Course: BIOC 201 S01
Term: Spring 2018
Room: KWG100

Instructor Contact Information

Instructor: Dr. Collin Thomas
Office: ABL130B
Email: collin.thomas@rice.edu
Office Hours: M-F 10-11 in ABL130B, or by appointment

Required Texts

1. *Campbell Biology*, 11th by Urry, Cain, Wasserman, Minorsky, Reece ISBN: 9780134093413
2. *Lives of a Cell: Notes of a Biology Watcher* by Lewis Thomas ISBN: 9780140047431
3. Course Ephemera (provided)

Course Objectives

Intangible Objectives

Knowing about things is intrinsically satisfying so learning more about how things work is itself worthwhile (based on this simple pleasure principle). Biology is particularly meaningful to us since we find ourselves on a planet that is hopelessly infested with life. Of late, we are increasingly thinking about biology in the most grandiose terms—plumbing whole genomes and editing them, cloning organisms, wringing our hands over the whole scale loss of biomes due to human action or lack thereof. While there is no denying the importance of biology to the perceived interests of

humans, my own hope for you is that biology becomes a liberating science—a collection of ideas and insights that will predispose you toward logical skepticism of given truth and lend itself to your own use of its methods. It is at root a mirthful and optimistic pursuit of a deeper understanding of the living world which can enliven your thinking and feed your curiosity.

Tangible Objectives

You will learn to think about biology through the interpretation of data. You will become familiar with ideas, important questions, and great experiments that underpin modern cell biology, genetics, biochemistry, and molecular biology. You should be able to interrogate biological questions through the lenses of these disciplines. You will learn how to approach the scientific literature in open-ended peer discussions of the cell and molecular canon. Your writing and scientific communication skills will be informed by selected historic essays, articles, missives, and book chapters—all of which have influenced the thinking of generations of biologists.

COURSE EXPECTATIONS

Attend all the lectures. Read all material for the class meeting as indicated in the syllabus. Your reading encompasses as many as three separate assignments for each lecture: a text chapter from Campbell, an essay by Lewis Thomas, and an ephemeron. You will have an opportunity to discuss ephemera and Lives of a Cell essays with a TA in recitation or with me outside of class, and you are always welcome in office hours. Outline the text chapters and become conversant in the vocabulary as we learn. More importantly, ask yourself questions, ask your mates questions, and ask me questions in office hours or in class. If there is a particular topic that you find vexing or interesting, let me know, and I will supply you with additional resources.

RECITATIONS

There are three teaching assistants for our class. While you are not obliged to go, you are encouraged to attend your designated evening recitation sessions each week where you will have a chance to talk about ephemera readings. The TAs will discuss the articles using potential exam questions I will provide them. Get to know your TAs—they are great people and will be a valuable resource to you. For the sake of keeping recitation groups small, the class will be divided into 6 groups based on last, first name.

Session	*Students*	*TA*	*Contact*	*Day &Time*	*Location*
1	Abe, E- Car, A	Bryce Hackett	bah6@rice.edu	Monday 6-7 PM	ABL 131
2	Cav, F- Gil, B	Asli Yilmaz	ay20@rice.edu	Monday 7-8 PM	ABL 131
3	Gil, H- Lee, E	Kevin Chang	ktc1@rice.edu	Tuesday 8-9 PM	KWG 100
4	Lee, J- Par, O	Bryce Hackett	bah6@rice.edu	Wednesday 6-7 PM	KWG 100
5	Per, J- She, A	Asli Yilmaz	ay20@rice.edu	Wednesday 7-8 PM	KWG 100
6	Shz, S- Zam, A	Kevin Chang	ktc1@rice.edu	Wednesday 8-9 PM	KWG 100

GRADED WORK

You will have 4 in-class exams and a final exam, each scored on a percent basis. Each exam will count toward 20% of your reported grade.

