Biology 317 - Principles of Cellular Signaling
Fall, 2018
10:00 AM - 11:20 AM – Frey Hall 104

Professors: Dr. Simon Halegoua (Course Director) and Dr. Maya Shelly

Teaching Assistant: Allen Chen (MD/PhD Student)

Readings: *CELL SIGNALING principles and mechanisms* (Lim, Mayer and Pawson), 2014.

Date	Instructor	Topic
28-Aug	Halegoua	Interpreting extracellular signals: Signal Transduction – Chapters 1, 8
30-Aug	Halegoua	An adrenalin rush through the second messenger cAMP – Chapter 6
4-Sep	Halegoua	G-proteins and cAMP regulation – Chapters 3, 8
6-Sep	Halegoua	Sensory systems and G-proteins; second messengers and effectors – Chapter 12
11-Sep	Halegoua	Second messengers and effectors regulate your metabolism – Chapters 3, 4, 6, 7
13-Sep	Halegoua	Protein kinases, phosphatases and phosphorylopathies – Chapters 3, 4
18-Sep	Halegoua	Growth factors, oncogenes and cancer – Chapters 3, 8, 12
20-Sep	Halegoua	Signaling through Receptor Tyrosine Kinases – Chapter 8
25-Sep		**Exam 1**
27-Sep	Shelly	Signaling pathways directing cell-polarization I – Handouts
2-Oct	Shelly	Signaling pathways directing cell-polarization II – Handouts
4-Oct	Shelly	Second messenger signaling in neuronal development I – Chapter 6
9-Oct	**Fall Break**	**No Class**
11-Oct	Shelly	Second messenger signaling in neuronal development II – Chapter 6
16-Oct	Shelly	Signaling mechanisms regulating cytoskeletal dynamics – Handouts
18-Oct	Shelly	Signaling mechanisms underlying axon guidance – Handouts
23-Oct	Shelly	Regulated protein degradation – Chapters 4, 9
25-Oct	Shelly	Regulated protein degradation in neuronal development – Chapters 4, 9
30-Oct	Shelly	Signaling strength and input duration – Chapter 11
1-Nov		**Exam 2**
6-Nov	Halegoua	Keeping neurons alive and active: Neurotrophin signaling – Chapter 9 and Handout
8-Nov	Halegoua	Signaling in time and space – Chapters 5, 8, 11
13-Nov	Halegoua	Signaling Scaffolds and cross-talk – Chapters 6, 10, 11
15-Nov	Halegoua	Membrane receptor signaling to the nucleus – Chapter 8
20-Nov	Halegoua	Signaling and gene regulation I – Chapters 5, 8
22-Nov	**NO CLASS - Thanksgiving**	
27-Nov	Halegoua	Control of gene transcription – Chapters 4, 5
29-Nov	Halegoua	Nuclear hormone receptors – Chapters 4, 8
4-Dec	Halegoua	Nuclear receptor signaling – Chapters 4, 8
6-Dec	Halegoua	Nature, Nurture and Epigenetic regulation – Chapter 4
20-Dec		**Exam 3 (Thursday, 8:00 AM - 10:45 PM)**

Learning Objectives: Students who successfully complete BIO 317 will be able to:
- Understand and appreciate the use of the Scientific Method in addressing current biological issues.
- Describe different strategies used to respond to and integrate biological signals at the cellular level.
- Appreciate and describe the use of molecular and cellular/biochemical approaches to study cell signaling.
- Provide multiple, concrete examples of the experimental basis of scientific knowledge

Textbooks: The textbook is (highly) recommended but not required. The University Bookstore has books on hand. In addition, several copies of the text are on reserve in the Science and Engineering Library (on first floor of the Melville Library).

