesis methods.

The Effect of ER Stress on Translation in Mitochondrial Vicinity

Kristen Avallone, Psychology
Sponsors: Professor Christine Vogel, Biology; Dr. Shuvadeep Maity, Biology

Translation is a tightly regulated cellular phenomenon needed to maintain overall protein production. It occurs freely within the cytoplasm and near or within specific organelles such as the endoplasmic reticulum, mitochondria and peroxisomes. When a cell undergoes stress, global translation is affected. For example, when Endoplasmic Reticulum (ER) stress is activated, which occurs in the presence of aggregated misfolded proteins within the ER, cells turn on ER stress response pathways and inhibit global translation. The Vogel lab is interested in understanding the relationship between ER stress and organelar localized translation, in particular mitochondrial localized translation. It is important to consider that for all mitochondrial proteins, with the exception of 13, encoding occurs in the nucleus followed by translation in free cytoplasmic ribosomes or ribosomes attached to the outer membrane of mitochondria (Pearce et al., 2017). Interestingly, the ER and mitochondria maintain their physical interactions to coordinate different signaling pathways. Upon ER stress, previous studies detected changes in mitochondrial morphology and in expression of mitochondrial proteins (Lebeau et al., 2017). To understand if these changes are due to remodeling of the localized mitochondrial translation during ER stress, this project aims to identify the changes in expression of few known mitochondria-localized RNA by a combination of differential centrifugation and ribosome profiling of cytoplasmic and mitochondrial fractions from control and ER stressed cells. The results will elucidate the mechanisms involved in facilitating a cell’s return to homeostasis during stress and allow researchers to better understand how cells combat disease by regulating intracellular processes.

Role of Candidate Genes in Sexually Dimorphic Morphogenesis

Trevor Barker, Biology
Sponsor: Professor David Fitch, Biology

This work investigates sexual dimorphism, i.e., the processes that cause two sexes to develop different traits through embryonic and adult morphogenetic events. In the nematode C. elegans one such dimorphism involves the four cells composing the tail tip. In males, during the last larval phase before adulthood, these cells undergo tail tip morphogenesis (TTM), during which the tail tip cells fuse, change from a pointed to a round shape and migrate somewhat anteriorly. TTM does not occur in hermaphrodites, and the tail tip cells retain the pointed shape of the juveniles. A “master regulator” gene, dmd-3 (which
encodes the DM-domain transcription factor DMD-3), is both required and sufficient for TTM. This project aims to better understand how DMD-3 coordinates morphogenesis by testing whether or not it controls a set of candidate genes found to be upregulated in an RNA-seq screen (a genome-level comparison of gene expression in tail tips from WT males, dmd-3(-) males and wild-type hermaphrodites). Specifically, this project aims to verify which of these genes are actually involved in tail tip morphogenesis and whether or not they are controlled by DMD-3. The approach is to make reporter constructs using Overlap PCR and test if their expression is dependent on DMD-3. These reporters will fuse approximately 2Kbp of promoter sequence from a candidate gene to the gene for Green Fluorescent Protein (GFP). These constructs will then be injected into the gonads of the hermaphrodite “mother” for wild-type and dmd-3(-) strains to visualize gene expression in the offspring. Constructs for genes that are controlled by DMD-3 should show a difference in expression pattern between wild-type and dmd-3(-).

High Throughput Mapping of the miRNA-mRNA Interactome
Skyler Barr, Biochemistry, Sociology
Sponsor: Professor Lara Mahal, Chemistry

Glycosylation, the post-translational addition of carbohydrates to modify protein structure, plays an important role in host-pathogen interaction and immunity, cancer metastasis and numerous other cellular processes. Glycosylation relies significantly on miRNA-based regulation, which occurs via interaction between a miRNA and the 3' UTR of an mRNA transcript. This project uses the miRNA Proxy Approach to collect data on these interactions, which will later be further analyzed to determine how miRNA downregulation of certain glycogenes affects biological processes. The miRNA proxy method involves cloning mRNA 3' UTR transcripts into plasmid sensors that are then tested for interactions with certain miRNA using microarrays for high-throughput data collection. It is hoped this data can be used to develop an algorithm for predicting miRNA-mRNA interactions in the glycome and to create a corresponding database mapping these interactions. This algorithm will provide the potential to generate data sets for viruses such as Zika and Influenza, which can be developed and used for antiviral therapies.

Salinity Tolerance and Antibiotic Resistance of Bacteria Isolated from the Turtle Pond in Central Park
Asia Beal, Science, Borough of Manhattan Community College, Fadel Yerima, Science, Borough of Manhattan Community College
Sponsor: Professor Christine Priano, Biology, Borough of Manhattan Community College

Over the last three decades, the Turtle Pond in Central Park, NYC, has been home to over 500 turtles of various species. Using a refractometer, the salinity of this water was measured to be 0%, the same conditions as a freshwater habitat. Bacteria that co-inhabit the Turtle Pond were previously isolated and characterized and found to be consistent with E. coli. For six isolated clones, prior experiments indicated that these bacteria are halotolerant and could survive marine conditions, although with reduced growth rates. Similar experiments are now described in which these bacteria were grown in salinities ranging from 100–200% seawater. Results showed that for most clones, the bacteria could grow in the higher salinities, although growth rates continued to decrease as salinity increased. For one clone, growth seemed not to be affected by salinity up to twice that of seawater. These results suggest that freshwater bacteria might adapt well if introduced in nature to a saltwater environment. Further experiments were performed for one bacterial clone that was found to contain a DNA plasmid. Using a disc diffusion assay, antibiotic resistance was tested in non-marine and marine conditions. This clone showed similar sensitivity to most antibiotics.
tested. However, bacteria grown on marine agar were resistant to tetracycline whereas the same bacteria grown on non-marine agar were sensitive. Conversely, these bacteria had higher sensitivity to neomycin when grown on marine agar compared with non-marine agar. These results have implications for understanding how halotolerance might affect antibiotic activity.

**Joan Jonas Knowledge Base**

*Nesma Belkhodja, Computer Science, Studio Art*

*Sponsor: Professor Deena Engel, Computer Science*

Performance art is a unique and interdisciplinary subfield of the fine arts. It combines media, performance, props and sound. Consequently, it can be rather difficult to document and conserve for academic purposes. Performance art often does not fit into typical art historical classifications of medium and style, nor does it fit into standard archival descriptions. The Joan Jonas Knowledge Base will be a database containing the works and relevant information of iconic performance artist Joan Jonas. As an information resource, it is intended to aid curators, conservators and others researching her work. The author is working directly with the artist, her archive and people who are familiar with her artistic production. This project is a part of the Artist Archive Initiative, which was founded at New York University to promote research and conservation of contemporary art. The Joan Jonas Knowledge Base will be a user-friendly website with this specifically structured database on the backend that will serve to converse this art in its integrity. It will serve to promote research about the history and care of performance art and, specifically, it will be helpful for future exhibitions, conservation interventions and scholars.

**The Role of Diaphanous 1 in Obesity, Insulin Resistance and Type 2 Diabetes**

*Joseph Boroda, Biology*

*Sponsor: Professor Ann Marie Schmidt, Medicine, NYU School of Medicine*

The primary research aim is to determine whether Diaphanous 1 (DIAPH1), a member of the formin family of proteins, plays a pathophysiological role in obesity, insulin resistance and type 2 diabetes. Nearly one third of all adults in the US suffer from obesity (CDC, 2015), many of whom go on to develop type 2 diabetes (T2D). Insulin resistance is a hallmark of T2D, and its etiology remains largely unknown, which limits the therapeutic options for patients suffering from these diseases. Hyperglycemia or abnormally elevated levels of circulating glucose is a result of T2D. When glucose levels are high, there is an increased likelihood that these sugars will undergo non-enzymatic binding to proteins and lipids in the blood and thus produce advanced glycation endproducts (AGEs). The receptor for AGEs (RAGE) is a cellular membrane receptor that, upon binding to AGEs, activates inflammatory and oxidative stress pathways, possibly contributing to the chronic low grade inflammation observed in obesity and diabetes. The Schmidt lab found that mice globally devoid of RAGE are protected from diet-induced obesity, insulin resistance and inflammation. Furthermore, work from the lab showed that ligand mediated RAGE signaling requires its cytoplasmic association with DIAPH1, which has previously been associated with promoting inflammation. In this study, both wild type mice and mice globally devoid of DIAPH1 were fed either standard chow or high fat diets. Findings show that DIAPH1 knockout mice are protected from diet-induced obesity, inflammation and metabolic dysregulation.

**The Diastereoselective Synthesis of Peroxide Bonds**

*Ana Burrís, Chemistry, Journalism*

*Sponsor: Professor Keith Woerpel, Chemistry*

The Woerpel group is dedicated to the development and advancement of unique reactions that exhibit valuable stereoselectivity. In the past, the Woerpel group investigated the role of the peroxide moiety, which is often at the core of many biologically active natural products. Much of this work has been conducted on the ferroptosis-inducing peroxide, FINO2, which was synthesized in the Woerpel lab. Ferroptosis is a non-apoptotic form of regulated cell death and an important process in cancer treatment. For example, while evaluating the lethality of FINO2, it was found that apoptosis inhibitors were unable to suppress cell death caused by the peroxide. The Woerpel group aims to develop new routes to synthesize similar compounds and research the effect stereochemical configuration has on the properties of the peroxide. The goal of this project is to investigate and advance methods for the synthesis of organic peroxides. Specifically, this project investigates the mechanism of stereoselective peroxidation of Baylis-Hillman adducts. The project will also work to expand the scope of peroxide-containing substrates that can be synthesized by attaching a functional handle to one side of the Baylis-Hillman adduct framework.

**Temporal Straightening Capabilities of Models of Human Vision**

*Lydia Cassard, Mathematics*

*Sponsor: Professor Eero Simoncelli, Neural Science*

Sensory systems make predictions about future observations given the recent past, and it has recently been hypothesized that this is achieved by transforming them to an internal representation that follows stricter temporal trajectories (the “straightening hypothesis”, Hénaff et al., 2018; 2019). This hypothesis is supported by both perceptual (Hénaff et al., 2018; 2019) and neural (Bai et al., 2018) evidence, which reveal straightening of natural image sequences but increased curvature (“entangling”) of artificial sequences that fade between an initial and final
frame. Straightening of natural video trajectories, as well as entangling of artificial sequences, can also be observed in the responses of a two-stage model mimicking the nonlinear functional properties of the early visual system. Artificial neural networks trained for object recognition, on the other hand, exhibit an increase in curvature for all sequences. Thus, optimizing for object recognition does not provide these networks with the straightening capabilities found in the human visual system (Hénaff et al., 2019). To further investigate the straightening performance of artificial neural networks, this project examined the responses of a biologically-inspired network optimized for image compression (Balle et al., 2017). The network consists of three stages, each computing responses of a set of (learned) linear filters and normalizing their responses by a weighted combination (also learned) of other rectified filter responses. It was found that this image compression network can achieve temporal straightening behaviors not seen in object recognition-trained networks and more consistent with those of human observers. Specifically, the results show the image compression network exhibits straightening of natural sequences as well as tangling of unnatural sequences. It was concluded that the temporal straightening capabilities of primate visual systems are consistent with, and may depend on, nonlinear response properties found in biological neurons.

**Early Life Adversity Diminishes Rat Pups’ VTA and Reward Value of Mother**

*Stephanie Chan, Neural Science, Cecilia Delmer, Neural Science  
Sponsor: Professor Regina Sullivan, Child and Adolescent Psychiatry, NYU School of Medicine*

A caregiver commonly serves as a secure base to reduce children’s fear response during exploration. However, when early life adversity is introduced, this system is compromised (Sullivan et al., 2011). Through a rodent model, this project studied how the ventral tegmental area (VTA), a region in the midbrain, is affected by early life adversity and fear. Dopamine from the VTA inputs to the amygdala, a region associated with fear regulation. Early life abuse is introduced through a scarcity-adversity model in which mothers are provided with insufficient bedding, inducing maternal stress and pup maltreatment. Pups are then fear conditioned at two ages with or without a mother present. Pup brains are processed to obtain quantitative data of neural activation in the dopaminergic parabrachial pigmented nucleus (PBP) and glutamatergic rostral ventral tegmental area (VTR). It was found that for pups reared normally, maternal presence during fear conditioning suppresses neural activation. For abused pups, maternal presence is no longer able to do so, indicating that abusive caregivers are less able to emotionally regulate pups. Additionally, neural activation decreased as pups mature and learn about fear, suggesting that maternal presence is gradually less relevant. Lastly, abused pups did not show a robust VTA response compared to pups reared normally; as the VTA is a region that encodes for reward, this suggests that abuse may devalue the mother. These results can have relevance in the clinical world by providing insights into how the neurobiology of the threat circuitry is affected in child abuse.

