

**UW Department of Global Health Milestone Achievements: February, 2009**

The Department of Global Health (DGH) was established in January of 2006 and became fully operational in January, 2007. The UW has based the DGH in both the School of Medicine and the School of Public Health, to build synergistic programs between these two schools, and across all six Schools of Health Sciences, as well as across the remaining 11 UW Schools and Colleges. The DGH was initially funded through a \$10M gift and a \$20M endowment from the Bill and Melinda Gates Foundation, followed by a commitment of \$2M per year from the University of Washington/State of Washington. The Department has since grown dramatically with total endowment plus state funding plus federal and non federal grants and contracts to the UW now totaling over \$104M annually for FY 2009, with 131 regular and annual faculty members, and with 248 graduate students enrolled in DGH educational programs. Original milestones for the department were established in 2005. Progress on milestones 1-16 is summarized below.

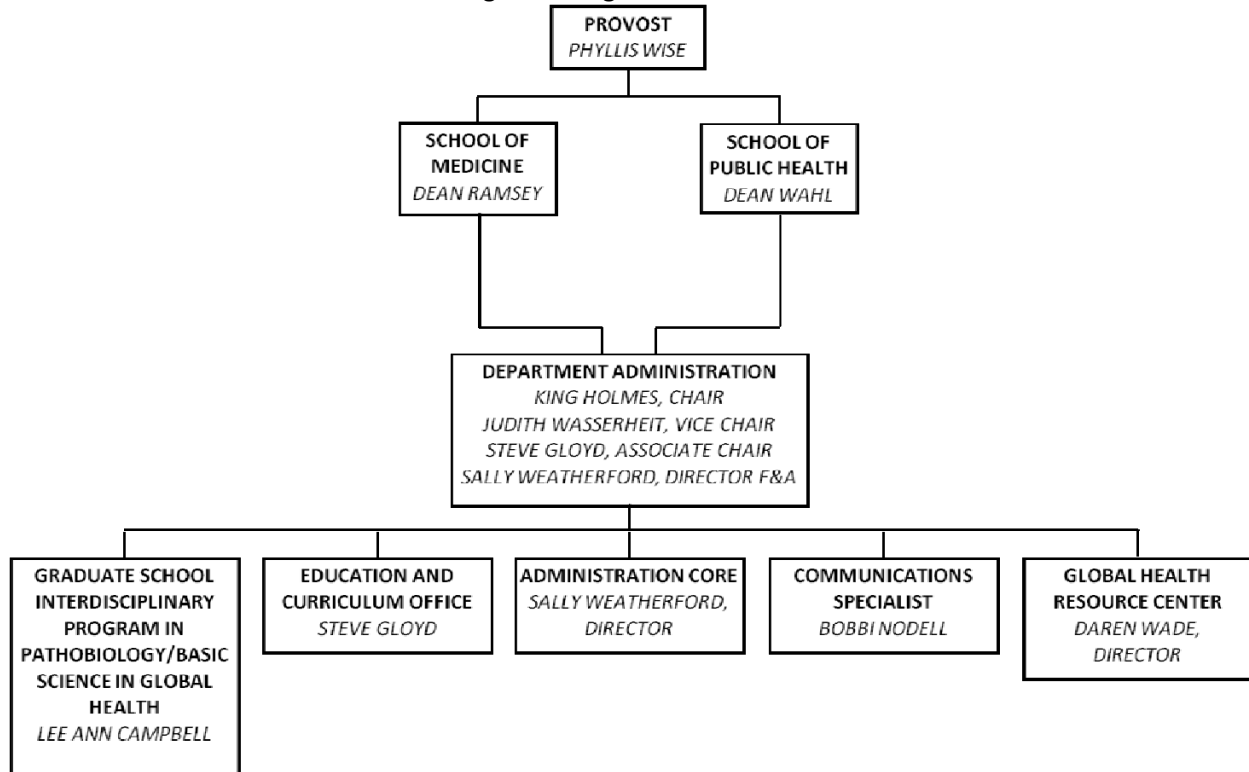
- 1. Hire Department Administrator:** Sally C. Weatherford, PhD was hired as Director of Finance and Administration in October 2006, bringing 10 years' experience administering international programs.
- 2. Hire Department Chair:** The **WILLIAM H. FOEGE ENDOWED CHAIR** was filled November 1, 2006 by King K. Holmes, MD, PhD, Professor of Medicine, Microbiology, and Epidemiology. Dr. Holmes, formerly Vice Chair of the UW Department of Medicine, founded and directs the UW Center for AIDS and STD, a WHO Collaborating Center for AIDS & STD, and is also PI for the International Training & Education Center on Health (I-TECH), a collaboration between the UW and subcontractee UCSF – one of the largest global health training programs in the world.
- 3. Hire key Department staff for initial setup of Department:** The Department's Vice Chair, Judith Wasserheit, MD, MPH, was recruited by Dr. Holmes and also started with the Department on November 1, 2006. Dr. Wasserheit had previously held leadership positions at NIH and the CDC, and had served as UW Professor of Medicine and Director of the NIH HIV Prevention Trials Network from 2002 to 2006. Prof. Stephen C. Gloyd, who had directed the International Health Program of the School of Public Health, transferred his primary appointment from the Department of Health Services to Global Health and was appointed Associate Chair for Education and Curriculum in August 2007. Dr. Weatherford hired core staff for the Department for finance, information technology, and human resources; the Department's 3 educational programs have hired 5 key staff; and UW Medicine supported recruitment of a Communications Specialist in 2008. The Department's Centers and Institute now have 258 UW staff appointments (including 32 based overseas), as well as 472 I-TECH local hires and approximately 1,000 HAI local hires based in other countries.
- 4. Establish new Department's organizational structure, policies, and procedures:** The organizational structure for the Department (Figure 1), includes the Administrative Core, the Interdisciplinary Graduate Program in Pathobiology/Basic Science in Global Health, the Education and Curriculum Office, the Communications Office, and the Global Health Resource Center; and the four Centers and the Institute for Health Metrics and Evaluation; which are described further below.

