

◀ *P. falciparum* sporozoite in a mosquito midgut



# Infectious Diseases

Washington University in St. Louis  
SCHOOL OF MEDICINE

DIVISION NEWSLETTER September 30, 2014 • Volume 9, Issue 3

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## Calendar Highlights

Tuesday, October 7, 2014  
Institute of Public Health Annual Conference  
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Washington University School of Medicine  
IDSA Reunion 2014  
[Event details](#)

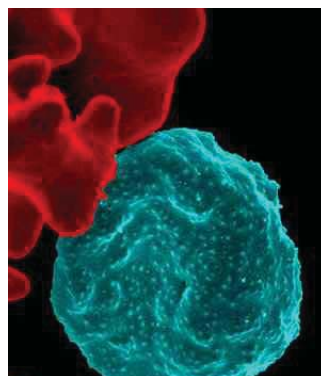
Wednesday, October 22, 2014  
ID Society of St. Louis  
Ebola, MERS-CoV and Chikungunya Viruses  
[Event details](#)

Thursday, October 30  
Gerald Medoff Inaugural Visiting Professor  
"The Challenge of Curing HIV"  
[Event details](#)

We are interested in your achievements, clinical and/or research activities, and other personal news since leaving Washington University School of Medicine. Please contact Dr. Gerald Medoff at [gmedoff@dom.wustl.edu](mailto:gmedoff@dom.wustl.edu) with any information you would like to share. All division newsletters can be found at: ID Division Newsletters

## Scientists find way to trap, kill malaria parasite

Michael C. Purdy



*Scientists may have found a way to imprison the malaria parasite in its protective chamber inside red blood cells. In the electron micrograph, the malaria parasites appear in blue and uninfected red blood cells are shown in red.*

Scientists may be able to entomb the malaria parasite in a prison of its own making, researchers at Washington University School of Medicine in St. Louis report July 16 in *Nature*.

As it invades a red blood cell, the malaria parasite takes part of the host cell's membrane to build a protective compartment. To grow properly, steal nourishment and dump waste, the parasite then starts a series of major renovations that transform the red blood cell into a suitable home.

But the new research reveals the proteins that make these renovations must pass through a single pore in the parasite's compartment to get into the red blood cell. When the scientists disrupted passage through that pore in cell cultures, the parasite stopped growing and died.

"The malaria parasite secretes hundreds of diverse proteins to seize control of red blood cells," said first author Josh R. Beck, PhD, a postdoctoral research scholar. "We've been searching for a single step that all those various proteins have to take to be secreted, and this looks like just such a bottleneck."

A separate study by researchers at the Burnet Institute and Deakin University in Australia, published in the same issue of *Nature*, also highlights the importance of the pore to the parasite's survival. Researchers believe blocking the pore leaves the parasite fatally imprisoned, unable to steal resources from the red blood cell or dispose of its wastes.

The malaria parasite, *Plasmodium falciparum*, is among the world's deadliest pathogens. Malaria is spread mainly by the bite of infected mosquitoes and is most common in Africa. In 2012, an estimated 207 million cases of malaria occurred worldwide, leading to 627,000 deaths, according to the World Health Organization. Resistance to drug treatments is spreading among the parasite's many strains, and researchers are working hard to find new drug targets.

Senior author Daniel Goldberg, MD, PhD, professor of medicine and of molecular microbiology and a Howard Hughes Medical Institute investigator at Washington University, studies how malaria affects red blood cells.

In the new study, he and his colleagues looked at heat shock protein 101 (HSP101). Scientists named this family of proteins "heat shock" because they become active when cells are over-

*continued page 2*

Above image (*P. Falciparum*): CDC/Dr. Mae Melvin (PHIL #2704), 1973. == Licensin). Masthead image: Ute Frevert; false color by Margaret Shear; Copyright: © 2005 Frevert et al.

## FEATURED COLLEAGUE



Hitoshi Honda, M.D.

I served from 2007 to 2010 as a Washington University-Barnes Jewish Hospital Infectious Disease Fellow after a 3-year internal medicine residency at University of Hawaii from 2004 to 2007. The entire time in which I served at Washington University School of Medicine was invaluable and unforgettable. I enjoyed the rewarding clinical fellowship with wonderful co-fellows including Mike Lane, Nur Onen, Abayomi Agbebi, and Carlos Santos. I also had the privilege of benefiting immensely from the experience and wisdom of my clinical mentors including Drs. Gerald Medoff, Gary Weil, and Nigar Kirmani.