**Modulating the Cavity Sizes of Self-Assembled 3D DNA Crystals**

*Anna Chen, Biochemistry  
Sponsor: Professor Nadrian Seeman, Chemistry*

The properties of DNA that make it a successful genetic material also allow it be directed to construct new materials on the nanoscale. 3D macromolecular structures in the form of crystalline lattices can be fashioned from DNA to form rigid structures that are programmable in both shape and size. The purpose of developing such systems is to provide a macromolecular scaffold, capable of binding and orienting a variety of molecules, from cellular macromolecules to organic conductors. This scaffold renders other biological molecules such as proteins amenable to x-ray diffraction, helping elucidate unknown structures. The goal of this research project is to increase the cavity size within DNA crystalline lattices to improve incorporation of foreign species such as proteins for structure determination. This will be done by testing six different designs for structure crystallization and cavity formation within the structure. As foreign species can be crystallized within the cavities of the DNA lattices for structure determination, the manipulation of these cavities becomes very important for the field of structural biochemistry and society at large.

**Targeting Mechanosensitive Channel Piezo1 Mediates Protective Immunity Against Pancreatic Cancer and Activation of Myc**

*Ruonan Chen, Biology  
Sponsor: Professor George Miller, Surgery, NYU School of Medicine*

A common characteristic of solid tumors including pancreatic tumors is high interstitial fluid pressure (IFP). Other than causing hypoxia and impeding drug delivery to the tumor site, elevated IFPs can also be sensed by cells through mechanosensitive ion channels, which become activated upon mechanical pressure. Piezo1 is a mammalian mechanosensitive ion channel expressed in various non-neuronal tissues such as lungs, bladder and kidneys and plays a crucial role in a number of physiological processes such as visceral pain sensing and embryonic vascular development. However, the role of Piezo1 signaling in tumors with high interstitial pressure has not been elucidated. This study found that Piezo1 was expressed in pancreatic tumor tissue, specifically on tumor-infiltrating
Piezo1

Flow cytometry analysis revealed upregulated Akt-mTOR state, which corresponds with an effector T cell phenotype. Deletion in T cells promoted a metabolically more active tumor growth. RNA sequencing data showed that deletion or pharmacological inhibition protected against activation exacerbated PDA progression, whereas Piezo1 knockout mouse model. It was observed that Piezo1 activation exacerbated PDA progression, whereas Piezo1 deletion or pharmacological inhibition protected against tumor growth. RNA sequencing data showed that Piezo1 deletion in T cells promoted a metabolically more active state, which corresponds with an effector T cell phenotype. Flow cytometry analysis revealed upregulated Akt-mTOR signaling and elevated activation in Piezo1−/− T cells upon stimulation. Together, these results uncover the suppressive effect of Piezo1-mediated mechanotransduction in T cells, unraveling Piezo1 as a novel target in cancer immunotherapy.

Mental Health and Sociability: A Cross-Species Approach to Exploring Interventions for the Effects of Early-Life Adversity

Divija Chopra, Neural Science
Sponsor: Professor Clancy Blair, Applied Psychology, Steinhardt School of Culture, Education and Human Development

The associations between children living in poverty and an increased risk for neurodevelopmental, behavioral, and health problems later in life are well-established. However, the specific contributions of impaired social skill development on mental health and neurodevelopment have not been previously examined with the intent of creating novel intervention techniques for children living in poverty using a bidirectional cross-species experimental design. This study examined correlational relationships by proposing sociability in Kindergarten as a pathway through which resource depletion in early-life poverty (6–36 months of life) influences mental health. Regression analyses of The Family Life Project data indicated that resource depletion correlated negatively with sociability and positively with increased risk for mental health problems, with sociability correlating negatively with mental health problems. A rodent scarcity-adversity model of resource depletion in poverty was used to explore whether a social intervention using a non-poverty-reared peer would rescue a socially impaired phenotype exhibited by scarcity-adversity-reared rodents. Results indicated rescue of social impairment through a social motivation test before and after peer intervention. These findings suggest that a peer-centered program aiming to improve social skills and interactions could be a potential intervention point to ameliorate these negative health effects.

Human Vaginal Fluid Components Do Not Interfere with Griffithsin Anti-HIV Properties

Nadjet Cornejal, Biotechnology, Borough of Manhattan Community College, Claudia Melo, Science, Borough of Manhattan Community College
Sponsor: Professor Jose A. Fernandez Romero, Science, Borough of Manhattan Community College

Despite a better scientific understanding of HIV and its prevention, almost 2 million individuals worldwide became newly infected in 2017. Griffithsin (GRFT), a lectin isolated from red algae, is being evaluated as a potential microbicide to prevent HIV acquisition. Samples were received from healthy women that volunteered to receive a vaginal gel formulation containing GRFT. Cervicovaginal lavages (CVLs) were performed before gel application and 4, 8 or 24h after gel application. CVLs were used to perform GRFT ELISA to quantify GRFT as well as the TZM-bl assay to test the anti-HIV activity. GRFT concentrations in CVLs between 0.18 and 82.1 μg/mL were detected. GRFT concentrations strongly correlated with the antiviral activity (r=-0.6143; p=0.0087). These results suggest that GRFT remains active in human CVL and vaginal formulations should be further tested in clinical trials.

Biological Activity of Guava (Psidium guajava)

Nadjet Cornejal, Biotechnology, Borough of Manhattan Community College, Victor Cruz, Science, Borough of Manhattan Community College, Claudia Melo, Science, Borough of Manhattan Community College, Victor Sorel, Science, Borough of Manhattan Community College
Sponsors: Professor Christine Priano, Science, Borough of Manhattan Community College; Professor José Fernández Romero, Science, Borough of Manhattan Community College; Professor José Fernández Romero, Science, Borough of Manhattan Community College; Professor José Fernández Romero, Science, Borough of Manhattan Community College; Aned C. Buczynski-Kos, Borough of Manhattan Community College

In the Dominican Republic, guava (Psidium guajava) leaves have been used in folk medicine mainly for treating diarrhea and dengue. The benefits can be attributed to chemical components such as phenolics and flavonoids produced by guava for defense. This study used different extraction methods for these chemicals and correlated their chemical composition with their biological activity. Total Phenolic, Total Flavonoid, ABTS/DPPH, TZM-bl, XTT and a Kirby-Bauer assay were used to test phenolic content, flavonoid content, antioxidant properties, antiviral activity, cytotoxicity and antibacterial activity respectively. Genetically modified HeLa cells susceptible to two different HIV-1 strains were used in the antiviral procedure. The median cytotoxicity concentration (CC50) and
half-maximal effective concentration values (EC$_{50}$) were obtained through a curve-fitting analysis using GraphPad Prism Software, Inc. Therapeutic index (TI) was calculated using the CC$_{50}$/EC$_{50}$ ratio. Antibacterial activity against *E. coli* and *B. subtilis* was tested using the Kirby-Bauer assay. Results suggest that extraction of phenolic compounds is optimal when one gram of plant extract is dissolved in 10 mL of 60% ethanol/methanol followed by evaporation at 50°C and resuspension in 1 mL of 20% DMSO. The guava leaf extracts had a high phenol and flavonoid content that did not correlate with high antioxidant capacity. The plant extracts showed selective antiviral activity with TI values above 10. Preliminary results of antibacterial tests indicated that the extracts showed greater activity against *B. subtilis* compared to *E. coli*. The results support the use of guava leaf extracts in traditional medicines.

**Directing the Synthesis of Monopatch Patchy Particles and Their Self-Assembly into Crystals**  
*Scott Cosgun, Biochemistry*  
*Sponsor: Professor Marcus Week, Chemistry*

Colloids are defined by their length scale (1 nm–100 µm) and encompass any insoluble particle that can be stably suspended in a secondary medium. Their possession of thermal energy, ability to be produced in a variety of shapes and visualization by microscopy have made colloids an attractive paradigm for understanding atomic and molecular behavior, solid-state physics and generally the ways in which matter is created. Substantial attention has been devoted to colloids, their assembly processes and the engineering of colloidal crystals with defined periodicity to create functional materials with applications in optics, wetting, catalysis, sensing, electronics and more. The Week group believes it can assemble large domains of colloidal monopatch patchy particles using two methods: assembly using dielectrophoresis and assembly at an oil/water interface. If the resulting assemblies can be deposited on a substrate, this in and of itself will be a significant advancement in biphasic particle assembly. It is expected that these crystals will possess unique packing geometries and optical properties that will illuminate new methods to create optically active colloidal materials for sensing and optical computing applications. These particles were successfully synthesized via a reaction between polystyrene seeds and (trimethoxysilyl)propyl methacrylate (TPM) and were prepared for crystal assembly via dielectrophoresis. The next steps of this project involve depositing and sealing the monopatch particles onto the slides and applying a non-uniform electric field that will theoretically orient the particles and lead to crystallization so that the particles can then be extracted and their photonic/optic properties and crystal packing structure can be analyzed.

**Investigating Schwann Cell Nonautonomous Signaling in PNS Development and Maintenance**  
*Or Dagan, Neural Science, Psychology*  
*Sponsor: Professor James Salzer, Neural Science*

In peripheral nerves, Schwann Cells (SCs) form myelin, which facilitates the rapid propagation of action potentials by saltatory conduction along axons in the vertebrate nervous system. *Egr2*, a transcription factor expressed in SCs, is commonly known as the master regulator of myelination, and mutations that disrupt its transcriptional activity in SCs cause severe demyelinating peripheral neuropathies. This project generated conditional knock-out (cKO) mice for the *Egr2* gene specifically in SCs. These mice have complete amyelination of the peripheral nervous system (PNS) with SC development arrested at the pro-myelinating stage. It is known that extrinsic signals from the axon and the SC extracellular matrix are necessary to drive SCs to adopt a myelinating fate. However, whether adjacent SCs communicate via paracrine signaling is unknown. This study investigated the presence of non-autonomous signaling between adjacent SCs in a chimeric mouse, in which *Egr2* cKO SCs and wild-type SCs coexist within a nerve bundle and even along the same axon. A significant increase in the internodal length of wild-type SCs in chimeric mice compared to completely wild-type controls was found. However, the myelin sheath thickness of wild-type SCs in chimeras was not significantly altered relative to controls. The increased internodal length may be due to the displacement of mutant SCs by their wild-type neighbors as the mutant SCs are not as well attached to axons. Together, these data provide the first evidence for non-autonomous, axon-independent control of SC myelination and will form the basis for ongoing studies to address the mechanism of SC-SC signaling in the developing PNS.

**Predicting Students’ Engagement in Online Learning with Real-Time EEG**  
*Or Dagan, Neural Science, Psychology*  
*Sponsor: Dr. Ido Davidesco, Teaching and Learning, Steinhardt School of Culture, Education and Human Development*

While massive open online courses (MOOC) are currently widely implemented in higher education, assessing students’ engagement and maintaining it over time remains a major challenge. This study investigated whether and how electroencephalography (EEG) can capture students’ engagement. Participants watched prerecorded science lectures while their EEG brain activity was monitored. At random points throughout each lecture, the video paused, and questions, concerning the participant’s subjective engagement and content retention, were presented. Analysis of the EEG data and the participants’ subjective
engagement scores revealed that alpha band (8–12 Hz) power significantly discriminated between moments of high and low engagement throughout the lecture. This effect was strongest over posterior electrodes in the 20 seconds leading to the question. These results demonstrate that moment-to-moment variations in EEG power can capture students’ engagement. A follow-up study is currently assessing whether EEG data can be used to assess students’ engagement in real-time and modify how information is presented to students.

Study on the Unwinding Activity of E. Coli Repair Helicase RecQ and Its Implication on DNA Damage Recognition
Sreya Das, Biochemistry
Sponsor: Professor Nicholas Geacintov, Chemistry

Helicases are a class of enzymes which catalyze the unwinding of DNA helices. The purpose of this process is twofold: to open the helix to allow for replication, an essential process for the production of subsequent generations, and to fix mistakes that may have occurred during the replication process or due to other chemical processes. The goal of this project is to focus on this second process: how does RecQ, a helicase found in E. Coli, function as part of a repair mechanism? So far, human repair helicases have not been isolated, so E. Coli RecQ Helicase, a sequence similar to human XPB, is used to model DNA repair to understand possible shortcomings of the process. The following questions will be addressed: how does duplex fork length affect the rate of reaction? Will the addition of (+)-cis-B[a]P-N2-dG, a DNA lesion, in place of a guanine residue, a disruption of the genetic code, slow down the rate of unwinding, which would indicate that the helicase would allow for repair molecules to act on the system? Studying the fork length, which is the “opening” to the DNA duplex where there is no bonding between the two strands, will elucidate the mechanism by which helicase functions by answering whether RecQ binds more quickly to a longer or shorter fork sequence. From here, the effect of a sequence mistake, the (+)-cis-B[a]P-N2-dG, can be studied and applied to the two scenarios: long and short fork length.