The Department has developed policies and procedures for financial management, personnel, and academic human resources. An Appointments and Promotions Committee developed guidelines for faculty appointments and promotions, harmonizing A&P guidelines for Medicine and Public Health.
- 5. Transfer existing UW faculty whose activities-education, research, and service-are pertinent to global health, including the transfer of existing research programs in AIDS/STD, infectious diseases, etc.** We have transferred many Pathobiology faculty and several other interested faculty to regular, adjunct, and affiliate appointments in DGH.
- 6. Recruit new tenure and tenure-track faculty:** As of 2/1/09, the Department has 29 regular faculty (19 primary, 11 joint with other departments) and 102 adjunct, affiliate, or clinical faculty; 53 faculty appointments (including 9 primary or joint appointments) are pending administrative reviews and

approvals. Nine primary faculty and two joint faculty and many affiliate faculty were newly recruited to the UW. Several pending recruitments are also new. The regular faculty members include five of the 55 UW faculty who are members of the Institute of Medicine. Of the 29 regular faculty members, ten have tenure of whom five are in the DGH.

**7. Identify and appoint key leaders of research, education, and service centers:** The Department now includes four such Centers and the Institute for Health Metrics and Evaluation. These Centers and Institute account for approximately 97% of the \$104M in annual DGH funding to the UW for FY 2009. Key leaders of the Centers/Institute are identified in Figure 1. A proactive process for forming new Centers and Institutes is underway.

Figure 1: Organization Chart



### INSTITUTE AND CENTERS



### EXISTING CENTERS AND INSTITUTE

- International Training and Education Center for Health (I-TECH)** <http://www.go2itech.org> The International Training and Education Center for Health (I-TECH) was founded in 2002, directed by Dr. Ann Downer. I-TECH supports training and education programs with staff working on country projects in Botswana, Caribbean Region (specifically, Jamaica, Trinidad and Tobago, Barbados, the Bahamas, and the Eastern Caribbean States), China, Ethiopia, Guyana, Haiti, India, Kenya, Malawi, Mozambique, Namibia, South Africa, Tanzania, Uganda, and Viet Nam. Professional staff are regular, clinical, or affiliate faculty members of DGH. I-TECH leads a multidisciplinary group of faculty and implementing

partners working primarily on the President's Emergency Plan for AIDS Relief. Its activities include (1) an extensive HIV and AIDS nursing initiative; (2) clinical mentoring in resource-limited environments using a five-level framework that emphasizes mentorship in clinical settings; (3) production of high-quality curricula, training programs, and media products; and (4) monitoring and evaluation for quality improvement.

