

Division of Medical Sciences

Ph.D. Programs at Harvard Medical School

**PRELIMINARY**

**First Meeting of Courses**

Fall Semester

2009-2010

(course details subject to change)

For Information Call: 617-432-0162

**Division of Medical Sciences**  
**Ph.D. Programs at Harvard Medical School**  
**First Meeting of Courses**  
**Fall Semester 2009**

**Biological Chemistry and Molecular Pharmacology (BCMP)**

**BCMP 200. Molecular Biology**

Catalog Number: 5591

*Richard Gregory (Medical School), Kami Ahmad (Medical School), Stephen Buratowski (Medical School), Dipanjan Chowdhury (Medical School), Richard Ian Gregory (Medical School), Ralph Scully (Medical School), William Shih (Medical School), Jack Szostak (Medical School), Gerhard Wagner (Medical School), and Johannes Walter (Medical School)*

*Half course (fall term). M., W., F., 10:30–12.*

An advanced treatment of molecular biology's Central Dogma. Considers the molecular basis of information transfer from DNA to RNA to protein, using examples from eukaryotic and prokaryotic systems. Lectures, discussion groups, and research seminars.

*Note:* Offered jointly with the Medical School as BP 723.0.

*Prerequisite:* Intended primarily for graduate students familiar with basic molecular biology or with strong biology/chemistry background.

First Meeting: Wednesday, September 9, 2009, 10:30 a.m.

Location: Bldg. C, Cannon Room along with various breakout rooms.

Course Head: Richard Gregory, [rgregory@enders.tch.harvard.edu](mailto:rgregory@enders.tch.harvard.edu)

**\*BCMP 218. Molecular Medicine**

Catalog Number: 2049 **Enrollment: Limited to 35.**

*Irving M. London (Medical School), David E. Cohen (Medical School), and George Q. Daley (Medical School)*

*Half course (fall term). Tu., 1–3.*

The course involves close reading of primary scientific papers that illustrate classical paradigms in molecular medicine. Emphasis will be placed on papers that demonstrate the connections between defined molecular and genetic abnormalities and disease pathogenesis.

*Note:* Faculty mentors will guide student-led discussions of the papers. Jointly offered with the Medical School as HT 140.

*Prerequisite:* Molecular Biology and Biochemistry

First Meeting: Tuesday, September 8, 2009, 1:00 p.m.

Location: TMEC Bldg., Room 447

Course Head: Irving London, [imlondon@mit.edu](mailto:imlondon@mit.edu)

**\* Indicates that this course requires faculty signature on study card.**

### **BCMP 230. Principles and Practice of Drug Development**

Catalog Number: 1295

*Stan Neil Finkelstein (Medical School) and Robert H. Rubin (Medical School)*

*Half course (fall term). Th., 3–6:00.*

Critical assessment of the major issues and stages of developing a pharmaceutical or biopharmaceutical. Drug discovery, preclinical development, clinical investigation, manufacturing and regulatory issues considered for small and large molecules. Economic considerations of the drug development process.

First Meeting: Thursday, September 10, 2009, 3:00 p.m.

Location: MIT campus, 21 Ames Street, Building 56 (Whitaker Building), Room 114

Course Head: Stan Finkelstein stan\_finkelstein@hcp.med.harvard.edu

Map: <http://whereis.mit.edu/map-jpg?mapterms=56&mapsearch=go>

### **BCMP 235. Principles of Human Disease: Physiology and Pharmacology**

Catalog Number: 3769

*David E. Golan (Medical School), Julian L. Seifter (Medical School), and Alain Viel*

*Half course (fall term). M., W., F., 9–10:30.*

Principles of human physiology, pathophysiology, and drug action-including mechanisms of organ function in health and disease, and strategies for designing drug-based therapeutic interventions-discussed in lectures, critical readings, clinical case scenarios, and patient presentations.

*Note:* Students may attend lectures in either Cambridge or Boston as lectures will be transmitted live from HMS to Cambridge and vice versa; the inter-campus link permits real-time interactions among students and faculty at both sites.

*Prerequisite:* Knowledge of introductory biochemistry, molecular biology, and cell biology required (MCB52 and MCB54 or equivalent); one year of organic chemistry.

First Meeting: Wednesday, September 9, 2009, 8:30 A.M.

