10 Celebrating the Start of 10 Years of Naval Medical R&D News

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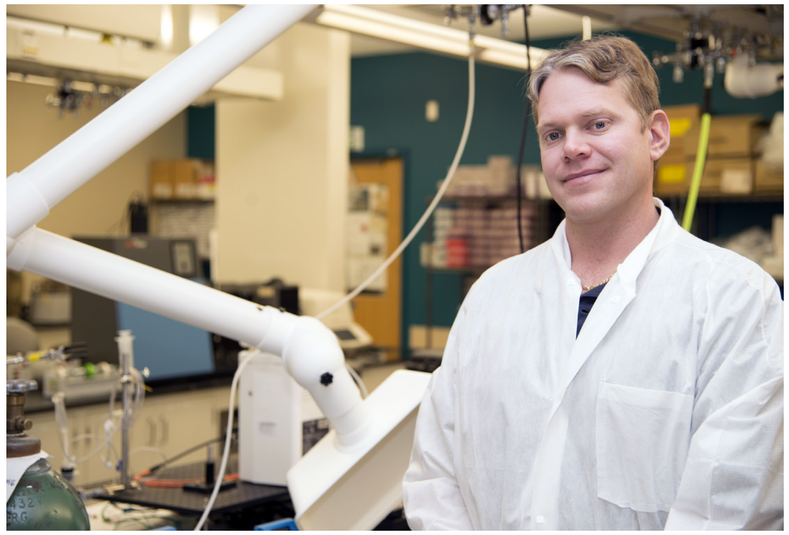
NAMRU-SA Research Project Could Lead to Better Method for Bone Regeneration (cover)

By. David DeKunder, Joint Base San Antonio News, Courtesy Story



SAN ANTONIO – A research project being conducted at Naval Medical Research Unit San Antonio, or NAMRU-SA, at Joint Base San Antonio Fort Sam Houston, could lead to a better method for bone regeneration and improve treatment for service members and patients whose bone tissue has been damaged by a traumatic injury.

The project, which started in 2015, is incorporating the use and researching the effectiveness of biological therapeutics, including stromal cells, in promoting bone regeneration and growth in damaged bone tissue.

Dr. Alexander Burdette, NAMRU-SA principal investigator, said the objective of the research project is to find out if biological therapeutics can provide a better and effective way of healing critical size bone defects – a bone defect size that is too large to heal on its own – than the current treatment of bone grafting, living bone tissue that is transplanted from one part of the body to the defect site located at another part of the body.

Burdette said bone grafting can heal damaged bone tissue over time, but it has several disadvantages. Bone grafting requires multiple surgeries, is dependent on the limited availability of bone that can be used as graft, can result in donor site morbidity and prolongs in-patient care.

“Someone who is exposed to an IED (improvised explosive device) blast can have a lot of trauma on them,” Burdette said. “The last thing they need to experience is another surgery to harvest the bone to do grafting on them.”

To come up with other options for treating damaged bone tissue, NAMRU-SA researchers utilized a biological therapeutic from amnion-derived multipotent progenitor, or AMP, cells known as secretome. The secretome contained secreted proteins that are vital to the process of bone regeneration and bone growth.

Researchers placed the secretome in a collagen scaffold. A collagen scaffold contains the main structural protein found in various connective tissues in the body, including tendons, ligaments and skin. The scaffold serves as a framework or structural element that allows cellular infiltration to the defect site with cell adhesion to the scaffold, followed by proliferation and osteogenic differentiation....(cont.)

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NMRC Senior and Junior Sailor of the Year (feature)

From Naval Medical Research Center Public Affairs

SILVER SPRING, Md. –The Naval Medical Research Center (NMRC) recognized two of its own as the cream of the crop as the Senior Sailor of the Year and Junior Sailor of the Year 2017. The Sailor of the Year program honors Sailors who have a history of proven leadership, dedication, a high level of professionalism, and a history of command impact and mission contribution.

The 2017 Senior Sailor of the Year is Hospital Corpsman First Class Karen Graydon, and the Junior Sailor of the Year is Hospital Corpsman First Class Nicole Mattera.

“I am exceptionally proud of these two Sailors who were selected as the Naval Medical Research and Development Enterprise Sailors of the Year,” said Senior Chief Hospital Corpsman Paul Duncan, Senior Enlisted Leader. “They are examples of the caliber of Sailors serving today and I couldn’t be happier for them and I am thankful for their quiet, humble, and servant leadership.”

