

The R&T Connection Newsletter

A Publication for the Research and Technology Directorate

Fall 2011

IN THIS ISSUE

- A Legend Retires... page 2
- ECBC Scientist Leads Discussion at Science Cafe... page 3
- Pilot Program Leads Way in Detecting HME Chemicals... page 4
- Raman Chemical Imaging Detects Explosives in Fingerprints... page 5
- BSL-3 Lab Staff Recognized for 10 Years of Safe Operations... page 6
- Dining With Doctors: Perspectives on the Movie *Contagion*... page 7
- National Research Council Conducts Staff Visit to Review Postdoc Program... page 11
- R&T Directorate Staff Recognized for Length of Service Awards and Patents... page 12
- Combined Federal Campaign... page 13
- Upcoming S&T Conferences/Meetings... page 13

Connect to the Center Through Social Media

-  Become a fan of ECBC on Facebook at: <http://www.facebook.com/EdgewoodChemBioCenter>
-  Follow ECBC on Twitter at: <http://twitter.com/EdgewoodChemBio>
-  View videos of ECBC on YouTube at: <http://www.youtube.com/edgewoodchembio>
-  View photos of ECBC on Flickr at: <http://www.flickr.com/photos/edgewoodchembiocenter>

R&T Connection

Have an item for the **R&T Connection**? Whether it's a technical accomplishment, an upcoming speech, an employee award or any other news story, please share it with R&T Communications Officer Mia Scharper at mia.d.scharper.ctr@mail.mil or 410.436.2262.

Message from the Director

Did you know that the U.S. Army Edgewood Chemical Biological Center (ECBC) has a Board of Directors (BoD)? Permanent members of the ECBC BoD are representatives from the following organizations: Joint Requirements Office; Joint Science and Technology Office for Chemical and Biological Defense; Joint Program Executive Office for Chemical and Biological Defense; U.S. Army Chemical Materials Agency; and the ECBC Technical Director's Office. The BoD first met on Oct. 28, 2011, and will meet annually or more often if deemed necessary. As you know, customer care is one of our three strategic goals. Inviting our customers to participate in our strategic planning – as well as to gain insight into our core competencies, funding and resources – is not only being collaborative but also makes smart business sense. The direct, two-way dialogue with our customers will help move the Center into the future and ensure that we stay focused on supporting our warfighters.



Return from Iraq

Chemical Engineer Teddy Damour returned in late August from a six-month assignment in Iraq as a civilian science and technology adviser. Damour coordinated with soldiers and agencies in theater to identify and find solutions to any technology gaps throughout the operational area.

"For example, if there was an issue with a military vehicle's power supply," Damour said, "we would go back and talk to the ECBC and RDECOM labs to determine how we could supplement the power in the vehicle to be used at full capacity during night missions."



Teddy Damour visited with personnel from the Fighting Geese at Joint Base Balad. One of the Unmanned Aerial Systems (UAS) that the Fighting Geese use on their mission is the Shadow UAS for reconnaissance missions in Eastern Iraq.

This visit to Iraq was the first for Damour. "It is something that most scientists and engineers might not always have the opportunity to see – the end result of their hard work, directly supporting and increasing the efficiency of the warfighters' missions," he said.

"I can now read Arabic and write the alphabet. I've tasted the food and interacted with Iraqis, allowing me to gain an added perspective on the work ECBC is doing," Damour said. "I would definitely go back if the opportunity presented itself again."

Damour will discuss his experiences in a brownbag lunch open to the ECBC workforce. The brownbag is currently scheduled for Nov. 29 at noon in the Berger Auditorium.



APPROVED FOR PUBLIC RELEASE



The R&T Connection Newsletter

A Publication for the Research and Technology Directorate

Fall 2011

A Legend Retires...

Sandra Thomson, Ph.D., chief of the U.S. Army Edgewood Chemical Biological Center's (ECBC) Toxicology and Obscurants Division, retired on Sept. 30 after 32 years of service.

The Research and Technology Directorate recognized Thomson's contributions during a celebration held in her honor. "Sandi asked that we not hold any events for her," said Steve Lawhorne, R&T deputy director. "But we had to ignore this request."

Lawhorne presented Thomson with awards and letters, including a star note from MG Nick Justice, commanding general of the U.S. Army Research, Development and Engineering Command, a Commander's Award and a Certificate of Retirement.

"She managed complex programs with highly hazardous materials, led a culture of safety in the workplace, and delivered the data needed to protect our soldiers and fellow workers. We've always looked at Sandi as the beacon for our safety program," said Lawhorne.

"I was fortunate to work with Sandi on a project early on," said Wienand. "Early as a young lieutenant, I learned to lead, follow or get out of the way. When I worked with Sandi, most of the time I did the latter two of those. When it's about safety for employees or soldiers, she's going to lead. She would fight for her team, for safety, for the workers in the lab, and for the soldiers. Thank you, Sandi, for your leadership here and all the people who are safer because of you."



ECBC Technical Director Joseph Wienand presents Sandra Thomson, Ph.D., with a historical photo collage during her retirement ceremony. Thomson retired on Sept. 30 after 32 years of service.

Wienand presented Thomson with an ECBC coin and a historical photo collage.

