



Class of 2016 Yearbook

EMERGING LEADERS IN BIOSECURITY INITIATIVE

A competitive fellowship program created to identify, develop, and provide networking opportunities for the next generation of leaders in biosecurity

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Emerging Leaders in Biosecurity Class of 2016

This US Department of Defense funded initiative was launched in 2012 under the leadership of the program's Executive Steering Committee, with program management by the UPMC Center for Health Security and program support from CENTRA Technology Inc.

For more information, please visit www.emergingbioleaders.org



"Whether you are talking about anthrax, avian flu, or Venezuelan Equine Encephalitis, we need a global capability to prevent, detect and rapidly respond to biological threats no matter their origin. This is doubly so in a world that is confronting naturally occurring epidemics like Ebola, while guarding against the possibility of bioterror."

*Rose Gottemoeller, Under Secretary of State for Arms
Control and International Security – As delivered to the
University of Virginia, February 13, 2015*





Emerging Leaders in Biosecurity Class of 2016





Emerging Leaders in Biosecurity Initiative

Thomas Inglesby, CEO and Director; Anita Cicero, COO and Deputy Director; and Crystal Boddie, ELBI Program Manager, UPMC Center for Health Security

With the conclusion of the Emerging Leaders in Biosecurity Initiative 2016 year, we add yet another extraordinary class of Fellows to ELBI's alumni network. Since its founding in 2012, and with the visionary leadership and support of the Defense Threat Reduction Agency of the US Department of Defense, the program has attracted some very talented and motivated professionals seeking to deepen their knowledge of biosecurity policy, programs, and threats, and make meaningful connections with both peers and more senior biosecurity leaders.

The quality of the applicants and selected fellows continues to be outstanding. This year's Fellows have demonstrated impressive critical thinking on biosecurity issues, and they are well positioned to make meaningful contributions in disciplines that are crucial to the field. In fact, many of the 2016 class members have already made impressive strides in the areas of biological research, policymaking, and practice, and we know they will continue to tackle and solve difficult biosecurity problems in the future.

Through the 2016 ELBI program, Fellows representing the US, Canada, and the UK were provided access to a variety of experts and organizations in the biosecurity world. In the spring, Fellows visited the White House and the US Army Medical Research Institute of Infectious Diseases (USAMRIID) and Integrated Research Facility (IRF) at Ft. Detrick to learn about biodefense policy and research. In the fall, the Fellows traveled to the San Francisco Bay area, where they heard about

cutting edge biodetection technologies and approaches at Lawrence Livermore National Laboratory (LLNL), and about bioengineering advancements in the private and academic sectors at Stanford University.

This year's ELBI program was influenced and guided by a number of current issues, including lessons from the Ebola crisis, response to the Zika virus pandemic, and the Global Health Security Agenda. The fellows also learned about the history of bioweapons and the current US approach to biodefense. They discussed biotechnology advancements such as CRISPR-cas, and considered the potential benefits and biosecurity risks that come with a rapidly changing scientific landscape.

We are very proud of the growing vibrant ELBI network, which now includes more than 100 individuals representing a great variety of focuses and skill sets from journalism, to basic and applied research, international policy, medicine and public health, and defense. Already, Fellows from the 2016 class have made connections, collaborated on projects, and organized events together with alumni from past ELBI classes. We are very excited to see what the 2016 class of fellows does next.



UPRAC
Tom

UPRAC
Assistant Secretary
Michael

UPRAC
Bill Hostyn
March 14, 2011

Bill Hostyn
Defense Threat Reduction Agency

Executive Steering Committee

Members of the Executive Steering Committee are senior leaders in US and UK biosecurity and biodefense who collectively work or have worked in government, private industry, and academia. Their expertise and experience makes this body uniquely suited to offer guidance to the fellowship as we work to develop the nation's next generation of leaders in biosecurity.