A native of Jersey City, New Jersey, Graydon enlisted the Navy in 2002 and departed on her first tour of duty, the USS Harpers Ferry LSD 49, as a Culinary Specialist before cross rating to the rank of Hospital Corpsman (HM) in 2005. After spending time at the Field Medical Service School at Camp Pendleton in Oceanside, California, and embarking on her first duty station as a HM at Naval Medical Center in San Diego, California, she completed tours at U.S. Naval Hospital Guam and the 3D Medical Battalion in Okinawa, Japan, before being stationed at NMRC. In support of the NMRC mission, Graydon works in the Biological Defense Research Directorate as the Leading Petty Officer for the Bio-Warfare Detection Quality Assurance Program.

“The Navy has been a part of who I am for over 15 years, and it is has taught me to be independent, to have pride, and the value of a can-do attitude, teamwork and satisfaction in a job well done,” said Graydon.

A native of Palatine, Illinois, Mattera enlisted in the Navy in 2010 and departed to her first duty station in Okinawa, Japan, where she worked as an Emergency Medical Technician before being stationed at Camp Pendleton, California, with the 1st Medical Battalion where she was assigned to the Bravo Surgical Company for three years. Currently stationed at NMRC, Mattera is the Administration Leading Petty Officer in the Directorate for Administration.

“This selection means a lot to me,” said Mattera...(cont.)

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Naval Medical Research Unit - Dayton Accepts MV-22 Osprey for Research

By. Stacey Geiger, 88th Air Base Wing Public Affairs, Courtesy Story

WRIGHT-PATTERSON AIR FORCE BASE, Ohio – The Naval Medical Research Unit Dayton (NAMRU-D) accepted Aircraft 24, a decommissioned Marine Corps V-22 Osprey tilt-rotor aircraft, for aerospace medicine research, December 19.

"The MV-22 will be used to conduct static aerospace medical research in an effort to provide solutions toward preventing musculoskeletal injury to tilt-rotor aircraft crew," said Lt. Cmdr. Matthew Doubrava, Senior Medical Officer at NAMRU-D.

Along with researching prevention of musculoskeletal injury to tilt-rotor aircraft crew, Doubrava said that NAMRU-D will also be using the aircraft to study en route care to determine the most useful way to load and employ aircraft in that role.

Prior to the MV-22 arrival and landing in Area B, a team of NAMRU-D personnel participated in a foreign object damage walk to ensure the area was cleared of debris.

Delivered by the Air Test and Evaluation Squadron 21 from Patuxent River, Maryland, NAMRU-D commanding officer Capt. Rees Lee accepted the aircraft on behalf of NAMRU-D.

The MV-22 Osprey is a multipurpose tilt-rotor aircraft that has the vertical ability of a helicopter and the speed and range of a fixed-wing aircraft. With its rotor in a vertical position, it can take off, land and hover like a helicopter. Once in the air, the MV-22 can transform into a turboprop airplane capable of high-speed, high-altitude flight.

Although Aircraft 24 was used primarily for conducting developmental flight testing, the primary mission of the MV-22 is for transportation of troops, equipment, and supplies from ships and land bases for combat assault and assault support.

Mark Hollady, MV-22 flight test engineer lead, stated the most important role of Aircraft 24 was to evaluate the MV-22 Ice Protection System in a natural icing environment. To undergo testing, the aircraft underwent extensive modifications that included installing a flight test engineer control station, complex instrumentation system, and the latest generation components for the Ice Protection System. The external configuration of the aircraft was modified to represent a Marine Corps MV-22 on one side and an Air Force CV-22 on the other to allow ice accumulation characteristics to be measured simultaneously for both aircraft configurations during a natural icing test program....(cont.)

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Joint Efforts in Search of a Cure for Tropical Diseases

By. Maria Pinel, Joint Task Force-Bravo Public Affairs, Courtesy Story

SOTO CANO AIR BASE, Honduras – Malaria, leishmaniasis, dengue, chikungunya and Zika are infectious diseases affecting millions in South and Central America and the Caribbean where hundreds of service members are deployed to yearly.

The Joint Task Force-Bravo Medical Element, the U.S. Naval Medical Research Unit No. 6 (NAMRU-6) and the Uniformed Service University of the Health Sciences partnered for an ongoing tropical disease study in Trujillo and Soto Cano Air Base early August, 2017 testing live samples and collecting vectors that could be potential carriers for diseases.

The team, comprised of preventive medicine personnel, entomologists and students of the tropical medicine program, collected samples from August 6-11 in Trujillo, a red zone for malaria and leishmaniasis in Honduras, and later continued their gathering at Soto Cano Air Base the following week.

"These are diseases that could potentially impact broad population segments," said 1st Lt. Isavelita Goodearly, public health nurse with JTF-Bravo MEDEL. "When we test those individuals we are not only directly impacting that group of people; the indirect impact from studying these diseases could affect millions."