- **Health Alliance International (HAI)** <http://depts.washington.edu/haiuw> Health Alliance International is a UW-affiliated 501(c)(3) organization with branches internal and external to the University of Washington. Stephen Gloyd is the Director of HAI. Professional leaders are regular, clinical, or affiliate faculty members of the DGH. HAI's programs focus on Mozambique, Ivory Coast, Sudan, and E. Timor. HAI's advocacy and technical assistance programs emphasize (1) raising awareness of the links between economic and political equity and health; (2) promoting policy and structural changes that address widespread poverty and the systemic inequalities of opportunity that perpetuate it; (3) increasing access to quality health care among disadvantaged populations, including the right to effective care and treatment for HIV/AIDS, with a focus on strengthening public sector programs; (4) operations and implementation research and technical assistance to strengthen health care systems.
- **Institute for Health Metrics and Evaluation (IHME)** <http://www.healthmetricsandevaluation.org> The IHME was established in July 2007 and is directed by Christopher J.L. Murray, a Professor in the Department of Global Health. The mission of IHME is to monitor global health conditions and health systems, as well as to evaluate interventions, initiatives, and reforms. The Institute provides high quality and timely information on health so that policymakers, researchers, donors, practitioners, local decision-makers, and others can better allocate limited resources to achieve optimal results.

Multiple global health efforts have sprung up over the past several decades as health spending has risen to unprecedented highs, accounting for 9% of total economic output. Yet a lack of objective, comparable, and comprehensible information on health hinders these various efforts from achieving their highest aims. The Institute intends to build the needed base of objective evidence about what works and what does not work to improve health conditions and health systems performance. Most importantly, the Institute will make this evidence base freely and readily available in the public domain. Better health information can be expected to lead to more knowledgeable decision-making and higher achievements in health.

- **International Clinical Research Center** <http://depts.washington.edu/uwicrc/index.php> The International Clinical Research Center (ICRC) was established in September 2007 and is directed by Professor Connie L. Celum. The mission of the ICRC is to expand clinical research trial capacity for infectious disease interventions of public health importance. The ICRC facilitates collaborations; improves observational cohort studies and clinical trial operations; and provides repositories of biologic specimens and reagents for future scientific investigations for pathogenesis and prevention research related to HIV and other infectious diseases. The overarching objective of the ICRC is to expand UW capacity to conduct preeminent biomedical prevention and laboratory research internationally and utilize well-designed systems for research trials operations.
- **Center for AIDS Research (CFAR)** <http://depts.washington.edu/cfas/cfar/center> The UW/FHCRC CFAR includes the UW Academic Medical Center (UWAMC)-Affiliated Institutions: the Fred Hutchinson Cancer Research Center, Harborview Medical Center, UW Medical Center, Children's Hospital and Regional Medical Center, and Seattle Biomedical Research Institute, plus the University of Hawaii. The CFAR has 337 CFAR-affiliated faculty and research scientist members (including 93 PIs who received NIH AIDS-related funding in FY07) and 78 trainee members. The CFAR includes 10 funded Cores: A) Administration, B) Developmental, C) Biometrics; D) Clinical Research; E) International; F) Clinical Retrovirology; G) Clinical Epidemiology and Health Services Research; H) Computational Biology; I) Immunology; and J) Sociobehavioral and Prevention Research (which supports our Community Action Board); and 3 Scientific Programs: (1) Mathematical Modeling for HIV/STD Research; (2) Health Systems and Strategies Research, and (3) AIDS-Associated Infections and Malignancies. The CFAR has helped to

develop over 200,000 sq. ft. of new or newly renovated facilities for HIV/AIDS research in Seattle since 1997; organizes community relationships; and provides strategic planning for these activities. The CFAR participates in leadership of the national CFAR Global AIDS Research Consortium, and leads the national CFARs' participation in the USAID initiative for Operations Research, **Project SEARCH**.

#### **ADDITIONAL CENTERS AND INITIATIVES**

Two Centers under discussion include the Vaccine and Immunization Research Center and the Center for Quantitative Infectious Diseases Research. In addition, the Department has undertaken a proactive strategic planning process to identify and form future Global Health Centers and Institutes. The Department issued an RFP and received 41 concept proposals (**18 for Interdisciplinary Discovery, Learning and Service Centers and 23 for Inter-Departmental and Inter-School Initiatives**) from faculty representing all 17 UW Schools and Colleges. These concept proposals included areas such as adolescent and child health, chronic disease prevention and management, nutrition, mental health, oral health, injury control, emergency and essential surgical care, disability, international indigenous health, antimicrobial susceptibility surveillance, pharmacovigilance, diagnostics and drug development, information technology and informatics, implementation science, demography, engineering, safe drinking water, the environment and climate change, vulnerability and globalization research, social justice, diplomacy, global governance, social entrepreneurship, communication, PhD education, and training and workforce development.

Following internal and external review of the 41 concept proposals, 5 Center proposals and 9 Initiative proposers have been invited to submit full applications. Reviews are expected to be completed by late 2009 and awards for selected proposals will be made in FY10.