Parney Albright, PhD, CEO and President, HRL Laboratories, LLC

Kenneth W. Bernard, MD, RADM, USPHS (Ret), Former Special Assistant to the President for Homeland Security, Health, Security and Biodefense Affairs

Luciana Borio, MD, Acting Chief Scientist, FDA

Lance Brooks, Division Chief, Cooperative Biological Engagement Program, DoD

Richard Danzig, PhD, JD, Senior Fellow, Johns Hopkins Applied Physics Laboratory

David Franz, DVM, PhD, Principal, SBDGlobal

John Grabenstein, PhD, COL, USA (Ret), Executive Director, Global Health & Medical Affairs, Merck Vaccines

D. Christian Hassell, PhD, Deputy Assistant Secretary of Defense for Chemical and Biological Defense, DoD

Jo L. Husbands, PhD, Scholar/Senior Project Director, Board on Life Sciences of the US National Academy of Sciences

Ambassador Bonnie Jenkins, PhD, JD, Coordinator for Threat Reduction Programs, US Department of State

Robert Kadlec, MD, Deputy Staff Director, Senate Select Committee on Intelligence

Lawrence Kerr, PhD, Director, Pandemics and Emerging Threats, HHS

Ali Khan, MD, MPH, RADM, USPHS (Ret), Dean, UNMC College of Public Health

Randall J. Larsen, COL, USAF (Ret), National Security Advisor, UPMC Center for Health Security

Tara O'Toole, MD, MPH, Executive Vice President, In-Q-Tel

Stephen Redd, MD, RADM USPHS, Director of the Office of Public Health Preparedness and Response, and Assistant Surgeon General, CDC

Martin Reynolds, British Defence Staff, Chemical and Biological Threat Reduction

EX-OFFICIO MEMBERS:

Randall Holmes, Program Manager, Advisory Committees and Programs Office, Defense Threat Reduction Agency

William P. Hostyn, Director, Advisory Committees and Programs Office, Defense Threat Reduction Agency

Stephen J. Polcheck, Deputy, Advisory Committees and Programs Office, Defense Threat Reduction Agency



Wendy Anne Beauvais

Wendy Beauvais is a veterinarian with research interests in zoonotic pathogens, public health, and mathematical modeling. She completed her veterinary degree in 2007 at the Royal Veterinary College in London, and, following a short period in clinical veterinary practice, she completed a masters degree in veterinary epidemiology at the London School of Hygiene and Tropical Medicine and the Royal Veterinary College (2010). She then worked as a research assistant on several projects, including a risk analysis of reintroduction of a globally eradicated virus that has potential as an agricultural bioweapon (rinderpest), funded by the Food and Agriculture Organization of the United Nations. In May 2016, she submitted her PhD thesis on the control of brucellosis in domestic livestock, people, and wildlife in Kazakhstan. During this period she also completed a residency with the European College of Veterinary Public Health (pending examination) and was involved in investigating the recent mass mortalities in saiga antelope in Kazakhstan. She then worked for a few months as a research assistant at the London School of Hygiene and Tropical Medicine until August 2016, when she started as a Postdoctoral Associate at Cornell University College of Veterinary Medicine, working on modelling of infectious diseases.



Anne Cheever

Anne Cheever is a Lead Scientist at Booz Allen Hamilton, supporting the Defense Advanced Research Projects Agency (DARPA) in the areas of biosecurity, emerging infectious diseases forecasting, synthetic biology, and medical countermeasures. Prior to joining Booz Allen, Dr. Cheever was an American Association for the Advancement of Science (AAAS) Science and Technology Policy Executive Branch Fellow at the US Department of State in the Bureau of Intelligence and Research (INR). In INR, she provided scientific advice, coordination, and written and oral intelligence briefings to senior policymakers on a broad range of topics, including biosecurity, health, environmental issues, wildlife trafficking, and emerging technologies. Dr. Cheever was a postdoctoral fellow at Cleveland Clinic Lerner Research Institute, where she studied translation regulators of selenoprotein expression during conditions of selenium deficiency. At the University of Illinois at Urbana Champaign, she received a BS in ecology, ethology, and evolution and a PhD in cell and molecular biology for work on neurodegenerative disease and the role of microRNAs as translational regulators of the Fragile X Mental Retardation Protein (FMRP).