Trujillo, Colon and the Misquito Coast have the highest incidence of malaria in the country. These are also areas where JTF-Bravo participates in multiple humanitarian missions. These areas represent an important interest for NAMRU-6, whose mission is to detect infectious disease threats of military and public health importance.

"We have a lot of service members coming through these areas classified as red zones for these types of illnesses," said Dr. Ricardo Aviles, medical liaison, JTF-Bravo MEDEL. "For the preventive medicine portion of MEDEL, this mission and training are crucial because we are in this environment; we face these illnesses all the time."

Currently there are no specific medications for the treatment of these vector-borne diseases and the entomologists at NAMRU-6 work diligently to help develop vector control strategies against them.

"What we are doing is simultaneously collecting vectors and teaching the group of medics everything about the different methods we use to gather specimens and the habitat of vectors in endemic areas," said Dr. Gissella Vasquez, deputy director of the Entomology Department at NAMRU-6....(cont.)

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A Look Inside: Navy Medicine's Peruvian Research Lab, NAMRU-6

By. MC1 John Paul Kotara II, Bureau of Medicine and Surgery

U.S. Naval Medical Research Unit No. 6 (NAMRU-6) is the U.S. Navy's first stand-alone research facility in South America, and is one of six overseas research laboratories operated by the U.S. Department of Defense (DoD).

NAMRU-6 was initially established in Lima, Peru, in 1983, as the Naval Medical Research Institute Detachment (NAMRID) to investigate infectious diseases. Today, NAMRU-6 research activates focus on applied research to evaluate and test new vaccines, prevention strategies, treatment modalities, diagnostics, and novel insect control measures. Additional efforts have concentrated on disease detection, epidemiologic descriptions, and assistance to regional partners in developing surveillance systems, with a strong focus on viral pathogens, especially influenza, dengue, chikungunya, and Zika virus. NAMRU-6 conducts research through the coordination of six different departments; bacteriology; entomology, parasitology, virology and emerging infections, as well biomedical informatics.

The Bacteriology Department focuses on the development, testing and evaluation of vaccine products against enteric pathogens affecting our deployed troops worldwide. Researchers conduct regional antimicrobial resistance surveillance relevant to determine best antibiotic treatment regime. Other research efforts include:

- Determining the distribution, resistance patterns and molecular mechanisms of multidrug resistant bacterial pathogens within the U.S. Southern Command area of responsibility.

- Conducting field studies to determine the etiologies and impact of diarrhea on military and traveler populations, and support preclinical and clinical vaccine testing and development

- Support the development and testing of novel therapeutics against resistant bacteria, including bacteriophage product development efforts

The Entomology Department conducts field and lab studies to test technologies that protect the warfighter in deployed settings by understanding the biology, taxonomy and population dynamics of vectors. NAMRU-6 is home to the first overseas DoD mosquito insectary and maintains a colony of Anopheles darlingii mosquitos, a common malaria vector, allowing the production of millions of sporozoites for research use. Other research efforts include: ...(cont.)

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NHRC Educates Teachers About Military Medical Research

From Naval Health Research Center Public Affairs

SAN DIEGO – Twenty-five high school science, technology, engineering, and math (STEM) teachers toured the Naval Health Research Center (NHRC), Jan. 12, to see a working research lab in action and gain insights they could take back to the classroom to inspire the next generation of scientists.

"This was a great opportunity to educate the educators, those teaching our nation's future scientists, about the research we conduct at NHRC," said Capt. Marshall Monteville, commanding officer. "We use science to protect our warfighters from infectious diseases, reduce the risk of injuries, and improve survivability. I hope everything these teachers learned today helps them get their students excited about science and career possibilities in military medical research."

The teachers were participating in the M.J. Murdock Charitable Trust's "Partners in Science" program, which helps bring knowledge from the research lab into the classroom to promote hands-on science education. The teachers, whose subjects ranged from math and chemistry to biomedical sciences, came from Washington, Oregon, California, Montana, Idaho, and New York.

During the tour, the teachers visited NHRC's infectious diseases labs where they learned how researchers conduct surveillance for dangerous pathogens to protect military members from illnesses. They also visited the Warfighter Performance Lab to see first-hand how NHRC is addressing the unique challenges of today's military through research that focuses on sleep and fatigue, extreme environmental conditions, improving human performance, and injury recovery and rehabilitation.

One teacher, Paul Donelson, a biology teacher from Beaverton, Oregon, said visiting NHRC gave him a new appreciation for all the different aspects of military research....(cont.)

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R&D Chronicles: The Navy Medical Research Almanac, 1948

By André B. Sobocinski, Historian, BUMED

In 1948, the Navy was becoming further entrenched in the post-war period of demobilization and consolidation of services under the newly created Department of Defense (DoD).

