Dear Infectious Diseases and Vaccinology Incoming Class 2016,

On behalf of the faculty, students and staff of the Division of Infectious Diseases & Vaccinology (IDV) at UC Berkeley, we would like to welcome you enthusiastically to our program at UC Berkeley. This handbook is assembled as a resource guide for new students. Please read this in conjunction with the School of Public Health Student Handbook (available in the SPH website at sph.berkeley.edu) and the Resources and Services for Graduate Students at Graduate Division website at http://grad.berkeley.edu/students/

Much of the information in this guide can also be found in the Division website at http://microbe.berkeley.edu and the Infectious Diseases and Immunity (IDI) PhD program website at http://microbe.berkeley.edu/idgroup/index.html

Our faculty and staff are here to support you and take pride in your academic success. Please feel free to contact us for assistance. Wishing you a very prosperous and rewarding year ahead!

Sincerely,

Lee Riley, MD

Professor of Epidemiology and Infectious Diseases

Chair, Division of Infectious Diseases and Vaccinology

School of Public Health
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IDV MPH Program
Core Competencies

Students completing the MPH curriculum with a concentration in Infectious Diseases should be able to:

- Describe the viral, bacterial, fungal, and parasitological agents of infectious diseases of humans;

- Explain the manifestations of infectious diseases and the biological, molecular, cellular, and immunological mechanisms of infectious disease;

- Identify the local, state, federal, and international agencies responsible for infectious disease surveillance and control and explain their roles and missions;

- Conduct classical and molecular laboratory analyses for the detection and characterization of infectious disease agents;

- Implement advanced diagnostic and surveillance techniques used in clinical and public health laboratories;

- Identify current public health problems in communicable diseases and describe how the social, behavioral, environmental, and administrative/policy components of public health affect infectious disease distributions;

- Demonstrate use of biostatistics and epidemiology in infectious disease surveillance;

- Critically evaluate biological and experimental designs for infectious disease research;

- Organize, analyze, and present scientific data in a lucid manner through oral and written communications.
IDI PhD Program
Core Competencies

Students completing the Infectious Diseases and Immunity PhD curriculum should be able to:

- Describe the viral, bacterial, fungal, and parasitological agents of infectious diseases of humans;
- Explain the manifestations of infectious diseases and the biological, molecular, cellular and immunological mechanisms of infection and disease;
- Demonstrate advanced knowledge of molecular biology, microbiology, immunology, biochemistry and cell biology;
- Identify the local, state, federal and international agencies responsible for infectious disease surveillance and control and explain their roles and missions;
- Conduct classical and molecular laboratory methods;
- Identify current public health problems in communicable diseases and describe how the social, behavioral, environmental and administrative/policy components of public health affect infectious disease distributions;
- Demonstrate use of biostatistics and epidemiology in infectious disease;
- Critically evaluate biological and experimental designs for infectious disease;
- Organize, analyze and present scientific data in a lucid manner through oral and written communications;
- Teach coursework in an area relating to infectious diseases;
- Plan, conduct, and publish original research in the area of infectious diseases and immunity;
Overview

The study of infectious diseases focuses on the interactions between infectious agents, their hosts, and the environment that may lead to disease in humans. Infectious Diseases and Vaccinology (IDV) is a multidisciplinary program. The curriculum is designed to emphasize the biology and molecular biology of host-pathogen interactions; host immune response to infection associated with protection or pathology; the ecology, evolution, and transmission of infectious agents, methods of laboratory-based surveillance and the epidemiology of infectious diseases.

The Division of Infectious Diseases & Vaccinology offers:

- The professional two-year MPH degree in Infectious Diseases & Vaccinology; and
- The five year academic degree of the Infectious Diseases and Immunity PhD program.

IDV Office Address:

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Faculty & Staff

Faculty
Gertrude C. Buehring, Ph.D., Professor of Virology
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Peter Dailey, Ph.D., Adjunct Professor
   207.1 U Hall (by appointments) pjdailey@berkeley.edu

Eva Harris, Ph.D., Professor of Infectious Diseases and Molecular Biology,
   IDI PhD program Head, 500B Li Ka Shing Center

Fenyong Liu, Ph.D., Professor of Virology
   326 Barker Hall

Sangwei Lu, Ph.D., Adjunct Professor
   57B Koshland Hall

Daniel A. Portnoy, Ph.D., Professor of Public Health and Molecular and Cell Biology
   508 Barker Hall

Lee W. Riley, M.D., Professor and Division Chair of Infectious Diseases & Vaccinology
   500D Li Ka Shing Center

George F. Sensabaugh, Professor of Graduate School, Emeritus
   319 Mulford Hall

Sarah Stanley, Assistant Professor, School of Public Health
   500C Li Ka Shing Center

Richard S. Stephens, Ph.D., Professor Emeritus
   51A Koshland Hall

John E. Swartzberg, M.D., Clinical Professor of Medical Virology and Microbiology, Emeritus
   570 University Hall

Staff

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   Office: 293 University Hall  idadmin@berkeley.edu  (510) 642-2613

Kathleen Loretz, Staff Research Associate & Instructor
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Audrey B. Cristobal, Field Study Supervisor
   Office: 141 University Hall  acristobal@berkeley.edu  (510) 642-2084
Gertrude Case Buehring, Ph.D.

Professor of Virology
Office: 61A Koshland Hall
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E-mail: buehring@berkeley.edu

Education:

- PhD - Genetics, University of California, Berkeley
- CLS - Doctors Hospital (clinical laboratory scientist)
- BA - Biology, Stanford University

Courses:

- PH162A: Public Health Microbiology, Fall (UG course)

Research Interests:

- Viral etiology of human breast cancer
- Bovine leukemia virus and its possible role in causing human breast cancer
- Development of early diagnostic tests for breast cancer

Current Projects:

The following projects relate to our overall hypothesis that bovine leukemia virus (BLV) infects humans and could potentially cause cancer:

1. How do humans become infected with BLV? Is it from cattle via bovine food products?
2. Can women infected with BLV pass the virus to their children transplacentally or through breast milk?
3. Are other human organs besides breasts infected by BLV and could the virus be associated with cancer in these organs?
4. Does infection of normal human breast cells with BLV in culture cause them to acquire characteristics of a malignant cell?

Selected Publications:


**Other interests:**

- Member, Graduate group in Infectious Diseases and Immunology, UC Berkeley
- Member, Graduate group in Endocrinology, UC Berkeley
- Member, Avon Foundation Virus and Breast Cancer Research Consortium
- Member, International Expert Panel on Misidentification and Cross-Contamination of Cell Lines
Courses:

- PH 266B Zoonotic Diseases
- PH 264 Current Issues in Infectious Diseases (Co-Instructor)

Research Interests:

- Development, evaluation, and implementation of assays for the estimation of HIV incidence
- Development, evaluation, and enabling access of infectious disease diagnostics in low-resource settings

Biography:

Dr. Peter J. Dailey is a microbiologist who serves as a Senior Technical Officer for the Foundation for Innovative Diagnostics (FIND). Dr. Dailey received his Ph.D. in Microbiology and MPH at UC Berkeley and his bachelors degree in Bacteriology at UC Davis. He has 35 years of experience in infectious disease, primarily in the research and development of infectious disease molecular diagnostics. He has worked for the California Public Health Department (Viral & Rickettsial Disease Laboratory), Hospital and Medical center clinical laboratories, and in the molecular diagnostics biotechnology industry. Previously he was the Senior Vice President of Research & Development at Cepheid, a molecular diagnostics biotechnology company in Sunnyvale, CA and has also held R&D leadership positions at Roche Molecular Systems and Chiron Diagnostics. He has led the research and development of over 20 diagnostic and blood-screening assays for infectious diseases including TB, MRSA, West Nile Virus, viral meningitis, HPV, HIV, SIV, and HCV.

Current/Recent Projects:

- Senior Technical Officer for the Foundation for Innovative New Diagnostics (FIND). FIND is a non-profit organization headquartered in Geneva, Switzerland whose mission is to drive the development and early implementation of innovative diagnostic tests that have a high impact on patient care, disease control, and public health in low-resource settings.

- “HIV Incidence Assay Development Partner”, grant funded through FIND. Coordination of multiple projects related to the development, evaluation and implementation of HIV Incidence Assays.
“PanDx: A Low-cost Diagnostics Platform for Health Centers in the Developing World”: discover and develop a prototype affordable, easy-to-use system for health workers to rapidly diagnose diseases in resource limited settings. Prototype assays for tuberculosis (nucleic acid assay) and HIV (immunoassay) will be developed. This project is part of the Grand Challenges in Global Health Diagnostics initiative funded by the Bill & Melinda Gates Foundation to Stratos Product Development.

Other interests:

- Member, Committee for Laboratory and Environmental Biosafety (UC Berkeley’s Institutional Biosafety Committee (IBC))
- Associate Editor, Diagnostic Microbiology and Infectious Diseases
- Point of Care Diagnostics Idea Lab (http://www.pocdx.org/)
- UC Berkeley One Health Student Initiative (faculty advisor)

Selected Publications:


Eva Harris, Ph.D.

Professor of Infectious Diseases
Director, Center for Global Public Health
Infectious Diseases and Immunity PhD Program Head
Office: 500B Li Ka Shing Center
Lab: 510D Li Ka Shing Center
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Courses Taught:

- PH 265: Molecular Parasitology (Fall, odd-numbered years)
- PH 260F: Infectious Disease Research in Developing Countries (Spring, odd-numbered years)
- PH292/3: Immune Evasion in Host-Pathogen Interactions

Research Interests:

- Molecular virology, pathogenesis, immunology, epidemiology, and control of dengue
- Epidemiology of influenza in tropical countries
- Scientific capacity building in developing countries

Research Description:

Dr. Harris has developed a multidisciplinary approach to study the molecular virology, pathogenesis, immunology, epidemiology, clinical aspects, and control of the mosquito-borne diseases dengue, Zika, and chikungunya. Her work investigates viral and host factors that modulate disease severity and immune correlates of protection and pathogenesis, using in vitro approaches, animal models, and research involving human populations. In vitro studies have focused on functional characterization of antibodies and B cell memory response, virus-host interactions and viral pathogenesis, viral fitness and evolution, and the mechanism of viral translation and replication. The mouse models developed by her group recapitulate many aspects of human dengue disease and immune response, including antibody-dependent enhancement of infection, and are being used to identify antibody determinants of protection, enhancement, and therapeutic efficacy. Her international work focuses on laboratory-based and epidemiological studies of dengue, Zika, chikungunya, and influenza in endemic Latin American countries, particularly in Nicaragua, where she has been working closely with the Ministry of Health for over 28 years. Long-term collaborations include clinical, biological, and immunological studies of severe disease through an 18-year pediatric hospital-based study; a 13-year pediatric cohort study of dengue, Zika, chikungunya, and influenza transmission in Managua; and a recently concluded cluster randomized controlled trial of evidence-based community-derived interventions to prevent and control arboviral diseases.

Other interests:

- President, Sustainable Sciences Institute
- Director, Center for Global Public Health
- Infectious Diseases and Immunity Graduate Group
- Microbial Biology Graduate Group
Selected Publications:


Division of Infectious Diseases and Vaccinology; School of Public Health

Fenyong Liu, Ph.D.