#### **8. Expand and enhance current education programs in global health; AND**

#### **9. Develop new education programs in global health**

#### **EDUCATION AND CURRICULUM**

As the first priority of the DGH, the Education and Curriculum Office (ECO) was formed in February 2007 to coordinate all global health academic activities and policies of the Department, the Schools of Medicine and Public Health, and the University. The infrastructure to support these efforts includes ECO core faculty and staff, the Department's Education Executive Committee, and the campus-wide Curriculum Advisory Committee, which leads the campus-wide efforts to coordinate the multitude of global health related programs and courses in all 17 schools and is also involved in coordinating programs with WSU. The DGH student body has rapidly grown to now include 248 graduate students, including 37 PhD students pursuing basic science research related to Global Health; 59 MPH students; 86 medical students in the Global Health Pathway, 19 IHME fellows; and 47 pursuing the Graduate Certificate in Global Health. Table 1 demonstrates the rapid, enormous expansion in applications and admissions for most of these programs.

All educational programs in the department are being strengthened, building on efforts by working groups of campus wide faculty and staff. Current programs include the following:

- **Master's level programs:** The DGH offers the MPH – General Global Health Track, and the Peace Corps Track and provides the global health courses and mentoring for the Department of Epidemiology Global Health Track. Concurrent MPH degree programs exist with Medicine, Nursing, Public Affairs, Social Work, Anthropology, and International Studies. Two new MPH tracks are being developed: (1) Global Health Leadership, Policy, and Management, and (2) Health Metrics. GH faculty have also taken the lead in proposing a Master's Degree in Development Practice.

**Table 1. Applicants and admissions to Dept. of Global Health educational programs, 2006-2009**

	Programs - Tracks	2006	2007	2008	2009	Current Enrollment
<b>PhD – Pathobiology</b>	Applicants	54	51	60	52	37
	Admits	6	4	7	6	
<b>MPH</b>	<b>MPH – General Global Health Track</b>					35
	Applicants – US	35	49	82	146	
	Applicants – Int'l	14	12	16		
	Admits – Total	12	11	17	§	
	<b>MPH Concurrent (MD,RN, MSW, Anthro)</b>					31*
	Applicants only	1	4	5		
<b>MPH – Peace Corps Masters Int'l Track</b>					14	
Applicants	36	42	47	60		
Admits	3	4	5	§		
<b>Department of Epidemiology MPH – Global Health Track</b>					10	
Applicants	6	11	10	27		
Admits	3	5	4	§		
<b>MPH –TOTALS</b>					59	
Applicants	77	102	139	202		
Admits	18	20	23	§		
<b>Fellowships (IHME)</b>	<b>Post-Graduate Fellowship (IHME)</b>					7
	Applicants			70	80	
Admits			6	4		
<b>Post-Bachelor Fellowship (IHME)</b>					12	
Applicants			165	325		
Admits			9	§		
<b>Global Health Pathway (medical students)</b>	Entering	15	35	25		86
	Total Enrolled	26	61	86		
<b>Graduate Certificate in Global Health</b>						47
<b>Total current enrollment in all DGH Graduate Programs</b>						248

\* admits to this track are included in the totals for the MPH General Health Track

§ pending

- **The Pre-Doctoral program** in Pathobiology/Basic Science in Global Health was transferred from the former Department of Pathobiology and is now offered and supported by the DGH in conjunction with the Graduate School, with 37 pre-doctoral students at the present time. A pre-doctoral track in Health Metrics and Evaluation is being developed with the IHME.
- **The Global Health Pathway** of the medical school has experienced remarkable growth, with 86 medical students currently enrolled in this pathway.
- **Courses:** The DGH has developed 8 new graduate level courses, and offers a total of 46 global health courses including 4 GH undergraduate courses, 26 graduate GH courses, 8 Pathobiology courses (Appendix A).
- **Graduate Certificate in Global Health.** This Certificate enhances the education of matriculated UW graduate students and professional students beyond their regular course of study, and provides continuing education to graduate nonmatriculated (GNM) students. Students complete 15 credits of approved coursework, a global health work experience, and a capstone project. Currently, students from other MPH programs, health administration, pharmacy, geography, nursing, social work, public affairs, bioengineering, and sociology are enrolled.
- **Post Baccalaureate and Post Graduate Fellowships in Health Metrics:** The IHME currently has 19 Fellows, with an extraordinary growth in applications for these positions.

- **Special educational initiatives** include the Global Health Leaders Program, a GH Summer Institute, and frequent ad hoc seminars and workshops.

Note that all of the graduate programs are closely integrated with the UW's 10 NIH Fogarty International Center Programs, and with the Washington Global Health Alliance, and its individual members, many of whom serve as lecturers and mentors. All of the above programs convene weekly or bi-weekly management and curriculum committee meetings and monthly program faculty meetings. The department continues to carry out departmental functions, including annual retreats and orientations, student symposia, dissertation, thesis and capstone presentations, open houses, and annual course and student evaluations. The Pathobiology Graduate Program has convened bi-weekly steering committee meetings over the past year to facilitate faculty and student affiliations with Global Health and develop curriculum.