"The most important thing to me is to take care of the people – they are like family. That goes hand in hand with safety. You can't have a productive workplace without safety. It's important to speak truth to power," Thomson said.

"We hope you will remember us. We will certainly remember you for the many, many good things you've done here," said Lawhorne.

Below: Sandra Thomson, Ph.D., poses with members of the Toxicology and Obscurants Division during a celebration held in her honor.



APPROVED FOR PUBLIC RELEASE



The R&T Connection Newsletter

A Publication for the Research and Technology Directorate

Fall 2011

ECBC Scientist Leads Discussion at Science Café

Peter Emanuel, Ph.D., chief of the U.S. Army Edgewood Chemical Biological Center's (ECBC) BioSciences division, led an open discussion at a Science Café event on Oct. 11 at Harford Day School in Bel Air, Md.

Casner, NMTC executive director. "We are fortunate to have such an articulate, engaging expert as Dr. Emanuel to help us do that. His evening's topic, *Contagion: Fact and Fear*, is of great concern as the flu season comes 'knocking' and was reassuringly



Peter Emanuel, Ph.D., presents *Contagion: Fact and Fear* during a recent Science Café.

Emanuel described how science and policy shaped the nation's response to the global flu pandemic of 2009 – 2010. The H1N1 flu pandemic was used as an example of how science and policy are intertwined, and how complexities were created by budgets and international policy.

As the former assistant director for chemical and biological countermeasures, Office of Science and Technology Policy in the Executive Office of the White House, Emanuel shared stories of his tenure at the White House helping form U.S. policies and decisions about the flu and flu vaccine dissemination.

The Science Café events are hosted by the Northeastern Maryland Technology Council and are a way for the general public to hear scientists talk about their work in a relaxed, fun and informative setting. The events are free and offered monthly from September through June at public venues in Harford and Cecil counties.

"The NMTC Science Café seeks to have our community learn about science and its influence on our everyday life," said John

explained. We were all highly entertained as he punctuated his talk with his interesting experiences working in the glow of the White House. The audience, captivated for the entire hour as time flew by, included Dr. Emanuel's former mentor, also from ECBC, Dr. Harry Salem. The informal conversation afterwards saw both Dr. Emanuel and Dr. Salem staying to answer the many good questions that evening's discussion encouraged."

"Hearing first-hand how scientists, analysts and policy leaders reached the decisions they did regarding developing a separate H1N1 vaccine during the 2009-2010 global flu epidemic was eye-opening and, in spite of all the uncertainties inherent in such an event, reassuring," said Nina Lamba, Ph.D., president and chief scientist of CCL Biomedical, Inc., and chair of the NMTC's Science Café committee.

NMTC is Maryland's fast growing technology association with over 140 members and supporters providing member access to technology, industry, academic and government leaders in Pennsylvania, Delaware, Northeastern Maryland, the Greater Baltimore area and beyond.



APPROVED FOR PUBLIC RELEASE



The R&T Connection Newsletter

A Publication for the Research and Technology Directorate

Fall 2011

Pilot Program Leads Way in Detecting HME Chemicals

Story by Amy Newcomb, GUIDON staff



The Fort Leonard Wood, Mo., Maneuver Support Center of Excellence has implemented a pilot program that will train soldiers, regardless of their military occupational specialty, to use a colorimetric homemade explosive detector to determine if unknown substances are precursors for the production of homemade explosives.

John Fuller, Fort Leonard Wood Capabilities Directorate Integration Division/Requirement Determining Division capabilities developer, said the military is looking for ways to prevent soldier deaths on the battlefield, with the ultimate goal of keeping these materials out of the hands of terrorists.

"One train of thought is that if we can catch the guys that mix this stuff before it becomes explosive residue, we are ahead of the ballgame," Fuller said.

Six soldiers – two from 3rd Chemical Brigade, two from 84th Chemical Battalion and two from 35th Engineer Battalion – were trained, tested and assessed on June 27-29.

Sgt. 1st Class Floyd Bennett, Company A, 84th Chem. Bn., said he thought the prototype kit produced timely results as well as being user-friendly.

"The process itself is very simple; it's very easy to use, and it doesn't take a lot of time to learn — it can be taught in about 10 minutes and after a few times you could be very proficient using it," Bennett said. "I think the detector has very good potential as far as being used by units that are deployed where homemade explosives are being used. I think it will help small unit leaders verify whether or not they may have homemade explosives."

The kit has two halves designed to fold together and snap into place. Each half has four compartments. On one half, in each of the four compartments are two capsules, which are backed by a substance that is sticky. On the other half, there is a special paper that changes colors indicating whether a substance is safe or dangerous.

The kit would be used if a soldier came across a suspicious substance. The soldier would place the collection side of the kit on the substance where it would stick, crush the capsules in the compartment so the detection liquids came in contact with the unknown substance, fold the two halves together, wait 30 seconds and then turn the kit over to see if the paper changed colors.

"Every soldier can use the kit, and that's just the first layer of response, whether they are on checkpoints, patrol or reconnaissance," Fuller said. "The bottom line is – from the Secretary of the Army – you gotta figure out a way to defeat these IEDs."

Jim Genovese, U.S. Army Edgewood Chemical Biological Center team leader, is part of a team that was tasked by the U.S. Army Research, Development and Engineering Command to generate ideas for developing technology to identify the precursor chemicals used to make HME devices.

