

Department of Environmental & Global Health

University of Florida College of Public Health and Health Professions



EGH Develops an Infectious Disease Field Laboratory in Haiti

Already with the lowest socioeconomic metrics in the Americas, when the earthquake hit Haiti in January 2010, it decimated Haiti's public health infrastructure. The goal of this project is to set up a modest infectious diseases field laboratory in rural Haiti for the preparation of scientific research specimens. This laboratory will be used to support the collaboration of UF, DoD, Haitians, and other investigators in studying and preventing infectious diseases in Haiti.

The laboratory will support surveillance, research, and intervention work that will be conducted in concert with US government priorities for the support of the people of Haiti and the Haitian Ministry of Health. The proposed site for the laboratory is adjacent to a nearly completed FISH Ministries (nongovernment organization) guest house that withstood the recent earthquake near the town of Gressier, Haiti. FISH Ministries has been working in the region for 12 years and has worked with the University of Florida for several years. The FISH project consists of a 3/4 acre pond that creates green enriched water for 15 grow-out ponds. Each grow-out pond

Contents:

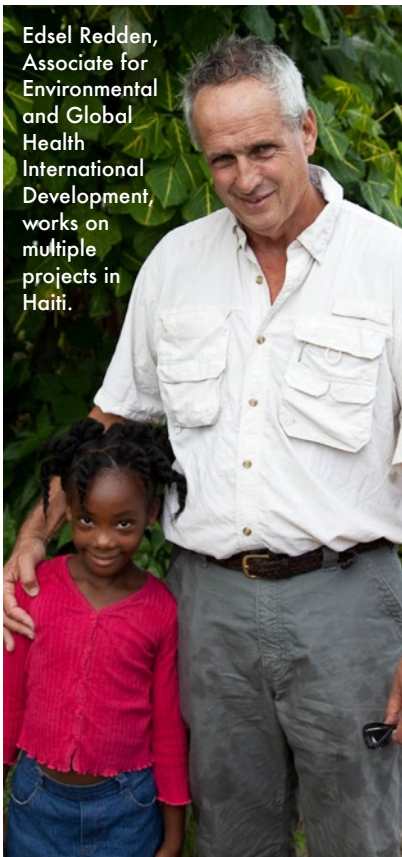
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produces approximately 3,000 tilapia every four months. This production provides 1,200 fish each week to the children at three Haitian schools and an orphanage. FISH Ministries also trains Haitians in small poultry farm production. FISH Ministries has offered to let the University of Florida and collaborating researchers work out of their facility. The facilities are gated and guarded, and will have modern accommodations, multiple bathrooms, a kitchen, and stable electrical power through generator support.

October 2010

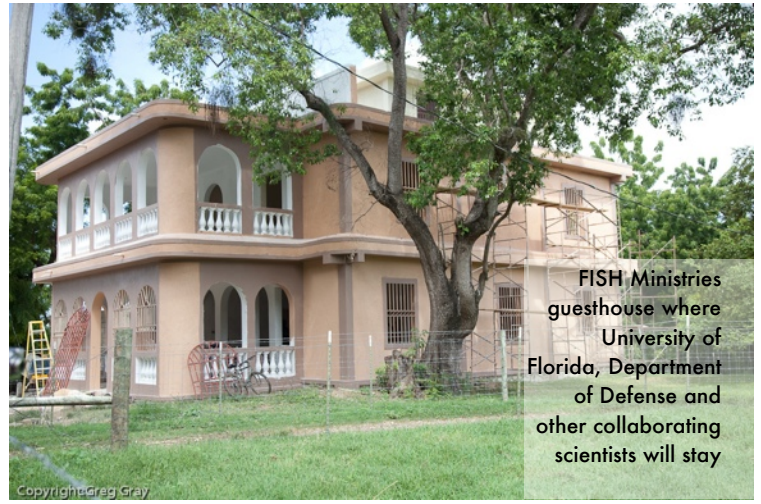
The Department of Environmental and Global Health is a hub of collaboration among University of Florida scientists who are interested in the effects of environmental factors on human health.





