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 *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 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 hospital costs, patient outcomes, and public health. And with many patients suffering from chronic conditions, it is crucial to prevent infections that can lead to hospital readmissions and further hospital stays. This work is essential for improving patient outcomes and reducing the burden of healthcare costs.
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).”

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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. 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
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“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.
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