"This came down as a requirement because of all the IED occurrences in both Afghanistan and Iraq," Genovese said.

The military already developed and implemented a chemical warfare agent detection kit called the M256A2 Detector kit. Every skill level 2 soldier is trained to use the M256A Detector Kit. Genovese and his team were tasked with using this kit as a basis for developing the HME detector.

"The new kit will be out in the field probably right next to the M256A2, so the soldier will have chemical warfare capability as well as homemade explosive detection capability," Genovese said.

"The advantage of this program is immediate response. You can get a response in 30 seconds; that's very, very good," Genovese said.

(Editor's note: Joan Lenahan-Bernard, CDID/RDD operations support assistant, contributed to this article.)

This development effort is under the Army Technology Objective "Detection of Unknown Explosives," which is managed by R&T. R&T provided the funds and direction for the effort.



APPROVED FOR PUBLIC RELEASE



The R&T Connection Newsletter

A Publication for the Research and Technology Directorate

Fall 2011

ECBC's Raman Chemical Imaging Detects Explosives in Fingerprints

As improvised explosive device (IED) attacks continue at home and abroad, linking trace evidence, such as explosive residues and other bomb-making materials, to a perpetrator has become increasingly important. U.S. Army Edgewood Chemical Biological Center (ECBC) scientists are developing the tools that enable simultaneous collection of chemical forensic information and biometric data, which could be the one-two punch that brings terrorists to justice before they can attack again.

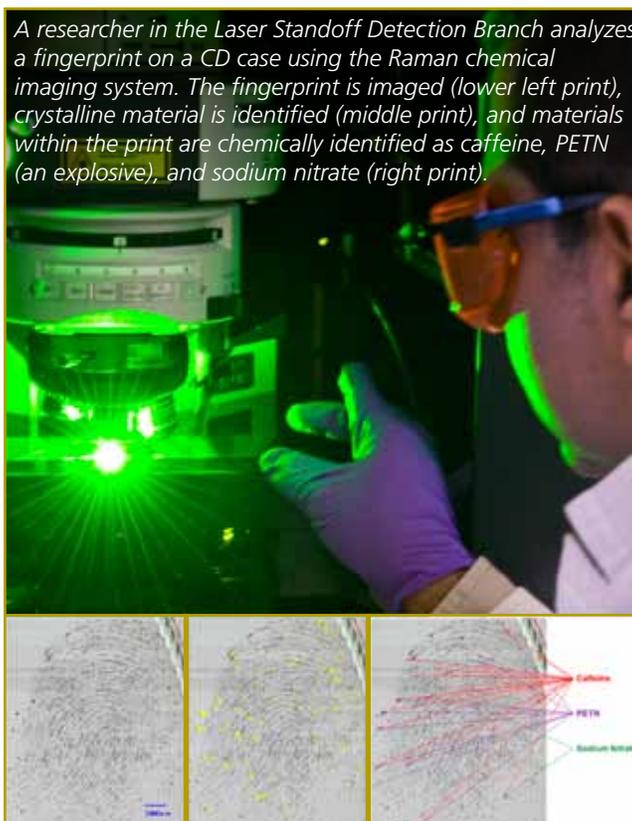
Jason Guicheteau, Ph.D., and his team in the Laser Standoff Detection Branch within the Research and Technology (R&T) Directorate is using a detection technique called wide-field Raman chemical imaging (RCI) to detect and identify the presence of trace explosives in contaminated fingerprints on surfaces, such as plastics and painted metals.

Because this technique is non-destructive, requires no sample preparation, and gives a high degree of chemical specificity, explosive materials can be identified without compromising the fingerprint sample for further biometric analysis. If visual images of the fingerprint can also be obtained without modifying the sample, then identification of the person who handled the explosive could also be obtained non-destructively.

"We've used RCI to analyze fingerprints on five types of samples, including compact disks (CDs), plastic CD cases, and painted car door panels. So far, there is not a surface that we cannot analyze with our method," Guicheteau said. "We've been able to accurately discriminate 25 different explosive materials from these surfaces, including RDX, PETN, HMX, and ammonium nitrate, a material commonly used in the construction of IEDs."

To perform RCI for the identification of explosives in fingerprints, a complete fingerprint montage image is constructed by obtaining a series of magnified images of the fingerprint on

A researcher in the Laser Standoff Detection Branch analyzes a fingerprint on a CD case using the Raman chemical imaging system. The fingerprint is imaged (lower left print), crystalline material is identified (middle print), and materials within the print are chemically identified as caffeine, PETN (an explosive), and sodium nitrate (right print).



the investigated surface. From this montage, regions suspected of containing explosive crystals are identified by an automated program simply looking for contrasting visual indications of crystals. A laser is then used to optically excite the identified areas of interest in the fingerprint, resulting in a Raman spectrum. The spectrum is processed to remove interfering background spectral information and compared to a library database of approximately 25 explosive materials of interest. RCI requires no additional processing of the fingerprint, such as sampling with a piece of tape or with dusting with powder, which significantly reduces sample contamination and damage to the print, preserving valuable biometric data.

