

November 2016

# NTSSC **This Month**



U.S. Army Garrison Natick Public Affairs Office

## Thin Air

Helping Soldiers maintain weight, muscle mass at altitude



2013 and 2015 U.S. Army  
Maj. Gen. Keith L. Ware Awards  
First Place, Digital Publication

NAGC

2016 National Association of  
Government Communicators  
First Place, External Newsletter



# Commander's Corner

Lt. Col. Ryan Raymond  
USAG Natick Garrison Commander



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## Just getting started

It was great to see so many of you when we re-opened Hunter Auditorium; thank you for your continued support and patience as we work to improve conditions on the installation. Hopefully, you are already seeing some of the positive changes.

The garrison team is working hard to overcome many years' neglect of our aged infrastructure. As a garrison, we aren't in this alone. We have great partners across the installation who are helping us bring the infrastructure up to standard.

We are just getting started. When you walk through the lobby of Building 1, you will see on the monitor some of the plans we have for the installation. These improvements are to make Natick Soldier Systems Center a great place to work and bring our community together.

The holiday season is right around the corner. The installation holiday social is Dec. 9 at the Lord Community Center. We had a great time together last year, and I look forward to sharing some great times with you. The FMWR and CWF teams always put together a fabulous event.

Before I close, I want to take a moment and thank my battle buddy, Command Sgt. Maj. Erika Gholar, for her service to our garrison and her service to our nation. Her time as the garrison CSM is coming to a close, and I wanted to personally thank her for her dedication to the people of our garrison and the Natick Soldier Systems Center. She has been a great partner since I took command, and her counsel and support will be greatly missed.

Please be safe throughout the holidays. Remember, Soldiers of today and tomorrow are depending on you and are thankful for YOUR service here at Natick.



Lt. Col. Ryan Raymond  
USAG Natick Garrison Commander

## NSSC This Month

NSSC  
Senior Mission Commander  
[Brig. Gen. Thomas H. Todd III](#)

Garrison Commander  
[Lt. Col. Ryan Raymond](#)

Command Sergeant Major  
[Command Sgt. Maj. Erika M. Gholar](#)

Public Affairs Officer  
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Editor  
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**About this newsletter**  
NSSC *This Month* is a monthly newsletter covering NSSC news within the Army and commercial media.

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To subscribe to *NSSC This Month*, please contact Bob Reinert at [robert.j.reinert.civ@mail.mil](mailto:robert.j.reinert.civ@mail.mil).

On the Web: [www.army.mil/natick](http://www.army.mil/natick)

Cover photo: Staff Sgt. Todd Christopherson

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## Thin Air



Photo: Staff Sgt. Todd Christopherson

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# NSSC News Briefs ...

## New Parenting Support Group

The Hanscom Air Force Base Family Advocacy Program is now sponsoring a confidential peer support group for new mothers and fathers. The group will take place at the Hanscom Airmen and Family Readiness Center on the first Monday of each month from 11 a.m. to 1 p.m., and the third Monday of each month from 5:30 p.m. to 7:30 p.m. For more information, please contact Kathy Cipolla at [kathycipolla@yahoo.com](mailto:kathycipolla@yahoo.com).

## Chaplain's Office Counseling

If you are in need of a counseling appointment, chaplain coverage or religious support, please call the Chaplain's Office at ext. 4506, or the mobile line at (508) 202-2638. All communication during a counseling session with an Army chaplain and/or chaplain assistant is confidential.

## Retirement Seminar

Planning to retire in the next five years? A Social Security and Blue Cross Blue Shield Retirement Seminar will be held in Grant Conference Center from 9:30 a.m. to 11:30 a.m. on Thursday, Dec. 15. Some of the topics to be covered are Federal Employees Health Benefits Program, Retirement Eligibility and much more. To register for this event, please e-mail Amber Black at [amber.m.black.civ@mail.mil](mailto:amber.m.black.civ@mail.mil), or call ext. 4584.

## Commander's Cup 2017

On July 22, NSRDEC claimed the grand prize of the NSSC Commander's Cup. Now, the new season has emerged. Want to compete for the cup in 2016-2017? Join in on the fun Dec. 9, at Lord Community Center (Bldg. 32). There will be a doubleheader of the Jingle Bell Run/Best Costume and a Gingerbread House competition. The run will start at 11 a.m., and submissions for the Gingerbread House will begin at noon. For more information, please contact Bert Scott at ext. 4791, or [bert.r.scott4.naf@mail.mil](mailto:bert.r.scott4.naf@mail.mil).

## Civilian Wellness Program

Did you know that DA civilians can take part in a six-month exercise program? While every organization has specific guidelines for employee participation, the Army Civilian Wellness Program allows civilian employees to exercise up to three hours per week during the duty day to help promote a healthier and more productive workplace. For more information, contact Natick Family and MWR at ext. 4791.



## Garrison Spotlight

### Susan Baldwin

#### What Susan does:

Susan is the Sexual Assault Response Coordinator, which entails leading assault and harassment prevention efforts, and ensuring victim advocates are trained and ready to respond to any calls for help 24/7.



#### ACS Director Kari Sharpe on Susan:

"Susan is well-known throughout NSSC for her personable and lively Sexual Harassment/Assault Response and Prevention training. She knows that as Department of Defense Soldiers, civilians and contractors, we are required to attend numerous annual

trainings – some covering the exact, same topics from year to year. Because of this, she strives to engage groups and develop new and interactive training sessions that explore different aspects of the SHARP program and the social problems that contribute to sexual violence. Susan is an asset to the Army SHARP program and Team Natick."

## Overseas/PCS Assistance

ACS offers one-on-one briefing appointments for overseas relocation or other Permanent Change of Station (PCS) moves. Gain information on what you need to know about living overseas, or let us help you connect with your next duty station with welcome packets and other online resources. Briefings are available for both military and DoD civilians anticipating a PCS move. For an appointment, please contact Diane Magrane at [diane.k.magrane.civ@mail.mil](mailto:diane.k.magrane.civ@mail.mil).

## Army Family Action Plan

Between now and Dec. 9, take advantage of your opportunity to submit an AFAP issue. The AFAP is an Army-wide initiative to identify issues of concern to improve the overall quality of life for Soldiers and their families. You can submit an issue via the NSSC Family and MWR website, <http://natick.armymwr.com/us/natick/programs/army-family-action-plan>, or contact ACS at ext. 4485 for more information.



NSSC

# Combating veteran homelessness

By Tazanyia Mouton, USAG Natick Public Affairs/NATICK, Mass. (Nov. 17, 2016)

As of January 2015, on any given night, it was recorded that 47,725 veterans were homeless. During this time, it was also estimated that 1,133 homeless veterans resided in the [Commonwealth of Massachusetts](#).