Professor of Virology
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Courses Taught:

- PH 264: Current Issues in Infectious Diseases (Fall)
- PH 295: Seminar in Public Health

Research Interests:

- Biology of human viruses (e.g. herpes, cytomegalovirus)
- Development of novel antiviral agents
- Biochemistry of nucleic acids and RNA enzymes

Selected Publications:


Sangwei Lu, Ph.D.
Adjunct Professor
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(510) 643-4986, Fax: (510) 643-9955
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Courses Taught:

- PH 266A: Food-borne Diseases (Fall even-numbered years)

Research Interests:

- Pathogenesis and transmission of Salmonella
- Foodborne pathogens
- Foodborne diseases – detection and prevention

Selected Publications:


Courses Taught:

- PH 262: Molecular and Cellular Basis of Bacterial Pathogenesis (Spring)
- PH 102/MCB 103/PMB 103

Research Interests:

- Intracellular Pathogens
- Bacteria
- *Listeria monocytogenes*
- Cell Biology
- Innate and adaptive immunity
- Vaccines

Current Projects:

**Cell biology of infection.** The primary *L. monocytogenes* determinant responsible for lysis of host cell vacuoles is the pore-forming cytolysin, listeriolysin O (LLO). We will continue to focus on the control of LLO synthesis and secretion, and its mechanism of action. The ultimate goal is to relate structural and biochemical information to its precise mechanism of action in both tissue culture and in mice. We are also characterizing a number of fail-safe mechanisms that prevent LLO toxicity in the host cytosol and thereby compartmentalize its activity to acidic vacuoles. Interestingly, mutants that fail to properly compartmentalize LLO activity are cytotoxic to infected host cells and attenuated for virulence in mice.

**Innate immunity to infection.** Murine listeriosis is an outstanding model to study basic aspects of innate and acquired cell-mediated immunity. Using bacterial mutants blocked at various stages in the infection process, we are elucidating pathways of host cell gene expression in response to microbial infection. Our studies clearly document the presence of a vacuolar and cytosolic pathway of innate immune recognition. Most recently, we identified that bacteria secrete a small signaling molecule, c-di-AMP, through bacterial multidrug efflux pumps that activates a host cytosolic protein called STING leading to the transcription of type I interferon and co-regulated genes. We are currently investigating the role of this pathway during infection and immunity.

**Bacterial determinants that control pathogenesis.** We continue to use genetic screens and genomic approaches to identify and characterize bacterial determinants required for pathogenesis. Among the bacterial factors we are currently studying include enzymes that synthesize, degrade, and export c-di-AMP during bacterial growth both in culture and in cells. Most recently, we've
identified a set of bacterial factors that respond to redox stress and are specifically necessary for growth in macrophages. Bacterial and host derived glutathione are required to activate bacterial virulence gene expression.

**Acquired immunity to infection and vaccine development.** Mice that survive a challenge with sublethal doses of virulent *L. monocytogenes* acquire antigen-specific cell-mediated immunity that renders the mice resistant to subsequent challenge. Importantly, killed bacteria or bacterial mutants unable to access the host cell cytosol fail to induce immunity, while mutants that enter the cytosol, but fail to spread from cell to cell retain their capacity to induce immunity. We are interested on both the bacterial and host factors that contribute to immunity. Surprisingly, in the context of *L. monocytogenes* immunity, the STING pathway has a negative impact on development of adaptive immunity. These studies have implications for the rational design of vaccines. Indeed, *L. monocytogenes* being developed in the private sector as a vector-based vaccine for both cancer immunotherapy and infectious diseases applications.

**Selected Publications:**


Burke TP and **Portnoy DA.** SpoVG is a conserved RNA-binding protein that regulates *Listeria monocytogenes* lysozyme resistance, virulence, and swarming motility. *MBio.* 2016 Apr 5;7(2). (2016).


Witte CE, Whiteley AT, Burke TP, Sauer, JD, Portnoy DA, Woodward JJ. Cyclic di-AMP is critical for Listeria monocytogenes growth, cell wall homeostasis, and establishment of infection. mBio. 2013 May 28;4(3). (2013)


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Lab Website: https://sites.google.com/site/rileylabucberkeley/home

Courses Taught:

- PH 260A  Principles of Infectious Diseases, Part I (Fall) with Dr. Swartzberg
- PH 260E  Molecular Epidemiology of Infectious Diseases (Fall, even-numbered years)
- PH 275  Current Topics in Vaccinology (Spring, even-numbered years)

Research Interests:

- Pathogenesis of mycobacterial and enteric pathogens
- Molecular epidemiology of tuberculosis and drug-resistant gram-negative bacterial infections
- Field epidemiology and international health, focused on slum health

Selected Publications:


Tartof SY, Reis JN, Andrade AN, Ramos RT, Reis MG, Riley LW. Factors associated with Group A Streptococcus emm type diversification in a large urban setting in Brazil: a cross-sectional study. *BMC Infect Dis*. 2010 Nov 11;10:327.

George F. Sensabaugh, D. Crim.

Professor of Biomedical and Forensic Sciences
Professor of Graduate School
Professor Emeritus

Office: 319 Mulford Hall
(510) 642-1271, Fax: (510) 643-6426
E-mail: sensaba@berkeley.edu

Education:

- D Criminology - University of California, Berkeley, 1969
- BA - Philosophy, Pre-Med, Princeton University, Princeton, NJ, 1963

Courses Taught:

PH260C: Infectious Diseases laboratory Module II (Spring)

Research Interests:

- Microbial population genetics and evolution - molecular epidemiology
- Genetic variation in human populations - biological significance and evolutionary origins
- Forensic science - forensic genetics, science-law interactions, concepts of identification

Research Description:

**Microbial Population Genetics and Epidemiology**

We are interested in the genetic structure of populations of species in the genus staphylococcus and in the role of mobile elements in shaping variation within and between species.

**Forensic Science**

Our research interests focus on the analysis and interpretation of biological evidence, with a current emphasis on the utilization of biological evidence in the investigation and prosecution of sexual assault.

Current Projects:

- Genomic characterization, population structure, and evolution of Staphylococcus saprophyticus
- Review of evidence collection and DNA profile outcomes in sexual assault cases

Selected Publications:


Other interests:
- Affiliated Faculty - Graduate Group in Forensic Science, UC Davis
Sarah Stanley, Ph.D.

Assistant Professor, Infectious Diseases & Vaccinology
Office: 500C Li Ka Shing Hall
(510) 666-3729, Fax: (510) 642-6350
E-mail: sastanley@berkeley.edu

Courses Taught:

- PH263: Public Health Immunology (Fall)
- PH 293 section 3: IDI Monday Doctoral Seminar

Research Interests:

- Tuberculosis mechanisms of pathogenesis and immune subversion
- Lipid metabolism
- Innate Immunity
- Novel approaches to antibiotic development

Selected Publications:

Braverman, J, Sogi KM, Benjamin D, Nomura DK, **Stanley SA.** HIF-1α Is an Essential Mediator of IFN-γ–Dependent Immunity to *Mycobacterium tuberculosis.* Journal of Immunology 2016 July, 1600266.


**Stanley, SA,** Cox, JS. Host-pathogen interactions during *Mycobacterium tuberculosis* infections. *Current topics in Microbiology and Immunology,* 2013 July 24.


Richard S. Stephens, Ph.D., MSPH

Professor Emeritus
Office: 51A Koshland Hall
(510) 643-9900, Fax: (510) 643-1537
E-mail: rss@berkeley.edu

Research Interests:

- Molecular interactions of pathogens and the host in the context of specific microbe-cell interaction.
- The genetic basis of chlamydial developmental regulation.
- Molecular epidemiology of chlamydial infections.
John E. Swartzberg, MD, FACP

Clinical Professor, Emeritus
Chair, Editorial Board, UC Berkeley Wellness Letter
Office: 570 University Hall
(510) 643-0499, Fax: (510) 643-8771
E-mail: jes@berkeley.edu

Courses Taught:

- HMS 202 D/E: Clinical Skills
- PH 260A: Principles of Infectious Diseases (co-teach with Riley)
- PH 260B: Principles of Infectious Diseases (Spring)
- PHW 260: Principles of Infectious Diseases (Fall)
- PH 266C: Hospital Associated Infections (Fall)

Research Interests:

- Healthcare Associated Infections
- Infectious Diseases
- Journalism and Public Health

Selected Publications:

- UC Berkeley Wellness Report: "Dietary Supplements" (2016)
- UC Berkeley Wellness Report: "Eating for Optimal Health" (2016)
- UC Berkeley Wellness Report: "Women's Health" (2016)
- UC Berkeley Wellness Report: "Men's Health" (2016)
- The Physician as a 21st Century Public Health Professional, JAMA December 24/31, 2009

Other interests:

- Chair, Editorial Board - UC Berkeley Wellness Letter
MPH Program Career Opportunities

I. Research/Education -Related
1. Research analyst, research associate, research scientist, research analyst in a:
   - biotechnology, state (CDHS) or federal (CDC, LBL, FDA, NIH, etc.) laboratory;
   - county health department laboratory or division (e.g., communicable diseases, STD, TB, bioterrorism);
   - hospital-based or academic research group;
   - forensics laboratory;
   - city sanitation department.
2. As a stepping stone for a higher degree: Dr PH, PhD, DVM, MD. Many IDV MPH graduates continue on for more education immediately after graduation such as MD, DrPH, PhD degrees.
3. Licensed clinical laboratory scientist in a hospital or private laboratory at a supervisory level (must complete 12-15 month training program and licensure).

II. Public health microbiologist in a state or county public laboratory at a supervisory level (must complete 6-month training program and licensure).

III. Teaching
1. Clinical laboratory scientist or public health microbiologist training programs (with appropriate licenses).
2. Instructor or faculty in a junior college.
3. Academic coordinator for microbiology lab courses, internships, etc. in a college or university.
4. Field program supervisor, public health practice.

IV. Epidemiology-Public Health Epidemiologist in private or public sector
1. Infection control officer in a hospital or other institution.
2. Surveillance assistant in a public health department.
3. Epidemiology analyst.

V. Program Administrator
1. Biohazard inspector for a university, institute, or biotech company.
2. Environmental microbiologist.
3. Industrial hygienist specializing in infectious diseases.
4. Health facility evaluator.
5. Health program director
6. Program Coordinator/Program Analyst

VI. Journalism
2. Producer/director of science programs.

VII. Supplement (public health perspective) to an already earned doctoral degree
SPH IDV Career Center 2015 statistics
MPH Program
Curriculum Requirements

This MPH program provides a basic course of study in public health microbiology and infectious diseases. Persons with a firm background in biology but with no prior experience in infectious diseases, can gain the basic education necessary to pursue careers in the public health, industrial, and clinical fields of infectious diseases. Persons with prior backgrounds in the infectious diseases (i.e. medical technologists, clinical and public health microbiologists, nurses, physicians, etc.) can update and broaden their public health base. **Forty-eight (48) graduate units** are required for graduation. All Breadth and Division core courses must be taken in letter grades, with a minimal of a **B-** grade for graduation. Students must maintain an overall grade-point average of **at least 3.0** on the basis of all upper division and graduate courses (100- and 200-level, please note 300-level courses will not count for graduation) taken in graduate standing. No more than one third of the classes for graduation can be taken in Satisfactory or Unsatisfactory (S/U) grade. A Satisfactory grade implies work of B minus (B-) quality or better. The time required to complete the MPH degree is two years.

As part of general School of Public Health Breadth requirements, the following courses or accepted substitutes must be taken, or an exemption examination passed. More advanced level substitutes are recommended when possible.

