

Foundations A: Molecules to Systems

Course Information

Catalog No GS-GS-6600
Credits: 6
Didactic: Y
Academic Year: 20-21
Term: 1+2
Room: Online
Schedule: Lecture: MWF 1:15-2:15
Discussion Groups:
W or F 2:30-3:30, as
scheduled.
TA Sessions: MWF 5:15-
6:30, as scheduled.



Course Director

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COURSE DESCRIPTION AND OBJECTIVES:

The course will provide students with foundational and comprehensive knowledge in several critical areas of biology. Lectures are divided into nine modules that cover essential aspects of biology. Lectures will begin with a description of macromolecules, and then incrementally expand into more complex mechanisms, and finally into the presentation of systems. The diversified format includes a series of lectures, discussion sessions, and TA sessions in which “active learning” techniques and “backwards design” are implemented to promote both knowledge and skill development for learners.

RECOMMENDED TEXTS AND MATERIALS:

Course text: *Molecular Biology of the Cell*, 6th edition, Alberts, et. al., Garland Science Publishers. A recommended textbook for late in the course is *Developmental Biology* by Richard M. Twyman, BIOS Scientific

PREREQUISITE(S) or EXCLUSIONS:

None

ATTENDANCE REQUIREMENTS:

Attendance will not be formally factored into the final course grade. However, lack of attendance may result in missing a readiness quiz, and failure to attend Discussion Session will be reflected in a score of 0 due to missing the in-session quiz. Nevertheless, attendance is recommended for all lectures and TA sessions to optimize the educational experience and skill development.

A total of two excused absences from Discussion Sessions are allowed for illness, emergency, or natural disaster. However, prior approval must be obtained from the Course Director. In addition, evidence for the absence in the form of an official document (signed letter from a physician, for example) must be submitted to the Course Director at a reasonable time after the fact.

GRADING:

Student grade assignments (A,B,C,F) will be based on the performance in three exams, responses to nine module-related quizzes, and attendance in eight module-based Discussion Sessions. Readiness quizzes will be taken by all students at the beginning of each module. The quizzes are based on reading material assigned prior to initiation of that module. This approach is intended to introduce and prepare students for the upcoming topic. Each quiz will consist of 5-10 questions. The answers will demonstrate whether the information was assessed and understood. The purpose of Discussion quizzes is explained above; they will consist of 5-10 questions that will drive the discussions. In this manner, the combination of quizzes and discussions are given the same importance as an exam. The final course score will be broken down as follows:

20% Exam 1 (Lectures 1-14)
 20% Exam 2 (Lectures 15-30)
 20% Exam 3 (Lectures 31-45)
 20% Readiness Quizzes - Modules
20% Discussion Quizzes
 100%

The final course will be graded on a curve that is based on the class average. Grades will be determined as follows (after rounding to the nearest whole number):

- Greater than 1 SD above the class average = A
- Between 1.5 SD below average and 1 SD above the class average = B
- Between 2 SD below and 1.5 SD below the class average = C
- More than 2 SD below the class average = F).

PROFESSIONAL CONDUCT:

Students are expected to conduct themselves in a professional manner and abide by all policies of Baylor College of Medicine, the Graduate School of Biomedical Sciences and their Programs. Any conduct not in keeping with the ethical or professional standards of BCM is defined as

professional misconduct. Academic misconduct is defined as dishonesty (e.g. cheating, plagiarism, etc.) that occurs in conjunction with academic requirements such as coursework including homework and examinations.

COURSE EVALUATIONS:

The Graduate School of Biomedical Sciences seeks student feedback and opinions about the courses and lecturers in the curriculum. After the end of each term, students will receive an email request from gsbs-stars@bcm.edu to complete course evaluations. The email will include a link and unique security PIN that will provide students the opportunity to provide numerical ratings and comments about the lecturers and courses taken during the term. Ratings and comments are fully anonymous and are provided to lecturers, course directors, and GSBS administration. Over time, student input influences and improves the overall quality of the delivery of our curriculum.