With veteran homelessness continuing to be on the decline, once again the [Natick Soldier Systems Center](#) workforce did its part in assisting homeless veterans and their families by holding a clothing drive, Oct. 31 through Nov. 1. This was the seventh such event held at NSSC.

The biannual event, which began in fall 2013, brought in approximately 2,150 pounds of clothing and personal hygiene products in its most recent drive.

Overall, the clothing drives have accumulated more than 13,000 pounds of items that have gone directly to veterans and their families who need assistance.

## By the Numbers

**35 percent**  
Decline of veteran homelessness between 2009 and 2015



**1,552**  
Veterans who are homeless as members of a family with children (January 2015)

**1 in 10**  
Veterans experiencing homelessness

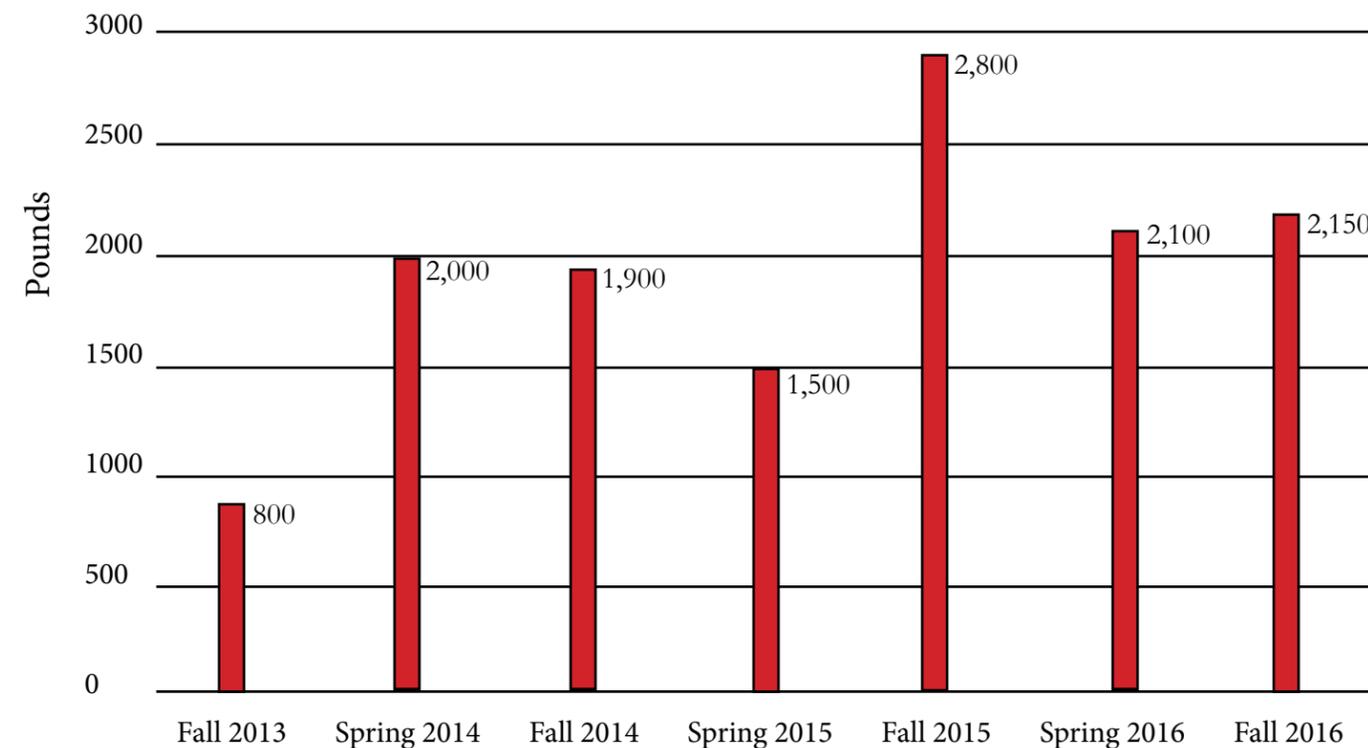


**9 percent**  
Makeup of homeless veterans who are women



U.S. Department of Housing and Urban Development

## NSSC Homeless Veteran Clothing Drive



# Honoring those who served

## Natick senior commander speaks on Veterans Day

By USAG Natick Public Affairs/NATICK, Mass. (Nov. 14, 2016)

At the Town of Natick's [Veterans Day](#) ceremony Nov. 11, [Brig. Gen. Thomas H. Todd III](#), senior commander of the [Natick Soldier Systems Center](#), spoke of the town's unparalleled commitment to those who served their country.

"Having served 27 years in the Army, I've lived all around the world, and my assignment at Natick ... holds a special place in (my) heart," Todd said. "Take a walk around this community and see how they honor their veterans – seventy-three squares in the community dedicated to members who served and seven memorials to those from Natick who paid the ultimate sacrifice."

Todd also noted that Natick's [Morse Institute Library](#) is home to Massachusetts' first oral history project for veterans, more than 300 of whom have shared their stories.

"The Systems Center, dedicated to our Soldiers, is one team really with a mission of Soldier Success," Todd said. "This community is a tremendous part of that team, and we are so blessed to be part of this community."

"Since the first shots at Lexington and Concord were fired and our [Revolutionary War](#) began, men and women from Natick have been answering the call of duty."

Todd spoke of the many campaigns fought by American service members to preserve the nation's freedoms.

"We remember and honor all of them," Todd said. "Veteran status isn't something that is handed to you. It is something that is earned."

Though they come from all walks of life, said Todd, veterans share fundamental qualities.

"They possess courage, pride, determination, selflessness, dedication to duty and integrity," Todd said. "Each of those quali-

ties are needed to serve a cause larger than one's self."

He then asked all the veterans in attendance to raise their hands.

"Thank you for raising your right hand and swearing to protect and defend the [Constitution of the United States](#) against all enemies, foreign and domestic," Todd said. "Thank you for rising to the nation's call to duty. Thank you for your service not just while you are in uniform, but your service to our community."

Many veterans continue to serve others, Todd said.

"Some have coached Little League, some have served in the local government, and some have served in our churches," Todd said. "Service for veterans doesn't end when they hang up the uniform."

Todd pointed out that he and his family had moved 15 times in his 27 years of service, which have included multiple deployments.

"It would not have been possible without the amazing support of my family – my wife, specifically," Todd said. "Our military families go through so much because of our service."

Quoting [Abraham Lincoln](#), Todd said: "Honor the Soldier and Sailor everywhere,

who bravely bears his country's cause. Honor, also, to the citizen who cares for his brother in the field and serves, as best he can, the same cause."

Todd called on the audience to honor service members not just on Veterans Day but every day.

"It truly has been an honor to be with an amazing group of heroes this morning – our veterans," Todd said. "Today, as we honor our veterans, please take a moment and say a prayer for those serving in harm's way and the families who are missing them today."