During this time, I specialized in healthcare epidemiology and trained with the Washington University Hospital Epidemiology team under the tutelage of Drs. David Warren and Victoria Fraser, who gave me invaluable guidance in the early stages of my career as a hospital epidemiologist.

After completing my fellowship in 2010, I moved back to my native country of Japan to help initiate an infectious disease consultation service while also working to advance infection control and hospital epidemiology. Even after returning to Japan, I have been fortunate enough to receive the continued support of the Washington University ID faculty, including Drs. David Warren, Hilary Babcock, Erik Dubberke, and Victoria Fraser.

With the support of the ID division, I was selected in 2012 to be the International Ambassador of the Society for Healthcare Epidemiology

*continued next column*

## malaria parasite continued

heated or stressed. The proteins have multiple functions, including guiding the folding and unfolding of other proteins.

Previous studies have suggested that HSP101 might be involved in protein secretion. The researchers disabled HSP101 in cell cultures, expecting to block the discharge of some malarial proteins. To their surprise, they stopped all of them.

“We think this is a very promising target for drug development,” Goldberg said. “We’re a long way from getting a new drug, but in the short term we may look at screening a variety of compounds to see if they have the potential to block HSP101.”

The scientists think HSP101 may ready malarial proteins for secretion through a pore that opens into the red blood cell. Part of this preparation may involve unfolding the proteins into a linear form that allows them to more easily pass through the narrow pore. HSP101 may also give the proteins a biochemical kick that pushes them through the pore.

Beck noted that researchers at the Burnet Institute neutralized the parasite in a similar fashion by disabling another protein thought to be involved in the passage of proteins through this pore.

“That suggests there are multiple components of the process that we may be able to target with drugs,” he said. “In addition, many of the proteins involved in secretion are unlike any human proteins, which means we may be able to disable them without adversely affecting important human proteins.”

*Reprinted with permission, Micheal Purdy, “Washington University Record”, July 16, 2014*

of America (SHEA) and also received the International Investigator Award at ID week in 2013. I currently serve as a member of the SHEA External Affairs Committee.

My clinical research interests are epidemiology and prevention of healthcare-associated infections, including methicillin-resistant *S. aureus*, *Clostridium difficile*, and catheter-related bloodstream infection. I am also interested in behavioral modification among healthcare workers, as exemplified in influenza vaccination protocol and hand hygiene practice.

In 2013, I began working at Tokyo Metropolitan Tama General Medical Center, one of the largest Tokyo metropolitan government-owned hospitals. I established the Division of Infectious Diseases at my current hospital, where I serve as the head of Infection Control. I am also active as an infection control consultant for the Tokyo Metropolitan government.

Last but not least, I am blessed in having my wonderful wife, Aki, who is now back to work as an anesthesiologist in Japan, at my side as a source of continual support and inspiration. We also have been blessed with two children, Tamako, who was born at Barnes-Jewish Hospital and will start 1st grade next year, and our son, Sotaro, who was born in July of this year.



Pictured are Hitoshi's parents Keiichiro and Keiko, along with daughter, Tamako, wife Aki, son Sotaro and Hitoshi

# awards & announcements

| RECENT AWARDS  |   |  |
|--|---|--|
| PRINCIPAL INVESTIGATOR(S)                                  | AWARD   | PROJECT TITLE  |
| James D. Brien, Ph.D.                                      | K22   | Immune Control of West Nile Virus Quasispecies Dynamics  |
| Erik Dubberke, M.D., M.P.H.<br>Jennie Kwon, D.O.           | The Foundation for Barnes-Jewish Hospital Foundation                      | Effect of Limiting Sequential <i>Clostridium difficile</i> Testing on Patient Care Outcomes                                  |
| Erik Dubberke, M.D., M.P.H.<br>Margie Olsen, Ph.D., M.P.H. | Sanofi-Pasteur  | Analysis of the Health Care Utilization Trajectory Before and After <i>Clostridium difficile</i> Infection                   |
| George Kyei, M.D., Ph.D.                                   | Harold Amos Faculty Development Grant from Robert Wood Johnson Foundation | Control of HIV production by cyclin L2   |
| Matthew Kuhlmann, M.D.                                     | CRTC  | Human Variations in Enterotoxigenic <i>E. coli</i> Outcomes  |
| Robyn Klein, M.D.  | P01 NINDS   | Targeting the Blood-Brain Barrier to Treat Neuroinflammation   |
| Robyn Klein, M.D.  | U19 NIIAD   | Control of Neurotropic Flavivirus Infection by Type I and III Interferons  |
| Robyn Klein, M.D.  | Multidisciplinary Proposal  | Targeting the blood-brain barrier to limit infection with encephalitic alpha viruses   |
| Benjamin Thomas, M.D.                                      | Center for Disease Control and Prevention (CDC) RFA-CK11-0010401SUPP14    | Multicenter Collaborative (Harvard Prevention Epicenter) to Define Sepsis Epidemiology and Improve Sepsis Surveillance Grant |

