G717 Biomedical Science III: Cellular Basis of Systems Biology
Meets 1 - 2:00 PM Monday, Wednesday, Friday, Location Glick 103

This course covers the organization and function of cells, tissues, and physiological systems. The topics include key concepts in cell physiology with an emphasis on disease processes. The organ systems that will be discussed include musculoskeletal, cardiovascular, the immune system, the endocrine system, and the nervous system.

Lectures, Canvas (One.iu.edu), and PowerPoint presentations:
All lectures will be in the Glick Eye Institute lecture hall 103. The Course web site is maintained on the IU Canvas online curriculum management system and is accessible to enrolled students using their IUSM student username and password. The lecture presentation files will be made available prior to each lecture under the "Files" section on the Course website. Additionally, the Course site will provide a calendar of lecture dates, email communications, and exam information. Audio recordings of lectures and review sessions will be made available on the Course site after each event. However, because of occasional technical issues, we **CANNOT** guarantee that each lecture recording will be available.

Examinations and grading:
Student grades will be determined by three examinations and one homework assignment for a total of 350 available points. Examination questions will be derived from the topics covered in each lecture and will be in the short essay style that require brief, concise essay answers. The homework will be completed by individuals in their own words, and will be returned on the indicated date. There will be no comprehensive final exam.

Suggested textbook:
Molecular Cell Biology. Seventh Edition by Harvey Lodish, Arnold Berk, Chris A. Kaiser, Monty Krieger, Anthony Bretscher, Hidde Ploegh, and Angelika Amon, Seventh edition. Publisher W.H. Freeman and Company.

Course Faculty Participants:
Questions about the lecture material may be submitted to the teaching faculty by e-mail, and appointments may be made to meet with the individual faculty members. A list of faculty lecturers and email addresses is provided here:

Faculty	***Department***	***Office***	***Email***
Bidwell, Joe, **Director**	Anatomy Cell Biology	MS 1030	jbidwell@iu.edu
Day, Richard, **Co-director**	Physiology	MS 333	rnday@iu.edu
Davis, Hannah, **TA**	Anatomy Cell Biology	MS 5035	hannahd@indiana.edu
Arrizabalaga, Gustavo	Pharm & Tox	R2 380	garrizab@iu.edu
Wek, Ron	Biochemistry	MS 4067A	rwek@iu.edu
Pavalko, Fred	Physiology	MS 334	fpavalko@iupui.edu
Gallagher, Pat	Physiology	MS 2061	pgallag@iupui.edu
O'Leary, Heather	Medicine, Physiology	R3 C321D	haoleary@iu.edu
Harrington, Maureen	Biochemistry	MS 4071F	mharrin@iu.edu
Herring, Paul	Physiology	MS 309	pherring@iupui.edu
Tune, Johnathan	Physiology	MS 2069	jtune@iupui.edu
Brutkiewicz, Randy	Micro & Immuno	R2 368	rbrutkie@iupui.edu
Gilk, Stacey	Micro & Immuno	MS 453	sgilk@iupui.edu
Yu, Andy	Micro & Immuno	MS 457	andyu@iupui.edu
Allen, Matt	Anatomy Cell Biology	MS 5045P	matallen@iupui.edu
Elmendorf, Jeff	Physiology	MS 307	jelmendo@iupui.edu
Fehrenbacher, Jill	Pharm & Tox	MS 552	jfehrenb@iu.edu
Richardson, Jennelle	Pharm & Tox	MSA401	jdrichar@iu.edu
Chopra, Nipun	Stark Neurosci	NB201E	chopran@iu.edu
McDonald, Brenna	Radiology	GH4322	mcdonalb@iupui.edu

36 LECTURES, 3 EXAMS, 1 Homework - 350 pts total

	DATE	INSTRUCTOR	TITLE/TOPIC
Key Concepts in Cell Biology:			
1.	08/21/17	Bidwell/Day	Introduction to the course
2.	08/23/17	Bidwell	Organelles
3.	08/25/17	Bidwell	Protein sorting (targeting)
4.	08/28/17	Bidwell	Membranes, membrane proteins, pumps, & channels
5.	08/30/17	Bidwell	Vesicular traffic (endocytosis)
6.	09/01/17	Arrizabalaga	Organization of the cytoskeleton
	09/04/17	**LABOR DAY**	**NO CLASS**
7.	09/06/17	Arrizabalaga	Cytoskeletal function and regulation
8.	09/08/17	Arrizabalaga	Cell movements
9.	09/11/17	Wek	Intracellular quality control - unfolded protein response
10.	09/13/17	Pavalko	Cell-ECM interactions in disease
11.	09/15/17	Gallagher	Cell cycle
	09/18/17	**Review Session (1:00 - 3:00pm)** Bidwell/Arrizabalaga/Wek/Pavalko/Gallagher	
	09/20/17	**EXAM 1: covers lectures 08/23/17 - 09/15/17 – 100 pts [Wednesday 1:00 - 3:00pm]**	
Cell Biology & Disease:			
12.	09/22/17	Day	Genetics and disease
13.	09/25/17	Day	Epigenetics and disease
14.	09/27/17	O'Leary	Stem Cells
15.	09/29/17	O'Leary	Stem Cells
16.	10/02/17	Harrington	Cancer
17.	10/04/17	Harrington	Cancer
18.	10/06/17	Day	Imaging cellular mechanisms
Systems Biology:			
19.	10/09/17	Herring	Muscle
20.	10/11/17	Tune	Cardiovascular Overview
21.	10/13/17	Gallagher	Cellular basis of atherosclerosis
	10/16/17	**FALL BREAK**	**No Class**
	10/18/17	**Review Session (1:00-3:00pm)** Day/O'Leary/Harrington/Tune/Herring/Gallagher	
	10/20/17	**EXAM 2: covers lectures 09/22/17 - 10/13/17 – 100 pts [Monday 1:00-3:00pm]**	
The Immune System:			
22.	10/23/17	Brutkiewicz	Introduction and Innate immunity: the “Early Birds”
23.	10/25/17	Brutkiewicz	Adaptive Immunity: “Do or die!”
24.	10/27/17	Gilk	Bacterial pathogenesis
25.	10/30/17	Yu	Viral pathogenesis

