

Alan V. Smrcka, Ph.D., Course Director  
e-mail: alan\_smrcka@urmc.rochester.edu

**IND 447 (CRN #42688)/PHP 447 (CRN #56143)**  
**Signal Transduction**  
4 Graduate Credit Hours  
**Spring 2011**

**Lectures: Tuesday and Thursday, 11:00 a.m. - 12:30 p.m.**

**Room 3-7619 unless otherwise indicated\***

Cellular signal transduction is one of the most widely studied topics in the biomedical sciences. It has become clear that cells have multiple mechanisms for sensing the environment and converting the external signals into intracellular responses. The goal of this course will be for students to learn modern concepts in signal transduction. The lectures will cover a spectrum of topics ranging from basic principles and mechanisms of signal transduction to contemporary techniques for doing research in this area.

DATE	LECTURE TITLE	LECTURERS
January 13	Overview <b>*(2-6424, Whipple Aud)</b>	D. Yule
January 18	G Protein Linked Receptors <b>*(2-6408, K207)</b>	A. Smrcka
January 20	G Proteins	A. Smrcka
January 25	GPCR's and Disease <b>*(2-6408, K207)</b>	P. Hinkle
January 27	G protein Targets	G. Tall
February 1	Non receptor G protein modulators	G. Tall
February 3	Cyclic Nucleotide Signaling	C. Yan
February 8	Cyclic Nucleotide Signaling	C. Yan
February 10	Receptor Desensitization <b>*(G-9425, Class of 62 Aud)</b>	B. Blaxall
February 15	Receptor Downregulation	B. Blaxall
February 17	<b>Exam I</b>	
February 22	Nf-kB signaling	J. Zhao
February 24	Nf-kB signaling	J. Zhao
March 1	Tyrosine Kinase and MAP Kinase signaling	R. Mooney
March 3	Tyrosine Kinase and MAP Kinase signaling	R. Mooney

DATE	LECTURE TITLE	LECTURERS
<i>March 8</i>	<i>No class – this is <u>not</u> considered a semester break for Ph.D. students. All Ph.D. students must report to lab or office during this period.</i>	
<i>March 10</i>	<i>No class – this is <u>not</u> considered a semester break for Ph.D. students. All Ph.D. students must report to lab or office during this period.</i>	
March 15	Cell Adhesion signaling	A. Ivanov
March 17	Cell Adhesion signaling	A. Ivanov
March 22	Small GTPases	A. Glading
March 24	Cell Motility	A. Glading
March 29	<b>Exam II *(3-6408, K307)</b>	
March 31	Signaling through Ubiquitination and Protein Turnover	R. Freeman
April 5	Regulation of Ion Channels	C. Lopes
April 7	Metabolic signaling	P. Brookes
April 12	NO Signaling	P. Brookes
April 14	Introduction to Calcium Signaling	T. Shuttleworth
April 19	Calcium Release	D. Yule
April 21	Calcium Entry and Calcium Oscillations	T. Shuttleworth
April 26	Spatial Organization of Signaling	D. Yule
April 28	Spatial Organization of Signaling	D. Yule
<i>May 5</i>	<b>Final Exam</b>	