Location: Countway Library, Room 403

Course Head: David E. Golan, david\_golan@hms.harvard.edu

## Cell Biology

### **Cell Biology 212. (formerly Cell Biology 211b). Molecular Mechanisms of Cancer**

Catalog Number: 4169

*James A. DeCaprio (Medical School) and Myles A. Brown (Medical School)*

*Half course (fall term). M., W., 12-1:30.*

Examines the molecular basis of human cancer, including lung, breast, prostate, melanoma and leukemia. Concepts including stem cells, senescence, genomic instability, angiogenesis, oncogenes, tumor suppressors and viruses in human cancer will be examined.

Note: Alternates years with Cell Biology 211. Offered jointly with the Medical School as CB 705.0.

Prerequisite: Advanced biochemistry, molecular genetics, and cell biology.

First Meeting: Wednesday, September 9, 2009, 12:00 p.m.

Location: TMEC bldg., Room 333

Course Head: James DeCaprio [James\\_Decaprio@dfci.harvard.edu](mailto:James_Decaprio@dfci.harvard.edu)

### **Cell Biology 226. Concepts in Development, Self-Renewal, and Repair**

Catalog Number: 8747 **Enrollment: Limited to 14.**

*Laurel A. Raftery (Medical School), Alan J. Davidson (Medical School), Iain A. Drummond (Medical School), Niels Geijsen (Medical School), N. Nanda Nanthakumar (Medical School), Elizabeth A. Perkins (Medical School), and David T. Scadden (Medical School)*

*Half course (fall term). F., 2-5.*

Explores developmental mechanisms through the life cycle, contrasting pluripotency and cell fate restriction in embryos and adult tissues. In depth analysis of in vivo approaches, with emphasis on adult stem cells, tissue repair and self-renewal.

Note: Offered jointly with the Medical School as CB 721.0. For more information visit:

<http://www2.massgeneral.org/bbs/>

Prerequisite: Upper division cell biology or equivalent.

First Meeting for Course Sign-up: **Friday, September 11, 2009**, 2:00 p.m. TMEC Bldg., Room 448

All future meeting location: Simches Research Center, MGH, 3rd Floor  
Room 3.130 - Shuttle bus from Vanderbilt Hall to Simches departs at 1:30 p.m.

Course Heads: Laurel A. Raftery, [laurel.raftery@cbr2.mgh.harvard.edu](mailto:laurel.raftery@cbr2.mgh.harvard.edu)  
Iain A. Drummond, [idrummond@partners.org](mailto:idrummond@partners.org)

**\*Cell Biology 330. Experimental Approaches to Developmental Biology**

Catalog Number: 6590 **Enrollment: Limited to 16.**

*David L. Van Vactor (Medical School), Amy Wagers, (Medical School), and members of the Division.*

*Half course (fall term). M., through Sa., 9–9:00 p.m. over two week period in January (1/6/10 – 1/22/10).*

This introductory level course will provide a rapid survey of major topics and themes in developmental biology in parallel with hands-on exposure to a variety of experimental approaches, technologies and model systems (*Drosophila*, *C. elegans*, *Xenopus*, chick & mouse).

*Note:* Open to all first-year BBS students; permission of the instructor required for all others.

First Meeting: 9:00 a.m. Wednesday, January 6, 2009

Location: TBA Will be e-mailed to registered students

Course Heads: Amy Wagers, [amy.wagers@joslin.harvard.edu](mailto:amy.wagers@joslin.harvard.edu) and David L. Van Vactor, [davie@hms.harvard.edu](mailto:davie@hms.harvard.edu)

**\* Indicates that this course requires faculty signature on study card. This is a Fall term course on your Study card.**

## **Genetics**

### **Genetics 201. Principles of Genetics**

Catalog Number: 4225

*Fred Winston (Medical School), Anne C. Hart (Medical School), Ann Hochschild (Medical School), Mitzi I. Kuroda (Medical School), and Jennifer Lanni*

*Half course (fall term). M., W., F., 9–10:30.*

An in-depth survey of genetics, beginning with basic principles and extending to modern approaches and special topics. We will draw on examples from various systems, including yeast, *Drosophila*, *C. elegans*, mouse, human and bacteria.

*Note:* Intended for first-year graduate students. Offered jointly with the Medical School as GN 701.0.

First Meeting: Wednesday, September 9, 2009, 9:00 a.m.

Location: Bldg. C, Cannon Room

Course Head: Fred Winston, [winston@genetics.med.harvard.edu](mailto:winston@genetics.med.harvard.edu)

### **Genetics 219. Inheritance – (New Course)**

Catalog Number: 14189

*Chao-Ting Wu (Medical School), Kami Ahmad (Medical School), Steven McCarroll (Medical School), and David Reich (Medical School)*

*Half course (fall term). Tu., 10-1.*

Lectures/discussions will focus on surprising patterns of inheritance, including those resulting from chromosome rearrangements (CNVs, translocations, etc.) and phenomena that were recently considered extraordinary but are now recognized as general paradigms spanning fungi to humans.