Francisco Cruz

Francisco Cruz is a Biologist in the Field Operations Branch of the US Environmental Protection Agency's (EPA) Chemical, Biological, Radiological, and Nuclear Consequence Management Advisory Division (CBRN CMAD). As CBRN CMAD's Biologist, Mr. Cruz provides operational guidance to federal, state, and local responders in the areas of decontamination and emergency response related to biological incidents. Additionally, he collaborates with EPA researchers on novel decontamination approaches, focusing methods that can be best implemented in the field using commercially available products. Prior to his position with CBRN CMAD, Mr. Cruz was a Federal On-Scene Coordinator (FOSC) for EPA's Philadelphia regional office, leading federal responses to releases of hazardous substances and oil spills. During his time as a FOSC, Mr. Cruz responded to several large environmental disasters, including Hurricane Sandy and Hurricane Irene. In addition to emergency response, he provided training, exercise development, and preparedness planning to state and local responders. Mr. Cruz was responsible for coordinating full-scale exercises and training for 33 counties throughout Virginia and West Virginia. He is a trained Public Information Officer and served as Assistant Public Information Officer for EPA during the Deepwater Horizon Gulf Oil Spill.

Mr. Cruz holds a BA in biological sciences from the University of Delaware, a graduate certificate in critical analysis and strategic responses to terrorism from George Mason University, and an MS in biodefense from George Mason University.



Genya V. Dana

Genya V. Dana is a Senior Science Policy Officer in the Office of the Science and Technology, Adviser to the Secretary of State, at the US Department of State. She advises on emerging biotechnologies and international policy issues; is a negotiator on science, technology, and innovation in multilateral organizations like the United Nations; and works to advance science, technology, and innovation for sustainable development with a focus on Africa. She also manages 4 science policy fellowship programs aimed at bringing more technical expertise into the Department. She was a AAAS Fellow in the Department's Office of Conservation and Water from 2011 to 2013, covering food security, wetlands, biodiversity, drylands management, and biotechnology in international negotiations. Her scientific training is in ecological risk assessment of emerging technologies and stakeholder engagement in risk governance, and she conducted her doctoral research in South Africa.

Prior to her AAAS fellowship, she split her time between an Oak Ridge Institute for Science Education (ORISE) postdoctoral fellowship at the US Environmental Protection Agency, where she assisted with stakeholder engagement in nanotechnology research strategy development, and an appointment as a public policy scholar at the Woodrow Wilson Center for International Scholars, where she tested methodologies for evaluating the environmental risks of synthetic biology applications. She was also a Christine Mirzayan Science & Technology Policy Fellow at the National Academies of Science in 2011. She completed a PhD in ecological risk assessment and an MSc in science, technology and environmental policy at the University of Minnesota's Conservation Biology Program and Humphrey Institute of Public Affairs, respectively.



Cory Davenport

Cory Davenport is a Senior Researcher and Intelligence Community Postdoctoral Fellow at the National Consortium for the Study of Terrorism and Responses to Terrorism (START), a Department of Homeland Security (DHS) Center of Excellence at the University of Maryland, as well as an Instructor at the Catholic University of America. He was formerly a Fellow with the Center for Biodefense, Law, and Public Policy and is currently Associate Editor for the *Journal of Biosecurity, Biosafety, and Biodefense Law*. Dr. Davenport has a BS in psychology from Michigan State University and a PhD in experimental psychology from Texas Tech University. His research primarily involves an application of the behavioral sciences to problems in national/global security, including biosecurity and global health security. Examples of this research include the creation of a profile of disgruntled CBRN scientists, an investigation into how best to prevent the radicalization of bioscientists, and an analysis of the behavioral antecedents of CBRN insider threats.



Natalie DeGraaf

Natalie DeGraaf serves as a Public Health Analyst and Advisor for International Projects in the CDC Division of Select Agents and Toxins in the office of Public Health Preparedness and Response. Her primary responsibilities are to serve as subject matter expert and co-manager of DSAT's International Projects, which assist foreign governments in the policy development and implementation of their national bio-risk systems. These unique national bio-risk systems oversee and evaluate the biosafety and biosecurity of laboratories working with agents of concern. Ms. DeGraaf also coordinates international high and maximum containment laboratory assessments for the NIH/NIAID and serves as international biosafety and biosecurity inspector. She is quickly developing a growing knowledge base of international and national regulations, guidelines, and norms on biosafety and biosecurity across the globe. She comes to the CDC after spending time in the nonprofit sector developing and strengthening biosafety and biosecurity programs internationally. Through her experiences as a White House and United Nations Fellow, Ms. DeGraaf has robust experience working with high-level stakeholders in many countries on priority issues of national security, global health, and science policy. Ms. DeGraaf received her MPH in global public health from NYU and a masters in science and technology policy and a BS in biochemistry with medicinal chemistry from Arizona State University.