Dr. Bernard Okech Studying Malaria, Haiti

Plasmodium falciparum is a major cause of morbidity and mortality in Haiti. Chloroquine-resistant malaria is an obstacle to malaria eradication efforts in endemic areas such as Haiti and poses a major threat to areas where it has been eliminated. Chloroquine resistant *Plasmodium falciparum* malaria emerged in Columbia, South America and in Thailand, Southeast Asia in the early part of 1960s and spread rapidly around the world. The resistant malaria phenotype is now well established in many areas around the world. Despite this, Haiti is reportedly free of the chloroquine-resistant malaria phenotype even with the continued use of chloroquine in Haiti.



The reasons or mechanisms that have prevented the spread of chloroquine-resistant phenotypes into Haiti are unknown. Dr. Okech will conduct a population based study to determine the prevalence of resistant phenotypes of *Plasmodium falciparum* parasites, and evaluate biological factors that may hinder the development, intensification and spread of drug resistant malaria in Haiti.

His research will also examine the contribution of the mosquito vectors on malaria. Understanding these related biological factors that influence malaria transmission will enhance the identification of opportunities or new methods to prevent the spread of malaria resistance phenotypes. This project is IRB approved as human subject research by a Haitian IRB (Misyon Fenme Haiti of Family Health Ministries) and UF-IRB-1.

New Department

On July 1, 2009 the Department of Environmental and Global Health within the College of Public Health and Health Professions was established. The Department is led by Gregory C. Gray, MD, MPH.

Factors in the air, soil, and water that threaten health are rarely contained within artificially drawn political borders. Thus environmental health is a global need. It is our goal to explore and examine its global dimensions fully. The Department collaborates extensively with the University of Florida Center for Environmental and Human Toxicology, the Emerging Pathogens Institute (EPI), and the Whitney Laboratory for Marine Bioscience.



EGH Anticipates a New Doctorate Degree Program will be Approved by Summer 2011

The proposed PhD in Public Health, offered by the College of Public Health and Health Professions, will require a minimum of 90 post-baccalaureate credit hours. These credits will include core public health coursework (15 credits); quantitative methods and statistics (12 credits); professional issues (7 credits); concentration area (35 credits); supervised research (3 credits); supervised teaching (3 credits); and dissertation research (15 credits). Initial areas of concentration include Environmental and Global Health and Social and Behavioral Sciences. However, it is expected that other concentrations will be added over time and that students will also be able to specialize within each concentration. Upon successful completion of all program components, culminating in the dissertation defense, program graduates will be awarded the PhD in Public Health. Examples of places of employment include universities, federal and state government agencies (e.g. Centers for Disease Control, Public Health Departments), health and environmental research firms, and non-profit local, national, and international agencies.

Visit our website for more details: EGH.PHHP.UFL.EDU



Emerging Pathogens Institute

EPI was established as a multidisciplinary unit on the University of Florida campus in 2007 to bring together researchers from diverse fields to understand factors leading to the emergence of new pathogens and to develop methods for their control. The new institute is also charged with developing the teaching capability to train the next generation of scientists. The Institute has a strong interest in understanding the role of environmental factors (including climate and other anthropogenic changes) in emergence of pathogens and in developing microbial risk assessment models, including modeling of transmission pathways and interventions.

New Faculty Hires

Afsar Ali, PhD

Dr. Afsar Ali came to EPI in the summer of 2008 from the University of Maryland, with a wealth of knowledge in microbiology and expertise in the study of pathogenic vibrios originating in aquatic environments. Dr. Ali's plans for future research include whether climate change and warming environments may contribute to the emergence of more pathogenic vibrios, or if it may increase their survival advantage in food and aquatic reservoirs. He conducts research in the United States, Bangladesh, and Haiti.

Dana Focks, PhD

Dr. Focks was a Senior Research Scientist with the Center for Medical, Agricultural and Veterinary Entomology, and the US Department of Agriculture. His major research efforts included the development of epidemiologic models of human vector-borne diseases of interest to the U.S. Department of Defense and public health institutions including the National Institutes of Health, and the World and Pan American Health Organizations. He holds a BS degree in zoology and a PhD in medical entomology from the University of Florida (1971 and 1977). Dr. Focks is developing dengue research studies in south Florida.