*Prerequisite:* Primarily for first-year graduate students, but is open to medical students and advanced undergraduates. A basic understanding of genetics recommended.

First Meeting: Tuesday, September 8, 2009, 10:00 a.m.

Location: TMEC bldg., Room 340

Course Head: Ting Wu [twu@genetics.med.harvard.edu](mailto:twu@genetics.med.harvard.edu)

### **Genetics 220. Molecular Biology and Genetics in Modern Medicine**

Catalog Number: 4660

*Anne Giersch (Medical School)*

*Half course (fall term). F., 9:30–12:30, Tu., 2–5.*

Scientific, clinical, and ethical aspects of modern human genetics and molecular biology as applied to medicine. Covers genetic approaches and molecular underpinnings of inherited diseases and somatic/genetic diseases are integrated with patient presentations, discussions. *Note:* Offered jointly with the Medical School as HT 160.

First Meeting: Friday, September 11, 2009, 9:30 a.m.

Location: Tuesdays: MIT campus Building E52 Room 175 (<http://whereis.mit.edu/map-jpg?mapterms=E25&mapsearch=go>)

Fridays: TMEC Bldg., Room 209

Course Head: Anne Giersch, [agiersch@rics.bwh.harvard.edu](mailto:agiersch@rics.bwh.harvard.edu)

### **Genetics 228. Genetics in Medicine - From Bench to Bedside**

Catalog Number: 9840

*Susan A. Slaughaupt (Medical School) and Christopher Newton-Cheh (Medical School)*

*Half course (fall term). F., 2–5.*

Focus on translational medicine: the application of basic genetic discoveries to human disease. Will discuss specific genetic disorders, including patient interviews, and the approaches currently used to speed the transfer of knowledge from the laboratory to the clinic.

*Note:* Course will include clinical presentations and lectures by investigators known for their work in a specific disease area. Course will be held at MGH (transportation provided to MGH). Offered jointly with the Medical School as GN 711.0. For more information visit:

<http://www2.massgeneral.org/bbs/>

*Prerequisite:* Genetics 201 or equivalent.

First Meeting: Friday, September 11, 2009, 2:00 p.m.

Location: MGH Simches Research Building, 185 Cambridge Street, Boston;  
3rd Floor, Room 3120 (bus leaves corner by Vanderbilt hall at 1:30 pm)

Course Head: Susan A. Slaughaupt [Slaughaupt@chgr.mgh.harvard.edu](mailto:Slaughaupt@chgr.mgh.harvard.edu) and Christopher Newton-Cheh [cnewtoncheh@partners.org](mailto:cnewtoncheh@partners.org)

**\*Genetics 390. Experimental Approaches in Genetic Analysis**

Catalog Number: 8039 **Enrollment: Limited to 8.**

*Fred Winston (Medical School) and members of the department*

*Half course (fall term). M. through Sa., 8:30–7 p.m. each day*

A survey of major themes in genetics combined with exposure to various experimental techniques, technologies, and model systems. Combines lectures and hands-on laboratory activities emphasizing experimental methods, hypothesis generation and testing, and data analysis.

This course will provide a rapid survey of major topics and themes in genetics and genetic analysis in conjunction with exposure to a variety of experimental techniques, technologies, and model systems. Building on fundamental principles learned in Genetics 201, students will gain knowledge and hands-on experience in using genetic approaches to address biologically relevant questions in a variety of experimental systems, such as *Drosophila*, yeast, zebrafish, and humans. The course will combine didactic lectures and laboratory activities emphasizing experimental techniques, hypothesis generation and testing, and data analysis.

*Note:* Limited to 8 students. Priority will be given to G1 graduate students. Students must first contact Sarah Wojiski (sarah\_wojiski@hms.harvard.edu) or 2-7468 for enrollment approval prior to registration for the course. Meeting Dates/Times: Approximately 8:30 am-7:00 pm each day for 14 days in January.

*Prerequisite:* Students must also enroll in, or have taken Genetics 201.

**\* Indicates that this course requires faculty signature on study card. This is a Fall term course on your Study card.**

*Note:* Limited to 8 students. Priority will be given to G1 graduate students. ***Students must first contact Sarah Wojiski sarah\_wojiski@hms.harvard.edu or 2-7468 for enrollment approval prior to registration for the course.*** Meeting Dates/Times: January 8 - January 23 (no class on Sundays) Approximately 8:30 am-7:00 pm each day. All meals will be provided.

