Molecular Regulation of Cell Functions

Lecture:	3:00 – 4:15 PM MW, Clark A204

Instructors: Chaoping Chen, MRB 233, 491-0726 (office), Chaoping.Chen@colostate.edu
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Class TA: Tyler Biebighauser, 491-5969 (lab), tylerjb@rams.colostate.edu

Office Hours: By appointment (phone, email or in class)

BC466/565 Recitation: R01: 1:00-1:50 PM R, MRB 230 (CC, JD, and TJB)
R02: 9:00-9:50 AM R, MRB 230 (CC, JD, and TJB)
R03: 2:00-2:50 PM R, MRB 230 (CC, JD, and TJB)

Textbook: *Molecular Biology of the Cell*, 6th Edition, Bruce Alberts et al, 2015 print
(one copy is available for a 24 hour check-out at MRB 110)

References: *Cell Biology,* 2nd Edition, Thomas Pollard et al, 2008 print
Molecular Cell Biology, 6th Edition, Harvery Lodish et al, 2008 print
Molecular Biology of the Cell, 5th Edition, Bruce Alberts et al, 2008 print
(one copy each is available for a 24 hour check-out at MRB 110)

Additional Requirement: iClicker will be used as a learning and interacting tool in most lectures

Lecture Slides: *Lecture slides will be posted to Canvas prior to each class*
Discussion papers for BC565/466 recitation will be posted there as well

Q&A time: Tyler Biebighauser, the TA of the class, will be available 4:30 -5:30 pm for Q&A at MRB 250 on Tuesdays in the weeks when there is NO exam Jan 23 through May 1. If you have a time conflict, please set up an appointment with him. His contact information is listed under Class TA.

On the Tuesdays of the first three exam weeks (*i.e.*, Feb 6, Mar 6, and Apr 10), the teaching instructor will be available 4:30 -5:30 PM at MRB 312 for Q&A. The time and place for the final exam Q&A will be arranged by Dr. DeLuca towards the end of the semester.

Class Schedule

			Topic	Text reading
Week 1	Lecture	CC		66th ed
			Introduction and Membrane Review	
Jan 17	1		Introduction, Membrane Compositions and Characteristics	565-596
Jan 18			*BC466/565 Recitation*	
Week 2		CC		
Jan 22	2		Membrane Dynamics	565-596
			Cell signaling	813-879
Jan 24	3		overview and plasma membrane receptors	813-31, 850-4, 863-6
Jan 25			*BC466/565 Recitation*	
Week 3		CC		
Jan 29	4		Protein hardware for signaling	832, 854-7
Jan 31	5		Second messengers	834-48
Feb 1			*BC466/565 Recitation*	
Week 4		CC		
Feb 5	6		Integration of signals I	843-6
Feb 7			**Exam 1 (lecture 1-6)**	
Feb 8			*BC466/565 Recitation*	
Week 5		CC		
Feb 12	7		Integration of signals II	860-6
			Protein traffic	
Feb 14	8		Protein translation, folding, modification, targeting	353-9, 649-54
Feb 15			*BC466/565 Recitation*	
Week 6		CC		
			Membrane trafficking	
Feb 19	9		The ER and Intracellular vesicular traffic	669-701
Feb 21	10		Intracellular vesicular traffic and the Golgi Apparatus	701-722
Feb 22			*BC466/565 Recitation*	
Week 7		CC		
Feb 26	11		Lysosomes and endocytosis	722-41
Feb 28	12		Exocytosis	741-50
Mar 1			*BC466/565 Recitation*	
Week 8		CC		
			Cellular interactions and the extracellular matrix	
Mar 5	13		Cell junctions, adhesion, and the extracellular matrix	1035-87
Mar 7			**Exam 2 (lecture 7-13)**	
Mar 8			*BC466/565 Recitation*	
March 12-16			**Spring Recess**	
Mar 19			**Last day to withdraw a class**	
Week 9		JD		
			Cytoskeleton and Cell Motility	
Mar 19	14		Intro to cyoskeleton / Actin: structure and function	889-98/899-914
Mar 21	15		Regulation of actin filaments/ Actin-based motor proteins	899-914/915-25
Mar 22			*BC466/565 Recitation*	
Week 10		JD		
Mar 26	16		Microtubule (MT) structure and function	925-932
Mar 28	17		Microtubule regulation / MT associated proteins / Kinesins	932-941

Mar 29			*BC466/565 Recitation*	
Week 11		JD		
Apr 2	18		Dynein MT motors: Guest Lecturer Dr. Steven Markus	936-941
Apr 4	19		Intermediate filaments	944-949
Apr 5			*BC466/565 Recitation*	
Week 12		JD		
Apr 9	20		Cell Motility / Intracellular motility / Cilia and flagella	951-960 / 938-941 / 941-4
Apr 11			**Exam 3 (lectures 14-20)**	
Apr 12			*BC466/565 Recitation*	
Week 13		JD	***The Cell Cycle***	
Apr 16	21		Introduction to the cell cycle	963-974
Apr 18	22		G1 and the regulation of cell proliferation	1010-1018
Apr 19			*BC466/565 Recitation*	
Week 14		JD		
Apr 23	23		S phase and G2 phase	974-985 / 261-262
Apr 25	24		Mitosis	980-996
Apr 26			*BC466/565 Recitation*	
Week 15		JD		
Apr 30	25		Cytokinesis	996-1002
May 2	26		Apoptosis and Senscence	262-265 / 1016 / 1021-103
May 3			*BC466/565 Recitation*	

