

A. Specific Aims

Translating research and medical advances into improvements in global health and reduction of health disparities requires a broad interdisciplinary approach coupled with an ethos of international cooperation. Our proposed Frameworks project will bring together the faculty and resources of four separate schools at the University of Washington -- Medicine, Public Health, Law, and Arts and Sciences -- to address this challenge. The goal of this project is to develop new curricular resources and administrative frameworks that will remove barriers to and facilitate both inter- and multi-disciplinary training in global health. Specifically we will undertake the following:

Core Activities

- 1) Curriculum: Develop a coordinated, interdisciplinary curriculum that will energize and inspire undergraduates, graduate students and researchers interested and/or active in global health.
 - a. Create 3 new foundation courses for Global Health: a "Discovery" seminar for incoming freshman, a multidisciplinary, team taught, case-based foundational seminar for graduate students, and a methodology course on population metrics for global health.
 - b. Coordinate existing interdisciplinary graduate certificate programs, and support the development of three new certificates.
 - c. Coordinate internship opportunities with local, regional and global partners
 - d. Promote distance learning opportunities in Global Health through established UW outreach programs.
- 2) Administrative Framework: Establish a comprehensive overview of the wide range of existing and developing global health activities at the University of Washington.
 - a. Establish a Global Health advisory council, representing the wide range of departments and programs, to act as an input mechanism for the Frameworks project, and for the new Global Health Department at the University of Washington
 - b. Coordinate Fogarty programs here at the University of Washington to identify common challenges and share best practices
 - c. Create a database to provide an overview of all academic and training-related activities in global health, accessible to local, regional and global constituents

Supporting Activities

- 3) Outreach: Build the global health constituency by synergizing the efforts of faculty and researchers currently working in the area, providing outreach to those not currently involved in global health issues, and strengthening ties to our regional and global partners.
 - a. Local -- Monthly campus seminar spotlighting local partners, researchers and initiatives.
 - b. Regional -- Research symposia designed to increase interchange among researchers across disciplines, and enhance research translational activities and exploit the regional infrastructure of the existing WWAMI program.
 - c. Global -- Provide a web based catalog of academic and research opportunities, and distance learning activities
- 4) Evaluate activities carried out by the grant
 - a. Evaluation of curriculum and long-distance learning activities by students, researchers, and faculty peers.
 - b. Survey of constituents (administrators/students/faculty/key personnel/ Fogarty programs/international partners) to assess usefulness of catalog of activities produced by Specific Aim 2

The curricula and frameworks developed here will help guide, and be integrated into the new Global Health Department at the University of Washington. The department is expected to be established in September 2006, and to be fully functional by 2009.

B. Background and Significance

The landmark “global burden of disease study” (Murray & Lopez, 1997) created the first standard metrics for the major causes of mortality and disability in the world. With these metrics it became possible to see clearly the massive gaps in population health around the world – between rich and poor within countries, and between the wealthy industrialized nations and the low-income nations struggling to develop. Increasingly, the forces of globalization – the movements of information, people, goods and money, and the institutions that support this – create a world in which these health and socio-economic disparities are connected and interdependent. The same forces create a broader range of physical contact among human populations and establish the foundation for pandemic spread of emergent infections. As a result, the boundaries between local health and global health are dissolving. On the one hand, this makes a global perspective essential for addressing the root causes of health disparities. On the other hand, it makes a local perspective essential for appreciating the constraints on and opportunities for prevention, treatment and care.

Achieving real improvements in global health will require us to make this global disease burden the focus of research and the principle for resource allocation. Studies and analysis of global health indicators estimate that 93% of the global burden of premature mortality is attributable to disease problems in developing countries, while 95% of global expenditure on health research is directed at disease problems of developed countries. This result is what the World Health Organization Ad Hoc Committee on Health Research calls the “10/90 disequilibrium”: less than 10% of total global spending on health research is devoted to diseases that account for over 90% of the global disease burden. (Global Forum for Health Research, 2002). This fundamental inequity drives increasing concern that populations of developing and economically struggling countries are being ignored in terms of fair benefits of research. (“Fair Benefits for Research in Developing Countries,” *Science*, 2002). With the reemergence of lethal infectious diseases, it also drives the growing recognition that there are benefits to developed countries from solving health problems in the developing world.

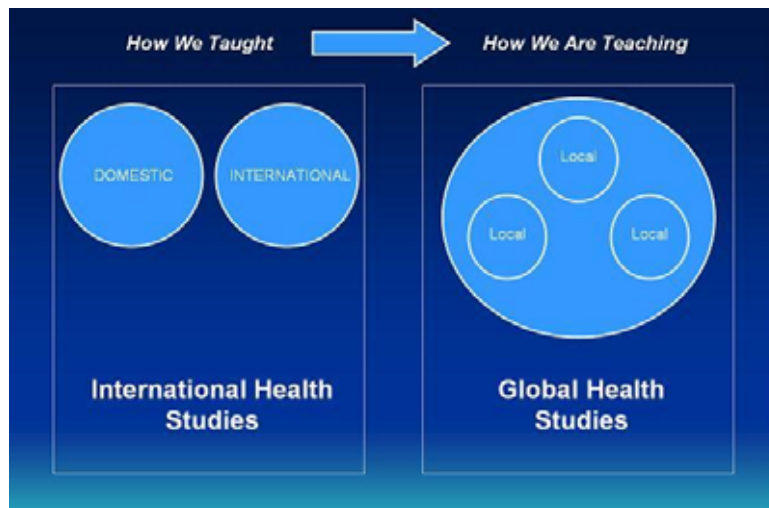
The gap in health conditions between the poor and the rich, at both the individual and the country level, is overwhelmingly due to communicable diseases. Most of these diseases are preventable. The diseases that account for much of the gap include AIDS, malaria, measles and diarrheal disease. Diarrheal disease kills over 2 million children a year in poor countries, despite the fact that prevention simply requires safe drinking water, and treatment with inexpensive oral rehydration salts is often sufficient to prevent death. One million children in poor countries still die of measles every year, despite the existence of a vaccine for half a century, and the fact that the immunization costs only a few cents. Malaria can be prevented with inexpensive insecticide-impregnated bednets, and is treatable, but it too, remains in the top ten causes of adult and child mortality in developing countries. AIDS takes a similar disproportionate toll, but it has had another impact: because its toll is rising while many of the others are falling, and because its long duration gives it a global reach, it has refocused attention on the continuing threat of infectious diseases. Alone among these diseases, it has galvanized the developed world to respond.

Increasingly, the challenges facing global health have come to be understood as a multidimensional social challenge: having the medical technology is only effective if we have the means to distribute it. The barriers to distribution of even the simplest medical treatments are complex. In the context of health services delivery, much of the world’s population lack access to even a rudimentary health care infrastructure (WHO, 2001). Access to pharmaceutical drugs presents another barrier. The 1994 Agreement on Trade-Related Aspects of Intellectual Property (TRIPS) requires World Trade Organization member states to respect intellectual property protections, but it also provides for several exceptions in cases of significant public health need. Despite this, developing countries have faced opposition from multinational corporations when trying to take advantage of these provisions (Ferreira, 2002). Yet another formidable barrier to global health is the pervasive exclusion and marginalization of some of the most needy and vulnerable populations, including the disabled, women, children, racial/ethnic minorities and internally-displaced persons. Finally, a failure to understand the cultural context of health-related behaviors can lead prevention or treatment efforts to fail at the last link of the chain.

This array of macro- and micro-economic factors, political dynamics, legal frameworks, cultural differences, psychological mechanisms, and social determinants defines the broader context of population health. The next generation of researchers, policy makers and practitioners in global health will need to understand all of

these factors to make progress. They will need to work together, across disciplinary boundaries, and across national boundaries, for this to happen.

Two recent reports from the Institute of Medicine, *The Future of the Public's Health in the 21st Century* (2002) and *Who will keep the Public Healthy? Educating Health Professionals for the 21st Century* (2003) have emphasized the need to expand the health sciences curriculum to include a broad based approach to the complex determinants of health. Shortell and colleagues (2003) have recently documented the ongoing efforts across Schools of Public Health to address this challenge. In many, Global Health is identified as a content area of need. We also see it as an area which can be an "integrator" as portrayed below.



The University of Washington (UW) is one of a growing number of universities to begin to address the complex issues in global health. We have supported an International Health Program training track for decades. The curriculum (Appendix 1) has sought to integrate traditional biomedical approaches with other disciplines and perspectives. UW is also host to a significant number of research and training programs in the global health arena, including seven Fogarty programs, the Population Leadership Program for international health professionals, a long-standing Hewlett Foundation grant for international training in population and reproductive health, and hundreds of funded research projects (listed in Appendix 2). We also have an unusually strong set of regional partner organizations, including Program for Appropriate Technology in Health (PATH), the Seattle Biomedical Research Institute (SBRI), Battelle, and the Fred Hutchinson Cancer Center (FHCRC). These partners have provided many internship and research collaboration opportunities to our students and faculty for over 25 years. But as the range of research on global health issues on campus has rapidly grown, the limitations of our current structure have become increasingly clear: it needs a central institutional home, more resources, and a radically multidisciplinary curriculum.

The UW has therefore undertaken to establish a new Global Health Department in 2006 that will be a joint venture of the School of Medicine (SOM), and the School of Public Health and Community Medicine (SPHCM). The goal is to create a multidisciplinary learning environment to engage students and faculty in the challenges of global health. We want to help them define, quantify, and monitor the progress towards global health goals; foster internships with local, regional and global health partners; design, implement and evaluate interventions, and learn to translate knowledge into policy.

