

◀ *P. falciparum* sporozoite in a mosquito midgut



Infectious Diseases

Washington University in St. Louis
SCHOOL OF MEDICINE

DIVISION NEWSLETTER December 31, 2016 • Volume 11, Issue 4

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Feb 20 - 25, 2017 - Global Health Week
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Friday, March 31, 2017 - Science to Solutions
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Thursday, April 6, 2017
Infectious Diseases Society of St. Louis
Challenging Clinical Cases
presented by
Clinical Fellows in Infectious Diseases
Reception 6:00 pm Presentation 7:00 pm
[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@wustl.edu with any information you would like to share.
ID Division Newsletters

Resisting Zika

Undeterred, researchers are tackling a global crisis from multiple directions.

Tamara Bhandari, PhD

The most devastating consequence of Zika virus infection is the development of microcephaly, or an abnormally small head, in fetuses infected in utero. Now, researchers at Washington University School of Medicine in St. Louis and Vanderbilt University School of Medicine have identified a human antibody that prevents — in pregnant mice — the fetus from becoming infected with Zika and damage to the placenta. The antibody also protects adult mice from Zika disease.



Jennifer Govero, PhD, a senior scientist and lab manager, and virologist Michael S. Diamond, MD, PhD, analyze a plaque assay of the Zika virus.

This is the first antiviral that has been shown to work in pregnancy to protect developing fetuses from Zika virus," said Michael Diamond, MD, PhD, the Herbert S. Gasser Professor of Medicine and the study's co-senior author. "This is proof of principle that Zika virus during pregnancy is treatable, and we already have a human antibody that treats it, at least in mice." The study is published Nov. 7 in *Nature*, as a fast-track advance online publication.

Diamond, co-senior author James Crowe Jr., MD, of Vanderbilt, and colleagues screened 29 anti-Zika antibodies from people who had recovered from Zika infection. They found one, called ZIKV-117, that efficiently neutralized in the lab five Zika strains – representing the worldwide diversity of the virus.

To test whether the antibody also protects living animals, the researchers gave the antibody to pregnant mice either one day before or one day after they were infected with the virus. In both cases, antibody treatment markedly reduced the levels of virus in pregnant females and their fetuses, as well as in the placentas, compared with pregnant mice that did not get the antibody.

"These naturally occurring antibodies isolated from humans represent the first medical intervention that prevents Zika infection and damage to fetuses," Crowe said.

The placentas from the treated females appeared normal and healthy, unlike those from the untreated females, which showed destruction of the placental structure. Damage to the placenta can

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FEATURED COLLEAGUE



**Lou Polish, MD with his wife,
Deborah Shapiro**

I came to Washington University in 1998 as the Hospital Epidemiologist, having previously held the same position at the University of Maryland. My prior training included medicine residency at the University of Colorado, the Epidemic Intelligence Service at the Centers for Disease Control and Prevention, and the London School of Tropical Medicine and Hygiene (DTMH).

In 2004 I had the opportunity to return to Burlington, Vermont (the place where I was born and attended medical school) to practice clinical infectious diseases as Associate Professor of Medicine at the University of Vermont Medical Center. We primarily provide in-hospital consultations and outpatient care of patients with infectious diseases for the state of Vermont and upstate New York, and have 3 outreach clinics for HIV care throughout the state. Most of my time now is spent taking care of patients in both the inpatient and outpatient settings as well as directing the Infectious Diseases Practice Committee of the medical center.

For the past 5 years I have also been the Clerkship Director for the 3rd year medical students in inpatient internal medicine. Teaching these medical students the important concepts of clinical reasoning, and being involved in their maturation as physicians, has been especially rewarding.

The backyard that Deborah and I enjoy sits on the shore of Lake Champlain and looks west to the Adirondacks of New York, with our kayaks nearby for easy access to the water. My avocations include photography (for several years I enjoyed taking photographs for a magazine Deborah published about food in Vermont), travel, reading and appreciating the mountains and lakes of Vermont. I enjoy seeing many of you at the infectious disease meetings and give warmest regards to friends and colleagues I've spent time with during my years in St. Louis.

zika *continued*

cause slow fetal growth and even can cause fetal death, both of which are associated with Zika infection in humans." We did not see any damage to the fetal blood vessels, thinning of the placenta or any growth restriction in the fetuses of the antibody-treated mice," said co-author Indira Mysorekar, PhD, an associate professor of obstetrics and gynecology, and of pathology and immunology at Washington University, and co-director of the university's Center for Reproductive Sciences. "The anti-Zika antibodies are able to keep the fetus safe from harm by blocking the virus from crossing the placenta."