Brig. Gen. Thomas H. Todd III, NSSC senior commander, speaks at the Town of Natick Veterans Day ceremony.

Photo: John Harbour, USAG Natick Public Affairs

The [Natick Soldier Research, Development and Engineering Center's Combat Feeding Directorate](#) hosted Food Science & Industry Day on Oct. 27.

"Food Science & Industry Day provides an opportunity for the Combat Feeding Directorate to showcase current research and development efforts to our industrial and academic partners," said Jeremy Whitsitt, deputy director, CFD.

Throughout the day, members of industry/academia and CFD project officers discussed areas of interest, developing technologies and future goals. Attendees toured CFD's unique facilities and participated in technology demonstrations. They also learned how to conduct business with the government and about the challenges inherent in developing rations and equipment for the warfighter, who often operates in remote locations under austere conditions.

"CFD Industry Day is a great day for all of CFD's industry and government partners to see everything we are working on and to get the big picture of how everything fits together, including how their particular mission and job fits in with ours," said Jill Bates, CFD food technologist, Sensory Evaluation. "It also allows many of us to put faces with names of those we have worked closely with but may have not met yet in person."

The day underscored CFD's commitment to using science and engineering, as well as collaboration with academia and industry, to provide the warfighter with good-tasting food that provides optimal nutrition. CFD's expertise include applied nutrition and biochemistry; food engineering preservation and stabilization; food protection, defense and microbiology; food service equipment engineering; food packaging and polymer science; and product development, technical evaluation and ration design.

Peter Lavigne, a chemical engineer on CFD's Equipment and Energy Technology Team and one of the day's many presenters, discussed CFD's development of high efficiency appliances and the importance of fostering collaboration.

"This venue provided a unique opportunity to demonstrate innovative technologies that we are exploring to meet the needs of our military customers and foster potential collaborative opportunities spanning the interests and expertise of our industry



Photo: Jeff Sisco, NSRDEC Public Affairs

The Natick Soldier Research, Development and Engineering Center's Combat Feeding Directorate recently hosted Food Science & Industry Day. Peter Lavigne, a CFD chemical engineer and one of the day's presenters, discussed CFD's development of high-efficiency appliances, including the multi-function, water-heating appliance pictured here.

# Feeding the Warfighter

NSRDEC hosts 'Food Science & Industry Day'

By Jane Benson, NSRDEC Public Affairs/NATICK, Mass. (Oct. 31, 2016)

partners," said Lavigne. "The development of high efficiency appliances, to include a multi-function, water-heating appliance, raised a number of observations and comments that highlighted the benefits that we aim to address with these technologies."

At the heart of Food Science & Industry Day is CFD's ongoing commitment to improving the lives and performance of the nation's warfighters.

"CFD Industry day benefits the warfighter by fostering partnerships between govern-

ment and industry to continuously provide new technologies and ration products to our warfighters," said Bates.

"Operational ration and expeditionary food equipment R&D is truly a collaborative effort," said Whitsitt. "Without the knowledge and capabilities of our external partners, we would be unable to improve quality of life for our warriors. This venue fosters communication and awareness which, in turn, promotes innovation and synergy."

Photo: John Harlow, USAG Natick Public Affairs



# Know your SHARP team

## Identifying Natick's victim advocates

By Army Community Services

The [SHARP](#) team is here to support all of Team Natick, but do you know who they are?

Susan Baldwin is the full-time [Sexual Assault Response Coordinator](#), located in Building 1, Room 120.

"She is dedicated to supporting our community and extending our reach to the surrounding local communities in order to provide a diverse range of resources for everyone at NSSC," said Kari Sharpe, USAG Natick [Army Community Services](#) director. "Our SHARP victim advocates have all voluntarily accepted the challenge of supporting our team during times of trauma, in addition to their full-time duties. Our advocates hail from tenants across the installation, reinforcing the fact that our community here is one team."

The current SHARP team includes: Capt. Sigrid Harrison, USARIEM chief of Logistics; Sgt. 1st Class Keenan Reed, HRDD Research, Development, Technology and Engineering NCO; Sgt. 1st Class Mark Brumbaugh, TACOM Airdrop Equipment NCO; Staff Sgt. Thomas Plummer, USARIEM NCO in charge of the Thermal and Mountain Medicine Division; and Dennis Donlan, ACC – Contract cost and price analyst.

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**"Each victim advocate took time out of their regular duties to attend an intensive, two-week training course in order to receive national credentials and once credentialed, they must participate in ongoing education to remain current."**

Kari Sharpe, USAG Natick ACS director

"Each victim advocate took time out of their regular duties to attend an intensive, two-week training course in order to receive national credentials and once credentialed, they must participate in ongoing education to remain current," Sharpe said. "During a recent visit to [Newton-Wellesley Hospital](#), our SHARP team was given

the opportunity to meet with response personnel at the emergency department and view the facilities where clients will be cared for."

Future training will include meeting with DES, local police and CID for firsthand knowledge of the interview process, special victims counsel who provide legal representation for NSSC clients, and tabletop exercises designed to hone critical-thinking skills.

"The dedication of the NSSC SHARP and continual familiarization with local resources including medical, legal and counseling paired with a sense of compassion all contribute to what it truly means to be an advocate," Sharpe said. "This SHARP team not only excels as Soldiers and civilians in the U.S. Army, they are prepared to walk the path from victim to survivor, which is a path requiring the strength and courage of two people, and they are prepared to answer this call at a moment's notice."

"This team could not exist without the unfailing support of their respective chains of command, as our SHARP program must be the responsibility of all personnel. It is this total dedication that allows our Army and our community to come together and instill a climate of trust and community, and the selflessness and compassion of our SHARP team are what makes our community shine."

# 'Tis the season

## Federal employees must be careful about gifts

By Capt. Briana S. Tellado, Command Judge Advocate

As federal employees (both civilians and service members), we work for the government to serve the public, not to get free stuff.

As the traditional holiday gift-giving season approaches, many questions come up about whether we can exchange gifts at work, and if so, with whom, what are we allowed to give them, and are there any rules that we need to know about?

The general rule is that a federal employee may not solicit or accept a gift given because of the employee's official position. Which brings up another question: What is a "gift?" A gift is almost anything of value. An example of what is not a gift is the coffee and donuts rule. Light snacks and refreshments, such as coffee and donuts, or cookies and soda, or water, are not considered gifts.

So, if you would like to bring hot chocolate and snowman cookies to your weekly meeting to share with your co-workers, no problem. You can share the cookies, and you can eat the cookies offered to you. They are not considered "gifts."

Greeting cards are also not considered "gifts." So if you'd like to share your family's holiday greeting card with your colleagues, go right ahead.