**MPH Breadth Requirement:**

- PH 200J, K, & L  
  Public Health Core Breadth Course  
  (PH 200J- 2 units, 200L-2 units, (4 units total) (Fall 2016)  
  (PH 200K 2 units)(Sp 2017)

- PH 142  
  Probability and Statistics in Public Health and Biology (4 units) (F)

- PH 250A  
  Epidemiologic Methods (3 units) (Su) (F)

- PH 297  
  Public Health Field Study (3 units) (Do the Placement in Summer 17),  
  Register the class PH 297 in Fall 2017 in S/SU grade for 3 units

Effective Fall 2014, MPH students are required to attain a **B-** or better in Breadth Course Requirements (Epidemiology PH 250A; Biostatistics PH 142; Health Policy & Management PH 200J; Environmental Health PH 200K; Health and Social Behavior PH 200L). This rule also applies to alternative courses. Please refer to the School-wide Student Handbook 2016-17 for details. **Students attaining less than a B- will be required to retake the course in order to receive a MPH degree.** Students must also meet the “Good Academic Standing Rule” (i.e. student must maintain overall GPA of a B, which is a 3.0) to participate in the PH 297 Field Study and to graduate.
Special curricular requirements for the IDV MPH Program are as follows:

**IDV Core Requirement:**
PH 260A & PH 260B must be taken in the first year. PH 260C is also generally taken in the first year.

- PH 264 must be taken in the fall of the 2nd year.
- PH 260A Principles of Infectious Disease, Part I (4 units) (F)
- PH 260B Principles of Infectious Disease, Part II (4 units) (Sp)
- PH 260C Laboratory in Infectious Diseases (2, 4 units) (Sp) (Possible to waive one or both modules, contact Dr. Sensabaugh for details)
- PH 264 Current Issues in Infectious Diseases (2 units) *(F, 2nd yr IDV MPH students only)*
- PH 263 Public Health Immunology (3 units) (F)

**Advanced Courses:**
At least two advanced courses are required for all MPH students for graduation. Courses offered in alternate years are **in bold**.

- **PH 260E** Molecular Epidemiology of Infectious Diseases (2 units) (Fall 2016)
- **PH 260F** Infectious Disease Research in Developing Countries (2 units) (Sp 2017)
- PH 262 Molecular Basis of Bacterial Pathogenesis (3 units) (Sp)
- **PH 265** Molecular Parasitology (3 units) (Fall 2017)
- **PH 266A** Food-borne Diseases (2 units) (Fall 2016)
- PH 266B Zoonotic Diseases (2 units) (Sp)
- **PH 275** Current Topics in Vaccinology (2 units) (Sp 2018)

**IDV Division Seminars:**

All IDV MPH students are required to register for **PH 266C: Hospital Associated Infections (counts as IDV Division Seminar). Substitution by other School of Public Health seminars related to Infectious Diseases may be acceptable as IDV Division Seminar, please contact IDV Division Manager for questions. Please note it is established that PH 295 Infectious Diseases Modeling Seminar I or II by Professor John Marshall is acceptable to count as the IDV Division Seminar.**

IDI PhD students should register for and participate in PH 293 section 3: IDI Monday Doctoral Seminar (1 unit) and PH 293 section 4: IDI Wednesday Doctoral Seminar (for pre-QE IDI PhD students, others are welcome).
## MPH Program
### Sample of Two Year Course of Study

<table>
<thead>
<tr>
<th>COURSE #</th>
<th>COURSE TITLE</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 1: Fall Semester</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*PH 260A</td>
<td>Principles of Infectious Disease Part I</td>
<td>4</td>
</tr>
<tr>
<td>PH 250A</td>
<td>Epidemiologic Methods</td>
<td>3</td>
</tr>
<tr>
<td>*PH 200J &amp; L</td>
<td>Public Health Core Breadth Course</td>
<td>4</td>
</tr>
<tr>
<td>PH 142 or</td>
<td>Intro. Probability and Statistics</td>
<td>4</td>
</tr>
<tr>
<td>PH 263</td>
<td>Public Health Immunology</td>
<td>3</td>
</tr>
<tr>
<td><strong>Year 1: Spring Semester</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*PH 260B</td>
<td>Principles of Infectious Disease, Part II</td>
<td>4</td>
</tr>
<tr>
<td>PH 260C</td>
<td>Infectious Disease Laboratory</td>
<td>2, 4</td>
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<tr>
<td>PH 257</td>
<td>Outbreak Investigation</td>
<td>2</td>
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<tr>
<td>PH 200K</td>
<td>Public Health Core Breadth Course</td>
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<tr>
<td>PH 241</td>
<td>Statistical Analysis of Categorical Data</td>
<td>2</td>
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<tr>
<td></td>
<td>Required IDV Advanced Courses</td>
<td>2-4</td>
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<tr>
<td><strong>Year 1: Summer 2017</strong></td>
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<tr>
<td>*PH 297</td>
<td>Public Health Practice – Field Study Placement</td>
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<tr>
<td><strong>Year 2: Fall Semester</strong></td>
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<td></td>
</tr>
<tr>
<td>*PH 264</td>
<td>Current issues in Infectious Diseases</td>
<td>2</td>
</tr>
<tr>
<td>PH 266C</td>
<td>Hospital Associated Infections (IDV Div Seminar)</td>
<td>2</td>
</tr>
<tr>
<td>PH 253B</td>
<td>Epidemiology and Control of Infectious Diseases</td>
<td>3</td>
</tr>
<tr>
<td>PH 2xx</td>
<td>Electives</td>
<td>7</td>
</tr>
<tr>
<td>*PH 297</td>
<td>Public Health Practice – Field Study (work done in the summer, register for course in the following fall semester to receive credits)</td>
<td>3</td>
</tr>
<tr>
<td><strong>Year 2: Spring Semester</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH 2xx</td>
<td>Electives</td>
<td>8</td>
</tr>
<tr>
<td>PH 296</td>
<td>Work on Comprehensive Exam (Comp Paper mentorship), register for 2 units of PH 296 section of your assigned Comp Paper mentor faculty</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Required Advanced Course</td>
<td>2-6</td>
</tr>
</tbody>
</table>

Students must register for a minimum of 12 units each semester.
* Required course that must be taken during the semester where indicated on this document.
PH 142 can be taken in the first year or second year, only 1 semester is needed.
Additional courses offered by the School of Public Health and by other departments on the Berkeley campus may be taken to supplement the above curriculum and to satisfy particular student educational objectives. Such courses should include epidemiology, biostatistics, molecular biology, immunology, Public Health policy, MBA and behavioral science.

**Recommended Alternatives to Public Health Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Acceptable Substitutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 142</td>
<td>PH 241, 245, 252 or *exemption exam</td>
</tr>
<tr>
<td>PH 250A</td>
<td>PH 250B or *exemption exam</td>
</tr>
</tbody>
</table>

*Exemption exam will be held during Orientation

**Advanced Courses in Infectious Diseases and Vaccinology**

(Courses offered in alternate years are **bolded**)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 260E</td>
<td>Molecular Epidemiology of Infectious Diseases</td>
<td>2</td>
<td>Fall 2016</td>
</tr>
<tr>
<td>PH 260F</td>
<td>Infectious Diseases Research in Developing Countries</td>
<td>2</td>
<td>Spring 2017</td>
</tr>
<tr>
<td>PH 262</td>
<td>Molecular Basis of Bacterial Pathogenesis</td>
<td>3</td>
<td>Spring 2016</td>
</tr>
<tr>
<td>PH 265</td>
<td>Molecular Parasitology</td>
<td>3</td>
<td>Fall 2017</td>
</tr>
<tr>
<td>PH 266A</td>
<td>Foodborne Diseases</td>
<td>2</td>
<td>Fall 2016</td>
</tr>
<tr>
<td>PH 266B</td>
<td>Zoonotic Diseases</td>
<td>2</td>
<td>Sp</td>
</tr>
<tr>
<td>PH 266C</td>
<td>Hospital Associated Infections(count as IDV Div seminar)</td>
<td>2</td>
<td>Fall</td>
</tr>
<tr>
<td>PH 275</td>
<td>Topics in Vaccinology</td>
<td>2</td>
<td>Spring 2018</td>
</tr>
</tbody>
</table>
**Recommended Electives:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 219D</td>
<td>Social and Behavioral Health Research</td>
<td>3</td>
</tr>
<tr>
<td>PH 241</td>
<td>Statistical Analysis of Categorical Data</td>
<td>2</td>
</tr>
<tr>
<td>PH 245</td>
<td>Introduction to Multivariate Statistics</td>
<td>4</td>
</tr>
<tr>
<td>PH 253B</td>
<td>Epidemiology and Control of Infectious Diseases</td>
<td>3</td>
</tr>
<tr>
<td>PH 253D</td>
<td>Behavioral &amp; Policy Science in HIV Treatment &amp; Prevention</td>
<td>3</td>
</tr>
<tr>
<td>PH 257</td>
<td>Outbreak Investigation</td>
<td>2</td>
</tr>
<tr>
<td>*PH 250B</td>
<td>Epidemiologic Methods II</td>
<td>4</td>
</tr>
<tr>
<td>PH 2xx</td>
<td>Bridge courses to other areas in Public Health, i.e. Epidemiology, Nutrition, Aging, International Health, health Policy and Administration, Community Health</td>
<td></td>
</tr>
<tr>
<td>MCB 110</td>
<td>General Biochemistry and Molecular Biology</td>
<td>4</td>
</tr>
<tr>
<td>MCB 210</td>
<td>Macromolecular Reaction and the Cell</td>
<td>4</td>
</tr>
<tr>
<td>MCB 250</td>
<td>Advanced Immunology</td>
<td>4</td>
</tr>
<tr>
<td>PH 251C</td>
<td>Casual Inference and Meta-Analysis in Epidemiology</td>
<td>2</td>
</tr>
<tr>
<td>PH 252C</td>
<td>Intervention Trial Design</td>
<td>3</td>
</tr>
<tr>
<td>PH 144A/B</td>
<td>Introduction to SAS Programming</td>
<td>2</td>
</tr>
<tr>
<td>PH 272A</td>
<td>Geographic Information Science for Public and Environmental Health</td>
<td>4</td>
</tr>
<tr>
<td>PH 227A</td>
<td>Healthcare Finance</td>
<td>3</td>
</tr>
<tr>
<td>PH 269E</td>
<td>Environmental Medicine</td>
<td>2</td>
</tr>
<tr>
<td>PH 253G</td>
<td>Sexual Health Promotion and Sexually Transmitted Diseases</td>
<td>2</td>
</tr>
<tr>
<td>PH 220D</td>
<td>Health Policy Advocacy</td>
<td></td>
</tr>
<tr>
<td>PH 204F</td>
<td>Culture, Public Health Practice, and Eliminating Health Disparities: From Ideas to Action in the 21st Century</td>
<td>3</td>
</tr>
</tbody>
</table>

* highly recommended
MPH Field Study Practice Requirement

All MPH students in the School are expected to complete a field training or project-based public health practice activity following the first year of academic study in public health. This entails a 12 week, full-time work experience during the summer between the 1st and 2nd year. Unit credit is received by registering for 3 units of Public Health Practice Field Study (PH297) in the fall semester of the 2nd year.

The Center for Public Health Practice (CPHP) provides the academic and administrative structure for meeting this practice requirement for the MPH degree. To receive academic credit, students need to complete four activities: Internship Agreement, Mid-Point Update/Site Visit, Final Evaluations, Final Project. Please visit the Center for Public Health Practice web-site at: http://sph/cphp/index.php for more information.

Infectious Disease students can fulfill the public health practice requirement by active participation in a research or field project within the School or by working in a public health agency at the local, state, national, or international level. Examples of field placements from past years are listed below. Students should start planning for their public health practice project at least by the beginning of the Spring semester of the 1st year. Students are encouraged to attend CPHP’s preparatory sessions and work closely with the Field Supervisor assigned to the IDV students and start to look for field work early. CPHP will hold a few workshops to prepare students for international field study.