A researcher holds a tray of Zika virus growing in cells at Washington University School of Medicine in St. Louis.

The antibody also protected adult male mice against a lethal dose of Zika virus, even when given five days after initial infection. Zika is rarely lethal in humans, so using a lethal dose allowed the scientists to see how well the antibody works under the most stringent conditions.

"We stacked the deck against ourselves by using a highly pathogenic strain of Zika, and even in that case, the antibody protected the mice," said Diamond, who is also a professor of pathology and immunology, and of molecular microbiology.

These findings provide evidence that antibodies alone can protect adults and fetuses from Zika. Further, they suggest that a vaccine that elicits protective antibodies in women also may protect their fetuses in current and future pregnancies. A vaccine is already in human trials, but it was never tested in pregnant animals, so this new study represents strong evidence that a vaccine that elicits protective antibodies in adults is likely to protect fetuses as well.

A Zika vaccine is likely to be the cheapest and simplest method of preventing Zika-related birth defects. However, there is an outside possibility that a Zika vaccine could worsen symptoms in people who encounter the virus later. This is known to occur with dengue virus, a close relative of Zika. People who have antibodies against one strain of dengue virus get sicker when infected with a second strain than those who do not have such antibodies. The phenomenon, known as antibody-dependent enhancement, has been observed with Zika in a petri dish but never in living animals or in epidemiologic surveys of people in Zika-endemic regions.

Nonetheless, the researchers tested whether they could eliminate the possibility of antibody-dependent enhancement of Zika infection by modifying the antibody so it could not participate in the process. The modified antibody, they showed, was just as effective as the original at protecting the placenta and fetus.

Until a human vaccine is available, it may be possible to protect fetuses by administering antibodies to pregnant women in an attempt to prevent transmission from mother to fetus. Under this scenario, a woman living in a Zika-endemic area would receive the antibodies throughout her pregnancy, starting when she first learns she is pregnant, regardless of whether she is diagnosed with Zika. Alternatively, pregnant women or their partners with

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awards & announcements

RECENT AWARDS		
PRINCIPAL INVESTIGATOR(S)	AWARD	PROJECT TITLE
Michael J. Durkin, MD, MPH	KL2 Career Development Award Clinical research Training Center	Administrative Claims to Assess Antibiotic Prescribing for Uncomplicated UTI.
Robyn S. Klein, MD, PhD	R01NS052632 National Institute of Neurological Disorders and Stroke (NINDS)	Neuroprotective mechanisms during WNV encephalitis
Robyn S. Klein, MD, PhD	R21NS096363 NINDS	Mechanisms of sex differences in blood-brain barrier function
Michael S. Diamond, MD, PhD Robyn S. Klein, MD, PhD	UH2NS100126 NINDS	Effect of aging on neuroinvasion during West Nile virus (WNV) infection
F. Matthew Kuhlmann, MD	K23 - National Institutes of Allergy and Infectious Diseases (NIAID)	Accelerating Translational Development of Novel Antigens for an Enterotoxigenic E. coli Vaccine
Makedonka Mitreva, PhD	R01 - NIAID, National Institute of General Medical Sciences	Evolution of the Nematode Intestine, a Key Host Interface
Mark J. Miller, Ph.D.	R01 - NIAID	Epithelial Responses to Bacterial Invasion
Jennifer A. Philips, MD, PhD	R01 - NIAID	Mechanisms of Innate Immune Evasion by Mycobacterium Tuberculosis.

special recognition

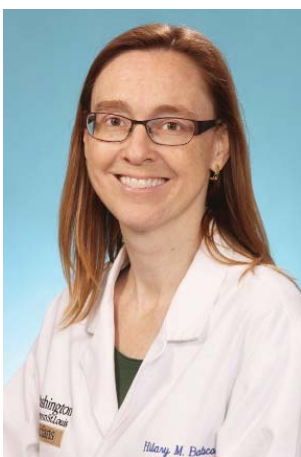
future physicians honor our faculty

To express their appreciation for dedication, patience and skill in medical education, students at Washington University School of Medicine in St. Louis recently honored faculty, residents and staff with the Distinguished Service Teaching Awards for the 2015-16 academic year.