*Prerequisite:* Students must also enroll in, or have taken Genetics 201.

First Meeting: Friday January 8, 2010, contact Sarah Wojiski

Location: TBA, contact Sarah Wojiski

Course Head: Fred Winston, winston@genetics.med.harvard.edu

## Immunology

### **\*Immunology 201. Principles of Immunology**

Catalog Number: 8337 **Enrollment: Limited to 50.**

*Michael C. Carroll (Medical School), Ulrich H. Von Andrian-Werburg (Medical School) and members of the Faculty*

*Half course (fall term). Tu., Th., 1:30–3, with section Tu., Th., 3–4.*

Comprehensive core course in immunology. Topics include a broad but intensive examination of the cells and molecules of the immune system. Special attention given to the experimental approaches that led to general principles of immunology.

*Note:* Intended for students who have had prior exposure to immunology on the undergraduate level. In the absence of such exposure, students *must* obtain the permission of the Course Director. Offered jointly with the Medical School as IM 702.0.

*Prerequisite:* A background in genetics and biochemistry strongly recommended.

First Meeting: Tuesday, September 8, 2009, 1:30 p.m.

Location: Jeffrey Modell Immunology Center, Fred Rosen Classroom, room 104

Course Head: Michael C. Carroll, [carroll@cbr.med.harvard.edu](mailto:carroll@cbr.med.harvard.edu)

**\* Indicates that this course requires faculty signature on study card.**

**Medical Sciences**

**\*Medical Sciences 250ab. Human Functional Anatomy**

Catalog Number: 6946 **Enrollment: Limited to 52. Minimum 25.**

*Lee Gehrke (Medical School)*

*Full course (fall term). Lectures, M., W., F., 1:30–2:30; laboratory, M., W., F., 2:30–6.*

Lectures, detailed laboratory dissections, and prosections provide a thorough exploration of the gross structure and function of the human body. Fundamental principles of embryology and bioengineering promote analytical approaches to understanding the body's design.

*Note:* Open to qualified graduate students with permission of the course director. Offered jointly with the Medical School as HT 010. The first meeting of this course is September 2, 2009.

First Meeting: Wednesday, September 2, 2009, 1:30 p.m.

Location: Armenise Bldg., Amphitheater

Course Head: Lee Gehrke, [lee\\_gehrke@hms.harvard.edu](mailto:lee_gehrke@hms.harvard.edu)

**\* Indicates that this course requires faculty signature on study card.**

## **Microbiology and Molecular Genetics**

### **\*Microbiology 205. Mechanisms of Microbial Pathogenesis**

Catalog Number: 2480 **Enrollment: Limited to 40.**

*Clyde S. Crumpacker II (Medical School) and associates*

*Half course (fall term). Tu., Th., 8:30–1.*

The mechanisms of bacterial, mycoplasmal, fungal, and viral pathogenesis are covered. Topics are selected for intrinsic interest and cover the spectrum of pathophysiologic mechanisms of the infectious process. Emphasis on pathogenesis at the molecular level.

*Note:* Offered jointly with the Medical School as HT 040.

*Prerequisite:* A background course in molecular biology is strongly encouraged.

First Meeting: Tuesday, September 1, 2009, 8:30 a.m. **\*\*Note earlier start date**

Location: TMEC Bldg., Room 250

Course Head: Clyde S. Crumpacker, ccrumpac@bidmc.harvard.edu

**\* Indicates that this course requires faculty signature on study card.**

### **Microbiology 230. Analysis of the Biological Literature**

Catalog Number: 3791

*Elaine A. Elion (Medical School), Welcome Bender (Medical School), Michael Demian Blower (Medical School), Alan B. Cantor (Medical School), Stephen J. Elledge (Medical School), Richard Ian Gregory (Medical School), William C. Hahn (Medical School), Kevin M. Haigis (Medical School), Marcia C. Haigis (Medical School), Edward E. Harlow (Medical School), Jonathan M. G. Higgins (Medical School), Jordan A. Kreidberg (Medical School), Cammie Lesser (Medical School), Andrea I. McClatchey (Medical School), David S. Pellman (Medical School), Adrian Salic (Medical School), Ramesh Arjun Shivdasani (Medical School), David A. Sinclair (Medical School), Kevin Struhl (Medical School), Sheila Thomas (Medical School), Amy J. Wagers, and Chao-Ting Wu (Medical School)*

*Half course (fall term). Tu., Th., 2:30-7:30*

Critical analysis of original research articles in intensive small group discussions. Analyze range of papers in biochemistry, genetics, microbiology, and cell and developmental biology in terms of context, hypotheses, methods, results and future experiments.