In June, 2008 the DGH held its first graduation of MPH, Certificate, Pathobiology PhD, and Global Health Pathway students with Dr. Tachi Yamada as Commencement Speaker.

- **Undergraduate programs:** The DGH now has 4 undergraduate courses (Appendix A), with 539 student registrations for 2008-09; and a multidisciplinary proposal for an undergraduate minor in GH has been approved by most UW committees and is awaiting matching funding.

**10. Develop new training programs for emerging leaders in developing countries.** The UW currently has ten Fogarty International Center Research Training Programs, and the DGH works closely with several in providing graduate teaching and mentoring opportunities to developing countries scholars. The Department also supports development of a new Global Health Leadership, Policy, and Management MPH.

**11. Develop education and training programs with partner institutions.** The Department represents the UW as a founding member of the Washington Global Health Alliance – a partnership which also includes the Bill and Melinda Gates Foundation, Washington State University, FHCRC, PATH, SBRI, IDRI, and Children's Regional Hospital and Medical Center. Within this alliance, the UW has collaborated with WSU in the proposed WGHA Education and Training Program; with SBRI and PATH in the proposed High School Ambassadors Program; and with FHCRC and PATH in the ongoing Pilot Research Grant Program which supports junior investigators new to Global Health Research.

The DGH is a co-founding member of the new University Consortium for Global Health, which has convened twice, with support from the BMGF, now includes 20 North American Universities and expects to grow to approximately 40 North American Universities with Developing Country partners.

**12. Establish the Seattle Vaccine and Immunization Research Center.** This VIRC is still in the planning stage. Two distinguished immunologists were interviewed during 2008 as potential faculty candidates for this Center. Meanwhile, UW DGH faculty participated in the successful Washington Vaccine Alliance (WAVA) application to the Washington State LSDF, recently resulting in \$4.7M in funding; two DGH faculty serve on the WAVA Executive Board, and one of three funded projects is led by a DGH faculty member.

**13. Establish and expand partnerships with select international institutions.** The Department was invited by the BMGF in 2008 to develop a partnership between the UW and the University of Nairobi. Considerable progress was made in planning with the U of Nairobi, but the overall partnership program unfortunately may not go forward at the Foundation during 2009. Nonetheless, strong partnerships, funded by US Federal agencies and private foundations, for research and research training have been established through DGH Centers and faculty with many international partners (see DGH mapping project below). Particularly extensive DGH partnerships now exist in Kenya, Peru and Mozambique.

**14. Expand Service Center database to include international work of all UW faculty.** The **DGH Communications Office Mapping Project** (<http://depts.washington.edu/deptgh>) has so far identified 160 funded global health projects involving DGH faculty in over 70 countries. The Department will work with the UW Vice Provost for Global Affairs to expand this effort.

**15. Expand activities of Service Center to provide technical assistance to partner institutions.**

- **The Global Health Resource Center (GHRC)** (<http://depts.washington.edu/deptgh/ghrc/index.html>) was established in 2003 with funding through the BMGF Puget Sound Partners program. This has been an extremely successful program, directed by Daren Wade. The Center coordinates field work experiences, managing six student exchange programs through the WGHA, and managing international rotations for over 200 students to 26 countries since 2003; coordinates activities and information about global health education, training, research, funding, employment opportunities and events; connects undergraduate and graduate students and professional trainees by faculty and staff.

Through the Global Health Resource Center, the Department also hosts three to five lectures and events per week and the WGHA monthly Discovery Symposium Series. (See our [online calendar](#) for a sample.) In April, 2009, the department will host the 7th Annual Western Regional International Health Conference (the fourth held at the UW), a mostly student-run event expected to bring at least 1,000 people to the campus, and will co-host the annual meeting of the Global Health Education Consortium. The GHRC Advisory Board brings together faculty, staff, and students across campus as a networking resource.

A proposal to BMGF through the WGHA for continued funding over the next 5 years has been developed collaboratively by UW DGH and WSU School of Global Animal Health, at the suggestion of the BMGF. Continued support from the Foundation for the program, but unfortunately is now on hold.