GRADE VERIFICATION:

Due process involves providing students with a clear description of course expectations, including grading requirements. Students may have questions about their final grade or the grading process. If students want to verify their final grade, they are first encouraged to meet with the course director informally to discuss those questions. After grade verification and discussion, the student may choose to proceed with a formal grade appeal if they believe they have received a grade unjustly. Grievances are not the same as disagreements. A student cannot file a grievance merely because s/he disagrees with the grade. A student can file a grievance if they believe the grade was unfair, for example, if it is felt to be an act of discrimination. Formal grievances can be filed via the Integrity Hotline portal.

EDUCATIONAL CONFLICTS OF INTEREST

Educators must strive to avoid Conflicts of Interest (COIs) that may arise in relation to academic duties. Possible COIs include: 1) Immediate family or extended family relationship to students; 2) Personal or social relationships with the student or a member of the student's immediate or extended family; 3) Business or financial relationship with the student. Students who have immediate family, extended family or personal relationships with an Educator should not participate in evaluations of that Educator. Students are expected to report an actual or perceived Conflict of Interest to the GSBS Dean or designee. See BCM Policy [23.2.04](#) for more details.

RESPECTFUL AND PROFESSIONAL LEARNING ENVIRONMENT:

The Baylor College of Medicine (BCM) is committed to the values of integrity, respect, teamwork, innovation, and excellence, and requires all BCM Learners to practice these values consistently during the completion of requirements for educational progression and performance of scholarly and professional duties. Creating and sustaining an environment reflective of BCM values is the responsibility of every individual at BCM. This [policy](#) outlines the expectations of academic honesty and integrity; professionalism issues relating to alcohol and substance abuse; expectations for proper management of social media and internet use along with use of BCM resources; options for reporting lapses in professionalism against learners. Learners may report alleged violations of this policy through the Integrity Hotline either by calling the toll-free Hotline number (855-764-7292) or by accessing the Integrity Hotline website (www.bcm.ethicspoint.com).

STUDENT GRIEVANCES POLICY:

<https://www.bcm.edu/education/academic-faculty-affairs/student-services/student-grievances>

STUDENT DISABILITY SERVICES:

Students with documented disabilities can seek accommodations from Student Disability Services at 713-798-8137 or email to the Student Disability Coordinator at disability@bcm.edu. Information about a student's disability will be kept private. The student is responsible for informing the course director of approved accommodations prior to the first examination.

SEXUAL HARRASSMENT:

Baylor is committed to providing a safe and supportive environment for all community members, guests and visitors. Individuals have the right to be free from all forms of sex and gender-based discrimination, which includes sexual harassment, acts of sexual violence, domestic violence, dating violence and stalking. Sexual Harassment is unwelcomed verbal or physical conduct of a sexual nature that is sufficiently severe, pervasive or persistent that it interferes with, denies or limits a person's ability to participate in or benefit from the College's academic environment, educational programs and/or activities, and is based on power differentials or quid pro quo, results in the creation of a hostile environment, or retaliation. To learn more about BCM policy regarding sexual harassment, discrimination, and reporting options, visit the BCM Title IX Office [website](#) or email title-ix@bcm.edu

COURSE SCHEDULE:

There are two attached appendices with two versions of the course schedule. Appendix A is the standard schedule for students who are in Houston and studying at the standard course times. Appendix B is the adjusted schedule for students who are studying from overseas temporarily.

Note on TA Sessions – Each module has two TA sessions, labeled as A or B. Each TA session A is designed for students who don't have a background in the content of the module and may need some addition review to start off. TA session B is a review of the material covered throughout the module. Both are optional for attendance.

