

Fisher FOCUS



JOHNS HOPKINS
MEDICINE

Volume 3, Issue 2

December 2014

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

Sherrilyn Fisher Visits Namesake Center



L to R: Megan E. Reller, MD, PhD, MPH; Paul G. Auwaerter, MD, MBA; Mrs. Sherrilyn Fisher; Aaron Milstone, MD, MHS; Christopher D. Heaney, PhD, MS

On September 18, 2014 **Sherrilyn Fisher** visited the Sherrilyn and Ken Fisher Center for Environmental Infectious Diseases. Dr. Auwaerter and the Fisher Center staff were delighted to offer Mrs. Fisher a tour of the newly renovated space, followed by scientific presentations by three Fisher Center Discovery Program (FCDP) award recipients.

Aaron Milstone, MD, MHS Associate Professor, Pediatric Infectious Diseases and Epidemiology, Johns Hopkins University, School of Medicine presented his research, *Manipulating the microbiome to prevent healthcare associated infections*. **Christopher D.**

Heaney, PhD, MS, Assistant Professor, Environmental Health Sciences and Epidemiology, Johns Hopkins University, Bloomberg School of Public Health presented his project, *Evolutionary dynamics of multidrug-resistant Staphylococcus aureus among industrial food animal production workers*.

Megan Reller, MD, MPH, Assistant Professor, Pathology Medical Microbiology, Johns Hopkins University, School of Medicine presented research on *Detection of Unrecognized Tick-borne Febrile illness in the Upper Midwest and Northeast United States*.

Mrs. Fisher was able to meet other FCDP grant awardees, Division of

Infectious Diseases faculty and staff during an informal luncheon in the Fisher Center conference room. Also present were the new Chairman of the Department of Medicine, **Mark Anderson, MD** and Arthur Lawrence Fisher, MD scholarship recipients **Helen Bradshaw, Judith Vick, and Rabia Karani** of the Johns Hopkins University School of Medicine.

Luncheon attendees were able to express their gratitude to Mrs. Fisher and Ken Fisher for having the foresight to support innovative, pilot research that typically lacks the opportunity for traditional funding. Thanks were also offered for provision of the pleasant and useful physical surroundings of the Fisher Center. Dr. Paul Auwaerter, Director of the Fisher Center, faculty and staff are looking forward to exploring additional topics in depth in future visits.

L to R: Helen Bradshaw, class of 2018; Sherrilyn Fisher; Judith Vick, class of 2017; Rabia Karani, class of 2017. Missing from photo, Mays Ali, class of 2015



Inside

2

Director's Message

Marques Visit

3

FC Award Recipients

4

Hopkins Links

Publications

Presentations/
Conferences

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.



A word from our Director Paul Auwaerter, M.D., M.B.A.

Clinical Director, Division of Infectious Diseases

Remembering those who have died is a traditional end of year activity often used in newspapers and magazines that helps remind us of those who have contributed to our society. This past year two significant contributors to the field of tick-borne infections passed. One you may know, the other perhaps not.

Willy Burgdorfer PhD, died at his home in Montana at the age of 89, near the National Institute of Allergy and Infectious Diseases Rocky Mountain Laboratories where he worked for many decades. Although Allen Steere and Stephen Malawista, both rheumatologists at Yale University, put together the clinical description of Lyme disease in the 1970s realizing that it was likely an infection as it was a penicillin-responsive illness, the cause remained mysterious.

Dr. Burgdorfer had worked since

graduate school in 1946 studying vector borne infections caused by ticks, mosquitoes and fleas including Rocky Mountain spotted fever and relapsing fever among others. His early years were spent dissecting thousands of African ticks by laboriously preparing smears to examine under the microscope in an effort to understand how they transmit relapsing fever caused by a cousin of Lyme disease (*Borrelia duttoni*) that remains a cause of significant world-wide infection. His unglamorous work over the years served to provide basic understanding that ticks of all types generally host a large number of organisms that are endosymbiotic bacteria in their guts and may indeed cause infections when feeding on certain hosts. His descriptions were decades ahead in importance of understanding a microbiome, that is the normal bacterial

intestinal flora of an organism, which is now one of the 21st century's hottest topics in modern medicine.