Exams and Grading: Each of the three exams will count for one-third of your overall grade. Exams 2 & 3 will not be cumulative; each exam will focus on the material dealing with that section of the course. The exams and answer keys will be posted on the BIO 317 Blackboard site. Make-up exams are offered (see **Absences**), but may be in a different format (e.g. essay or short answer rather than multiple choice). Final grades may be influenced by participation both in class (clickers and email will be used ***during*** class) and in review/recitation sessions, and by an improvement in exam scores. In addition, participation awards may be given for students who participate in class at an extraordinary level, as will be explained in class. These awards may be "cashed in" for a boost in your final grade as explained in the first lecture. *Regardless of exam grades or awards, in order to receive a grade of "A" in this course, attendance at a minimum of 20 class lectures is required*. Attendance will be taken by the use of clickers or, in special circumstances, a sign-in book. To receive credit, your clicker *must be registered in this course for this semester*: in the Blackboard "Tools" section, click on "Turning Account Registration (clickers)" and follow instructions. You will need the Device ID (a 6-character code printed below the bar code on the back). Any clicker must be registered to and used by *only the registered student*. Clickers and/or licenses may be purchased directly from the Turning Point store that you can access from your account (https://account.turningtechnologies.com/account/). Credit for in-class participation using email will require the use of your ***SBU email account*** and emailing to the TA at bio317ta@gmail.com.

Academic Integrity: Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work or class attendance as your own is always wrong. Any suspected instance of academic dishonesty will be reported to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at http://www.stonybrook.edu/uaa/academicjudiciary/

Absences and Make-up Exams: Should you miss an exam you must contact Prof. Halegoua *within 48 hours after the exam* in order to qualify for a make-up exam. You must provide a physician's or other acceptable note before a makeup exam can be counted. All excuses must be approved by Prof. Halegoua. Otherwise, you will receive a zero for each exam missed. The make-up exam will be given immediately after the third exam, and within the allotted time during final exams week. Anyone with **excused** absences for two or more exams, or for the third (final) exam, will receive a grade of Incomplete (I) in the course and the remaining make-up exam(s) will be scheduled on a specified date early in the following semester.

Appeal Process: After the exam results are posted you may appeal the grading of individual questions. To do so you must provide a short, cogent explanation of the basis of your appeal - if you do not provide a cogent appeal it will not be reviewed. The appeal must be received no later than 24 hours after the exam answer keys are posted. Appeals turned in at a later time will be declined.

Study Guide: Past exams and answer keys will be provided on the BIO 317 Blackboard site as a study guide. This will help prepare you for each test. In addition, review material will be provided on the Blackboard site. Some of the past exam questions and/or review questions will reappear on your tests. Students are therefore encouraged to seriously examine the study guide, review material and attend the review sessions to discuss the course material and questions.

Review Sessions and Office Hours: Each lecturer will hold regular office hours during their part of the course to answer questions regarding lectures and administration. Additionally, there will be review/recitation sessions and office hours held by the Graduate TA, and when possible, additional pre-exam review sessions. Students are strongly encouraged to take advantage of these opportunities.

Blackboard: You are expected to check the BIO 317 Blackboard site for posting of handouts or messages. The website is http://blackboard.stonybrook.edu.

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact Disability Support Services at (631) 632-6748 or http://studentaffairs.stonybrook.edu/dss/. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the following website: http://www.sunysb.edu/ehs/fire/disabilities.shtml

Instructor Information:

Prof. Simon Halegoua; 631-632-8736; simon.halegoua@stonybrook.edu; Rm. 534, Centers for Molecular Medicine (CMM Bldg).
Office Hours: Tuesdays, 11:30 AM - 12:30 PM; Thursdays, 1:30 – 2:30 PM or by appointment.

Prof. Maya Shelly; 631-632-8684; maya.shelly@stonybrook.edu ; Rm. 530, Life Sciences Building.
Office Hours: Tuesdays and Thursdays, 12:30 PM - 1:30 PM (10/4 – 11/5) or by appointment.

Graduate TA: **Allen Chen**; 631-632-6595; bio317ta@gmail.com
Office Hours: Tuesdays 5:00 - 6:00 PM, Rm 054, Life Sciences Bldg (LSB).
Weekly Sessions: Thursdays 5:00 - 6:00 PM, Rm 054, Life Sciences Bldg (LSB).
Exam Review Sessions: Held in Rm 038, Life Sciences Bldg (LSB).
Exam 1: Friday, 9/21 3-5 PM
Exam 2: Tuesday 5-7 PM
Exam 3: Friday, 12/07 4-6 PM