Completing the Cortico-hippocampal Circuit: Mapping the Long-Range Glutamatergic Projections from Lateral Entorhinal Cortex to Hippocampal Areas CA3 and CA1
Rodrigo De La Torre, Neural Science
Sponsor: Professor Jayeeta Basu, Neuroscience and Physiology, NYU School of Medicine

The cortico-hippocampal circuit is critical for the formation of episodic memories, enabling us to remember people, places, objects and events. Memory formation relies on the generation of neuronal ensembles in the hippocampus that code for space, context and episodes. These ensembles are formed through interactions of various pathways within the cortico-hippocampal circuit, creating temporal and contextually specific memories. The entorhinal cortex (EC), a neighboring cortical area, associates and projects multimodal sensory inputs to the hippocampus through two pathways. The canonical circuit model posits a direct perforant pathway, by which EC routes afferent glutamatergic projections directly to hippocampal area CA1, and an indirect trisynaptic pathway, by which EC indirectly routes information through the dentate gyrus mossy fibers to CA3, then via the CA3 Schaffer collateral inputs to CA1. While the trisynaptic pathway is well characterized, little is known about the long-range, direct projection circuitry from EC to hippocampal CA regions. Most studies on direct inputs have focused on EC inputs to CA1, but the EC also directly projects to area CA3. Thus, there is a need to examine how EC differentially projects to different hippocampal areas to modulate local excitatory and inhibitory neurons, which are involved in creating neural ensembles. To fill this gap, this study examined the anatomical organization of the glutamatergic projections from the entorhinal cortex to hippocampal areas CA1 and CA3. It was found that, in contrast to the traditional circuit model, hippocampal area CA3 receives denser direct EC inputs compared to the more-widely studied area CA1 along the dorsal and ventral hippocampus, which have canonically been associated with cognitive and emotional processing, respectively. These results provide insight into how excitatory projections from EC may be recruited to give rise to different mental functions.

Testing the Importance of T22C8.4 in the Dosage Compensation of C. elegans through RNA Interference Genetic Assays
Maykel Dolorit, Neural Science, Psychology
Sponsor: Professor Sevinc Ercan, Biology

Dosage compensation (DC) is the genetic mechanism that balances the dose of X chromosome gene expression in males and females. Studying this mechanism may provide insight as to how organisms regulate gene expression with future implications for the treatment of genetic diseases. C. elegans is a model organism to study DC due to their Dosage Compensation Complex (DCC), which only binds to the X chromosome and not any of the other 5 autosomes and chromosomes. DCC binding is a two-step process in which the DCC is recruited to recruitment elements in the X chromosome—known as rex sites. Thereafter, the DCC spreads to promoters and enhancer sites of active genes in the X chromosome, down-regulating transcription by 50%. T22C8.4 is a previously uncharacterized transcription factor that is predicted to bind a 12-bp motif that is enriched at the rex sites. To test if T22C8.4 plays a role in binding of the DCC to the rex sites, RNAi genetic
assays were used to analyze dosage compensation requirements for T22C8.4 using different C. elegans strains. The assay is measuring whether T22 knockout enhances the embryonic lethality of a DCC hypomorph. If it does, then the result is consistent with the hypothesis here. A pattern of enhanced embryonic lethality was observed when a DCC hypomorphic strain was fed RNAi bacteria to knock down T22C8.4. This increase in lethality suggests T22C8.4 plays a role in dosage compensation. To test if DCC is capable of binding to the X chromosome in the absence of T22C8.8, CRISPR-cas9 will be employed to perform gene knockout. Upregulation of the X chromosome is expected.

**Variance Adaptation in Navigational Decision Making**
*Sophie Dvali, Physics*
*Sponsor: Professor Marc Gershow, Physics*

Sensory systems relay information about the world to the brain, which enacts behaviors through motor outputs. To maximize information transmission, sensory systems discard redundant information through adaptation to the mean and variance of the environment. The behavioral consequences of sensory adaptation to environmental variance have been largely unexplored. This project studies how larval fruit flies adapt sensory-motor computations underlying navigation to changes in the variance of visual and olfactory inputs. It is shown that variance adaptation can be characterized by rescaling of the sensory input and that for both visual and olfactory inputs, the temporal dynamics of adaptation are consistent with optimal variance estimation. In multisensory contexts, larvae adapt independently to variance in each sense, and portions of the navigational pathway encoding mixed odor and light signals are also capable of variance adaptation. These results suggest multiplication as a mechanism for odor-light integration.

**A Closer Look into Genetic Recombination in**
*S. cerevisiae*
*Ian Edelman, Biology*
*Sponsor: Professor Andreas Hochwagen, Biology*

In sexually reproducing organisms, a specialized type of cell division termed meiosis gives rise to gametes. During meiosis, genetic recombination ensures that gametes receive the correct number of chromosomes. Recombination initiates with the formation of hundreds of programmed double-stranded breaks (DSBs) along chromosomes. DNA damage is hazardous; therefore organisms have evolved extensive regulatory mechanisms to ensure proper surveillance and repair of these DSBs. The long-term goal of the Hochwagen group is to further understand the roles of two conserved genes that regulate meiotic recombination as well as to classify novel mutations in genes involved in recombination. Most genetic screens to study meiotic recombination in budding yeast have utilized the deletion collection, an approach that biases non-essential genes. To avoid such bias, a screen was designed that can generate separation-of-function mutations. Consequently, such mutations can reveal previously unrecognized functions of proteins. The screen employs a mutant strain that is deleted for a meiosis-specific gene essential for DSB repair (DMC1). After meiotic induction, the mutant strain arrests due to active checkpoint proteins that sense unrepaired DSBs, and cells fail to generate spores (yeast gametes). After point mutagenesis with Ethyl methanesulfonate (EMS), cells able to complete meiosis in the absence Dmc1 were isolated. These mutations likely involve genes that function in one of three categories: genes required to induce the breaks themselves, genes that suppress alternate repair mechanisms, or genes that promote checkpoint arrest in response to DNA damage. The goal of the project is to conduct such classification.

**Stochastically Modeling Vaccination on Scale-Free Evolving Networks**
*Jay Faris, Mathematics*
*Sponsor: Professor Lisa Hartung, Mathematics*

This project develops an extension to the work of E. Jacob and P. Moerters in “The Contact Process on Scale-Free Networks Evolving by Vertex Updating” (2017) by designing and adding a simple vaccination process to their model. It was found that the vaccination process increases the point of phase transition between the infection’s extinction regimes by a quantity depending on the vaccine’s effectiveness. The author formally derived the values of the network’s power-law exponent corresponding to each regime and implemented a simulation in MATLAB for concreteness.

**HIV-1 Exposure Triggers Calcium Influx That Is Inhibited by a P2X Antagonist**
*Tracey Freeman, Biology*
*Sponsor: Professor Talia Swartz, Infectious Diseases, Icahn School of Medicine at Mount Sinai*

HIV-1 is an incurable, chronically infectious virus associated with numerous health disparities, disproportionately impacting Black and Latinx LGBTQ+ populations. Untreated chronic HIV-infection is characterized by high viral titers in the body and depleted CD4+ T-cell counts. Antiretroviral therapy (ART) is able to greatly reduce HIV-1 viral load and stabilize CD4+ T-cell counts, but people living with HIV (PLWH) still suffer from reduced life expectancy. HIV-associated chronic inflammation is partially responsible for this reduction in life expectancy and is associated with comorbidities such as heart disease, cognitive decline and cancer. Purinergic (P2X) receptors have been increasingly implicated in HIV pathogenesis and induce inflammatory signaling pathways when activated. To determine whether HIV-1 activates these receptors,
this project monitors acute cellular calcium influx (indicative of P2X activation) and productive infection following HIV-1 exposure. Calcium influx and productive infection following HIV-1 exposure is measured through use of a calcium-sensitive dye and a fluorescent reporter virus on the Beacon single cell imaging platform. The experiment is conducted in parallel with a P2X inhibitor, NF449. Increases in acute intracellular calcium following HIV-1 exposure were observed, and calcium influx and productive HIV-1 infection were found to be positively correlative. NF449 treatment reduces calcium influx and HIV-1 productive infection, suggesting that both calcium influx and HIV-1 productive infection are P2X dependent. These results indicate that P2X inhibitors may prove to be attractive dual-target drugs effective at both suppressing viral load and preventing inflammation-associated comorbidities in HIV patients.

### Neural Connectivity Correlates of Inter-Individual Differences in Autism Severity and Expressive Language Ability in Young Children

**Zachary Friedrich, Neural Science**

**Sponsor: Dr. Adriana Di Martino, Psychiatry, Child Mind Institute**

Autism spectrum disorder (ASD) is a psychiatric condition characterized by impaired social communication and interaction as well as limited and repetitive patterns of interests and behaviors. It is commonly heterogeneous in its clinical presentation, and the high prevalence of inter-individual differences among ASD subjects is often not accounted for in functional magnetic resonance imaging (fMRI) studies. Further, while a limited number of fMRI studies have been done on very young ASD subjects, natural sleep imaging offers a method of reliably acquiring functional connectivity data from these subjects. Thus, the present study aims to use natural sleep imaging to find the patterns of neural connectivity underlying early ASD and how inter-individual differences in autism severity and expressive language ability affect this connectivity.

Combining Multivariate Distance Matrix Regression with seed-based follow-up analyses indicated that Vineland expressive language (VEL) scores in ASD are 1) positively related to the strength of precentral cortex intrinsic functional connectivity (iFC) with the higher-order association cortex and 2) negatively related to the strength of precentral cortex iFC with lower-order sensorimotor cortex and subcortical regions. Similar patterns of negative and positive relations with VEL were observed for the preenuel seed. Autism severity was positively related to limbic posterior cingulate cortex iFC with medial occipital cortex. These findings indicate a double dissociation with regard to visual cortex iFC.

### Nature Versus Nurture: Maternal Responses to Infant Distress Cues

**Katherine Furman, Neural Science**

**Sponsor: Professor Robert Froemke, Neuroscience and Physiology, NYU School of Medicine**

Newborn mouse pups are helpless after birth and emit ultrasonic vocalizations (USVs) to express their needs. For example, when they become isolated from the nest, pups emit isolation USVs. A mother mouse (dam) must reliably respond to these isolation calls by locating the pup and retrieving it back into the nest. Inexperienced virgin female mice do not recognize the meaning of these pup calls and fail to retrieve pups. However, after 2–3 days of cohousing with a dam and pups, virgins gradually learn the meaning of isolation USVs, and eventually retrieve pups with accuracy comparable to the mother (Marlin et al., 2015). This study hypothesizes these different behavioral responses reflect differences in the learned salience of pup-related stimuli. This work aims to characterize the preference of dams, experienced virgin females and inexperienced virgin females for the auditory isolation USV stimulus played from a speaker in two behavioral paradigms: Conditioned Place Preference (CPP) and Spatial Orientation (SO). Results indicate that after an initial one-time exposure to a USV stimulus, there is no difference in the way that dams, experienced virgins and naïve virgins respond as none of the three groups showed a preference or aversion for a context associated with the USV after a single trial. However, preliminary work suggests this behavioral response is learned only after multiple exposures to the same stimulus and context. Currently in progress is a 5-day chronic version of the CPP and SO paradigms with the goal of understanding how behavioral responses to a USV cue are learned differently over time.

### Blocking Inhibitory Receptors to Restore T Cell Proliferative Responses in Perinatally-Infected HIV+ Children

**Matthew Generoso, Global Public Health/Biology**

**Sponsor: Professor Alka Khaitan, Pediatrics, NYU School of Medicine**

Children with HIV are especially at risk for opportunistic infections and complications because the infection is present in the context of a developing immune system. Additionally, children with HIV have weaker immune responses, often due to a phenomenon known as immune exhaustion following chronic HIV infection. Immune exhaustion is characterized by lower proliferative potential of T cells and lower effector cytokine production. These diminished responses are caused by overexpression of inhibitory receptors, such as PD-1, on the surface of T cells. These responses have not been well explored in chil-
Innate behaviors, such as aggression and mating, are vital for species survival and propagation. The medial amygdala, which directly receives olfactory inputs, has been implicated in the generation of these unlearned behaviors. Moreover, the medial amygdala possesses distinct neuronal subpopulations, such as otp, which can be parcellated based on its molecular identity. The main goal of this project is to determine the circuitry of the aforementioned medial amygdala neuronal subpopulation to better understand its role during behaviors like aggression and mating. It is necessary to better understand the identity of otp cells and its projection patterns. It is presently not known whether otp cells are excitatory or inhibitory, but based on preliminary work, it has been suggested that they might be excitatory. The role of otp cells in generation of social behaviors will be investigated through the use of social preference assays that will assess the preference of this subpopulation for varying conspecifics.