*Note:* This course is required for first year BBS students. Students who are not first year BBS should contact the course director (E.A.E.) to determine the available space and receive course materials in advance of class. E.A.E. can be reached by email at Elaine\_COURSE@hms.harvard.edu

First Meeting: Organizational Meeting: Tuesday, September 8, 2009, 11:30 a.m. – 12:30 p.m.

Location: Building C., Cannon Room (1<sup>st</sup> meeting). All other meetings in breakout rooms.

Course Head: Elaine Elion, elaine\_elion@hms.harvard.edu

## Neurobiology

### Neurobiology 200. Introduction to Neurobiology

Catalog Number: 6062 **Enrollment: Limited to 50.**

*Richard H. Masland (Medical School), John A. Assad (Medical School), David P. Corey (Medical School), Matthew P. Frosch (Medical School), Lisa V. Goodrich (Medical School), and Rosalind A. Segal (Medical School)*

*Half course (fall term). M., W., F., 9–12.*

Modern neuroscience from molecular biology to perception and cognition. Includes cell biology of neurons and glia; ion channels and electrical signaling; synaptic transmission; brain anatomy and development; sensory systems; motor systems; higher cognitive function.

*Note:* Offered jointly with the Medical School as HT 130. Follows the Medical School calendar. Nine hours of lecture or lab/conference weekly.

*Prerequisite:* Introductory cell and molecular biology or permission of instructor.

First Meeting: Wednesday, September 2, 2009, 9:00 a.m.

Location: TMEC Bldg., Room 227

Course Head: Richard H. Masland, masland@helix.mgh.harvard.edu

### \*Neurobiology 220. Cellular Neurophysiology

Catalog Number: 2141

*Bruce P. Bean (Medical School), Wade G. Regehr (Medical School), and Gary I. Yellen (Medical School)*

*Half course (fall term). Tu., Th., 9–12 and a weekly discussion section.*

Introduction to the physiology of neurons. Topics include structure and function of ion channels, generation and propagation of action potentials, and physiology of synaptic transmission. Includes problem sets and reading of original papers.

*Note:* Offered jointly with the Medical School as NB 714.0.

*Prerequisite:* Introductory neurobiology.

First Meeting: Tuesday, September 8, 2009, 9:00 a.m.

Location: Goldenson 122

Course Head: Bruce P. Bean, bruce\_bean@hms.harvard.edu

**\* Indicates that this course requires faculty signature on study card.**

## **Pathology**

### **\*Pathology 205. Molecular Biology of the Auditory System**

Catalog Number: 0211

*Albert Edge (Medical School)*

*Half course (fall term). T., 4:30- 6:00 p.m.*

Examines the exciting advances in inner ear genetics and molecular biology. Topics include identifying deafness genes, genes and proteins recently identified as critical for proper inner ear function, development, and regeneration.

*Note:* Given in alternate years.

*Prerequisite:* Introductory courses in neurobiology and molecular biology are recommended.

First Meeting: Tuesday September 15, 4:30 PM, EPL Library, 4th floor MEEI.

Location: Mass Eye and Ear Infirmery, EPL Library, 4th floor MEEI.

Course Head: Albert Edge, [albert\\_edge@meei.harvard.edu](mailto:albert_edge@meei.harvard.edu)

**\* Indicates that this course requires faculty signature on study card.**

### **Pathology 209. Tumor Pathophysiology and Transport Phenomena - A Systems Biology**

#### **Approach**

Catalog Number: 5934

*Rakesh K. Jain (Medical School)*

*Half course (fall term). M., 5-7 p.m.*

Tumor pathophysiology plays a central role in the growth, metastasis, detection, and treatment of solid tumors. Principles of transport phenomena are applied to develop a quantitative understanding of tumor biology and treatment.

*Note:* Given in alternate years. Offered jointly with the Medical School as PA 712.0.

First Meeting: Monday, September 14, 2009, 5:00 PM

Location: MIT campus, Building E25 Room 117

Course Head: Rakesh Jain, [vikash@steele.mgh.harvard.edu](mailto:vikash@steele.mgh.harvard.edu)

Map: <http://whereis.mit.edu/map-jpg?mapterms=E25&mapsearch=go>

## Virology

### **\*Virology 200. Introduction to Virology**

Catalog Number: 6075 Enrollment: Limited to 20.

