



Fisher FOCUS

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News from the Sherrilyn and Ken Fisher Center for Environmental Infectious Diseases

Defining environmental infectious diseases

Infectious diseases and related conditions are estimated to afflict greater than 10 million people in the United States annually. In an era of soaring health care costs, declining research funding, and antibiotic resistance, there is a need to improve diagnosis and treatment of infectious diseases.

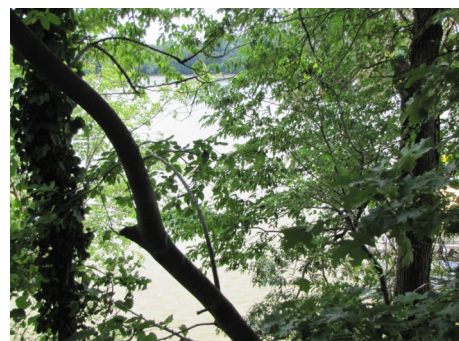
The Fisher Center is dedicated to clinical care and research of diseases that may be classified as environmental infectious diseases. The term “environmental infectious disease” includes disease causing agents found in traditional ecological environments, such as air, soil, and water, in addition to vector-borne or zoonotic

diseases, and those acquired from built environments (home, hospital and community).

Initial research efforts for the Center include tick-borne infections such as Lyme disease, as well as prosthetic joint infections.

Mission Statement

The Sherrilyn and Ken Fisher Center for Environmental Infectious Diseases is dedicated to the clinical research of environmental pathogens which improves the diagnosis and treatment of these infections.



Fisher Center Goals

- Be a leader in prevention and clinical treatment of less understood environmental infectious diseases
- Develop excellence in clinical research and education regarding environmental infectious pathogens
- Support leadership development in clinical care and research

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A word from our Director

Paul Auwaerter, M.D., M.B.A.

Associate Professor of Medicine

Clinical Director, Division of Infectious Diseases



Welcome to our first newsletter! Through the generosity of Sherrilyn and Ken Fisher, the Center will be fostering clinical excellence and improving the diagnosis and treatment of environmental infectious diseases through research.

Though the study of infectious diseases has a long and illustrious history in modern medicine, in recent years certain infections that continue to cause substantial health problems here in the United States and abroad have not had as much attention or

progress as other spheres. For example, although *Borrelia burgdorferi* was described as the cause of Lyme disease more than 30 years ago, there have been no genuine breakthroughs to improve diagnostic accuracy or substantially improve upon existing antibiotic therapy for patients who don't respond well to initially prescribed courses. Many other areas are ripe for attention including hospital-acquired infections, prosthetic joint infections, as well as soil and water pathogens causing lung disease.

With the Fishers' substantial help, the Center will offer a home for clinicians and researchers who look toward innovative strategies that advance our care of patients who suffer from environmental infectious diseases. I also wish to acknowledge Karen Carroll, Richard Moore, David Thomas and Marsh-Wills Karp who will lend their considerable expertise as advisors to the Center. Stay tuned, as this fall of 2012 the first grant proposals will be reviewed for prospective funding.

Lyme disease update

The most common form of Lyme disease caused by *Borrelia burgdorferi* in North America is the characteristic rash called erythema migrans. Although often call a "bull's eye" rash, due to central clearing, this classically described rash is not the most common, but rather a homogeneous red rash as displayed in this photo (right). Currently available commercial testing for Lyme disease depends upon human antibody production that usually takes more than one

to two weeks after infection for the immune system to respond. Therefore, the rash remains the best method of making an early diagnosis of Lyme disease. The mild winter of 2011-2012 in many parts of the United States appears to have led to an increase in the number of infections caused by ticks, although final numbers will not be determined until later this year. Many patients do not recollect the bite of the deer tick (*Ixodes scapularis*) which is often less painful than the bite of other ticks. Improved abilities to secure accurate diagnosis of Lyme

disease will depend both on healthcare provider and patient education as well as knowing how to properly interpret testing, unless new methods for diagnoses of *B. burgdorferi* in development appear superior.



Typical homogenous erythema migrans rash that usually is >5 cm and grows quickly in size. Antibiotics result in quick reversal and fading of the rash.

Fisher Center Advisory Board

At Johns Hopkins we are very fortunate to have access to world-renowned clinicians and researchers. Accordingly, the Fisher Center Advisory Board is composed of five faculty members from the Johns Hopkins School of Medicine and Bloomberg School of Public Health.



Paul G. Auwaerter, M.D., M.B.A. will serve as Chair of the Board. Dr. Auwaerter is

an Associate Professor of Medicine and is the Clinical Director of the Division of Infectious Diseases. He is the Executive Director of the Johns Hopkins Point-of-Care Information Technology (POC-IT) Center, which focuses upon developing evidence-based clinical decision support tools for healthcare providers. His research and educational interests include tick-borne infections.



Karen C. Carroll, M.D. is a Professor of Pathology and Medicine and is the Director of the Division of

Medical Microbiology. Dr. Carroll serves as the Director of the Medical Microbiology Fellowship program. Her

research interests include diagnostic test evaluation and development for the detection of microbial pathogens in clinical specimens.



Richard D. Moore, M.D., M.H.S. is a Professor of Medicine, Medical Director of the Johns

Hopkins Hospital HIV Clinic, and PI of the Johns Hopkins HIV Clinical Cohort and two national HIV cohorts. Dr. Moore's extensive experience with clinical databases will be a great asset as the Fisher Center develops electronic databases for clinical research.