RICE HONOR CODE

In this course, all students will be held to the standards of the Rice Honor Code, a code that you pledged to honor when you matriculated at this institution. If you are unfamiliar with the details of this code and how it is administered, you should consult the Honor System Handbook at http://honor.rice.edu/honor-systemhandbook/. This handbook outlines

the University's expectations for the integrity of your academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process.

DISABILITY SUPPORT SERVICES

If you have a documented disability or other condition that may affect academic performance you should: 1) make sure all associated documentation is on file with Disability Support Services (Allen Center, Room 111 / 3 adarice@rice.edu / x5841) to determine the accommodations you need; and 2) talk with me to discuss your accommodation needs.

LECTURE SYLLABUS

			Reading and Preparation		
Class	Date	Topic	*The Lives of a Cell*	Ephemera ("Files" on Canvas)	Campbell Chapter
1	M 8 Jan	Why study biology?		What is Life Chap. 1 only	
2	W 10 Jan	Atomizing biology			2
3	F 12 Jan	Pauling's revolution			2
	M 15 Jan	NO CLASS/RECITATION		Miller paper	
4	W 17 Jan	Electronegativity			2
5	F 19 Jan	Weak interactions/Water			3
6	M 22 Jan	Buffers/Carbon Chemistry		Anfinsen paper	3/4
7	W 24 Jan	Carbon Chemistry/Sugars			4/5
8	F 26 Jan	Proteins			5
9	M 29 Jan	Protein Folding	The Lives of a Cell	Watson & Crick paper	5
10	W 31 Jan	Lipids/Nucleic Acids	Thoughts for a Countdown		5
11	F 2 Feb	EXAM 1	On Societies as Organisms		
12	M 5 Feb	Cytoskeleton & Nucleus	A Fear of Pheromones	Gray paper, Sagan paper(optional)	6
13	W 7 Feb	Endomembrane System	The Music of *This* Sphere		6
	F 9 Feb	NO CLASS/RECITATION			
14	M 12 Feb	Endomembrane System	An Earnest Proposal		6

15	W 14 Feb	Symbiont organelles			6
16	F 16 Feb	Plasma membrane	The Technology of Medicine		6/7
17	M 19 Feb	Membrane Transport	Vibes	Edidin paper	7
18	W 21 Feb	Exam 2	Ceti		
19	F 23 Feb	Bioenergetics: thermo	The Long Habit		8
20	M 26 Feb	Bioenergetics: kinetics	Antaeus in Manhattan	Sumner paper	8
21	W 28 Feb	Enzymes	The MBL		8
22	F 2 Mar	Enzyme Control	Autonomy		8
23	M 5 Mar	Redox and Glycolysis			9
24	W 7 Mar	Respiration	Organelles as Organisms		9
25	F 9 Mar	Photosynthesis	Germs		10
	M-F 12-16 Mar	NO CLASSES/RECITATIONS			
26	M 19 Mar	Signal Transduction	Your Very Good Health	Swan paper	11
27	W 21 Mar	EXAM 3	Social Talk		
28	F 23 Mar	Cell cycle control	Information		12
29	M 26 Mar	Sex	Death in the Open	Wilson paper	13
30	W 28Mar	Transmission genetics	Natural Science		14
31	F 30 Mar	DNA replication	Natural Man		16
32	M 2 Apr	Transcription			17
33	W 4 Apr	Translation	The Iks		17
34	F 6 Apr	Protein localization	Computers		17
35	M 9 Apr	Transcriptional Regulation	The Planning of Science	Orgel and Crick paper	18
36	W 11 Apr	EXAM 4	Some Biomythology		
37	F 13 Apr	Transcriptional Regulation	On Various Worlds		18
38	M 16 Apr	Post-transcription regulation	Living Language		18
39	W 18 Apr	Episomes	On Probability and Possibility		
40	F 20 Apr	Viruses	The World’s Biggest Membrane		19
TBD	25 Apr- 2 May	FINAL			