- **Communications, Outreach, and Strategic Planning.** During 2008, the DGH hired communications specialist Bobbi Nodell, with more than 15 years of communications experience. She worked with the GHRC to launch and maintain the very popular interactive map of global health mentioned above, which highlights the growing number of faculty, projects, expertise, and international affiliations of the DGH. She also launched a new already widely viewed [website](#), which features the map, an RSS feed of department news, a media portal to showcase podcasts, digital stories, and videos, and a section for global health profiles. The department also created a [brochure](#), conference display materials, and has generated coverage in University and other publications. Our [Press Room](#) chronicles our coverage. The department has been working with a strategic communications consultant, who has interviewed several stakeholders to help define our message for different audiences.

- **The UW Global Support Project** (<http://www.washington.edu/admin/finmgmt/globalsupport>) was initiated in 2006 to provide essential operations support to enable programs such as I-TECH and ICRC to work efficiently and effectively in other countries. Their mantra is “risk management, not risk aversion.” The Project has become a national model. Ann Anderson, UW Comptroller who leads the GSP, was invited to give a keynote on University Support Systems at the inaugural 2008 meeting of the University Consortium for Global Health; and the GSP was subsequently visited by a delegation from Duke University in 2008 to help Duke establish a similar program. Our GSP has been the creator of a non-profit, UWWorld, with satellites in 11 countries, to register UW projects and potentially receive local funding support only available to local agencies.

**16. Consolidate the Department at Phase III of the UW Medicine and South Lake Union site.** The Phase III SLU site is in development. Meanwhile, the DGH currently, is in the process of programming 60,000 square feet in the new Ninth and Jefferson building located on the Harborview Medical Center campus, and will occupy a total of 8,400 square feet in two historic buildings on the University of Washington campus.

## Appendix A: Department of Global Health Courses

### Undergraduate Courses

#### **G H 201 Newly Emerging Diseases in Public Health (2) NW White**

Newly recognized and emerging disease pose a major problem for public health. AIDS, hantavirus infections, Ebola virus infections, and the role of bacterial infection in the causation of stomach ulcers are examples of problems to be studied. Other timely diseases are presented in this lecture discussion course. Offered: A.

#### **G H 401 Introduction to Global Health (1) Gonzales, Wade**

Addresses a variety of themes in global health which serve as a base for an introductory-level understanding of the field. Emphasizes the diverse, multidisciplinary perspectives on global health. Credit/no credit only. Offered: A.

#### **G H 402 Multidisciplinary Perspectives in Global Health (1) Gonzales, Wade**

Presenters from a variety of disciplines discuss their experiences working on global health issues in resource-poor settings. Speakers illustrate how their work is influenced by communication, culture, economic and socio-political realities. Credit/no credit only. Offered: Sp.

#### **G H 415 Global Health Challenges (4) I&S Murray**

Introduces principal health problems of the world's populations, and major challenges to improving health globally. Explores interdisciplinary factors accounting for health patterns, ranging from either physiological basis to their economic, social, and political context. Prerequisite: MATH 124; either BIOL 180, STAT 311, or Q SCI 381. Offered: A.

### Global Health MPH &

### Graduate Certificate Course Offerings

#### **G H 500 Global Health Seminar (1, max. 6)**

Explores issues relevant to global health; themes vary by quarter. Required course for Global Health MPH and Global Health Certificate students. Credit/no credit only. Offered: AWSpS.

#### **G H 501 Introduction to Global Health (1) Gonzales, Wade**

Addresses a variety of themes in global health which serve as a base for an introductory-level understanding of the field. Emphasizes the diverse, multidisciplinary perspectives on global health. Offered: A.

#### **G H 502 Multidisciplinary Perspectives in Global Health (1) Gonzales, Wade**

Presenters from a variety of disciplines discuss their experiences working on global health issues in resource poor settings. Speakers illustrate how their work is influenced by communication, culture, economic and socio-political realities. Offered: Sp.

#### **G H 505 P-Advanced Global Health (2) Kimball**

Prepares health profession students for work in developing countries. Includes health care delivery systems, political, social, and economic determinants of health, major global health issues, and personal well-being while abroad. Lecture and seminar format with guest speakers, student presentations, and discussion. Offered: jointly with MED 560; Sp.

**G H 511 Problems in International Health (4) *Gloyd***

Explores social, political, economic, environmental determinants of developing countries' health; traces development of societal responses to problems. Includes: origins of primary health care; child survival; traditional systems; population; water; sanitation; international agencies; impact of economic policies. Case study formulating pharmaceutical policy in a developing country. Offered: A.

**G H 514 Global Population Health (3) *Bezruchka***

Looks at determinants of population health in different countries, to learn about the constraints of typical public health and development paradigms. Topics include colonialism, development and underdevelopment, political economy, culture, health behaviors, hierarchy, health care and medical harm. Offered: Sp.

