

Dermatology News

PURSUING WITH EXCELLENCE THE MISSIONS OF RESEARCH EDUCATION AND PATIENT CARE

Immunology Research Shows Great Promise in Treating **Aggressive Skin Infections**

OVER THE PAST TWO DECADES, there has been an epidemic of methicillin-resistant *Staphylococcus aureus* (MRSA) infections that has spread across the United States and around the world. These infections are aggressive and are becoming increasingly resistant to antibiotics. MRSA is one of the most common causes of infection-related mortality—averaging between 11,000 and 18,500 deaths per year in the United States alone. With particular relevance to the skin, *S. aureus*/MRSA is responsible for the vast majority of skin infections in infants, children, adults, and the elderly population—causing 14 million outpatient visits and 500,000 hospital admissions each year in the United States. In children, skin infections are often associated with eczema, a chronic and sometimes lifelong, inflammatory skin disease that frequently becomes infected by *S. aureus*/MRSA. To combat *S. aureus*/MRSA infections, **Lloyd S. Miller, M.D., Ph.D.** and his team are investigating the essential immune pathways that the body uses to fight off these infections. With this key information, they can target these immune mechanisms to develop more effective vaccines in humans. “This area of research is important because the immune responses that provide long-term protection against *S. aureus*/MRSA are not clear, all prior vaccination attempts against these infections have failed in clinical trials, and many otherwise healthy people (up to 36% of adults and 50% of children) suffer from recurrent *S. aureus*/MRSA skin infections” says, Dr. Miller.

In addition to studying *S. aureus*/MRSA infections of the skin, Dr. Miller and his laboratory are investigating improved treatments for life-threatening



Lloyd Miller, M.D., Ph.D. provides instruction to post-doctoral fellow Carly Page, Ph.D., in the Miller Lab

S. aureus/MRSA infections in the blood (sepsis), heart (endocarditis) and bone (osteomyelitis) as well as infections of surgically-implanted materials (such as knee/hip replacements and pacemakers). Infections of surgical implants are exceedingly difficult to treat because the bacteria attach and form biofilms on the implanted materials, which block the penetration of immune cells and antibiotics, creating a chronic and persistent infection. Indeed, the treatment of infected surgical implants requires extensive medical and surgical care, including multiple operations to remove and replace the infected materials, prolonged antibiotic courses, and extended rehabilitation and disability, which contribute to worse clinical outcomes and increased healthcare costs. At Johns

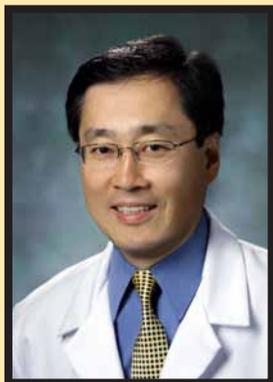
WITH PARTICULAR RELEVANCE TO THE SKIN, *S. AUREUS*/MRSA IS RESPONSIBLE FOR THE VAST MAJORITY OF SKIN INFECTIONS IN INFANTS, CHILDREN, ADULTS, AND THE ELDERLY POPULATION.

Hopkins, the team is working on ways to boost the body's immunity against these invasive infections and developing novel antimicrobial implant coatings to prevent infections of surgical implants altogether. It is critical to move this work forward quickly in order to meet the growing demand for hip and knee replacements and pacemakers among patients in the United States.

This work also plays a critical role in patient safety. By reducing the number of infections that patients incur while in the hospital, it will have a dramatic effect on

(continued on page 3)

Chairman's corner



Sewon Kang, M.D.

By now, I hope many of you have had the opportunity to see our new clinical space on the eighth floor of the Johns Hopkins Outpatient Center. This new clinic exemplifies the Johns Hopkins commitment to patient and family-centered care—from the thoughtful expansion of the waiting area, which is now more spacious and comfortable, to the larger exam rooms that are better tailored for the dermatologic exam, and the colorful artwork that brightens the walls.

We have added 10 additional exam rooms, doubled the number of surgery suites and increased the number of photopheresis machines by 50 percent. In addition, we have extended the phototherapy hours to include before- and after-work timeslots so that patients are able to receive treatment when it is convenient for them.