Recently, fingerprints generated by RCI were submitted to the U.S. Army Criminal Investigation

Laboratory (USACIL) and run through the automated fingerprint identification system (AFIS). The high quality of the RCI fingerprints enabled researchers to search AFIS's 771,000 print database and confirm the fingerprints as matches to real people, proving that RCI can be used to produce accurate biometric information for forensic attribution. This recently patented method demonstrates the ability to non-destructively identify explosives on fingerprints present on commonly found surfaces such that the fingerprint remains intact for further biometric analysis.

Through continued engagement with USACIL, the team plans to expand the applications of RCI to detect and identify illegal drugs and gun-shot residue from fingerprints. "Ultimately, we will need to develop a custom RCI system that will enable us to fully automate the process, for faster analysis and higher throughput. We envision this will lead to greater forensic capabilities across numerous investigative branches," Guicheteau said.



The R&T Connection Newsletter

A Publication for the Research and Technology Directorate

Fall 2011

BSL-3 Lab Staff Recognized for 10 Years of Safe Operations

The U.S. Army Edgewood Chemical Biological Center (ECBC) celebrated the 10th anniversary of its Biosafety Level 3 (BSL-3) laboratory on Oct. 5.

The laboratory opened on Sept. 5, 2001, a week prior to the Sept. 11 attacks on the United States. During this time, ECBC was called upon to support the subsequent reaction to the anthrax-laced letters scare by researching various methods of monitoring and detection for biological and/or chemical-laced mail.

“Not only have we had many accomplishments, but we have done it with precise accountability under our surety regime. I’m very proud of all our folks involved with the BSL-3. They are true professionals and set the gold standard,” stated Joseph Corriveau, Ph.D., director of the Research and Technology Directorate, during the ceremony.

Speakers at the ceremony included Raymond MacKay, Ph.D., former Research and Technology director; James L. Rogers, Ph.D., former BSL-3 manager; Harry Salem, Ph.D., chief scientist for Life Sciences; Peter Emanuel, Ph.D., chief of the BioSciences Division; and Mary Wade, Ph.D., BioDefense branch chief. Also saying a few words of congratulations were Corriveau and Brig. Gen. John J. McGuiness, Natick Soldier Systems Center Commander.

“The BSL-3 has been an integral part of our organization, and I want to congratulate everyone involved,” said MacKay.

“I’m very proud that you’ve been safely operational for 10 years, and I hope that you have at least 10 more years operating in the same manner,” Rogers said.

Salem recounted a few highlights from his experience serving as the acting senior team leader of BioSciences. “It was my honor to serve the BioSciences Division during two periods of time. I really fell in love with all the team. It was an enjoyable learning experience.”

A high-containment biological facility, the BSL-3 laboratory has state-of-the-art capabilities in the areas of isolation, identification, preparation, characterization and testing of highly pathogenic bacterial, viral and fungal microorganisms.

Within the laboratory, ECBC’s scientists process a wide variety of research projects involving pathogenic organisms and their simulants in support of military and civilian agencies. These operations both enhance military biological capabilities and support the research and development needs of private industry.



Posing after the anniversary ceremony are, from left, Joseph Corriveau, Ph.D., Research and Technology director; Joseph Wienand, ECBC technical director; Mary Wade, Ph.D., chief of the BioDefense Branch; Harry Salem, Ph.D., ECBC chief scientist for life sciences; and Brig. Gen. John J. McGuiness, Natick Soldier Systems Center Commander.

“We have for 10 years safely and securely done a lot to contribute to the warfighter, but we have also had fun,” said Wade. On that note, Wade presented tongue-in-cheek Golden PAPR Awards. A PAPR – Powered Air Purifying Respirator System – is the device that scientists wear to protect against breathing contaminated air.

And the winners are . . .

Founding Father: Jose-Luis Sagripanti, Ph.D., for his work in setting up the BSL-3 lab 10 years ago.

Best Interior Decorator: Peter Emanuel, Ph.D., for his immaculate sense of style.

Longest Running Program: Harry Salem, Ph.D., for his work with the Environmental Protection Agency test that has been ongoing since 2005.

Best Actor: Joseph Insalaco for his realistic portrayal of a terrorist during a training exercise.



The R&T Connection Newsletter

A Publication for the Research and Technology Directorate

Fall 2011

Dining With Doctors: Perspectives on the Movie *Contagion*

Four ECBC microbiologists gathered after hours recently to view *Contagion* and offer their perspectives on the film's portrayal of a lethal, fictional pandemic. The *R&T Connection* was invited to listen in on the discussion. **Spoiler Alert:** If you're intending to watch the movie, you may want to delay reading this discussion.



Participants included Peter Emanuel, Ph.D., BioSciences division chief; Mary Wade, Ph.D., BioDefense branch chief; Calvin Chue, Ph.D.; and Jennifer Sekowski, Ph.D.

Emanuel: To start, it struck me that the film *Contagion* was drawing on events from the 2009/2010 H1N1 pandemic. I remember being at the White House Office of Science & Technology Policy when the president's Science Advisor was called over to help determine our path forward. It started in April and by summer we were meeting daily - sometimes late into the night. The government spent a lot of money on a vaccine, closed schools, and the public health officials did a lot of messaging about social distancing and vaccine safety. When the vaccine took longer than promised to manufacture and the H1N1 turned out to be less deadly than expected, the public perception was that the federal government had wasted money. This movie showed what could have happened if the H1N1 virus had been as deadly as it appeared in April 2009. Back in April, all we knew was that it was spreading fast in Mexico and we learned soon after that it was targeting young people.