One case where the gift rules do not apply is personal relationships or family friendships. With friends or family who are also federal employees, the gift must

be clearly motivated by a family relationship or personal friendship, rather than the positions or the work relationships of the employees.

If you work for the DoD, and your spouse works for NASA, you can give your spouse a gift. The rule does not apply in that circumstance. If you're a private first class going home for Christmas leave, and your parent, who is a

If your relationship would end when the job ends, then the gift is probably motivated by a work relationship, rather than a friendship. In the case of a work relationship, the gift rules apply.

Gift rules state that, generally, federal employees may not give a gift to their official superior. Similarly, an employee may not accept a gift from a lesser-paid employee.

But sometimes, including traditional gift-giving occasions, superiors may receive gifts from subordinates. These include giving or receiving gifts (but not money) valued at \$10 or less, and sharing food and refreshments within the office, like Halloween candy or Thanksgiving leftovers, birthday cake on birthdays, and coffee and donuts.

Another exception where an employee may

give or receive something of value would be personal hospitality in an employee's home. So if your boss invites you over for Thanksgiving dinner, eat up! Likewise, employees who are guests in a colleague's home are allowed to bring an appropriate gift for the host or hostess, even if it costs more than \$10.

Examples include bringing wine or dessert to a dinner party, or a houseplant or bouquet of flowers for gatherings and celebrations at someone's home. So you can bring a bottle of wine to the boss when you show up for Thanksgiving dinner, and it's OK if the wine costs \$15.

Happy Holidays, indeed!



colonel, gives you a gift, you can accept it, and vice versa.

But if you want to give a gift to somebody at work, ask yourself – is this gift motivated by our relationship, or is it just because we work together?

If you're not sure, imagine that you, or your co-worker, quit your job tomorrow. When do you think you would speak again? Do you hang out together on weekends? Do you feel comfortable calling your co-worker's cell phone outside of business hours? Have you ever visited this person's home, or invited them over to yours?

Happy Holidays, indeed!



Photos: David Kann, NSRDEC Strategic Communications

# Improving Natick Upgrades made to front gate, auditorium

By John Harlow, USAG Natick Public Affairs/NATICK, Mass. (Nov. 16, 2016)

Leadership from across the [Natick Soldier Systems Center](#) cut the ceremonial ribbon to re-open Hunter Auditorium on Nov. 7.

The auditorium had been closed since a pipe burst in February and flooded the auditorium, causing severe damage.

The clean-up and renovations are complete, and Hunter Auditorium is back open for business.

“My first impression when I came to Natick about 13 months ago was this auditorium,” said Douglas Tamilito, director of the [Natick Soldier Research, Development and Engineering Center](#). “I was looking around and thought if this is what we have to offer, it is a pretty sad statement. This (auditorium) is just one effort to get to that next level. It takes a group effort if we are to get anything accomplished here at Natick.”

The renovation of the auditorium isn't the only thing happening at NSSC. The window replacement project has been ongoing for the past three years, and the renovations to the front gate to provide better

security for the installation and other projects across the installation are underway.

“We wanted to recognize the culmination of some of the work being done here over the past year,” said Lt. Col. Ryan Raymond, [USAG Natick](#) garrison commander. “We have a way forward, and we are trying to make this place better. Natick has been around since the mid-1950s, and there really is a compounded effect of neglected maintenance over the years, and we're going to try to attack that. We're not going to be able to do it alone. It will be a collaborative effort. I ask for your support, continued patience and confidence in the fact that we are going to make this a place that you are all proud to work at.”

There are several projects expected in the future. The S2PRINT facility, recreational area and military family housing are part of the plan.

“We have the potential to build new military family housing here,” said Brig. Gen. Thomas H. Todd III, NSSC senior commander. “It is projected to be in the fiscal year 2018 budget.”

Todd talked about his top two priorities as the NSSC senior commander.

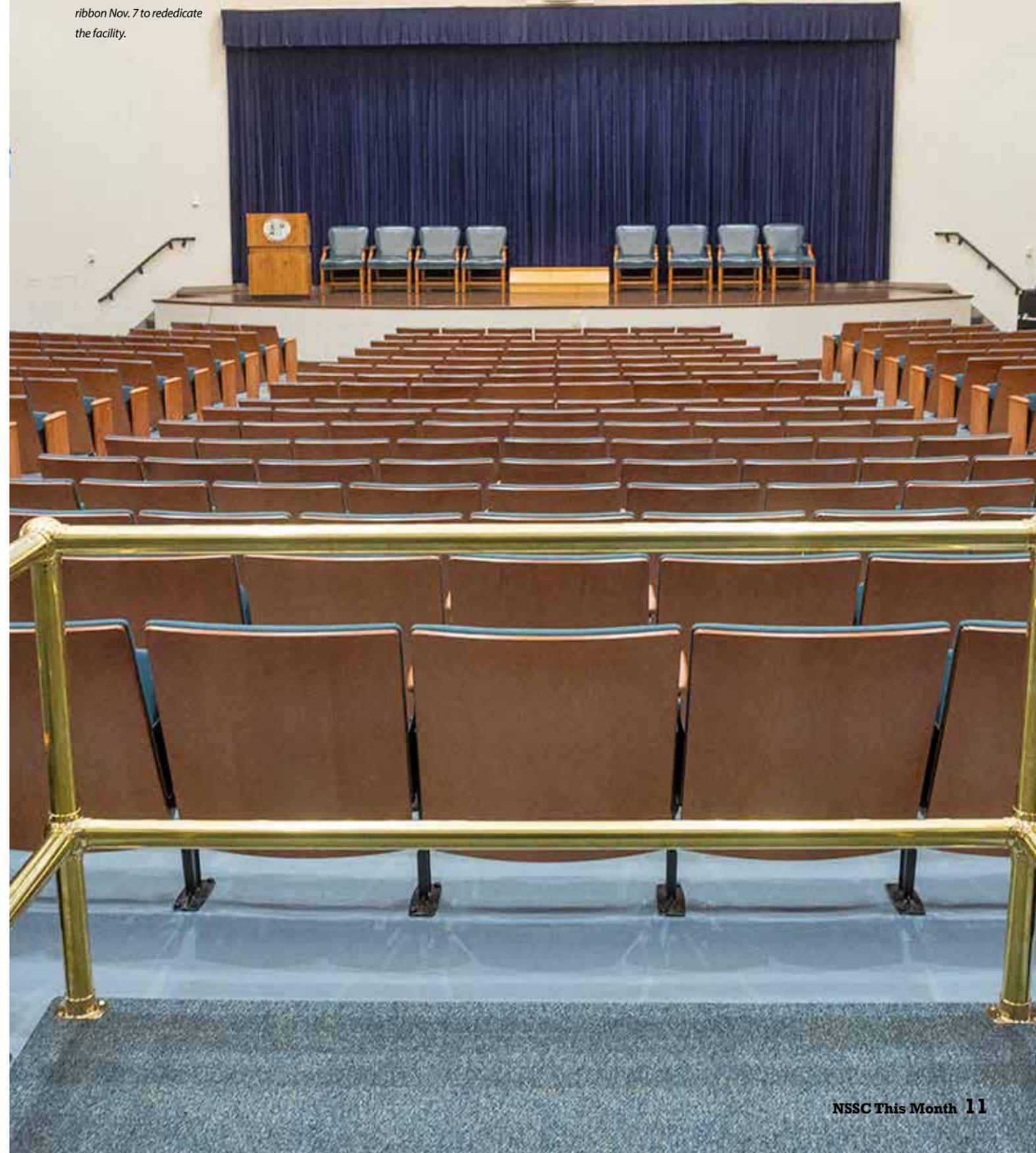
“My first priority is the safety of our workforce, both outside and inside the installation,” said Todd. “The new front gate is to keep our security guards out of the weather and make anyone thinking of threatening the installation think twice after seeing the new front gate.”