Steven Lawrence, MD, MSc, associate professor of medicine, received a Class of 2017 Clinical Teacher of the Year Award.

Nigar Kirmani, MD, professor of medicine, and **Steven Lawrence, MD, MSc** were selected by the Class of 2018 to receive Distinguished Service Teaching Awards.

congratulations...



Babcock elected Vice President of SHEA

Hilary M. Babcock, MD, an associate professor of medicine in the Division of Infectious Diseases at Washington University School of Medicine in St. Louis, has been named vice president of the Society for Healthcare Epidemiology of America (SHEA), a professional group that promotes research, education and advocacy for safe health care.

Babcock, medical director of the Infection Prevention and Epidemiology Consortium (IPEC) for BJC HealthCare and medical director for Occupational Health at Barnes-Jewish and St. Louis Children's hospitals, began her four-year term Jan. 1 and will become president in 2019. Founded in 1980, SHEA represents physicians and other health-care professionals focused on infection prevention and antibiotic stewardship.

"As a SHEA leader, I want to preserve and magnify SHEA's strong voice advocating for safe health care for all through research, facility and legislative policy development and member support," Babcock said.

William G. Powderly is Named IDSA President

Pledging to continue the Infectious Diseases Society of America (IDSA)'s commitment to improving the health of all people, communities and society, William G. Powderly, MD, FIDSA, assumes the reins as the new president of IDSA. He will be joined by dedicated, experienced board members as well as new additions who bring expertise in areas ranging from diagnostics and HIV to compensation, pediatrics and guidelines development.

"We are reaching out to the new presidential administration and Congress to help shape their understanding of critical health care challenges and opportunities, including efforts to improve patient safety, lead cutting-edge biomedical research, strengthen public health infrastructure, advocate for patients with HIV and other infectious diseases, and guide the development of critically needed new antibiotics and diagnostics," said Powderly. "I look forward to working closely with my colleagues on the Board who embody strong representation from women and men whose experience and perspectives reflect the diversity of our field."

Dr. Powderly was the inaugural chair of the HIV Medicine Association (HIVMA) and was a founding member of the Infectious Diseases Society of St. Louis. He is interested in: advancing care in HIV, focusing on long-term complications and antiretroviral therapy; fungal infections, especially cryptococcosis; and the translation of clinical advances to public health and public policy.

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William G. Powderly, MD, will serve as the inaugural Larry J. Shapiro Director of the Institute for Public Health

The directorship of the Institute for Public Health at Washington University in St. Louis has been named in honor of Larry J. Shapiro, MD, former executive vice chancellor for medical affairs and dean of the School of Medicine. The directorship was named through the generosity of St. Louis-based BJC HealthCare, which has an enduring relationship with the university. Washington University physicians treat patients at Barnes-Jewish and St. Louis Children's hospitals, each part of BJC HealthCare.

Chancellor Mark S. Wrighton has announced that William G. Powderly, MD, the current director of the institute, will serve as the inaugural Larry J. Shapiro Director. Powderly also will continue in his role as the Dr. J. William Campbell Professor of Medicine and as co-director of the Division of Infectious Diseases at the School of Medicine.

Washington University Trustee Steven H. Lipstein, president & CEO of BJC HealthCare, said: "Advances in public health — clean water, public sanitation systems, immunizations and many other programs to improve human health — have contributed so much to our society, to increases in our human lifespan and to our quality of life. We can think of no one who cares more about the human condition than Larry Shapiro, and we are privileged to establish this endowment in his honor."

The Institute for Public Health seeks to address public health issues and health disparities in the St. Louis region and the world. The multidisciplinary institute draws on the expertise and efforts of faculty, researchers, practitioners, staff and students from across the university to share ideas and develop innovative solutions aimed at improving public health. Powderly was named director of the institute in 2013.

"I am deeply honored to serve as the Larry J. Shapiro Director," Powderly said. "Larry's support and encouragement for the institute have made it possible for those working under its umbrella to undertake important work to address gun violence, disparities in health care, antibiotic resistance, global malnutrition and other important public health issues in our St. Louis community and across the globe."