This proposal is one of the first steps in building the new UW Global Health Department, and the resources developed with this Fogarty Frameworks grant will be transferred and sustained there. Specifically, we seek to establish the curricular and administrative framework for linking the Health Sciences (SOM and SPHCM), the Social Sciences, and the Law School. There are strong programs in each school focused on parts of the global health picture, but the links between them are weak. These interdisciplinary links are essential for any successful program in global health. It is only with broad support that complex research and training can adequately address the complex problems on the ground.

C. Preliminary Studies/Progress Report

1. Institutional descriptions

The University of Washington (UW) is a public research university with campuses in Seattle, Tacoma, and Bothell, Washington. Founded in 1861, it has grown to be one of the leading research universities in the nation, recognized for the high quality of its research and graduate programs. Significant achievements include:

- Since 1969, the University has ranked among the top five institutions in the nation in receipt of federal awards, and since 1974, it has been the number one public university in America in receiving federal support for research and training. In fiscal year 2002, the University received more than \$800 million in public and private grant and contract support for research and training.
- Since 1989, four UW faculty members have won Nobel Prizes in physics and medicine, and a fifth won a Nobel Prize in medicine for work done primarily at Seattle's Fred Hutchinson Cancer Research Center.
- In 2000, the UW received the first national EDUCAUSE award for excellence in campus-wide programs in information technologies that support teaching and learning.
- The University of Washington is one of the largest academic institutions in the United States, with 38,000 students annually and over 5000 full-time faculty members.

The university has numerous departments, centers and programs that have academic offerings relevant to global health, particularly the aspects of ethics and social justice, population demographics, and ecology and environmental change. Many offerings emanate from the University's Schools of Medicine, Law, Public Health and Community Medicine, and College of Arts and Sciences. Because these schools and programs are all housed on one large physical campus in Seattle, Washington, there is a tremendous opportunity for multidisciplinary education and interchange. As a large state university drawing students and researchers from the region, nation, Asia Pacific, and the World, the University of Washington is in a strong position to build a global health perspective into the culture of scientific discovery and provision of health care. In fact this is already a central, albeit not fully realized, part of our University's mission. Global Health is a central issue to the welfare of our increasingly large population of faculty and students. This proposed project will further the "local to global" continuum of understanding essential to the training and knowledge base of the researchers, leaders and health care providers of the future.

Schools and affiliated institutions

Our grant proposal unites the strengths of the University of Washington's School of Public Health & Community Medicine (SPHCM), School of Medicine (SOM), School of Law (SOL) and Center for Study of Demography and Ecology (CSDE) in the College of Arts and Sciences, all of which have existing academic offerings and research expertise in global health issues. In the text below, we describe each school, the project leader from that school on this proposal, other key personnel from that school, and other "resource faculty" who have agreed to participate. A total of 52 resource faculty in the collaborating schools have volunteered to provide teaching, mentoring, or curriculum development. Biosketches for all persons named here are included in this submission.

a. School of Public Health and School of Medicine

The University of Washington is a regional center of excellence in the Health Sciences. Its **Schools of Public Health and Medicine** serve a regional role for the states of Wyoming, Alaska, Montana and Idaho (WWAMI) which have no medical or public health schools within their borders.

The School of Public Health and Community Medicine (SPHCM) and School of Medicine (SOM) work closely together in international collaborations and education. The two schools are "home" to seven Fogarty funded research and training programs (see section C.2.a below). The School of Public Health has a longstanding

International Health Program training track within its MPH degree program. The School of Medicine now has a Global Health pathway for Medical Students. The two schools collaboratively run the Puget Sound Partners for Global Health program (see section C.3 below). The new Global Health Department will cross both schools and eventually encompass most of the global health activities underway. This project provides a “proof of concept” for that expansive vision by creating an educational and administrative framework as we describe herein.

Project Leader: Ann Marie Kimball, MD, MPH, FACPM, Principal Investigator, Program Director

Dr. Kimball serves as the Program Director and Principal Investigator (25% FTE) of the Global Health Fogarty Frameworks activity. She brings extensive organizational and teaching experience to this role, having served as Director of the Masters in Public Health Program in Health Services, and Director of the Community Medicine program at SPCHM as well as numerous other university and community organizational activities. She directs and serves as co-PI of the “Amauta” Fogarty Global Informatics program in Peru. She joined the Biomedical and Health Informatics faculty as an adjunct professor in 2003, reflecting her increasing involvement in Informatics through the ongoing training activity in Peru and advanced networking in the Asia Pacific. She was awarded a New Century Scholars Fulbright in 2002 and in 2004 she received a Guggenheim Foundation scholar award for her work on Global Trade and the Emergence of Infections. Prior to joining the UW, Dr. Kimball served Washington State as its Director of HIV/AIDS activities, the National Alliance of State and Territorial AIDS Directors as its chair, and the Pan American Health Organization as its Regional Advisor for AIDS. She is fluent in Spanish and French.

Key Personnel (non-Fogarty):

Doug Schaad is division director in the Department of Medical Education and will be in charge of evaluation of the project, an area where he has worked extensively.

Resource Faculty: (biosketches for all Resource Faculty are included)

S. Beresford
Bobbie Berkowitz
Sherrilynne Fuller
Steve Gloyd
Virginia Gonzales
Jonathan Gorstein

Jane Hitti
Ann Kurth
Lisa Manhart
Mary Anne Mercer
Mark Oberle
James Pfeifer

Roger Rosenblatt
Steven Self
Clarence Spigner
Caroline Watts
Joe Zunt

b. School of Law

Our **School of Law** offers a multidisciplinary concentration track in Health Law with numerous offerings in health care ethics and the role of law. Most of its offerings are available to health sciences, public health, and public affairs students as well as to law students. Within the Health Law program, the **Global Health and Justice Project** focuses on global health, bioethics and human rights issues. Directed by Dr. Patricia Kuszler and Dr. Beth Rivin, this multidisciplinary project includes academic activities at the Law School, as well as field opportunities for students and faculty in developing countries in collaboration with the Seattle-based NGO, Uplift International. Complementing the Health Law Program are the law school’s strengths in Asian, international and comparative law and in intellectual property law and policy, all of which have relevance to issues in global health. Law School faculty members are actively engaged in research and consulting activities related to law and policy reform in developing countries, including China, Japan, Southeast and South Asia, India, Eastern Europe, the former Soviet Union, and the Middle East. Recent and current projects include:

- Global Health and Justice Conference in February, 2005, supported by law schools at University of Washington, Seattle University, Lewis and Clark University, Gonzaga University and the University of British Columbia. Proceedings from this international, multidisciplinary conference will be published. The conference program is in Appendix 3.

- Ongoing collaboration with Schools of Law and Medicine at the University of Indonesia to create multidisciplinary curricula in health, bioethics and human rights and survey students and professionals about knowledge and attitudes in these areas.
- U.S. Department of State Grant for \$2 million to establish a graduate program for Afghan law professors. The grant will fund a three-year project to help rebuild Afghanistan's legal profession, and allow Afghan lawyers to spend one year in Seattle as visiting scholars or master's of laws candidates to learn about the U.S. legal system.

Project Leader: Patricia Kuszler, MD, JD, Co-Principal Investigator

Dr. Kuszler is Associate Dean and Professor at the UW School of Law. She has an MD from Mayo Medical School and a JD from Yale Law School. Dr. Kuszler has academic appointments in the UW School of Medicine and the School of Public Health and Community Medicine. Prior to her career in law, Dr. Kuszler practiced medicine in New York and Connecticut. Following graduation from Yale Law School in 1991, she practiced health law at Hogan & Hartson in Washington, DC. Her areas of practice included IRB and regulation of research and scientific misconduct. Kuszler founded and directs the health law concentration track at UW Law School and teaches a variety of courses focusing on medical and research ethics, including Medical Ethics and Jurisprudence, Ethical, Legal and Social Issues in Genetics, and Health and Human Rights. She has chaired one of the UW's Human Subjects Committee for the last several years. For the last four years, she has also chaired the Conflict of Financial Interest Advisory Committee of the UW; this committee provides guidance to the VP of Research on research conflict of interest and scientific misconduct

As Associate Dean for the School of Law, Kuszler is responsible for multidisciplinary initiatives, research, centers, and programs involving study of law. Most recently she has in collaboration with Dr. Beth Rivin, initiated and instituted the Global health and Justice Program which like the Fogarty fellowships, focuses on translating academic experience to practical application in developing countries. Her teaching and research interests include the impact of law and regulation upon health care delivery, research ethics and standards, scientific misconduct, health and human rights, and legal, ethical and policy issues presented by advances in medicine and biotechnology.

Key Personnel:

Beth Rivin has headed up the Health and Human Rights project in Law and is working in Indonesia. She will be both a teaching and a source resource for case construction in SE Asia. She will also shepherd the certificate program in Law.

Resource Faculty:

| | |
|-------------------|------------------|
| Kate Battuello | Joel Ngugi |
| Steve Calandrillo | Sean O'Connor |
| Clark Lombardi | Kristen Stilt |
| Anna Mastroianni | Toshiko Takenaka |
| Paul Miller | |

c. Arts and Sciences – Center for Studies in Demography and Ecology (CSDE)

CSDE, founded in 1947, is a regional center for research and training in population studies at the University of Washington. We focus on interdisciplinary population research, with faculty affiliates and students drawn from Sociology, Anthropology, Geography, Economics, Statistics, Social Work, Public Affairs, International Affairs, and the SPHCM. Many affiliates are leaders in their field, serving as president of the Population Association of America, president of the Association of American Geographers, director of the UW Center for Research on Families, and director of the Population Leadership Program at the UW. CSDE is one of only 10 demography centers in the country to have both research infrastructure and training grants from the NIH. In addition, we administer an investigator-initiated research grant portfolio of over \$6.5M. One of CSDE's "signature themes"

is population and health. Faculty affiliates in this area focus on a wide range of social, cultural and biodemographic issues in global health, including the role of partnership networks in HIV transmission, female genital cutting, nutritional deficiencies in Kenya, postpartum breastfeeding and child health in Bangladesh, sexual orientation and HIV in Peru, the demographic impacts of AIDS in South Africa, sex-selective abortion in China, medical geography, and the impact of import liberalization on developing countries. CSDE has one of three biodemography laboratories in the country. The lab specializes in developing, optimizing, and carrying out hormone assays for large-scale survey research projects in resource poor settings.