In this spring issue we have highlighted the work of Lloyd Miller, M.D., Ph.D. and his team. Dr. Miller's lab is interested in preventing aggressive antibiotic-resistant infections like MRSA. Often in the news, these infections are not only difficult to treat but also in some cases

fatal. Dr. Miller is leading the Department's research efforts in this area by specifically focusing on vaccine development to prevent and control the spread of these difficult infections. Recently, Dr. Miller was one of two recipients of the first annual Nexus Awards from the Johns Hopkins Institute for Clinical and Translational Research (ICTR). Dr. Miller's award was for "Innovations in Drug Delivery – Drugs, Biologics, Vaccines, and Devices." The ICTR awards are designed to bridge research gaps and help investigators advance projects and technologies along the translational pathway.

I close with special thanks to all of the individuals that have supported our efforts through their generous donations to our research, clinical and patient-centered programs. We are truly grateful for the investment you have made in the Johns Hopkins Department of Dermatology.

I look forward to updating you again on our progress later this year.

Best regards,

—Sewon Kang, M.D.
Noxell Professor & Chairman

ABC News Externship Broadens Resident's Educational Experience

Each year, the Chief Resident in the Johns Hopkins Department of Dermatology has the unique opportunity to engage in a one month externship. Over the years, residents have travelled as far as Africa to participate in this unique month long program. This year Chief Resident, **Crystal Agi, M.D.**, had a life changing experience by spending her time immersed in the world of medical journalism with ABC News in New York City.

ABC News is the only major news organization that hosts this type of elective. Each month, four to six residents from across the United States rotate through the medical unit and serve as medical consultants. During the externship, residents critically analyze new studies from scientific peer-reviewed journals and

determine which studies may be relevant to the general public. The residents write stories that are used for ABC News local affiliates and prepare medical news stories for the ABCnews.com website. The residents are embraced as part of the ABC News team during their tenure. They participate in the daily production meetings with producers from "Good Morning America" and "World News Tonight with David Muir" and pitch interesting medical stories.

During her time at ABC News, Dr. Agi wrote several stories and three articles for the ABCNews.com website—one of which featured an important research study from a team at Johns Hopkins entitled, "Sulforaphane treatment of Autism Spectrum Disorder (ASD)."

(continued on page 3)



Crystal Agi, M.D. and Robin Roberts in the ABC Newsroom

Department Welcomes Inaugural Ethnic Skin Fellow

The Johns Hopkins Department of Dermatology created the Ethnic Skin Program in January 2010. Approximately 70% of the population of Baltimore City consider themselves to be Asian, Black, Hispanic, Native-American or of mixed race. The focus of the program is to diagnose and treat skin, hair, and nail conditions of patients with darker skin tones.

Led by **Ginette Okoye, M.D.**, the Ethnic Skin Program is committed to outstanding clinical care, research, and education. Certain skin diseases are more common or severe in people with darker skin tones, such as lupus, sarcoidosis, and specific types of skin cancer. The team specializes in the diagnosis and treatment of skin problems associated with these diseases, and performs skin cancer screenings in patients with ethnic skin.

In July, 2014, the Department welcomed its inaugural Ethnic Skin Fellow, **Nashay Clemetson, M.D.** Dr. Clemetson received her medical degree from the University of Miami Leonard M. Miller School of Medicine prior to joining the Department for her fellowship year. Generously funded by Valeant Pharmaceuticals, this fellowship is the first of its kind in the country. "Already half-way through the fellowship year, my experience has been very fulfilling.



Nashay Clemetson, M.D., Ethnic Skin Fellow, Yolanda Lenzy, M.D., and Ginette Okoye, M.D., Director of the Ethnic Skin Program

I remain in awe of the significance of my training whenever I hear comments like, "I am happy there's a doctor who understands my skin," Dr. Clemetson shared. In August, she helped organize a special community seminar entitled "Hair Loss in African American Women."

The speaker Yolanda Lenzy, M.D., Associate Clinical Professor at the University of Connecticut, specializes in hair loss, scalp disorders, and skin disease in skin-of-color patients. The event was attended by more than 60 local African American women. The Ethnic Skin

Program will be planning another community seminar on skin health issues related to African American men in April 2015. In addition, the Program conducts other community outreach efforts and this winter distributed skin care packages to the homeless population in Baltimore City.