APPENDIX A:
COURSE SCHEDULE for Students in Houston:

Module 1	Mon	Aug 3	1:00-2:15	Readiness Quiz 1 & Lecture 1: Nucleic acids	Mol. Biol. Cell (6thEd), pp 109-135.	Damian Young
	Mon	Aug 3	5:15-6:30	TA Session A: Module 1		
	Wed	Aug 5	1:15-2:15	Lecture 2: Proteins 1		Jin Wang
	Fri	Aug 7	1:15-2:15	Lecture 3: Proteins 2		Jin Wang
	Fri	Aug 7	2:30-3:30	Discussions #1	Lichtarge, et al., 1996. J. Mol. Biol. 257:343-358 PMID: 8755504	
	Mon	Aug 10	1:15-2:15	Lecture 4: Carbohydrates & Lipids		Damian Young
	Mon	Aug 10	5:15-6:30	TA Session B: Module 1		
Module 2	Wed	Aug 12	1:00-2:15	Readiness Quiz 2 & Lecture 5: Cellular compartmentalization	Mol. Biol. Cell (6thEd), pp 641-648.	Richard Sifers
	Wed	Aug 12	5:15-6:30	TA Session A: Module 2		
	Fri	Aug 14	1:15-2:15	Lecture 6: Organelle biogenesis		Richard Sifers
	Mon	Aug 17	1:15-2:15	Lecture 7: Protein topology & metabolism		Richard Sifers
	Wed	Aug 19	1:15-2:15	Lecture 8: Vesicular transport of proteins		Richard Sifers
	Fri	Aug 21	1:15-2:15	Lecture 9: Lysosomes & related diseases		Richard Sifers
	Fri	Aug 21	2:30-3:30	Discussions #2	Lam et al., 2010. PNAS (USA)107(50): 21523 -21518 PMID: 21098289	
Module 3	Fri	Aug 21	5:15-6:30	TA Session B: Module 2		
	Mon	Aug 24	1:00-2:15	Readiness Quiz 3 & Lecture 10: Signal transduction & ion transport overview	Mol. Biol. Cell (6thEd), pp 813-824.	Brian York
	Mon	Aug 24	5:15-6:30	TA Session A: Module 3		
	Wed	Aug 26	1:15-2:15	Lecture 11: Relevant PTMs in signal transduction		Brian York
	Fri	Aug 28	1:15-2:15	Lecture 12: Calcium & phospholipase signaling		Brian York
	Mon	Aug 31	1:15-2:15	Lecture 13: Membrane-bound receptors		Carolyn Smith
	Wed	Sep 2	1:15-2:15	Lecture 14: GPCRs		Carolyn Smith
Module 4	Wed	Sep 2	2:30-3:30	Discussions #3	Lee et al., 2018. Cancer Cell 34(6):954-969 PMID: 30537515	
	Wed	Sep 2	5:15-6:30	TA Session B: Module 3		
	Fri	Sep 4	1:15-2:15	Faculty Review: Exam #1		
	Mon	Sep 7		No Class – Labor Day		
	Wed	Sep 9	1:00-4:00	Exam #1		
	Fri	Sep 11	1:00-2:15	Readiness Quiz 4 & Lecture 15: Cell division & cell cycle	Mol. Biol. Cell (6thEd), pp 963-975, 237-244, 250.	Weiwei Dang
	Fri	Sep 11	5:15-6:30	TA Session A: Module 4		
Module 5	Mon	Sep 14	1:15-2:15	Lecture 16: Regulation of cell cycle & checkpoints		Weiwei Dang
	Wed	Sep 16	1:15-2:15	Lecture 17: DNA replication		Grzegorz Ira
	Wed	Sep 16	2:30-3:30	Discussions #4	Zou and Elledge, 2003. Science. 300:1542-1548 PMID: 12791985	
	Fri	Sep 18	1:15-2:15	Lecture 18: DNA damage & repair		Grzegorz Ira
	Fri	Sep 18	5:15-6:30	TA Session B: Module 4		
	Mon	Sep 21	1:00-2:15	Readiness Quiz 5 & Lecture 19: Mendelian genetics	Mol. Biol. Cell (6thEd), pp 485-508.	Herman Dierick
	Mon	Sep 21	5:15-6:30	TA Session A: Module 5		
Module 6	Wed	Sep 23	1:15-2:15	Lecture 20: Mutations & Mutants		Herman Dierick
	Fri	Sep 25	1:15-2:15	Lecture 21: Meiosis, linkage & mapping		Herman Dierick
	Mon	Sep 28	1:15-2:15	Lecture 22: Genetics		David Bates
	Wed	Sep 30	1:15-2:15	Lecture 23: Gene interactions		David Bates
	Fri	Oct 2	1:15-2:15	Lecture 24: Epistasis analysis		David Bates