Sekowski: Typically, flu infects people that are over 65 years of age. Young people tend to be the least demographically infected. The last time that happened was in 1918 with the Spanish flu pandemic. That killed somewhere between 50 and 100 million people.

Emanuel: Yes, I liked that scene where Kate Winslet talks about the infectivity calculation. I remember we were desperate to get data to accurately calculate that value. WHO [World Health Organization] and CDC [Centers for Disease Control] had little data from Mexico early on and we knew later about the preference for young people. Then there was an outbreak at a grade school in New York City and that created a high emotional tempo. In the real world, these events slowly roll out over weeks, but in a movie the director paces them so months can pass in a matter of minutes. It's easy to play Monday night quarterback but, had we waited until a few months into the spread of H1N1, and the virus had proved deadly, that hesitation would have been a disaster.

Wade: In the movie, Dr. Ellis Cheever from the Centers for Disease Control and Prevention [played by Laurence Fishburne] stated that he would rather be overprotective than make a mistake and risk the lives of millions of people.

Emanuel: Yes, I was so glad that he said that. That's what HHS [Health and Human Services] Secretary Sebelius said as well. The media tends to want to over-sensationalize perceived missteps of the government, but we felt with H1N1 that we needed to take extreme care and prepare for the worst.

Wade: One thing that I thought was inaccurate about the movie is that researchers seemed to be working alone whereas we would be working in teams. Dr. Cheever and the epidemiologist, for example, were working alone rather than with a partner in the labs.

Sekowski: Yes, the labs were very quiet. There was one post-doc and one PI [principal investigator].

Chue: A real CDC lab could have 60 people.

Emanuel: Yes, they showed the character Ian Sussman working alone when he disobeyed CDC orders to destroy his samples. He sent the other scientist home and worked alone on the infected samples. Hollywood makes that kind of reckless behavior okay because Sussman solved the problem. But what if he hadn't solved the problem?

continued on page 8



The R&T Connection Newsletter

A Publication for the Research and Technology Directorate

Fall 2011

continued from page 7

Perspectives on the Movie *Contagion*

Sekowski: He could have infected himself.

Emanuel: He was working in the middle of New York City –

Sekowski: – which wasn't infected at the time –

Wade: – in a university lab, all alone, in the middle of the night, with a virus that had no known cure and high infectivity. From a security perspective, it was disturbing that Hollywood trivialized that as scientific bravado. That's both a safety and security violation.

Emanuel: It's interesting that in the end only the Laurence Fishburne character is punished with a congressional inquiry [for warning his wife], while others who significantly violated rules were given a pass. It's also interesting that Hollywood tends to portray government scientists as either lone wolfs or dunderheads, but that's a whole different conversation.

Wade: Speaking of characters who broke the rules, was the assumption that the vaccine clinical trial in humans occurs when CDC scientist Dr. Ally Hextall secretly injects herself with the live virus, then tests herself by visiting her father, who is severely ill with the virus?

Sekowski: Yes, and the film glosses over that a bit. She visits her father, doesn't get ill, and assumes that the vaccine is effective.

Emanuel: Yes, she injects herself with one dose, waits just a couple hours to let the vaccine take effect, catches an episode of *Dancing with the Stars*, and then goes to kiss her sick dad. That must have been some adjuvant [an agent included in vaccines to boost the immune system]. Okay, I'm joking. But the timeframe was very compressed and this is not a realistic scene.

Chue: Well, the Jude Law character does get in trouble too, but it was for insider trading, right? I think Jude Law [who plays a freelance blogger who falsely claims to have discovered a homeopathic cure] was supposed to epitomize the counter culture who distrusts the government and science. A big part of that is the lack of scientific knowledge. If you don't understand something, you distrust it.

Sekowski: This is how conspiracy theories start.

Emanuel: In terms of realism, I believe the labs and the lobby were actually shot at the CDC. However, most of the office shots were from a different location. You can tell that because the skyline was different from what you would see at the CDC. You would see Emory University.

Chue: The movie is fairly realistic in part because of Dr. Ian Lipkin, the Columbia University Mailman School of Public Health infectious disease expert who served as the movie's technical adviser, and Stuart Nichol, chief of the Viral Special Pathogens Branch of the Centers for Disease Control and Prevention, who also served as a consultant for the film.

Emanuel: The Obama administration wrote two reports on H1N1 that made a series of recommendations. Those recommendations were addressed in the movie. One was the ability to more rapidly isolate the seed stock.



Jennifer Ehle as Dr. Ally Hextall. (Photo courtesy of Warner Bros. Pictures)

Sekowski: You know, I was impressed that the movie addressed the fact that they were having difficulty growing and isolating the virus. That was a detail that I didn't expect the film makers to pick up.

continued on page 9



APPROVED FOR PUBLIC RELEASE



The R&T Connection Newsletter

A Publication for the Research and Technology Directorate

Fall 2011

continued from page 8

Perspectives on the Movie *Contagion*

Emanuel: The second recommendation was the need to rapidly manufacture the vaccine. There is a massive initiative currently called the MCFI [medical countermeasures initiative] to build a rapid, flexible and agile capability to make vaccines in a fraction of the time we currently need. Without getting into too many details, I was glad the film recognized these two recommendations: to rapidly isolate seed stock and make vaccines.