Added Shapiro: "I could not be more pleased over Bill Powderly being named the inaugural holder of this directorship and for BJC HealthCare's generous support. Bill has dedicated his career to finding ways to improve the lives of others and to bring attention to deeply important public health issues, health disparities in particular. He is recognized internationally for his research and breadth of knowledge, perhaps mostly for his work to improve treatments for patients with HIV. I have been proud to know and work with such a dedicated physician-scientist."



see full story at theSOURCE



Klein Elected to the Advisory Board of the International Society for Neuroimmunology (ISNI)

Robyn Klein, MD, PhD, professor of medicine, was elected to serve as a member of the ISNI International Advisory Board. The advisory board is charged with making policies for the organization and organizing scientific meetings. At least 8 of the advisory board members serve on the Board of the Society.

The International Society of Neuroimmunology was established in 1982, and since this date has contributed greatly to the growing recognition of the different roles of the immune system in causing or modifying the severity of neurological disorders, and to the potential for new approaches to treatment.

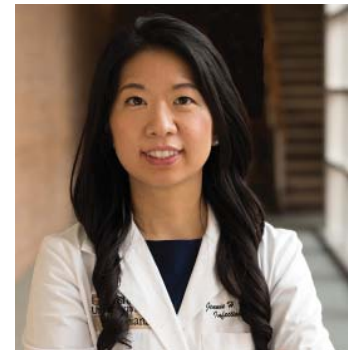
Neuroimmunology is a rapidly expanding field with tremendous and daily advances from basic immunology to clinical practice and we need to have a scientific society capable of supporting established scientists, but also undergraduate and post graduate students. These needs require a scientific body able to guarantee that researchers worldwide are kept abreast of new developments and to support the participations of students to the society's courses and meetings by providing travel bursaries. Robyn joins colleagues from Argentina, Australia, Canada, Denmark, France, Germany, Italy, Japan, Lebanon, Switzerland, United Kingdom, and others from the United States.

Kwon Named National Academy of Medicine Fellow

Jennie H. Kwon, DO, MSCI, has been selected as a 2016 National Academy of Medicine Fellow in Osteopathic Medicine. Kwon, an instructor in medicine in infectious diseases at Washington University School of Medicine in St. Louis, was chosen based on her scholarship, professional accomplishments and expertise.

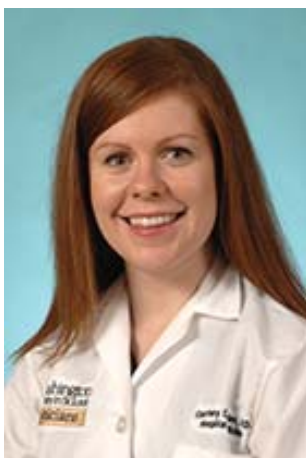
During the two-year fellowship, Kwon, who also is an epidemiologist at Barnes-Jewish Hospital, will work with the academy's expert committees and roundtables to research important questions in infectious diseases and public health, and provide evidence-based guidance to policy makers, academic leaders, health-care administrators and the public.

The overall purpose of the NAM Fellowship program is to enable talented, early career health science scholars to participate actively in the work of the Academies and to further their careers as future leaders in the field. The fellowship includes a stipend and complements Kwon's research, which focuses on the fecal microbiome in patients with multi-drug-resistant infections, and how multidrug-resistant organisms are transmitted in health-care settings, the community and the environment. Kwon will continue her primary academic post while engaging part time over a two-year period in the Academies' health and science policy work.



Patel featured on the "Pulse of St. Louis"

On January 14, 2017, the Pulse of St. Louis, took a closer look at the state of HIV and AIDS in the St. Louis Metropolitan Area. Rupa Patel, MD, MPH, DTM&H, assistant professor, was interviewed by John Brown, about the status of HIV in St. Louis and what is being done to prevent it. Dr. Patel, the Director of the Pre-Exposure Prophylaxis (PrEP) Program at the Washington University Infectious Diseases Clinic, talked about oral antiretroviral therapy, a biomedical approach to HIV Prevention. Her research interests include PrEP implementation at the policy, organizational, and consumer level and focuses on PrEP access to care for young adult MSM. She is the Principal Investigator for a PrEP Study in the St. Louis region and was instrumental in the development of a recently launched website providing resources for PrEP.



Courtney D. Chrisler, MD, named to IDSA's Clinical Affairs Committee

During ID Week, Dr. Courtney Chrisler, Assistant Professor of Medicine, was selected to serve on the Infectious Diseases Society of America Clinical Affairs Committee. This committee is charged with monitoring, developing and making recommendations to address issues related to infectious disease clinical practice and to monitor and make recommendations to address issues relating to the practice of hospital epidemiology and infection control. This committee serves to monitor and advocate with Medicare and other third party payers to appropriate coverage and reimbursement for infectious disease services. The clinical affairs committee is also charged with developing and making recommendations on providing products and services to improve the practice efficiency of infectious disease clinicians.

