

THE BIOLOGY OF AGING

Spring 2005, Course ID 303-20500

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Office Hours Monday 11:30am-1pm, Wednesday 3-3:45pm, or by appointment

Textbook *Biology of Aging: An Introduction to the Biomedical Aspects of Aging* by James L. Christiansen and John M. Grzybowski

COURSE OBJECTIVES

You should have a firm knowledge and understanding of the following topics by the end of the course:

- ? How is science practiced? What is the scientific method?
- ? What are the main tenets of evolutionary theory? Why is it important to understand evolutionary theory?
- ? What are the current ultimate and proximate hypotheses about why organisms age?
- ? How do different human biological systems age?
- ? What are some of the diseases that may affect various biological systems as they age?
- ? How do different lifestyle choices and attitudes affect the biology of aging?
- ? Can "aging" be manipulated, and if so how? What ethical issues are raised by these manipulations?
- ? Where can one find the latest scientific and/or medical information about aging and other topics? How can one understand this information?
- ? Have fun! We're all aging every day, so let's learn about the journey and enjoy the ride. ☺

Do you realize that the only time in our lives when we like to get old is when we're kids? If you're less than 10 years old, you're so excited about aging that you think in fractions. How old are you?. "I'm four and a half. You're never 36 and a half. You're four and a half going on five! That's the key. You get into your teens, now they can't hold you back. You jump to the next number. How old are you? "I'm gonna be 16." You could be 12, but you're gonna be 16. And then the greatest day of your life happens, you become 21. Even the words sound like a ceremony: You BECOME 21! YES! But then you turn 30. Ooohhh what happened there? Makes you sound like bad milk. He TURNED, we had to throw him out. There's no fun now. What's wrong? What changed? You BECOME 21, you TURN 30, then you're PUSHING 40. Stay over there, it's all slipping away! You BECOME 21, you TURN 30, you're PUSHING 40, you REACH 50 And your dreams are gone. Then you MAKE IT to 60. You didn't think you'd make it! So you BECOME 21, you TURN 30, you're PUSHING 40, you REACH 50, you MAKE IT to 60. Then you build up so much speed you HIT 70! After that, it's a day by day thing. After that, you HIT Wednesday. You get into your 80's, you HIT lunch. My grandmother won't even buy green bananas. It's an investment you know, and maybe a bad one. And it doesn't end there. Into the 90's you start going backwards. I was JUST 92. Then a strange thing happens. If you make it over 100, you become a little kid again: "I'm 100 and a half!"

GRADING

1. Vocabulary Assignments

A list of vocabulary words will be posted most weeks—check the syllabus. Definitions, which may be **paraphrases** (not word-for-word copies) of the definitions found in the textbook glossary or from other sources, are due by 9am each Monday via [WebCT](#).

Note that Vocabulary Assignment #5 will be due on Friday, March 4th. The purpose is to give you time to relax over spring break.

The ten (10) vocabulary assignments will be worth **20% of your overall grade** (2% each). All the words must be defined for you to get credit for the assignment—credit is given either as all or nothing.

2. Aging in the News

Choose an article about a biological aspect of aging from the popular press, i.e. a reputable newspaper or magazine (e.g. *The New York Times*, *Scientific American*, *Natural History*), published between September 1, 2004 and now. Write a one page summary of the article and a second page of critique—did the article leave important questions unanswered? Where could you go to find more information? Find, cite and attach the original scientific paper(s) on which the article is based. Include a brief statement about why you chose the article. Submit your paper as a Word document, double-spaced A4 paper, 12pt Times New Roman font, 1” margins through [WebCT](#).

The purpose of this exercise is to ensure that you can examine a scientific claim from the popular press for its validity, and find more information about the issue being discussed. This assignment will be worth **15% of your overall grade**. Topics are due on Friday, February 25th; final paper is **due: Friday, April 22nd**. Absolutely no extensions. For advice on researching a paper, refer to the library web site: <http://www.ithaca.edu/library/htmls/pdf/researchpaper.pdf>

3. In-Class Examinations

There will be **two in-class examinations, each worth 20% of your overall grade**. Exam 1 will cover lectures, readings, and vocabulary from January 17th—February 18th, and will be held on **Monday, February 21st**. Exam 2 will cover lectures, readings, and vocabulary from February 28th—April 4th, and will be held on **Friday, April 8th**.

4. Final Examination

The final exam will be **cumulative**, and will be **worth 25% of your overall grade**. Date to be announced.

STUDENTS' RESPONSIBILITIES

Assigned Readings: You are responsible for reading the textbook pages and/or articles (becoming available through WebCT through the semester) assigned for each day **prior** to arriving in class. The purpose of this policy is to help you understand the material when it is presented and discussed in lecture. If called upon, you will be expected to demonstrate your familiarity with the readings. If you do not understand the material, please see me during office hours. Due to the dynamic nature of this field of research, new articles are coming out all the time – therefore, I reserve the right to assign further readings as the semester progresses and these articles become available.