## special recognition

**Hilary Babcock, M.D., M.P.H.**, Medical Director, BJC Infection Prevention and Epidemiology Consortium and Occupation Health (Infectious Diseases) of Barnes-Jewish and St. Louis Children's Hospitals, has been appointed to the CDC Healthcare Infection Control Practices Advisory Committee (HICPAC). Hilary is an Associate Professor of Medicine. HICPAC is a federal advisory committee to provide advice on periodic updating of existing CDC guidelines.

## congratulations...

### **CRTC Mentor of the Year**

**Margie Olsen, Ph.D, M.P.H.**, became the first "CRTC Mentor of the Year". She was nominated for her efforts in clinical research education by the CRTC scholars and voted on by the CRTC leadership and staff.

"Margie is a great recipient of this award. Many people in the Division have benefited from her commitment to teaching and mentoring others at different stages of their career development. Please congratulate her!" Bill Powderly, M.D., Co-director, Division of Infectious Diseases.

### **Length of Service Awards**

The Infectious Diseases Division recognizes three staff members celebrating length of service awards. Congratulations to **Kim Gray, Ed.D, MSN** (20 years), **Lisa Kessels, RN, BS** (15 years) and **Michelle Ann Elam-Noll** (10 years).

### **IDWeek 2014 Travel Awards**

**Jennie Kwon, D.O.** received a travel award for oral abstract presentation "Recovery of *Clostridium difficile*, Vancomycin Resistant Enterococcus and Methicillin Resistant Staphylococcus aureus from the Food of Hospitalized Patients" in Philadelphia, PA and also received a IDWeek Trainee travel grant. **Ben Thomas, M.D.** received a travel award for oral abstract presentation "Compliance with follow-up cultures in Staphylococcus aureus bacteremia: Opportunity for quality improvement".

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# welcome new faculty

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## **Kerry Bommarito, Ph.D., Instructor of Medicine**

I was born and raised in St. Louis. My interest in infectious diseases began when I started working as a medical technologist in microbiology at a St. Louis hospital. I completed my Masters of Public Health in epidemiology at St. Louis University and an internship at the Centers for Disease Control and Prevention. After completion of my MPH, I was hired by Dr. Fraser as a research coordinator in the Division. After several years at Washington University, I decided I wanted to obtain advanced training in epidemiology methodology and wanted to have an increased level of involvement in research studies. I enrolled in the School of Public Health at SLU and completed my PhD in Public Health Studies/Epidemiology this past December. My dissertation involved using large administrative data sets to analyze risk factors for chorioamnionitis and its impact on maternal morbidity.

I joined the Infectious Diseases Division as an Instructor in Medicine on July 1st. I am interested in the epidemiology of obstetric infections and the use of administrative data for clinical and outcomes research. I was awarded an ICTS KL2 Career Development Award to study the effect of chorioamnionitis on subsequent pregnancy and infertility that began July 1st. I am also working with Dr. Margie Olsen as the Associate Director of the Center for Administrative Data Research.

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## **Phillip Budge, M.D., Ph.D., Assistant Professor of Medicine**

I grew up in the West (Utah, Arizona, Idaho, and California) before attending Brigham Young University (Provo, UT) as an undergraduate. I graduated from the MSTP at Vanderbilt University (Nashville, TN) in 2007 with a PhD in microbiology and immunology and a strong interest in public and international health. After residency at Vanderbilt, I spent 2 years in the Epidemic Intelligence Service (EIS) and Parasitic Diseases Branch of the Centers for Disease Control and Prevention (Atlanta, GA), where I had my first introduction to the captivating world of filarial diseases and parasitology, and became involved in projects related to elimination and control of lymphatic filariasis (LF) in Western Africa and India. I then returned to Vanderbilt University in 2011 to complete my infectious diseases fellowship, where I completed some additional training in epidemiology and biostatistics before joining David Wright's lab to work on the development of strategies for point-of-care diagnosis of Loa loa.