“The second priority I have is the quality of life for our workforce. I want you to want to work here. I want you to look forward to coming to work every day.”

Natick Family and Morale, Welfare and Recreation will be opening up a new hot coffee bar in the coming weeks.

“Please know this – we are working really hard to make a difference for you,” said Todd. “We are investing in you. In relative short order, you have some fantastic work (being) done around the installation. Floor by floor, slowly but surely, we'll get you where you need to be.”

Hunter Auditorium received nearly \$1 million in renovations. Opposite, Brig. Gen. Thomas H. Todd III cuts the ribbon Nov. 7 to rededicate the facility.





# Thin Air

## Helping Soldiers maintain weight, muscle mass at altitude

By Mallory Roussel, USARIEM Public Affairs/NATICK, Mass. (Nov. 21, 2016)

No one can work on an empty stomach.

It is old news that warfighters conducting combat operations in mountainous regions in Afghanistan can experience significant loss of weight and muscle mass. Yet, this loss may not entirely be due to a lack of food or high physical activity levels. Hypoxia, a condition that leads to [Acute Mountain Sickness](#), or AMS, could be playing a major role in muscle loss during high-altitude missions.

For the past 10 years, researchers from the [U.S. Army Research Institute of Environmental Medicine](#), or USARIEM, have con-

ducted a series of underfeeding studies in order to evaluate nutrition requirements needed for working in extreme environments. High altitude – greater than 11,500 feet – had been one of the puzzle pieces that USARIEM’s [Military Nutrition Division](#), or MND, had not yet explored until last summer.

MND researchers conducted a six-week underfeeding study with 17 test volunteers at the institute’s [Maher Memorial Altitude Laboratory](#), located 14,115 feet above sea level on the [Pikes Peak](#) summit in Colorado. According to Dr. Stefan Pasiakos, the study’s principal investigator, the purpose was to better understand nutrition requirements for high-altitude missions and to provide evidence

that can be used to optimize the combat ration – specifically, the [Modular Operational Ration Enhancement](#), or MORE, a food ration the U.S. Army Natick Soldier Research, Development and Engineering Center’s [Combat Feeding Directorate](#) developed to provide warfighters additional calories during strenuous high-altitude missions.

“The most consistent issue we see during operations is that warfighters are not eating enough, which causes a negative calorie balance and, ultimately, a loss of muscle mass,” Pasiakos said. “USARIEM researchers want to ensure that warfighters are consuming the right blend of macronutrients, particularly carbohydrates and protein, during periods of negative calorie balance to protect against muscle wasting, physical performance declines and cognitive deterioration – in this case, during high-altitude missions.”

Researchers executed a highly controlled diet and exercise intervention at the Pikes Peak lab. They assessed body composition, muscle protein and carbohydrate metabolism measurements, appetite, gut microbiome, exercise and cognitive performance at sea level, during and after 21 days of high-altitude exposure.

According to Pasiakos, this is not the first time researchers have studied the effects of hypoxia and underfeeding, but it is the first comprehensive and systematic approach to identify how hypoxia elicits muscle wasting and how a warfighter’s diet during high-altitude missions can either contribute to muscle loss or help protect warfighter muscle and performance.

What may explain the loss of body weight and muscle?

“Hypoxia diminishes the ability to deliver oxygen to the body, so metabolism ramps up because the body still needs the same amount of oxygen to function,” Pasiakos said. “Warfighters need to eat more to maintain body weight. But appetite is also suppressed. While these symptoms improve as warfighters acclimatize to high altitude, the higher amount of calories needed versus the lower amount of calories consumed is going to cause warfighters to lose weight. Warfighters’ abilities to maintain muscle mass, prevent injury and sustain physical and cognitive performance are at greater risk of being compromised.”

Volunteers ate either a standard-protein diet or a higher-protein diet consistent with recommendations for periods of high physical activity to see how well they maintained their muscle mass when losing weight. Researchers also fed volunteers either a multi-carbohydrate blended drink or a placebo to test how efficiently the volunteers burned carbohydrates during endurance exercise and how fast they were able to complete a two-mile run.

Pasiakos said that while the volunteers went through the stress of being underfed and performing high levels of physical activity, they were monitored by “research staff, with over 100 years of combined physiology research at high altitude.”

“The practical experience and can-do attitude of our staff enabled the team to tightly control physical activity and diet and execute complex experiments throughout this six-week study,” Pasiakos said.

For the price of underfeeding the test volunteers, warfighters could be better fed during future missions.

“The knowledge learned from this study will improve Soldier readiness by advancing our understanding of the nutritional requirements for warfighters working in extreme high-altitude environments,” Pasiakos said. “Recommending dietary changes to the ration composition is one method to help prevent

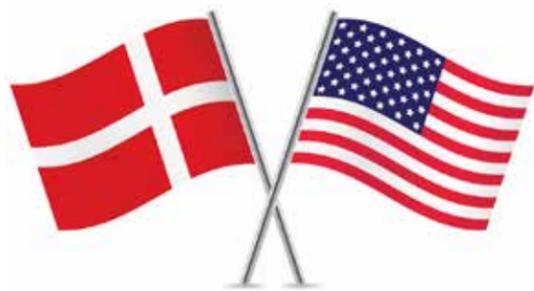
muscle loss and maintain physical and mental performance during high-altitude stress.”

Pasiakos said that researchers are currently “digesting the results.” He will share the study outcomes with the ration developer to optimize the dietary composition of future combat rations.

“Nutrition recommendations for athletic performance are available, but they do not necessarily apply or are practical for warfighters operating in environmental extremes, due to limited access to foods or mission constraints on eating,” Pasiakos said. “It is our job to define nutrition requirements and identify solutions specific to our warfighters under the multiple circumstances they operate in. This study is expected to advance our understanding of how to best feed warfighters during high-altitude missions.”