FINALS WEEK

May 7 4:10-6:10 **pm**   **FINAL EXAM (all lectures with emphasis on lectures 21-26)**

BC465 Grade:

There are four exams (each has 100 points) throughout the semester making up 80% of the final grade (400 points). iClicker participation could earn up to 8% (40 points) and take-home excercises to 12% (points). The total possible points are 500. Students achieving the following totals will be assured of th minimum letter grade shown here:

451-500 (>90%)	A
401-450 (80-90%)	B
351-400 (70-80%)	C
301-350 (60-70%)	D
<350 (<60%)	F

Individual exams will not be curved, but the final total points may be curved depending on the averages and distribution of grades.

iClicker: There is a total of 40 points for iClicker. Participation is evaluated based on iClicker response 40 points for >85% iClicker participation; 30 points for 70- 85% participation; 20 points for 50-70% participation; 10 points for 30-50% participation; no points for <30% participation.

Take-home exercises: Take home assignments will be assigned each week except for exam weeks.There are a total of 12 assignments making up to a maximum of 60 point (Each assignment is worth 5 points).

Make-up Exams: No written make-up exam is offered. An unexcused absence from an exam is grade zero. An excused absence from one mid-term exam will result in your grade being set on a percentage basis for the missing exam. An excused absence from the final exam or more than one mid-term exam will result in an "I" (incomplete) grade. An incomplete grade can be removed by re-taking the course n year or, if permitted by the instructor, by taking an oral exam covering the material on the missed exam

Re-grading: Please submit your exam sheet along with a written explanation of why the student feels the original answer was correct or was deserving of more points. This must be done within one week from the date when the exams are returned to the class. Exam answers will be posted to RamCT withir two days of the exam or after all students have completed the exam.

BC565 Grade:

There are a total of 530 possible points. Four exams (100 points each) make up ~ 75% of the final gra Note that BC565 exams are taken at the same time as BC465 exams but are different in content as the contain questions related to the recitation materials. The remaining 25% of the grade is evaluated base on recitation (52 points; ~10%), iClicker participation (30 points; ~6%), and take-home exercises (48 points; ~9%). The final letter grade is based on the total points:

477-530 (>90%)	A
424-476 (80-90%)	B
371-423 (70-80%)	C
318-370 (60-70%)	D
<317 (<60%)	F

Individual exams will not be curved, but the final total points might be curved depending on the average and distribution of grades.

iClicker: There is a total of 30 points for iClicker. Participation is evaluated based on iClicker response 30 points for > 85% iClicker participation; 23 points for 70- 85% participation; 15 points for 50-70% participation; 8 points for 30-50% participation. No points for < 30% participation.

Take-home exercises: Take home assignments will be assigned each week except for exam weeks.There are a total of 12 assignments making up to a maximum of 48 point (Each assignment is worth 4 points).

Make-up Exams and Re-grading: Same as BC465

Incomplete Grade Policy

At the discretion of the instructor, a temporary grade of "I" may be given to a student who demonstrates that he/she could not complete the requirements of a course due to circumstances beyond the student' control and not reasonably foreseeable. The request for an "I" grade must be made before the last day the class, *i.e.*, prior to the final exam. A student must be passing a course at the time that an incomplet is requested unless the instructor determines that there are extenuating circumstances to assign an incomplete to a student who is not passing the course. When an instructor assigns an "I", he/she shall specify in writing the requirements the student shall fulfill to complete the course as well as the reasons for granting an "I" when the student is not passing the course. The instructor shall retain a copy of this statement in his/her grade records and provide copies to the student and the department. If a student must re-take the course to complete the Incomplete, they should NOT register for the course a second time. After successful completion of the makeup requirements, the "I" grade will be changed by the instructor. After one year of the assigned "I" grade, or at the end of the semester in which the student graduates (whichever comes first), any incompletes remaining on a students' record will be automatica changed to a grade of "F".

<u>Academic Integrity</u> (modified from an example provided by the Institute for Learning and Teaching at CSU)

We take academic integrity seriously. At minimum, academic integrity means that no one will use another's work as their own. The CSU writing center defines plagiarism this way:

Plagiarism is the unauthorized or unacknowledged use of another person's academic or scholarly work. Done on purpose, it is cheating. Done accidentally, it is no less serious. Regardless of how it occurs, plagiarism is a theft of intellectual property and a violation of an ironclad rule demanding "credit be given where credit is due."

If you plagiarize in your work you could lose credit for the plagiarized work, fail the assignment, or fail the course. Plagiarism could result in expulsion from the university. Each instance of plagiarism, classroom cheating, and other types of academic dishonesty will be addressed according to the principles published