I am thrilled to be joining the faculty at Washington University School of Medicine, where I'll have the wonderful opportunity of working closely with Gary Weil, Peter Fischer and others on the DOLF (Death to Onchocerciasis and LF) project. My laboratory research will focus on the development of diagnostic tools for use in public health programs in low-resource settings.

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## **Courtney Chrisler, M.D., Instructor of Medicine**

Courtney received her BA at Northwestern University, Evanston, Illinois and attended medical school at Washington University School of Medicine. She did her residency in internal medicine and completed an Infectious Diseases fellowship in 2014 at Barnes-Jewish Hospital at Washington University School of Medicine.

On July 1, 2014 she joined the faculty as an Instructor in Medicine, Division of Hospital Medicine, Department of Medicine at Washington University School of Medicine. Her current research interests and projects revolve around adverse events requiring hospital readmission in patients on outpatient parental antibiotic therapy, impact of pre-implantation infection on outcomes following LVAD placement, and the impact of duration and spectrum of prophylactic antibiotics on infectious complications after left ventricular assist device implantation.

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# welcome new faculty

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## **Kevin Hsueh, M.D., Instructor of Medicine**

It is my pleasure to have joined the ID faculty here at Washington University School of Medicine in July of this year. Here's a little about myself, I grew up in Great Neck, Long Island, which some of you may recognize as having been the inspiration for F. Scott Fitzgerald's West Egg in the Great Gatsby. I obtained my undergraduate degree from Williams College, then worked with Dr. Jennifer Puck at the NIH, exploring the reasons behind the failure of X-linked SCID ex-vivo gene therapy. In 2004 I entered medical school at New York University School of Medicine where, in addition to my medical education, I worked with Dr. Martin J. Blaser investigating *H. pylori*'s effects on the gastric microbiome. I stayed at NYU for my internship and residency, subsequently helping to pilot their first healthcare quality oriented housestaff position, the Chief Residency in Quality and Patient Safety (a Manhattan VA sponsored position). During my tenure as Chief Resident, I helped redesign the resident sign-off system and antimicrobial stewardship systems to help reduce systemic errors and improve oversight, acquiring a deep interest in patient

safety and health systems redesign.

My interest in health systems improvement led me to gravitate to infection prevention, hospital epidemiology, and antimicrobial stewardship during my Infectious Diseases fellowship (also at NYU). During my fellowship, I helped write the outpatient parenteral antimicrobial therapy chapter for the upcoming version of Mandell's with Dr. Jeffrey Greene, and examined the utility of neutrophil cell population characteristics as a marker for systemic infection with Dr. Harold Horowitz. Here at Washington University, I will be continuing my work with hospital epidemiology and infection control as a new Associate Medical Director for Infection Prevention, where I hope to continue studying and improving healthcare processes and patient safety with a particular eye towards antimicrobial stewardship.

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## **George Kyei, M.D., Instructor of Medicine**

I am from Ghana where I obtained my MB, ChB degree from the University of Ghana Medical School. After internship at the Korle-Bu Teaching Hospital in Accra, I was a family physician for three years at Manna Mission Hospital, an inner city hospital that cares mainly for the indigent and underserved. As a family physician in Ghana, I did everything from treating adults with hypertension, diabetes, tuberculosis and HIV, children with complicated malaria and sickle cell disease, to women with complications of pregnancies, performing difficult deliveries and C-sections.



I have always had an interest in basic science, so while at Manna Mission I obtained an MPhil degree from my medical school doing my thesis on biochemical characterization of mycobacteria causing pulmonary disease in HIV and non-HIV positive patients. Following that, I moved to the University of New Mexico in Albuquerque to obtain a PhD in Microbiology/Molecular Genetics with Dr. Vojo Deretic. I characterized parts of the endosomal membrane trafficking machinery of both TB and HIV.

When I learned of the Physician Scientist Training Program (PSTP) at Washington University's Department of Medicine, I felt it would be the perfect program for me to further my clinical and research training. I joined the program in 2008 and completed an internal medicine residency and infectious diseases fellowship along with postdoctoral research training, all at Washington University. During my postdoctoral research, I worked with Dr. Lee Ratner to understand how HIV is able to survive in latently infected cells like macrophages and resting T cells.

