



BIOB10Y: Cell Biology and Molecular Aspects of Genetic Processes

Dr. Aarthi Ashok
Department of Biological Sciences, UTSC
Course Syllabus
Summer 2014

Course description:

A course designed to introduce theory and modern experimental techniques in cell and molecular genetics. Emphasis will be on eukaryotic cells. First half topics include: Structure and function of major animal and plant organelles, the role of the cytoskeleton, the role of the plasma membrane and extracellular matrix in the context of cellular interactions with the environment. In the second half of the course, topics will include structure and function of the nucleus, DNA replication and cell cycle control, transcription and translation, gene regulation and signal transduction. Please note this course contains the content of both BIOB10H and BIOB11H.

Prerequisites: BIOA01H & BIOA02H & CHMA10H & CHMA11H

Exclusions: BIOB10H, BIOB11H, BIO240H, BIO241H, (BIO250Y)

Time and Location:

Lectures: Thursdays 10am –noon in AC 223, **AND** Thursdays, 2-4pm in AC 223

Tutorials: Thursdays 4-5pm in AC 223 as listed below.

The thinking tutorials and the LASSI tutorial are MANDATORY; the review sessions are optional.

1. Thurs, May 8th = Thinking Tut 1: “David and Goliath”
2. Thurs, May 15th = LASSI Tutorial
3. Thus, May 22nd = Review 1
4. Thurs, May 29th = Thinking Tut 2: “The story of PINK”
5. Thus, June 5th = Thinking Tut 3: “A cure for cancer?”
6. Thus, June 12th = Review 2

READING WEEK

7. Thurs, June 26th = Thinking Tut 4: “Friend or Foe”
8. Thurs, July 10th = Review 3
9. Thurs, Jul 17th = Thinking Tut 5: “Check your genome”
10. Thurs, Jul 31st = Thinking Tut 6: “Chew out the ECM”
11. Final review tutorial = TBA

Textbook:

Cell and Molecular Biology: Concepts and Experiments, 7th edition (Wiley), Gerald Karp

Online Course resources:

Login and access the Blackboard site (<https://portal.utoronto.ca>) for BIOB10Y for Summer 2014.

This site will contain:

- The course syllabus – including a course description & schedule.
- Contact information for the instructor, TA and course coordinator.
- Important announcement regarding lectures, tutorials or course content – **please check this site regularly for any such announcements.**
- Lecture outlines (slides) will be posted 1 day prior to each class.

Note: these outlines will not contain ALL contents of the lectures. Please print out these lecture outlines, bring them to class and take additional notes on them during the class.

Course staff:

1. Instructor: Dr. Aarthi Ashok

Office hours: **Wednesdays, 11am-noon. NOTE: these hours will be extended prior to term tests** (please see BB for announcements)

Office location: SW 521D

Email: aashok@utsc.utoronto.ca

- Please use only your UTSC/UToronto email address for correspondence.
- I will respond to email inquiries by email within 48 hours (in most instances) during the workweek (does not apply to weekends). If a question cannot be answered easily by email, I will send a reply to indicate to the student that they should attend my office hours.
- Email should not be used as an alternative to office hours or as a mechanism to receive private tutorials.
- Specific questions regarding prerequisites should be addressed to the course coordinator.

2. TA: Michele Taffs: michele.taffs@mail.utoronto.ca

- TA will check and answer email inquiries within 48 hours (does not apply to weekends).
- Please pose straightforward questions that can be readily answered by email communication.
- TA should be contacted for appointments regarding the optional assignment.

3. Course coordinator: Kelly Barnes: kbarnes@utsc.utoronto.ca

Office hours: Mon/Wed/Fri 10am – noon; Tues/Thurs 2pm-4pm (or by appointment)

Office location: SW 421D

- Please contact Kelly for:
 - Questions regarding course prerequisites or exclusions
 - Questions regarding exam conflicts
 - Questions regarding missing/missed exams (UTSC medical certificates)
 - Questions regarding viewing graded exams
 - Marks verification for term test and final exams
- Please consider attending Kelly's office hours for detailed or complex questions.

