

BIOB11: Molecular Aspects of Cellular and Genetic Processes

Classroom/schedule information: AC223, Tues and Thursday from noon-1PM; every third Thursday there is a tutorial from 5-7PM

Instructor: Dan Riggs

Office: SY224

Office hours: Monday 11AM-noon; Thursday 1-2PM (just after class so I may be late if delayed by answering questions after class=be patient, I'll be there soon).

Email: riggs@utsc.utoronto.ca I am willing to answer your questions via email, but they have to be straightforward to answer. Pose your question and tell me what you think and why. This gives me an idea of what you know and what you don't know and allows me to more effectively help you.

Textbook: 'Cell and Molecular Biology' by Gerald Karp, Janet Iwasa and Wallace Marshall. 8th edition. Note that there are copies available in the library for 3hr loan. There are also copies of the 7th edition, but be aware that there are some changes and the figures that I recommend as 'smart pages' may not be the same in this edition. In addition, there is another textbook on reserve ('Biology' by Brooker, et al.) that I'll occasionally show some images from and which you may wish to consult.

Attendance: Attendance is not required but is HIGHLY advised. I encourage you to get to know your classmates, who might turn out to be great assets for you (and you for them). Talking about the course material, face to face, will solidify your understanding of the course topics. The course will be web optioned, but I encourage you to think of this as a backup.

Exams and Assignments:

- Formal exams: There will be two term tests and a final exam, the dates of which will be set by the registrar's office. As soon as I know these dates, I will communicate them to you.
Term test 1: Monday February 5th; covers lectures 1-8 (22% of final grade)
Term test 2: Monday March 12th; covers lectures 9-16 (22% of final grade)
Final exam: (32% of final grade): is cumulative; 50% of the exam is on lectures 17-24, 25% on L1-8 and 25% on L9-16. The value of questions is weighted such that if you have taken TT1 and TT2, the marks for L1-16 are minimal and the final exam accounts 32% of your final grade (more specifically, 26% on L17-24 material and 3% on each of L1-8 and L9-16 for 32% total). There are no make up exams for TT1 and TT2; if you miss an exam for a legitimate reason, you can earn those marks on the final exam [which will weight the L1-8 or L9-16 questions more heavily: e.g. you missed TT1 so the TT1 aspect (questions on L1-8) now has a multiplier of 0.25 instead of 0.03].
- Quizzical: Quizzical is a multiple-choice question writing assignment, learning tool and test bank. During the term you will be required to write two MCQs on topics in specific lectures. This is worth $2 \times 4\% = 8\%$ total. More information about Quizzical is available on the course Blackboard site.
- Quizzical participation marks: Attempt 10 questions for each lecture within 14 days of the lecture, scoring a minimum of 60% and you receive full participation marks= 6% of your final grade. Note that in the past few years some Q questions were included in formal exams, so pragmatically speaking, the more attempts you make, the greater the likelihood that you will see an upcoming exam question. In addition, these are easy marks to get to boost you over whatever bump you need; (e.g. you have a 78 average but 6 easy

marks=84% and you're on your way to medical school; alternatively you've earned a failing grade but 6% more gives you a passing mark, a credit, and allows you to take upper level courses that require B11 as a prerequisite).

- Poster project: If you were in BIOB10 or any of the other B-level core courses, you know about the poster project. If not, have a look at the Blackboard link and I'll post more information about timelines and due dates as they are determined. This project is worth 10% of your final grade.

AccessAbility statement

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. AccessAbility Services staff (located in Rm SW302, Science Wing) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations (phone 416-287-7560 or email ability@utsc.utoronto.ca). The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

Academic Integrity

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 in papers and assignments include using someone else's ideas or words without appropriate acknowledgement, submitting your own work in more than one course without the permission of the instructor, making up sources or facts, obtaining or providing unauthorized assistance on any assignment. On tests and exams cheating includes using or possessing unauthorized aids, looking at someone else's answers during an exam or test, misrepresenting your identity, or falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.

Schedule of topics/tutorials

(note that this lecture/tutorial schedule also exists on the navigation bar as a stand alone item and has hyperlinks to the One Page summaries.

