

**PHARMACOLOGY 290**  
**“Topics in Molecular and Cellular Pharmacology”**  
**Spring 2019 Syllabus**

**Course Director:** Benedek Erdos, MD, PhD  
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**Class Time:** Tuesday / Thursday, 2:50 – 4:05 PM

**Location:** Dewey 314

**Course Description:**

Pharmacology 290 will be offered by the Department of Pharmacology to advanced undergraduates and graduate students in the Spring Semester, 2019. This three credit hour, team-taught course focuses on basic pharmacological principles, drug interactions with receptors, membranes, synapses, neurotransmitters, macromolecules, ion channels, the cytoskeleton, and membrane pumps. Recent studies of the molecular and cellular mechanisms of drug action are discussed, and state-of-the-art techniques for pharmacological analysis of various cellular target molecules are described.

*This course is a core requirement for students pursuing the Pharmacology Minor.*

**Grading:**

Grades will be based on 5 closed-book exams. Exams will consist of a variety of short answer type questions (multiple choice, matching, true/false, short essay).

*Extra Credit Paper:* An extra credit option in the form of a 6-8 page paper, due on April 25th, is available. The paper should be related to one of the general course topics and be based on at least 3 primary literature references (not reviews). Your paper should summarize the background, results, and conclusions of the cited papers, discuss the importance of the papers in the context of the specific topic of interest, and include your assessment of the strengths and possible limitations or weaknesses of the research.

Please inform Dr. Erdos by April 18<sup>th</sup> of your intent to submit a paper, which will be weighted as a 6<sup>th</sup> exam.

**Schedule of Lectures:**

<b>Date</b>	<b>Topic</b>	<b>Instructor</b>
1/15	G-protein coupled receptors	ErDOS
1/17	Growth factors	Lounsbury
1/22	Transcription factors	Lounsbury
1/24	The Function and Pharmacology of Receptor Kinases - I	Morielli
1/29	The Function and Pharmacology of Receptor Kinases - II	Morielli
1/31	<b>EXAM I</b>	
2/5	Hormone receptors	Carr
2/7	Monoclonal antibodies as therapies	Lounsbury
2/12	IP3 receptors	Collier
2/14	Ryanodine receptors	Hennig
2/19	Cell adhesion & cytoskeletal dynamics	Gonzales
2/21	<b>EXAM II</b>	
2/26	Calcium channels	Wellman
2/28	Potassium channels	Wellman
3/5	<i>No class - Town meeting day recess</i>	
3/7	Cation channels (TRP channels)	Klug
3/12	<i>No class - Spring break</i>	
3/14	<i>No class - Spring break</i>	
3/19	Cyclic AMP/PKA signaling	Dostmann
3/21	Cyclic GMP signaling, nitric oxide	Dostmann
3/26	<b>EXAM III</b>	
3/28	Chloride channels	Harraz
4/2	Synaptic pharmacology and neurotransmission - I	ErDOS
4/4	Synaptic pharmacology and neurotransmission - II	ErDOS
4/9	Nicotinic receptors	Morielli
4/11	Ocular pharmacology, retinopathy	Klug
4/16	<b>EXAM IV</b>	
4/18	Central control of the cardiovascular system	ErDOS
4/23	Vascular function and disease	Hennig
4/25	Pharmacophysiology of the kidney	ErDOS
4/30	Renin-angiotensin system	ErDOS
5/2	Pharmacogenetics – pharmacogenomics	ErDOS
5/7	<b>EXAM V</b>	

**Pharmacology 290 Faculty list; Spring 2019**

<b>Faculty</b>	<b>Department</b>	<b>Telephone</b>	<b>E-mail</b>
Frances Carr	Pharmacology	656-1318	<a href="mailto:Frances.Carr@uvm.edu">Frances.Carr@uvm.edu</a>
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