Christine Farquharson

Christine Farquharson is a Program Examiner at the Office of Management and Budget (OMB), where her responsibilities include oversight and coordination of policy and budgetary issues related to the Department of Health and Human Services' Assistant Secretary for Preparedness and Response, the Centers for Disease Control's Strategic National Stockpile, and the National Institutes of Health. Prior to OMB, Christine spent a decade working in a variety of commercially focused roles in the biopharmaceutical industry, including new product development, reimbursement, health policy, and government affairs. Christine earned an MS in biotechnology at Northwestern University and a BA in biology at the University of Virginia. She is especially interested in biosecurity issues at the nexus of infectious disease, climate change, and public health.



Mary Foote

Mary Foote is the Senior Medical Coordinator for Communicable Disease Preparedness at the New York City Department of Health & Mental Hygiene (NYCDOHMH), Office of Emergency Preparedness and Response. She oversees Ebola-related health system preparedness activities and is developing an “all-communicable disease-hazard” preparedness program for the NYC healthcare system. She earned her MD and MPH from the University of Arizona and completed a residency in social internal medicine at Montefiore Medical Center in Bronx, NY, before going on to Emory University in Atlanta, Georgia, for fellowship training in infectious diseases. After her clinical fellowship, Dr. Foote spent a year in Mysore, as a Fogarty Global Health Fellow, investigating TB infection risk among adults with diabetes. In addition to her work with the NYC Office of Emergency Preparedness, she maintains clinical positions at the Atlanta Veterans Association Hospital Emergency Department and with the Bureau of Tuberculosis Control at the NYCDOHMH.



Stephanie Griese

Stephanie Griese is a medical epidemiologist in the Office of Public Health Preparedness and Response at the Centers for Disease Control and Prevention in Atlanta, Georgia. Her focus areas include pediatric preparedness, vulnerable populations, and medical countermeasures. Dr. Griese recently served as the Lead for the Ebola Children's Health Team, where she directed a multidisciplinary team of clinicians, epidemiologists, health scientists, public health advisors, and health communicators to ensure the unique needs of children were recognized and addressed in all aspects of CDC's Ebola outbreak response. Dr. Griese earned her undergraduate degrees (BS, BA) from the College of William and Mary, her medical degree from the Penn State College of Medicine, and a masters of public health from the Johns Hopkins Bloomberg School of Public Health. She completed her pediatrics residency training at the Johns Hopkins Hospital and practiced in the Johns Hopkins Hospital Pediatric Emergency Department prior to a career in public health. She served as a CDC Epidemic Intelligence Service Officer for 2 years with the North Carolina Division of Public Health before joining CDC's Office of Public Health Preparedness and Response as a medical epidemiologist in 2013.



Trevor Hall

Trevor Hall is the Leader of Emergency Preparedness for Sunnybrook Health Sciences Centre, Canada's largest single-site hospital and trauma centre, and provides system risk reduction oversight for 17 hospitals in the Toronto Central Local Health Integration Network. Further, Mr. Hall is Operations Director for the CBRNE Collaborative and the Leader of Ontario's Emergency Medical Assistance Team, Canada's first mobile field hospital that has the capacity to deploy a 56-bed critical care unit. Mr. Hall is a registered nurse, has worked as a firefighter, and is trained as an emergency communicator (911 operator) and an advanced HAZMAT Life Support Provider and Instructor. Academically, he holds a masters of science in disaster medicine, a business degree, and a nursing degree, and is a Fellow of Quality Improvement.

Currently, Mr. Hall is working on an initiative in the Middle East to prepare healthcare responders to manage CBRN incidents; partnering with multiple public health agencies to coordinate primary healthcare support to welcome new Canadian residents from Syria at the point of entry; co-investigating the feasibility and safety of providing critical care for patients with Ebola through design of a simulated Ebola treatment unit; and is the Co-Chair for the World Association of Disaster and Emergency Medicine Congress that is being held in Toronto in 2017.