David L. Thomas, M.D., M.P.H. is a Professor of Medicine and currently serves as the Chief of

the Division of Infectious Diseases. Dr. Thomas' research and clinical focus is viral hepatitis and HIV. His experience as a researcher, clinician and administrator will be of great benefit to our Board.



Marsha Wills-Karp, Ph.D. is a Professor and Chair of the Department of Environmental Health Sciences

at the Bloomberg School of Public Health. Dr. Wills-Karp is a leader in the study of the genetic and environmental causes of allergic asthma.

Fisher Center Discovery Program

To develop excellence in clinical research regarding environmental infectious pathogens, the Center has created the Fisher Center Discovery Program (FCDP). Goals of the FCDP include funding of grants for clinical research related to environmental infectious diseases, provision of resources for studies that lack traditional funding mechanisms, promotion of cross-disciplinary collaborative research and provision of mentoring opportunities for young investigators.

The inaugural grant cycle commenced on October 3, 2012 with release of the "Request for Application" within the Johns Hopkins community. Initial response has been gratifying and we look forward to submission of innovative research proposals. The grant application deadline is November 15, followed by proposal review November through January. We anticipate award notification distribution in mid-January 2013.

Fisher Center research update

Prosthetic joint infection research

Over 800,000 prosthetic joints are placed in the US each year. A notable proportion of these joints subsequently fail.

Prosthetic joint infections have been considered to be the most serious cause of subsequent joint failure, occurring in up to 2% of arthroplasties. *Propionibacterium acnes* (*P. acnes*), commonly found on the skin, has been increasingly recognized as an important agent

in these infections, specifically shoulder replacements.



Under the direction of Dr. Paul Auwaerter, **Damani Piggott, M.D., Ph.D.** is undertaking research to

characterize prosthetic joint infections caused by *P. acnes*. This research may lead to a greater understanding as to how these infections may be treated and

prevented, thereby improving outcomes for surgical patients.

Dr. Piggott is currently a Fellow in Infectious Diseases at Johns Hopkins. He is a 2005 M.D./Ph.D. graduate of Yale University School of Medicine and completed his residency at Yale New Haven Hospital. Dr. Piggott's other research interests include HIV epidemiology and pathogenesis.

Infections after organ transplant

From January 1988 through April 2012, 544,566 organs have been transplanted in the United States. Based on Organ Procurement and Transplantation Network (OPTN) data, 8986 total organs were transplanted in the first four months of this year. As the number of transplants increase and anti-rejection medications improve outcomes, more transplant patients are resuming normal activities,

increasing their environmental exposure. Although guidelines have been developed for long-term survival strategies, further study is needed to validate guidelines and develop new recommendations for transplant patients and their families.



Robin Avery, M.D. previously participated in a multicenter study funded by the CDC that included

assessment of post-transplant risks for environmental infections and is currently designing protocols to investigate these questions in greater detail. The Fisher Center and the Transplant Infectious Diseases team at Johns Hopkins will collaborate with Dr. Avery on this research project.

Renovation of Research Space

The Fisher Center will be located in the Pre-Clinical Teaching Building on the East Baltimore Campus of the Johns Hopkins University. What were formerly anatomy labs and teaching areas will be transformed into an attractive and stimulating office environment that will support collaborative research efforts among our staff, administrators, and faculty members.

The award-winning architectural firm, Cho Benn Holback and Associates is working with our staff to create office and storage space for the Fisher Center. Project completion is anticipated for summer 2013.



The now no-longer used anatomy laboratory space that has trained two generations of medical students will be transformed into a dynamic research space for faculty and staff with the support of both the Fisher Center and the Division of Infectious Diseases

Hopkins Links

Online Referral Directory

Find a Hopkins physician

www.hopkinsmedicine.org/doctors

Johns Hopkins USA

Residents from outside of Maryland

1-800-695-4872

www.hopkinsmedicine.org/usa

Johns Hopkins Medicine International

From outside the United States and

for non-English speaking residents

1-410-502-7683

www.hopkinsmedicine.org/international

Johns Hopkins Division of Infectious Diseases

www.hopkinsmedicine.org/medicine/id/

Johns Hopkins Infectious Diseases Outpatient Clinics

Green Spring Station:

410-583-2727 general information

410-583-2888 appointments

Bayview Medical Center:

410-550-0100

HIV Moore Clinic

410-955-1725

Viral Hepatitis Center

410-583-2736

Upcoming Presentations and Conferences

October 26, 2012

Dr. Paul Auwaerter will present *Lyme Disease and Other Tick-Borne Infections* at the Seventh Infectious Diseases Update for the Primary Care Practitioner at the Johns Hopkins University, School of Medicine in Baltimore, Maryland.

December 18, 2012

Tick Summit, sponsored by the Maryland Department of Health and Mental Hygiene in Odenton, Maryland. The Summit brings together a diverse group of healthcare providers, clinical researchers, public health experts, biologists, environmental experts, and military and government representatives to discuss tick-borne diseases in the Mid-Atlantic region.

Recent Publications

Misdiagnosis of late Lyme arthritis by inappropriate use of synovial fluid Borrelia burgdorferi immunoblot testing, authored by Drs. Sam Barclay, Michael Melia and Paul Auwaerter, was published online September 12, 2012 ahead of print publication. The printed article will appear in an upcoming edition of the American Society for Microbiology's journal, *Clinical and Vaccine Immunology*.

Fisher Focus

Johns Hopkins University, School of Medicine
Department of Medicine, Division of Infectious Diseases
The Fisher Center for Environmental Infectious Diseases
1830 E. Monument St., 4th Floor
Baltimore, MD 21287

For questions or comments, contact:
yhiggins@jhmi.edu or 410-614-0440