*Elliott D. Kieff (Medical School), David M. Knipe (Medical School), Karl Münger (Medical School), and Max L. Nibert (Medical School)*

*Half course (fall term). M., 3–4:30; W., 12:30–3.*

Introduction to virology. The lecture component reviews the basic principles of virology and introduces the major groups of human viruses. Weekly discussion groups critically analyze selected papers from the literature.

*Note:* There will be a final project consisting of a proposal based on laboratory rotations (for Virology, BBS, or Immunology Program students) or a final paper based on a topic from the literature. Offered jointly with the Medical School as MG 705.0.

First Meeting: Wednesday, September 9, 2009, 3:00 p.m.

Location: Armenise Bldg., Room 330

Course Head: Elliott Kieff, [ekieff@rics.bwh.harvard.edu](mailto:ekieff@rics.bwh.harvard.edu)

**\* Indicates that this course requires faculty signature on study card.**

### **Virology 202. Animal Virology: Seminar**

Catalog Number: 6025

*Michael R. Farzan (Medical School), David T. Evans (Medical School), Frederick C. Wang (Medical School), Priscilla Yang (Medical School), and Xinzhen Yang (Medical School)*

*Half course (fall term). W., 1:30–4:30.*

Students will write, present, and evaluate research proposals in the areas of virus replication, viral pathogenesis and treatment and prevention of viral infections.

*Note:* Offered jointly with the Medical School as MG 724.0.

*Prerequisite:* General background in biochemistry and virology.

First Meeting: Wednesday, September 9, 2009, 1:30 p.m.

Location: TMEC Bldg., Room L-007

Course Head: Michael Farzan, [michael\\_farzan@hms.harvard.edu](mailto:michael_farzan@hms.harvard.edu)

## **Other courses of interest:**

### **\*BPH 204. Metabolic Processes Underlying Complex Diseases**

*Catalog Number: 4367 Enrollment: Limited to 15.*

*Chih-Hao Lee (Public Health) and Brendan D. Manning (Public Health)*

*Half course (fall term). M., F., 1:30–3:30.*

This course covers key metabolic processes underlying cancer and metabolic diseases with an emphasis on molecular mechanisms (e.g., signaling pathways, transcription factors, etc). The first half focuses on tumor cell metabolism and the second half on organismal metabolism in metabolic diseases. The course consists of both lectures and critical reading of primary literature. *Note:* Offered jointly with the School of Public Health as GCD 211 and with the Medical School.

*Prerequisite:* Firm knowledge of basic biochemistry.

First Meeting: Friday, September 4, 2009

Location: SPH-FXB-G03

Course Head: Brendan Manning [bmanning@hsph.harvard.edu](mailto:bmanning@hsph.harvard.edu)

**\* Indicates that this course requires faculty signature on study card.**

### **Chemical Biology 2100. Introduction to Chemical Biology I**

*Catalog Number: 4030*

*Suzanne Walker (Medical School), Ulrike Sophie Eggert (Medical School), and Nathanael Gray (Medical School)*

*Half course (fall term). Tu., Th., 2–3:30. EXAM GROUP: 16, 17*

This introductory course examines key areas of biology from a chemical perspective, discusses the use of chemical approaches to study biological systems, and explores new strategies to treat disease.

*Prerequisite:* A basic knowledge of organic chemistry.

First Meeting: Thursday, September 3, 2009, 2:00 p.m.

Location: Alpert 436 (HMS)

Course Head: Suzanne Walker [Suzanne\\_Walker@hms.harvard.edu](mailto:Suzanne_Walker@hms.harvard.edu)

### **Systems Biology 203. Fundamentals of Quantitative and Systems Biology - (New Course)**

*Catalog Number: 83523*

*Peter K. Sorger (Medical School) and Timothy J. Mitchison (Medical School)*

*Half course (fall term). M., W., F., 10:30–12. EXAM GROUP: 3, 4*

Cell tissue biology from molecular, dynamical systems and information theoretic perspectives. Approaches to modeling biological pathways, collecting quantitative data and deriving mechanistic insight will be presented through weekly lectures, workshops and literature analysis.

First Meeting: Friday, September 4, 2009, 10:30 a.m.

Location: Alpert 436 (HMS)

Course Head: Peter Sorger [peter\\_sorger@hms.harvard.edu](mailto:peter_sorger@hms.harvard.edu)