In recent past, Mr. Hall facilitated technical training for the management of biological patients for Ontario's Paramedic Services and Hospitals. He also assisted the government of Canada in developing a national CBRN training program. Mr. Hall is an advocate and resource for quality improvement science, including lean methodologies and human factors engineering. He aims to build safety into healthcare systems and decrease variability within emergency response.



Mark Hansberger

Mark Hansberger has been a Senior Intelligence Specialist and Biological Subject Matter Expert in the Threat Intelligence Division at the Defense Threat Reduction Agency since 2010. He was formerly an Intelligence Analyst at the Counterproliferations Support Office in the Defense Intelligence Agency from 2006 to 2010. He has spent 10 years in the Department of Defense, identifying current and future trends in biosecurity and biotechnology, analyzing potential biological threats to domestic and international assets, and coordinating efforts in the public health community to help support global disease events. Dr. Hansberger received his PhD from the Department of Microbiology and Immunology at Vanderbilt University in October 2006, where he studied virus/host cell interactions and the resulting cell signaling pathways and programmed cell death that are initiated following viral infection. Prior to his graduate degree, Dr. Hansberger received his BS in microbiology from Mississippi State University in May 2000.



Siddha Hover

Siddha Hover works for BAI, Inc., as an embedded contractor with the Department of Homeland Security, where she serves as DHS's sole treaty analyst. In this role, she is responsible for reviewing all relevant DHS-sponsored research and activities for compliance with applicable arms control agreements. Siddha is currently pursuing her PhD in biodefense. She holds an MSc in biodefense from George Mason University and an MSc in international relations from the London School of Economics.



Daniel Jackson

Daniel Jackson is a Program Advisor for the US Department of State's Biosecurity Engagement Program (BEP). BEP reduces the threat of bioterrorism by preventing terrorist access to potentially dangerous biological materials, dual-use infrastructure, and expertise, while supporting efforts to combat infectious disease and enhance public and animal health worldwide. At BEP, Mr. Jackson leads a portfolio that includes biosecurity assistance to the Middle East, Africa, and Southeast Asia. He also helped lead the Department of State's biosecurity response to the Ebola outbreak in West Africa. He developed and oversaw efforts to secure vulnerable Ebola samples in West Africa, and during the outbreak he led teams to each of the primarily affected countries. Previously, Mr. Jackson served at Embassy Kabul as the biosecurity coordinator and in Washington, DC, working with the Iraq Scientist Engagement Program (ISEP). Mr. Jackson has bachelor's degrees in international affairs and Arabic language and is currently a graduate student in the War Studies Department at King's College London.



Dylan Jones

Dylan Jones is an International Project Manager at the Defense Threat Reduction Agency (DTRA), the US government agency dedicated exclusively to combating the full spectrum of threats from weapons of mass destruction. He currently operates in the Cooperative Threat Reduction Directorate's Cooperative Biological Engagement Program, where he is responsible for executing projects in support of eliminating and preventing the threat posed by the intentional or unintentional release of dangerous pathogens. In previous roles, Mr. Jones led a US-Russian bilateral nuclear Intercontinental Ballistic Missile (ICBM) elimination project at DTRA and served as a Foreign Affairs Officer in the Bureau of International Organization Affairs at the US Department of State. Mr. Jones began his career in federal service as a recipient of the Presidential Management Fellowship, the US government's flagship leadership development program. Before joining government service, Mr. Jones held various positions in think tanks, defense universities, and embassies. He received his masters in international affairs from the Elliott School of International Affairs at the George Washington University, where he specialized in international security studies and the Middle East. Prior to his graduate degree, Mr. Jones received his BA in international studies from the University of Oregon.



Samantha Kasloff

Dr. Samantha Kasloff works as a consultant for the United Nations Food and Agriculture Organization under the Emerging Pandemic Threats-2 program, involved in procurement projects for laboratory strengthening of African veterinary research and diagnostic institutes. Samantha earned her Honours Biology degree through the University of Winnipeg and Master's degree in Medical Microbiology at the University of Manitoba. During her graduate research, she spent three years with the Special Pathogens unit at the National Centre for Foreign Animal Disease in Canada's only maximum containment facility, and was awarded a summer fellowship at the Hokkaido University Research Center for Zoonosis control in Japan. Upon completion of her Master's Samantha moved to Italy where she spent five years at the Istituto Zooprofilattico Sperimentale delle Venezie, working on several influenza virus-related projects and earning a PhD through the University of Padova while studying the oncolytic properties of avian influenza viruses against human pancreatic cancer. As a PhD student, her interest in the field of biosafety and biosecurity led her to develop and implement a biosafety course for her coworkers, which she has since delivered to additional departments at the University of Padova. In the fall of 2016 Samantha will return to Canada's National Centre for Foreign Animal Disease as a Post-Doctoral fellow in the Special Pathogens unit.