Bone and Osteoporosis:

26.	11/01/17	Allen	Basic bone biology
27.	11/03/17	Allen	Basic bone biology
28.	11/06/17	Bidwell	Osteoporosis: etiology and treatment

The Endocrine System:

29.	11/08/17	Elmendorf	Endocrine glands
30.	11/10/17	Elmendorf	Glucose homeostasis
31.	11/13/17	Elmendorf	Cellular basis for Diabetes
	11/15/17	**Review Session (1:00pm-3:00pm)** Brutkiewicz, Gilk, Yu, Allen, Bidwell, Elmendorf	
	11/17/17	**EXAM 3: covers lectures 10/23/17 - 11/13/17 – 100 pts [Monday 1:00-3:00pm]**	

The Nervous System:

32.	11/20/17	Fehrenbacher/Richardson	Neuro overview/neurotransmission/Vision
	11/22/17	**THANKSGIVING**	**No class**
	11/24/17	**THANKSGIVING**	**No class**
33.	11/27/17	Fehrenbacher/Richardson	Class discussion of paper on channel rhodopsin Autonomic nervous system
34.	11/29/17	Chopra	CNS overview and learning and memory
35.	12/01/17	Fehrenbacher/Chopra	Group discussion of paper on cellular mechanisms of learning and memory
36.	12/04/17	McDonald	CNS imaging workshop
	12/06/17	**HOMEWORK and Discussion: covers lectures 11/20/17 - 11/29/17 – 50 pts**	

IUPUI Policy on Disability Accommodations:

Students needing accommodations because of disability will need to register with Adaptive Educational Services (Links to an external site.) and complete the appropriate forms issued by AES before accommodations will be given. The AES office is located in Taylor Hall, UC 100. You can also reach the office by calling 274-3241.

IUPUI Policy on Religious Holidays:

IUPUI respects the right of all students to observe their religious holidays and will make reasonable accommodation, upon request, for such observances. Students seeking accommodation for religious observances must submit a request in writing to the course instructor by the end of the second week of the semester and should use the Request for Course Accommodation Due to Religious Observance Form (Links to an external site.). More information on the IUPUI Policy on Religious Holidays is available here: http://registrar.iupui.edu/religious.html (Links to an external site.).

IUPUI Policy on Academic Integrity:

The IU Code of Student Rights, Responsibilities, and Conduct states that students must uphold and maintain academic and professional honesty and integrity; the code defines academic misconduct as any activity that tends to undermine the academic integrity of the institution. Students engaging in academic misconduct may therefore receive penalties from their course instructor and disciplinary action from the university. Policies against academic misconduct apply to *all* course-, department-, school-, and university-related activities. Academic misconduct may involve human, hard-copy, or electronic resources and includes but is not limited to the following: cheating, fabrication, plagiarism, interference, violation of course rules, and facilitating academic dishonesty. For definitions of these activities, visit http://studentcode.iu.edu/responsibilities/academic-misconduct.html (Links to an external site.). For information on how faculty and students are expected to handle cases involving academic misconduct, visit http://registrar.iupui.edu/misconduct.html (Links to an external site.). Additional information about the rights and responsibilities of IU students is available at http://studentcode.iu.edu/ (Links to an external site.).

IUPUI Policy on Sexual Misconduct:
As your instructors, we help create a safe learning environment on our campus. Title IX and our own Sexual Misconduct policy prohibit sexual misconduct. If you have experienced sexual misconduct, or know someone who has, the University can help.

If you are seeking help and would like to speak to someone confidentially, please visit http://stopsexualviolence.iu.edu/help/index.html (Links to an external site.) for contact information. It is also important that you know that federal regulations and University policy require us to promptly convey any information about potential sexual misconduct to our campus' Deputy Title IX Coordinator or IU's Title IX Coordinator. In that event, they will work with a small number of others on campus to ensure that appropriate measures are taken and resources are made available to the student who may have been harmed.

Protecting a student's privacy is of utmost concern, and all involved will only share information with those that need to know to ensure the University can respond and assist. We encourage you to visit stopsexualviolence.iu.edu (Links to an external site.) to learn more about available resources on campus and in the community.

Education and Title VI:
Title VI of the Civil Rights Act of 1964 protects people from discrimination based on race, color or national origin in programs or activities that receive Federal financial assistance.