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Learning to Care for Those in Harm's Way

the pulse

Sharon Willis
Deputy Vice President for External Affairs and Managing Editor

Gwendolyn Smalls
Chief, Media Affairs

Tech. Sgt. Oshawn Jefferson
Deputy Chief, Media Affairs

Christine Creenan-Jones
Editor and Layout Artist

MC2 Brittney Cannady
Writer

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Photo by Thomas Balfour

On the cover
Army 2nd Lt. Daniel Lammers, a medical student at the Uniformed Services University, plays regular games of wheelchair basketball with wounded warriors through a new USU program called the Wounded Warrior Partnership. *See story, page 3.*

USU scientists resolve decades-old mystery of "chlamydia anomaly"

By Sharon Willis, managing editor

A 50-year-old mystery surrounding the existence of a cell wall in the bacterial pathogen *Chlamydia trachomatis*, or chlamydia, has been solved by researchers at the Uniformed Services University. Chlamydia is the leading cause of sexually transmitted infections worldwide, infecting nearly 1.5 million Americans each year. It can cause sterility in men and women, Pelvic Inflammatory Disease, and ectopic pregnancy and is also the leading cause of preventable blindness. Other types of chlamydia cause a variety of diseases in humans and animals, including two strains of the bacterium that are threatening survival of the koala population in Australia.

Since the 1960s, scientists have tried to solve the 'chlamydial anomaly.' All chlamydial species are sensitive to antibiotics that target the bacterial cell wall, or peptidoglycan, but no one has ever been able to show that peptidoglycan exists in chlamydia until now.

In an article, "A new metabolic cell-wall labeling method reveals peptidoglycan in *Chlamydia trachomatis*," published in the Dec. 11 advance online issue of *Nature*, the study lead co-author Dr. George Liechti, a postdoctoral fellow in the laboratory of Dr. Anthony Maurelli at USU, along with a scientific team from Maurelli's lab and collaborators from Indiana University in Bloomington, Ind., outlines their discovery of the presence of a peptidoglycan in chlamydia.

Using novel chemical probes designed by researchers in the laboratories of IU scientists Drs. Yves Brun and Michael Van Nieuwenhze, Liechti was able to visualize the cell wall of chlamydia for the first time since these paradoxical observations were initially described 50 years ago. Maurelli's team, working closely with the IU researchers, produced images that revealed a cell wall architecture never before seen in bacteria: a ring-like structure that appears to cut across each growing microbe at its center line.

Additional experiments carried out by Liechti and IU researcher Erkin Kuru confirmed that the label is specific for the bacterial cell wall and suggests that chlamydia generates its unique cell wall the same way as many other microbes, such as *E. coli*, do.

The demonstration by Maurelli's team that chlamydia possess peptidoglycan will help other researchers study how infection with these organisms produces an inflammatory response in its human host.

In addition, peptidoglycan almost certainly plays a role in chlamydial cell division, says Liechti. "We know almost nothing about how chlamydia divide," he said, "but the unusual labeling pattern of the peptidoglycan that we observed suggests some very testable models that we plan to pursue in our lab."

In addition to solving a decades-old mystery, this study suggests new and powerful applications of this innovative labeling technique developed by Maurelli's IU collaborators. This breakthrough in labeling technology has the potential to revolutionize the study of the microbial cell wall with potential applications in visualization of the cell wall by electron microscopy and the eventual capture and purification of peptidoglycan components.

"I am thrilled that we were able to resolve the chlamydial anomaly," said Maurelli. "Now that we have shown that chlamydia have a typical bacterial cell wall, scientists can focus on key questions such as how the peptidoglycan of chlamydia contributes to the severe inflammation that is typically seen in chlamydia infections of the eye and the genital tract. We can also get a better understanding of how certain antibiotics work against these organisms."

The discovery could eventually lead to the development of new therapeutic approaches for treatment of chlamydial infection.

USU students, wounded warriors bond through art, sports

By Christine Creenan-Jones, editor

Physicians are privy to a lot of deeply personal information about the people they treat, but the person behind the diagnosis is often still a mystery to them. A new pilot program at the Uniformed Services University called the Wounded Warrior Partnership, however, is encouraging a new kind of dynamic by creating unique bonding opportunities for providers and patients through art, music, theater and sports.