	Mon	Oct 5		No Class – Fall break		
	Wed	Oct 7		No Class – Fall break		
	Fri	Oct 9		No Class – Fall break		
	Mon	Oct 12	1:15-2:15	Lecture 25: Human pedigree analysis & genomics		Herman Dierick
	Mon	Oct 12	5:15-6:30	TA Session B: Module 5		
Module 6	Wed	Oct 14	1:00-2:15	Readiness Quiz 6 & Lecture 26: Gene transcription fundamentals 1	Mol. Biol. Cell(6thEd), pp 299-316.	David Lonard
	Wed	Oct 14	2:30-3:30	Discussions #5	Problem Solving	
	Wed	Oct 14	5:15-6:30	TA Session A: Module 6		
	Fri	Oct 16	1:15-2:15	Lecture 27: Gene transcription fundamentals 2		David Lonard
	Mon	Oct 19	1:15-2:15	Lecture 28: Chromatin & gene expression 1		Charles Lin
	Wed	Oct 21	1:15-2:15	Lecture 29: Co-regulators		David Lonard
	Wed	Oct 21	2:30-3:30	Discussions #6	Lu et al., 2018. Nature 558(7709):318-323 PMID: 29849146	
	Fri	Oct 23	1:15-2:15	Lecture 30: Chromatic & gene expression 2		Charles Lin
	Fri	Oct 23	5:15-6:30	TA Session B: Module 6		
	Mon	Oct 26	1:15-2:15	Faculty Review: Exam #2		
	Wed	Oct 28	1:00-4:00	Exam #2		
Module 7	Fri	Oct 30	1:00-2:15	Readiness Quiz 7 & Lecture 31: Processing of the nascent Pol II transcripts 1	Mol. Biol. Cell(6thEd), pp 315-327, 415-423.	Joel Neilson
	Fri	Oct 30	5:15-6:30	TA Session A: Module 7		
	Mon	Nov 2	1:15-2:15	Lecture 32: Processing of the nascent Pol II transcripts 2		Joel Neilson
	Wed	Nov 4	1:15-2:15	Lecture 33: Regulation of mRNA stability & translation		Joel Neilson
	Wed	Nov 4	2:30-3:30	Discussions #7	Ule et al., 2006. Nature 444(7119):580-586 PMID: 17065982	
	Wed	Nov 4	5:15-6:30	TA Session B: Module 7		
Module 8	Fri	Nov 6	1:00-2:15	Readiness Quiz 8 & Lecture 34: Protein translation & folding	Hartl et. al., 2011.Nature 475(7356):324-332. PMID: 21776078	Francis Tsai
	Fri	Nov 6	5:15-6:30	TA Session A: Module 8		
	Mon	Nov 9	1:15-2:15	Lecture 35: Protein biosynthetic quality control		Richard Sifers
	Wed	Nov 11	1:15-2:15	Lecture 36: Adaptive cellular responses		Andre Catic
	Fri	Nov 13	1:15-2:15	Lecture 37: Apoptosis vs necrosis		Richard Sifers
	Mon	Nov 15	1:15-2:15	Lecture 38: Autophagy		Richard Sifers
	Wed	Nov 18	1:15-2:15	Lecture 39: Endocytosis schemes, phagocytosis		Richard Sifers
	Wed	Nov 18	2:30-3:30	Discussions #8	Cox and Walter, 1996. Cell 87(1):391-404 PMID: 8898193	
	Wed	Nov 18	5:15-6:30	TA Session B: Module 8		
Module 9	Fri	Nov 20	1:00-2:15	Readiness Quiz 9 & Lecture 40: Tissue generation	Developmental Biology (TEXTBOOK) (Twyman), Chapters 1 & 2.	Andrew Groves
	Fri	Nov 20	5:15-6:30	TA Session A: Module 9		
	Mon	Nov 23	1:15-2:15	Lecture 41: Principles of mammalian development		Ronald Parchem
	Wed	Nov 25	1:15-2:15	Lecture 42: Stem cells		Daisuke Nakada
	Fri	Nov 27		No class – Student FTO/Thanksgiving		
	Mon	Nov 30	1:15-2:15	Lecture 43: Tissue homeostasis & metabolism 1		Noah Shroyer
	Wed	Dec 2	1:15-2:15	Lecture 44: Tissue homeostasis & metabolism 2		Sean Hartig
	Fri	Dec 4	1:15-2:15	Lecture 45: Systems biology approach to biomedical research		Craig Hanis
	Fri	Dec 4	2:30-3:30	Faculty Review: Exam #3		
	Fri	Dec 4	5:15-6:30	TA Session B: Module 9		
	Wed	Dec 9	1:00-4:00	Exam #3		