CSDE has established several links to SOM and SPHCM. A number of our biological anthropology faculty affiliates co-teach a set of courses on medical anthropology in SPHCM. Several other affiliates have begun to partner with the UW Center for AIDS Research (CFAR) in the SOM to develop a comprehensive research and training program in the social, behavioral, and demographic aspects of HIV/AIDS, and a capacity to model the intrahost transmission dynamics of HIV. We are also reaching out to non-affiliated faculty in the Social Sciences at the UW to participate in this Fogarty Framework proposal.

Project Leader: Martina Morris, PhD, Co-Principal Investigator

Martina Morris, PhD

Dr. Morris is the Director of the Center for Studies in Demography and Ecology. She has a PhD in Sociology and a MA in Statistics from the University of Chicago, Chicago, IL and a BA in Sociology from Reed College, Portland, OR. At the UW Dr. Morris holds the Blumstein-Jordan endowed chair, and has a joint appointment in the departments of Sociology and Statistics. Her research has focused on the determinants of global HIV prevalence differentials for the last 15 years. She has published extensively on the role of sexual networks in the spread of HIV, with empirical work based in Uganda, Thailand and the US. She currently holds three NIH grants that focus on aspects of this topic, and heads a large interdisciplinary and international team of researchers working on statistical modeling of networks for epidemiology. She has also published extensively on the trends in earnings inequality in the US, with an award winning book in 2001.

Dr. Morris has established a number of institutional and research collaborations with the SOM via the NIH funded UW CFAR. She is the founding director of the newly funded "Sociobehavioral and Prevention Research" core, with an interdisciplinary team drawn from the departments of Epidemiology, Nursing, Social Work and Family Medicine. She is a co-director of the new "Mathematical Modeling Program" in that center, working with a team of biostatisticians, physicists and mathematicians. And she is a co-director of the Behavioral track of the STD/AIDS training grant in the SOM, mentoring a range of pre- and post-doctoral students from many disciplines.

Key Personnel:

Samuel J. Clark, PhD is an assistant professor in the Department of Sociology with considerable experience in the field of mortality patterns in Africa, where he has worked on mortality models for Namibia, Gambia, and South Africa. Dr. Clark is pursuing a project to develop an individual level microsimulator of HIV infection of African populations. He will lead the development of the population metrics course.

Resource Faculty:

Rachel Chapman
Yu-Chin Chen
Elaina Erosheva
Mary Gilmore
Angelina Godoy
Steve Goodreau
Robert Halvorsen
Darryl Holman
Lucy A. Jarosz

Danuta Kasprzyk
Nancy Kenney
Wolfram W. Latsch
William Lavelly
Donna Leonetti
John Mayer
Dan Montano
Kathleen O'Connor
Devon Pena

Bob Plotnick
Claus Portner
Priti Ramamurthy
Lorna Rhodes
Bettina Shell Duncan
Janelle Taylor
Lynne Thomas
Jonathan W. Warren

2. Ongoing Research and Training Programs in Global Health

The University has an active global role in research and training in the Health Sciences. This includes seven Fogarty International Center Research and Training Programs (detailed below) with an extensive network of collaborating centers; several other international population/health training programs in the collaborating schools; and the Puget Sound Partners. In 2003 the programs came together in a series of meetings to begin to synergize our work. This program announcement is timely to our efforts to build a support network for global health initiatives at the University of Washington.

a. FOGARTY FUNDED RESEARCH AND TRAINING PROGRAMS at the UNIVERSITY OF WASHINGTON

| Grant Number | Content Area | PI | Institutional Home" | Collaborating Foreign sites |
|-------------------|--------------------------------|--------------|--|--------------------------------------|
| 5D43TW005509-05 | Malaria | Duffy, P. | SBRI | Tanzania |
| 5D43TW000007-17 | IARTP - AIDS | Holmes, K. | Infectious Diseases | University of Nairobi, Kenya |
| 5D43TW000642-09 | Occupational & Environ. Health | Keifer, M. | Medicine; Public Health and Comm. Medicine | Nicaragua Vietnam |
| 3D43TW001286-04S1 | Informatics training | Kimball, A. | Epidemiology | Universidad Peruana Cayetano Heredia |
| 1 D43 TW007267-01 | Injury Prevention | Mock, C. | Harborview | Ghana, Viet Nam |
| 5D43TW000924-05 | Emerging Infectious Diseases | Stuart, K. | SBRI | Mexico India |
| 5T37TW000049-07 | MIRT | Williams, M. | Epidemiology | Zimbabwe, Ecuador, and Peru |

An overview of each Fogarty program's goals, and accomplishments, is provided in Appendix 4. While each of the seven programs addresses a unique content area, they have many commonalities: issues of recruitment, selection, mentoring and return of scholars to resource poor settings. The global "brain drain" is increasingly appreciated as a major obstacle to the improvement of health (Narasimham et al., 2004; Saravia & Miranda, 2004). To date across these programs we have been highly successful at insuring our graduates return. However, the challenge of assuring a knowledge-based environment in the home country, coupled with organization and institution building with our collaborating partners, is only now coming to the fore as the programs mature. This proposal includes strategies to share on-line innovations in curricula and science across institutions as well as across the ongoing Fogarty programs as "lessons learned".

Achievements of the Fogarty Programs affiliated with the University of Washington

Since 1988, the productivity of our varied Fogarty programs has been prodigious. Nearly 700 scholars have been trained across the various disciplinary areas, and another 86 are in training now. They have published collectively over 375 scientific papers, and made over 280 scientific presentations (Details in Appendix 4.b).

Many of our Fogarty researchers and scholars desire an exposure to critical thinking skills beyond the biomedical realm, but currently we do not have a good mechanism to promote that diversity in curriculum. Our graduate and undergraduate students likewise seek multidisciplinary curriculum offerings in global health to provide perspective for their studies and research.

b. OTHER TRAINING PROGRAMS IN GLOBAL HEALTH at the UNIVERSITY OF WASHINGTON

| Name | Funding | School |
|-------------------------------|----------------------|---------------------|
| Population Leadership Program | Gates & Packard Fdns | Public Affairs/CSDE |
| Hewlett Population | Hewlett Fdn | CSDE |
| International Health Program | Internal | SPHCM |

The University of Washington **Population Leadership Program** awards fellowships to accomplished mid-career professionals and leaders from developing countries whose careers focus on population, family planning, and reproductive health. The Program seeks professionals who have already demonstrated leadership in their areas of responsibility and would benefit from a year of reflection and rigorous work to develop stronger management and leadership skills. The curriculum combines the expertise of three parts of the University of Washington: the Daniel J. Evans School of Public Affairs, the School of Public Health and Community Medicine and the Center for Studies in Demography and Ecology. PATH (the Program for Appropriate Technology in Health), an international nonprofit organization dedicated to improving health, is a partner.

The CSDE has administered a **Hewlett** funded training program for international students in population studies since 1988. This program funds graduate training toward the PhD. in any of CSDE's affiliated departments in the social sciences. The course of study follows each department's requirements. All fellows also receive training in the responsible conduct of research. The Hewlett program is designed to benefit: the world at large by enabling sustainable rates of population growth; societies whose members can emerge from a life of bare subsistence; individuals, particularly women and girls, in terms of their physical and emotional health and wellbeing; and children whose parents want them and who have more time to help them mature into responsible and productive adults.

The SPHCM offers an interdisciplinary graduate program in **International Health** leading to a Masters of Public Health (MPH) degree. The International Health Program is designed for health professionals, administrators, and policy analysts who intend to devote a significant part of their careers to improving health in developing countries. Its goal is to contribute to the advancement of world health through service, teaching, and research. The program focuses on community health and primary health care systems of the developing world. Students learn basic principles of public health and to identify social, political, and economic determinants of illness. The study of planning, management, and evaluation of health care systems is an integral part of the academic program. The program is an elective track within the MPH degree programs in both the Departments of Health Services and Epidemiology.

3. Puget Sound Partners for Global Health (PSPGH)

This is a collaboration of Seattle-area researchers, healthcare professionals, students and non-governmental organizations committed to improving global health. We link the Seattle global health community by sharing information; funding international training, education and research opportunities; and holding events focused on global health. Specifically the Partners has provided limited funding which has begun two key activities: educational initiatives for placing students in the allied health sciences overseas, and providing seed money for innovative research in Global Health. The Global Health Resource Center which is an administrative collaborator in our Framework is supported by the Partners. Among the sites where US students visit for practica, predoctoral work or clinical experience is Peru, where Amauta has served as the "parent" program to the practica program.

a. Global Health Resource Center (GHRC)

The GHRC opened its doors on September 2003 in the Health Sciences Administration department in order to manage the Training and Education Program for the Puget Sound Partners for Global Health and to establish a global health resource and information center on campus. The GHRC 1) coordinates activities, events and information; 2) connects individuals interested in global health; and 3) catalyzes opportunities for international, inter-professional collaboration and exchange. Among the activities of the Partners and the Global Health Resource Center is the **Regional International Health Conference** which is held biannually.

b. SBRI & Fred Hutchinson Cancer Research Center

Founded in 1976, SBRI is the largest independent, non-profit research institute in the United States focused solely on infectious disease research. The mission of SBRI's nearly 200 staff members is to conduct targeted

research leading to the prevention, diagnosis and cure of global infectious diseases. Including malaria, HIV/AIDS and tuberculosis, the diseases researched at SBRI are the world's most devastating infectious diseases, responsible for the deaths of 14 million people each year. Today, SBRI is an internationally recognized center for research and training excellence with connections from Seattle to its field lab in Tanzania, as well as a number of other locations around the world.