Mary Lancaster

Mary Lancaster is AFRICOM Science Manager for the Cooperative Biological Engagement Program (CBEP) of the Cooperative Threat Reduction Program (CTR). Dr. Lancaster manages a research portfolio that strengthens the biosurveillance capabilities of partner countries in order to improve detection, diagnosis, and reporting of disease events and to reduce the threat of pathogens of security concern. Dr. Lancaster influences the strategy of the AFRICOM Science portfolio, coordinates the submission of research project proposals with potential collaborators, and manages ensuing projects.

Prior to joining CBEP, Dr. Lancaster gained experience as a research scientist at Pacific Northwest National Laboratory and as a regional epidemiologist in the Tennessee Department of Health. In December 2014, Dr. Lancaster was detailed to DHHS/ BARDA as a liaison between BARDA's Analytic Decision Support Division and the modeling and simulation expertise found in DOE National Laboratories.



Gregory Measer

Gregory Measer is an ORISE Fellow at the US Food and Drug Administration (FDA), working primarily with regulatory counsel in the Office of Counterterrorism and Emerging Threats on legal and policy issues relating to emergency use authorities and the monitoring and assessment of medical countermeasure use during and after a public health emergency. Prior to joining FDA, Mr. Measer was a legal researcher in the Public Health Law and Policy Program at the Sandra Day O'Connor College of Law at Arizona State University (ASU), where he provided analysis on issues regarding global health, emergency preparedness, and the Affordable Care Act. He also previously served as a legal intern providing research assistance in the Office of the General Counsel at the US Centers for Disease Control and Prevention. Mr. Measer received a JD from ASU in 2015 with a certificate in health law and maintains a license to practice law in the state of Arizona. He received a BS in psychology from John Carroll University. Mr. Measer's primary research interests include topics at the intersection between law and the public's health, including emergency preparedness, medical countermeasures, data sharing and information privacy, and emergency use authorities.



Amber Murch

Amber Murch is a senior research scientist at the Defence Science and Technology Laboratory, which is part of the UK Ministry of Defence, based at Porton Down. Her primary role as a high containment microbiologist is the development and evaluation of novel broad spectrum medical countermeasures to treat a variety of infections caused by highly pathogenic bacteria. In addition to her research role, Amber is a biological advisor for the nonproliferation policy area, supporting the UK's obligations under the Biological and Toxin Weapons Convention and the Australia Group. Amber also supports various sovereign capabilities as a biological subject matter expert for the UK chemical and biological counterterrorism Specialist Response Team, and as a toxin analyst for the UK National Network of Laboratories. In 2014 Amber deployed to Sierra Leone as a high containment microbiology expert to carry out laboratory diagnostics at an Ebola treatment centre as part of the UK government's response to the Ebola crisis.

Ms. Murch received her Bachelor's degree in Biological Sciences from the University of Exeter in 2007, is a chartered biologist with the Royal Society of Biology and is currently reading for a PhD in molecular microbiology at the University of Southampton.



Hayley Severance

Hayley Severance is an epidemiologist who currently serves as a support contractor in the Office of the Deputy Assistant Secretary of Defense for Countering Weapons of Mass Destruction in DoD Policy. Ms. Severance is the biological threat reduction functional lead and the Global Health Security coordinator and is responsible for advising the Policy Director of the Cooperative Threat Reduction program on developing strategic guidance for the Cooperative Biological Engagement Program (CBEP) in the EUCOM, AFRICOM, CENTCOM, and PACOM areas of responsibility. Ms. Severance serves as the AO-level policy lead for the DoD Global Health Security Agenda coordination cell and is responsible for refining messaging on the DoD role in GHSA, securing high-level DoD support for the agenda, preparing senior leadership for international GHSA summits, and representing OSD policy equities in GHSA fora.