For Dr. Clemetson, the remainder of her year will be spent seeing patients in the dermatology clinics and completing research projects in central centrifugal cicatricial alopecia, post-inflammatory hyperpigmentation. She is also studying the relevance of race related to the physician-patient relationship and treatment outcomes. She has been nominated for the prestigious 2015 United States Fulbright Award and is awaiting notification. Dr. Clemetson is planning to pursue a residency in dermatology. ■

ABC News Externship

(continued from page 2)

"It was during my time with ABC News that I realized how much I loved writing. Writing for a scientific peer-reviewed journal is very different than writing for the general public. As a resident, so much of my time is spent using "doctor-speak" and a critical skill in medical journalism is learning how to communicate effectively with people from various backgrounds and education levels—a task that is much easier said than done." says Dr. Agi.

The Department of Dermatology is invested in making the residency experience one that not only teaches the fundamentals of dermatologic care but also provides residents with opportunities beyond the walls of Johns Hopkins. ■

Aggressive Skin Infections

(continued from page 1)

the overall recovery that patients experience post-surgery and significantly reduce health care costs. Johns Hopkins has been a leading institution in both patient care and research involving many different types of infectious diseases affecting people from around the world. To help facilitate his research, Dr. Miller has formed collaborations with clinical researchers and basic scientists to take advantage of the latest technologies in the centers of excellence at Johns Hopkins. Miller says, "The outstanding researchers and facilities at Johns Hopkins will help to rapidly translate our findings to clinical practice by providing new and effective vaccination and therapeutic strategies to combat *S.aureus*/MRSA infections in humans." ■

Dr. Miller's laboratory has been generously supported by the National Institutes of Health, MedImmune, LLC, Chan Soon-Shiong Institute for Advanced Health, and the H. Tony and Marti Oppenheimer Foundation.

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Sewon Kang, M.D.
Noxell Professor and Chairman
Kyleigh LiPira, MBA, *Editor*

AWARDS & RECOGNITION

Inbal Braustein, M.D., Johns Hopkins Dermatopathology fellow, was featured in the publication *Dermatology World* for her volunteer work at Puentes de Salud—a non-profit organization which provides healthcare to underserved immigrant residents in South Philadelphia. While a resident at the University of Pennsylvania, Dr. Braustein provided dermatologic care to these patients and conversed fluently with them in Spanish.

Stefan Doig, M.D., a first year resident, was selected to represent the Johns Hopkins Medical Institutions at the 2015 Student National Medical Association Conference in New Orleans.

Lloyd Miller, M.D., Ph.D., received a R56 grant from the National Institute of Arthritis and Musculoskeletal and Skin Diseases to study immune responses against *S. aureus*/MRSA skin infections. Dr. Miller also received a \$100,000 Nexus Award from the Johns Hopkins Institute for Clinical and Translational Research for his project entitled “An Electrospun Polymer Implant Coating as a Tunable Antimicrobial

Release Delivery System to Prevent Prosthetic Joint Infections.”

Janis Taube, M.D., M.c., was awarded a grant from the W.W. Smith Charitable Trust for her project entitled “PD-1/PD-L1 Immune Checkpoint Blockade in NSCLC: Influence of Tumor Microenvironment and Mutational Density on Therapeutic Outcomes.” Dr. Taube also received funding from Bristol-Myers Squibb to study the tumor immune microenvironment in virus-associated cancers.

Sewon Kang, M.D., was elected to the Executive Committee of the Dermatology Foundation—the largest private grant-awarding agency in the field. The Foundation distributed over \$3.5 million in 2014 and has supported the specialty for 50 years. Dr. Kang received funding from the Dermatology Foundation early in his career. In the Department, Luis Garza, M.D., Ph.D., Lloyd Miller, M.D., Ph.D., Janis Taube, M.D., M.Sc., and Ginette Okoye, M.D., have received funding. As an executive committee member, Dr. Kang will help guide the future direction of the organization.

Supporting our Work

The Johns Hopkins Department of Dermatology strives to provide outstanding individualized diagnosis and treatment of skin disease, educate the next generation of dermatologists to become leaders in medical dermatology, cosmetic dermatology, dermatologic surgery, dermatopathology and investigative dermatology, and develop new and better strategies to diagnose and treat skin disease through groundbreaking research.

If you wish to support our efforts with a tax-deductible gift please visit:
www.hopkinsmedicine.org/dermatology