At naval hospitals, clinical research programs were inaugurated leading to the first use of antibiotics like streptomycin in the treatment of tuberculosis and oral penicillin as a venereal disease prophylaxis.

The Bureau of Medicine and Surgery (BUMED)'s Research Division—founded at the beginning of World War II—would continue to set policy and manage resourcing for the greater naval medical research program.

In Bethesda, Maryland, the Naval Medical Research Institute (NMRI) was leading an ambitious program of applied research. The year 1948 at NMRI was highlighted by Dr. Theodor Benzinger's formative work in the field of human calorimetry. Five years later Benzinger would be credited with developing the first human gradient calorimetry device.

Beyond the D.C. beltway, medical research flourished in the fields of aviation, undersea/submarine and field medicine and infectious diseases. Active medical institutions in operation included the Naval Medical Field Research Laboratory in Camp Lejeune, North Carolina; the Naval Submarine Medical Laboratory in New London, Connecticut; the School of Aviation Medicine and Research (SAM) at the Naval Air Training Command in Pensacola, Florida; the Naval Air Materiel Center (NAMC) in Philadelphia, Pennsylvania; the Physiological Test Unit, Naval Air Station, in Patuxent River, Maryland; the Naval Unit, Chemical Warfare Service in Fort Detrick, Maryland; the U.S. Naval Medical Research Unit (NAMRU) No. 1 in Berkeley, California; U.S. Naval Medical Research Unit No. 3 in Cairo, Egypt; and U.S. Naval Medical Research Unit No. 4, Georgia.

NAMRU No. 4 would relocate from Georgia to Great Lakes during that same year. Established as the "Rockefeller Research Unit" at the Naval Hospital Dublin, Georgia in 1945, the unit's mission had originally been the study and treatment of rheumatic fever. At Great Lakes, NAMRU No. 4 expanded its role into other diseases affecting naval recruits, especially the study of acute respiratory illnesses....(cont.)

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DoD, FDA Partner to Develop Medical Products for Warfighters

By. Terri Moon Cronk, DoD News, Defense Media Activity, Courtesy Story

WASHINGTON— The Defense Department and Food and Drug Administration launched a joint pilot program to prioritize efficiently developing safe and effective medical products to save the lives of U.S. warfighters, officials of the agencies announced January 16 in a media teleconference.

"The partnership we announced today reflects the invaluable collaboration between our organizations," Tom McCaffery, acting Assistant Secretary of Defense for Health Affairs said.

"It strengthens our ability to equip our troops with the best possible medical support, and it helps us achieve our mission of providing battlefield care to support our entire military's effort to achieve a safer, more secure world," he added.

The FDA is fully committed to working closely with DoD to expedite availability of medical products that are critical to the health of service members, particularly those used to treat injuries in battlefield settings, said FDA Commissioner Dr. Scott Gottlieb, a physician and medical policy expert.

"Ensuring our nation's warfighters have safe and effective medical products is a top priority for the agency," he said. "By standing up a collaborative program with DoD, we hope to address DoD's immediate product priorities and ensure these products are developed and made available in the most expeditious manner possible."

Quick Access Is Critical

Fast access to lifesaving medical products on the battlefield is part and parcel of DoD's efforts to support forces operating around the world, McCaffery said.

"[It's also] essential to upholding our responsibility to the men and women of our military who risk their lives for us," he added.

FDA's expertise and guidance will help DoD put the best, most-effective products in the hands of battlefield medical personnel, he emphasized. "We look forward to working with our FDA partners on this important pilot program to ensure delivery of critical battlefield medicine to our deployed troops around the world."...(cont.)

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LIFE AFTER SERVICE:

SOLUTIONS TO COMMON CHALLENGES

To facilitate your reentry into civilian life, the Department of Defense and Department of Labor offers the Transition Assistance Program (TAP) to helpyou become a "career ready" civilian. However, many service members also want information about whatthey can do for themselves to enhance quality of life.

This document highlights four key topics for self navigation, particularly if your military service involved combat deployments. However, these four topics are foundations to well-being even if you never deployed to combat. We are referring to:

1. Social Ties
2. Anger
3. Pain
4. Sleep

We know that these topics are important because we administered surveys to thousands of Marines and Sailors during TAP classes across the country. Many of these same Marines and Sailors allowed us to follow up with them for a second survey after they left the military. On the follow-up survey, we asked our new veterans a number of things, including how happy they were, how much stress their families were under, and how difficult it was for them to readjust back to civilian life. Fortunately, the majority of our survey takers had few significant problems as veterans, although minor issues were common.

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NAVY MEDICINE R&D ENTERPRISE COMMAND

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