John Lednicky, PhD

Dr. Lednicky is broadly trained in microbiology. As former Principal Scientist at Midwest Research Institute since July 2005, he managed and provided technical oversight and guidance for programs involving molecular biology, virology, and microbiology. He is an expert in the area of virology and molecular biology. Dr. Lednicky works with influenza viruses including those which are highly pathogenic. He holds a PhD in microbiology from the University of Texas at Austin, a MS in microbiology from the University of Missouri at Kansas City, and a BS in microbiology from the University of Miami in Florida.

Edsel Redden, MS

After working for the UF Institute of Food and Agricultural Science division (IFAS) for 7 years, Mr. Redden joined EGH from the Putnam County extension office, as former Director and Agriculture Agent. Mr. Redden hails from West Virginia, where he was a county agriculture agent. Mr. Redden has a Bachelor's of Science Degree in Agriculture Education and a Master's of Agriculture Degree in Vocational Administration. Mr. Redden specializes in cattle, forestry, aquaculture, and production management. He works closely with EGH in the development of the new infectious disease field laboratory in Haiti.

Richard Rheingans, PhD

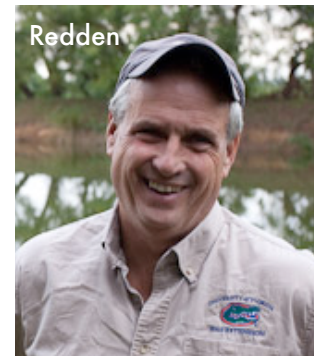
Dr. Richard Rheingans has joined us from the Hubert Department of Global Health at Emory University. His current research interests include: effectiveness, sustainability and scaleability of school-based water and sanitation interventions; determinants of disparities in water quality and sanitation in peri-urban areas; the impact and cost-effectiveness of diarrheal control strategies in low-income countries; and the impact of water and sanitation on psycho-social stress.

Tara Sabo-Attwood, PhD

Dr. Sabo-Attwood will be joining EGH in January 2011. A former gator herself (PhD class of 2003), Dr. Sabo-Attwood comes to us from the University of South Carolina where she was recently recognized as a Research Rising Star and has been focusing on cell signaling pathways impacted by airborne pollutants (asbestos, smoke, nanoparticles) relevant to environmental lung disease. She also studies the role of estrogen in lung cancer and molecular mechanisms of xenoestrogens in aquatic models (zebrafish).



Ali



Redden



Focks



Rheingans



Lednicky



Sabo-Attwood

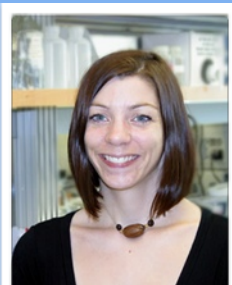
New Postdoctoral Researchers

Kalina Atanasova, PhD



Kalina Atanasova, originally from Bulgaria, has a Doctorate degree in virology from Ghent University, Belgium. Her dissertation work explored the interactions between porcine respiratory coronavirus (PRCV) and bacterial cell-wall toxins in the lungs of gnotobiotic and conventional pigs. The general aim of her research was to elucidate the mechanisms involved in the development of PRCV-induced respiratory disease, with special emphasis on the role of bacterial cell-wall toxins and Tumor necrosis factor- α (TNF- α).

Kelli Barr, PhD



Kelli Barr has a Doctorate degree in plant, insect and microbial sciences from the University of Missouri. She comes to us from Florida Gulf Coast University, Fort Myers FL. Kelli specializes in surveillance for dengue virus, chikungunya virus and Rift Valley Fever virus. She also is interested in viral genetics and resistance, and human and equine arboviruses.



Amanda Rice, PhD

Amanda Rice received her PhD in genetics from the University of Florida College of Medicine in 2008. Her dissertation focused on host pathogen interactions of pox viruses. Amanda is now focusing on free-living pathogenic amoeba and zoonotic pox viruses.

New and Ongoing Research Projects

Seroepidemiological Study of Bovine Zoonoses in Persons Occupationally Exposed to Cattle

Clinton McDaniel - Global Pathogens Laboratory

Cattle have been implicated as a reservoir in a number of human zoonoses, including cryptosporidiosis, leptospirosis, giardiasis, Q fever, and listeriosis. While the epidemiology of these bovine zoonoses is well documented, cattle have been theorized to play an important role in transmission of other pathogens. Evidence exists to support the hypothesis of zoonotic transmission of respiratory syncytial virus, coronavirus, norovirus, and rotavirus between humans and cattle.