Investigating DNA Replication-Transcription Conflict on RNA Polymerase II Transcribed Genes in S. cerevisiae
Himari Gunasinghe, Biology
Sponsor: Professor Duncan Smith, Biology

During S-phase of the mitotic cycle, the eukaryotic replisome has to replicate hundreds of kilo bases of DNA, which in itself is a difficult and intricate process as the replisome must bypass DNA secondary structures and protein-DNA complexes. However, DNA replication is further complicated by the transcription of genes occurring simul-aneously. This allows for potential conflicts between the replisome and transcription machinery, which may result in the collapse of progressing replication forks and in turn cause replication error and DNA damage. Previous studies have shown there are significant obstacles to replication of protein-coding genes in human cells while that is not the case in S. cerevisiae. Here, it is hypothesized that RNAPII backtracked at transcription termination sites (TTSs) is the cause of the observed impediment in human cells and that impairing RNAPII progression along yeast protein-coding genes would show a similar replication impairment. This study uses the anchor away technique followed by Okazaki fragment deep sequencing to show that forcing RNAPII to pause at TTSs has no effect on replication fork progression or stalling. However, it is also shown that impairing RNAPII progression by the conditional depletion of certain essential subunits can cause certain replication origins to fire less efficiently and cause some replication forks to move slower along the genome. Overall, this project aims to better understand the interaction between DNA replication and transcription and gauge the importance of replication-transcription conflicts as a source of fork-stalling and DNA damage.

Molecular Abnormalities in Human Pluripotent Stem Cell-Derived Neural Precursor Cells and Neurons
Michael G. Hamilton, Neural Science
Sponsor: Professor Eric Klann, Neural Science

Fragile X syndrome (FXS) is the leading inherited cause of autism and intellectual disability. FXS is caused by trinucleotide repeat expansion in the 5’ untranslated region of the X-linked FMR1 gene. This leads to gene silencing and the absence of its product, fragile X mental retardation protein (FMRP) which is an mRNA-binding protein involved in mRNA translation, localization and transport. In FXS mouse model, key proteins of mTOR pathway show increased levels of translation and phosphorylation (Rich-ter et al., 2015). Dysregulated mTOR signaling leads to abnormal molecular, synaptic and behavioral phenotypes. The Klann lab has previously shown that genetic removal of one of the proteins involved in mTOR pathway (S6K1) can rescue synaptic, morphological, biochemical and behavioral phenotypes in the FXS mouse model. However, mouse models may not fully recapitulate human neural development. This study investigates neurons and neural precursor cells (NPCs) derived from human induced pluripotent stem cells (which were in turn derived from fibroblasts) of FXS patients and control subjects to study mTOR signaling and underlying cellular deficits in human neurons and NPCs. The results indicate multiple S6K1 effectors show increased phosphorylation. To treat or cure FXS, it is imperative to understand the underlying cellular mechanism that has gone awry.
Chemogentic Manipulations of Medial Prefrontal Cortex Affects Running in Adolescent Mice Exhibiting Anorexia Nervosa-Like Behavior
Ishan Handa, Neural Science
Sponsor: Professor Chiye Aoki, Neural Science

This project aims to identify the neurobiological basis of Anorexia Nervosa (AN). This is an anxiety-based psychiatric illness characterized by the risky behavior of combining excessive exercise with voluntary food restriction. This maladaptive decision-making can be induced in adolescent mice. This study tested the hypothesis that the neural networks of the mPFC underlie the decisions made by the mice to exercise rather than eat during limited hours of food access. Designer Receptors Exclusively Activated by Designer Drugs (DREADDS) were used to transiently excite or inhibit prefrontal cortical neural networks to test this hypothesis. It was shown that excitation of PFC neurons by DREADDs decreases running during the hours after feeding (postprandial) and leading up to feeding (Food Anticipatory Activity [FAA]) on the fourth day of food restriction. DREADD induced inhibition of the same set of neurons caused a greater reduction of running across the time periods studied including the FAA, food allowance and post prandial periods during the fourth day of food restriction. These results show that stress increases from day 2 of food restriction to day 4, there is an increase in running among control animals. The excitation and inhibition of the DREADDs can counteract this behavior and protect animals from both excessive exercise and weight loss. The unexpected similarity of the DREADD mediated excitation and inhibition could be due to the excitation’s recruitment of GABAergic neurons. These results suggest that boosting GABA tone in the mPFC can be helpful in treating individuals with AN.

Maintaining Synaptic Inhibition during Transient Hearing Loss Preserves Juvenile Auditory Perception and Learning
Syeda Isabel Hassan, Neural Science
Sponsors: Dr. Melissa Caras, Neural Science; Professor Dan Sanes, Neural Science

Transient hearing loss (THL) is one of the most prevalent childhood sensory impairments. During development, THL is a risk factor for subsequent deficits in learning, aural communication and perceptual skills even after audibility has been restored. One possible explanation is that a lack of sensory input during development results in long-lasting changes to the central nervous system, giving rise to abnormalities in sound encoding, perception and cognition. Indeed, THL reduces the strength of synaptic inhibition, and this reduction can persist long after sensory input has returned to normal. If weak inhibition underlies HL-related perceptual deficits, then increasing synaptic inhibition during or after HL might prevent or restore normal perceptual skills. To explore this possibility, Mongolian gerbils (Meriones unguiculatus) were raised with THL by inserting bilateral earplugs from postnatal (P) day 11–23. During that period, animals received daily injections of either a selective GABA reuptake inhibitor (SGRI) or saline. At P35, gerbils were trained and tested on an amplitude modulation (AM) depth detection task. THL-raised animals treated with saline performed poorly compared to normally raised littermates, demonstrating learning delays and elevated perceptual thresholds. In
Design and Synthesis of Peptidomimetic Macro cyclic Peptoids as Aspergillus fumigatus Chitinase Inhibitors

A. fumigatus is a fungal pathogen responsible for causing a range of diseases in patients with compromised immune systems. Infection occurs upon spore inhalation, which allows the organism to enter and inhabit the lungs. Previous reports have suggested that such infection can be eliminated with the introduction of competitive chitinase inhibitors. Belonging to Family 18, the A. fumigatus chitinase (AfChiB1) plays a significant role in the maintenance of the organism’s structural integrity, remodeling the cell wall via chitin hydrolysis. The Van Aalten group has identified AfChiB1 as an attractive target for the study of a competitive inhibitor that hinders substrate binding, decreases enzyme activity and may thus eliminate A. fumigatus. The group has solved its crystal structure alone and in complex with Argadin, a natural chitinase inhibitor. Although Argadin is a cyclic pentapeptide that has been shown to selectively bind the AfChiB1 pocket, it is difficult to synthesize and is subject to poorer bioavailability. These characteristics motivate the project in question: an Argadin peptidomimetic that is easily synthesized and evades degradation can be designed to yield dissociation constant (Kd) and half maximal inhibitory concentration (IC50) values comparable to Argadin’s. Argadin’s backbone scaffold resembles that of a cyclic pentapeptoid and has side chains that can be incorporated sequentially. In comparison to cyclic peptides, cyclic peptoids are known to demonstrate greater stability and resistance to proteolysis as well as a strong sense of directionality. The goals of this project are to design and synthesize a library of macro cyclic peptoid inhibitors, or Argadin peptidomimetics, via molecular visualization, solid-phase synthesis, NMR spectroscopy and mass spectrometry. At the same time, the AfChiB1 enzyme has been expressed and purified as it is not commercially available. Its activity in the presence and absence of inhibitors is now being analyzed via fluorimetric chitinase assays.

A Novel Enzymatic Tool for Targeted Amino Acid Deprivation of Cancer Cells

Cancer cells employ dramatic metabolic changes to support their rapid proliferation, offering novel therapeutic opportunities. Though the importance of metabolites in the regulation of tumor progression is known, researchers lack the tools to allow them to control cellular and sub-cellular levels of targeted metabolites. This study proposes to utilize bacterial enzymes to control levels of specific metabolites, offering a novel approach to the study of mechanisms and therapeutic implications of cancer metabolism. This proof-of-principle study explores the functionality of bacterial amino acid racemases expressed in mammalian cancer cells and their potential to become tunable enzymatic tools for metabolite control. Racemases catalyze the interconversion between proteogenic L-amino acids and their D-optical isomers, which are virtually unusable by the cell. The author identified enzymatic candidates for these racemase tools, glutamate racemase and lysine racemase, expressed them in murine lung adenocarcinoma cell lines and then assessed their ability to deplete specific L-amino acids or utilize D-amino acids. Racemase activity can be controlled by genetic manipulation, tuning expression levels and specifying spatiotemporal localization. The proposed system will provide a unique experimental tool to directly modulate the levels of specific metabolite levels at cellular and sub-cellular levels, expanding the resolution of the view of metabolic landscapes within cancer cells. More broadly, it is planned to use these tools to aid the design of rational therapeutic strategies targeting amino acid metabolism in cancer.
in the real numbers and the p-adic numbers for every prime number, then there is a rational solution. This study will provide the historical and mathematical background for the Hasse-Minkowski theorem as well as present the main ideas of the proof. Furthermore, a counterexample is given that shows this theorem does not generalize to polynomials of degree higher than two.

**Metabolic Engineering of Flavonoid Production for Industrial Applications**

Kaavya Ashok, Biology, Malini Basu, Biomolecular Science, Tandon School of Engineering, Adler Guerrero, Biology, Steven Ionov, Biology/Chemical and Biomolecular Engineering

Sponsor: Professor Jin Ryoun Kim, Chemical and Biomolecular Engineering, Tandon School of Engineering

Flavonoids, a large group of plant compounds, have broad applications ranging from therapeutics and food industry to dyes and cosmetics. Established methods for flavonoid production in industry involve plant extraction or organic chemical synthesis, resulting in high costs and massive amounts of environmentally toxic substances. The global flavonoids market is projected to reach $1.06 billion by 2025, providing motivation for novel methods of flavonoid synthesis. The NYU International Genetically Engineered Machines (iGEM) team aims to metabolically engineer pathways for recombinant flavonoid production in order to virtually eliminate waste and synthesize flavonoids more efficiently. Central to the team’s synthesis methods is the use of optogenetic gene regulation, which has recently been validated as a viable method for efficient metabolic engineering. Due to the breadth of flavonoids produced from naringenin, metabolic pathways can be combined and edited to produce a wide array of commercially relevant products. The team has validated the production of naringenin and is working to produce flavonoids using a prototype bioreactor; the performance of the “photo-bioreactor” is under analysis. The results of this work may be applicable to the global flavonoids market as a viable alternative to current synthesis methods.

**Avalpone ICharacterization of Transforming Growth Factor Type-β (TGF-β) Signaling in Small Excision and Large Excision Wound Healing in Mice**

Annette Kaminaka, Biology

Sponsors: Dr. Chae Ho Lim, Dermatology, NYU School of Medicine; Professor Mayumi Ito, Dermatology, NYU School of Medicine

In humans, scarring and the failure to regenerate hair follicles (HF) are consequences of wound healing that tend to go hand in hand. However, it has been shown that HF can form de novo in the center of large excision wounds (LW) on genetically normal adult mice, whereas small excision wounds (SW) form a typical, hairless scar. Much is currently unknown about the interaction between the mechanisms of fibrosis and regeneration that causes this differential phenotype between small and large wounds. It is known that transforming growth factor type-β (TGF-β) signaling significantly contributes to the scarring mechanism. This study sought to characterize the temporal and spatial signaling pattern of TGF-β in both SW and LW. It was identified that in both SW and LW, there is equally distributed, transiently elevated TGF-β signaling two and four days post wounding (PW2D, PW4D). Interestingly, TGF-β signaling attenuation was identified in the center of LW after PW6D that maintained throughout the rest of the wound healing process. This implies that sustained TGF-β signaling attenuation may play a role in creating the appropriate niche for de novo HF formation in LW, and this study brings a better understanding of how fibrotic mechanisms can be manipulated to redirect scarring into promoting regeneration following injury.
Self-Assembly of Stressed Tensegrity Triangle
Jenish Karmacharya, Biochemistry
Sponsor: Professor Nadrian Seeman, Chemistry

The growth of crystals, designed and constructed from self-assembling DNA motifs, is one of the long-stated goals of the growing field of structural DNA nanotechnology. The purpose of developing such systems is to provide a macromolecular scaffold, capable of binding, orienting and juxtaposing a variety of molecules from cellular macromolecules to organic conductors and optical memory components. These macromolecular scaffolds rest fundamentally on the sequence-dependent methodology and inter-molecular sticky end cohesions and make them capable of creating a crystalline lattice. Previously designed motifs of symmetric system with n-multiple edges (i.e. 1-4 DNA turns) were made of varying inter-junction base pairs (7, 17, 18, or 28bp). To further such studies, this project has reported structural stability of triangle with 9bp in the interjunction. Optimization of crystal growth conditions are underway to improve the resolution of the crystals from 9bp interjunction triangle. Work has also been done to stabilize 6bp inter-junction triangle, which is considered to be most stressed energetically.