**G H 515 Global Health Challenges (4) *Murray***

Introduces principal health problems of the world's populations, and major challenges to improving health globally. Explores interdisciplinary factors accounting for health patterns, ranging from either physiological basis to their economic, social, and political context. Prerequisite: either BIOST 511, BIOST 512, and BIOST 513, or BIOST 517 and BIOST 518, or equivalent; either EPI 511 or both EPI 512 and EPI 513. Offered: A.

**G H 521 International Program Management and Evaluation (3) *Downer, O'Malley***

Overview of the program planning cycle as applied to international program management. Uses case studies and application exercises to develop skills in designing assessment activities for program planning; developing, testing, and implementing programmatic interventions; managing resources and people, monitoring activities; and evaluating program outcomes. Offered: Sp.

**G H 531 Research Methods in Developing Countries (3/4) *Gloyd, Mock***

Simple, practical methodologies to obtain and validate information regarding health status and health services in developing countries. Usefulness, validity, limitation of vital records, health reports, household (and cluster) surveys, nutritional anthropometry, and qualitative methods discussed. Lectures, computer lab, and student participation in community-based survey. Offered: jointly with EPI 539; W.

**G H 532 Responsible Conduct of International Research (3) *Farquhar***

Prepares international and U.S. students to develop research proposals, conduct international field research, and present scholarly work. Topics include proposal writing, human subjects protection, data management, peer review, scholarly integrity, responsible authorship, and grants and budget management. Open to graduate and non-matriculated students. Credit/no credit only. Offered: jointly with EPI 586; A.

**G H 533 Population Health Measurement (4) *Lim***

Introduces approaches for measuring population health such as burden of disease methods. Provides an understanding of the technical basis, uses, and limitations of these methods, particularly in developing countries. Predominantly quantitative. Primarily for PhD students. Prerequisite: G H 515, or permission of instructor. Offered: W.

**G H 543 Global Health Pharmacy: Medicines, Practice and Policy (2) *Garrison, Stergachis***

Introduces the critical role of pharmaceuticals in addressing the major diseases affecting persons in resource-limited settings, such as HIV/AIDS, malaria, and tuberculosis. Addresses the wide range of relevant issues, including burden of disease, human resource capacity, regulation, drug safety/pharmaco-vigilance, drug distribution, pharmaco-economics, financing, intellectual property, and drug trade policies. Credit/no credit only. Offered: W.

**G H 544 Maternal and Child Health in Developing Countries (3) Mercer**

Emphasizes critical health problems of women and children in developing countries in social, economic, and cultural contexts. Practical approaches to developing MCH programs shared via lecture/discussions, exercises, and small group work. Students acquire skills in baseline assessment, setting objectives, planning and evaluating interventions, and involving communities. Offered: jointly with HSERV 544: W.

**G H 553 Reproductive Health, Population and Development (2) Povey**

Provides students with an introduction to demographic conditions in Third World countries and an understanding of the consequences of rapid population growth on health and the environment. The context and effectiveness of family planning programs is a major focus. Offered: A.

**G H 555 Nutrition in Developing Countries (3) Gorstein**

Introduces issues of nutrition in developing countries, with an emphasis on the control and prevention of under nutrition and micronutrient deficiencies. Offered: jointly with NUTR 555; Sp.

**G H 561 Tropical Medicine (1) Buckner, Pottinger**

Intended for professional health science students interested in learning the pathophysiology, epidemiology, and clinical presentation of disease conditions that are more commonly seen in less-developed countries, resource-limited settings, or tropical climates, and how to diagnose, treat, and follow the resolution of these diseases with commonly limited resources. Credit/no credit only. Offered: jointly with MED 561; Sp.

**G H 562 AIDS: A Multidisciplinary Approach (2) Farquhar**

Comprehensive overview of the public health, clinical, and laboratory aspects of human immunodeficiency virus (HIV) infection and disease. Topics include the pathogenesis, natural history, and management of HIV infections. The impact of HIV/AIDS on community and global health care and prospects for prevention and control. Credit/no credit only. Offered: jointly with EPI 530/MED 530; A.

**G H 565 Diseases of Public Health Importance and Strategies for their Control (3)**

Public Health perspective of major disease of national and global importance. Discussion of origins, establishment, progression, and pathogenesis of diseases. Importance of immunological, intercellular and external factors, and strategies of disease prevention. Requires a grounding in cellular and molecular biology, microbiology, and immunology. Prerequisite: permission of instructor. Offered: Jointly with PABIO 550.

**G H 566 Biochemistry and Genetics of Pathogens and Their Hosts (4)**

Provides a strong foundation in biochemistry, molecular biology, and genetics for students interested in disease. Principles will be illustrated through examples focusing on pathogens, and infectious and non-infectious disease. Prerequisite: undergraduate level course work in molecular biology or biochemistry or permission of instructor. Offered: Jointly with PABIO 551.