To fill this research gap, the Global Pathogens Laboratory has proposed a cross-sectional seroprevalence study to investigate occupational exposures of cattle workers to potential zoonotic pathogens. The study will examine human sera for evidence of previous exposures to bovine respiratory syncytial virus,

coronavirus, norovirus, and rotavirus. If antibody levels are high, risk factor analyses will be performed to identify behavior or occupational factors that may be mitigated. The study has recently won UFIRB-1 approval and enrollments are expected to begin later this year.

US Animal Agricultural Worker Study

Danielle Peters - Global Pathogens Laboratory

The Global Pathogens Laboratory is beginning a controlled, prospective study of up to 2,000 US animal agricultural workers and 200 non-animal exposed age and gender-matched controls for emerging influenza virus infections. This nation-wide, web-based study is jointly sponsored by the US Department of Defense and the National Institutes of Health. The study objectives are to estimate the prevalence of previous influenza virus infection among ag workers, to identify worker exposures and behaviors that may be associated with evidence of influenza virus infection, and to conduct surveillance for influenza-like illnesses at the human-animal nexus to determine the proportion of illness among agricultural workers and their household contacts that is due to influenza viruses.

The study has gained IRB approval and the Global Pathogens Laboratory has begun to recruit participants among healthy adult agricultural workers who are exposed to swine, turkeys, ducks, and geese. National advertisements were first released in August and will go through September and October. The UF PPHP Press Office has published a press release. Multiple news carriers, including the Gainesville Sun and Pork Magazine, have reprinted the article. Participants will complete online questionnaires and submit samples to GPL via postage-paid specimen collection kits.

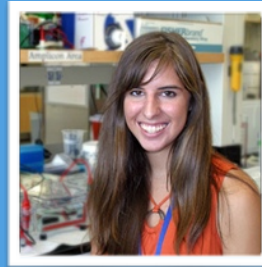
Zoonotic Influenza Transmission Study in the Republic of Georgia

Danielle Peters - Global Pathogens Laboratory

The Global Pathogens Laboratory has teamed up with Dr. Ann Machabishvili, head of the Influenza Laboratory at the National Center for Disease Control and Public Health in the Republic of Georgia, to propose a prospective study of zoonotic influenza transmission in the Republic of Georgia. The objectives of this study are to assess the evidence for zoonotic influenza virus infections among people occupationally exposed to animals, to determine the risk factors for such zoonotic influenza infection, to characterize influenza isolates, and to develop recommendations to reduce cross-species influenza virus transmission among persons occupationally exposed to animals in the Republic of Georgia. This proposed project awaits funding.



The Global Pathogens Laboratory Welcomes New Interns



Global Pathogens Laboratory (Dr. Gray, Director) has started a laboratory internship training program for persons who wish an introduction in laboratory science and infectious disease epidemiology. Training is particularly geared towards helping graduate students in public health. This fall semester the interns are (from left to right) Ben Anderson (MPH-EGH student), Elizabeth Ray (UF undergrad in Microbiology and Cell Science), and Chris Childs (UF undergrad in Health Science). More information about this and other training programs can be found at: <http://gpl.php.ufl.edu/training>

Sustaining and Scaling School Water, Sanitation, and Hygiene (SWASH)

Dr. Richard Rheingans is interested in examining the determinants of water quality in developing countries (i.e. the causes and patterns of contamination of drinking water) along with the social, ecological and economical disparities in water and sanitation access. He has several ongoing projects.

The SWASH project is a collaboration with the humanitarian organization CARE, Great Lakes University of Kisumu, and Emory University. SWASH is funded by the Bill and Melinda Gates Foundation. The first phase of the project was designed to test the impact of school-based water and sanitation interventions on educational and health impacts in children in western Kenya. The first phase has demonstrated that the interventions can be effective in reducing absenteeism and illness, but the benefits are often not realized because the water and sanitation improvements are not sustained. A new phase of the project was recently approved to develop and test alternative approaches for increasing accountability and sustainability of the interventions.