Neuronal Dynamics of Beat Perception
Alexandra Kuznetsov, Mathematics
Sponsors: Dr. Áine Byrne, Neural Science; Professor John Rinzel, Neural Science

The human brain is unique in that it is able to not only identify a beat from a stimulus, such as music or language, but is also able to represent this beat even after the stimulus has been removed. Practically, humans are able to move to a musical beat, adjust their rhythm when the music speeds up or slows down and continue to express it when the music stops. This study utilizes a model of the beat-generating neuronal network formulated by the Rinzel lab that is responsible for “learning” a beat from a given isochronous stimulus based on a discrete time scale (Bose, Byrne et al., 2019). The model utilizes two learning mechanisms: one regarding period and one regarding phase, which provide plasticity, allowing the beat generating neuron to match its spike times to those of the metronomic stimulus. The present model is a single oscillator cell in the Hodgkin-Huxley framework. This study examines this model’s response to perturbations of a regular beat and tests whether its properties match observed behavior in terms of asymmetric resynchronization, negative mean asynchrony and beat maintenance in the absence of an external stimulus.

An RNA Splicing Component Implicated in Cancer Plays a Role in Heterochromatin Formation Independently of Splicing in the Fission Yeast
Soon Hoo Lee, Biology
Sponsors: Professor Fei Li, Biology; Dr. Qianhua Dong, Biology

Heterochromatin domains in eukaryotes serve essential cellular functions such as regulating gene expression, facilitating chromosome segregation and protecting the genome integrity. Though recent findings have outlined the major factors in heterochromatin assembly, a comprehensive understanding of all components involved and how they interact is lacking. Recently, The Li lab conducted a genome-wide screen of heterochromatin factors using the yeast model S. pombe. It was found that a highly conserved RNA-splicing factor Rbm10 is indispensable for heterochromatin assembly. Its ortholog in humans, RBM10, has been implicated in the alternative mRNA splicing of several oncogenes. The N-terminal RNA-binding module is essential for such splicing function. The present study demonstrates the C-terminal domain of Rbm10 facilitates heterochromatin formation independently of RNA-splicing. The deletion of the RNA-binding module does not impair heterochromatin formation, while the deletion of the C-terminal domain phenocopies the complete deletion. Interestingly, any partial deletion of Rbm10 abrogates its function in RNA-splicing, indicating that cooperation of all protein domains is necessary for splicing. Additionally, the splicing of the heterochromatic ncRNA is unaffected in the Rbm10 mutant, suggesting that Rbm10 contributes heterochromatin by means other than ncRNA processing. These results reveal a novel role for RNA-splicing factors in heterochromatin formation. Furthermore, it is possible that the role of RBM10 in heterochromatin is conserved in humans by homology. As heterochromatin instability is a major source of tumor heterogeneity, these results open the intriguing possibility that RBM10 has a chromatin-mediated mechanism of cancer in addition to its role in regulating oncogene splicing.

Examining Bicoid’s Pioneering Ability in Enhancer Regulation During Drosophila Embryo Development
Rimma Levina, Biology
Sponsors: Professor Rhea Datta, Biology; Hamilton College; Professor Stephen Small, Biology

In Drosophila melanogaster development, the proteins Zelda (Zld) and Bicoid (Bcd) work to pattern the early embryo. Both proteins bind to enhancers at specific sequence motifs and in unique combinations in order to regulate associated genes. Zld is thought to initially change chromatin accessibility to make DNA available for binding by other proteins. Bcd is capable of directly activating...
many genes necessary for head development. However, the full scope of both Zld and Bcd’s roles in regulating genes remains unclear, as recent data have attributed novel regulatory abilities to Bcd. Here, it is shown that Bcd is capable of replacing Zld functions during early regulation of the goosecoid (gsc) gene. Through site-specific mutagenesis and transgenic reporters this study demonstrated substituting Zld binding sites with Bcd binding sites in the gsc enhancer can change it from being dependent on Zld for activation to solely dependent on Bcd. It still remains unclear the way in which Bcd is able to replace Zld-functions, as well as whether this is a ubiquitous property of Bcd or solely enhancer-specific. However, it is speculated that Bcd can have different roles in enhancer regulation when bound to either its high affinity or low affinity sites. Taken together, these results are exciting because they demonstrate that Bcd’s role in early embryonic development is more dynamic than previously thought and could change the thinking about factor-identities and early gene regulation.

Amyloid Precursor Protein Is Required for Late-Term Survival and Proliferation of Melanoma Cells in the Brain Parenchyma
Grace Levinson, Biology
Sponsors: Professor Eva Hernando, Pathology; NYU School of Medicine; Kevin Kleffman, NYU School of Medicine

Stage IV patients with melanoma brain metastasis have the most severe morbidity and mortality, lowest overall survival rates and lowest therapeutic responses among all melanoma patients, as the mechanisms behind melanoma brain metastasis are poorly understood. Preliminary project data has shown that amyloid-β precursor protein (APP) is required for late-term survival and proliferation of melanoma cells in the brain parenchyma in one cell line. This research focuses on infecting 5B1 melanoma cell line with lentiviral shRNA to silence APP and analyzing the effects in-vitro and in-vivo. Results showed a nonsignificant trend towards decreased parenchymal metastasis and increased leptomeningeal metastasis. Additionally, the research focuses on understanding how amyloid-β precursor protein mediates melanoma-astrocyte crosstalk, as previous experiments have shown that silencing APP prevents reactive astrocytosis surrounding melanoma cells in the brain parenchyma. RNA-sequencing of astrocytes exposed to conditioned media from melanoma cells with and without APP silencing shows that APP from melanoma cells induces an upregulation of genes involved in metabolism and downregulation of genes involved in inflammatory response.

Face Specific Staining of a 2-Turn Asymmetric Crystal Using Fluorophores (Cyanine 3, Cyanine 5)
Ziqi Liu, Chemistry
Sponsor: Professor Nadrian Seeman, Chemistry

DNA molecules are able to self-assemble into double-stranded helices based on Watson-Crick base complementarity; therefore, they can be programmed into forming immobile branched junctions and geometric structures, for example tensegrity triangles, that are predictable in both shape and size according to a variation and manipulation of nucleotide sequences. Treating nucleic acids as nanoscale materials, researchers in the field have been able to create crystal lattices of asymmetric DNA motifs through sticky-end cohesion. The ability to crystallize rigid DNA tensegrity lattice motifs opens up the possibility of face-specific co-crystallizing covalently attached molecules within the lattice. This will not only allow for the periodic arrangements of guest molecules within a DNA crystal lattice but will also hopefully ease the structural determination of other non-biological molecules. In this project, the chosen covalently attached molecules are fluorophores, namely Cyanine 3 and Cyanine 5, for the ease of demonstration. This research hopes to demonstrate the potential applications of structural DNA nanotechnology and to extend such applications beyond the currently known techniques in the field.

Efficient Combinatorial K-Means Projective Clustering on J-Subspaces
Diego Fernando Lorenzo Casabuena Gonzalez, Computer Science, Economics
Sponsor: Dr. Soledad Villar, Center for Data Science

The problem of finding the optimal k-means clustering on an input of n j-subspaces is known to be NP-Hard. This project considers the set of all possible clusterings of the j-subspaces and proposes a smart way to sample from this exponential-size set. The smart sampling procedure converges in polynomial time towards the optimal clustering.

Molecular Beacon Probes for Assaying the Gut Microbiome
Yinglun Ma, Chemistry, Samuel Odeja, Chemistry
Sponsor: Professor Yoel Ohayon, Chemistry

There are roughly a thousand different species of bacteria in the human microbiome with many having established a symbiosis with the human host. These species can facilitate nutrient uptake, help regulate metabolism and improve immune system function. The concentration of a given species in the gut can vary from person to person with potentially significant health impacts. Studies have shown that children with autism are more likely than neurotypical
children to develop alimentary-canal disorders due to having different relative bacterial concentrations. Researchers have also demonstrated that a deficiency in L. reuteri in the microbiome may be linked to symptoms of autism. With the microbiome being so central to the human body’s health, it is important to be able to determine its makeup. This study’s molecular beacon probes will be able to selectively hybridize to variable regions of bacterial 16s rRNA sequences that are species-specific. The method involves isolating these variable regions without prior knowledge of the bacteria’s identity. Thus, the probes can be constructed based on the isolated variable regions to allow for selective hybridization and fluorescence measurement. The authors have successfully amplified 16s rRNA sequences that are conserved across all bacterial species and plan to utilize reverse-transcribed cDNA from these sequences to create probes. After probe construction, it will be possible to quantify and compare the bacterial species present in Host A and Host B. The intersection in bacterial concentration between the two hosts can be useful in aiding diagnosis and elucidating health discrepancies between them.

The Comparison of Healthy and Diseased Microbiomes
Olivia Maffei, Chemistry
Sponsor: Professor Yoel Ohayon, Chemistry

There are millions of microorganisms such as bacteria, fungi and viruses that live in a human’s mouth, skin, gut and other parts of the body. These microbes inhabit communities known as microbiomes. Some of these can be harmful, but a large quantity of them is beneficial to the immune system and help to combat detrimental bacteria and viruses. The microbiome is greatly affected by environment such as diet, climate, stress and medications. Therefore, microbiomes greatly vary from person to person. There have been many clinical trials that have examined whether bacteria from microbiomes can treat a variety of human diseases including diabetes and AIDS. This project aims to create a chemical process that will distinguish between healthy and diseased microbiomes: they will be compared on a protein expression level without employing sequencing. The goal is to learn what RNA exists in one microbiome, yet not in another. This will allow a determination to be made about what RNA is found in a diseased microbiome. However, since RNA is very costly, this research will be accomplished using DNA models that resemble three different microbiomes. This project employs Asymmetric Polymerase Chain Reaction, Native Gel Electrophoresis, and Rapid Thermal Annealing approaches. With this process, one can more effectively study the microbiome, leading to further development of drugs and other methods of targeting the microbiome in treating diseases.

Engineering Toroidal Shaped Micro-Swimmers
Selamawit Moges, Computer Science
Sponsor: Matan Ben Zion, Physics

A threading torus or “donut-shaped” swimmer was first introduced by Purcell in 1977 and later in 2008 by Kenneth and Leshensky on a theoretical and mathematical level respectively. Toruses have a theoretical swimming efficiency higher than most naturally-occurring or man-made micro-swimmers. On the macro-scale, a swimmer that threads water similarly to a torus was built and swimming efficiency along with propulsion velocity were calculated and compared to other micro-swimmers. Once stable, the toroidal swimming prototype will then lead to the further designing and building of a torus-shaped swimmer. The data and conceptual understanding drawn upon these experiments will then carry over into how to execute this on a micro-scale. The experiments conducted strongly suggest that donut-shaped microswimmers hold great promise for targeted drug delivery, performing risky bio-medical procedures and many other technological advancements.