Sekowski: They also looked at the need to set up PODs [points of distribution] to vaccinate hundreds of millions of people. The birthday lottery idea was very accurate. The big ethical issue that emerged with H1N1 was who gets the vaccine first? Who are the prioritized groups? The film didn't gloss over this issue, unlike in the film *Outbreak*, in which everyone magically is vaccinated and survives. In *Contagion*, Gwyneth Paltrow and Kate Winslet end up in body bags. [Paltrow plays Beth Emhoff, the person who spreads the disease from Hong Kong to Chicago and back home to Minneapolis. Winslet plays Dr. Erin Mears, a CDC epidemic intelligence service officer.]

Chue: *Outbreak* was the feel-good version.

Wade: Another element that seems unrealistic is shown in the end scenes when we see that an infected bat that drops a piece of fruit activates the spread of this virus, which they termed MEV-1. That happened too quickly.

Emanuel: I think they were just trying to demonstrate how a pandemic might start.

Sekowski: It was an artistic interpretation of recombination, which does not happen in 30 seconds. Bat eats fruit, pig eats fruit, boom... *Contagion*!

Emanuel: The movie assumes that we have a scientific capability to rapidly characterize a new pathogen, identify therapeutic targets, and translate that into an effective countermeasure in one fluid pipeline. The fact is that this capability is still in its infancy. Because Hollywood required the concept to complete their story line, they portrayed it as a robust capability. We really don't have a diagnostic pipeline like this – we have the beginnings of that, but it's being impacted by programmatic cuts.

Chue: An example of the ultimate failure of the system is HIV. It's not super infectious. Scientists all thought that if



we throw enough money at it, we'll cure it. But here it is 30 years later, and we haven't developed a cure. It's still at the basic research step, we don't have a workable vaccine, and we still don't really understand the virus. Nature doesn't necessarily cooperate with us.

Emanuel: Mary [Wade], you're in charge of a rapid characterization pipeline and you really work with Dr. Ian Sussman (Dr. Ian Lipkin in real life). You might be called upon in a situation like this. You built this capability and at the very moment that you were about to become operational, your budget was reduced 50 percent and you had to let people go. How do you build this intellectual capability with shifting funding?

Sekowski: That's a good point. You can't just invent experts when you need them. You need to build the capability, build the expertise, be a well-oiled machine well before a pandemic would occur. It's expensive, but a rapid response capability is worth the money.

Wade: You can't make this capability on demand. On another note, I'm not sure that the movie really addressed the role of the local hospitals and local health departments. They would generally be involved first before the CDC. The response in general was minimized – from the local response to the number of people in the lab.

Chue: Supportive care is another issue. It's odd that the nursing staff would unexpectedly be on strike and stay on strike during a major crisis.

continued on page 10



APPROVED FOR PUBLIC RELEASE



The R&T Connection Newsletter

A Publication for the Research and Technology Directorate

Fall 2011

continued from page 9

Perspectives on the Movie *Contagion*

Sekowski: The mortality rate in *Contagion* was 25% at its worst, so supportive care was obviously effective, but the movie made it appear as though everyone were dying.

Emanuel: The number of respirators in this country is really limited, as is our ability to conduct massive supportive care. If large numbers of people were to get sick, the quality of care would drop dramatically, except for the very wealthy. That part was realistic.

Chue: There are ways we could mitigate that, such as by having a surge capacity, training additional personnel and identifying pre-equipped sites like convention centers and stadiums to be available to hold beds. Volunteers could help set everything up. We have some sites identified on a local level but not on a national level.

Sekowski: The time course that the movie implied for the development of the pathogen was completely unrealistic.

Emanuel: I think it was entirely plausible, but certain aspects were simplified for the sake of the movie, including the time course. A natural outbreak that gets out of control is far more likely than an overt biowarfare attack.

Chue: There have always been emerging diseases. The problem is that global travel allows emerging diseases to spread much more rapidly.

Sekowski: A natural outbreak that jumps species as in *Contagion* from the bat to the pig to the human is entirely possible.

Emanuel: I wouldn't be surprised if we see this during our lifetime.

Chue: Farming practices in Southeast Asia would facilitate this kind of outbreak. Here we have feed lots and separation of animals. It's usually small farmers with a chicken house above the pigs.

Emanuel: If you're trying to feed 6-7 billion people, you're cramped for space and you're commingling your animal stocks, you're going to see this happen. With the globalization of

travel and commerce, you're going to see some kind of massive pandemic within the next 20 years. H1N1 didn't manifest itself in the way we feared, thank goodness. The tipping point is a fine line between overreaction and devastation.

Wade: In the movie, Gwyneth Paltrow was patient zero – she contracted the virus after shaking hands with the chef after he handled the raw pork and didn't wash his hands. The chef died too, along with everyone Paltrow came into contact with at the casino.

Chue: A good question is what is ECBC doing to help avoid this kind of situation? We are a rapid response pipeline. In real life, the CDC could be on the phone with us almost immediately, and we would be shipping samples back and forth.