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Michael Lane, MD, MPHS, MSc appointed to the National Quality Forum

Dr. Lane, Assistant Professor of Medicine, was appointed to the National Quality Forum's Infectious Disease Standing Committee for evaluation of national infectious diseases quality measures. The National Quality Forum (NQF) is a not-for-profit, nonpartisan, membership-based organization that works to catalyze improvements in healthcare. NQF measures and standards serve as a critically important foundation for initiatives to enhance healthcare value, make patient care safer, and achieve better outcomes.



The multi-stakeholder Standing Committee will evaluate newly submitted measures and measures undergoing maintenance review, and make recommendations for which measures should be endorsed as national consensus standards. This Committee will identify and recommend endorsement of new performance measures for accountability and quality improvement that specifically address a number of topic areas, including, but not limited to: HIV/AIDS, hepatitis, sexually transmitted infections, adult and pediatric respiratory infections, and sepsis. Additionally, the Committee will evaluate consensus standards previously endorsed by NQF under the maintenance process.

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Mattar Elected Chair of the Junior Doctors Network of the World Medical Association



Caline Mattar, MD, instructor in medicine, has been elected to serve as Chair of the The Junior Doctors Network (JDN), a network of junior doctors who independently join the World Medical Association (WMA) as Associate Members. The WMA is the largest international organization representing physicians from 111 countries around the world.

The JDN was formed in 2010 to create a platform for junior doctors worldwide to ensure their voice is heard within the WMA and globally. The mission is to empower young physicians to work together toward a healthier world through advocacy, education and international collaboration.

fellows' corner



Jason P. Burnham, MD, 2nd year fellow, is a 2017 recipient of the *Jonathan Freeman Scholarship*. The Scholarship was established by SHEA to promote the training of outstanding infectious disease fellows who demonstrate interest in the field of healthcare epidemiology.

In January 2017, Jason presented his work on readmissions in patients with multidrug-resistant organisms (MDROs) infections at the *CDC Epicenters Workgroup* meeting in Atlanta, GA. CDC's Prevention Epicenters Program is a unique research program in which CDC's Division of Healthcare Quality Promotion (DHQP) collaborates with academic investigators to conduct innovative infection control and prevention research. Washington University School of Medicine in St. Louis (WU), Barnes-Jewish Hospital (BJH), and BJC Healthcare (WU/BJC Epicenter) is among 11 epicenters nationally.

In addition, Jason recently received a "*Just-in-Time*" award, funded by the Institute of Clinical and Translational Sciences. His project is "Critical Care and Infectious Diseases: A Survey Study Addressing Attitudes Toward Collaboration".

Jane O'Halloran, MD, 1st year fellow received a Conference on Retroviruses and Opportunistic Infections (CROI) *2017 Young Investigator Scholarship Award*. These awards are limited and highly selective. Dr. Halloran will be presenting an abstract titled, "Effect of ART on Monocytes Cholesterol Efflux and HDL function" at the CROI 2017 in Seattle, WA February 13 - 16.



Brett W. Jagger, MD, PhD, 2nd year fellow co-authored the *chapter "Cellulitis"* in The Washington Manual Subspecialty Consult Series, General Internal Medicine Consult, 3rd Edition. Contributing faculty authors include Erik R. Dubberke, MD, Gerome V. Escota, MD, Kevin Hsueh, MD, Steven Y. Liang, MD, Lemuel R. Non, MD, Shadi Parsaei, MD, and Hilary E. L. Reno, MD.

Mati Hlastshwayo, MD, 2nd year fellow, and her husband, pediatric resident at St. Louis University, Jesse Davis, MD, celebrated the birth of their daughter, Aneni, on November 29, 2016.



alumnus spotlight



Mary Horgan, MD

**1990 ID fellow Washington University,
elected 142nd and first Female President of
Royal College of Physicians of Ireland.**

Professor Mary Horgan has been elected as the *first female* President Designate of the Royal College of Physicians of Ireland (RCPI). She will become the 142nd President of RCPI at their Annual Stated Meeting in October 2017 and will serve a three-year term.