The **Fred Hutchinson Cancer Research Center**, home of three Nobel Prize laureates, is an independent, nonprofit research institution dedicated to the development and advancement of biomedical research. The center receives more funding from the National Institutes of Health than any other independent U.S. research institute. This funding supports four scientific divisions that collaborate to form a unique environment for conducting basic and applied research. The center enjoys productive academic and industry collaborations that enhance Fred Hutchinson's ability to achieve advances in cancer research and treatment. Fred Hutchinson's clinical and research partners, University of Washington Medicine and Children's Hospital and Regional Medical Center, together form one of 40 National Cancer Institute-designated comprehensive cancer-research centers.

c. PATH

PATH is an international, nonprofit, nongovernmental organization that improves the health of people around the world. Headquartered in Seattle, Washington, since its inception in 1978, PATH operates 19 offices in 13 countries. They currently work in more than 100 countries in the areas of reproductive health; vaccines and immunization; HIV, AIDS, and tuberculosis; and children's health and nutrition. Over the past 25 years, PATH has advanced more than 30 health technologies that are appropriate for low-resource settings. PATH work entails strengthening the capacity of health care providers and institutions, providing policymakers and decision makers with evidence-based information, and working with programs to ensure they are delivering services effectively. PATH has a deep involvement in communication for social change—programs that open up new possibilities for choosing healthy behaviors.

d. The new Global Health Department at the University of Washington

Pertinent to this proposal is a joint initiative by the Schools of Medicine and Public Health, launched in the fall of 2004, to create a Department of Global Health. Funding provided by a gift from the Bill and Melinda Gates Foundation will support start up costs for the new department. (Appendix 5) The activities we outline in this proposal will serve as a “proof of concept” for that nascent effort, which is in the early planning stages and anticipated to be fully operational by 2009. While the Department crosses two schools, the intent of the design of the department is to reach across the campus community to other schools and disciplines resident at the University of Washington and to their external collaborators. Our experience with this proposal will guide that new direction by seeking to systematically capture the research and training experience of our ongoing Fogarty funded research and training activities and creating new curricula and outreach activities.

- How well received will the Discovery Seminar be?
- Will the Global Health Research Symposium succeed in reaching out to our larger community?
- How will our WWAMI and regional partners respond to our on line offerings and new opportunities for their students and faculty within the program?
- What is the value added of creating curriculum across law and social sciences through certificates?
- Are full specialty degrees warranted in these areas?
- What are the “best practices” with our international partner institutions?
- How can these be reinforced administratively across distinct research and training programs?
- How can enhanced administrative collaboration enhance the collaborative global health research enterprise?

In 2009, when the new Department is fully functional, we will have designed and tested a framework through this project. Still in the planning stages, the new department is soliciting advice help for collaborative activities both on- and off- campus and seems a logical home for future Fogarty administration. It is anticipated that the department will begin academic activities by Fall, 2005. However curricula remains to be determined and this framework will provide guidance, experience and evaluation data for that effort.

D. Research Design and Methods

This proposal unites four schools at the University in teaching, research and administrative collaboration: The School of Public Health and Community Medicine, The School of Medicine, The School of Law and the College of Arts and Sciences.

This collaborative effort will allow us to bring in the important domains of law and social sciences to enhance understanding of population health and wellness. Over the course of the project, we anticipate building linkages to additional pertinent disciplines through the increased communication and education opportunities inherent in our methodology.

The four schools in this project are committed to creating an interdisciplinary environment that will enhance opportunities for learning, partnering and exchange among the many constituents that will contribute to improving global health. Our proposal focuses on creation of a framework which will support an interdisciplinary curriculum serving the needs of students and researchers at every level and provide an easily accessible catalog of activities and opportunities to our local, regional and global partners.

Core activities: Curricula Development and Administration of the Framework Program

D.1 Purpose and Goals of Curriculum Development:

The focus of our Framework for Global Health curriculum development is to create a integrated approach to the diverse determinants of global health. Our goal is to provide grounding in the medical and public health approaches to individual and population health, but also to go beyond this traditional construct to promote study and research on the broader determinants of global health. We will create two foundational “bookend” courses through this proposal: an introductory “Discovery seminar” for incoming freshman and a multidisciplinary seminar for upperclassmen and graduate students. We will also create a methodological core course: Population metrics in Global Health. Our enhancements in the certificate program activity will “frame” what could eventually be potential areas of specialized degree programs within Global Health. We also “frame” translation through multidisciplinary internships with regional partners like PATH, to demonstrate the real world impact of bridging between biomedical and social science disciplines.

As an example of new areas, equity issues such as access to pharmaceutical products and other products of research are central to achieving global health. Issues to be addressed, include the role of intellectual property rights, trade law and policy, social and economic status of the target populations, the health and public health delivery system and its underpinnings, and geopolitical constraints. Even simple determinants of health such as nutrition and childhood vaccination have a cascade of underlying determinants ranging from land rights in the former to superstition in the latter. Our innovative curriculum will explore the underlying determinants of global health and seek to engage the many disciplines that are vital in the quest to improve population health in the future. For this reason, our proposed curriculum has global health offerings aimed at several different levels of students and life-long learners.

D.1.a Course content and details

i. Foundation and skills-building courses

Undergraduate foundation seminar in Global Health: The “Discovery” Seminar

Our Global Health Frameworks program would integrate global health issues into the undergraduate curriculum in two ways. First, our multidisciplinary team would build an intensive, five-credit, month-long course that would become part of the University's existing “Discovery Seminar” program for incoming undergraduates. Discovery Seminars emphasize interdisciplinary study, focused inquiry and writing. The goal is to provide students with an early opportunity to interact with UW professors and faculty member, provide early access to campus resources and the academic milieu, provide active learning in a small-class format, jumpstart student research and analytic skills, and promote active learning on cutting-edge issues. For example, in the coming summer, the following are among the 23 courses offered: Can the U.S. Export Democracy?, When Politics, Religion, and Biology Meet: The Controversy over Stem Cell Research; Contracts of the Heart: Gift and Sacrifice. At the present time, there are no focused global health offerings in the “Discovery” series and such an offering would be welcome.

We plan to offer a “Discovery” seminar, tentatively titled “The top 10 issues in Global Health.” It will focus on the most important current sources of mortality, morbidity, and health disparities, and the biggest emerging health threats. The pedagogical approach will emphasize the interaction between pathogens, environments, social, economic and biomedical factors that determine the patterns of global health. The UW Dean that leads the seminar series has assured us that such a course would be a welcome addition to the offerings. We anticipate developing the course curriculum in year 1 of the grant offering the Discovery seminar for the first time in Summer, 2006.

Second, upper division undergraduates would be eligible to enroll in the core seminar on Global Health. This will allow them an opportunity to learn in a graduate seminar format, provide them with role models, and demonstrate multidisciplinary learning through a problem-based approach. Many of these undergraduates will be planning graduate level study in medicine, law, public health, public affairs, business, or health sciences. This seminar will provide them with knowledge and the context of global health that can serve as a backdrop for their graduate area of study.

Graduate foundation seminar in Global Health: Problem-based Multidisciplinary Seminar

The cornerstone of the proposed framework in Global Health academic curriculum will be a seminar on global health and related legal, social and policy issues. This seminar will function as the capstone for the graduate certificate programs and for other graduates and upper division undergraduates desiring a unifying educational experience focusing on global health.

The seminar will use a problem-based, case-study approach that will emphasize the role of multidisciplinary collaboration. Students will consider the case studies and be exposed to legal, ethical, social and policy analyses of the issues and possible solutions incumbent in a given case study. Each case study will be robust enough to provide study for five weeks. Students will develop an ability to delve deeply into the underlying causes of a given global health problem, research and study the problem from different perspectives, and work together to posit possible solutions. Because the students will come from a wide variety of backgrounds and interests, we anticipate lively and challenging engagement in the seminar topic. This pedagogical strategy has been successfully used by several of the faculty members in this grant in the past with great success.

Problem Based Learning (PBL) can be defined as “A curriculum of carefully selected and designed problems that demand from the learner acquisition of critical knowledge, problem solving proficiency, self-directed learning strategies and team-participation skills. Students work in small groups and generate hypotheses about the case and learning objectives, work outside of class to fill these deficiencies, then reconvene to teach each

other and solve the problem (Kincade, 2005). While it is not a panacea for teaching and learning, it has been demonstrated to be at least as effective as traditional learning methods in the acquisition of complex skill sets such as the practice of medicine where problem solving and critical thinking figure prominently (Distlehorst, Dawson, Robbs, & Barrows, 2005).

Issues raised by the cases might include: What are research ethics and how are they construed in different cultures? How can biomedical research be structured to avoid exploitation of vulnerable populations? How is population health impacted by economic shocks? How is HIV/AIDS affecting societies and what is its priority in settings heavily affected by other endemic diseases? What evidence and metrics can we use to allocate scarce resources? How does intellectual property protection imperil or enhance access to medicines and pharmaceutical products? The seminar will be structured to maximize multidisciplinary and multidirectional learning, by involving faculty members and students from the many internationally focused programs at the University of Washington.

Initially, the cases will be developed by resource faculty members and researchers from the collaborating schools. We will carry out intensive faculty development for the year prior to the seminar. We plan to focus on the development of the six learning case studies for the seminar, but also to promote interdisciplinary exchange among the teaching faculty. A series of faculty retreats will be held off campus to insure uninterrupted work. In addition to developing the curricular material, we will explore the similarities and differences in how we teach, what our expectations of our students are, and we will learn to listen to one another and incorporate disparate disciplinary viewpoints into the case construction effort. The seven UW affiliated Fogarty research and training programs and other international programs are eager to be brought together to assist in the design of realistic cases for study from each of the global regions we are currently working with: East Africa, Latin America and South Asia. Eventually, our goal to engage the students in developing additional cases out of their internship and fieldwork experiences.