Agencies where students were placed during the last few years include:

University Mayores de San Andres, La Paz, Bolivia
California Dept. of Public Health (CDPH), Richmond
- TB Control Branch
- HIV Prevention Training Center
- Alcohol Research Group: Bar Study

UCSF-GI Division
- SF General Hospital/Division of Internal Medicine
- Grant Laboratory Gladstone Institute of Virology & Immunology
- UCB Global Framework
- Global Health Group-Zanzibar Malaria Control Program
- Parnassus - Pediatric Immunology
- Blood Systems Research Institute

University of Zimbabwe
NIH Malaria Training Program, Mali
ID Branch, Ministry of Health, Nicaragua
UCOP CA Breast Cancer Research Program
SFDPH STD Prevention and Control Services
NIH, Bethesda
California Emerging Infections Program
Les Cantres GHESKIO, Haiti
Thailand Ministry of Public Health
City of Berkeley Bioterrorism Preparedness
Alta Bates Medical Center, Berkeley
Contra Costa County, Alameda County and San Francisco, Dept of Public Health
Ctr for Infectious Disease & Emergency Readiness
CDC, Washington D.C.

Emerging Drug Resistance -Malaria, Uganda
National Institute of Infectious Diseases-Japan
Meheba Refugee Settlement- Zambia
Providence Cancer Center-Portland, Oregon
WHO-Geneva, Switzerland
Fundacao Oswaldo Cruz- Centro de Pesquisa Gonçalo Moniz – FIOCRUZ
Zambia-Meheba Refugee Settlement-
UN Internship Program (NY)
Pan Am Health Organization, Washington DC
Family AIDS care & Education Services, Kenya
Prevention International, Kenya
Project AIDS East Bay, Oakland
HEAL Africa, Democratic Republic of Congo & Berkeley
### IDV MPH Summer 2016 Field Study Placements

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Field Study</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lauren Gernon</td>
<td>CDPH Infectious Diseases Branch (Disease Investigations Section)</td>
<td></td>
</tr>
<tr>
<td>2. Sarah Petnic</td>
<td></td>
<td>Richmond</td>
</tr>
<tr>
<td>3. Michelle Leishman</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Naveen Makhdum</td>
<td>CDPH Immunizations Branch (Health Education)</td>
<td></td>
</tr>
<tr>
<td>5. Alison Ohringer</td>
<td>CDPH Viral Hepatitis Program</td>
<td></td>
</tr>
<tr>
<td>6. Akio Hasegawa</td>
<td>Research with Dr. Sensabaugh</td>
<td>Berkeley</td>
</tr>
<tr>
<td>7. Kevin Mandagere</td>
<td>Research with Dr. Wolfe Nadoolman</td>
<td></td>
</tr>
<tr>
<td>8. Maria Ma</td>
<td>Roche Molecular Diagnostics</td>
<td>Pleasanton</td>
</tr>
<tr>
<td>9. Justine Maher</td>
<td>UCSF Infection Control</td>
<td>San Francisco</td>
</tr>
<tr>
<td>10. Ina Zhang</td>
<td>Metabiota</td>
<td></td>
</tr>
<tr>
<td>11. Claudia Greene</td>
<td>Division of Public Health Bureau of Infectious Disease</td>
<td>New Hampshire</td>
</tr>
<tr>
<td>12. Megan Mcintosh</td>
<td>Forum for Collaborative HIV Research</td>
<td>Washington, DC</td>
</tr>
<tr>
<td>13. Sayah Bogor</td>
<td>International Centre for Diarrhoeal Disease Research</td>
<td>Bangladesh</td>
</tr>
<tr>
<td>14. Dorian Jackson</td>
<td>University of Liverpool School of Tropical Medicine</td>
<td>Liberia</td>
</tr>
<tr>
<td>15. Emily Pearman</td>
<td>Universidade Federal Fluminense</td>
<td>Brazil</td>
</tr>
<tr>
<td>16. Samuel Schildhauer</td>
<td>Ministry of Public Health Bureau of Epidemiology</td>
<td>Thailand</td>
</tr>
</tbody>
</table>
Comprehensive Examination

Students graduating from the MPH Program in Infectious Diseases are expected to possess both core knowledge and critical thinking skills in the area of infectious diseases and a basic understanding of the scope of public health. Students are evaluated for competency in these areas through a comprehensive examination which consist of two components:

1. Preparation of an analytical, comprehensive paper on a topic involving infectious diseases in the public health context, and;
2. An oral examination (conducted in April of their last semester).

The preparation of the analytical paper is initiated during the Fall Term of the 2nd year in the course “Current Issues in Infectious Diseases” (PH 264). Students are to identify their paper topic early in the Fall semester. The topic may build upon the student’s own experience, e.g., a laboratory research project, the field study or a community intervention project. Alternatively, the student may develop a novel topic of his/her own interest, e.g. a policy proposal on a public health issue or a research proposal. Second year IDV MPH students present Field Study projects in the IDV MPH symposium.

**Students should start working on the Comp Paper topics early in Fall**

Once the topics are approved, students will be assigned to faculty mentors who will help them with the development of the paper. During the Fall semester PH 264 course, students will give presentations reviewing progress on their papers for peer critique. The paper is completed in the Spring semester under the mentorship of a faculty member in the program assigned to the student under the PH 296 Special Study (2 units) course number.

Students should start early to meet with their faculty mentors in late Oct/Nov to discuss their proposed paper topics and set a schedule and adhere to it for the work to be done. Students should update/meet with their mentors regularly on their progress and made revisions to the paper per feedbacks given. A highly complete draft is due to the faculty mentor in mid-February. The final written paper is due in mid-March to the Division prior to Spring Break and is typically 10-15 pages, single spaced, in length. **Deadlines must be strictly adhered to.** No late submission will be accepted.

Students submitting acceptable comprehensive papers are then qualified to take the oral examination and will be given the Oral Exam questions to study when submitting the final written paper to the Division on March 15, 2017. Students must follow the Comp Paper guidelines and meet the time lines. Detailed information will be given out by the instructors of PH 264.

The oral exams are administered during the two-week period immediately following Spring Break starting in April. Each student will be examined by two members of the faculty; exams are one hour in length. A portion of the exam tests the student’s knowledge of infectious diseases in the public health context. The exam may also include questions and discussion concerning the analytical paper and general public health issues.
Financial Aid

There are several sources of financial support available for MPH students in IDV Division:

Graduate Division Fellowships:

**Block Grant (BG) for Academic Excellence.** For new students BG, usually about 1 award for IDV which is processed through SPH fellowship competition process per nominated by Division during admission process. In addition, about 10 Block Grants awards for continuing students for the entire School. SPH Student Services will administer and call for applications for BG award for continuing students. Please watch out for emails from Student Services

**Graduate Opportunity Fellowships:** usually 1 per year for IDV

**SPH Full Fellowship:** usually one per year for IDV

**Community Health Fellowships-Kaiser Community Scholars:** one or two awards per year for IDV

**Graduate Student Instructors (GSI):** about 9 per year for courses in our Division. GSI appointment is similar to Teaching Assistants in other universities, all come with partial fee remission in addition to salary income. Current salary rate is $964.75 for 25% appt (about 10 hrs work) and $1929.5 for 50% (about 20 hrs wk) for 5 months. First time GSI required to complete the new GSI requirements as a condition for employment. Many for science courses offered by department s such as Molecular and Cell Biology Dept and Integrative Biology hire a lot of GSI each semester. These courses include BIO 1A and 1B courses. Please visit the respective department website for details. Application for GSI positions usually made at least one semester in advance. Contact the respective Student Affairs Officers and their website for details and pay attention to email announcements at SPH weekly student digest. Please note last minute GSI job openings may be available prior to semester starts. Students interested to apply for GSI should always highlight your academic qualifications and credentials and your teaching assistant/tutoring experience in your application.

**Graduate Student Researchers (GSR):** GSRs positions are usually hired by faculty and sometimes by research centers for administering projects or programs. For appointment 25%-44% GSR appointments, it will give partial fee remission as benefits. For 45% or above GSR appointments, students will get full fee remission. GSRs are subject to availability of funds and research needs. Please contact individual professors to see if they have any positions available. Moreover, faculty usually will give preference to PhD students for GSR appointments.

**Work Study Job or Other Job Opportunities** will be announced in Student Services students weekly digest among other announcements as well as SPH Career Center job site.

Please note that you can convert some of your loan amount to work study (if you do not offer any) this will
Financial Aid

make you more competitive in the process as under the Workstudy program, the employer only needs to pay half of your salary, the other half will come from the Government. Unlike loans, which is guaranteed funding, Workstudy award is only an amount of how much you can earn within the Workstudy program, you still have to land on the job and earn the income. Please visit workstudy program website at http://financialaid.berkeley.edu/work-study and contact Financial Aid Office for questions.

Useful website for jobs:

Work Study: http://workstudy.berkeley.edu/JobSearch.aspx

Campus Career Center: https://career.berkeley.edu/Callisto/CalJobs.stm

School of Public Health Career Center: https://ucalhealth-csm.symplicity.com/

Association for Schools and Programs for Public Health (ASPPH) link for students to find outside scholarship and external financial aid http://www.aspph.org/study/financing-your-degree/
PH C102: Bacterial Pathogenesis (3 units)
Course Format: Three hours of lecture per week.
Prerequisites: Molecular and Cell Biology C100A/Chemistry C130 or Molecular and Cell Biology 102 or consent of instructor.
Description: This course for upper division and graduate students will explore the molecular and cellular basis of microbial pathogenesis. The course will focus on model microbial systems which illustrate mechanisms of pathogenesis. Most of the emphasis will be on bacterial pathogens of mammals, but there will be some discussion of viral and protozoan pathogens. There will be an emphasis on experimental approaches. The course will also include some aspects of bacterial genetics and physiology, immune response to infection, and the cell biology of host-parasite interactions. Also listed as Molecular and Cell Biology C103 and Plant and Microbial Biology C103.
(Sp) Portnoy

PH 162A: Public Health Microbiology (3 units) (Fall)
Course Format: Two 1½-hour lectures per week.
Prerequisites: One year each of college-level biology and chemistry.
Description: Introduction to properties of microorganisms; their relationships with humans in causing infectious diseases and in maintaining health. May be taken without 162L.
(F) Buehring; (Su) Dailey

PH 162L: Public Health Microbiology Laboratory (1 unit) (Fall)
Course Format: One 2-hour laboratory per week.
Prerequisites: One year each of college-level biology and chemistry.
Description: Laboratory to accompany 162A.
(F) Loretz,

PH 260A-260B: Principles of Infectious Diseases (4;4 units) (260A Fall; 260B Spring)
Course Format: 4 hours of lecture per week.
Prerequisites: Upper division course preparation in biology
Description: This course presents general principles of microbial interactions with humans that result in infection and disease. Common themes are developed using examples of viral, bacterial, and parasitological pathogens that exemplify mechanisms of infectious disease. The epidemiology, pathogenesis, host immune response, diagnosis, treatment, and control will be presented for each infectious disease discussed.
PH 260A: (F) Riley & Swartzberg.; PH 260B: (Sp) Swartzberg

PH 260C: Infectious Disease Laboratory (2,4 units) (Spring)
Course Format: Two 7½-week modules, each with two 2-hour lectures and two 3-hour laboratories per week.
Prerequisites: PH 260A or consent of instructor. Students may take a single module for 2 units of credit.
Description: Module I: Practice in standard techniques for the isolation, identification, and characterization of infectious agents; laboratory safety. Module 2: Application of molecular methods to the identification and characterization of infectious agents, vectors, and hosts.
(Sp) Loretz (Module I, 1st 7 wk) & Sensabaugh (Module II, 8 to 14 wk)

43
PH 260E: Molecular Epidemiology of Infectious Diseases (2-3 units)
(Fall of even-numbered years)

Course Format: Three hours of lecture and ½ hour of discussion per week.
Prerequisites: PH 250A, PH 260A or equivalent course.