I hope to continue my research in the area of HIV latency, identifying factors and small molecules required for viral reactivation with the hope that one day, we may be able to eliminate the virus from our patients. I have recently been awarded a 4-year training grant, the Harold Amos Medical Faculty Development Grant, from the Robert Wood Johnson Foundation.

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# welcome new faculty

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## **Shadi Parsaei, D.O., Instructor of Medicine**

Shadi completed a Bachelor of Science, Major in Biology at the University of Louisville, Louisville, KY and Doctor of Osteopathic Medicine at the Chicago College of Osteopathic Medicine, Midwestern University, Downers Grove, IL. She completed her internship, residency in Internal Medicine and Hospitalist, Internal Medicine at the University of Chicago (NorthShore) Evanston Hospital, Evanston. Shadi recently completed an infectious diseases fellowship at Washington University School of Medicine and has joined the faculty as an Instructor of Medicine, Infectious Diseases Division.

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## **Rupa Patel, M.D., MPH, BTM&H, Instructor of Medicine**

Dr. Patel joined the infectious diseases staff in 2013 as an Instructor of Medicine. She completed her Internal Medicine residency at the University of Texas Southwestern Medical Center, in Dallas. Dr. Patel completed her Infectious Diseases fellowship training from Mount Sinai Medical Center in New York. Dr. Patel received her Masters in Public Health from Johns Hopkins University. She is also the Co-Director of the Global Health Pathway in Internal Medicine.

Dr. Patel's research interests include implementation of HIV pre-exposure prophylaxis (PrEP) among high-risk populations, namely men who have sex with men (MSM).



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# welcome to our 2014 fellows

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## **Anapum Pande, M.D.**

I was born in Mumbai, India. I graduated from medical school at Byramjee Jeejeebhoy Medical college, Pune, India and completed residency in internal medicine at the University of Arkansas for Medical Sciences, where I was awarded the Thomas E. Andreoli award for excellence in internal medicine.

### **Why did you chose an ID fellowship?**

I chose to specialize in infectious diseases as it keeps me humble due to its vast scope; and it ensures that I remain a student of medicine for life. I developed a liking for infections while studying epidemiology (Masters of Public Health) at the University of Texas Health Science Center in Houston. I was involved in several research projects at M.D. Anderson Cancer Center and at Baylor College of Medicine. I have always been interested in infections in stem cell transplant patients, and would like to focus on research in this field during my fellowship. I am also passionate about teaching, and hope to make this part of my career.

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# welcome to our 2014 fellows (cont'd)

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## **Merilda Blanco, M.D.**

I was born in the Dominican Republic, and completed medical school at the Pontificia Universidad Catolica Madre y Maestra. I did my medicine residency at the Hospital of Saint Raphael in Connecticut. During

residency, I received the Outstanding Intern award, the Excellence in Ambulatory Care award as a second and third year resident, and the Medical Staff President's award in research. After graduation, I worked as a Clinical Instructor of Medicine with Yale University Medical Students and joined the faculty at the Hospital of Saint Raphael/ Yale Medical Center Internal Medicine Categorical programs. During this time, I participated as a member of the CRBSI reduction committee.

### **Why did you chose an ID fellowship?**

During my first year of residency I was fascinated by the process of evaluating patients with infectious conditions and how their adequate management could lead to a significant impact in the patient's outcome. It is a focused discipline that still allows me to see the patient as a whole, not only an organ system.

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## **Caline Mattar, M.D.**

I was born in Beirut, Lebanon. I earned my M.D. degree at the American University of Beirut, then completed residency at the University of Arkansas for Medical Sciences. During residency, I served as the Chair of the Graduate Medical Education Residents Council and am currently the Vice Chair for the Junior Doctors Network of the World Medical Association, the

body that represents Residents and Fellows from over 75 countries. I was awarded the first prize for the American College of Physicians Arkansas Chapter Research Competition in 2014

### **Why did you chose an ID fellowship?**

Global Health is my passion, which I have been developing for the last 6 years. I see Infectious Diseases going hand in hand with Global Health in various respects. I have had a particular interest in HIV, neglected tropical diseases and antibiotic resistance. My ideal career involves patient care, teaching, and being a physician advocate for the multiple global health challenges that we are facing today.