In addition to the work on school-based interventions, Dr Rheingans is also involved in new and ongoing water and sanitation projects in Kenya, including understanding the causes and consequences of disparities in urban water quality and the effect of agricultural improvements on people living with HIV.

Sanitation and Hygiene Applied Research for Equity (SHARE)

Dr Rheingans recently participated in the launch of the SHARE research consortium at the Stockholm World Water Week. SHARE is multi year research consortium funded by the UK Department of International Development and will support applied research in India, Bangladesh, Tanzania and Malawi. SHARE's research is focused on better understanding the health impacts of sanitation and identifying effective strategies for ensuring that improvements reach the poor. Dr Rheingans serves on the research management team for the consortium.

Dr. Fiona Maunsell, BVSc, PhD Joins EGH Global Pathogens Laboratory as Consultant



Dr. Maunsell is a large animal veterinarian and a research scientist with interests in mycoplasma infections and infectious diseases of ruminants. She received her veterinary degree in 1990 from the University of Melbourne in Australia then worked in private practice. After moving to the US in 1994, Dr. Maunsell completed a residency in food animal medicine and surgery at the University of Illinois and became a Diplomate of the American College of Veterinary Internal Medicine (Large Animal Internal Medicine). She was awarded a PhD from the University of Florida in 2007; her research focused on the mucosal immune responses of young calves during *Mycoplasma bovis* infection and was performed in the laboratory of Dr. Mary Brown. She is currently a clinician in the Food Animal Reproduction and

Medicine Service, Department of Large Animal Clinical Sciences, and a research assistant professor in the Department of Infectious Diseases and Pathology, College of Veterinary Medicine, where she collaborates with Dr. Brown on ruminant mycoplasma infection research. Recent research in that laboratory has focused on identifying risk factors for *M. bovis* infection of calves, evaluation of a commercial *M. bovis* vaccine, molecular epidemiology of *M. bovis*, and sequencing and annotation of the genome of a field isolate of *M. bovis*. Dr. Maunsell is also a collaborator in ongoing clinical research on periparturient diseases of the dairy cow.

EGH International Research Collaborations



The Department of Environmental and Global Health has on-going projects in over a dozen countries, with proposals for more research and collaborations in the works. Check out our site at EGH.PHPH.UFL.EDU for more information on our projects including, photos.

Research Collaborations in Romania

During late September Dr. Pam McKenzie of St. Jude Children's Research Hospital and Dr. Gray visited research collaborators in eastern Romania. Led by Dr. Alex Coman of Babes-Bolyai University, the Romanian team of professionals is conducting a AFHSC-GEIS-funded, controlled, prospective cohort study of more than 300 Romanians exposed to pigs and poultry for evidence of zoonotic influenza virus infections. As many of the cohort members are exposed to pigs, the research team is also studying their pigs for influenza virus. As funded by St. Jude Children's Research Hospital's NIH Center of Excellence for Influenza Research and Surveillance, the Romanian team has also set up 7 sentinel geese and duck sites in the Danube Delta. These flocks of birds readily mingle with the migrating species that frequent the Danube Delta. Weather permitting, the researchers monthly collect posterior pharyngeal and cloacal swabs specimens as well as serum specimens from these birds to determine which influenza viruses they may have been exposed to.



Professionals from Around the World Come for Infectious Disease Training

Each year, a class of up to 40 international public health professionals are provided with tuition scholarships and travel funding to participate in this Certificate program. The Certificate is earned through 18 to 20 days of intensive training at the University of Florida coupled with year-round web-based, asynchronous, distance learning training. Training includes lectures, tutorials, field experiences, laboratory exercises, public health demonstrations, and written examinations, with the goal of introducing students to the many facets of studying emerging infectious diseases. Disciplines reviewed include: epidemiology, biostatistics, zoonotic diseases, entomology, microbiology, water quality assessments, scientific research, and food safety.



