

IBS 603: CELL BIOLOGY & SIGNALING I

<i>Faculty</i>	<i>Dept.</i>	<i>Office</i>	<i>Phone</i>	<i>Email</i>
<i>Course Director</i> Michael Kilgore	Pharmacology	MN354 UKMC	323-1821	m.kilgore@uky.edu
<i>Course Assistant</i> Deborah Turner	Pharmacology	MN306 UKMC	323-6085	dturner@uky.edu
<i>Course Faculty</i>				
Doug Andres	Biochemistry	BBSRB 179	257-6775	dandres@uky.edu
Luke Bradley	Anatomy	MN 222	323-1826	lhbradley@uky.edu
Esther Dupont-Versteegden	Rehabilitation Sciences	CTW 204L	323-1100 ext. 80592	eedupo2@uky.edu
James Geddes	Anatomy	BBSRB B379	323-5135	jgeddes@uky.edu
Richard Grondin	Anatomy	313 Whitney	323-8925	rcgron0@uky.edu
Robert Hadley	Pharmacology	MS375 UKMC	257-6556	rhadley@uky.edu
Charlotte Kaetzel	Microbiology	124D Combs	257-6573	charlotte.kaetzel@uky.edu
Rolf Craven	Pharmacology	213 Combs	323-3832	rolf.craven@uky.edu
M. Paul Murphy	Biochemistry	211 Sanders-Brown	257-1412 ext. 490	mpmurp3@email.uky.edu
E. Charles Snow	Microbiology	MN410 UKMC	323-8953	ecsnow01@uky.edu

A. COURSE DESCRIPTION

IBS 603 Cell Biology, a 3-credit hour fall semester course, will consist of lectures relating to cell types and architecture, membrane structure, cytoskeleton I & II, mitochondria, cellular mechanisms of development, cell division, cell cycle, apoptosis, necrosis and cancer as well as other topics. This course involves a series of approximately 4-5 lectures followed by a discussion session/journal club. This class period will entail discussion of 1-2 questions that will be assigned by course faculty prior to the class. Questions will be graded and returned to the students. Prior to the discussion sessions, a list of 15-20 students will be selected from the class roster. During the discussion session, students from the generated lists will be asked to present their answers to the questions. Exams will occur after approximately 8-9 lectures.

B. COURSE OBJECTIVES

To provide students with a detailed understanding of cell structure and function, cell cycle, cell transformation and cell death.

C. CLASS ATTENDANCE

It should be noted that class attendance is required! A sign-up sheet will be issued at every class session. **Students must sign their own name, to prove attendance. The sign up sheet will be collected 5 minutes after the start of class. Please inform Ms. Turner or Dr. Kilgore if you have any excused absences.** Attendance will not be considered for grading (See F).

D. TEXT AND COURSE MATERIALS

Faculty will provide lecture outlines and notes for the lectures. These will be provided during the course via on Blackboard (see <https://elearning.uky.edu>). Students are encouraged to check the IBS Blackboard website on a daily basis for course information.

Molecular Biology of the Cell, 5th Edition, Alberts *et al.* will be the reference text book for IBS 603. Faculty assign chapters from Alberts *et al.* for each lecture, but additional literature will be assigned as needed. While the 5th edition contains significant and substantive changes from the 4th edition, the 4th remains a viable reading supplement for most of the course.

E. PREREQUISITES

CHE 105 and 107, General College Chemistry I and II;
CHE 230 and 232, Organic Chemistry I and II
BIO 150 and 152, Principles of Biology I and II
Or equivalents.

F. GRADING

Students will be evaluated on the basis of the four written examinations. Each examination will last approximately two hours and will account for **20%** of the total grade. In addition, questions handed in during the Discussion Session class periods will be graded and will account for **20%** of the total grade.

The grading standards employed are as follows. Students who perform in these ranges will be guaranteed to receive the indicated grades below.

A:	90-100%
B:	80-89%
C:	70-79%
D:	60-69%
E:	below 60%

Depending on the performance of the class as a whole, some adjustments (curving) may take place on the final cumulative semester grade. For example, median score = B, + 1 Standard Deviation = A, - 1 Standard Deviation = C) (not a rule).

Examinations can be submitted for a re-evaluation if it is deemed that a mistake has been made in the original grading. Resubmissions must be accompanied by a written explanation of the perceived mistake. Upon resubmission, the entire examination will be subject to re-evaluation and all questions therein will be regraded. Examinations for regrade must be submitted to the course director, only, within one week (7 days).

Graduate students will not receive a grade of "D" but instead will receive a failing mark for an average under 70%. All examinations must be taken at the scheduled time except when legitimate medical or personal reasons make it impossible to do so. Prior notification of your absence to the course director is required. In these cases, either an oral or written make-up examination will be given. An "I" grade will not be assigned to students who simply miss an examination.

G. UNDERGRADUATE ENROLLMENT

Undergraduate students may enroll in the course with the permission of the course director and the Graduate School.

H. OFFICE HOURS

The course director and faculty will be available for consultation. Students are encouraged to consult with all participating faculty.

I. DAY, DATES, TIMES

IBS 603 meets Monday, Wednesday, Friday, 9:00-9:50 AM in the Medical Sciences Building MN 463 unless otherwise noted. Exam times during the semester are 6:00-8:00 p.m. Please refer to the **Room** listing for the correct classroom for each lecture and each exam.

J. TOPIC

Readings refer to the chapter numbers from *Molecular Biology of the Cell* (Alberts et al., 5th edition) and are **required** reading. Where handouts are made available, these too will be required reading.

