

PHP 403
(CRN#77032)
Cell and Molecular Physiology
3 Credit hours

Lectures: Mondays, Wednesdays, and Fridays, 1:00 – 2:00 pm
 Room 4-6912 (Anders Room)

This course is aimed to provide an introduction to the fundamental principles of modern cell and molecular physiology – the basic concepts in the field, the principal research questions, and common methodologies. Emphasis will be on a quantitative approach wherever possible, and the implications of the cellular and molecular principles addressed to the overall physiology of the body, in both healthy and diseased states, will be discussed. Course content will particularly focus on cardiovascular, neurobiological, and epithelial/exocrine systems.

Course Co-Directors	Room	Phone	E-Mail
Dr. Ted B. Begenisich	4-5320	5-3456	ted_begenisich@urmc.rochester.edu
Dr. Trevor J. Shuttleworth	4-5512	5-2076	trevor_shuttleworth@urmc.rochester.edu
Course Lecturers			
Dr. Ted B. Begenisich	4-5320	5-3456	ted_begenisich@urmc.rochester.edu
Dr. Robert T. Dirksen	4-6423	5-4824	robert_dirksen@urmc.rochester.edu
Dr. Andrei I. Ivanov	5-6131	6-4067	andrei_ivanov@urmc.rochester.edu
Dr. Paul J. Kammermeier	4-5408A	5-5606	paul_kammermeier@urmc.rochester.edu
Dr. James E. Melvin	G-9649 KMRB	5-3444	james_melvin@urmc.rochester.edu
Dr. Ingrid H. Sarelius	4-8531	5-7729	ingrid_sarelius@urmc.rochester.edu
Dr. Trevor J. Shuttleworth	4-5512	5-2076	trevor_shuttleworth@urmc.rochester.edu
Dr. David I. Yule	4-5314	3-2154	david_yule@urmc.rochester.edu

Faculty may be contacted directly, or by making an appointment through Linda Fullington, the course coordinator, in room 4-6441 (phone: 5-0447). Linda can also assist you with any administrative problems related to the course.

BOOKS:

There is not a required text for this course- many of the faculty will have handouts specific to their material. It is recommended that students consider a textbook covering cell physiology. One such book is "Cellular Physiology" by Mordecai P. Blaustein, Joseph P.Y. Kao, and Donald R. Matteson – 2004, published in the Mosby Physiology Monograph Series by Elsevier/Mosby. This text will be available at the Medical Center Book Store.

PHP403
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Fall 2009 Schedule – 3 credit hours
All classes are held in the Anders Room (4-6912)

Transport Physiology

Day/Date	Time	Lecture Title	Instructor
Wednesday September 9, 2009	1:00-2:00	Transport across membranes	Shuttleworth
Friday September 11, 2009	1:00-2:00	Carriers and Pumps	Shuttleworth
Monday September 14, 2009	1:00-2:00	Ion Channels I	Begenisich
Wednesday September 16, 2009	1:00-2:00	Ion Channels II	Begenisich
Friday September 18, 2009	1:00-2:00	Ion Channel Scientific Paper	Begenisich
Monday September 21, 2009	1:00-2:00	Epithelial transport I	Shuttleworth
Wednesday September 23, 2009	1:00-2:00	Epithelial transport II	Shuttleworth
Friday September 25, 2009	1:00-2:00	Regulated exocytosis of proteins I	Yule
Monday September 28, 2009	1:00-2:00	Regulated exocytosis of proteins II	Yule
Wednesday September 30, 2009	1:00-2:00	Endocytosis	Ivanov
Friday October 2, 2009	1:00-2:00	Anion channels and fluid secretion	Melvin
Monday October 5, 2009	1:00-3:00	EXAM I	

Nerve/Muscle Excitability

Wednesday October 7, 2009	1:00-2:00	Neuronal channels	Begenisich
Friday October 9, 2009	1:00-2:00	Action potentials	Begenisich
Monday October 12, 2009	1:00-2:00	Nerve conduction	Kammermeier
Wednesday October 14, 2009	1:00-2:00	Neuromuscular junction	Kammermeier
Friday October 16, 2009	1:00-2:00	Local Anesthetics	Begenisich
Monday October 19, 2009	1:00-2:00	Central synapses	Kammermeier
Wednesday October 21, 2009	1:00-2:00	Synaptic channels	Kammermeier

Friday October 23, 2009	1:00-2:00	Synaptic plasticity	Kammermeier
Monday October 26, 2009	1:00-2:00	Excitation-contraction coupling	Dirksen
Wednesday October 28, 2009	1:00-2:00	Muscle contraction and molecular motors	Dirksen
Friday October 30, 2009	1:00-2:00	Myotonia/periodic paralyses	Dirksen
Monday November 2, 2009	1:00-3:00	EXAM II	

Cardiovascular Microphysiology

Wednesday November 4, 2009	1:00-2:00	Cardiac ion channels	Begenisich
Friday November 6, 2009	1:00-2:00	Cardiac action potential	Begenisich
Monday November 9, 2009	1:00-2:00	The EKG	Dirksen
Wednesday November 11, 2009	1:00-2:00	Neuronal control of cardiac excitability	Dirksen
Friday November 13, 2009	1:00-2:00	Cardiac EC coupling and Contractility	Dirksen
Monday November 16, 2009	1:00-2:00	Smooth Muscle Contractility	Dirksen
Wednesday November 18, 2009	1:00-2:00	Regulation of Smooth Muscle Contractility	Dirksen
Friday November 20, 2009	1:00-2:00	Microcirculatory physiology I: Endothelial cell function	Sarelius
Monday November 23, 2009	1:00-2:00	Microcirculatory physiology II: Vascular smooth muscle - endothelial cell communication	Sarelius
Wednesday November 25, 2009		NO CLASS	
Friday November 27, 2009		THANKSGIVING HOLIDAY	
Monday November 30, 2009	1:00-2:00	Microcirculatory physiology III: Mechanotransduction	Sarelius
Wednesday December 2, 2009	1:00-2:00	Microcirculatory physiology IV: Regulation of permeability	Sarelius
Friday December 4, 2009		NO CLASS	
Monday December 7, 2009	1:00-3:00	EXAM III	