To assure its accessibility across school populations and to both higher level undergrads and graduate students it will be approved as a "U Conjoint" course. It will be held in late afternoon to facilitate participation of off campus students and medical students. U Conjoint courses have a single approval process and are open and cross listed in many schools. The "home department" will initially be Epidemiology but we anticipate its transition in year three to the new Global Health Department. Students will consider the case studies and be exposed to legal, ethical, social and policy analyses of the issues and possible solutions incumbent in a given case study. Each case study will be robust enough to provide study for an entire quarter. Students will develop an ability to delve deeply into the underlying causes of a given global health problem, research and study the problem from different perspectives, and work together to posit possible solutions. Because the students will come from a wide variety of backgrounds and interests, we anticipate lively and challenging engagement in the seminar topic. This pedagogical strategy has been successfully used by several of the faculty members in this grant in the past with great success.

Methodology Training: Population Metrics for Global Health

Achieving real improvements in global health will require us to make the "global disease burden" the focus of research and the principle for resource allocation. This course will provide the methodological foundation for this goal: a conceptual framework in which to understand and assess the health of populations. Related processes that work together to impact the overall health of a population, but which are often studied separately, are presented together to encourage an appreciation of how they work together to create the outcomes we observe. Appropriate tools and techniques from Demography, Epidemiology and related disciplines are presented and demonstrated in this broader context.

Content & Learning Goals

Mortality -- The goal of this segment is to provide an understanding of the methods and data available to assess cause-specific mortality and the burden of disease in a population. This segment covers concepts and

tools necessary for the study of child and adult mortality as a broad population-level health indicator, and methods to measure and assess levels, trends and differentials in all-cause and cause-specific mortality. Upon completing this segment students should be:

- familiar with the primary sources of mortality data and methods for collecting all-cause and cause-specific mortality data,
- able to construct and manipulate single decrement and multi-decrement life tables
- understand and use model life table systems to fill in for sparse data and/or conduct comparative analyses of mortality in different populations,
- familiar with and able to use a variety of common tools used in the analysis of mortality, and
- able to use indirect estimation techniques (Brass techniques) to make estimates of child and adult mortality from a variety of sparse or limited sources

Morbidity & Non-Fatal Health Outcomes -- The goal of this segment is to provide students with a framework in which to understand and quantify non-fatal health outcomes. Sources of data and methods to construct health measures such as healthy life expectancy and disability-adjusted life years are presented. Upon completing this segment students should be able to:

- Identify sources of data, including epidemiological literature, that are appropriate as inputs to various summary measures of population health,
- Understand techniques for collecting and evaluating measures of health using standard survey techniques,
- Calculate healthy life expectancy and disability-adjusted life years

Risk Factors -- The goal of this segment is to introduce the risk factor framework and associated tools used by Epidemiologists to identify health risk factors and their associated outcomes. Sources of data and techniques for estimating risk and exposure-based outcomes are presented. Upon completing this segment students should be able to:

- Identify and use various data sources to describe the exposure of a population to various risk factors
- Identify the burden of disease associated with a specific risk factor or set of risk factors and estimate the improvement that would result from removing those risk factors, and
- Read epidemiological literature related to specific risk factors and the burden of disease.

D.1.b. Interdisciplinary Graduate Certificate Programs

The University of Washington has a range of Interdisciplinary Graduate Certificate programs that provide students with an opportunity to explore, in a sequence of related courses, an area of interest that is complementary, but outside their primary area of research or graduate study. Graduate certificates are available to all graduate students at the University, including those in medical, law, public health, and business as well as arts and sciences. Enrollment in these programs is typically capped, and they attract more students than they can accommodate, so participation is, in practice, often limited by school. At the present time, there are 18 Certificate programs authorized by the Graduate School ranging from Astrobiology to Technology Entrepreneurship. These are listed in Appendix 6.

These programs provide opportunities to both graduate students and non-matriculated graduate-level students. For graduate students the program provides a foundational context in interdisciplinary areas that will enrich their disciplinary studies, while broadening their knowledge and skills beyond their primary discipline. For non-matriculated graduate students who return to the University seeking an additional specialty credential or life-long learning, the Certificate will provide them with new perspectives for their career.

Several of the current Graduate Certificate programs have relevance for global health (listed in the Table below). Within the framework of this grant, we plan to bring these together to 1) publicize and promote more multidisciplinary enrollment; 2) rationalize offerings and streamline faculty efforts across programs and; 3) coordinate the transition of appropriate programs to the new Global Health Department.

UW Interdisciplinary graduate certificate programs relevant to Global Health

| <i>Certificate</i> | <i>Department/School Sponsor</i> |
|--------------------------------------|----------------------------------|
| Biomedical and Health Informatics | Med Ed/Medicine |
| International Health certificate | HS/SPHCM |
| International Relief and Development | Public Affairs |
| Global Health Pathway | Medical School |
| HIV/AIDS | Epi/SPHCM |
| Environmental Management | Program on the Environment |

For example, the International Relief & Development Certificate Program prepares UW graduate students for the challenges of working internationally in the aftermath of natural and man-made disasters and on poverty alleviation and long-term solutions for communities worldwide. The Graduate Certificate in Environmental Management is an interdisciplinary program designed to prepare students to contribute to sustainable utilization and enhancement of the natural and human environment. One of our curricular goals will be to provide courses which will allow students in these and similar tracks to consider the global health impact of environmental change, or the legal, ethical and social determinants of health pivotal to an effective relief effort.

Three new Certificate Programs

Three new certificate programs with relevance to global health will be developed with support from this Fogarty Frameworks project: Global Health and Social Justice, Population Dynamic Modeling, and Population, Global Change and Environmental Health. Each involves a collaboration of the schools that are participating in this Fogarty Frameworks proposal. Each school is contributing core courses that serve as the foundation for these certificate programs.

All candidates in these new certificate programs will be required to enroll in the Multidisciplinary Global Health Foundation Seminar. As noted above, this year-long seminar (6 credits over 3 quarters) will be the unifying core of the academic program and the touchstone for students and faculty interested in global health. The seminar will provide a multidisciplinary and multi-directional learning experience for Graduate Certificate students, with active exposure to faculty from participating schools and program. The Global Health Seminar will be the centerpiece of our Certificate program and will be a core course in both of the new Certificate programs related to Global Health.

1. Certificate in Global Health and Social Justice

The Certificate track in Global Health and Social Justice will allow the graduate certificate student to focus on the ethical and social justice aspects of the quest for global health. This certificate will serve as an important credential for our foreign students as their institutions set up human subjects review infrastructure in their home institutions. The Certificate will include significant exposure to the centrality of ethics in achieving fair and equitable access to health services, products and research, to the role of law in achieving justice and fostering positive changes in the social and economic determinants of health, and the importance of the public health approach to achieving improvements in population health and wellness.

Students in this Certificate program track will be required to enroll in the Global Health Seminar, as well as the three core courses described below. These core courses focus on some of the most integral aspects of global

health focusing on issues of ethics, law, economic, cultural and social determinants of health form an international perspective.

We anticipate that the Global Health and Social Justice Certificate Program and its courses will attract graduate and professional student from several different disciplines. There is a demonstrated need for Research Ethics education and training across virtually all the health sciences departments, especially those that are home to Fogarty grants. There is significant interest in global health issues among law and public health students as a result of the graduate law degrees in comparative law and the MPH track in international health. We also anticipate drawing students from the School of Public Affairs, notably from their two international fellowship program. Finally, we anticipate drawing in graduate students from Arts and Sciences and Business through our existing partnerships with both.

Required courses (9 credits) – International Research Ethics, Health and Human Rights, International Health Policy.

Capstone (2-6 credits) – The Foundation seminar on Global Health (developed with support of this Fogarty initiative).

2. Certificate in Population Dynamic Modeling

Population Modeling is a methodology that develops the tools for understanding the dynamics of processes occurring in large complex populations. It provides a quantitative framework for integrating these dynamics across multiple domains. With this quantitative framework comes the prospect for identifying and characterizing mechanisms that influence the population dynamics of disease spread, and disease related morbidity and mortality. The methods also make it possible to examine the complex demographic impacts of health dynamics in populations – including orphanhood, household structure, and population composition. The methods are also used to explore the “within-host” dynamics of viral replication and immune response. As a result population modeling methods provide a laboratory for exploring the potential impact of a wide range of public health interventions – both biomedical and behavioral.

Population Modeling represents a core expertise essential to the academic and research activities of a program on Global Health. It is an integrative methodology, providing the ability to understand mechanisms determining the dynamics of population health over time, across levels of analysis, and multiple dimensions of health. The methodology includes a wide range of tools – from simple life-table projections, to deterministic “macro” models, to stochastic microsimulation. There are almost no programs in the US that teach the full range of methods to health and population scientists, and perhaps only one other program in the world (at Imperial College, London). This is what we hope to develop with the new certificate in population modeling.

The certificate will leverage a substantial combination of new resources at the UW. The first is a set of recently funded initiatives in mathematical modeling at the UW CFAR. The newly funded scientific program in mathematical modeling, along with the new Sociobehavioral core and the Biostatistics core is bringing three population dynamic modelers to the UW to build capacity in this area. The hires will focus on interhost dynamics, intrahost dynamics, and vaccine trial support. The latter has already been hired (Dr. Laith Abu Raddad). In addition, a recent hiring initiative in CSDE recruited two modelers to Arts and Sciences, one in Sociology (Dr. Sam Clark) and the other in Anthropology (Dr. Steven Goodreau). Between them, these two initiatives create a critical mass in population dynamic modeling at the UW, and an unprecedented opportunity for this modeling to bridge the social, biological and health sciences.