“Mary has made an enormous contribution to the College since she first became involved in 1999” said Dr. Diarmuid O’Shea, Registrar, Royal College of Physicians of Ireland. “Within the College, Mary has a strong track record in supporting medical training initiatives, and while serving as Associate Dean of Basic Specialist Training, took a lead role in the development and training of postgraduate doctors. She is a member of the RCPI Council and is currently Director of Development and Planning.”

Originally from Kerry, Professor Horgan graduated from University College Dublin in 1986, was awarded her MD in 1995, MRCPI in 1988 and FRCPI in 1997, an international benchmark of professional excellence and a career milestone. She serves on the Board of the Health Products Regulatory Authority and the Mercy University Hospital and on the Governing Body of UCC. She is formerly a Board Member of the Irish Blood Transfusion Service and was previous Chair of the Council of Deans of Medical Schools. She is a Consultant Physician in Infectious Diseases and Internal Medicine at Cork University Hospital and Dean of the University College Cork School of Medicine.

“We all look forward to working closely with Mary in her new role as President Designate from January and I know she will bring great energy and passion to the role of President when she takes up the post in October 2017. It is also a new era for RCPI with the election of the first female President Designate in our 360 year history” says Dr. O’Shea.

“Wash U takes the risk of having the likes of me – a foreign grad – and we do the institution proud. Even if I say so myself this is an achievement, not only that I am the first female but am outside Dublin,” says Mary Horgan.

announcement...

The Infectious Diseases Division has a new website!

A microscopic image showing several yellow, spherical cells with textured surfaces, possibly bacteria or yeast, against a dark background with red, fibrous structures.

National Leaders in Infectious Diseases
We are involved in exceptional patient care and ground-breaking research while preparing the next generation of scientists and physicians

FELLOWSHIP PROGRAM

<https://infectiousdiseases.wustl.edu/>



print to practice: importance of recent publications

The faculty of the ID Division at Washington University School of Medicine are working on a variety of research endeavors from basic science to clinical practice. This newsletter will begin a new section showcasing publications and the author's spin on why the publication is relevant and the significance in medicine today. Below is a list of several publications, followed by the author's comment.



Sigala, P.A., Morante, K., Tsumoto, K., Caaveiro, J.M.M., Goldberg, D.E. (2016). In-Cell Enzymology to Probe His-Heme Ligation in Heme Oxygenase Catalysis. *Biochemistry*, 55 (34) pp. 4836 - 4849 .

Daniel E. Goldberg, MD, PhD: "This publication describes the unexpected finding that heme oxygenases, enzymes involved in host defense, can do without a key amino acid in their active site. This analysis could not be done with the standard biochemical assays, but only with a novel whole cell approach."

Priya, Pal, Daniels B.P., Oskman A., Diamond M.S., Klein R.S., Goldberg DE (2016). Plasmodium falciparum Histidine-Rich Protein II Compromises Brain Endothelial Barriers and May Promote Cerebral Malaria Pathogenesis. *mBio* 7 (3) e00617-16

Dr. Goldberg: "This publication describes the discovery that a protein produced by the malaria parasite Plasmodium falciparum and known to accumulate to high levels in the blood stream, is a toxin that causes blood-brain barrier leakage and may cause the brain swelling that is a hallmark of cerebral malaria."



Kuhlmann, F.M., Santhanam, S., Kumar, P., Luo, Q., Ciorba, M.A., Fleckenstein, J.M. (2016). Blood Group O-Dependent cellular responses to cholera toxin: Parallel clinical and epidemiological links to severe cholera. *American Journal of Tropical Medicine and Hygiene*, 95 (2) pp. 440 - 443 .

F. Matthew Kuhlmann, MD: "Severe cholera has been linked to patients with blood type O in epidemiological studies. However, the biology underlying this observation was not certain. Using gastrointestinal enteroid cells (or "miniguts") derived stem cells obtained from individuals with different blood groups and novel CRISPR mutants of a gastrointestinal carcinoma line we were able to demonstrate significantly enhanced responses to cholera toxin in blood group O intestinal cells, providing the first direct molecular link between cellular toxicity and disease severity."



Guth, R.M., Storey, P.E., Vitale, M., Markan-Aurora, S., Gordon, R., Prevost, T.Q., Dunagan, W.C., Woeltje, K.F. (2016). Decision Analysis for Metric Selection on a Clinical Quality Scorecard. *American Journal of Medical Quality*, 31 (5) pp. 400 - 407 .