APPENDIX B:
COURSE SCHEDULE for International Students Studying from Outside the United States:

Module 1	Mon	Aug 3	8:30-8:45	Readiness Quiz 1 (live)	Mol. Biol. Cell (6thEd), pp 109-135.	Damian Young
	Mon	Aug 3	1:15-2:15	Lecture 1: Nucleic acids (live or recorded)		Damian Young
	Mon	Aug 3	5:15-6:30	TA Session A: Module 1 (live or recorded)		
	Wed	Aug 5	1:15-2:15	Lecture 2: Proteins 1 (live or recorded)		Jin Wang
	Fri	Aug 7	1:15-2:15	Lecture 3: Proteins 2 (live or recorded)		Jin Wang
	Mon	Aug 10	9:00-10:00	Discussions #1 (live)	Lichtarge, et al.,1996. J. Mol. Biol. 257:343-358 PMID: 8755504	
	Mon	Aug 10	1:15-2:15	Lecture 4: Carbohydrates & Lipids (live or recorded)		Damian Young
	Mon	Aug 10	5:15-6:30	TA Session B: Module 1 (live or recorded)		
Module 2	Wed	Aug 12	8:30-8:45	Readiness Quiz 2 (live)	Mol. Biol. Cell (6thEd), pp 641-648.	Richard Sifers
	Wed	Aug 12	1:15-2:15	Lecture 5: Cellular compartmentalization (live or recorded)		Richard Sifers
	Wed	Aug 12	5:15-6:30	TA Session A: Module 2 (live or recorded)		
	Fri	Aug 14	1:15-2:15	Lecture 6: Organelle biogenesis (live or recorded)		Richard Sifers
	Mon	Aug 17	1:15-2:15	Lecture 7: Protein topology & metabolism (live or recorded)		Richard Sifers
	Wed	Aug 19	1:15-2:15	Lecture 8: Vesicular transport of proteins (live or recorded)		Richard Sifers
	Fri	Aug 21	8:00-9:00	Discussions #2 (live)	Lam et al., 2010. PNAS (USA)107(50): 21523 -21518 PMID: 21098289	
	Fri	Aug 21	1:15-2:15	Lecture 9: Lysosomes & related diseases (live or recorded)		Richard Sifers
Module 3	Fri	Aug 21	5:15-6:30	TA Session B: Module 2 (live or recorded)		
	Mon	Aug 24	8:30-8:45	Readiness Quiz 3 (live)	Mol. Biol. Cell (6thEd), pp 813-824.	Brian York
	Mon	Aug 24	1:15-2:15	Lecture 10: Signal transduction & ion transport overview (live or recorded)		Brian York
	Mon	Aug 24	5:15-6:30	TA Session A: Module 3 (live or recorded)		
	Wed	Aug 26	1:15-2:15	Lecture 11: Relevant PTMs in signal transduction (live or recorded)		Brian York
	Fri	Aug 28	1:15-2:15	Lecture 12: Calcium & phospholipase signaling (live or recorded)		Brian York
	Mon	Aug 31	1:15-2:15	Lecture 13: Membrane-bound receptors (live or recorded)		Carolyn Smith
	Wed	Sep 2	9:00-10:00	Discussions #3 (live)	Lee et al.,2018. Cancer Cell 34(6):954-969 PMID: 30537515	
Module 4	Wed	Sep 2	1:15-2:15	Lecture 14: GPCRs (live or recorded)		Carolyn Smith
	Wed	Sep 2	5:15-6:30	TA Session B: Module 3 (live or recorded)		
	Fri	Sep 4	1:15-2:15	Faculty Review: Exam #1 (live or recorded)		
	Mon	Sep 7		No Class – Labor Day Holiday		
Module 4	Wed	Sep 9	To be announced	Exam #1 (live)		
	Fri	Sep 11	8:30-8:45	Readiness Quiz 4 (live)	Mol. Biol. Cell (6thEd), pp 963-975, 237-244, 250.	Weiwei Dang
	Fri	Sep 11	1:15-2:15	Lecture 15: Cell division & cell cycle (live or recorded)		
Module 4	Fri	Sep 11	5:15-6:30	TA Session A: Module 4 (live or recorded)		