Required courses (6 credits) – Two new courses, one in the Mathematical Modeling of Infectious Diseases (Applied Mathematics), and the other in the Statistical Modeling of infectious diseases (Biostatistics).

Electives (9 credits) – To be taken from a range of discipline-specific modeling courses: Research Methods in Demography (SOC 433), Social Simulation (SOC 537), Human Population Genetics (BIO A 482), Seminar in Mathematical Biology (BIOL 510), Topics in Mathematical Biology (BIOL 511), Population Biology I: Evolution and Systematics (GENET 572), Population Biology II: Ecology and Conservation Biology (GENET 573).

Capstone (2-6 credits) – The Foundation seminar on Global Health (developed with support of this Fogarty initiative).

3. *Certificate in Population, Global Change and Environmental Health*

The School of Medicine and the School of Public Health and Community Medicine are working towards the development of an interdisciplinary graduate program focused on the impact of global environmental change on human health. For the last three years, Dr Roger A Rosenblatt from the School of medicine and Dr. Mark Oberle from the School of Public Health have taught an interschool/intercollege graduate course (UCONJ 540) which brings together graduate students from all schools to explore the intersection between changes in the global environment and the impacts on individual and population health. The course has led to further evolution of a growing intellectual emphasis in this area, and has been over-subscribed by students.

Partially as a result of this course development, the two schools are involved in a broader initiative funded by the Earth Initiative and Program on the Environment at the University of Washington tentatively entitled: Conservation of Living Systems. Working with colleagues in the natural sciences, policy community, and law, Drs Rosenblatt and Oberle are working to create a broad interdisciplinary graduate program which will bring together graduate students from the entire University. Currently, a planning committee is working towards creating a concrete proposal in the next few months, with the intent of launching this new program in the following academic year. We have funding from the Earth Initiative and the Program on the Environment to create the curriculum and the plan for this program with a report date of December 15, 2005. We have a small grant from Rockefeller, and have submitted a LOI to another foundation. If all goes well, we would hope to take in the first graduate students by September, 2006.

Required courses (9 credits) – UCONJ 540 -Environmental Change and Human Health: The Role of the Health Professional; CSDE 595: Sustainability: People, Institutions, Knowledge and the Environment; GEOG 480:Environmental Geography , Climate, and Health; PBAF 595:The Role of Science in Environmental Decisions.

Capstone (2-6 credits) – The Foundation seminar on Global Health (developed with support of this Fogarty initiative).

D.1.c. Internship and Fieldwork Opportunities

Our curriculum contributions are focused on establishing key multidisciplinary courses and sequences. Our framework activities will link this to internship opportunities. Our health science students currently enjoy many opportunities for hands-on experience through the ongoing (2003-2008) *Puget Sound Partners Global Health Training and Education Program* activity. Specifically students are offered short term practica, clinical or pre-dissertation project experience through six funded programs as outlined in the table below.

Students in Arts and Sciences have opportunities to obtain support for international fieldwork by applying for external funding through CSDE. In the past two years, CSDE has submitted 13 proposals on behalf of students for dissertation support and postdoctoral projects. Six of these have been funded, and five are still pending. The funding sources include NSF, NIH, the Wenner-Gren foundation, and the Wellesley Centers for Women. The students are from the departments of anthropology, economics, geography, sociology.

Puget Sound Partners Global Health Training and Education Programs

| Program title | PI | Foreign Sites | Target Group | # of Students Planned | Total to date |
|---|-----------------------------------|--|--|------------------------------|----------------------|
| International Health Electives | Tom Norris, GHRC with IHG | Various | Medical Student clinical (4 th year) elective | 10 | 19 |
| International Health Opportunities Program (IHOP) | same | Various | Medical Student elective (1st year) | 10 | 17 |
| Training Students in HIV-1 Research | Lisa Frenkel, A Melvin, NM Samuel | Chennai, India | Medical students, researchers & postdocs | 4 per year | 5 |
| International Experience in Occupational and Environmental Health | Matthew Keiffer | Vietnam, Costa Rica, Thailand, Nicaragua | Public Health students | 1-2 per year | 3 |
| Amauta Public Health Practica | AM Kimball | Peru, Equador | Public Health Students | 7 per year | 13 |
| Global Partnerships Travel Grants | S Gloyd | Timor, South Africa, Ecuador, Mexico, Cambodia | Public Health Students | 25 total | 5 |

Our framework activity will “glue” these activities in two ways: 1) by linking curriculum and field work together and 2) by expanding multidisciplinary field work opportunities. This will be done through administrative and program linkages as described in section D2 and evaluated as described in section D4 of this proposal. For example, tracking students over time we will chart their trajectories and the impact of curriculum on field work demand, and the impact on curriculum of field work experience. We also plan to engage the students in developing cases from their fieldwork experiences that will be used in the Graduate Foundation Seminar on Global Health.

Clinical and Laboratory Experience

Within our Framework community, we have some foci of clinical research training and of laboratory research training. We propose to bring these into the educational effort more directly. SBRI includes a broad portfolio of laboratory based research. The Fogarty Research and Training programs on emerging infections (Stuart) and malaria (Duffy) are based there. We will seek opportunities for enhancing our “two way” exchange with these unique programs 1) identifying laboratory training opportunities for interested graduate students both here and at foreign sites 2) identifying specific areas of our Framework global health curriculum of value to postdoctoral students from foreign sites here for laboratory training. In particular, such scientists would be excellent candidates for the certificate program in justice and ethics which would enhance their ability to contribute to IRB activities in their home institutions on their return.

Clinical training for medical students is available through the Partners activities as described above. In addition, a “two way” exchange is beginning through the activities under the ICOHRTA collaboration with UPCH. To date three Peruvian physicians have received clinical training at UW to enhance the ongoing research “Central Nervous System Infections in Peru “(5R21NS048838-02 J. Zunt, PI) The increased visibility of such training efforts and the coordination of opportunities across clinical, research and classroom settings through our administrative framework will add value in terms of enhanced participation and eventually scope of activities in these areas.

D.1.d. Distance learning opportunities

Our new curriculum, along with short courses already offered in-country and in Seattle by the affiliated programs brings rich new content forward for our community. This includes our “distance” community of regional and global partners. We will work actively with the extension distance learning enterprise to create quality distance learning offerings to be offered on line. Our experience with distance learning suggests that 1) such courses will require active teaching faculty involvement in interchange, grading and troubleshooting 2) such courses are most effective when content is localized to the environment where the course is offered and 3) a course product is an iterative product, requiring updating and revising annually as experience with the offering allows it to be molded and perfected. Our Framework community gives us the breadth to successfully address these challenges to demonstrate the value of more systematic incorporation of distance learning into ongoing regional and global research, training and teaching endeavors.

The University of Washington has a large and successful set of distance learning activities that are organized by the UW Educational Outreach program. The Vice Provost of this program has included a letter of support for this Fogarty Frameworks proposal.

We discuss additional plans for online outreach activities under Section D3.

D.2 Administrative Activities

D.2.a Establish a Framework advisory council, representing the wide range of collaborating departments and programs, to advise the GHRC on global health curriculum development

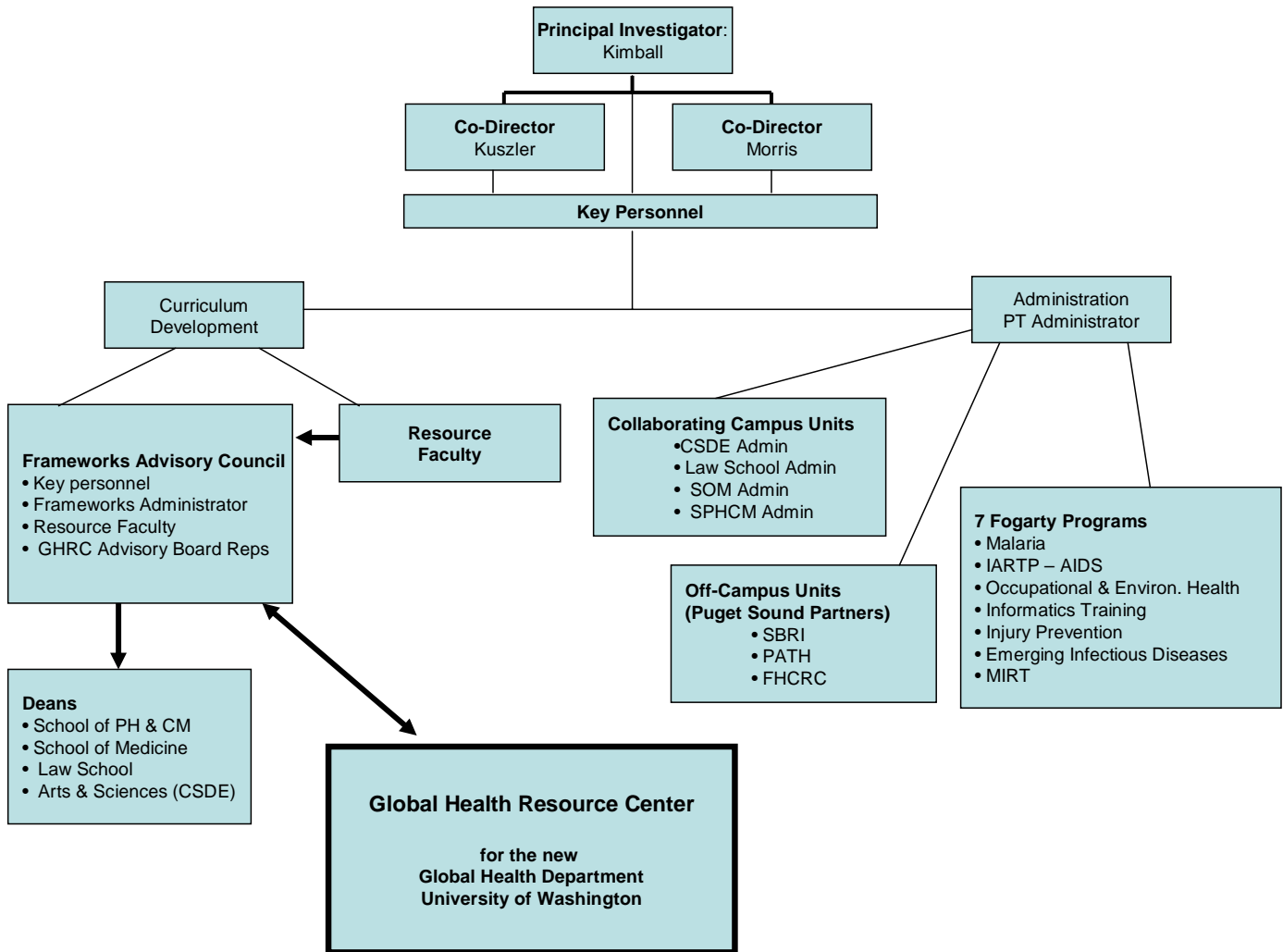
Formation of the new GH department has re-energized interest in collaborative activities both on- and off-campus; this new department will be the permanent home for the administrative and curricular resources developed as part of this Fogarty Frameworks project. It is anticipated that the department will begin academic activities with the existing International Health Certificate curriculum, and integrate the courses and certificates developed by this Frameworks grant.