It is **your responsibility to be aware of changes in assignments and due dates** or any other important course information by checking the **Announcements and email** through WebCT. “I didn’t know” is not an acceptable excuse.

Attendance: Examinations will be based mostly on material in lectures – you are expected to attend every lecture, and it is in your best interest to do so. If you do miss a class, you are nevertheless responsible for its content, and should obtain notes from a classmate.

OTHER COURSE POLICIES

If you have a **disability** and require special accommodation when attending lectures and/or taking examinations, please speak with me at the beginning of the semester. The college and I will make all possible arrangements to help you learn effectively and comfortably, and to examine you fairly.

If you **miss an exam**, there will be no make-up, and you will automatically receive a grade of zero (0%) for that exam. Excuses will only be granted for a legitimate illness (documented by the Health Center), death in the family (with documentation from the Dean’s office), a sports event or conference in which you are participating (with a letter from the coach or professor). Notify me at least three days prior to the exam, or within 24 hours after the examination if your absence is due to an emergency. Notifying me will not guarantee that I will accept the excuse for absence, but not notifying me will guarantee you a zero on the exam.

If you are participating in a **team sport** that may cause your absence from class, please bring me a letter from your coach at the beginning of the semester.

There is no class curve. If any adjustment is to be made to overall class grades, it will be made at the end of the semester. If you are taking the class Pass/Fail, you will need to get a grade of C– or higher to pass. If you are taking the class for a letter grade, you will pass with a D–, but your GPA will be lowered accordingly. So study, learn, and ask questions if you don’t understand – that’s what I’m here for!

If you are caught **cheating** on any assignment – copying vocabulary definitions from a fellow student, using “cheat-sheets” in examinations, copying from a near-by student’s exam paper, or handing in as your own an assignment that was researched and/or written by someone else (also known as “plagiarism”)—you will get an automatic, irrevocable F for the course, and will be asked to refrain from attending class. For a definition and explanation of plagiarism, refer to the library web site: <http://www.ithaca.edu/library/htmls/plagiarism.htm>

TENTATIVE SYLLABUS

Date	Topic	Assignments (+ others as announced)
1/17	Introductions, Nuts & Bolts	
1/19	Why age? Evolution	Text p. 1-10
1/21	What causes aging?	Text p.13-28; National Geographic article
1/24	Integumentary system	Text p. 31-37; Vocabulary 1
1/26	Skeletal system	Text p.61-61
1/28	Muscular system	Text p.75-83
1/31	Respiratory system	Text p.91-101; Vocabulary 2
2/2	Digestive system	Text p.115-126
2/4	Excretory system	Text p.141-151
2/7	Cardiovascular system	Text p.167-177; Vocabulary 3
2/9	Lymph, Blood, Immunity	Text p.191-206
2/11	Reproductive system	Text p.217-229
2/14	Endocrine system	Text p.241-256; Vocabulary 4
2/16	Nervous system	Text p.256-281
2/18	Sense organs	Text p.293-306
2/21	Exam 1	
2/23	Using reference databases	
2/25	Popular & scientific articles	“Aging in the News” topic due
2/28	Diseases of integument	Text p.38-46
3/2	Skeletal diseases	Text p.61-70
3/4	Film	Vocabulary 5
3/5-3/13	Spring Break	Enjoy!
3/14	Muscular diseases	Text p.83-86
3/16	Respiratory diseases	Text p.101-110
3/18	Digestive system diseases	Text p.126-133
3/21	Excretory diseases	Text p.151-159; Vocabulary 6
3/23	Cardiovascular diseases	Text p.177-185
3/25	Diseases of lymph, blood, immunity	Text p.206-210
3/28	Reproductive diseases	Text p.229-233; Vocabulary 7
3/30	Endocrine diseases	Text p.256-259
4/1	Nervous system diseases	Text p.281-287
4/4	Disease of sense organs	Text p.306-310; Vocabulary 8
4/6	Review of systemic diseases	
4/8	Exam 2	
4/11	Lifestyle & aging	Text p.317-318, 341
4/13	Nutrition & aging	Text p.318-328
4/15	Exercise & aging	Text p.332-336
4/18	Stress, drugs, alcohol & aging	Text p.336-337;328-332; Vocab. 9
4/20	Attitude & aging	TBA
4/22	Case studies in unusual aging	TBA; Aging in the News assignment due
4/25	Ethical issues	TBA; Vocabulary 10
4/27	Putting it all together	
4/29	Putting it all together	