The innovative program brings USU medical students and wounded warriors together for side-by-side participation in Walter Reed National Military Medical Center's adaptive sports and creative arts programs. These engaging encounters are designed to bridge unique, non-clinical connections between participating members.

"We wanted to create an opportunity for our students to develop natural, one-on-one relationships with wounded warriors," said Navy Cmdr. (Dr.) Adam Saperstein, an assistant professor in the Department of Family Medicine at USU.

Saperstein and his colleague, Dr. Paul Pasquina, director of the Center for Rehabilitation Science Research at USU, are the impetuses behind the Wounded Warrior Partnership. The idea for the program was born from their personal experiences in military medicine and from their understanding that engagement and connection are often facilitated through action.

It's a lesson they both learned in college. Saperstein was a member of the Naval Academy's prestigious Glee Club, and Pasquina was a star quarterback on West Point's varsity football team. For both physicians, these mediums had unifying powers that brought diverse groups of people together.

"Something draws people to the arts, something beyond curiosity," said Saperstein. "It can also nurture close bonds between participating members, which is something we're hoping for with the Wounded Warrior Partnership."

So far, it seems to be working. Navy Ensign Teresa Gilbride, a USU medical student who is currently participating in the program, spends several hours each month playing wheelchair basketball with injured servicemembers in the Wounded Warrior Partnership. Between the hook shots and dribbling, Gilbride has developed a great rapport with her teammates.

"It's just so much fun," she said. "I have never in my life played on a basketball team and am not a very formidable foe in a wheelchair either, but the wounded warriors are very welcoming."

Although building new clinical competencies isn't the main focus of the program, Gilbride's teammates have given her a special insight into military medicine and what it takes to care for servicemembers with amputations, traumatic brain injuries, post-traumatic stress and other complex wounds without easy remedies.

"It kind of hit home to me how each one of these guys need an individualized plan tailored to their specific injuries," she said. "Each one of their new normals is going to be different and requires creativity and probably a lot of teamwork with their physicians, physical therapists and families to figure out."

Photo by Thomas Balfour

Army 2nd Lt. Daniel Lammers is taking part in the Wounded Warrior Partnership, a pilot program at the Uniformed Services University that pairs USU medical students with wounded warriors for side-by-side participation in adaptive sports and creative arts programs.

The program is also a great way to remember the sacrifices that come with uniformed service. All of the warrior participants in the Wounded Warrior Partnership are still recovering from serious, and in some cases, life-threatening injuries that were sustained in the line of duty.

"At USU, our students are learning to care for those in harm's way. But in the midst of a very rigorous academic schedule, when our students are spending more time with their books than actual people, it's easy to forget the true meaning of that mission," said Saperstein. "The Wounded Warrior Partnership is a wonderful reminder of what our university is really about."

Senior Employee of the Quarter

By Christine Creenan-Jones, editor

Photo by Thomas Balfour

Edmund Burke, a collateral duty counselor and special emphasis program manager in the Office of Equal Employment Opportunity, is the Senior Employee of the Quarter at the Uniformed Services University.

Burke, who also works as a program support specialist in USU's Administrative Support Division, was selected for his outstanding work ethic and ability to expertly manage multiple tasks and responsibilities.

As an EEO collateral duty counselor, Burke provides technical assistance with discrimination complaints, creates official USU reports, coordinates EEO-sponsored events and distributes information about EEO training and procedures.

This work helps streamline the complex responsibilities that befall EEO employees at USU.

"Obviously, new and varying procedures and regulations consistently prevail in the EEO area. It is almost impossible to envision how I would handle all of the technical, distribution and coordination requirement if were not for Mr. Burke's efficient support," said Patricia Burke, director of EEO programs at USU. "Mr. Burke sets the perfect example of an employee who truly goes above and beyond in his service to the USU family. I can think of no one more deserving of recognition as the Senior Employee of the Quarter."