	Mon	Sep 14	1:15-2:15	Lecture 16: Regulation of cell cycle & checkpoints (live or recorded)		Weiwei Dang
	Wed	Sep 16	9:00-10:00	Discussions #4 (live)	Zou and Elledge, 2003. Science. 300:1542-1548 PMID: 12791985	
	Wed	Sep 16	1:15-2:15	Lecture 17: DNA replication (live or recorded)		Grzegorz Ira
	Fri	Sep 18	1:15-2:15	Lecture 18: DNA damage & repair (live or recorded)		Grzegorz Ira
	Fri	Sep 18	5:15-6:30	TA Session B: Module 4 (live or recorded)		
Module 5	Mon	Sep 21	8:30-8:45	Readiness Quiz 5 (live)	Mol. Biol. Cell (6thEd), pp 485-508.	Herman Dierick
	Mon	Sep 21	1:15-2:25	Lecture 19: Mendelian genetics (live or recorded)		Herman Dierick
	Mon	Sep 21	5:15-6:30	TA Session A: Module 5 (live or recorded)		
	Wed	Sep 23	1:15-2:15	Lecture 20: Mutations & Mutants (live or recorded)		Herman Dierick
	Fri	Sep 25	1:15-2:15	Lecture 21: Meiosis, linkage & mapping (live or recorded)		Herman Dierick
	Mon	Sep 28	1:15-2:15	Lecture 22: Genetics (live or recorded)		David Bates
	Wed	Sep 30	1:15-2:15	Lecture 23: Gene interactions (live or recorded)		David Bates
	Fri	Oct 2	1:15-2:15	Lecture 24: Epistasis analysis (live or recorded)		David Bates
	Mon	Oct 5		No Class – Autumn break		
	Wed	Oct 7		No Class – Autumn break		
	Fri	Oct 9		No Class – Autumn break		
	Mon	Oct 12	1:15-2:15	Lecture 25: Human pedigree analysis & genomics (live or recorded)		Herman Dierick
Module 6	Mon	Oct 12	5:15-6:30	TA Session B: Module 5 (live or recorded)		
	Wed	Oct 14	8:30-8:45	Readiness Quiz 6 (live)	Mol. Biol. Cell (6thEd), pp 299-316.	David Lonard
	Wed	Oct 14	9:00-10:00	Discussions #5 (live)	Problem Solving	
	Wed	Oct 14	1:15-2:15	Lecture 26: Gene transcription fundamentals 1 (live or recorded)		David Lonard
	Wed	Oct 14	5:15-6:30	TA Session A: Module 6 (live or recorded)		
	Fri	Oct 16	1:15-2:15	Lecture 27: Gene transcription fundamentals 2 (live or recorded)		David Lonard
	Mon	Oct 19	1:15-2:15	Lecture 28: Chromatin & gene expression 1 (live or recorded)		Charles Lin
	Wed	Oct 21	9:00-10:00	Discussions #6 (live)	Lu et al., 2018. Nature 558(7709):318-323 PMID: 29849146	
	Wed	Oct 21	1:15-2:15	Lecture 29: Co-regulators (live or recorded)		David Lonard
	Fri	Oct 23	1:15-2:15	Lecture 30: Chromatin & gene expression 2 (live or recorded)		Charles Lin
	Fri	Oct 23	5:15-6:30	TA Session B: Module 6 (live or recorded)		
	Mon	Oct 26	1:15-2:15	Faculty Review: Exam #2 (live or recorded)		
Module 7	Wed	Oct 28	To be announced	Exam #2 (live)		
	Fri	Oct 30	8:30-8:45	Readiness Quiz 7 (live)	Mol. Biol. Cell(6thEd), pp 315-327, 415-423.	Joel Neilson
	Fri	Oct 30	1:15-2:15	Lecture 31: Processing of the nascent Pol II transcripts 1 (live or recorded)		Joel Neilson
	Fri	Oct 30	5:15-6:30	TA Session A: Module 7 (live or recorded)		
	Mon	Nov 2	1:15-2:15	Lecture 32: Processing of the nascent Pol II transcripts 2 (live or recorded)		Joel Neilson
	Wed	Nov 4	9:00-10:00	Discussions #7 (live)	Ule et al., 2006. Nature 444(7119):580-586 PMID: 17065982	
	Wed	Nov 4	1:15-2:15	Lecture 33: Regulation of mRNA stability & translation (live or recorded)		Joel Neilson
	Wed	Nov 4	5:15-6:30	TA Session B: Module 7 (live or recorded)		