The UW and Puget Sound Partners have established a Global Health Resource Center (GHRC) as part of the planning process for the new GH department. GHRC has an Advisory Board, with a set of subcommittees: 1. Puget Sound Partners GH Training and Ed Committee; 2. Fogarty Grants Committee; 3. Curriculum Advisory Committee; and 4. Administrative Advisory Committee. These subcommittees provide a natural mechanism for input from the Frameworks advisory council, and we plan to have members from our advisory council integrated into the subcommittees. This will ensure that this Fogarty Framework initiative has direct input into the new GH department.

A Framework advisory council will be established (based on the GHRC Advisory Board members and the Framework Key Personnel and Resource Faculty) representing the wide range of departments and programs at UW. The Advisory Council would review the progress of the curriculum development activities for the Frameworks program and would stand as a model for the future curriculum committee as the new GH department is brought on-line.

The resulting organizational linkages we envision can be seen in the organizational chart below.

Figure 1 Administrative Organization Chart



Instead of the currently anticipated five-year curriculum development lag, this grant will enable enhanced global health offerings to be available within six-months to one-year and would have on-going curriculum revision happening as the new department is brought on-line.

The Frameworks advisory council will meet once a quarter to review progress on the specific aims of the Frameworks project. As coordination problems or administrative obstacles to the Global Health curriculum development are identified, the membership of the council will help to ensure that these will get the attention of the Deans of the collaborating units.

D.2.b Coordinate Fogarty programs here at the University of Washington to identify common challenges and share best practices

The Fogarty Program administrators have been meeting sporadically for two years. These ad hoc meetings have allowed collaboration in ethics training, information sharing on scholar return policies and assisted in record keeping within the programs. They cite these meetings as the most effective way of maintaining

communication and awareness of other programs. The coordination involved in setting up these meetings and providing locations for such is a major task. This proposal will allow this rich and demonstrably valuable interchange to continue by providing administrative support for convening, documenting and following up on actions identified by that group, which will be expanded to include administrative personnel in CSDE, the Law School and other pertinent global health training efforts on campus.

Working with the administrators of the various Fogarty awards generally and with the Global Health Resource Center manager specifically, the Framework Program Administrator (50% FTE) will create and/or implement standardized procedures for working within a global educational/training framework. Examples of such procedures may include stipend; visa requirements, health requirements in remote areas, curriculum/course options; certificate programs, etc. Another problem cited for the program administrators is maintaining regular two-way communication with the Fellows. The Administrator will explore more effective methods and schedules for such communication with the assistance of the GHRC manager.

She/he will support the new multidisciplinary efforts that will bring multiple Fogarty programs within campus wide schools and departments together in the topic area of international health. The Administrator will serve in a variety of roles and will provide effective management of a full range of services, including program and budget planning, grant and contract budget administration, personnel administration, facilities management, and curriculum coordination. With the Directors and affiliated faculty and programs the Administrator will serve as part of the executive team to assess needs and develop programs within the scope of the Framework for Global Health auspices.

The administrator will help to set up and coordinate short term projects of graduate students and/or international interns including applications, funding, legal requirements, visas, and ethical. She/he will coordinate curriculum offerings within different degree programs; working closely with administrative personnel in affiliated schools and departments. She/he will solicit new sources of funding, will oversee the development of budgets for any new and continuing grant proposal applications and will serve as liaison with agency project and grants officers on fiscal issues.

She/he will formulate the general administrative policies of this interdisciplinary program: develop, implement, interpret and provide counsel regarding this program's policies and procedures as well as those of the UW; develop and administer new procedures in concert with affiliated programs as needs are identified and in conformance with institutional and program sponsors' policies and will participate in the development of long-range planning and priorities.

With delegated authority, she/he will assume full administrative and functional responsibility for nonacademic personnel matters, i.e., job descriptions; employee recruitment; recommendation for hourly classifications and rates of pay for approval by HR; will oversee implementation of Academic Student Employee union contract rules, write offer letters and ensures appropriate trainee/student job descriptions on behalf of Director and faculty as needed. She/he will also serve as primary contact with University units on space and equipment issues.

D.2.c Coordinating information

Reinforcement of the LIFE database

In 2002, in order to create an accessible centralized information resource for Global Health, the UW SOM initiated a project to design a database on faculty interests. The database is called Linking International Faculty/Staff Expertise (LIFE). The purpose of this database is to guide students, and our larger constituency, in locating and profiting from opportunities for learning, research and service in Global Health.

Initiated by the Health Sciences Associate Deans, the LIFE project was designed as an interdisciplinary database and a data-driven, web-based application to collect and make available information about the international activities of our faculty and staff. The LIFE Database is a growing resource for the UW community and is designed to afford students, staff and faculty ready access to information about its global

activities, opportunities, and expertise. The database collects information on current research and training projects, study abroad programs and research. After initial development through funding from the Vice Provost's Office, the LIFE Database is currently being promoted by the Global Health Resource Center to the Health Sciences schools with the goal to expand the database to Upper Campus departments and thus make the database UW campus-wide.

The LIFE database project has been designed and placed on the GHRC website (life.washington.edu). The database itself is well-designed and is an example of already existing resource that can provide support to the Fogarty programs if brought into a more centralized program for international health information. However, it has never been fully implemented because 1) resources for maintaining the dataset have not been identified and 2) the population of the database elements depended on faculty input. To date the LIFE database is free standing. However a parallel database on research faculty (Community of Science) is in use and faculty are motivated to maintain it because it has been central to activities in research. Our intent is to work with the GHRC program manager to revamp and update the existing "LIFE" database including linkage to information on identified faculty in the COS database. One of the requirements for the resource we will complete is that it will rely on existing data as much as possible and be easily and automatically updated centrally.

Curriculum offerings relevant to Global Health

This grant will support and enhance a central listing of relevant course offerings across all schools and departments at UW and develop a mechanism for its maintenance. With the assistance of the Administrator using both existing and newly created listings and database sources, enhancement activities will include oversight of the development of this centralized reference. Again, this activity will call upon the help and coordination of the GHRC as it becomes a central clearing house for campus information on international health.

Speakers Bureau for K-12 and local colleges

With faculty interest information more easily available through database applications, formation of a speaker's bureau for local K-12 and colleges will be set up as an additional resource. This will enable a much greater number of our faculty to reach out to the local and regional community. Appropriate communication of this resource, will empower community groups with ready access to the educational and research work at the UW. An additional advantage of such a resource is understandable "research translation" to the community at large.

Visitors/ delegations

The UW is host to many visiting faculty, and delegations both foreign and domestic who are working in the international health arena. We propose to establish a centralized calendar of such visits and the participants. This will permit greater facilitation of campus contacts and scheduling across programs. We anticipate that this will also be housed in the GHRC as another centralized resource.

Supporting Activities: Outreach and Evaluation

D.3 Constituency building

D.3.a Local Outreach: Monthly workshops

One of our first tasks in building the framework for this community is quite simple – to bring them together on campus. We propose to do this with a monthly seminar/workshop series. There are a number of existing seminar series supported by the schools and departments collaborating on this proposal. Some of these are interdisciplinary, like the weekly CSDE research demography seminars, and some focus on global health specifically, like the weekly seminars for the International Health Program at SPHCM. So the need is really for a series that would help to connect the different groups, to give participants an overview of the many programs on campus and in the region, the opportunities for research and training that these provide, and the people working in these areas. Given the large time commitments already in place for many of the people we want to

bring together, we will aim for a monthly meeting. Example meetings would include: a panel of all of the Fogarty Program directors describing their program, participants, and international partners; a panel of the Puget Sound partner organization representatives describing their programs and opportunities; and taking advantage of an international research project team's visit to Seattle to spotlight their project and activities.

D.3.b. Regional Outreach: Annual Research Symposium and WWAMI

Global Health Research symposium

As a student initiative the UW has launched a Regional International Health meeting which brings together students in health from our national constituency across the five-state area. The most recent program is appended (Appendix 7). Attendance has been outstanding and evaluations highly positive. In addition our Vice Provost for Research convenes annual colloquia on innovative research. The most recent colloquia are described in the appendix. It is our vision to offer a Global health research symposium on an annual basis in concert with these efforts. The Research symposium will seek to translate current global health research into ongoing efforts in technical collaboration.

