Course Title: Immortality: from biology to culture
Course Number: FYSEM-UA 676
Number of credits: 4
Prerequisites: None
Instructor: Justin Blau
Contact information: justin.blau@nyu.edu
212-998-8261
Class time: Wednesday 2.00-4.30pm
Class location: xxx
Office hours: Mondays 2-3pm and by appointment
Brown 1055, Silver Center

Course description:
I want to live forever! Since antiquity, humans have confronted immortality in culture, literature and the alchemists’ search for an elixir of life. The notion of immortality did not disappear even as science evolved into a discipline that seeks to understand the natural world through experiments. In fact, scientists continue to ask whether we must die. This course examines immortality – and death – principally from the view of biology, but also from the perspective of psychology and culture. In doing so, fundamental human concerns are confronted – birth, growth, aging, sickness and death – as the course explores immortality and the human desire to live forever.

Learning Outcomes:
Students who successfully complete this course will:
1. Know the basics of cell and molecular biology and how this can change in disease and aging.
2. Understand how experiments can be used to test ideas.
3. Understand how the desire for immortality impacts humanity.
4. Develop their ability to communicate effectively in writing and speech.

Teaching and Learning Methods:
There are 3 main teaching and learning methods employed in this course:
1. Class discussions. During each class, there will be numerous questions posed by the Instructor to help students engage in the topics and promote discussion. Texts including primary scientific papers, review articles and more popular texts will be discussed in depth. Students will be guided on how to understand primary scientific papers.
2. Short written papers. These will help students use their knowledge of the topics to focus on specific aspects of the class material. Students will write a set of short papers and a longer paper during this course. There will be opportunities to receive feedback and then edit these papers.
3. Oral presentations. Oral presentation is a major part of this course – students will present short talks as well as longer presentations. There will be feedback for each presentation and guidance for further improvement from the Instructor.
Course texts:
The Immortal Life of Henrietta Lacks  
by Rebecca Skloot

*Immortality: The Quest to Live Forever and How It Drives Civilization*  
by Stephen Cave

*Gilgamesh: A New English Version*  
by Stephen Mitchell (Translator)

Additional readings will be posted on Classes.

Assignments and grades:
There will be a mixture of written and oral assignments that will develop students’ abilities to communicate effectively.

**Written assignments.** 3 short pieces (2-3 pages each). These will come from the material and guidelines will be given for each piece.

**Short presentations.** Students will give 5 short talks and presentations to the class on a range of topics. They will receive feedback on these talks.

**Class participation** will be assessed by the quality, clarity and regularity of student contributions in class. This is not an attendance grade and is separate from the oral presentation assessments.

**Final paper.** Full details later in the semester.

There are no exams for this course.

**Grading:**
The final grade will consist of the following:

- 4 written assignments 36%
- 5 presentations (1 short @4%, 4 longer @8%) 36%
- Class participation 14%
- Final paper 14%

**Class attendance.** You are expected to attend every class.

**No plagiarism. Ever. What’s the point?** NYU expects its students to adhere to the highest possible standards of scholarship and academic conduct. Students should be aware that engaging in behaviors that violate the standards of academic integrity will be subject to review and may face the imposition of penalties in accordance with the procedures set out in the NYU policy. Full details at:

[http://cas.nyu.edu/page/academicintegrity](http://cas.nyu.edu/page/academicintegrity)

You may find the NYU Writing Center to be a valuable resource. Information about hours and how to set up an appointment is available here:

[http://www.nyu.edu/cas/ewp/html/writing_center.html](http://www.nyu.edu/cas/ewp/html/writing_center.html)
Syllabus:

**Class 1.** Wed Sep 6: Introduction
Course overview. Who wants to be immortal?
Introduction to molecular and cellular biology

**Assignment for Class 2:** Read *The Immortal Life of Henrietta Lacks* Ch. 1-3, ~100pp

**Class 2.** Wed Sep 13: HeLa cells, viruses & cancer 1

**Assignments for Class 3:**
1. Prepare 2 minute presentations (topics decided in class 2)
2. Read *The Immortal Life of Henrietta Lacks* Ch. 4-6, ~100pp

**Class 3.** Wed Sep 20: HeLa cells, viruses & cancer 2

**Assignments for Class 4:**
1. Draft paper 1: What mechanisms make HeLa cells immortal?

**Class 4.** Wed Sep 27: Premature aging in young humans: Progeria
In-class editing: Paper 1

**Assignments for Class 5:**
2. Draft paper 2: Progeria

**Class 5.** Wed Oct 4: Aging in humans: Neurodegeneration and epigenetics
In-class editing: Paper 2

**Assignments for Class 6:**
1. Complete and submit Paper 2
2. Prepare presentation 1: Strategies of long-lived animals. Papers to be selected from list in class
e.g. How naked mole rats avoid cancer. *Nature*, 499: 346-9
e.g. Telomerase activity in Planaria. *Proceedings of the National Academy of Sciences*: 109: 4209-14

**Class 6.** Wed Oct 11: Strategies of long-lived animals (Presentations)


**Class 7.** Wed Oct 18: Your immortal genome: Stem cells & DNA ancestry

**Assignments for Class 8:**
2. Prepare presentation 2: Living a long human life.
Papers to be selected from list in class
e.g. Caloric restriction. Journals of Gerontology: Medical Sciences, 70: 1097-1104
e.g. Resveratrol and arterial wall stiffening. Cell Metabolism, 20: 183-90

Class 8. Wed Oct 25: Living a long human life (Presentations)

Assignment for Class 9: Diverse readings – a selection will be provided online

Class 9. Wed Nov 1: Whose responsibility is health and long life?
Euthanasia.

Assignment for Class 10:
1. Paper 4: Summarize “Whose responsibility is health and long life” class discussion. Submit.
2. Prepare presentation 3: Technology & immortality

Class 10. Wed Nov 8: Technology & immortality (Presentation 3)


Class 11. Wed Nov 15: Terror management theory 1

Assignments for Class 12:
2. Prepare presentation 4: Cultural worldviews on immortality

Class 12. Wed Nov 27: Terror management theory 2
Cultural worldviews on immortality (Presentations)

Assignment for Class 13: Read Stephen Cave book, section 4. ~60 pages

Class 13. Wed Dec 6: Fame, fortune and legacy as immortality

Assignment for Class 14:
1. Read Gilgamesh. ~50 pages of poetry
2. Read Stephen Cave book, section 5. ~30 pages

Class 14. Wed Dec 13: Conclusion
Gilgamesh: lessons on death and immortality
Overview: Who wants to be immortal?

Final paper: Immortality and society (~ 5 pages)