Description: The course will cover general principles and practical approaches in the use of molecular laboratory techniques to address infectious disease epidemiologic problems. It is designed for students with experience in the laboratory or in epidemiology, but not both. The principles to be discussed will include the use of molecular techniques in outbreak investigations, characterizations of dynamics of disease transmission, identifying vehicles, and quantifying attributable risks in sporadic infections, refining data stratification to assist case-control studies, distinguishing pathovars from non-pathogenic variants of organisms, doing surveillance, and identifying genetic determinants of disease transmissions.

(Fall 2016) Riley

PH 260F: Infectious Disease Research in Developing Countries (2 units)
(Spring of odd-numbered years)

Course Format: Two hours of lecture per week.

Description: The objective of this course is to provide M.P.H. and Ph.D. students with an appreciation and understanding of the complex issues involved in conducting scientific, laboratory-based investigation in developing countries. We will discuss the many obstacles to establishing and sustaining research projects, such as poor infrastructure, insufficient financial and material resources, and lack of scientific information and interaction. More importantly, we will identify innovative solutions to overcoming these obstacles. The first half of the course will consist of presentations by investigators in the U.S. and developing countries that have long-term research experience in Latin America, Asia, and Africa. We will also discuss related issues such as ethical considerations, equitable collaborations, and research capacity strengthening. During the second half of the course, students will give presentations on topics of their choice.

Offered in odd-numbered year.

(Sp) Harris

PH 262: Molecular and Cellular Basis of Bacterial Pathogenesis (3 units) (Spring)

Course Format: Three hours of lecture and 1 hour of literature review per week.
Prerequisites: PH 260A, PH 260B, or consent of instructor.

Description: This course for graduate students will explore the molecular and cellular basis of bacterial pathogenesis. The emphasis will be on model bacterial pathogens of mammals. The course will also include some aspects of bacterial genetics and physiology, immune response to infection, and the cell biology of host-parasite interactions. Public health courses 102 and 262 are taught concurrently. Students enrolled in PH 262 also will be required to attend a weekly discussion of the primary literature, both current and classic. Each student will be required to present one paper.

(Sp) Portnoy
PH 263: Public Health Immunology (Fall)

Course Format: Three hours of lecture and 1 hour of literature review per week

Description: This course will be the principal immunology course for graduate students in the field of public health. It is designed to teach both the basic biology of the human immune system and its response in health and disease, especially the specific response of the human immune system to major human pathogens. Four areas will be explored: 1) components of the immune system (spectrum of cell types and cell products); 2) different arms of the immune system including humoral, cell-mediated, innate and mucosal immunity; 3) specific immune response to infection caused by viral, bacterial, fungal, and parasitic pathogens; and 4) disorders of the immune system unrelated to infectious disease.

(F) Stanley

PH 264: Current Issues in Infectious Diseases (2 units) (Fall)

Course Format: One 2-hour lecture and presentation per week.

Prerequisites: 2nd year Infectious Diseases M.P.H. students only.

Description: Formerly PH 264A-264B. Examination of scientific, social, and policy dimensions of issues involving infectious diseases. Students select one topic for in-depth analysis and present findings in class. Topics vary from year to year.

(F) Liu, Dailey

PH 265: Molecular Parasitology (3 units) (Fall of odd-numbered years)

Course Format: Two 1½-hour lectures and 2 hours of discussion per week for 11 weeks.

Prerequisites: Upper division courses in molecular biology, parasitology, biochemistry, immunology, microbiology, or consent of instructor. Familiarity with reading primary research is recommended.

Credit Option: Course may be repeated for credit.

Description: This is an advanced course in the molecular aspects of parasite immunology, molecular biology, genetics, biochemistry, and genomics. For each parasite, the following areas will be covered: biology (history, classification/taxonomy, life cycle), disease spectrum/clinical manifestations, epidemiology (distribution, impact), pathogenesis, immunology (host immune response, immunopathology), vaccine development, and genomics. The lectures will focus on "state-of-the-art" research and knowledge in these areas in relation to molecular mechanisms of pathogenesis, parasite adaptions for survival within the host, and strategies for drug and vaccine development. Course content will rely heavily on current literature. Readings are required and consist of one review article about each parasite and several primary research articles on selected topics that will be focused upon in the lectures.

(F) Harris
PH 266A: Foodborne Diseases (2 units) (Fall of even-numbered years)

Course Format: 1½ hours of lecture per week.

Prerequisites: Basic knowledge of microbiology.

Description: This course will cover public health, microbiological, social, and economical issues related to foodborne diseases. Three areas will be explored: 1) categories, clinical manifestations, and disease processes of foodborne illness; 2) etiological agents causing foodborne illness; 3) investigation and prevention of foodborne illness. The course will discuss different types of foodborne diseases, clinical manifestations, and the interactions between etiological agents (pathogens and non-pathogens) and human hosts. We will cover pathogens that are the most frequently associated with foodborne illness, including bacterial and viral pathogens such as Salmonella, E. coli, hepatitis viruses and Norwalk-like gastroenteritis viruses. We will also study non-pathogen agents such as heavy metal, pesticide, and toxic chemicals. Furthermore, the course will discuss how to identify the etiological agents in outbreaks and possible measures that can be taken to minimize the risk to the public, including vaccines and education. Finally, we will explore the social and economic issues involved in the food production, distribution, and consumption that contribute to foodborne diseases.

(F) Lu

PH 266C: Hospital Associated Infections (2 units) (Fall)

Course Format: 1 hour lecture and 1 hour discussion per week.

Description: This course will examine and evaluate the principles underlying the control of infections in healthcare settings, the causes of these infections, current important topics in this field and future trends. Students will gain an appreciation of the national and local programs involved in preventing HAI’s, their major causes, antimicrobial control, and specific agents and procedures causing HAI’s. The class instructors have spent many decades in infection control in healthcare settings. Additional, there will be an invited guest for each class who has extensive knowledge of the topic to be discussed. (Count to meet IDV Division Seminar requirement)

(F) Swartzberg

PH 275: Current Topics in Vaccinology (2 units) (Spring of even-numbered years)

Course Format: One 2-hour lecture per week.

Prerequisites: Principles of Infectious Disease (PH 260A); basic immunology course.

Description: This is an advanced infectious disease course designed to cover issues related to the biological aspects of vaccinology. It will begin with discussions related to the concepts of correlates of protection, new understanding of cell-mediated and humoral immune response, and mucosal immunity. Then, topics related to the latest developments in recombinant vaccine technology, vaccine delivery systems, “naked DNA” vaccines, “designer” vaccines (“edible vaccines”), and the status of AIDS vaccine as a paradigm for new vaccine development will be covered. Each session will begin with a didactic lecture on topics outlined in the syllabus. This will be followed by a 10-15 minute discussion session based on published studies assigned for the week. Two students will lead the discussion at each session. A satisfactory letter grade or a passing grade will be based upon participation in class discussions, presentation, and a five-page paper.

(Sp) Riley

PH 291A: Preparation for Public Health Practice (1 unit)

Course Format: Two hours of seminar every other week.

Description: Seminar providing area of concentration-specific preparation for M.P.H. internship.

(F) Field Studies program staff
PH 291: Public Health Professional Development Series (1 unit)

Course Format: Two hours of workshop every week.

Description: A series of skills-based workshops designed to introduce the student to specialized skills needed in the public health workplace. These workshops are designed to complement the core curriculum of the School of Public Health and are selected based on regular feedback from faculty, public health practitioners, and students. Workshop facilitators include consultants, CPHP field supervisors, and public health practitioners with expertise in the subject. This course or series of workshops is open to all M.P.H. and Dr.PH. students. Students select from a list of 2-hour workshops to total 1 unit equal to 15 hours of class time, plus readings that are assigned for many of the workshops. Workshop topics have included writing for publication, moderating focus groups, human resources management, legislative policy and advocacy, negotiation, evaluation, tools for financial planning, scientific grant writing, leadership, oral presentations, strategic planning, cultural competency, time management, and budgeting.

(Sp) CPHP staff

PH 293: Doctoral Seminar (1-4 units)

Course Format: One to four hours of seminar per week.

IDI Monday Doctoral Seminars PH 293 section 3 (1 unit, letter grade) Instructor: (Fall 2016) Stanley IDI
Wednesday Doctoral Seminar PH 293 section 4 (2 units, letter grade) Instructor: (Fall 2016) Liu

Credit Option: Course may be repeated for credit.

Description: Discussion and analysis of dissertation research projects, as well as of conceptual and methodological problems in planning and conducting health research.

(F, Sp) Faculty

PH 295: Seminars (1-4 units)

Course Format: One to four hours of seminar per week.

Credit Option: Course may be repeated for credit.

(F, Sp) Staff

PH 296: Special Study (1-10 units)

Course Format: Independent study.

Credit Option: Course may be repeated for credit.

Description: Designed to permit any qualified graduate student to pursue special study under the direction of a faculty member. For IDV MPH students, you should sign up for two units for the Work on the Comprehensive Paper in their second year Spring Semester.

(F, Sp) Faculty
PH 297: Field Study in Public Health (3 units) S/SU grade only
Course Format: Field Study.
Grading Option: Must be taken on a satisfactory/unsatisfactory (S/U) grade.
Description: Supervised experience relevant to specific aspects of public health in off-campus organizations for graduate students. Regular individual meetings with faculty sponsor and written reports required. IDV students should sign up for 3 units. (Field Study will be completed in the summer after the first year; student should register the class in their second year fall semester) Staff

PH 298: Group Study (1-8 units)
Course Format: Independent study.
Credit Option: Course may be repeated for credit.
(F, Sp, Su) Faculty

PH 299: Independent Research (1-12 units)
Credit Option: Course may be repeated for credit.
Description: Independent study.
(F, Sp, Su) Faculty
Seminar Offerings

Fall 2016 & Spring 2017:

**IDI Doctoral Seminar series:**

- **PH 293 Sec. 3**  IDI Monday Doctoral Seminar (1 unit, letter grade) (Fall and Spring)
- **CCN 29834**  Instructor: Dr. S. Stanley
  - Mondays, 10 a.m. to 11 a.m., 103 GPB
  - All IDI PhD students must register and participate in this class for 1 unit and in letter grade

- **PH 293 Sec. 4**  Wednesdays Doctoral Seminar (2 units, letter grade) (Fall 2016)
- **CCN 29835**  Instructor: Dr. Liu
  - Wednesdays 10:00 to noon, 440 U Hall
  - Discussion and analysis of dissertation research projects, as well as conceptual and methodological problems in planning and conducting health research. IDI PhD students who have not passed the QE must take this course every semester.

**IDV Division Seminar series:**

**Fall 2016:**

- **PH 266C**  Hospital Associated Infections (2 units)
- **CCN 34535**  Instructor: Dr. Swartzberg
  - Thursday, noon to 2 p.m. 256 U Hall

**Course Description:**

This course will look at and evaluate the principles underlying the control of infections in hospitals, the causes of these infections, current important topics in this field and future trends. Students will gain an appreciation of the national and local programs involved in HAI’s, their major causes, antimicrobial control, and specific agents and procedures causing HAI’s.
Ph.D. Program Introduction

The study of infectious disease and immunity focuses on those interactions between infectious agents, their human and other hosts, and their relationship to the environment that may lead to disease in humans. Infectious disease agents include primarily pathogenic bacteria, fungi, helminthes, protozoa, and viruses that continue to be leading causes of morbidity and mortality in human populations throughout the world. The treatment, control, and prevention of infectious diseases depend upon an in-depth knowledge of the biology and genetics of the pathogen; the factors that allow pathogens to infect, persist in the host and produce disease; and the host’s defense mechanisms that bring about recovery. This requires an integration of the disciplines of molecular and cellular biology, genetics, immunology, microbiology (which include virology, bacteriology, mycology as well as parasitology) and epidemiology.