Photos: Staff Sgt. Todd Christopherson



# Food Innovation

## NSRDEC's Combat Feeding presents at Danish seminar

By Jeff Sisto, NSRDEC Public Affairs/NATICK, Mass. (Oct. 31, 2016)

The small country of [Denmark](#) is making big strides to spur innovation in food technologies that benefit the global marketplace – and Army research is helping.

The [Department of Defense Combat Feeding Directorate](#), part of the [U.S. Army's Natick Soldier Research, Development and Engineering Center](#), was invited to share its expertise in food technology research during a recent seminar hosted by the [Danish Ministry of Environment and Food](#) at the Intercontinental Hotel in Boston, Massachusetts, Sept. 30.

The seminar, "Drivers of Food Innovation in the U.S. and Denmark," was part of a larger Danish Royal visit to the U.S. that connected government, industry and business leaders from both countries, with the goal of strengthening Danish research in food technology and innovation for worldwide applications.

A Danish delegation of more than 60 people attended, including the Danish Crown Princess, the Minister for Environment and Food, representatives from the Danish Embassy, the Danish Agriculture and Food Council, and leaders from companies within the Danish food and agricultural sector. Personnel from NSRDEC, the Commonwealth of Massachusetts, and Boston-based technology companies attended for the U.S.



Photo: Jeff Sisto, NSRDEC Public Affairs

**"The companies that are here today reflect cutting-edge technologies and state-of-the-art solutions and services to all kinds of challenges and opportunities in the industry."**

Crown Princess Mary of Denmark

"The companies that are here today reflect cutting-edge technologies and state-of-the-art solutions and services to all kinds of challenges and opportunities in the industry," said [Crown Princess Mary of Denmark](#) during opening remarks.

"Sharing creates synergies and opens the door for new collaborations and in this case, collaborations across the Atlantic. Global consumers increasingly demand global solutions, and this requires global cooperation," she added.

Denmark's vision of enhancing food technology globally stems from its agricultural expertise, forged during centuries of successful farming that led to a vibrant, export-based economy and international recognition as Europe's number one country for food innovation.

"The Danish food and agricultural sector's commitment to producing safe food is widely recognized and has been achieved through cooperation between farmers, the food industry and authorities," said the Crown Princess. "The cornerstone of Danish agriculture and food innovation is to produce more with less."

Denmark's approach to efficiency aligned with the innovative research coming out of Natick and commercial technology companies in the region, making Boston an ideal location to initiate collaboration.

Opposite, [Jeremy Whitsitt](#), NSRDEC Combat Feeding Directorate deputy director, highlights CFD's advancements in military food technology during the "Drivers of Food Innovation in the U.S. and Denmark" seminar hosted Sept. 30 in Boston by the Danish Ministry of Environment and Food. Below, [Eryn Flynn](#), left, an education and outreach coordinator at CFD, presents a tabletop display of combat rations to, from second left to right, Minister for Environment and Food [Esben Lunde Larsen](#), Crown Princess [Mary of Denmark](#), and [Karen Haekkerup](#), CEO, Danish Agriculture & Food Council.

"I am immensely impressed by the many innovations and inventions from right here in Boston – all of which, over the decades, have created new eating and drinking possibilities; not only for the U.S. military, but also for millions of civilians – even in Europe and my home country of Denmark," said [Esben Lunde Larsen](#), Danish Minister of Environment and Food, whose department is responsible for research in the areas of environmental protection, farming, fisheries and food production.

[Larsen](#) praised CFD's ability to identify and solve problems while continually improving its products.

"What fascinates me is the fact that Natick also works actively to increase the quality of the Army's food," said [Larsen](#). "In my view, when it comes to food, our focus should not only be on what is technically possible. We also need to focus on making meals a healthy and joyous daily event – for Soldiers as well as for the rest of us."

"CFD's continuous product improvement process hinges on Soldiers liking the rations they are consuming, or else they won't eat them, resulting in decreased health and performance on the battlefield," said [Jeremy Whitsitt](#), CFD's deputy director and presenter for Natick. "We are committed to developing rations that are nutritionally optimized and that Soldiers want to eat."

[Whitsitt's](#) presentation highlighted current technology research areas such as food processing and preservation, performance nutrition, food safety, equipment and energy, and examples of technologies developed for military use that have influenced the commercial marketplace. CFD also provided a tabletop display and ration samples of innovative food technologies such as cold weather rations and paratrooper bars.

The presentation was well-received and follow-on discussions resulted in the identification of several potential areas for collaboration and bilateral synergy.

"I believe your research and experiments at Natick will continue to grow into many future benefits for the wider public," [Larsen](#) said.

Following the seminar, participants attended a reception at the Massachusetts State House with [Governor Charlie Baker](#) and the Crown Prince and Princess.



Photo: Jeff Sisto, NSRDEC Public Affairs

# Dry Yarn

New advancement in non-wetting fibers, fabrics at NSRDEC

By Jane Benson, NSRDEC Public Affairs/NATICK, Mass. (Nov. 16, 2016)

**Q**uoc Truong – a scientist at the [Natick Soldier Research, Development and Engineering Center](#), or NSRDEC – has a dry yarn to tell.

Truong invented a new architecture for super non-wetting fibers, which have channels with re-entrant features in the shape of repeating trapezoids, which represent the optimal shape to repel liquid. The new architecture will take super non-wetting fabrics to the next level.

The resultant fibers mean improved warfighter protection. Since liquid will not wet the fabric, the fibers will help to keep out chemical-biological and other threats, enhancing personal comfort and protection performance. The fibers also keep out oil, chemicals, dirt, and solid contaminants. Thus, the fabric doesn't need to be washed as often.

"I thought instead of having a surface feature that is on a flat surface, what if we make it in such a way that the fabric will now be based on the fibers that have a repeating feature all along the length of the fiber," said Truong. "I then talked to the MIT professors Bob Cohen and Gareth McKinley about it. I told them I wanted to create a bi-component fiber in such a way that one component is extractable and one is water soluble. So after extruding the bi-component fiber, we subject it to water and the water soluble component is dissolved away. We will then have a certain structure that is very similar to the structure on the flat surface that causes super non-wetting. The finer these re-entrant features become, the more the curvature of the fiber surface will resemble that of a flat



**"For example, just imagine if Michael Phelps swam in a swimsuit made of this fabric; he would swim even faster. Because the fabric doesn't get wet, the drag resistance in the water is very low. He would go through the water like a speeding bullet."**

Quoc Truong, NSRDEC

Truong and NSRDEC are collaborating with [Clemson University](#), [University of Massachusetts Lowell](#), [Massachusetts Institute of Technology](#), or MIT, and [Luna Innovations, Inc.](#), on the project.