**G H 571 Essential of Clinical Care and Capacity Building in Low Income Countries (3) Pak-Gorstein, Zunt**

An interdisciplinary case-based forum of presentations by local and international lecturers and class discussions on realities of providing healthcare in low-income settings. Covers issues in prevention, socioeconomic underpinnings, management of medical and surgical conditions, and sustainable strategies to build capacity. Credit/no credit only. Offered: W.

**G H 590 Selected Topics in Global Health (1-4, max. 12)**

Focuses on topics relevant to global health. Offered: AWSpS.

**G H 592 Program Seminars (1-6, max. 6)**

Addresses specific educational needs of students within the Department of Global Health. Prerequisite: permission of instructor. Offered: AWSp.

**G H 593 MPH Thesis Workshop (1) Hagopian**

Introduces students to the issues involved in conceptualizing and completing thesis projects and the various international health organizations and faculty members available as resources to projects.

Prerequisite: first-year Global Health MPH students. Offered: AWSp

**G H 595 Master's Practicum (1-6, max. 6)**

Supervised practice experience providing an opportunity to apply knowledge and skills in a setting of relevance to global health. Credit/no credit only. Prerequisite: permission of faculty advisor. Offered: AWSpS.

**G H 600 Independent Study or Research (\*)**

Prerequisite: permission of instructor. Offered: AWSpS.

**G H 700 Master's Thesis (\*)**

Prerequisite: permission of instructor. Offered: AWSpS.

PhD Pathobiology Courses

**PABIO 536 Bioinformatics and Gene Sequence Analysis (3) Rose**

Nature and relevance of molecular sequence information, computer-based protein, and DNA sequence analysis, molecular sequence and genomic databases, and methods for database accession and interrogation. Prerequisite: background in molecular biology and permission of instructor. Offered: jointly with MEBI 536/PHG 536; ASp.

Instructor Course Description: [Timothy M Rose](#)

**PABIO 550 Diseases of Public Health Importance and Strategies for their Control (3)**

Public Health perspective of major disease of national and global importance. Discussion of origins, establishment, progression, and pathogenesis of diseases. Importance of immunological, intercellular and external factors, and strategies of disease prevention. Requires a grounding in cellular and molecular biology, microbiology, and immunology. Prerequisite: permission of instructor.

**PABIO 551 Biochemistry and Genetics of Pathogens and Their Hosts (4)**

Provides a strong foundation in biochemistry, molecular biology, and genetics for students interested in disease. Principles will be illustrated through examples focusing on pathogens, and infectious and non-infectious disease. Prerequisite: undergraduate level course work in molecular biology or biochemistry or permission of instructor.

**PABIO 552 Cell Biology of Human Pathogens and Disease (4)**

Cell biology and immunology explored through diseases of public health importance with examples of pathogen interaction with host cell biology and immune systems, unique aspects of the cell biology of pathogens, perturbations of these systems in non-infectious diseases and design of therapeutics and vaccines to combat diseases of public health importance. Prerequisite: undergraduate level coursework in biology or molecular biology or permission of instructor.

Instructor Course Description: [Jaisri Lingappa](#)

**PABIO 553 Survival Skills for Scientific Research (2) Lukehart, Parsons**

Focuses on skills needed for scientific career: writing abstracts, curriculum vitae, research proposals; preparing for oral presentations; lab management skills; discussion of mentorship/trainee relationships; case-based discussions of various topics in ethics and scientific misconduct. Credit/no credit only.

Offered: Sp.

**PABIO 568 Molecular Epidemiology of Infectious Diseases (2)**

Application of molecular typing techniques to study of microbial pathogens to increase understanding of epidemiology of infectious diseases. Brief review of molecular biology. Evaluation of methods used in outbreaks and epidemics reported in literature. Prerequisite: PABIO 511 or PABIO 512 or permission of instructor. Offered: jointly with ENV H 568/EPI 568; W.

**PABIO 580 Pathobiology Seminar (1, max. 15)**

Research from students, faculty members, and invited speakers is presented and discussed. Topics include immunochemistry, viruses, membranes, infectious diseases, immune response and other related topics.

Instructor Course Description: [Gerard A. Cangelosi](#)

**PABIO 582 Critical Thinking and Research Design in Pathobiology (1.5) *Lingappa***

Analysis of issues, hypothesis and experimental design and testing. Credit/no credit only. Prerequisite: graduate standing in pathobiology. Offered: W.

Instructor Course Description: [Amanda L Jones](#)