Previously, Ms. Severance served as the epidemiology subject matter expert on the CBEP Biosurveillance Team for the Defense Threat Reduction Agency's Advisory and Assistance Support contract and as an operational research and development analyst at Georgetown University's Project Argus, a disease prevention initiative focused on detecting catastrophic biological events on an international scale using open source media surveillance. Recently, Ms. Severance was selected to provide an oral presentation entitled "Biodefense and Security in the Global Health Security Agenda" at the February 2016 American Society of Microbiology Biodefense and Emerging Diseases Research Meeting.



Reid Orth

Lt Col Reid Orth is the Special Assistant for Biodefense in the Office of Countering Weapons of Mass Destruction (Policy), Office of the Under Secretary of Defense for Policy, Department of Defense (DoD). His biodefense work involves discussions and coordination of policy positions in the DoD and interagency on a diverse portfolio of issues including the Biological Weapons Convention, the Federal Expert Security Advisory Panel Report implementation, global health engagement, and the Global Health Security Agenda. Lt Col Orth earned his electrical and biomedical engineering degrees (BS, BS) from Johns Hopkins University, his engineering management degree (MS) from West Coast University, his biomedical engineering degrees (MS, PhD) from Cornell University, his medical degree (MD) from the University of Texas Health Science Center at San Antonio, and his public health degree (MPH) from the Johns Hopkins Bloomberg School of Public Health. His prior Air Force career has involved serving as Spacecraft Systems Engineer for Delta and Atlas rockets at Vandenberg Air Force Base, CA; biomedical engineering graduate student and Assistant Professor of Aerospace Studies at Cornell University in Ithaca, NY; Branch Chief in the Biotechnology Directorate at Patrick Air Force Base, FL; medical student at the University of Texas Health Science Center at San Antonio in San Antonio, TX; emergency medicine resident at the New York Presbyterian Hospitals of Columbia and Cornell in New York City, NY; and emergency medicine attending physician at the University of Alabama at Birmingham and Special Operations Surgical Team member in Birmingham, AL.



Megan Palmer

Megan J. Palmer is a Senior Research Scholar and William J. Perry Fellow in International Security at the Center for International Security and Cooperation (CISAC) at Stanford University. At Stanford she leads a research program focused on dual-use issues in biotechnology and other emerging technologies. Dr. Palmer is also an investigator of the multi-university Synthetic Biology Engineering Research Center (Synberc), where for the last 5 years she served as Deputy Director of its policy-related research program and led projects in safety and security, property rights, and community organization and governance. She was previously a research scientist at the California Center for Quantitative Bioscience at UC Berkeley and an affiliate of Lawrence Berkeley National Labs.

Dr. Palmer has created and led many programs aimed at developing and promoting best practices and policies for the responsible development of biotechnology. She founded and serves as Executive Director of the Synthetic Biology Leadership Excellence Accelerator Program (LEAP), an international fellowship program in responsible biotechnology leadership. She also leads programs in safety and responsible innovation for the international Genetically Engineered Machine (iGEM) competition. Dr. Palmer advises a variety of organizations on their approach to policy issues in biotechnology, including serving on the board of the synthetic biology program of the Joint Genomics Institute (JGI). Dr. Palmer holds a PhD in biological engineering from MIT and was a postdoctoral scholar in the bioengineering department at Stanford University. She received a BScE in engineering chemistry from Queen's University, Canada.



Lianne Parr

Lianne Parr is a Senior Consultant with Booz Allen Hamilton, providing onsite client support and program management for biosecurity and biodefense-relevant research portfolios. She currently supports the Defense Advanced Research Projects Agency (DARPA) Biotechnology Office with new programs in synthetic biology, genome editing, and integrating biosecurity into new biotechnology. Lianne previously supported the Department of Homeland Security Science & Technology Directorate Office of University Programs for five years, providing program coordination for the Centers of Excellence in Zoonotic and Animal Disease Defense and Food Protection and Defense. Working with these programs, she gained expertise in homeland security, as well as agriculture and food defense.