Pentagon Joint Staff Surgeon Visits USU

By MC2 Brittney Cannady, writer

The chief medical advisor to the chairman of the Joint Chiefs of Staff, Army Maj. Gen. (Dr.) Nadja West, visited the Uniformed Services University and provided a leadership brief last month.

As a part of the lecture, West shared her experiences and life lessons with faculty, students and staff.

"Treating every human being with dignity and respect will set you up for a great career as a physician and a leader," she said.

Courtesy photo

Army Maj. Gen. (Dr.) Nadja West

In her position as joint staff surgeon, West provides advice to the chairman of the Joint Chiefs of Staff and coordinates all issues related to health services to include operational medicine, force health protection and readiness among combatant commanders.

According to West, her success in this leadership role is the result of strong family values. West credits her parents for instilling her with a sense of gratitude, thankfulness and a strong work ethic that has made her career impactful.

"I knew I wanted to be in the military and I knew I wanted to be a physician. I just wanted to be the best and I was open to opportunities," said West.

During the question and answer portion of her brief, West addressed the importance of respect between servicemembers from different branches of the military – which is an important lesson for the university, since USU is a joint-service environment. West encouraged personnel to choose a joint tour during their careers – like USU – to get familiar with the cultures of different branches of the military. For service members working with civilian team members, West stressed fostering an attitude of inclusion as a key step to becoming a successful leader.

"Leadership is about influence," she said. "How do you influence people? It's by making them feel like they're a part of the team and trust. For people to trust in you is very humbling as a leader, so be careful with it."

Do you have a story for the Pulse?
Submit your ideas to
christine.creenan-jones@usuhs.edu. Pulse staff members are always looking for new leads about the people, programs, research and scholarship at the Uniformed Services University.

Junior Employee of the Quarter

By Christine Creenan-Jones, editor

Photo by Thomas Balfour

Robert Carter, a materials handler in the Logistics Division, is the Junior Employee of the Quarter at the Uniformed Services University.

Carter earned the title after serving at USU for more than 22 years. His long tenure has been characterized by superior results for both Logistics and USU as a whole.

Carter's primary work responsibilities include delivering gases for the university, maintaining and troubleshooting gas cylinders and valve connections, and processing, organizing and delivering USU's linens and lab coat inventory.

Carter, who is best known around campus for his positive attitude and professional acumen, is sponsored by The Arc, a national grassroots organization that is committed to the welfare of people with developmental disabilities.

"Robert has had to overcome numerous physical, emotional and social obstacles throughout his life," said Bobby Pritchett, chief of the Receiving and Distribution Branch of the Logistics Division at USU. "Over the years, it has been his co-workers' pleasure to watch Robert develop and succeed — slowly and unevenly at first — but eventually, with proper guidance, Robert has realized the potential that lies within him. This has enabled him to excel and become the outstanding employee he is today."

Alpha Omega Alpha hosts specialty night at USU

By MC2 Brittney Cannady, writer

Photo by Army 2nd Lt. Alexander Knobloch

Students at the Uniformed Services University attended the Military Medicine Specialty Night to learn more about graduate medical education opportunities, Dec. 3.

Medical students at the Uniformed Services University took part in a Military Medicine Specialty Night, Dec. 3.

The event, sponsored by the USU chapter of Alpha Omega Alpha, gave students a valuable opportunity to learn more about different specialties and meet with leaders in military medicine, residency program directors and specialty leaders from across the country.

"The specialty night is a great opportunity for USU and HPSP (Health Professions Scholarship Program) students to inquire about their future career opportunities in military medicine," said Dr. Joseph Lopreiato, associate dean for Simulation Education who attended the specialty night event.

The event included formal presentations and question-and-answer sessions. Attendees also received mentoring and advice from subject matter experts from the Naval Medical Center Portsmouth, Walter Reed National Military Medical Center and the National Capital Consortium, who shared information about residency programs available to graduates in areas such as pathology, orthopedic surgery and pediatrics.

"Students got face-to-face contact with specialists from various fields and from all four services to ask about training opportunities, training sites and the patient mix in their specialty. The evening allowed students to explore multiple specialties at their leisure in one place," said Lopreiato.