2010 Certificate in Emerging Infectious Disease Research

This year, the Certificate in Emerging Infectious Disease program hosted 39 professionals from 13 countries, including Nepal, Egypt, Cambodia, Uganda, Romania and Georgia. The primary purpose of this Certificate is to support sponsoring organizations (e.g. US Infections Surveillance and Response System (AFHSC-GEIS), Centers for Disease Control and Prevention (CDC), US Department of State, etc) by providing special graduate level education in emerging infectious disease research to nominated international public health professionals. By making advanced training available to international public health practitioners, the program helps to build sustainable epidemiological research capacity in infectious diseases and promote new collaborations between international US laboratories and other countries.

This year the students arrived in early May and had a busy two weeks. The students were given lectures, laboratory exercises and multiple field training experiences. Students enjoyed training at Gainesville Mosquito Control, Pilgrim's Pride poultry production facility, Suwannee Farms cattle confinement facility, and North Florida Holsteins dairy farm. Students were able to enjoy an excursion to St. Augustine, FL, America's oldest city.

The students have returned to their home countries but are continuing to work towards their certificate through two semesters of online graduate class work coordinated through the University of Florida's College of Public Health and Health Professions.

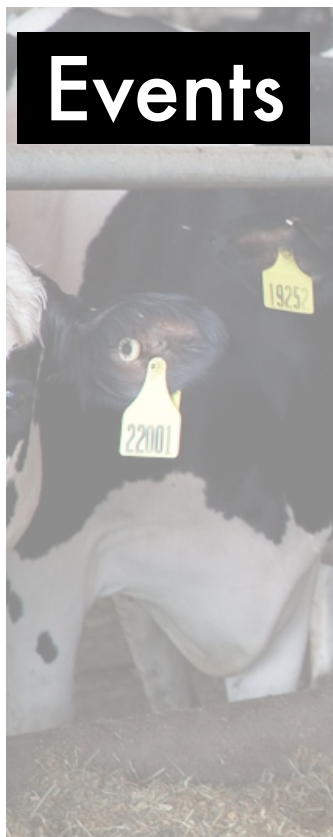


2010 Certificate course participants do the Gator Chomp

Work Continues on the UF Aquatic Pathology Laboratory

The Aquatic Pathobiology Laboratory is a unique, state of the art research and teaching facility at the University of Florida supported by the Emerging Pathogens Institute, the College of Public Health and Health Professions, the College of Veterinary Medicine, and the Institute for Food and Agricultural Sciences (IFAS). Under the direction of Dr. Andrew Kane, the laboratory serves as a shared resource for faculty and students with focus in the areas of aquatic toxicology, aquatic pathology, and ecological studies that examine the relationships between aquatic animal health, human health, and environmental stress. Areas for collaborative research include cell injury, carcinogenesis, endocrine disruption, environmental and comparative pathology, molecular biology, immunology, behavioral toxicology, and fisheries and aquaculture sciences. The UF Aquatic Pathobiology Laboratory was designed in 2007 and its outer shell was completed in October 2008. The interior construction was then completed and a certificate of occupancy issued in May 2009. The facility will contain multiple flow-through and recirculating systems for housing various freshwater and marine species. Five 350-gallon high-density polyethylene tanks and four 150-gallon tanks, used for holding specially prepared or hauled water will be available for culture and testing of freshwater, marine and estuarine organisms with consistent water quality. An uninterrupted, dedicated water filtration and delivery system will non-chemically dechlorinate and distribute water to tanks throughout the laboratory.

Dr. Andrew Kane, Director of the Aquatic Pathology Laboratory



Left: Concrete slab was poured so that room floors slope to their respective central drains.

Bottom: Exterior shell of building was completed mid-October



Events

November

8

Dr.'s Nancy Cox and Carolyn Bridges of the Center for Disease Control Influenza division make a visit to the University of Florida Department of Environmental and Global Health.

December

3

PHHP Research Day

Graduate students who are conducting research studies in a PHHP lab and under mentorship of a PHHP faculty member and PHHP Undergraduate Honors Thesis students will be presenting their work.

3rd International Symposium on Emerging Infectious Diseases

Mongolia • July 2010

The purpose of this symposium was to introduce Mongolian and US researchers to each other, such that we might increase scientific exchange between our countries. The Mongolian people are very unique, very gracious, and live very close to their animals. The infectious disease research needs in Mongolia are many. US scientists met and closely interacted with numerous national Mongolian leaders in human and animal health. The National Center for Communicable Diseases hosted the meetings.