The Graduate Group in Infectious Diseases and Immunity is an interdepartmental graduate program that provides graduate students an opportunity to obtain a Ph.D. degree that is unique in emphasizing integrated, multidisciplinary training of host-pathogen-environmental interactions. Important areas of inquiry include the molecular biology of host-pathogen interactions where the molecular and cellular biology of pathogenesis will be investigated; the ecology, evolution, and transmission of infectious agents where the mechanisms of infectious disease acquisition through environmental factors, intermediate hosts and vectors are integrated with biology, surveillance and epidemiological analysis; and prevention and control where the relationship between host immunity and preventive public health practices are integrated with molecular approaches for detection and vaccine and drug development.

The objective of this program is to provide students with research-oriented pursuits that will train them to design and implement independent investigations and advance the fundamental knowledge of infectious disease agents and their interactions with the human host and the environment. The goal is to promote health by integration of basic research and applied technologies for the development of new approaches for the diagnosis, treatment, prevention, and control of infectious disease in humans. This program crosses traditional departmental boundaries to combine clinical, epidemiological, and basic laboratory research strategies in modern biology and apply these to specific infectious disease problems affecting human populations. Thus, students that matriculate from this program will acquire expertise in fundamental infectious disease research for which there is demand from academic institutions, local and national government agencies, and biotechnology companies.
Ph.D. Program  
Admission and Curriculum

I. Undergraduate Preparation for Admission
Applicants with a B.A. or B.S. degree, typically in the biological sciences, from accredited institutions must meet the following minimal qualifications for admission:
   a) satisfactory record of scholarship (minimum GPA of 3.0),
   b) evidence of significant intellectual potential (GRE scores), and
   c) demonstrated competence in English.

Admission Criteria: Final selection for admission follows the ranking of all applicants on the basis of academic record, intellectual potential, preparation, letters of recommendation, research interests, and overall promise, as well as availability of enrollment allocation (determined by the Campus) for the program. Admissions are limited to the top 10% of the applicants depending on available allotment. Because a major part of the program is laboratory research training, each admitted student must be acceptable to at least three faculty members who would commit to providing research training in their laboratory.

The following subjects are normally required as undergraduate preparation for all candidates. Deficiencies must be made up early during the graduate program.
   a) Mathematics: calculus; one course in probability or statistics.
   b) Physics: general physics.
   c) Chemistry and biochemistry: inorganic chemistry; organic chemistry; biochemistry and associated laboratories.
   d) Biology: general biology lecture and laboratory; genetics, and a basic course in molecular biology.

Applicants are reviewed by the Group Admissions Committee appointed by the Group Chair and are considered for entry in the fall semester only. Admission recommendations are forwarded to the Dean of the Graduate Division for final approval.

II. Foreign Language
There is no requirement for a foreign language.

III. Program of Study

1. Program
In addition to the minimal core course requirements (listed below – see Section II, Part 3), each student shall take additional courses selected in consultation with the major professor and/or Graduate Advisor and approved by the Group Executive Faculty Committee. The specific courses will not be listed here since this part of the student’s curriculum will be tailored to meet identified professional career goals. In addition, laboratory rotations, teaching, Candidacy examination, research resulting in a dissertation and a culminating seminar are required for completion of the Ph.D. degree.
2. Unit Requirements

**Doctor of Philosophy:**

Students should take a minimum of twelve units each semester to qualify for full time students, and are advised not to take more than 16 to avoid academic overload. Any class load exceeding 20.5 units will need the Head Graduate Advisor's approval. The minimum requirements include a) general training in molecular biology, epidemiology, statistics, and research ethics; and b) specific training in infectious disease related to their major interest to obtain more specialized preparation. It is expected that students will complete a minimum of 30 units of predominantly graduate-level courses, in addition to 4 units of graduate seminar. All IDI PhD students must enroll and participate in PH 293 section 12 the IDI Seminar Series: Monday Doctoral Seminar. In addition, IDI PhD students who have not passed their qualifying examinations must enroll and participate in Wednesday Doctoral Seminar PH 293 section 4.

During the first three to four semesters of the program, doctoral students complete all or most of the course work required for the degree and rotate through the research laboratories of one to three faculty members, who evaluate the student’s ability to conduct laboratory research. This allows the student to determine what research opportunities are available to them, to learn new research methods that will be of value in their subsequent dissertation research, and to decide on a suitable research project for their dissertation.

The Candidacy examination is taken no later than the 4th semester. Within three months of passing the examination, the student is required to apply for Advancement to Candidacy for the Ph.D. degree, and then complete the requirements for the degree under Plan B of the Graduate Division, by submitting an acceptable dissertation on a suitable research question in a timely fashion.

**3. Required and Recommended Courses, including teaching requirement**

The following minimum core graduate courses, or their equivalent, are required of all students in the Graduate Group. These courses should be taken before the Qualifying Examination Committee is appointed, and the student must receive a “B” or higher grade average in these courses, except seminars that may be taken on a S/U basis.

**Group I: Infectious Diseases (2 courses)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Instructor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 260A</td>
<td>Principles of Infectious Disease, Part I (4 units); Riley &amp; Swartzberg</td>
<td>and one of the following:</td>
</tr>
<tr>
<td>PH 260B</td>
<td>Principles of Infectious Disease, Part II (4 units); Swartzberg &amp; Riley</td>
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<tr>
<td>PH 262</td>
<td>Molecular Basis of Bacterial Pathogenesis (3 units); Portnoy</td>
<td></td>
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<tr>
<td>PH 265</td>
<td>Molecular Parasitology (3 units); Harris</td>
<td></td>
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</tbody>
</table>

**Group II: Immunology (1 course)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>PH 263</td>
<td>Public Health Immunology (3 units) Stanley</td>
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<td>or:</td>
<td></td>
</tr>
<tr>
<td>MCB 250</td>
<td>Advanced Immunology (4 units); Raulet/Robey/Shastri</td>
</tr>
</tbody>
</table>
Group III: Epidemiology and Biostatistics (2 courses)

PH 145 Statistical Analysis of Continuous-Outcome Data (4 units)
or:
PH 245 Introduction to Multivariate Statistics (4 units)

PH 253B* Epidemiology and Control of Infectious Diseases (3 units); Reingold
or:
PH 260E Molecular Epidemiology (3 units); Riley

*Note: IDI PhD students without an epidemiology background are strongly encouraged to read more about Epidemiology and/or take 250A prior to taking PH 253B

Group IV: Research (2 courses)

PH 293 IDI Monday Doctoral Seminar section 3 (1 unit), required every semester
& IDI Wed Doctoral Seminar section 4 (2 units) for pre-QE students, others are welcome.
In addition to the required courses listed above, students will elect at least a few additional course work appropriate to the student’s area of research interest with the guidance of the Graduate Advisor and other faculty.

Examples for electives:
PH 250 A Epidemiologic Methods I (4 units)
MCB 210 Molecular and Cell Biology (4 units) Rio
PH 266A Foodborne Diseases (2 units); Lu
PH 260F Infectious Disease Research in Developing countries (3 units); Harris
PH 266B Zoonotic Diseases (2 units); Dailey
PMB 200B Genomics and Computational Biology (1.5 units) Brenner
PH 275 Current Topics in Vaccinology (3 units); Riley
MCB 230 Advanced Cell Biology (4 units); Bilder
MCB 259J Immune Evasion by Viruses (2 units); Coscoy

4. Lab Rotations
Rotations in lab provide an opportunity for students to experience different research areas and environments. Lab rotation should be arranged by mutual agreement with the faculty and the student in consultation with the IDI Head Graduate Advisor. Each lab rotation may last 9 weeks and should begin as early as desired, but no later than the mid of the first semester. Students are suggested to do at least one or two lab rotations before deciding on the lab for their research. IDI PhD first year students must decide on their lab at the end of April 2017 or early May 2017, the latest. They should inform the Head Graduate Advisor and the IDV Division on their lab decision once the information is available for the continuality of student funding support by the PI of the lab they joined.

5. Teaching Requirements
Teaching is an important part of training for a scientist and an educator. Doctoral students are required to work as GSIs for at least two semesters (50% GSI is preferable) to fulfill the teaching requirements for the program.
6. **Qualifying Examination**

The Qualifying Examination (QE) is usually taken late in the second year of graduate study (in the fourth semester), after all course requirements have been completed with a grade-point average of at least 3.0, excluding lower-division courses, seminars, and research. Each student will choose a four-member faculty committee. The committee membership must be cleared with the Division and approved by the Program Chair of the IDI Graduate Group and then approved and appointed by the Dean of the Graduate Division. Both the QE Chair and Academic Senate Representative must be members of the Berkeley academic senate. The QE Chair cannot also serve as the Chair of the student’s Dissertation committee. The fourth member can be from the IDI department or other departments with expertise on the subject matter. The Ph.D. Qualifying Examination consists of an oral defense of two written research proposals (10-15 pages each). The Qualifying Exam Application must be submitted to the IDV Division for onward submission to the Grad Division for approval at least three weeks prior to the proposed exam date. **No students can take the QE Exam without the Grad Division’s approval.**

One proposal represents the student’s proposed dissertation research, but the other must be on an unrelated topic pertaining to infectious diseases. The Chair of the Ph.D. Qualifying Examination Committee must approve both proposals. During the examination, questions by the committee focus on the background and theory of the proposed research, the rationale for the presented methods of data analysis, the experimental approach, etc., and not on the actual research results. The latter is a function of the dissertation committee. The purpose of the examination is to test your ability to recognize research problems of fundamental importance, to propose experimental approaches to address problems, and to demonstrate comprehensive knowledge of your disciplinary area and related subjects to test the student’s mastery of a broad area of knowledge reflecting the interdisciplinary preparation of an approved course of study. Please visit IDI website for IDI Guidelines for QE at [http://microbe.berkeley.edu/idgroup/currents.html](http://microbe.berkeley.edu/idgroup/currents.html).

7. **Advancement to Candidacy**

Within the same semester, or the latest, by the following semester, of passing the qualifying examination, students must apply for advancement to candidacy for the Ph.D. degree by completing an Application for Candidacy to the Doctoral Degree and submit to the Grad Division for approval with a copy of the application to the IDV Division for record. The student must choose and indicate on the form:

1) Their dissertation committee and Dissertation title;

2) Whether human subjects or animal research will be involved in the dissertation research. **A human subjects protocol must be procured from the Committee for the Protection of Human Subjects before any dissertation research is conducted.** Please visit CPHS Web Page at [http://cphs.berkeley.edu](http://cphs.berkeley.edu) for requirements and contact [ophs@berkeley.edu](mailto:ophs@berkeley.edu) for questions.

The dissertation committee chair is the student’s research mentor. Both the Dissertation Chair and the Academic Senate Representative of the Dissertation Committee must be members of the Berkeley academic senate and from outside IDV Division. In addition, student must choose another committee member from the Graduate Group in Infectious Disease & Immunity. PhD students with advanced candidacy status are required to meet with their dissertation committee **at least once a year** and complete an academic progress report in the student information portal with input from both the student and the Dissertation Chair.
8. Research and Dissertation

After obtaining research experience through laboratory rotations, the student should be acquainted with the research opportunities available in several laboratories and can evaluate these opportunities in the context of their personal interests. Students with interests that are clearly defined and are not identified among the Graduate Group faculty, but can be identified among faculty at Berkeley or UCSF outside of the Graduate Group, may elect through direct mentorship of a Graduate Group member to conduct their research in a laboratory other than one represented in the Graduate Group.

Ph.D. candidates who are advanced to candidacy must meet with their dissertation committee periodically at least once a year to complete the Annual Report on Candidacy Program in Doctoral Program to the Division for onward submission to the Graduate Division.