Wade: The rapid characterization pipeline that allowed Paltrow to point at a screen and say, "Here's what happened" is exactly what ECBC's BioDefense team is doing. The problem is that without consistent funding to support our scientists, we can't fully realize the capability portrayed in the film.

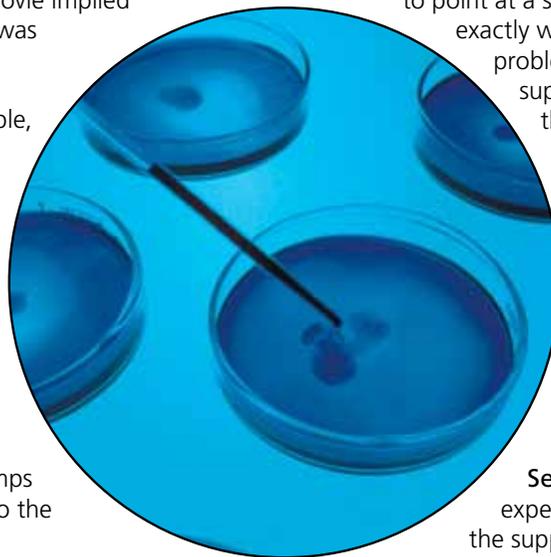
Sekowski: You're setting up the expectation with the public that we have this capability. It is possible, but only with stable, dedicated funding.

Emanuel: The filmmakers are creating the expectation that the politicians aren't fulfilling. This is easily fixed. We're so close.

Sekowski: We have the technology, the expertise, and the infrastructure. But we need the support to maintain the capability.

Chue: ECBC is a complete lifecycle pipeline for unknown characterization. Edgewood is in a strategic location; no other base that does this kind of work can receive samples by major highway, water way, rail line, fixed and rotary aircraft. We're the only military base in the country that can do this.

Emanuel: We can take any sample, prepare it, sequence, analyze and characterize it. We can receive mixed samples that others can't. Still it's frustrating because we're ready to contribute, but we're limited because of the lack of consistent funding.



The R&T Connection Newsletter

A Publication for the Research and Technology Directorate

Fall 2011

National Research Council Conducts Staff Visit to Review Postdoc Program

Two members of the National Research Council (NRC) visited the U.S. Army Edgewood Chemical Biological Center (ECBC) on Aug. 8, to review ECBC's Postdoctoral Resident Research Associateship Program (RAP).

NRC Program Administrator Eric Basques, Ph.D., and Fiscal and Administrative Officer Julie Parker, as well as two members of the Defense Threat Reduction Agency, participated in the staff visit, which included presentations by ECBC's postdoctoral associates and visits to labs.

"We are proud and happy to have you here today," said Steve Lawhorne, deputy director of ECBC's Research and Technology Directorate. "The NRC and ECBC were formed within a year of each other (1916 and 1917, respectively). This has been a good union."

Basques presented an overview of the NRC, which is part of the National Academies, and of the NRC RAP. The RAP mission is to promote excellence in scientific and technological research conducted by the U. S. government through the administration of programs offering graduate, postdoctoral and senior level research opportunities at sponsoring federal laboratories and affiliated institutions.

ECBC is one of those sponsoring federal laboratories. The Center currently has seven associates on tenure and is considering award offers to three additional scientists. Since 1985, ECBC has sponsored 63 associates. The program provides postdoctoral and senior scientists of unusual promise and ability with opportunities for research on problems that are compatible with ECBC's interests.

"We are the resident research associateship program," said Basques. "The intent is for the postdoc to conduct work at the lab so that both sides receive an advantage, including the

exchange of new ideas and the opportunity to work with top-flight scientists and engineers."

Scientists who are awarded the NRC associateship receive many benefits, including a competitive stipend, career enhancement, the ability to devote all of their working time to their research, access to unique facilities, and collaboration with leading scientists and engineers.



ECBC postdoc Bryn Adams presents her work with quorum sensing.

Applicants apply online for listed opportunities, and the NRC conducts quarterly reviews of the applications. Evaluation factors include academic and research record, scientific merit of the proposed research, and laboratory technical evaluation and willingness to support research.

During the Aug. 8 staff visit, ECBC postdocs reviewed a wide range of their research – from quorum sensing (cell-to-cell communication) to the potential for human stem cells (sourced from somatic cells) to develop high throughput, high content toxicological bioassays.

"Listening to the postdocs' presentations and hearing about the contributions they are making was very impressive," said Harry Salem, Ph.D., ECBC's Laboratory Program Representative. "We have seen a welcomed increase in our NRC program in recent years."

ECBC currently offers 38 active opportunities with 18 advisors.



The R&T Connection Newsletter

A Publication for the Research and Technology Directorate

Fall 2011

R&T Directorate Staff Recognized for Length of Service Awards and Patents

Despite persistent rain outside, the atmosphere in the U.S. Army Edgewood Chemical Biological Center's Bernard L. McNamara Life Sciences Lab was bright on a recent morning as several Research and Technology Directorate staff were recognized with length of service awards and patents.