A number of visitors initiated new projects with Mongolian collaborators:

- Dr. Tom Chambers (University of Kentucky) is exploring an OIE twinning agreement with the Veterinary Medical Institute on equine influenza research.
- Dr. Ellen Silbergeld (Johns Hopkins University) met with her Mongolian collaborators in planning how to execute their new NIH Fogarty training grant in noncommunicable diseases.
- Dr. Robert Gibbons (AFRIMS) is moving forward with plans to study viral hepatitis in Mongolia with the National Center for Communicable Diseases.
- Dr. Samia Metwally (USDA Plum Island) transferred pen-side diagnostics for foot and mouth disease to the Central Veterinary Laboratory.

We (University of Florida) are planning a molecular sequence study of DNA from a collection of *Y. pestis* isolates with the Center of Infectious Diseases with Natural Foci. After the Symposium, State Secretary Dr. Khurelbaatar met with EGH Chair, Dr. Gregory Gray to discuss plans for the next meeting. A 2-day September 2012 gathering (Sept 6-7 or Sept 20-21) has been considered. These meetings will be in Ulaanbaatar and again encourage the participating of professionals from rural Mongolia.

- Three sections have been considered for the 2012 meeting:
- (1) Several plenary sessions on continuing medical education and state-of-the art lectures on infectious diseases by visiting scientists
 - (2) A junior investigator research competition with prizes for top 3 best contestants (10 investigators <35 yrs of age selected to give 10 minute presentations in English of their research in Mongolia and to respond to questions by a panel of visitor and Mongolian judges). Prizes for the research competition: \$500, \$300, and \$200 with plaque awards.
 - (3) Traditional symposium presentations from visitors and Mongolians as done in past symposiums.

The symposium was supported by AFHSC-GEIS, University of Florida, Kansas State University, and the Mongolian Ministry of Health.



Above: Group of symposium speakers



Left: Dr. Ron Burke rides a camel.

Below: Dr. Batzukh, Dr. Richt, and Dr. Khurelbaatar (Mongolian State Secretary)





Sixth International Symposium on Aquatic Animal Health

Global Strategies for a Changing Environment

September 5-9, 2010

Tampa, Florida USA

The Conference Included over 300 Participants from 24 Countries

The 6th International Symposium on Aquatic Animal Health (ISAAH-6), addressed key issues of aquatic animal health practices and development. The symposium built upon a series of similar successful meetings held at 4-year intervals, that are sponsored by the American Fisheries Society - Fish Health Section, with additional support from other major national and international aquatic animal health organizations. These included the International Association for Aquatic Animal Medicine, the National Shellfisheries Association, the Japanese Society for Fish Pathology, the European Association of Fish Pathologists, and the Aquatics Committee of the American Veterinary Medical Association.

The symposium provided a stimulating and inclusive forum for exchange of current information on research, management and policy issues related to health and diseases of aquatic



animals, whether wild, farmed, or held on exhibit. The broadest range of animals was considered, from invertebrates, to fish, amphibians, chelonians, and marine mammals. This important international gathering was used to facilitate discussion and action on issues of international importance. Key themes of the symposium included (i) infectious diseases in aquaculture, (ii) planning and emergency response for aquatic animal health emergencies, (iii) interaction of diseases between wild and farmed stocks, and (iv) outcomes of environmental stress including effects of contaminants, and regional and global habitat alteration. The symposium facilitated active participation by individuals typically underrepresented at international meetings, including colleagues and students from such regions as Central and Eastern Europe, Russia and the Former Soviet States, Near East and Asia, Oceania, Australia and New Zealand, South America and Sub-Saharan Africa.



Environmental and Global Health Faculty and Staff Meet New MPH-EGH students, August 20, 2010

The department of Environmental and Global Health is pleased to welcome 9 new students for the Master in Public Health (MPH) program. Those who graduate with an MPH in Environmental and Global Health find challenging positions in federal, state and county departments of health and environmental protection, other federal agencies, consulting and research companies, and industry. They work as environmental health specialists, risk assessors, and project managers. Recent graduates from UF are employed by several major environmental consulting firms as risk assessors and by a research consulting firm.