The purpose of the committee meeting is to assess student’s progress and provide guidance to the student’s research. It is expected that the student’s research will be of sufficient quality to be accepted for publications in peer-reviewed journals. A goal of three first-author publications is typically considered to write the dissertation. The emphasis on publication of student research, rather than merely completing a dissertation is an intrinsic component of the Program’s training experience and one of its unique strengths.

9. Time to Degree

Most Infectious Disease & Immunity Ph.D. students take 5 years to complete the program. By UC Berkeley policy, IDI students must complete the program in 10 semesters following advancement to candidacy (normative time). Graduates from this program have gone on to academic, government, and industry positions.

10. Culminating Seminar

Within three months prior of filing the student’s dissertation, the student will give an oral seminar to the members of the Graduate Group describing the dissertation research conducted at the IDI Monday Doctoral Seminar.
# Ph.D. Program

## Sample Curriculum (Minimum Course load)

<table>
<thead>
<tr>
<th>COURSE #</th>
<th>UNITS</th>
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<tbody>
<tr>
<td><strong>Year 1 – Fall Semester</strong></td>
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<tr>
<td>Lab rotation</td>
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<tr>
<td>PH 260A</td>
<td>4</td>
</tr>
<tr>
<td>PH 263</td>
<td>3</td>
</tr>
<tr>
<td>PH 293</td>
<td>1; 2</td>
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<tr>
<td><strong>Year 1 – Spring Semester</strong></td>
<td></td>
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<tr>
<td>Lab rotation</td>
<td></td>
</tr>
<tr>
<td>PH 260B</td>
<td>4</td>
</tr>
<tr>
<td>Electives MCB 210</td>
<td>4</td>
</tr>
<tr>
<td>PH 145</td>
<td>4</td>
</tr>
<tr>
<td>PH 293</td>
<td>1; 2</td>
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<tr>
<td>PH 253B</td>
<td>3</td>
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<tr>
<td>Or PH 260E</td>
<td>2-3 unit</td>
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<tr>
<td><strong>Year 2 – Summer</strong></td>
<td></td>
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<tr>
<td>PH 299</td>
<td>3</td>
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<tr>
<td>PH 293</td>
<td>1; 2</td>
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<tr>
<td>PMB 200B</td>
<td>1.5</td>
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<tr>
<td>PH 265</td>
<td>3</td>
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<tr>
<td>Electives PH 2XX</td>
<td>6</td>
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<tr>
<td><strong>Year 2 – Fall Semester</strong></td>
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<tr>
<td>Qualifying Examination (If passed, submit the Advancement to Candidacy application in the same semester when passed the QE or the latest by the following semester)</td>
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<tr>
<td>PH 299</td>
<td>12</td>
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<tr>
<td>PH 293</td>
<td>1; 2</td>
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<tr>
<td><strong>Year 3+ until Graduation</strong></td>
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<td>PH 299</td>
<td>12</td>
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<tr>
<td>PH 293</td>
<td>1</td>
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</tbody>
</table>

Note: IDI PhD students without an epidemiology background are strongly encouraged to read more about Epidemiology and/or take 250A prior to taking PH 253B. In addition to the required coursework, students should take a few electives to strengthen the knowledge in the areas of their interest. Please consult the IDI Head Graduate Advisor or faculty advisor for academic advising. And IDV Division manager for questions.
Ph.D. Program Financial Support

Financial Aid and Fellowships

The Division offers full funding to doctoral students for the first year of study from a combination of state and Division funds. Funding support will include fees and tuition as well as a monthly stipend. Graduate Student Instructorship (GSIship) can also be used to supplement funding support, independent of the required two semesters of GSIship. The current minimum annual stipend for IDI students are $30,000.

After the students have decided on the laboratory for research after a series of lab rotations, usually before the fall semester of their second year, the faculty as their mentor and PI, will be responsible for continuing funding the students as Graduate Student Researcher (GSR) until graduation.

United States citizens and permanent residents who are not California residents must establish residency after one year and will no longer be subject to non-resident tuition.

Extramural sources of pre-doctoral fellowships are available to apply from the National Institute of Allergy and Infectious Diseases, National Science Foundation, and some private sources such as Founder Region Fellowship for women in doctoral program.

Graduate students are strongly encouraged to apply for these and other extramural fellowships

Intramural sources include Graduate Fellowships are awarded and administered through the Graduate Division. All prospective applicants who wish to be considered for graduate fellowships beginning in the fall semester must apply by December 1st of the preceding year. The number of Graduate Fellowships awarded each year is limited, and the competition for them is highly competitive. Teaching and research assistantships are awarded and administered by the IDV Division of the School of Public Health or the PI’s and the PI’s home department respectively.

Graduate Division Conference Travel Grant for PhD and Master Student in Academic Degrees

PhD and Master’s students in academic degree programs can apply for the Conference Travel Grant If you’re going to present a research paper or poster at a professional conference. Please see the link for details: http://grad.berkeley.edu/news/announcements/travel-grant/
Infectious Diseases & Immunity Ph.D. Program Graduate Group Faculty

**IDI Graduate Group Faculty and IDV SPH Faculty 2016**

Liu, Fen Yong
Lu, Sangwei, adjunct professor
Sensabaugh, George, Professor Emeritus
Buerhing, Gertrude
Harris, Eva (IDI PhD Program Head effectively Aug 1, 2016)
Portnoy, Daniel
Stanley, Sarah
Stephens, Richard, Professor Emeritus

**IDI Graduate Group Faculty from Other Units**

Barton, Gregory  MCB
Coscoy, Laurent  MCB
Fleiszig, Suzanne M.J.  OPT
Glaunsinger, Britt A.  PMB
Machen, Terry  MCB
Reingold, Arthur  SPH
Robey, Ellen A.  MCB
Shastri, Nilabh  MCB
Taylor, John W.  PMB
Vance, Russel E.  MCB
Welch, Matthew D.  MCB
Zhou, Qiang  MCB
Lee, Luke  BIOE
Brenner, Steven  PMB/BIOE
Getz, Wayne  ESPM
Nelson, Kara  CEE
Resh, Vincent  ESPM
Herr, Amy  BIOE
Sjolander, Kimmen  PMB/BIOE
Cox, Jeffery  MCB
Gronert, Karsten  OPT

54
<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
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<td>10 A.M.</td>
<td>10 to 11 A.M. PH 293 Sec. 3: IDI Mon. Doctoral Seminar</td>
<td>10 to 12 P.M. PH 162L 001 Lab: Public Health Microbiology Lab</td>
<td>10:00 to 12 P.M. PH 2003 Health Policy and Management Breadth Course</td>
<td>10 to 12 P.M. PH 162L 003 Lab: Public Health Microbiology Lab</td>
<td>10-11 or 12-1</td>
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<td>INSTRUCTOR: Liu</td>
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<td>12 P.M.</td>
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<td>12 to 2 P.M. PH 266C: Hospital Associated Infections</td>
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<td>200 J &amp; 200L discussion</td>
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<td>CCN: 34535</td>
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<td>INSTRUCTOR: Swartzberg</td>
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<td>1 P.M.</td>
<td>1 to 3 P.M. PH 162L 002 Lab: Public Health Microbiology Lab</td>
<td>1 to 3 P.M. PH 162L 004 Lab: Public Health Microbiology Lab</td>
<td>1 to 3 P.M.</td>
<td>1-2</td>
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<td>2 P.M.</td>
<td>2 to 4 P.M. PH 264: Current Issues in Infectious Diseases (2nd yr IDV/MPH students)</td>
<td>2 to 4 P.M. PH 260A: Princ. of Infectious Diseases</td>
<td>2 to 4 P.M. PH 260E: Molecular Epidemiology of Infectious Diseases</td>
<td>2 to 4 P.M. PH 260A: Princ. of Infectious Diseases</td>
<td>2 to 3 PM</td>
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<td>CCN: 29961</td>
<td>CCN: 30903</td>
<td>CCN: 30157</td>
<td>CCN: 29903</td>
<td>250 A discussion</td>
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<td>INSTRUCTOR: Riley &amp; Swartzberg</td>
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<td>INSTRUCTOR: Riley &amp; Swartzberg</td>
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<td>3 P.M.</td>
<td>3:30 to 5 P.M. PH 266A: Foodborne Diseases</td>
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<td>3:30 to 5 P.M.</td>
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<td>PH 266A: Foodborne Diseases</td>
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<td>LOCATION: Mulford 107</td>
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<td>INSTRUCTOR: Lu</td>
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<td>LOCATION: Mulford 107</td>
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Tips for Newcomers

Mailbox Information
Your mailboxes are located in the student lounge, Room 56 University Hall. Your name is below each private slot. Please check your mailbox regularly. If you have any mail sent to you at the School, be sure to use the following address. Please note: It is important to include both the name of your Division and the School of Public Health.

Your Name
Division of Infectious Diseases & Vaccinology
School of Public Health
50 University Hall MC 7360
University of California, Berkeley
Berkeley, CA 94720-7360

Library Resources
The School of Public Health Library is located on the ground floor of University Hall in Room 1. Your registration card entitles you to borrow books from the main University library and any of its branches. For more information, call the Doe Library Privileges Desk at (510) 642-3403 or visit the UC Berkeley Library homepage at http://www.lib.berkeley.edu.

Computing Resources
A shared computer lab for School of Public Health students is located in 340A Haviland Hall. Students may use the lab when classes are not scheduled. The drop-in facility for School of Public Health students is at 340B Haviland. Doctoral students will find computers for drop-in use in 585 University Hall; a pass code is needed. For more information about Instructional Computing resources in the School of Public Health, go to http://microbe.berkeley.edu. Students can also contact David Lein, Coordinator of Academic Computing, for assistance: dlein@berkeley.edu; (510) 642-6011.

Email Accounts:
UCB Campus email account should be set up once your student identification number (SID) is available at CalMail Website at https://calmail.berkeley.edu. Your Berkeley email account is the official email we will use to communicate with students. Students are responsible for the contents of the emails sent to them regarding policies and deadlines.

Useful Websites:
Please refer to IDV website at http://microbe.berkeley.edu on useful links. To name a few:
UC Berkeley homepage: http://www.berkeley.edu
(Students can use the search engine in the Berkeley home page to look for Online General Catalog, current Schedule of Classes and links to all campus departments and resources.)
Graduate Division homepage: http://www.grad.berkeley.edu
(Important information on the Guide to Graduate Studies, Information for holding GSI/GSR appointments, various academic forms, and fellowship information can be found in this site)
School of Public Health homepage: http://sph.berkeley.edu
SPH Career Center: http://sph.berkeley.edu/cphp/career_services/index.php
The Role of a Faculty Advisor

It is the responsibility of the academic faculty advisor to assist the student in developing an optimal academic plan that meets the basic curriculum requirements for the degree being pursued and insures sufficient flexibility to meet individual goals. The academic faculty advisor is prepared to discuss the requirements of the specific degree program and the individual area of concentration in which the student is enrolled. **It is the student’s responsibility to keep his/her faculty advisor of apprised of their academic progress and seek academic advice as needed.** IDV MPH students are required to meet with their faculty advisor at least once a year, preferably every semester. General program information can be addressed to IDV Division Manager.

All faculty advisors will make available a sufficient number of office hours to advise students during Orientation Week, the first week of the semester, and throughout the semester. Advisors are encouraged to post a sign-up sheet outside their door indicating office hours available for advising purposes. Students can then sign-up for the amount of time they believe they need to have all their questions answered.

A list of some possible questions students might want to ask their faculty advisor during an initial meeting is listed below. The purpose of a meeting with a faculty advisor early in a student’s first semester is to give the student a chance to get to know their advisor and vice versa, give the faculty advisor a chance to learn about the student’s academic and career goals and provide the student with specific information about what he/she can expect from the relationship with a faculty advisor. During the first meeting, students need to be prepared to ask the questions for which they want answers and to talk about themselves and their academic goals.