Date	Topic	Smart Pages	One Page Summary	Lecture #
Jan 9	Course overview, introduction to Quizzical and Blackboard resources			
Jan 11	DNA, genome organization and molecular evolution	Fig 10-11, 16, 17, 18, 28; Chap10EP fig2,4.	OP1	1
Jan 11 (5PM!)	Genome evolution and polymorphisms	Figs 10-19, 20, 23, 24, 26, 27, 30, SNP figure from Blackboard	OP2	2
Jan 11	Tutorial: 6-7PM Q&A session			

Jan 16	Transcription I: Overview and rRNA synthesis/maturation	Fig 11-1, 2, 4, 6, 7, 9, 11, 12	OP3	3
Jan 18	Transcription II: hnRNA synthesis and processing	Figs 11-15, 16, 18, 19, 20, 21, 22, 24, 27	OP4	4
Jan 23	Transcription III: RNA Splicing, miRNAs, siRNAs	Figs 11-28, 29, 30, 32, 33, 34, 35, 36; also Figure 12.63	OP5	5
Jan 25	Translation I: Genetic code and role of tRNA	Fig 2-24; Figs 11-37, 38, 39, 40, 42, 44, 45, 47, 50	OP6/7	6 & 7
Jan 30	Translation II: mechanistic aspects of protein synthesis			
Feb 1	Nuclear and chromatin structure	Fig 10-15; Figs 12-5, 6, 10, 11, 12, 13, 14, 16, 29	OP8	8
Feb 2	HELP! Session for upcoming exam; 3-5PM in SY110			
Feb 5	Term Test 1 on lectures 1-8; 5-7PM; test center locations TBA			
Feb 6	Gene Regulation I: Promoters and control circuits	Figs 12-1, 2, 3, 4, 33, 34, 44, 45, 48	OP9	9
Feb 8	Gene Regulation II: Transcription factors and microarray technology	Figs 12-35, 40, 41, 42, 43, 44	OP10	10
Feb 13	Gene Regulation III: Epigenetics/miscellaneous regulatory mechanisms	Figs 12-18, 47, 49, 50, 51, 53, 56, 58, 59, 60, 62, 64; also Figure 18-52	OP11	11
Feb 15	DNA Replication I: general enzymology	Figs 13-2, 3, 4, 7, 8, 9, 10, 11	OP12	12
Feb 15	Tutorial: Help session 5-7PM			
Feb 27	DNA Replication II: mechanism and regulation	Figs 13-12, 13, 14, 15, 19, 20, 22	OP13	13
Mar 1	Telomere replication and DNA repair processes	Figs 12-24; 13-16, 17, 24, 25, 26	OP14	14
Mar 6	Cell Cycle I: Introduction/cyclins/CDKs	Figs 14-1, 2, 3, 4, 5, 6, 8, 11	OP15	15
Mar 8	Cell Cycle II: Chromosome condensation & movement	Fig 9-11; 14-14, 16, 17, 20, 22, 25, 28, 30	OP16	16

Mar 12	Term Test 2: on lectures 9-16; 5-7PM; test locations TBA			
Mar 13	Cell Cycle III: Biochemical regulation of mitosis	Figs 14-26, 31, 35, 38; jpg figure similar to 14-37	OP17	17
Mar 15	Cell Cycle 4: Meiosis, Heredity, and Individuality	Fig 10-1, 3, 7; 14-39, 40, 41, 44, 46, 47, HP figure 1 (p578)	OP18	18
Mar 15	Tutorial: Help session 5-7PM			
Mar 20	Cancer I: General Aspects	Figs 16-3, 4, 6, 19, 21, 22, 23	OP19	19
Mar 22/27	Cancer II & III: Oncogenes, proto-oncogenes & tumor suppressor genes	Figs 16-9, 10, 11, 12, 14, 16, 17; also Fig 2-51	OP20	20
Mar 27	Signal Transduction I: General aspects	Figs 15-1, 2	OP21/22	21
Mar 29	Signal Transduction II: G proteins, glucose metabolism and lipid signaling	Figs 15-3, 5, 6, 7, 9, 10, 12, 13, 14	OP21/22	22
Apr 3	Signal Transduction III: Calcium signaling, receptor tyrosine kinases and modulation of G-protein activity	Figs 15-17, 19, 21, 24, 25, 26, 28, 29, 32	OP23	23
Apr 5	Signal Transduction IV: MAP kinase cascade; signaling pathway interactions and apoptosis	Figs 15-22, 33, 34, 35, 38, 39, 40	OP24	24