"The new architecture is based on and builds upon an amazing discovery by MIT in 2007," said Truong. "When a surface is engineered to have certain trapezoidal shape nano features at a certain angle, where the contact angle of the contacting liquid is greater than the contact angle of the re-entrant trapezoidal shaped nano features, then the liquid will simply not wet the surface. So, at an incline, the contacting liquid will simply roll off the engineered surface."

MIT's findings gave Truong an innovative idea.

surface; hence, the fiber will behave similarly as that of the super non-wetting flat surface."

"The fibers may radically reduce or completely eliminate the need for hydrophobic and oleophobic surface chemistries as well as increase the lifetime of the repellent properties of fibers and fabrics due to their inherent geometrical properties as predicted by the modeling team at MIT," said Dr. Philip J. Brown, Materials Science and Engineering, Clemson University.

"On the surface of the fiber, we put the nanoparticles on top of the surface and inside the channels," said Truong. "This creates the fiber surface that doesn't allow liquid to wet. And, with nanoparticles that are also coated on the inner wall surface of the channels, the contacting liquid will not propagate, or wick, along the fiber's inverted trapezoidal shaped channels. This effectively eliminates the

Droplets of water rest on a re-entrant fiber-based knit fabric, which resists liquid.

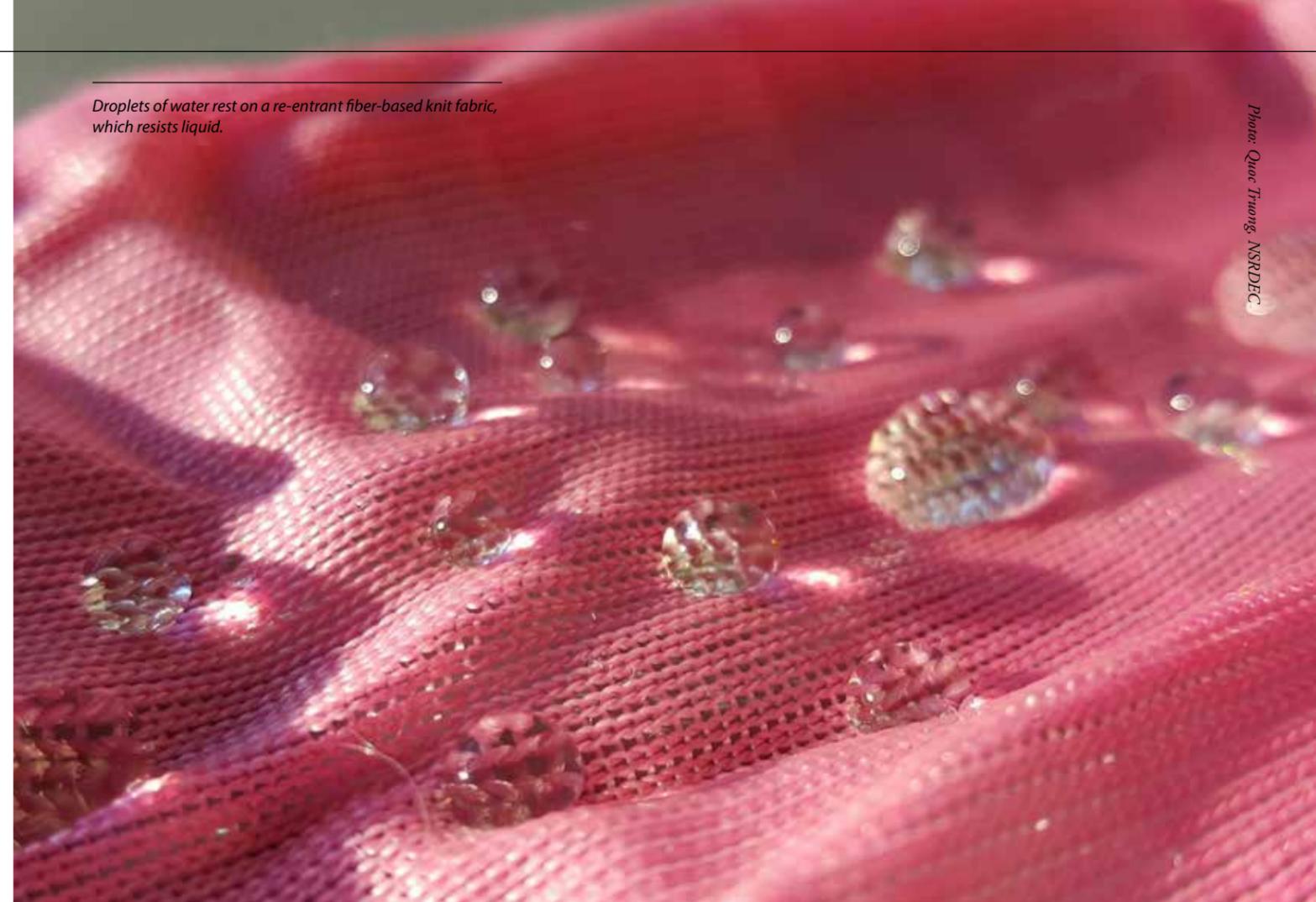


Photo: Quoc Truong, NSRDEC

"capillary effect," that is, the ability of a liquid to flow in narrow spaces without the assistance of external forces like gravity, along the tiny channels that surround the uniquely shaped fiber. When we combine these fibers and weave them into a fabric, that gives us another level of liquid repellency. So what I came up with was creating a special channel substructure around the fiber, and then putting the nanoparticles on top of the fiber and inside the channels. This introduces the fourth level of the re-entrant structure."

"Ideas and concepts like that can be turned into reality and can completely change an industry – and perhaps only come along once in a hundred years," said Brown.

"We are working to create the fiber re-entrant structure having a specific size and shape to make sure the resulting fabric is super non-wetting," said Truong.

Truong is currently working to eventually get the fibers incorporated into several warfighter uniforms, including uniforms for a tropical/jungle environment and chemical-biological protective clothing.

"The fiber will not allow chemical agents to wet the surface of the protective clothing," said Truong. "And since the agents don't wet the surface, they just roll off instead of permeating through and causing harm."

The non-wetting fibers will also be beneficial in cold environments.

"The fiber will help prevent frostbite because it is extremely dangerous to be wet in cold temperatures," said Truong.

The fibers have potential commercial applications.

"We have new reasons for creating multi-functional textiles because consumers have come to expect and appreciate improvements in comfort, fashion and functionality," said Brown.

The fibers could be used by commercial workers who handle chemicals, work in the rain, work in extreme cold, or even by athletes.

"For example, just imagine if [Michael Phelps](#) swam in a swimsuit made of this fabric; he would swim even faster," said Truong. "Because the fabric doesn't get wet, the drag resistance in the water is very low. He would go through the water like a speeding bullet."