The Genetic Logic of Striatal Development
Maesoumeh Mohammadhkani, Psychology
Sponsors: Professor Gordon Fishell, Neurobiology, Harvard Medical School; Professor Jeremy Dasen, Neuroscience and Physiology, NYU School of Medicine

The basal ganglia is a group of brain structures including the striatum and globus pallidus that are crucial for control of voluntary motor movements, cognition and emotion. During development, neurons of the basal ganglia are born from embryonic progenitor zones known as the ganglionic eminences (GEs). While much has been researched about the origin and wiring of the basal ganglia, a major question remains: how do neurons originating in the GEs become specified during development as one differentiated basal ganglia cell type versus another? To address this question, this project used single-cell RNA sequencing to profile the transcriptomes of thousands of mouse neurons collected along a developmental time course in combination with genetic fate mapping techniques. The results reveal that the medium spiny projection neurons (MSNs) of the striatum are genetically specified towards D1 and D2 types in the very early embryo, indicating that the wiring of the direct and indirect pathways are genetically encoded by specific gene modules early in development. These findings shed new light on the molecular diversification of early striatal precursors and reveal the temporal expression of genes important for the specification of basal ganglia cell types implicated in numerous neurological disorders.
Mechanisms Constraining Inhibitory Dynamics in Hippocampal CA1
Erica Nebet, Neural Science
Sponsors: Professor Richard Tsien, Neuroscience and Physiology, NYU School of Medicine; Dr. Simon Chamberland, Neuroscience and Physiology, NYU School of Medicine

Information processing in the brain requires coordination across individual neuronal elements. GABAergic interneurons control the activity propagation in neuronal circuits. While functionally distinct interneuron subtypes contribute to information processing, the main determinants gating their recruitment remain generally unknown. This research performed electrophysiological recordings in acute hippocampal slices and stimulated Schaffer’s collaterals (SC). Genetically labeled CA1 parvalbumin-positive (PV+) and somatostatin-positive (SST+) interneurons were recorded and anatomically identified. It was found that segregation of direct (CA3) and indirect (CA1) excitatory inputs contributes to cell type-specific recruitment of three interneuron classes. PV+ perisomatic-targeting cells were recruited mainly via direct excitation leading to feedforward (FF) inhibition, while SST+ oriens-lacunosum moleculare (OLM) cells were exclusively recruited by indirect excitation to execute feedback (FB) inhibition. Interestingly, PV+ bistratified cells with axons terminating on proximal dendrites of pyramidal neurons were excited by direct and indirect afferents. Thus, these interneurons map onto pyramidal cells along a spatial continuum, defined by direct and indirect recruitment. Notably, repetitive high-frequency SC stimulation led to cell type-specific changes in action potential probability. Perisomatic-targeting interneurons decreased their firing probability during repetitive stimulation while OLM cells were initially silent but later increased their activity. Bistratified cells demonstrated an elevated firing probability, which gradually decreased. These results suggest that the recruitment of interneurons by direct and indirect afferents is precisely coordinated. This idea is consistent with the result that optogenetically decreasing FF inhibition increased FB inhibition, allowing for a constant inhibitory drive. Altogether, our data highlight the main determinants gating interneuron type-specific recruitment during repetitive activity.

Defining Genetic Variation Associated with DNA Damage Sensitivity
Kimberly Nguyen, Biology
Sponsor: Professor Andreas Hochwagen, Biology

DNA repair in response to DNA damage is essential to maintaining genomic integrity and preventing cancer, aging and cell death. Mutations in DNA repair genes may sensitize cells to certain forms of DNA damage. Although many single-gene mutations underlying DNA-damage sensitivities in S. cerevisiae are well characterized, causative mutations for polygenic DNA-damage sensitivities between S. cerevisiae’s divergent populations have yet to be determined. To enable this, high-throughput genetic approaches like bulk segregant analysis (BSA) can facilitate the identification of multiple genes behind complex traits. To this end, this study screened progeny of two S. cerevisiae populations that show differences in sensitivity to DNA-alkylating agent methane methylsulfonate (MMS). Using BSA, 21 regions of the SK1 genome were associated to MMS resistance, and candidate mutations were determined that may confer a DNA repair advantage in SK1 strains. Furthermore, several complex traits were identified in response to DNA-damaging agents outside of MMS. Causality behind MMS sensitivity will be determined by backcrossing and further experimentation of the candidate mutations. It is anticipated that the polygenic basis behind these other DNA damage sensitivities can be resolved similarly by BSA. Successful identification of the mutations associated with these DNA-damage sensitivity phenotypes will create a more nuanced understanding of well-established DNA repair mechanisms as well as create a workflow for the continued investigation of complex traits across yeast populations.

Above and Beyond: Holographic Tracking of Axial Displacements in Holographic Optical Tweezers
Michael O’Brien, Physics
Sponsor: Professor David Grier, Physics

Precise three-dimensional control of optical tweezers is well understood using the method of holographic optical trapping. However, the manner in which microscopic particles move in these traps is not well understood. How far a particle moves along the axis of the beam in an optical tweezer is not simply dictated by the programmed displacement of the trap but rather depends on an interplay of the trap’s changing shape and the particles’ light-scattering properties. For the particular case of colloidal spheres in optical tweezers, the particle moves further along the beam direction than the trap does and ultimately is displaced out of the trap’s basin of attraction. The ratio of the particle’s displacement to the trap’s displacement depends sensitively on the particle’s properties in a manner that is explained by the theory of photokinetic effects. Holographic video microscopy, a new and revolutionary analysis technique that determines a particle’s size, refractive index and three-dimensional position, provides the feedback needed to achieve precise three-dimensional control of particle placement in colloidal assemblies created with holographic optical traps.
Tamiflu: Computational Analysis of Drug Binding and Resistance

Lourania Oliver, Chemistry
Sponsor: Professor Yingkai Zhang, Chemistry

A drug’s binding pose offers crucial information about the drug and its relation to its target. Through a computational analysis of Tamiflu, a drug that targets the neuraminidase (NA) of the influenza virus, this study explores the potential relationships among drug binding affinity, drug stability, target binding sites and drug-target interactions. Tamiflu is examined bound to different NAs using a variety of computational methods including conformation generation, quantum mechanical energy calculations, binding pocket analysis and molecular dynamic simulations. The resulting data on drug stability and the binding pocket are compared against Tamiflu’s binding affinity for each target. The apparent trends and lack thereof provide an understanding of how drug stability, the target’s binding site and drug-target interactions influence drug binding affinity. Additionally, this thorough analysis of Tamiflu provides a model procedure for future computational drug resistance studies.

Crystal Growth Inhibition for Prevention of L-cystine Kidney Stone Formation by L-cystine Diamides

Christie Passos, Chemistry
Sponsor: Professor Michael D. Ward, Chemistry

This research investigates the prevention of L-cystine stone formation at an early stage by inhibiting the crystallization of L-cystine crystals through the use of L-cystine diamides, which are potentially effective in increasing the apparent solubility of L-cystine via binding to specific crystal sites to slow the attachment of additional L-cystine molecules. Step velocity measurements made for three novel inhibitor candidates, LH 1726, LH 1729 and LH 1753, reveal that inhibitor candidate L-CDME remains, to date, the most effective inhibitor of all the diester imposters for which step velocities have been calculated both in the past and at present. The most suitable concentration at which a supersaturated solution of L-cystine can be created in de-identified human urine and used as a growth solvent for in situ Atomic Force Microscopy (AFM) step velocity measurements both at room temperature (20°C) and normal human body temperature (37°C) was identified to be 1.3 mM. The potential cause of the presence of a mixture of the hexagonal and tetragonal polymorphs of L-cystine crystals in L-cystine supersaturated solution at the earliest stages of L-cystine crystal development was determined. Analysis of L-cystine crystals within 1–14 hours of their nucleation revealed that the initial stages of L-cystine crystal growth are characterized by the tetragonal polymorph which over time transforms into the hexagonal polymorph. These findings can help pinpoint the optimal amount of time that L-cystine crystals should be allowed to mature in order to yield the ideal hexagonal polymorph required to perform AFM and test the efficacy of novel inhibitor candidates at present and in the future.

Exploiting Inclusions to Generate Screw Dislocations on Molecular Ionic Crystal Surfaces

Elijah Persad-Paisley, Biochemistry
Sponsor: Dr. Isabel Olson, Chemistry

In anisotropic molecular crystals, line defects, i.e. dislocations, may present unique consequences regarding the chemical and mechanical properties of the materials with applications in the detonation of explosives or processing of pharmaceutical tablets. Growth active screw dislocations have long been visualized as spiral-growth hillocks on crystal surfaces. The structural chemistry of screw dislocations and the mechanisms by which they form still remains ill-defined, however. Cleaved crystals of potassium hydrogen phthalate (KAP), chosen due to their low-dislocation density and ability to cleave easily, were grown in the presence of assorted fluorescently labeled nano- and micron-sized particles to systematically determine if there is a relationship between size and hardness of an inclusion and subsequent screw dislocation generation. Using the etching technique coupled with confocal fluorescence microscopy, it was found that colloidal particles of 1 µm were sufficient to generate a screw dislocation in an otherwise dislocation-free portion of the crystal. These results provide a potential pathway for understanding the mechanical, physical and chemical properties of materials.

Determining Efficacy and Efficiency of PORTL-iperoxo as a Selective M2 Receptor Agonist

Dennis Phan, Biochemistry
Sponsor: Professor Dirk Trauner, Chemistry

Acetylcholine is an abundant neurotransmitter in both the central and peripheral nervous systems (Langmead, Watson et al., 2008). In conjunction with muscarine, they mediate physiological functions such as arousal, memory and alertness to autonomic functions. However, there are currently few highly selective inhibitors or activators of the M2 muscarinic acetylcholine receptor, which is predominately expressed in the heart (Thal, Sun et al., 2016). The molecule of interest, iperoxo, was discovered and proved to be an agonist that produces a response greater than the endogenous ligand, acetylcholine (Langmead and Christopoulos, 2013). Specifically, during biological testing, iperoxo was found with twice the magnitude of activity as acetylcholine. However, iperoxo does produce off-target effects due to structural similarities of the receptors. The goal is to use iperoxo in conjunction with tethered photopharmacology to induce selectivity while using light to control activity. Tethered photopharmacology utilizes a covalent linker to lock a photoswitchable ligand in close proximity to a receptor of interest. The efficacy
and selectivity of the extra moiety will be tested in vivo after synthesis of a SNAP-tagged and Halo-tagged iperoxo (PORTL-iperoxo) to study the effects of the additional functional groups that will act as a tether.

**Neural Development of the Drosophila Visual System**

*Christopher Porras, Biology*

*Sponsor: Dr. Jennifer Malin, Biology*

The medulla is the most complex neuropil in the optic lobe and contains 80–100 neuron types (Fischbach and Dittrich, 1989; Morante and Desplan, 2008). The first component of medulla neuron specification involves temporal Transcription Factors Homothorax, Eyeless, Sloppy-paired 1/2, Dichaete and Tailless to be expressed sequentially within each neuroblast. These Neuroblasts generate Ganglion Mother Cells (GMCs). GMCs divide once more to generate mature neurons (Bertet et al., 2014). The second component is spatial factors. These are Transcription Factors expressed in a region-specific manner in the OPC. At the center OPC, Vsx1 is present, while Optix is present at the medial OPC (Erclik et al., 2017). Spatial factors also cross regulate each other like temporal factors do. The third component of medulla neuron specification is Notch signaling. GMCs divide to generate mature neurons whose daughter cells express Notch asymmetrically (Li et al., 2013). Hth-positive, Notchon neurons become multicolumnar neurons, whose fate depends on their spatial region of origin (Erclik et al., 2017). There is much left to learn about medulla neuron specification. Spatiotemporal patterning and Notch signaling will be used to identify MC neuron origin. Immunofluorescence staining and lineage tracing analysis identified specific spatial and temporal factors required for MC neuron specification. Low count MC neurons arise from a sub-window of the OPC, while high count ones arise from larger regions of the OPC. Early temporal window MC neurons target the proximal medulla while later ones target the distal medulla. These data add new insights into how the medulla is assembled.

**Identifying High-Impact SNPs That Predict Susceptibility to Genetic Diseases**

*Akshay Prabhushankar, Computer Science*

*Sponsor: Dr. Lawrence Sirovich, Mathematics, Rockefeller University*

It has been known for decades that some diseases, specifically autoimmune disorders, are passed down from parent to child. Only recently, however, has genome sequencing become cheap and fast enough for researchers to analyze specific single nucleotide polymorphisms (SNPs) responsible for genetic diseases. The aim of this research was to develop one or more classifiers that can receive a genome as input and accurately calculate the risk of the individual developing a genetic disease. This study used a genome database of over 19,000 individuals collected by the Wellcome Trust Case Control Consortium (WTCCC) in the UK, which included DNA from a control group and DNA from individuals diagnosed with type 1 and type 2 diabetes, rheumatoid arthritis, Crohn’s disease, ulcerative colitis and bipolar disorder. SNPs were marked as important if there was a significant difference between the alleles in the illness set (diseased) and the wellness set (control), keeping in mind that some mutations may actually protect against disease. For example, if 75% of known diseased individuals expressed the base A at location rs123, but only 25% of known healthy individuals expressed base A at the same location, then this mutation would be statistically relevant. But using only this conditional probability approach, as has been done in prior mutation-level research, results in data that skews toward SNPs with low penetration. This study used incremental information mathematics to reduce the interference from rare SNPs. After optimizing the classifiers, the illness (or wellness) of individual genomes could be predicted with an accuracy of over 80%.