Evaluation:

1. There will be **4 exams** in this course:

1. Term test 1 (Lec 1-6): 2 hours -20% of final grade
2. Term test 2 (Lec 6-12): 2 hours -25% of final grade
3. Term test 3(Lec 13-18): 2 hours -20% of final grade
4. Final exam (Lec 13-24): 3 hours -30% of final grade
5. LASSI Tutorial on May 15th 2014: Attendance & completion of the LASSI test PRIOR to attending the tutorial = 5% of final grade

The format of the exams may vary from all multiple-choice questions to a combination of short-answer and multiple-choice questions.

2. There will be an **optional assignment** in this course: Value = 14%. The assignment would be done in a group of 2 students only.

Assignment will involve reading 1 primary literature article (from a list provided by the instructor) that is related to a topic discussed in class. The students would then contact and record an interview with the scientists (one of the scientist authors) who performed the study detailed in the article. The students would make an edited soundclip of their own in-depth summary of the paper which should include implications for the field of cell biology and advances made by the study described in the paper, as well as segments of the interview with the scientist which will be posted on the course website for the educational benefit of the entire class. Think: podcast! This assignment will present a unique opportunity to learn more about a specific topic in cell biology and link it to real-world science. If students decide to take on this assignment, then the value of the 4 exams in the course **would change as follows:**

1. Term test 1 (Lec 1-6): 2 hours -18% of final grade
2. Term test 2 (Lec 6-12): 2 hours -20% of final grade
3. Term test 3(Lec 13-18): 2 hours -18% of final grade
4. Final exam (Lec 13-24): 3 hours -25% of final grade
5. LASSI Tutorial on May 15th 2014: Attendance & completion of the LASSI test PRIOR to attending the tutorial = 5% of final grade

Classroom Performance System (CPS) – *i-Clickers*

This technology enables better student-instructor interaction in a large class such as BIOB10Y through the use of a Radio Frequency Response Pad (commonly known as a "i-clicker"). Your responses — via the "i-clicker"— to questions will tell us when the class is having difficulty and will help you assess your learning. We can also use the system to give you sample test questions (not graded) to help you prepare for tests in this course. Your individual responses will NOT be shown in the classroom; only the aggregate (and anonymous) responses for the class will be displayed. In order to participate in your lectures using the CPS, you will need to purchase an "i-clicker" from the UTSC Bookstore. The "i-clicker" will work in each course you take that uses this technology and can be retained from year to year if needed.

Accessibility Needs:

(text provided by Centre for Teaching and Learning, UTSC)

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the *AccessAbility* Services Office as soon as possible. I will work with you and *AccessAbility* Services to ensure you can achieve your learning goals in this course. Enquiries are confidential. The UTSC *AccessAbility* Services staff (located in S302) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations (416) 287-7560 or ability@utsc.utoronto.ca.

Academic Integrity:

(text provided by The Centre for Teaching and Learning, UTSC)

Please consult: <http://www.utoronto.ca/academicintegrity/resourcesforstudents.html>.

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's *Code of Behaviour on Academic Matters* (<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to: **On tests and exams:** Using or possessing unauthorized aids. Looking at someone else's answers during an exam or test. Misrepresenting your identity. **In academic work:** Falsifying institutional documents or grades. Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes. All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. There are other offences covered under the Code, but these are the most common. ***Please respect these rules and the values that they protect.***

Continued....

Course Schedule:

Lecture #	Date	
1	May 8 th 2014	COURSE INTRODUCTION; PROKARYOTES & EUKARYOTES
1	May 8 th 2014	STUDYING CELLS
2	May 8 th 2014	MACROMOLECULES IN CELLS
2	May 8 th 2014	PROTEIN STRUCTURE
ThinkingTutorial 1	May 8 th 2014	"DAVID & GOLIATH"
3	May 15 th 2014	ORGANELLES IN CELLS
3	May 15 th 2014	THE ER: SECRETORY & MEMBRANE PROTEIN SYNTHESIS
4	May 15 th 2014	THE GOLGI: VESICULAR TRANSPORT & SECRETION
4	May 15 th 2014	PROTEIN SORTING & LYSOSOMES
LASSI Tutorial	May 15 th 2014	THINKING ABOUT HOW YOU LEARN
5	May 22 nd 2014	PLASMA MEMBRANE: STRUCTURE
5	May 22 nd 2014	PLASMA MEMBRANE: FUNCTION
6	May 22 nd 2014	ENDOCYTOSIS & PHAGOCYTOSIS
6	May 22 nd 2014	STUDYING PROTEINS I
OptionalTutorial	May 22 nd 2014	REVIEW 1
Midterm 1 for B10Y		
7	May 29 th 2014	MITOCHONDRIA: STRUCTURE
7	May 29 th 2014	MITOCHONDRIA: FUNCTION
8	May 29 th 2014	CHLOROPLAST: STRUCTURE
8	May 29 th 2014	CHLOROPLAST: FUNCTION
ThinkingTutorial 2	May 29 th 2014	"THE STORY OF PINK"
9	June 5 th 2014	THE CYTOSKELETON
9	June 5 th 2014	MICROTUBULES & MOTORS
10	June 5 th 2014	STUDYING PROTEINS II
10	June 5 th 2014	STUDYING PROTEINS II
ThinkingTutorial 3	June 5 th 2014	"A CURE FOR CANCER?"
11	June 12 th 2014	ACTIN FILAMENTS AND MOTORS
11	June 12 th 2014	INTERMEDIATE FILAMENTS
12	June 12 th 2014	EXTRACELLULAR MATRIX AND CELL-CELL INTERACTIONS
12	June 12 th 2014	CELL SPECIALIZATIONS AND TISSUES
OptionalTutorial	June 12 th 2014	REVIEW 2

		Midterm 2 for B10Y
		READING WEEK (no class on June 19th)
13/1	June 26 th 2014	HEREDITY & CHROMOSOMES
13/1	June 26 th 2014	GENES & DNA
14/2	June 26 th 2014	GENOMES
14/2	June 26 th 2014	MOBILE DNA
ThinkingTutorial 4	June 26 th 2014	"FRIEND OF FOE?"
15/3	July 3 rd 2014	TRANSCRIPTION IN PROKARYOTES
15/3	July 3 rd 2014	TRANSCRIPTION IN EUKARYOTES
16/4	July 3 rd 2014	TRANSCRIPTION IN EUKARYOTES - II
16/4	July 3 rd 2014	RNA PROCESSING
		NO TUTORIAL THIS WEEK!
17/5	July 10 th 2014	RNA SPLICING; NON-CODING RNAs
17/5	July 10 th 2014	TRANSLATION - I
18/6	July 10 th 2014	TRANSLATION - II
18/6	July 10 th 2014	TRANSLATION - II
OptionalTutorial	July 10 th 2014	REVIEW 3
		Midterm 3 B10Y & Midterm 1 B11H
19/7	July 17 th 2014	THE CELL NUCLEUS: STRUCTURE
19/7	July 17 th 2014	THE CELL NUCLEUS: CHROMATIN
20/8	July 17 th 2014	TRANSCRIPTIONAL CONTROL OF GENE EXPRESSION
20/8	July 17 th 2014	POST-TRANSCRIPTIONAL CONTROL OF GENE EXPRESSION
ThinkingTutorial 5	July 17 th 2014	"CHECK YOUR GENOME"
21/9	July 24 th 2014	DNA REPLICATION
21/9	July 24 th 2014	DNA REPAIR
22/10	July 24 th 2014	CELL PROLIFERATION: THE CELL CYCLE
22/10	July 24 th 2014	CONTROL OF THE CELL CYCLE & CHECKPOINTS
		NO TUTORIAL THIS WEEK!
23/11	July 31 st 2014	CANCER: LOSS OF CONTROL OVER CELL PROLIFERATION
23/11	July 31 st 2014	MOLECULAR TARGETS OF CANCER THERAPIES
24/12	July 31 st 2014	CELL SIGNALING & CHEMICAL MESSENGERS
24/12	July 31 st 2014	CELL SIGNALING & CHEMICAL MESSENGERS
ThinkingTutorial 6	July 31 st 2014	"CHEW OUT THE ECM"
		Final exam B10Y & Final exam B11H

