

BC465/466/565 - Molecular Regulation of Cell Functions

- Lecture:** 3:00 – 4:15 PM MW, BHSC A101
- Instructors:** Chaoping Chen, MRB 233, 491-0726 (office), Chaoping.Chen@colostate.edu
Jennifer DeLuca, MRB 237, 491-6718 (office), Jennifer.DeLuca@colostate.edu
- Class TA:** Wyatt Beyers, 491-4106 (lab), Wyatt.Beyers@colostate.edu
- Office Hours:** By appointment (phone, email or in class)
- BC466/565 Recitation:** 3:00 – 4:15 PM F, BHSC A101 (CC, JD and WB)
- Suggested Textbook:** *Molecular Biology of the Cell*, 6th Edition, Bruce Alberts et al, 2015 print
- 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

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: Wyatt Beyers, 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 29 through May 7. 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 13, Mar 13, and Apr 17), the teaching instructor will be available 4:30 -5:30 pm at MRB 250 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		6 th ed
			<i>Introduction and Membrane Review</i>	
Jan 23	1		Introduction, Membrane Compositions and Characteristics	565-596
Jan 25			<i>BC466/565 Recitation</i>	
Week 2		CC		
Jan 28	2		Membrane Dynamics	565-596
			<i>Cell signaling</i>	813-879
Jan 30	3		overview and plasma membrane receptors	813-31, 850-4, 863-6
Feb 1			<i>BC466/565 Recitation</i>	

Week 3	CC		
Feb 4	4	Protein hardware for signaling	832, 854-7
Feb 6	5	Second messengers	834-48
Feb 8		<i>BC466/565 Recitation</i>	
Week 4	CC		
Feb 11	6	Integration of signals I	843-6
Feb 13		Exam 1 (lecture 1-6)	
Feb 15		<i>BC466/565 Recitation</i>	
Week 5	CC		
Feb 18	7	Integration of signals II	860-6
		Protein traffic	
Feb 20	8	Protein translation, folding, modification, targeting	353-9, 649-54
Feb 22		<i>BC466/565 Recitation</i>	
Week 6	CC		
		Membrane trafficking	
Feb 25	9	The ER and Intracellular vesicular traffic	669-701
Feb 27	10	Intracellular vesicular traffic and the Golgi Apparatus	701-722
Mar 1		<i>BC466/565 Recitation</i>	
Week 7	CC		
Mar 4	11	Lysosomes and endocytosis	722-41
Mar 6	12	Exocytosis	741-50
Mar 8		<i>BC466/565 Recitation</i>	
Week 8	CC		
		Cellular interactions and the extracellular matrix	
Mar 11	13	Cell junctions, adhesion, and the extracellular matrix	1035-87
Mar 13		Exam 2 (lecture 7-13)	
Mar 15		<i>BC466/565 Recitation</i>	
Mar 18-22		Spring Recess	
Mar 25		Last day to withdraw a class	
Week 9	JD		
		Cytoskeleton and Cell Motility	
Mar 25	14	Intro to cyoskeleton / Actin: structure and function	889-98/899-914
Mar 27	15	Regulation of actin filaments/ Actin-based motor proteins	899-914/915-25
Mar 29		<i>BC466/565 Recitation</i>	
Week 10	JD		
Apr 1	16	Microtubule (MT) structure and function	925-932
Apr 3	17	Microtubule regulation / MT associated proteins / Kinesins	932-941
Apr 5		<i>BC466/565 Recitation</i>	
Week 11	JD		
Apr 8	18	Dynein MT motors: Guest Lecturer Dr. Steven Markus	936-941
Apr 10	19	Intermediate filaments	944-949
Apr 12		<i>BC466/565 Recitation</i>	
Week 12	JD		
Apr 15	20	Cell Motility / Intracellular motility / Cilia and flagella	951-960 / 938-941 / 941-4
Apr 17		Exam 3 (lectures 14-20)	
Apr 19		<i>BC466/565 Recitation</i>	
Week 13	JD		
		The Cell Cycle	
Apr 22	21	Introduction to the cell cycle	963-974
Apr 24	22	G1 and the regulation of cell proliferation	1010-1018
Apr 26		<i>BC466/565 Recitation</i>	

Week 14		JD		
Apr 29	23		S phase and G2 phase	974-985 / 261-262
May 1	24		Mitosis	980-996
May 3			<i>BC466/565 Recitation</i>	
Week 15		JD		
May 6	25		Cytokinesis	996-1002
May 8	26		Apoptosis and Senescence	262-265 / 1016 / 1021-1034
May 10			<i>BC466/565 Recitation</i>	

FINALS WEEK

May 16 11:50a - 1:50p **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 exercises to 12% (60 points). The total possible points are 500. Students achieving the following totals will be assured of the 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 are not curved, but the final grades may be curved depending on the average and distribution of grades.

iClicker: There is a total of 40 points for iClicker. Participation is evaluated based on iClicker responses: 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 graded 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 next year or, if permitted by the instructor, by taking an oral exam covering the material on the missed exams.

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 within two days of the exam or after all students have completed the exam.

BC466/565 Grade:

There are a total of 545 possible points. Four exams (100 points each) make up 73.4% of the final grade. Note that BC466/565 exams are taken at the same time as BC465 exams but are different in content as they contain questions related to the recitation materials. iClicker participation makes up 7.3% (40 points) and recitation make up 19.3% (105 points) of the final grade. Note that the take-home exercises are made available to you as reference only; doing the exercise will not earn you any extra points. Your final letter grade is determined based on the total points you earn:

490-545 (>90%)	A
436-489 (80-90%)	B
381-435 (70-80%)	C
327-380 (60-70%)	D
<326 (<60%)	F

Individual exams are not curved, but the final grades might 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 responses: 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.

Recitations quizzes: you will take a quiz at the end of each recitation. There are a total of 15 quizzes each worth 7 points, making up to a maximum of 105 points. See more instructions on a separate file under the BC466/565 module.

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's control and not reasonably foreseeable. The request for an "I" grade must be made before the last day of the class, *i.e.*, prior to the final exam. A student must be passing a course at the time that an incomplete 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 automatically changed to a grade of "F".

Academic Integrity (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 in the CSU General Catalog (see, <http://www.catalog.colostate.edu/FrontPDF/1.6POLICIES1112f.pdf>).

Of course, academic integrity means more than just avoiding plagiarism. It also involves doing your own reading and studying. It includes regular class attendance, careful consideration of all class materials, and engagement with the class and your fellow students. Academic integrity lies at the core of our common goal: to create an intellectually honest and rigorous community. By taking this class, you agree that ***you will not give, receive, or use any unauthorized assistance.***