## **Lemuel Non, M.D., MPH**

I graduated from the University of the Philippines in 2008, and then spent 2 years as a Municipal Health Officer in a conflict-affected area in southern Philippines. I later finished residency at the Albert Einstein Medical Center in Philadelphia in 2014. I won 1st place in quality improvement research, and 2nd place in clinical research at the

American College of Physicians Southeastern Pennsylvania chapter in 2013, 2nd place in research at the American Medical Association National Research Symposium in 2013, and presented at ID week in 2013 and the National ACP conference in 2012. My undergraduate research was on bacteriophage therapy, and my work after medical school focused on tinea imbricata, a forgotten infectious disease that afflicts many indigenous tribes in the Philippines. My research during residency was on *Clostridium difficile*.

### **Why did you chose an ID fellowship?**

My numerous exposures to the many facets of infectious diseases since pre-medical school have led me, finally, to this specialty. I'm planning on a career in either infection control or transplant ID.

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## **Maria Reyes, M.D.**

I am originally from Lima, Peru and went to medical school at the Universidad Peruana Cayetano Heredia. After finishing medical school I did research in cystic echinococcosis, and then came to the US for residency at the University of Miami, Regional Campus.

### **Why did you chose an ID fellowship?**

Being from Peru, I've been exposed to a variety of different infections, especially caused by parasites. Since then, ID has been an interest to me, in particular when I did my residency and realized how diverse the specialty really was. I am looking forward to the many opportunities and research available during my training here.

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## continuing education

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### Q & A Ebola: What you need to know

**Steven Lawrence, M.D., M.Sc.**, Assistant Professor of Medicine, Infectious Diseases, answers questions about the Ebola virus outbreak in West Africa.

Follow this link: <http://medicine.wustl.edu/news/headlines/q-and-a-ebola-what-you-need-to-know/>

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## continuing education opportunities & events

### **Institute of Public Health Washington University Annual Conference**

Public Good & Individual Choice: Navigating the Complexities of Public Health in a Modern Society  
Eric P. Newman Education Center, Washington University Medical Campus  
Tuesday, October 7, 2014 1:00 - 5:30 pm  
[More details](#)

### **Washington University School of Medicine IDSA Reunion 2014**

Philadelphia Marriott Downtown, 1201 Market Street, Philadelphia, Pennsylvania 19107, Room 405  
Friday, October 10, 2014 6:30 - 9:30 pm  
[RSVP acicerel@dom.wustl.edu](mailto:acicerel@dom.wustl.edu)

### **ID Society of St. Louis CME Event**

Resurgent and Emerging Viral Threats: Ebola, MERS-CoV and Chikungunya Viruses  
Steven Lawrence, M.D.  
Engineer's Club of St. Louis, 4359 Lindell Boulevard, St. Louis, Missouri 63108  
Thursday, October 22, 2014  
[Program announcement and registration information](#)

### **Gerald Medoff Inaugural Visiting Professor "The Challenge of Curing HIV"**

Douglas Richman, M.D., VA San Diego Healthcare System and University of California San Diego  
Internal Medicine Grand Rounds Clopton Auditorium, 4950 Children's Place, St. Louis, Missouri  
Thursday, October 30, 2014 8:00 am



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# announcements

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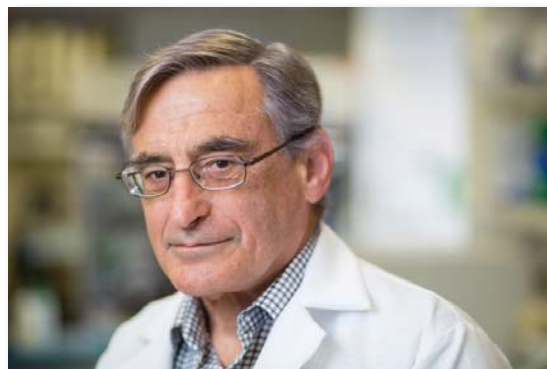
## Gerald Medoff Inaugural Visiting Professor

Thursday, October 30, 2014  
8:00 am

Internal Medicine Grand Rounds  
Clopton Auditorium

4950 Children's Place, St. Louis, Missouri

### The Challenge of Curing HIV



**Douglas Richman, M.D.**

VA San Diego Healthcare System and  
University of California San Diego  
Distinguished Professor of Pathology and Medicine  
Director, Center for AIDS Research  
Florence Seeley Riford Chair in AIDS Research  
San Diego CA

### Thank you to all who contributed toward the Gerald Medoff Visiting Professor Lecture

Dr. Hilary Babcock  
Dr. Thomas C. Bailey  
Dr. Daniel Goldberg & Dr. Mary Cullen  
Dr. Michael Cynamon  
Dr. Hope Cranston Damato  
Dr. Michael S. Diamond  
Dr. Erik R. Dubberke  
Dunagan Foundation, Inc.