**Suggested questions for the initial meeting with your faculty advisor include:**

1. Let your advisor know whether you have a specific career goal in mind or if you are uncertain and are “exploring different possibilities”.
2. Tell him/her what you would like to focus on while a student here; ask “What courses do you suggest I take?”
3. “Here are the courses I am thinking about taking; what do you think of this plan?”
4. “How often should I plan to meet with you?”
5. “What is the best way to communicate with you if I have questions, a problem, or need to make an appointment?”

**Steps for resolving an unsatisfactory advising situation**

The faculty advisor’s responsibilities are limited to advising the student about coursework and other aspects of the curriculum. He/she is not necessarily the same person who will be the student’s mentor for the MPH Comp paper. Summer Field Study placement should be arranged early through the Center for Public Health Practice; students should start the process early by working with the Field Study Placement supervisor and participating in the IDV Field Study Placement information session and speaking with peer students of their experience. IDV faculty advisor can give general research advice to students but are not expected to be involved in the actual placement process.

1. If a student feels that their faculty advisor is not fulfilling their responsibilities, the student should talk first with the advisor regarding that perception, and they should try to work together to take steps toward improving the situation. 2. If the situation is not resolved after talking about it with the faculty advisor, the student is encouraged to talk with the Division Head, Dr. Lee Riley and/or the Associate Dean of Services. It is the responsibility of the Division Head or the Associate Dean to discuss the situation with the faculty advisor to insure resolution of any advising difficulties.
Student Awards

Each year the Infectious Diseases Academic Program acknowledges academic excellence and presents the following awards to students:

- **Sanford Elberg Award**: Outstanding MPH comprehensive paper
  
  2016 award recipient – Jonathan Liu

- **Beattie Memorial Award**: Excellence in research in the laboratory sciences by a graduating doctoral student, 2016 award recipient: Aaron Whiteley

Student Groups

**Infectious Disease and Immunity PhD Student Group**

The mission of the ID & I student group is to facilitate social interactions within the student body and allow informal discussion addressing concerns central to the improvement of the program. The student-led group meets monthly to discuss and plan social events, student recruitment, the annual PhD retreat and general program concerns.

President (2016-17): Dustin Glasner, co-president: Daniela Andrade

**Association of Public Health Infectious Diseases Students (APHIDS)**

The Association of Public Health Infectious Diseases Students at Berkeley (APHIDS) is a graduate student group serving the School of Public Health (SPH) graduate students. Its goals include creating a strong sense of community and cohesiveness, and providing a welcoming and warm environment for new and prospective students. It is also dedicated to working within both the UC Berkeley student population and the city of Berkeley to reduce disease burden among at-risk populations. APHIDS has been engaged in community work with the Suitcase Clinic to provide Berkeley’s homeless population with flu vaccinations and to expand its disease surveillance services.

Co-Presidents (2016-17): Alison Ohringer, Justine Maher
# Academic Calendar

<table>
<thead>
<tr>
<th>Event</th>
<th>Fall 2016</th>
<th>Spring 2017</th>
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<tr>
<td>Registration fee payment due (full or 1st installment)</td>
<td>8/19/16</td>
<td>1/15/17</td>
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<tr>
<td><strong>Semester begins</strong></td>
<td>8/17/16</td>
<td>1/10/17</td>
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<td><strong>New Students Orientation</strong></td>
<td>8/22/16</td>
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<tr>
<td><strong>Instruction begins</strong></td>
<td>8/24/16</td>
<td>1/17/17</td>
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<tr>
<td><strong>Academic and Administrative Holiday</strong></td>
<td>9/5/2016</td>
<td>2/20/17</td>
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<tr>
<td><strong>Academic and Administrative Holiday</strong></td>
<td>11/11/16</td>
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<tr>
<td><strong>Semester begins</strong></td>
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<tr>
<td><strong>Non-Instructional Day</strong></td>
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<tr>
<td><strong>Academic and Administrative Holiday</strong></td>
<td>11/24, 11/25/16</td>
<td>3/31/17</td>
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<tr>
<td><strong>Formal Classes End</strong></td>
<td>12/02/16</td>
<td>4/28/17</td>
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<tr>
<td><strong>Reading/Review/Recitation Week</strong></td>
<td>12/05/16-</td>
<td>5/01/17-</td>
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<td>12/16/16</td>
<td>5/05/17</td>
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<tr>
<td><strong>Last Day of Instruction</strong></td>
<td>12/09/16</td>
<td>5/05/17</td>
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<td><strong>Final Exams</strong></td>
<td>12/12/16-</td>
<td>5/08/17-</td>
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<td>12/16/16</td>
<td>5/12/17</td>
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<tr>
<td><strong>Semester Ends</strong></td>
<td>12/16/2016</td>
<td>5/12/2017</td>
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<tr>
<td><strong>Academic and Administrative Holiday</strong></td>
<td>12/26, 12/27</td>
<td>5/29/17</td>
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<td>12/30-1/02/17</td>
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Please refer to the links below for details and deadlines:

- [http://registrar.berkeley.edu/calendar?terms=current](http://registrar.berkeley.edu/calendar?terms=current)
- [http://studentcentral.berkeley.edu/calendar](http://studentcentral.berkeley.edu/calendar)
General Information

California Residency
Every entering student is classified as a Resident or Non-resident of California for tuition purposes. Fees and tuition will vary depending upon the student’s residency status. To establish California residence for tuition purpose, it is important for non-California residents to begin collecting documentation. For more information, please visit the Registrar’s website at http://registrar.berkeley.edu/Residency/legalinfo.html and California residency information for non citizens is at http://registrar.berkeley.edu/?PageID=non-citizen.html.

For inquiries regarding residence requirements, determination, and exemptions, please contact the Residence Affairs Unit of the Registrar’s Office, email: orres@berkeley.edu, phone: (510) 642-5990, office located at120 Sproul Hall.

Registration and Enrollment
Incoming IDV MPH and IDI PhD graduate students are asked to register for classes they must take by reviewing the program curriculum requirement in calcentral student portal and confirming their class schedule after meeting with their faculty advisors during Orientation. Make any changes if necessary during the Adjustment Period.

To be officially registered at Berkeley, you must enrolled in at least 12 units; your registration fees must have been paid, either in full or by payment plan, by the published deadlines and you must have no registration/financial blocks. After adjustment period ended by the end of the 3rd week of instruction, students must fill out the Petition to Change Class Schedule for Graduate Students (forms available online) to make course schedule change. The form should be submitted to the Student Services at 417 U Hall and a small fee charged for adding/dropping classes. No change of class schedule will be entertained by Student Services after the SPH internal add/drop deadline for graduate students, it is usually earlier a week prior to the published deadline. Please always check your enrollment status in calcentral on a regular basis to make sure your enrollment information is correct.

Campus Resources for students with disabilities
The campus offers many different resources for graduate students with disabilities. The purpose of an academic accommodation is to offer the graduate student an equal opportunity to meet with the department’s academic standards and requirements. The Disabled Students Program http://dsp.berkeley.edu at (510) 642-0518 serves graduate students with disabilities (who complete the process of establishing eligibility) by authorizing academic accommodations. To get more information on the Disabled Access Services, please visit http://access.berkeley.edu or contact (510) 643-6473 or (510) 643-6456. It can usually assist with accommodations to extra-curricular events. Most physical access issues are addressed in the Campus Access Guide http://acads.chance.berkeley.edu/GAG/. Finally, problems with accommodations may be reported to the campus Disability Resolution Officer Derek Coates http://acads.chance.berkeley.edu/ada.shtml at (510) 642-2795.
University Health Services (UHS)
University Health Services (UHS) provides comprehensive medical, mental health and health promotion services to all Cal students and a variety of occupational health services to faculty and staff.
http://www.uhs.berkeley.edu/

GSI/GSR Position
If you are interested in finding GSI (Graduate Student Instructor) and/or GSR (Graduate Student Researcher). The best way is to contact the Student Affairs Officers and the faculty concerned of individual hiring departments and the faculty concerned, check the department’s website and pay attention to email announcements. Most departments hire their GSI at least a semester or even an academic year ahead of time (such as MCB), please apply early. The SPH GSI job openings are also posted in the SPH Career Center at https://ucalhealth-csm.symphlicity.com/students/

Complete academic departments and programs list (search by alphabet) can be found at www.berkeley.edu/academics/dept/a.shtml

SPH Graduate Student Lounge and Mailboxes
Each graduate student has been assigned a mailbox in the Student Lounge which is located on the ground floor of University Hall in Rm 56. An entry code will be required to enter the lounge. Students can obtain the entry code from the Office of Student Services and Admissions in Rm 417 University Hall.
Useful Resources

Useful campus contacts:

- **CalCentral** is UC Berkeley’s [online one-stop service center](https://calcentral.berkeley.edu) that allows students to manage class enrollment, billing, financial aid, and student records. This website combines multiple campus systems into one easy-to-use mobile friendly place. Check campus email, calendar, academic progress, financial aid, enrollment information, and more.

- **Cal Student Central** is the [physical one-stop student services center](https://studentcentral.berkeley.edu) located in 120 Sproul Hall where students can find answers to questions regarding financial aid, fees and billing, payments, disbursements, registration and enrollment in one convenient location. Visit [studentcentral.berkeley.edu](https://studentcentral.berkeley.edu) for quick answers to top questions. If you need further assistance, stop by 120 Sproul Hall, Monday - Friday, 9 a.m. - 4 p.m.

- **Center for Public Health Practice:** [http://sph.berkeley.edu/resources/cphp.html](http://sph.berkeley.edu/resources/cphp.html)

- **Registrar’s Office (Academic & student calendars, fees, establishing legal residency):** [http://registrar.berkeley.edu/](http://registrar.berkeley.edu/)

- **Graduate Division:** [www.grad.berkeley.edu](http://www.grad.berkeley.edu)
  - Guide to Graduate Policy: [www.grad.berkeley.edu/policies/guide.shtml](http://www.grad.berkeley.edu/policies/guide.shtml)
  - What do you Need to know about being a GSI, GSR, Reader or Tutor [http://www.grad.berkeley.edu/policies/pdf/apptknow.pdf](http://www.grad.berkeley.edu/policies/pdf/apptknow.pdf)
  - Degrees FAQ: [www.grad.berkeley.edu/policies/faq.shtml](http://www.grad.berkeley.edu/policies/faq.shtml)
  - Fees: [www.grad.berkeley.edu/admissions/cost_fees.shtml](http://www.grad.berkeley.edu/admissions/cost_fees.shtml)
  - Fellowship Office: [www.grad.berkeley.edu/financial/fellowships_office.shtml](http://www.grad.berkeley.edu/financial/fellowships_office.shtml)
  - Information on GSI/GSR/Reader/Tutor appointments: [www.grad.berkeley.edu/policies/pdf/apptknow.pdf](http://www.grad.berkeley.edu/policies/pdf/apptknow.pdf)
  - Graduate Diversity Program: [http://www.grad.berkeley.edu/diversity/diversity.shtml](http://www.grad.berkeley.edu/diversity/diversity.shtml)
  - Financial Aid Office: [http://students.berkeley.edu/finaid/](http://students.berkeley.edu/finaid/)
  - Disabilities Service: [http://dsp.berkeley.edu](http://dsp.berkeley.edu)
  - University Health Services at UCTang Center: [http://uhs.berkeley.edu/](http://uhs.berkeley.edu/)
  - GSI Teaching and Resource Center: [http://gsi.berkeley.edu/](http://gsi.berkeley.edu/)
  - Housing: [www.housing.berkeley.edu/livingatcal/graduatetestudents.html](http://www.housing.berkeley.edu/livingatcal/graduatetestudents.html)