Module 8	Fri	Nov 6	8:30-8:45	Readiness Quiz 8 (live)	Hartl et. al., 2011.Nature 475(7356):324-332. PMID: 21776078	Francis Tsai
	Fri	Nov 6	1:15-2:15	Lecture 34: Protein translation & folding (live or recorded)		Francis Tsai
	Fri	Nov 6	5:15-6:30	TA Session A: Module 8 (live or recorded)		
	Mon	Nov 9	1:15-2:15	Lecture 35: Protein biosynthetic quality control (live or recorded)		Richard Sifers
	Wed	Nov 11	1:15-2:15	Lecture 36: Adaptive cellular responses (live or recorded)		Andre Catic
	Fri	Nov 13	1:15-2:15	Lecture 37: Apoptosis vs necrosis (live or recorded)		Richard Sifers
	Mon	Nov 15	1:15-2:15	Lecture 38: Autophagy (live or recorded)		Richard Sifers
	Wed	Nov 18	9:00-10:00	Discussions #8 (live)	Cox and Walter, 1996. Cell 87(1):391-404 PMID: 8898193	
	Wed	Nov 18	1:15-2:15	Lecture 39: Endocytosis schemes, phagocytosis (live or recorded)		Richard Sifers
	Wed	Nov 18	5:15-6:30	TA Session B: Module 8 (live or recorded)		
Module 9	Fri	Nov 20	8:30-8:45	Readiness Quiz 9 (live)	Developmental Biology (TEXTBOOK) (Twyman), Chapters 1 & 2.	Andrew Groves
	Fri	Nov 20	1:15-2:15	Lecture 40: Tissue generation (live or recorded)		Andrew Groves
	Fri	Nov 20	5:15-6:30	TA Session A: Module 9 (live or recorded)		
	Mon	Nov 23	1:15-2:15	Lecture 41: Principles of mammalian development (live or recorded)		Ronald Parchem
	Wed	Nov 25	1:15-2:15	Lecture 42: Stem cells (live or recorded)		Daisuke Nakada
	Fri	Nov 27		No class – Student FTO/Thanksgiving		
	Mon	Nov 30	1:15-2:15	Lecture 43: Tissue homeostasis & metabolism 1 (live or recorded)		Noah Shroyer
	Wed	Dec 2	1:15-2:15	Lecture 44: Tissue homeostasis & metabolism 2 (live or recorded)		Sean Hartig
	Fri	Dec 4	1:15-2:15	Lecture 45: Systems biology approach to biomedical research (live or recorded)		Craig Hanis
	Fri	Dec 4	2:30-3:30	Faculty Review: Exam #3 (live or recorded)		
	Fri	Dec 4	5:15-6:30	TA Session B: Module 9 (live or recorded)		
	Wed	Dec 9	To be announced	Exam #3 (live)		