Ms. Monica Lynn Groth Farrar  
Dr. Victoria Fraser & Dr. Steven Miller  
Dr. Lawrence Gelb  
Dr. Alex Granok  
Dr. & Mrs. Michael B. Gutwein  
Dr. James Hinrichs  
Dr. Eric S. Jacobson  
Dr. Nigar Kirmani

Mr. Daniel Korte  
Dr. & Mrs. Michael A. Lane  
Dr. Jade Le  
Dr. Kristin E. Mondy  
Dr. Turner Overton  
Dr. William Powderly & Dr. Betsy Keath  
Dr. Rachel Presti  
Dr. & Mrs. Leon R. Robison III

Dr. Marcia L. Sokol-Anderson  
Dr. Jacob P. Sosna  
Dr. Gregory Storch &  
Dr. Lisa Brodsky Ring  
Dr. Woraphot Tantisiriwat  
Dr. David Warren & Dr. Corinna Warren  
Mrs. Lori Watkins  
Dr. & Mrs. Gary J. Weil

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## Victoria J. Fraser, M.D. Fellowship

### for Graduate Studies in Infectious Diseases



Graham Williams, B.A., M.Sc., DBBS

The **Victoria J. Fraser, M.D. Fellowship for Graduate Studies in Infectious Diseases** was recently established with a generous donation by the *Terry and Kathy Bader Family Foundation*. This donation was made in honor of Dr. Victoria J. Fraser to establish a fellowship that can be used for pre-doctoral trainees in the Infectious Diseases Division who are pursuing additional research.

**Graham Williams, B.A., M.Sc., DBBS**, pre-doctoral trainee in Dr. Adrianus "Jacco" Boon's laboratory, Infectious Diseases Division, is the first to receive the Victoria J. Fraser, M.D. Fellowship. The award will assist Mr. Williams to test the hypothesis that RNA-RNA interactions within and between genome segments dictate packaging and selection of genome constellations during coinfection. Mr. Williams will use novel molecular biology techniques to determine the regions of a genome important for selection in competitive conditions and if interactions with other segments influence the resulting

virus pool.

Graham Williams graduated with a B.A. in Biochemistry from DePauw University in Greencastle, IN (2010). He went on to complete a M.Sc. at Indiana University-Purdue University Indianapolis (IUPUI) in Biology (2011), then entered the Molecular Microbiology and Microbial Pathogenesis (MMMP) program through the Division of Biology & Biomedical Sciences during fall 2011.

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# supporting the ID Division

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## The Infectious Diseases Division Fund

Dr. Gerald Medoff has been among the most influential leaders in the School of Medicine in the past half century, and the contributions of Dr. Medoff to the field of medicine are clearly reflected in the quality of the School and in the extraordinary individuals he has mentored. We believe that you share our sense of pride in what we have been able to build, much of which is due to the leadership of Dr. Medoff. This year, unrestricted gifts directed to the Division will be used to honor Dr. Medoff with a lecture in his honor. Please consider a gift toward this effort.



Gerald Medoff, M.D.  
Emeritus Professor of Medicine

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## Thank You to Our Supporters

### *Infectious Diseases Division*

Michael H. Cynamon, M.D.

Woraphot Tantisiriwat M.D.

### *Victoria A. Fraser, MD Fellowship for Graduate Studies in Infectious Diseases*

*new*

*A minimum of \$5,000 is required each year to sustain a named expendable fellowship.*

Terry and Kathy Bader Family Foundation

Ms. Pamela Buell

Ms. Helen Z. Liu



Thomas H. Steinberg, M.D.

## In Memoriam

The Infectious Diseases Division is establishing a student prize in Tom Steinberg's honor that will be awarded annually. Contributions can be made to this Memorial Award by donating to the

### **Thomas H. Steinberg Memorial Trainee Award**

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To support the research, education and activities of the Infectious Diseases Division, please contact  
Dan Korte, Division Administrator, Infectious Diseases Division  
Campus Box 8051, 660 S. Euclid Ave., St. Louis MO 63110  
phone: 314-454-8354                      email: dkorte@dom.wustl.edu