IBS 603 – Cell Biology

Day	Date	Room	Lecture Topic	Readings	Instructor	Dept.
Wed.	25-Aug	MN 463	Introduction to IBS 603	Handout of Syllabus/Demo. on Blackboard	Kilgore	Pharmacology
Fri.	27	MN 463	Cell types/Architecture I	Chapter 1, intro to	Geddes	Anatomy
Mon.	30		Cell types II	Chapters 1,12	Geddes	Anatomy
Wed.	1-Sept	MN 463	Nucleic Acids/DNA Structure	On PowerPoint slide	Murphy	Biochemistry
Fri.	3	MN 463	Ribosomes	On PowerPoint slide	Murphy	Biochemistry
Mon.	6		LABOR DAY			
Wed.	8	MN 463	Nucleus I (structure)	On PowerPoint slide	Murphy	Biochemistry
Fri.	10	MN 463	Nucleus II (transport)	On PowerPoint slide	Murphy	Biochemistry
Mon.	13		Diseases of the Nucleus	On PowerPoint slide	Murphy	Biochemistry
Wed.	15	MN 463	Discussion/Journal Club 1		Murphy	Biochemistry
Fri.	17		Membrane Structure	Ch. 10: 617-640 Ch.11: 651-659	Hadley	Pharmacology
Mon.	20	MN 463	Plasma membrane compartments	Ch. 11: 642-648	Hadley	Pharmacology
Wed.	22	MN 463	Mitochondria I	Pgs. 813-840, 855-878, 713-719	Kilgore	Pharmacology
Thur.	23	HG611	Exam 1 6-8pm			
Fri.	24	MN 463	Mitochondria II	Pgs. 813-840, 855-878, 713-719	Kilgore	Pharmacology
Mon.	27	MN 463	Peroxisomes	Pgs. 721-723	Kilgore	Pharmacology
Wed.	29	MN 463	Discussion/Journal Club 2		Kilgore	Pharmacology
Fri.	1-Oct	MN 463	Endoplasmic Reticulum I (translation)	Ch.12 pgs. 689-700	Andres	Biochemistry
Mon.	4	MN 463	ERII (post-translational modifications)	Ch.12 pgs. 689-700	Andres	Biochemistry
Wed.	6	MN 463	Golgi complex	Ch. 13 pgs. 711-765	Andres	Biochemistry
Fri.	8	MN 463	Transport Vesicles (targeting/formation)	Ch. 13 pgs. 711-765	Andres	Biochemistry
Mon.	11	MN 463	Discussion/Journal Club 3		Andres	Biochemistry
Wed.	13	MN 463	Pathways of endocytosis	Chapter 13	Kaetzel	Microbiology
Fri.	15	MN 463	Mechanisms of endocytosis	Chapter 13	Kaetzel	Microbiology
Mon.	18	MN 463	Discussion/Journal Club 4		Kaetzel	Microbiology
Tues.	19	HG611	Exam 2 6-8pm			

Wed.	20	MN 463	Cell Death: Necrosis and Apoptosis I and II	No reading	Dupont-Versteegden	Rehabilitation Sciences
Fri.	22	MN 463	Cell Death: Necrosis and Apoptosis I and II	Pgs 1115-1129	Dupont-Versteegden	Rehabilitation Sciences
Mon.	25	MN 463	Discussion/Journal Club 5		Dupont-Versteegden	Rehabilitation Sciences
Wed.	27	MN 463	Cytoskeleton I: intermediate filaments	Chapter 16	Bradley	Anatomy
Fri.	29	MN 463	Cytoskeleton II: tubulin	Chapter 16	Bradley	Anatomy
Mon.	1-Nov.	MN 463	Cytoskeleton III: actin	Chapter 16	Bradley	Anatomy
Wed.	3		No Class			
Fri.	5	MN 463	Contractile function; actin/myosin	Chapter 16	Bradley	Anatomy
Mon.	8	MN 463	Extracellular matrix/adhesion I	Chapter 19	Geddes	Anatomy
Wed.	10	MN 463	Extracellular matrix/adhesion II	Chapter 19	Geddes	Anatomy
Fri.	12	MN 463	REVIEW & Discussion/Journal Club 6		Geddes	Anatomy
Mon.	15		No Class			
Mon.	15	HG611	Exam 3 6-8pm			
Wed.	17	MN 463	Cellular mechanisms of development I	CHAP. 22 (on CD) pp. 1305-1306, 1309-1320, and 1328-1347	Grondin	Anatomy
Fri.	19	MN 463	Cellular mechanisms of development II	pp. 1383-1397	Grondin	Anatomy
Mon.	22	MN 463	Cancer – Transformation I	Chapter 23	Kyprianou	Urology/ BCH
Wed-Fri	24-26		THANKSGIVING			
Mon.	29	MN 463	Cancer – Transformation II	Chapter 23	Kyprianou	Urology/ BCH
Wed.	1-Dec.	MN 463	Cancer – Transformation III	Chapter 23	Kyprianou	Urology/ BCH
Fri.	3	MN 463	Discussion/Journal Club 7		Kyprianou	Urology/ BCH
Mon.	6	MN 463	Cell Cycle I	Pgs. 983-1006	Snow	Microbiology
Wed.	8	MN 463	Cell Cycle II	Pgs. 983-1006	Snow	Microbiology
Fri.	10	MN 463	Cell Division	Pgs. 983-1006	Snow	Microbiology
Mon.	13-Dec.	MN 463	Exam 4 8:00 AM			