**Stimulation of Innate Immunity via TLR9 to Ameliorate Cerebral Amyloid Angiopathy in Aged Non-Human Primates**

*Margish Ramani, Neural Science*

*Sponsor: Professor Henrieta Scholtzova, Neurology, NYU School of Medicine*

Alzheimer’s Disease (AD) is the most common cause of dementia characterized by the presence of parenchymal amyloid-β (Aβ) plaques, cerebral amyloid angiopathy (CAA) and neurofibrillary tangles. Genome-wide association studies have demonstrated the importance of macrophage and microglia—the primary innate immune cells of the brain—in AD pathogenesis (Karch et al., 2014). Prior work has showed that stimulation of innate immunity with CpG ODN can reduce plaque pathologies without causing toxicity in mouse models based on cytokines, the molecules inciting an immune response (Scholtzova et al., 2009). Long-term safety of well-characterized TLR9 agonists, CpG ODN (cytosine-phosphate-guanine oligodeoxynucleotides), of both Class B and Class C is assessed in aged squirrel monkeys (SQMs) using peripheral cytokine concentrations. SQMs are small New World primates with cerebrovascular and immune systems similar to humans’. An important feature is that cerebral amyloid deposition in SQMs has a predilection for abundant CAA and low levels of parenchymal Aβ deposition, supporting SQM as a translational model for Alzheimer’s Disease. The administration of CpG ODN in elderly SQMs was effective in inducing an immunostimulatory response in the absence of toxicity. Hence, these exciting non-human primate data indicate that long-term treatment with TLR9 agonist CpG ODN results in amelioration of CAA and cognitive...
improvements in aged SQMs without inducing adverse events. Overall, these extensive preclinical research findings suggest that this innovative immunomodulation is effective at reducing all cardinal AD related pathologies without toxicity in multiple experimental models of AD. This study supports the viability of CpG ODN as a cure for Alzheimer’s Disease and would have a significant chance of achieving clinical efficacy.

**Misophonia and Tech: A Study to Help Better the Wellbeing of Students Who Struggle with Focusing while Listening to Naturally Occurring Sounds**

*Rachel Rios, Computer Science*

*Sponsor: Professor Craig Kapp, Computer Science*

Misophonia is a term used to describe people that can become irritated, enraged or even panicked when they hear their trigger sounds. Through a survey sent out in this research project, it was found that 1/5 students have a sensitive response to sounds. However, the author believes that their response can be changed if they were to be provided with a tool to assist them. Currently, there are no tools that have been published for users to learn more on how to cope with their Misophonia. This study will explore the history of the newly classified mental disorder and how a publicly available tool might help students better their focusing and studying habits.

**Phosphoproteomic Approach to Identifying PERK Downstream Targets Related to ER-Mitochondrial Interactions in Stress Conditions**

*Prianka Saha, Biology*

*Sponsors: Dr. Shuvadeep Maity, Biology; Professor Christine Vogel, Biology*

PKR-like endoplasmic reticulum kinase, or PERK, is an enzyme that is part of the Mitochondria Associated Membrane and is known to phosphorylate EIF2a, a translation initiation factor, in response to stress of the endoplasmic reticulum (ER). ER stress has been implicated in the pathophysiology of several chronic conditions such as diabetes, neurodegeneration, hypertension and cancer. Little is known about PERK’s downstream effectors outside the immediate translation inhibition. Several lines of evidence indicate that the consequent pathway that mounts the unfolded protein response post-phosphorylation of EIF2 also plays a role in the upregulation of certain mitochondria-associated proteins. The goal of this project is to define this subsequent regulatory phosphorylation network. Specifically, it will quantitatively map previously unknown PERK mediated phosphosites at different times points upon ER stress through the use of the mass spectrometry.
Observing the Proteolytic Activities of Matriptase1 by a Novel Protease Sensor in Zebrafish
Mira Sharma, Biology, Psychology
Sponsors: Professor Holger Knaut, Cell Biology, NYU School of Medicine; Naoya Yamaguchi, Developmental Genetics, NYU Sackler Institute of Graduate Biomedical Sciences

Proteolytic activities regulate a variety of developmental, physiological and disease-associated processes. Matriptase1, a membrane-bound serine protease, is often expressed with its inhibitor Hai1 in the same tissues, suggesting that there is a tight regulation of Matriptase1 by Hai1. Consistently, the suppression of Matriptase1 by Hai1 is crucial for a normal epidermal development. To study the regulation of this balance in organogenesis in vivo, the posterior lateral line primordium (primordium) in zebrafish was used as a model. To visualize the proteolytic activity of Matriptase1 in vivo, a novel Matriptase1 activity sensor was generated using Par2b, a known Matriptase1 substrate. Par2b is a GPCR that is cleaved in its extracellular domain by Matriptase1 and internalized for subsequent downstream intracellular signaling. par2b:par2b-Kate2-IRES-EGFP-CaaX BAC transgenic zebrafish were generated to simultaneously visualize Par2b-Kate2, fused to a red fluorescent protein, and cell membrane-GFP in par2b expressing tissues. Transgenic fish were screened by selecting those that displayed the “CFP eye” transgenic marker and established three transgenic lines. Live imaging was performed to capture the expression and the localization of Par2b-Kate2 together with membrane-GFP during the primordium migration via confocal microscopy. It was found that Par2b-Kate2 is clearly localized at the membrane in skin. On the other hand, localization of Par2b-Kate2 at the membrane in the primordium was not observed, suggesting that Par2b might be activated and in turn also suggesting activation of Matriptase1 in the primordium.

The Termolator, Terminology Extraction
Leizhen Shi, Computer Science
Sponsor: Professor Adam Meyers, Computer Science

This project has successfully recreated and improved the Chinese system of the Termolator that extracts terminologies from Chinese texts. By implementing algorithms such as DRDC, it is possible to extract raw information needed from tagged word chunks. With further help from additional libraries like the common word dictionary, law term dictionary and chemical term dictionary, it is possible to filter out some of the outlier words. Based on the results, the author will continue to develop linguistic rules from observation that can conclude the pattern and format of the terminologies in Chinese.

Identification of Chromatin Remodeling Cofactors Responsible for SDC-2 Mediated Recruitment of the Dosage Compensation Complex
Geet Shukla, Biology
Sponsor: Professor Sevinç Ercan, Biology

Dosage compensation (DC) is a fundamental gene regulatory mechanism responsible for equalizing expression of X-chromosomes in higher-level metazoans, which in C. elegans is between hermaphrodites (XX) and males (XO). Condensins are part of the larger family of structural maintenance of chromosome (SMC) proteins used in regulation of chromosome structure. In C. elegans, condensin DC constitutes the core of the X-specific dosage compensation complex (DCC), which are recruited to short DNA sequence motifs enriched at recruiting elements on the X-chromosome (rex sites), whereupon the DCC can spread along the chromosome to regulate transcription. SDC-2 is a predicted pioneer factor specific to the X-chromosome that has been shown to recruit the DCC and unknown cofactors to remove nucleosomes and aid in condensin DC binding (Dawes, Berlin et al., 1999). The goal of this study is to determine which chromatin-remodeling cofactors mediate SDC-2 directed nucleosome removal for DCC recruitment. SDC-2 is normally only expressed in hermaphrodites to achieve repression of both of the X-chromosomes by half, equalizing expression with males. A genetic assay will be created by exogenously expressing SDC-2 in male C. elegans, which has been shown to cause lethality due to a reduction in expression of the one X-chromosome (Nusbaum, 1989). Knocking down cofactors involved in SDC-2 mediated condensin DC recruitment should rescue male lethality (Toselli-Mollereau, Robellet et al., 2016). Clarifying the mechanism for SDC-2 function is an important step forward in understanding the molecular mechanisms of condensin recruitment.

Study of the Unidirectional Flow in Avian Respiratory System
Guanhua Sun, Mathematics
Sponsor: Professor Charles Peskin, Mathematics

It is known that avian respiratory systems differ a lot from mammals’: while mammals breathe in and out, the air does not loop around in the lungs as it does in a bird’s lung. This unidirectional flow remains a myth physiologically because no valves were ever observed directly, thus it’s expected to be a fluid dynamical phenomenon. At the same time, this system is suspected to be the key of birds’ rapid metabolism, which sustains their most apparent feature: flight. This project investigates this phenomenon by experiments, conducted in the Applied Mathematics Lab at Courant Institute together with simulations done with Immersed Boundary Method, which was first introduced.
by Prof. Charles Peskin to study the blood flow in heart. The phenomenon was successfully repeated both in the experiment and the simulation.

**Early-Life Trauma Reduces Flexibility in PFC Network Processing of Threat During Adolescence**

*Stephen Tan, Neural Science  
Sponsor: Professor Regina Sullivan, Child and Adolescent Psychiatry, NYU School of Medicine*

Having behavioral flexibility is key to the expression of adaptive behaviors. Research in children suggests this flexibility is compromised if maltreatment is experienced in early life. Here, using infant and adolescent rats (PN18 and PN28) maltreated by the mother (or control rearing), pups were presented with a threat with or without the mother present. A brain area well documented to be important for behavioral flexibility, the prefrontal cortex (PFC), was then assessed. Behavioral results showed that, in control rearing, maternal presence had an attenuation effect on threat learning at both ages. For maltreated pups, this effect is compromised in PN18. Previous research from the lab suggests this is due to disruption of the ventral tegmental area’s dopaminergic input into the basolateral amygdala (Barr et al., 2009; Opendak et al., 2019). In sharp contrast, PN28 maltreated pups retained this attenuation effect. Neural data was obtained using 14C 2-DG autoradiography and results showed engagement within the ventromedial PFC (vmPFC). Specifically, maternal presence led to an increase in engagement in the infralimbic cortex, an area considered to serve fear reduction (Do-Monte et al., 2015; Quirk et al., 2000; Sotres-Bayon et al., 2004) but showed no significant engagement in the prelimbic cortex, an area associated with enhanced fear (Sharpe and Killcross, 2014; Ye et al., 2017). Maltreated pups showed reduced activity in the vmPFC. Overall, the data suggests that following independence from the mother, pups transition to the PFC social support circuit and that maltreatment degrades the caregiver’s ability to attenuate fear learning potentially through compromised vmPFC function.

**From Chelate to Chromophore: Sensitizing Non-Luminescent Lanthanide Chelates for Use in Contrast Enhanced Magnetic Resonance Imaging**

*James A. Tranos, Chemistry  
Sponsor: Professor Youssef Wadghiri, Radiology, NYU School of Medicine*

Gadolinium chelates are widely used in chemical contrast based magnetic resonance imaging (MRI) and are especially important for early diagnoses of diseases such as cancer. However, upon in vivo transmetallation, free Gd+3 ions are highly toxic to various tissues in the body. This is especially problematic for patients who suffer from renal complications as these ions remain in their bodies for prolonged periods of time. Because of this issue, it has become necessary to develop highly sensitive and accurate methods for detecting gadolinium in vivo. In the past, gadolinium quantification has relied heavily on inductively coupled blood-plasma mass spectrometry (ICP-MS), the practice commonly used to detect doping in professional sports. While this method is considered to be accurate, it is particularly slow and expensive in the context of rapid screening for patients with compromised renal functions. In a more recent alternative method, contrast agent chelates have been sensitized using fluorescent molecules such as carbostyril 124 (cs124), allowing for real time quantification of gadolinium chelation using Förster Resonance Energy Transfer (FRET). However, these findings have only been replicated in vitro and chelates sensitized with this dye are limited to in vitro systems in part by their low-solubility in aqueous media and in the fact that energy transfer occurs following excitation with ultraviolet (UV) light. In order to make this technology more applicable to in vivo systems, this project investigated the use of novel fluorescent tags derived from 1,8-diaminonaphthalene (18-DAN) that are hypothesized to show absorption maxima in the visible regions of the Electromagnetic (EM) spectrum. Chelates sensitized with this moiety are also expected to exhibit a large Stokes shift due to direct coordination between the metal cation and ligand moiety, making use of these dyes highly favorable in a FRET system. With these findings the lab aims to develop a FRET based method for real time, noise-reduced, in vivo quantification of gadolinium and other non-luminescent heavy metals.