Supporting a discrete symposium is beyond the resources within our framework proposal. Thus we have secured support for this effort as an enhancement of the ongoing regional conference. Our "framework" role will be to assure the participation and recognition of our Fogarty funded international collaborators within a one day symposium providing travel, and convening an expert committee to award a "global health research" prize for the most innovative, scientifically sound and potentially productive research presentation.

Building Global Health into the WWAMI Network

For 35 years the University of Washington has coordinated a medical education network of the northwestern states (WWAMI) that currently covers 30% of the land area of the USA and includes the states of Washington, Wyoming, Idaho, Alaska, and Montana. For public health training purposes, the state of Oregon is also included through the Public Health Training Center cooperative agreement with HRSA. In each state, UW issues annual subcontracts to state health departments for training activities, and collaborates with faculty at the respective health sciences university in each state to offer clinical and/or public health training, ranging from on-site UW clinical work for UW residents assigned to remote sites to one week summer institutes. UW is also the medical school sponsor for the Area Health Education Centers in those states that provide clinical continuing education in those states. Most of these state universities are linked through videoconferencing in an NIH-funded, high-speed network called LARIAT. In addition, UW offers public health training through a low-bandwidth webconferencing system with streaming audio, shared documents and PowerPoint capability. The current contract service provider for webconferencing is iLinq. Additional web-based distance-learning capabilities are offered for academic credit through UW Outreach, one of the largest distance-learning providers in the country. In addition, the university maintains traditional phone line videoconferencing and access grid node videoconferencing.

For our WAMI sites the UW has developed a "video conferencing testbed" which is under construction. Located in a state of the art suite at our Undergraduate Library, this facility will allow enhanced real time communications through grid access technology for use in instruction with our WAMI partners and other collaborating institutions. Construction completion will be summer of 2005. Our on line curricular offerings developed through the Framework for Global Health will be offered as part of this ongoing regional collaboration to our entire six state area.

These technologies are available to the proposed project to extend course offerings to other partner universities and to facilitate and maintain scholarly interaction between faculty and trainees at remote sites. Thus, this proposed project is embedded in an extensive institutional and technological network for dissemination and educational collaboration.

D.3.c Global Outreach: Leveraging and coordinating resources

Through the Global Informatics Research and Training Program low technology strategies have been identified for distance learning in the low income setting of Peru. Specifically commercial “internet cabinas” have successfully been used as a distance learning outreach strategy to physicians and health workers at the provincial level. At the same time the new Amauta program is bringing resources to upgrade the institutional capacity at University Peruana Cayetano (UPCH) to enhance communications infrastructure. In East Africa, internet access is similarly limited. However, unlike Peru, commercial vending of internet access has not been an option. In such settings VSAT technology has been brought in support of the research activities in place. Broader strategies for distance learning have been less researched. Through our framework activities program experience will become explicit and as such can guide our efforts to enhance distance learning access in such diverse settings.

D.4 Evaluation of value added by this Fogarty Framework Initiative

To evaluate this program we will focus on both process measures and objective outcomes to capture the full range of activity described in the proposal. To do this we will break down each activity into its component parts and track both process and outcome. Explicit benchmarks will provide both a timeline and mechanisms for judging success/impact. The schema on the next page, developed for our Freshman Discovery Seminar, is illustrative of the process.

Example Evaluation Scheme: Freshman Discovery Seminars

| Activity | Year of Activity | Target | Products |
|---|------------------|---|---|
| Elaborate learning objectives; Develop and produce syllabus | 02 | Completed learning objectives | Syllabus for full course |
| Submit course application for approval | 02 | Proposal submission November 06 | Approval and ability to implement seminar |
| Teach the Discovery Seminar in August to 20 Freshman | 02 | August 06, 100% of sessions | Strong enrollment in seminar by incoming freshman |
| Add participants to master data base of potential Global Health Professionals | 02, 03 | Complete data capture | Database of “Discovery” Seminar participants |
| Distribute and collect course evaluation materials (existing) | 02 | 100% return of forms | Course evaluation data |
| Evaluate teaching | 02 | Excellent ranking | Course evaluation report and feedback loop improving the course |
| Develop survey to measure delayed impact | 02 | 2 Page survey for distribution 9 months post-course | Impact evaluation and CQI feedback loop |
| Survey students over subsequent two years in Spring | 02, 03 | Students recognize value from course | Survey data from student responses |
| Track students into the future | 02,03 | Quarterly updates for those who remain enrolled. | Long-term data on continued participation in Global Health activities |

For each of our curricular offerings we will carry out similar benchmarking of performance and evaluation.

The added value of the administrative framework will be measured in three ways: level of participation by members of the administrative working group, number and description of common policies adopted across programs, enhanced success of students and researchers in practice, new grant applications and funding, research publications and research symposia. The LIFE database will be evaluated by its utility to users of the system. This will include both qualitative and quantitative assessment and utilization statistics.

The impact of our outreach to foreign sites and our regional constituency will be measured through rates of participation, certificate completion and retention in the affiliation beyond program completion. Key informant interviews will allow the assessment of impact upon the development of Global Health Initiatives at the University of Washington and collaborating institutions.

All courses, whether on-line or in-person, will be evaluated by the participants within the course.

The evaluation plan will involve creating a database that tracks student/trainee activities from first contact with a framework activity and across all collaborative programs. This will allow the investigators to assess the cumulative impact of multiple exposures upon student/trainee career objectives and trajectories. Though the ultimate outcomes of interest, professional participation in global health activities, will not be known in the timeframe of the Framework program, a system will be in place to address this outcome -- in place at the very beginning of the new Global Health Department.

E. Human Subjects Research

There will be no human subjects data collected for research as part of the activities of this Framework grant.

Research ethics and human subjects issues are, however, a key part of our proposed project. One of the certificate programs we propose to create is focused on *Global Health and Social Justice*. The required courses for this certificate will include International Research Ethics, and Health and Human Rights.

F. Vertebrate Animals

NA

G. Literature Cited

- Institute of Medicine: Committee on Assuring the Health of the Public in the 21st Century (2002). *The Future of the Public's Health in the 21st Century* Washington, DC, National Academy Press.
- Institute of Medicine: Committee on Educating Public Health Professionals for the 21st Century. (2003). *Who will keep the Public Healthy? Educating Health Professionals for the 21st Century.* Washington DC: National Academy Press.
- Distlehorst, L.H., Dawson, E., Robbs, R.S., Barrows, H.D. (2005). Problem-based learning outcomes: The glass half full. *Academic Medicine*, 80(3), 294-9.
- Global Forum for Health Research, 2002. 10/90 Report on Health Research 2001-2002.
- [Fair Benefits for Research in Developing Countries](#). (2002). Participants in the 2001 Conference on Ethical Aspects of Research in Developing Countries. *Science*. 298, 2133-213
- Ferreira, L. (2002). Access to Affordable HIV/AIDS Drugs: the Human Rights Obligations of Multinational Pharmaceutical Corporations, *Fordham Law Rev.* 71, 1133-1171.
- Global Forum for Health Research. (2002). The 10/90 Report on Health Research 2001-2002. Retrieved April 15, 2005 from <http://www.globalforumhealth.org>.
- Kincade S. (2005). A Snapshot of the Status of Problem-Based Learning in US Medical Schools 2003-2004. *Academic Medicine*. Volume 80(3), 300-301.
- Mathers, C. D., Bernard, C., Iburg, K.M., Inoue, M., Fat, D.M., Shibuya, K., Stein, K., Tomijima, N., & Xu, H. (2003). Global burden of disease in 2002: data sources, methods and results. *Global programme on evidence for health policy discussion Paper No. 54*. World Health Organization.
- Murray, C.J., Lopez, A.D. (1997). Global mortality, disability, and the contribution of risk factors: Global Burden of Disease Study. *Lancet*. 349:1436–1442.
- Narasimhan, V., Brown, H., Pablos-Mendez, A., Adams, O., Dussault, G., Elzinga, G., Nordstrom, A., Habte, D., Jacobs, M., Solimano, G., Sewankambo, N., Wilbulpolprasert, S., Evans, T., & Chen, L. (2004). Responding to the global human resources crisis. *Lancet* 363(9419),1469–1472.
- Saravia, N., Miranda, J. (2004). Plumbing the Brain Drain. *Bulletin of the World Health Organization*. 82(8).
- Shortell, S.M., Weist, M.A., Sow, M.S., Foster, A., Tahir, R. (2004). Implementing the Institute of Medicine's Recommended Curriculum Content in Schools of Public Health: A Baseline Assessment. *AJPH*. Vol. 94, 1671-1674.
- (TRIPS) Trade-related Aspects of Intellectual Property Rights Agreement is Annex 1C of the [Marrakesh Agreement Establishing the World Trade Organization](#), signed in Marrakesh, Morocco on 15 April 1994. Retrieved April 15, 2005, from http://www.wto.org/english/docs_e/legal_e/27-trips_01_e.htm .
- WHO. (2001). Macroeconomics and Health: Investing in Health for Economic Development. *Report of the Commission on Macroeconomics and Health*.

H. Consortium/Contractual Arrangements

None

I. Resource Sharing

Selected curricular materials developed for foundation seminars, certificate programs, and courses developed for this grant will be available for distance learning through online dissemination locally and internationally. In addition they will be shared with all other investigators on the Framework awards.

Any administrative frameworks found to enhance research and training in Global Health will be shared on-line, in particular with other Framework award investigators, Fogarty Programs and other Global Health programs in the region. The LIFE database is already available, although in early stages of development. One of the activities of this grant is to enhance this database to provide the students, faculty and administrative units within the University and the region with resources relevant for Global Health.

Publications that discuss lessons learned in setting up and institutionalizing the Global Health Program as a result of this proposal will occur following customary scholarly practices.

J. Consultants

None.