Keith F. Woeltje, MD, PhD: "This article discusses how we developed a formal decision analysis process for choosing metrics for the BJC annual quality scorecard. It provides a framework for explicitly determining what measures are most important for the health system to work on each year."

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Non, L., Jeroudi, A., Smith, B.T., Parsaei, S. (2016). Bull's eye maculopathy in an HIV-positive patient receiving ritonavir *Antiviral Therapy*, 21 (4) pp. 365 - 367 .

Lemuel Non, MD: "This is a case demonstrating a rarely reported adverse effect of a common HIV medication, ritonavir, on the eyes. Physicians should be aware of this as stopping the drug could halt its progression."

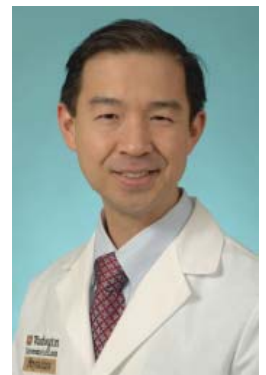


Liang S.Y., Beekmann S.E., Polgreen P.M., Warren D.K. (2016). Current Management of Cardiac Implantable Electronic Device Infections by Infectious Disease Specialists. *Clin Infect Dis.* 2016 Jun 28. PMID: 27358347

Stephen Y. Yian, MD, MPH: "A national survey of Emerging Infections Network members on approach to management of cardiac implantable electronic device infections with attention to clinical challenges not addressed in existing treatment guidelines."

Liang S.Y. (2016). Sepsis and Other Infectious Disease Emergencies in the Elderly. *Emerg Med Clin North Am* Aug; 34(3):501-22.

Dr. Liang: "This was a review of infectious disease emergencies commonly encountered in geriatric patients presenting to the emergency department. With increased vigilance and armed with a deeper understanding of the unique aspects of infection in this complex patient population, emergency physicians can play an integral part in the early recognition and appropriate management of a wide spectrum of infectious diseases in the elderly."



Koh, E.I., Hung, C.S., Henderson, J.P. (2016). The yersiniabactin-associated ATP binding cassette proteins YbtP and YbtQ enhance E. coli fitness during high titer cystitis. *Infection and Immunity*, 84(5):1312-9,

Jeffrey Henderson, MD, PhD: "This manuscript identifies a transport protein in disease-causing Enterobacteria as a drug target candidate for future antivirulence therapies."



Saeed MJ, Olsen MA, Powderly WG, Presti RM. (2016). Diabetes Mellitus is Associated With Higher Risk of Developing Decompensated Cirrhosis in Chronic Hepatitis C Patients. *J Clin Gastroenterol.* Jun 15.

Rachel Presti, MD, PhD: "Using the MarketScan database, we determined that insured patients with chronic HCV infection and diabetes mellitus had a significantly higher rate of developing complications of decompensated cirrhosis, such as peritonitis, GI bleed or encephalopathy, when compared to HCV infected patients without diabetes."



save the date



2017 Global Health Week

Global Health Student Advisory Committee

Monday, February 20, 2017 at 10:00 AM - Saturday, February 25, 2017 at 11:00 AM (CST)

St. Louis, MO

The activities for this event are designed to educate and engage the community on a broad range of health care issues. Everyone is welcome to attend all the events. Please register by February 15, 2017. Walk-ins welcome.



2nd Annual St. Louis TB Symposium- In Commemoration of World TB Day

March 24, 2017 1 pm – 5 pm

Farrell Teaching & Learning Center, Holden Auditorium, Washington University Medical Campus

Co-sponsors: Department of Molecular Microbiology, Center for Global Health and Infectious Disease (CGHID), Department of Medicine, Division of Infectious Diseases, and Department of Pediatrics, Division of Infectious Diseases.



SHEA Spring 2017 – March 29 – 31, 2017

The SHEA Spring 2017 Conference: Science Guiding Prevention

Hyatt Regency St. Louis at the Arch

Wednesday, March 29 – Friday, March 31, 2017.

SCIENCE GUIDING PREVENTION



Science to Solutions

Friday, March 31, 2017

8:30 am - 5:00 pm

Eric P. Newman Education Center

Washington University School of Medicine

Free and open to all. Registration is required by March 24, 2017

Infectious Diseases Society of St. Louis

Challenging Clinical Case Presentations presented by Clinical Fellows in Infectious Diseases

Thursday, April 6, 2017

6:00 pm Reception (meet & greet) 7:00 pm Meeting Commences

Engineer's Club of St. Louis 4359 Lindell Blvd. St. Louis, MO 63108



acute infection could be treated with antibodies.

