

**Molecular Medicine (Bio 5326)**Coursemaster: Enrico Di Cera (2915 South Building), 362-4185, [enrico@wustl.edu](mailto:enrico@wustl.edu)

Tu-Th 9:00 - 10:00 am (Biochemistry Seminar Room, 264 McDonnell Science Building)

Lectures by N. Abumrad, J. Atkinson, R. Bateman, E. Di Cera, A. Fagan, A. Goate, R.

Kopan, G. Marshall, C. Nichols, E. Sadler

	<b>Date</b>	<b>Topic</b>	<b>Lecturer</b>
1	Jan 13	Ligand binding	Di Cera
2	Jan 15	Enzyme kinetics	Di Cera
3	Jan 20	Molecular recognition: driving forces and mechanisms	Di Cera
4	Jan 22	Molecular recognition: allostery	Di Cera
5	Jan 27	Rational drug design: COX2 and thrombin inhibitors	Di Cera
6	Jan 29	Maintaining the integrity of the vasculature: the structure of blood vessels and platelets; the organization of the blood coagulation and fibrinolytic systems. Platelet adhesion and two disorders: von Willebrand disease and thrombotic thrombocytopenic purpura	Sadler
7	Feb 03	Making, breaking, and preventing blood clots: initiation and propagation of blood coagulation; fibrin self-assembly; regulation of fibrin degradation; oral anticoagulants	Sadler
8	Feb 05	Hemophilia, biochemistry to bedside: regulation of factor X activation in time and space; medical consequences of factor VIII and factor IX mutations; treatment of hemophilia with recombinant factor VIII, factor IX, or factor VIIa	Sadler
9	Feb 10	Innate immunity: protecting self and processing altered self	Atkinson
10	Feb 12	Human disease resulting from deficient complement activation	Atkinson
11	Feb 17	Human disease resulting from deficient complement regulation	Atkinson
12	Feb 19	Diabetes: ATP-sensitive K <sup>+</sup> channels. I	Nichols
13	Feb 24	Diabetes: ATP-sensitive K <sup>+</sup> channels. II	Nichols
14	Feb 26	Diabetes: ATP-sensitive K <sup>+</sup> channels. III	Nichols
--	Mar 03	Reading period - No class	
--	Mar 05	MIDTERM EXAM	
--	Mar 10	Spring Break - No class	
--	Mar 12	Spring Break - No class	
15	Mar 17	Diabetes: fatty acids and CD36. I	Abumrad
16	Mar 19	Diabetes: fatty acids and CD36. II	Abumrad
17	Mar 24	Diabetes: fatty acids and CD36. III	Abumrad
18	Mar 26	Alzheimer's disease: overview and pathophysiology	Goate
19	Mar 31	Is A $\beta$ central to Alzheimer's disease pathogenesis?	Goate
20	Apr 2	How does APOE modify risk for Alzheimer's disease?	Fagan
21	Apr 7	What is a biomarker and why do we need them?	Fagan
22	Apr 9	Metabolism of CSF proteins, a new tool for drug testing	Bateman
23	Apr 14	The Notch receptor. I	Kopan
24	Apr 16	The Notch receptor. II	Kopan
25	Apr 21	Host/pathogen interactions in sepsis	Marshall
26	Apr 23	Therapeutic approaches to sepsis	Marshall
27	Apr 28	Therapeutic approaches to AIDS	Marshall
--	May 5	FINAL EXAM	

This course offers a broad overview of molecular mechanisms of disease. Areas of focus include blood coagulation, inflammation, immune response, diabetes and Alzheimer's disease. Basic aspects of ligand binding, enzyme kinetics, and molecular recognition are reviewed to introduce essential knowledge for the analysis of protein-protein interactions relevant to biological systems. State-of-the-art lectures on specific examples of molecular mechanisms of disease are delivered by world experts in each field. The course is targeted to students interested in connecting quantitative biochemistry to medically relevant systems. Credit units: 2.