Conversations with Dr. Steere in 1978 raised the likelihood that a certain tick bite (then called *Ixodes dammini*, known colloquially as the deer tick) appeared to pre-date many presentations of Lyme disease. In an effort to find an offending organism, for over three years, Willy Burgdorfer examined ticks sent from the New England region but not until 1981 when he was dissecting ticks from Shelter Island, New York did he find oddly coiled, corkscrew organisms that resembled bacteria called spirochetes. Proof that that these bacteria were the cause of Lyme disease came by obtaining serum offered by general practitioner on Shelter Island, Dr. Edgar Grunwaldt, who cared for patients who

(continued page 3)

Thank you to those who contributed so generously to Environmental Infectious Disease research this past year. Such gifts help facilitate innovative research, especially targeted to younger investigators.

In particular we would like to acknowledge:

- Anonymous
- Jacqueline and Stephen Boesel
- Leonard Hartwig

Adriana Marques, MD Visits the Fisher Center



Adriana Marques, MD and Paul Auwaerter, MD, MBA

On October 21, 2014 **Adriana Marques, MD** presented *Searching for persistence of infection in Lyme disease* as part of the Clinical Conundrum meeting. Dr. Marques is the head of the Clinical Studies Unit, Laboratory of Clinical Infectious Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health

and is the principal investigator of clinical protocols investigating different aspects of Lyme disease. Her work addresses three areas in Lyme disease: pathogenesis, immunological responses and laboratory diagnosis. Her groundbreaking work on xenodiagnoses (using ticks to diagnose human Lyme disease) may help inform important questions regarding whether those patients who do not improve following antibiotics may be due to lack of complete eradication of the organism.

Before and after the presentation, Dr. Marques met with Johns Hopkins and visiting

Lyme disease investigators to discuss individual research efforts and the possibility of collaborative opportunities.

Dr. Marques meeting with tick borne disease investigators: Lily Nam, BS, Wanliang Shi, PhD, Mark, Eshoo, PhD, Adriana Marques, MD, Steve Dumler, MD, Ying Zhang, MD, PhD, Jie Feng, PhD



Fisher Center Discovery Program 2015 Awards

On November 21, 2014 the Fisher Center Advisory Board met to review 11 applications for the 2015 Fisher Center Discovery Program (FCDP) grants. After thoughtful review the Board selected three proposals for funding support up to \$50,000.

The Fisher Center Discovery Program offers grants for proof-of-concept, pilot, and novel clinical research proposals. Past FCDP award recipients have expressed gratitude to the FCDP for sponsorship of clinical research that may not have access to traditional funding mechanisms. To date, the FCDP has supported 14 research protocols.



Kieren Marr, MD Professor, School of Medicine, Infectious Diseases

Diagnostics for latent histoplasmosis *Histoplasma capsulatum* is a fungus that has a distribution in the soil of temperate climates. Human infection occurs after inhalation of fungal spores released from the soil mold. Infection is usually asymptomatic or subclinical in people who have intact cellular immunity (called “latent infection”). When cellular immunity is impaired reactivation of latent infection can result in severe, disseminated disease, with high mortality rates. Outcomes are typically poor, as diagnostic tests are not sensitive enough to detect early or latent infection. This study will evaluate the performance of Interferon-gamma release assays (IGRA) for detection of latent *H. capsulatum* infection, which may lead to development of improved diagnostics for *H. capsulatum*.

Trish Perl, MD Professor, School of Medicine, Infectious Diseases

Sara Keller, MD, MPH, MSHP Clinical Associate, School of Medicine, Infectious Diseases

The Home Environment: Infections among Patients Discharged Home with Venous Catheters Catheter-associated bloodstream infections (CABSI) and other complications of venous catheters have been increasingly recognized over the last two decades. CABSI lead to increased resource utilization including readmissions. However, many patients are discharged home from hospitals with long-term venous catheters for therapeutics and nutrition. Once leaving the hospital, patients are at risk for exposure to home environment pathogens, from sources such as water, pets, or soil. This research will

study patients discharged from the hospital with venous catheters to understand the risk of infections in the home environment. The data may be used to test interventions to reduce home catheter complications and improve quality of care.



Margaret Kosek, MD

Assistant Professor, Bloomberg School of Public Health, Global Disease Epidemiology and Control

Salivary diagnostics in childhood enteropathy Diarrheal diseases are a leading cause of malnutrition and death in children less than 5 years of age, accounting for 10% of all deaths worldwide. Multiple, repeated pathogen exposures are associated with stunting. Childhood environmental enteropathy (EE), an irreversible condition characterized by abnormal intestinal architecture, decreased nutrient uptake, and reduced oral vaccine efficacy, is believed to be a principal determinant of stunting. Prevention is hampered by early identification of EE, which relies on invasive tests. Non-invasive salivary assays for enteric pathogens associated with EE could improve early identification and prevention efforts. This project may expand salivary diagnostics for future studies of EE as well as other pathogens.