The Learning Resource Center at the Uniformed Services University is sponsoring several professional development classes in December, including Understanding Copyright and Essential Search Skills. University personnel can sign up online at www.lrc.usuhs.edu.

AFRRI health physicists earn rigorous CHP certification

By Christine Creenan-Jones, editor

Two officers at the Armed Forces Radiobiology Research Institute at the Uniformed Services University accomplished a challenging feat recently by passing both portions of the rigorous Certified Health Physicists Examination. As a result, Army Maj. Aaron Miaullis and Air Force Capt. Brian Livingston joined an esteemed group of health science professionals who've earned a certification in Comprehensive Health Physics by the American Board of Health Physicists.

Earning a CHP is both rare and extraordinary. The overall pass rate for parts one and two of the exam is less than 30 percent, and the second part of the test, for these officers, could only be taken once they had practiced health physics for at least five years.

"CHP certification is a big deal in the health physics world, because passing the examination requires a tremendous amount of knowledge and skill across multiple health physics' domains," said Army Col. (Dr.) Neil Page, Head of Military Medical Operations at AFRRI. "This credential puts Maj. Miaullis and Capt. Livingston at the absolute top of their practice. It also reflects well on our institute as a whole, because it demonstrates the caliber of our workforce here at AFRRI."

Photo by Christine Creenan-Jones

Army Maj. Aaron Miaullis and Air Force Capt. Brian Livingston recently earned a certification in Comprehensive Health Physicists by the American Board of Health Physicists.

The expansive skill set that earned Miaullis and Livingston their CHP certification is also being leveraged by AFRRI to ensure national safety in the event of a radiological accident. This work includes deploying to international locations to provide instruction on the medical effects of ionizing radiation and responding to nuclear disaster accidents as part of the Medical Radiobiology Advisory Teams, which in the past has included missions to Japan after the Fukushima Daiichi nuclear power plant experienced a full meltdown that was caused by a powerful earthquake and tsunamis in 2011.

Livingston was an integral member of Operation Tomodachi, the U.S. military's relief response to the Japanese crisis. His leadership was crucial then and it has been used to inform the education and consultation services that Miaullis, Livingston and other university health physicists provide as part of their everyday work at AFRRI.

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Word on Campus

By Christine Creenan-Jones, editor

Tis the season for giving, which for many personnel at the Uniformed Services University means donating to the Combined Federal Campaign, the world's largest, most successful workplace charity. At USU, the reasons for giving are as diverse as the CFC charities they support, but here are a few reasons why USU gives:

"I give because I believe it's important to help others and the CFC makes doing so both easy and efficient."

-Air Force Col. Arnyce Pock

"I always give to Make A Wish for Children, which grants each sick child a "wish." It is something positive to fill sick children's lives with joy.

-Sandra Silbergeld

"I give because I come from a charitable family, and I learned early in life that it is better to give than receive. I started giving as soon as I joined the military in 1990 and have been doing so ever since."

-Stephen Huntington

"For those to whom much has been given, much is also expected in return. The CFC represents a tangible way to provide meaningful financial support to organizations providing special services to the warrior-based causes I believe in."

-Navy Capt. Mark Stephens

"I always feel privileged to annually participate in the philanthropic mission of the CFC because there is no greater reward than helping those in need. The CFC provides a golden opportunity to receive a sense of fulfillment through giving."

-Bob Thompson

"My husband and I give to the CFC because we recognize how blessed we have been in our family, friends and work. The CFC is a guaranteed venue for ensuring that our annual contributions go as far as possible to benefit others."

-Mary Dix

The Combined Federal Campaign at the Uniformed Services University is currently underway. Personnel wishing to contribute to the CFC can donate online through the Defense Finance and Accounting Service's MyPay and CFC websites, by cash or check, and through payroll deduction. Each USU department also has a designated CFC keyworker who can answer questions and guide pledgers through the donation process.

Final Frame

Photo by MC2 Britney Cannady

UNIFORMED SERVICES UNIVERSITY
of the Health Sciences

The Uniformed Services University hosted a chili cook-off to raise money and awareness for the Combined Federal Campaign, Dec. 11. The event featured 18 chili recipes and attracted a large crowd of tasters, who doubled as guest judges.