At the end of the day, however, Truong is grateful for the chance to improve protection and quality of life for the Soldier.

"I feel very fortunate to have this opportunity to help the Soldier," said Truong. "That's all I ever wanted to do since I arrived here from Vietnam years ago. I have an opportunity to repay the kindness I was shown."

Zika virus is transmitted to people primarily through the bite of an infected *Aedes* species mosquito – *Aedes aegypti*, shown here, and *Aedes albopictus*.



Photo: James Gathany, CDC

# Zika Trial Begins

## Healthy adults vaccinated at Walter Reed

By Cheryl Pellerin, DoD News, Defense Media Activity/WASHINGTON (Nov. 9, 2016)

A clinical trial began here Nov. 7 at the [Walter Reed Army Institute of Research](#), where 75 participating healthy adults were vaccinated with a Zika virus vaccine that the institute's scientists developed earlier this year, Walter Reed officials announced.

The Phase 1 trial will test the safety and immunogenicity – the ability of the vaccine to trigger an immune response in the body – of the purified, inactivated Zika virus vaccine called ZPIV. The vaccine is being tested at WRAIR's Clinical Trial Center in Silver Spring, Maryland.

"The Army has moved efficiently from recognizing Zika virus as a threat, producing ZPIV for use in animals and demonstrating its effectiveness in mice and monkeys, producing ZPIV for human testing, and now initiating clinical trials to establish its safety and build the case for subsequent efficacy trials," Army Col. (Dr.) Nelson Michael, director of WRAIR's Military HIV Research Program, or MHRP, and Zika program co-lead, said in a statement.

Efficacy refers to the vaccine's ability to demonstrate a health effect when tested in a clinical trial.

"All of this," he added, "was done in 10 months."

Dr. Kayvon Modjarrad, Zika program co-lead and associate director for emerging infectious disease threats at WRAIR's MHRP, said the Army was able to move so quickly in developing, manufacturing and testing a Zika vaccine "because of its extensive experience with this vaccine platform and longstanding investments in the understanding and mitigation of flaviviruses like yellow fever, dating back to the founding of WRAIR."

### DOD ZIKA RESPONSE

WRAIR officials said this study is part of the [Defense Department](#) response to the ongoing Zika outbreak in North and South America and Southeast Asia.

**For service members, there are concerns about infection during deployment and travel, but also in the continental United States, where most military installations are concentrated in southern states. There, climate conditions and mosquito populations favor Zika transmission, WRAIR officials said.**

For service members, there are concerns about infection during deployment and travel, but also in the continental United States, where most military installations are concentrated in southern states. There, climate conditions and mosquito populations favor Zika transmission, WRAIR officials said.

As of Nov. 2, according to the [Centers for Disease Control and Prevention](#), 149 cases of Zika infection were confirmed in the military health system, including four pregnant service members and one pregnant family member.

Zika infection during pregnancy, the CDC says, can cause a birth defect of the brain called microcephaly and other severe fetal brain defects.

Other problems have been detected among fetuses and infants infected with Zika virus before birth, such as defects of the eye, hearing deficits and impaired growth. And reports have increased about Guillain-Barré syndrome, an uncommon sickness of the nervous system, in areas affected by Zika, CDC said.

But even Zika infections without symptoms "can lead to severe birth defects and neurological complications," Zika study principal investigator Army Maj. (Dr.) Leyi Lin said, adding, "A safe and effective Zika vaccine that prevents infection in those at risk is a global public-health priority."

### ZIKA AND OTHER FLAVIVIRUSES

Zika virus is transmitted to people primarily through the bite of an infected *Aedes* species mosquito – *Aedes aegypti*, shown here, and *Aedes albopictus*.

Flaviviruses like Zika are found mainly in mosquitoes and ticks and cause widespread morbidity and mortality worldwide. Other mosquito-transmitted viruses that are members of the flavivirus genus include yellow fever, or YF, dengue fever, Japanese encephalitis, or JE, and West Nile viruses, according to the CDC web page.

"We want to assess the safety and immune response of the ZPIV vaccine in JE and yellow fever YF vaccine recipients because these vaccines may alter the response to the ZPIV vaccine," Lin said.

"Uniquely," he added, "illness as a result of natural infection from JE, YF or Zika could be more severe when prior flavivirus infection or vaccination exists. Our study assesses co-vaccination to learn how to reduce risk when protecting against circulating flaviviruses."

This is important for service members who are vaccinated against other flaviviruses and then stationed in or deployed to areas where Zika is becoming endemic, WRAIR scientists said.

### ZIKA VACCINE PLATFORM

WRAIR's inactivated flavivirus vaccine platform was the same technology the institute used in its Japanese encephalitis vaccine, licensed in 2009.

An earlier preclinical study found that rhesus monkeys vaccinated with ZPIV developed a strong immune response and were protected against two strains of Zika virus.

The [National Institute of Allergy and Infectious Diseases](#), or NIAID, part of the [National Institutes of Health](#), helped identify the viral strain used in the ZPIV vaccine, supported the preclinical safety testing and is sponsoring the conduct of this trial.

WRAIR, NIAID and the [Department of Health and Human Services' Biomedical Advanced Research and Development Authority](#), or BARDA, have established a joint research collaboration agreement to support the vaccine's development.

The Pilot Bioproduction Facility at WRAIR manufactured the ZPIV vaccine being used in Phase 1 clinical studies, and the Army recently signed a cooperative research and development agreement to transfer the ZPIV technology to Sanofi Pasteur to explore larger-scale manufacturing and advanced development. BARDA recently awarded a six-year contract to Sanofi Pasteur to further develop this vaccine to licensure, according to the WRAIR release.

### OTHER ZPIV TRIALS

WRAIR's ZPIV candidate also will soon be part of an NIH trial that began in August. The NIH vaccine contains DNA that instructs volunteers' cells to make certain Zika proteins that then illicit an immune response. As part of that study, WRAIR's ZPIV vaccine will be given to volunteers as a booster after they receive the NIH DNA vaccine.

Three more Phase 1 trials using ZPIV are scheduled to begin this year:

– St. Louis University researchers, through the NIAID-funded Vaccine and Treatment Evaluation Units network, will examine the optimal dose of the vaccine to be used in larger studies.

– Beth Israel Deaconess Medical Center and Harvard Medical School researchers will evaluate the safety and immune response from a compressed vaccine schedule.

– The Ambulatory Center for Medical Research, part of Ponce Health Sciences University in Puerto Rico, will examine the vaccine's safety and immune response in participants who have already been naturally exposed to Zika or dengue viruses.

The WRAIR trial that began this month is sponsored by NIAID and funded by the Army and the Defense Department.

# Pearl Harbor

75th Anniversary

December 7, 2016