Willy Burgdorfer PhD (continued)

had recovered from Lyme disease. These sera reacted against these spirochetal organisms that Alan Barbour, also of the Rocky Mountain labs, helped grow in culture.

Dr. Burgdorfer wrote in a 1993 Clinics of Dermatology paper his personal view of the discovery: “...many hailed it as a medical breakthrough. Some called it serendipity, others, an accident, and still others, the reward of more than 35 years of research into the often complex relationship of pathogens to their arthropod vectors.” He left it for

readers of the paper to determine which is correct. My view is that only through his knowledge and foundation based on years of prior work did he come to recognize a potentially novel finding. Moreover, he needed others ranging from clinicians to microbiologists to offer sufficient proof. While we often rightly laude such discovery and the discoverers, perhaps more than a nod should go to many years of toil that preceded. Regardless, deservedly, Willy Burgdorfer will always be remembered, as the bacterium that causes Lyme disease now bears his name, *Borrelia burgdorferi*.

Dr. Edgar Grunwaldt also died this year, oddly also the same age of 89 as Willy Burgdorfer. A pediatrician who graduated top of his class at Washington University, he became the family physician to the small town of Shelter Island in 1975 after working in California. Without his help and dedication to understand why his patients had this perplexing illness caused Lyme disease, the breakthrough may have been much longer in coming. His passing was less noticed, by those in scientific community, but was a pivotal part of the discovery of the cause of Lyme disease.

Funding Our Future

Thanks to all of you that believe in the mission of environmental infectious disease research. As always, we are extremely grateful to those who have contributed. To donate, please consider the following options:

Online: To make a gift or pledge online, please complete our secure online giving form, <https://secure.jhu.edu/form/infdis>

Phone: To speak to someone directly about making a gift, please call 410-550-9893

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

Recent Publications

Fluoroquinolone Resistance in the Rectal Carriage of Men in an Active Surveillance Cohort: Longitudinal Analysis. Cohen JE, Landis P, Trock BJ, Patel HD, Ball MW, **Auwaerter PG**, Schaeffer E, Carter B. *J Urol.* 2014 Aug 8. pii: S0022-5347(14)04178-0. doi: 10.1016/j.juro.2014.08.008. [Epub ahead of print] PMID: 25111911

The First US Domestic Report of Disseminated Mycobacterium avium Complex and Anti-Interferon- γ Autoantibodies. O'Connell E, Rosen LB, LaRue RW, Fabre V, Melia MT, **Auwaerter PG**, Holland SM, Browne SK. *J Clin Immunol.* 2014 Aug 23. [Epub ahead of print] PMID: 25149293

John G. Bartlett: a transformative, visionary leader of Johns Hopkins Infectious Diseases. **Auwaerter PG**, Quinn TC, Sears CL, Thomas DL. *Clin Infect Dis.* 2014 Sep 15;59 Suppl 2:S61-2. doi: 10.1093/cid/ciu440. No abstract available. PMID: 25151478

High prevalence of reduced chlorhexidine susceptibility in organisms causing central line-associated bloodstream infections. Suwantarant N, Carroll KC, Tekle T, Ross T, Maragakis LL, Cosgrove SE, **Milestone AM**. *Infect Control Hosp Epidemiol.* 2014 Sep;35(9):1183-6. doi: 10.1086/677628. Epub 2014 Jul 23. PMID: 25111928

Lyme disease: authentic imitator or wishful imitation? Melia MT, Lantos PM, **Auwaerter PG**. *JAMA Neurol.* 2014 Oct 1;71(10):1209-10. doi: 10.1001/jamaneurol.2014.1193. No abstract available. PMID: 25090401

Presentations and Conferences

New Antimicrobial Agents and Approaches to Fever of Unknown Origin presented by **Paul Auwaerter, MD, MBA** at the 9th Infectious Diseases Update for Primary Care and Hospital Medicine, October 23-24, 2014. The event was hosted by Johns Hopkins in Baltimore, Maryland.

Fisher Focus

Johns Hopkins University, School of Medicine
Department of Medicine, Division of Infectious Diseases
The Fisher Center for Environmental Infectious Diseases
Pre-Clinical Teaching Building, Suite 211
725 N. Wolfe St.
Baltimore, MD 21205

For questions or comments, contact:
Yvonne Higgins, MAS, MS/ITS
fishercenter@jhmi.edu or 443-287-4840