Joseph L. Corriveau, Ph.D., director of Research and Technology (R&T), kicked off the awards ceremony. "I'm grateful for all of you; it's wonderful to work with folks who have such expertise and drive. It's good to take a moment to recognize your commitment and outstanding efforts here. Our number one strategic goal is our people, and we want to keep a culture where people like to work," Corriveau said.

R&T staff shared their thoughts (some tongue in cheek) as they received their awards and patents. Here are just a few highlights from the ceremony.

10 years of service

Jana Kesavan, Ph.D., Physics and Computational Sciences Division: "I was a post-doc and contractor before coming here, and before that I was at a university. This was a big change for me, and I like it. When you work for the government and the projects are bigger, you have to work together as a team."

15 years of service

Peter Emanuel, Ph.D., BioSciences Division Chief: "I'm very hopeful for the next 15 years. I think we're at a pivotal point, and I'm happy to have the opportunity to be part of this."

20 years of service

Ron Checkai, Ph.D., Toxicology and Obscurants Division: "I came originally on a faculty loan program, and I was convinced it would be a good idea to stick around. I've been blessed to work on a number of very interesting problems and issues over the years. It really doesn't seem like 20 years."

Congratulations and warm thanks to those R&T employees who have served with ECBC for five years and beyond. We are grateful that you have contributed your knowledge and expertise to our organization, our country and our warfighters.

- Dr. Joseph L. Corriveau, R&T Director

25 years of service
Harold Banks, Ph.D., Chemical Sciences Division: "One thing that really amazes me is that I survived 25 years of training. This was my second career after spending time in industry and academia. I've gotten to know some amazing people here and worked on interesting projects."



Chemist Harold Banks, Ph.D., receives his length of service award from Joseph Corriveau, Ph.D., Research and Technology director.

Doug Sommerville, Physics and Computational Sciences Division: "I didn't spend all 25 years here – I was at Fort Belvoir with the Corps of Engineers for the first year and a half. The biggest change has been less paperwork – in the old days we used to have to pass around memo slips and there would be delays. Now everything is electronic and it's easy to delete right away."

Cindy Swim, Chemical Biological Detection Division Chief: "Like Doug, I started at Fort Belvoir too, helping the Night Vision Lab. The best thing that happened to me at Fort Belvoir was meeting my future husband. It feels as if the time has flown – time flies when you're having fun. I always remember that we're doing this for the warfighter. We just returned from a trip to France and saw Normandy Beach. That really brought home the fact that war is hell. Anything we can do to support the warfighter is important."

30 years of service

Paul Gardner, Chemical Biological Protection and Decontamination Division Chief (Acting): "My dad was in the government and I grew up around the DC area, so I knew what I was getting into when I joined the government. It's been great, and we do important work. This is a special organization – some of the best people I've ever met."

continued on page 13



The R&T Connection Newsletter

A Publication for the Research and Technology Directorate

Fall 2011

continued from page 12

R&T Directorate Staff Recognized for Length of Service Awards and Patents

Completion of AMC Fellows Program

Carmen Hayes, Business Management Office: "I'm relatively new to Edgewood. I'm happy to be here, and I'm here for the long haul."

Five Patents

Jose-Luis Sagripanti, Ph.D., Senior Technologist in Biochemistry: "I'm happy to have completed these patents and if I have any regrets, it's not being able to do more."



Carmen Hayes receives her award from Joseph Corriveau, Ph.D., Research and Technology director.



Jose-Luis Sagripanti, Ph.D., receives his patent from Joseph Corriveau, Ph.D., Research and Technology director.

Concluding the ceremony, Corriveau said, "The state of our directorate is healthy, despite the shaky world economy. Combating WMD [weapons of mass destruction] is still a high priority for the United States and for our allies. We need to continue to work hard, take care of our customers, and keep the warfighter as our priority."

Combined Federal Campaign

This year's Combined Federal Campaign runs from Sept. 1 – Dec. 15. Change someone's life today by contributing to the campaign. This year, those making a \$50 donation or more will receive a \$25 restaurant.com gift certificate. Everyone is encouraged to participate through payroll deduction. You may also donate utilizing paper pledges and/or giving online. No matter what you give, your contribution matters to someone. Last year, your dollars helped to find a new place for a family to call home after a disaster, rebuild a community, help a homeless veteran find a job, rehabilitate wounded soldiers, rescue thousands of abandoned and abused animals and feed hundreds of sheltered animals, and find loving homes for needy puppies. Remember how good it feels to give, and together we can all make a difference. For more information about the CFC, please contact Mary Little at 436-3250 or mary.little@us.army.mil. You may contribute to this cause by visiting: www.cbacfc.org.

Upcoming S&T Conferences/Meetings

R&T staff get around! This list is just a sampling of the many conferences and workshops we will be supporting in the coming months.

- **CBRNe Convergence Conference** [link](#)
November 1–3, 2011; Istanbul, Turkey
- **Society of Environmental Toxicology and Chemistry 32nd Annual Meeting** [link](#)
November 13–17, 2011; Boston, MA
- **CBD S&T Conference** [link](#)
November 14–18, 2011; Las Vegas, NV
- **Partners in Environmental Technology Technical Symposium & Workshop** [link](#)
November 29–December 1, 2011; Washington, DC
- **Biotechnology 2011** [link](#)
November 29–December 1, 2011; Philadelphia, PA