Crowe is continuing the process of developing the antibody as a potential therapeutic, ramping up production and laying the groundwork for human studies. Meanwhile, Diamond is focusing on determining whether antibodies could be used to clear persistent Zika infection. Together, they are working with others to gain a higher-resolution understanding of how ZIKV-117 binds the virus and inhibits infection.

“We know that Zika can persist in certain parts of the body, such as the eyes and the testes, where it can cause long-term damage, at least in mice,” Diamond said. “We showed that the antibody can prevent disease, and now we want to know whether it can clear persistent infection from those parts of the body.”

Daved H. Fremont, PhD, a professor of pathology and immunology, has been working on developing a Zika vaccine. A vaccine made from a live but weakened virus would be relatively simple to create, but it could not be used in pregnant women because the virus, although weakened, could still be strong enough to infect the fetus and cause disease. Earlier this year, Fremont identified a portion of a Zika protein that elicits a strong, protective antibody response. He plans to collaborate with a primate research facility in Oregon to test whether the engineered vaccines protect non-human primates against Zika infection.

Diamond, in collaboration with Fremont, Mysorekar and researchers at Vanderbilt University, recently has shown that human antibodies can protect developing fetuses from Zika infection and adults from Zika disease, at least in mice. The discovery suggests that treating pregnant women with anti-Zika antibodies may prevent the worst outcomes — microcephaly and other birth defects — and that a vaccine eliciting similar antibodies could do the same.

Where next?

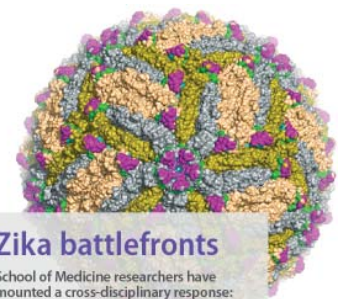
Despite the enormous progress made by the ever-growing community of Zika researchers, there is much work left to be done, including:

- **Determining whether Zika can cause brain damage in children and adults.** Neural progenitor cells, which are abundant in fetuses, are still present, although at much lower numbers, after birth. Robyn S. Klein, MD, PhD, a professor of infectious diseases and neuroscience, studies the impact of the virus on neurodevelopment, with an emphasis on learning and memory.
- **Identifying other routes of transmission.** Haina Shin, PhD, an assistant professor of medicine, is studying protective immunity against sexually transmitted Zika, as well as risk factors that may make women more susceptible to this form of transmission. Mysorekar, an associate director of the Center for Reproductive Health Sciences, is researching how the virus crosses the placental barrier, which separates maternal and fetal bodily fluids. Rajendra S. Apte, MD, PhD, the Paul A. Cibis Distinguished Professor of Ophthalmology and Visual Science, co-led a team (with Diamond and Miner) that characterized Zika in the eye and demonstrated presence of virus in tears. He is now studying whether corneal transplants could transmit the virus. This is the most common transplantation surgery in the U.S., with about 40,000 performed yearly.
- **Determining the effect of Zika virus on fertility.** The list of unanswered questions is daunting, but Diamond is undeterred. The lesson of Zika is not that epidemics can spring up out of nowhere, although that is true, he said. The true lesson is that the scientific community has shown itself to be up to the task of responding to such epidemics.

“While it was true that few were studying Zika before last year, it’s not true that we weren’t prepared for this outbreak. Within a very short period of time we’ve generated vaccine candidates, therapeutic candidates, and animal models both in mice and non-human primates,” Diamond said. “It shows that by studying basic properties of pathogens, whether it is bacteria, viruses, or otherwise, we’ll learn enough so that if something does happen, we’ll be prepared, poised and nimble enough to move into the field very quickly to make significant progress. And that’s what’s been done in Zika.”

Senior Medical Sciences Writer

Tamara Bhandari, PhD, covers pathology, immunology, medical microbiology, cell biology, neurology, and radiology.



Zika battlefronts

School of Medicine researchers have mounted a cross-disciplinary response:

- Diagnosis and surveillance
- Maternal-fetal transmission
- Other routes of transmission
- Animal models
- Reproductive medicine
- Fetal brain development
- Neurological effects on adults
- Ocular health
- Vaccine, drug development

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Gerald Medoff, M.D.
Emeritus Professor of Medicine

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