**Early Life Maltreatment Reduced the Role of Striatum in Threat Learning**

*Gayatri Venkataraman, Neural Science  
Sponsor: Professor Regina Sullivan, Child and Adolescent Psychiatry, NYU School of Medicine*

Development is a period of significant neurobiological changes, requiring infants to exhibit behavioral flexibility and plasticity to adapt to the world. The caregiver is the primary source of infant environmental stimuli and has a profound role on infant brain development. The amygdala is one brain region that produces behavioral flexibility during sensitive periods, and mother rats have been shown to modulate infant amygdala plasticity in an age-dependent manner (Moriceau and Sullivan, 2006; Upton and Sullivan, 2010). Though the amygdala is critical for learning about threat, meaningful behavioral expression involves the coordinated function of multiple brain regions within functional circuits. Here, the role of the striatum, specifically how its functionality changes in infant rats that have been reared with abusive caregivers, is explored under a fear-condition paradigm. It was shown that in an age-specific manner, maternal presence suppresses the activity of the ventral striatum in infant pups reared under control conditions. This supports the expansion of the mother’s
ability to modulate the threat circuit beyond the amygdala to other areas such as the striatum. However, suppression was not found in infant pups reared under abusive conditions, suggesting that abusive mothers have impaired ability to block this functional target of the threat circuit in infant rats. These results support the idea that abusive caregivers may cause changes in threat network development of infant pups. More generally, these data can provide mechanical insights into neural dysfunction following early life trauma.

**Working Memory Deficit and Frontoparietal Network Abnormalities in Schizophrenia**

Ruoyu (Luie) Wang, Psychology

**Sponsors:** Professor Mariana Lazar, Radiology, NYU School of Medicine; Faye McKenna, Radiology, NYU School of Medicine; Dr. Laura Miles, Radiology, NYU School of Medicine

Working memory refers to the ability to hold information mentally for short duration, and its impairment is a core feature in schizophrenia (SZ). Although previous studies suggested this deficit is associated with frontoparietal network (FPN) abnormalities, the underlying mechanisms remains unclear. Here, this study examined the correlation between working memory capacity (WMC) and FPN properties in both SZ patients and healthy controls (HC) using resting-state fMRI and region of interest (ROI) based graph theory analysis. This study included 16 SZ patients and 19 HC. They were instructed to lie still in the MRI scanner with eyes closed during image acquisition. Their WMC was measured through Symbol Span subtest from Wechsler Memory Scale Fourth Edition. Acquired images were preprocessed in CONN toolbox (Whitefield-Gabrieli and Nieto-Castanon, 2012), following the default pipeline. Four ROIs within FPN—bilateral lateral prefrontal (LPFC) and posterior parietal (PPC) cortices were selected for the computation of network local and global efficiency metrics. SZ patients were found to have significantly higher global efficiency in right PPC than HC. Furthermore, significant negative correlation between Symbol Span score and local efficiency of the right PPC was found in HC but not in SZ patients. Altered global efficiency in SZ as well as the negative association between WMC and FPN network property in HC were consistent with past findings. The results suggest the possibility of alternative neural mechanisms supporting WMC in SZ. Further study of network properties and associated cognitive deficits is needed to further understand the affected neural substrates in SZ.

**Raman-Based Molecular Probes for pH and Metal Detection in Living Cells**

Alexandra Winter, Chemistry

**Sponsor:** Professor Daniela Buccella, Chemistry

Sensing methods in living cells allow for quick and measurable detection of metals and pH, where metal sensing can be particularly useful for medicinal applications. However, in making a sensor, pH is both easier and more cost effective to test the sensor’s mechanism, eventually resulting in a modular sensor that can further be tested. Raman microscopy is a spectroscopic sensing tool that can be utilized to measure the nitrile vibration of a cyano group, a wavenumber region that is in the Raman silent region for biomolecules (between 2600 cm⁻¹ and 1700 cm⁻¹). This concept can be applied to create Raman-based molecular sensors that measure the change in pH in living cells via a wavenumber shift and address problems found with other sensors like fluorescence-based probes. Specifically, Raman-based probes are immune to photobleaching and can provide a clear, quantifiable response in regions of the Raman-spectrum with little to no background noise from biomolecules. Through alteration of a fluorescence-based pH sensor with a low quantum yield and weak fluorescence, a Raman-based pH sensor was created to ultimately provide a ratiometric Raman response. Its functionality has undergone testing using various spectroscopy techniques including UV-Visible spectroscopy, Fluorescence spectroscopy and Raman spectroscopy to ensure a ratiometric response, stability in the presence of nucleophiles, stability at various pH and response testing with a Raman microscope. Other sensors were also synthesized to alter the pKₐ and act as a control throughout testing, allowing for the sensor to be modular in nature. This sensor expands the current array of sensors available by addressing problems found with current fluorescent-based probes and providing a customizable sensor model within the Raman-sensing field.

**Maternal Presence Blocks Fear Learning in Infant Rats by Blocking Plasticity Molecules**

Joyce Woo, Neural Science

**Sponsor:** Professor Regina Sullivan, Child and Adolescent Psychiatry, NYU School of Medicine

Maternal presence blocks amygdala-dependent fear learning in infant rats, although how simple maternal presence prevents amygdala plasticity remains elusive. Using infant rat fear conditioning, two important molecules for memory consolidation (ERK, mTOR) were tested. Results show that an amygdala molecule supporting memory consolidation (ERK) is controlled by maternal presence in pups younger than PN (postnatal) 16. In older pups, with maturation and the emergence of mTOR, the mother can no longer alter ERK.
The Role of Apolipoprotein E on Anti-Amyloid Beta Passive Immunization in APP Transgenic Mice
Vivian Xu, Biology
Sponsor: Professor Martin Sadowski, Neurology, NYU School of Medicine

Research has shown that Alzheimer’s Disease (AD) risk varies according to APOE genotype, which encodes apolipoprotein E, the main lipid-carrying protein in the brain. Carriers of the E4 allelic form of APOE exhibit significantly higher AD frequency as well as earlier disease onset. ApoE modulates soluble beta-amyloid (Aβ) clearance from the brain and formation of Aβ plaques, which lead to a cascade of a variety of downstream neurodegenerative effects. Anti-Aβ immunotherapy has shown potential to be a disease-modifying treatment through the use of monoclonal antibodies (mAbs) that can bind and help clear Aβ plaques via macrophage-transformed microglia. Previous work has shown that anti-Aβ mAb 10D5 immunization produces differential effects in microglia activation and Aβ plaque load reduction across APOE isoforms. This project aims to compare the effects of anti-Aβ mAb10D5 on Aβ deposition and glial cell activity in murine wildtype ApoE and ApoEKO mice both expressing amyloid precursor protein (APP). Mice treated weekly between 13.2–15 months of age with 10mg/kg 10D5 or 10mg/kg TTY 11-15 (an isotype IgG control antibody) were compared against an untreated control and perfused at 15 months. Brain sections will be immunostained to visualize interactions between Aβ plaque cores, diffuse Aβ protein, microglia and astrocytes. Confocal microscopy analysis is in progress.

Testing Promoter Specificity in Drosophila
Justin Yeung, Biology
Sponsors: Dr. Shigehiro Yamada, Biology; Professor Christine Rushlow, Biology

Zelda is a transcription factor that regulates early development in Drosophila melanogaster (fruit fly), a model organism used in the Rushlow lab to study transcriptional mechanisms. Zelda is known to increase chromatin accessibility, which facilitates binding of other transcription factors and therefore helps them activate their target genes. Zelda has two types of targets, Class I and Class II genes. For Class I genes, such as bkn, Zelda alone is sufficient for gene activation, but for Class II genes other transcription factors are required for activation. For example, the Class II genes sog requires Dorsal, a morphogen that specifies different cell types along the dorsal-ventral axis. Zelda’s role in sog activation is to boost Dorsal activity by helping it bind. Curiously, if Zelda can activate bkn by itself, why does it need Dorsal to activate sog? Here it is hypothesized that Zelda can interact with the bkn promoter but not the sog promoter and that Dorsal interacts with the sog promoter. To test this, this project will swap the promoters and assay the effects on expression with the aim of uncovering the basis for how Zelda differentially activates each class of target genes.

General Adversarial Networks for Image Inpainting
Ye Yuan, Computer Science, Mathematics
Sponsor: Professor Davi Geiger, Computer Science

Generative Adversarial Networks have been used for a wide range of generative tasks, most notably that of generating faces that are somewhat hard to differentiate from real images. This work attempts to build on previous works with Generative Adversarial Networks and explore its effectiveness when used to fill in missing regions in a given image. The results are promising. Depending on the nature of the image being used and the size of its missing region, it is often possible for the network to inpaint the missing regions in a way that is only discerned by careful observation. As always, the result is better if the test images are close to the training ones. It is possible to use quantitative methods for measuring the effect of such inpainting, but nevertheless it is more straightforward when resulted images are presented.

Monitoring the Kinetics of Molecular Binding Using Holographic Video Microscopy
Yvonne Zagzag, Physics
Sponsor: Professor David Grier, Physics

This research uses a novel experimental technique, Holographic Video Microscopy (HVM), to perform the first direct measurements of the kinetics of molecular binding. This demonstration opens up a new field of research in time-resolved measurements of chemical kinetics. It also provides the basis for fast, inexpensive and label-free molecular binding assays for pharmaceutical discovery and medical diagnostics. HVM determines the size and refractive index of individual colloidal spheres with unprecedented precision. With this technique, it is possible to resolve the radius of an individual micrometer-scale colloidal sphere to within 5 nanometers. The study explores the use of this precision to monitor the radius shift of populations of biotinylated polystyrene as they grow in size when coated with avidin and also watch as single biotinylated polystyrene are concentrically coated with avidin.

The Genetic Role of Ire1 in Drosophila Eye Development
Kenny Zheng, Biology
Sponsor: Professor Hyung Don Ryoo, Cell Biology, NYU School of Medicine

Proteins designated for secretion or display on the cell surface first enter the endoplasmic reticulum (ER) to be properly assembled. The cell monitors and regulates the protein folding conditions of the ER through the unfolded protein response (UPR), a signaling pathway activated by misfolded proteins to help resolve stress. Drosophila
Exaggerated Cap-Dependent Translation as a Mechanism for Cortico-Striatal Dysfunction in Fragile X Model Mice

Jeffrey Zhu, Neural Science
Sponsor: Dr. Francesco Longo, Neural Science

Fragile X Syndrome (FXS) is a neurodevelopmental disorder caused by a mutation in the \textit{Fmr1} gene and the most common form of inherited intellectual disability. A significant number of individuals with FXS also exhibit symptoms of autism spectrum disorders (ASD) including impaired social interaction and communication as well as repetitive and perseverative behaviors (Penagarikano et al., 2007). Despite the clinical impact of these symptoms, not much is known about the neurobiology of motor deficits in comparison to other autistic symptoms. This study aims to determine if cortico-striatal synaptic composition, function and plasticity are altered in FXS model mice. The central hypothesis is that aberrant repetitive and perseverative behaviors are due to a net increase in cap-dependent translation in striatal medium spiny neurons (MSNs), which alters the activity of the direct and indirect pathways, causing changes in behavior. Global and conditional knockout mice for \textit{Fmr1} were utilized in behavioral assays designed to characterize ASD-like behaviors as well as novel biochemical analysis to quantify de novo protein synthesis. It was demonstrated that global deletion of \textit{Fmr1} and selective deletion of \textit{Fmr1} in D1-MSN’s results in a net increase in protein synthesis in addition to increased repetitive and perseverative behaviors. Furthermore, it was possible to ameliorate these behavioral deficits as well as elevated protein synthesis with novel cap-dependent translation inhibitors such as 4EGI-1. This study suggests that enhanced cap-dependent translation at cortico-striatal synapses contributes to repetitive behaviors in mouse models of FXS, providing critical information on potential therapeutic treatments for synaptic and behavioral dysfunction in FXS and also in ASD.

inoshitol requiring enzyme 1 (Ire1), a mediator of the UPR, is an ER transmembrane protein with a luminal domain, which recognizes unfolded peptides and an RNase domain on the cytoplasmic side. Interestingly, it was found that Ire1 plays a role in proper \textit{Drosophila} eye development. When the RNase domain (RNase dead) was mutated, a rough eye phenotype was observed, whereas mutation of the luminal domain showed a phenotype indistinguishable from the wild-type. On a cellular level, it was observed that the RNase dead shows deformed ommatidia, which deviate from their expected hexagonal shape. On the contrary, the ommatidia luminal domain deletion mutant retains their hexagonal form just like the wild-type. From this, it was hypothesized that the IRE1 peptide sensing domain is dispensable in \textit{Drosophila} eye development. Previously published papers have noted that there are other types of stress that do not need the luminal domain to activate Ire1. In this model, it is believed the transmembrane domain is responsible for detecting other stresses such as lipid imbalance or inositol imbalance and in turn activates IRE1. This model would explain why the luminal domain is dispensable in proper \textit{Drosophila} eye development.