Prior to supporting the Office of University Programs, Ms. Parr was at Georgetown University earning an MS in biohazardous threat agents and emerging infectious diseases while working as an analyst on Project Argus, a biosurveillance project researching the use of open source and media information to inform a severity rating of disease events. While working on Project Argus, Ms. Parr covered the emergence of 2009-H1N1 influenza in Mexico and cholera in Haiti and the Dominican Republic. She earned her BS in biology and BA in Spanish at Wofford College, where she focused on socioeconomics and public health in Latin American populations. She is especially interested in the impact of research and novel technology on biosecurity.



Kristin Post

Kristin Post currently works at Marine Corps Base Quantico. She is a Researcher with the Center for Advanced Operational Culture Learning (CAOCL)'s Translational Research Group (TRG). She is the lead researcher for a longitudinal study that will use qualitative and quantitative methods to assess cultural training and education programs with the 7th Marine Regiment. She is also conducting interviews with individuals who were involved in the humanitarian response to the 2014-15 Ebola virus disease outbreak. Those transcripts will be archived in an open-source lessons learned database hosted by the American Anthropological Association.

Prior to this year, Ms. Post conducted another IRB-approved longitudinal study assessing culture and language training for Marine advisors and trainers of foreign militaries. She published a peer-reviewed article on culture stress. In 2014, she was an assistant instructor for the Command and Staff College elective "War, Sex and Gender." She has also collected oral history interviews about the origin of CAOCL in the context of institutional changes in the military due to the conflicts in Iraq and Afghanistan.

Ms. Post developed experience working with the Marines when she deployed to Helmand Province, Afghanistan, as a social science researcher with a Human Terrain Team (HTT7). She conducted outside-the-wire research primarily with 3 battalions in Nawa and Marjah Districts. Prior to that, she was awarded a globally competitive Rotary World Peace Fellowship and graduated with a master's degree in international relations and conflict resolution from the University of Queensland, Australia. She has also received a master's in education and a bachelor of arts in English from the University of North Carolina at Chapel Hill. She has worked in a cultural education museum and for NPR member stations, and she has traveled and studied in more than 48 countries on 5 continents.



Claire Standley

Claire J. Standley is a Senior Research Scientist at the George Washington University's Milken Institute School of Public Health. Dr. Standley's research focuses on strengthening health systems and international capacity building for public health, with an emphasis on prevention and control of emerging and re-emerging diseases in both humans and animals. Prior to joining GWU, Dr. Standley was an American Association for the Advancement of Science (AAAS) Science & Technology Policy Fellow with the Biosecurity Engagement Program at the US Department of State, where she managed projects related to biosecurity capacity building, disease surveillance, and cooperative health security research in sub-Saharan Africa, the Middle East, and the Lower Mekong. Dr. Standley earned her doctorate in genetics and biomedical parasitology from the University of Nottingham in a joint program with the Natural History Museum in London, focusing on neglected tropical diseases in East Africa, and she also holds degrees from the University of Oxford and the University of Cambridge.



Jen January Therrien

Jen January Therrien is a Presidential Management Fellow at the Center for Global Health in the Centers for Disease Control and Prevention. She recently graduated from Georgetown University with a master of science in foreign service, focusing on science, technology, and international affairs. She worked at the American Association for the Advancement of Science and supported the Office of Science and Technology Policy while completing her degree. Ms. Therrien obtained her undergraduate degree in science and society from Brown University. She is interested in emerging biotechnologies, such as synthetic biology and genetic sequencing, bioethics, and international security.



Angela Vasa

Angela Vasa, BSN, RN, CCRN, has an expansive background in nursing with experience in the care of patients with highly infectious diseases, education, infection control, solid organ transplant and critical care. Angela provided direct patient care for the patients with Ebola Virus Disease admitted to the Nebraska Biocontainment Unit in 2014-2015. She currently serves as the Clinical Program Coordinator for the Nebraska Biocontainment Unit (NBU). In this role her responsibilities include providing competency based training for physicians, nurses and consulting ancillary staff in proper PPE donning and doffing techniques, designing and facilitating exercises to further preparedness efforts related to highly infectious diseases, as well as developing policies and procedures related to personal protective equipment, infection control, staffing ratios, personal hygiene, clinical care, specimen handling and new staff orientation.

Angela also serves as faculty for the National Ebola Training and Education Center as a subject matter expert in the following areas: infection control, care of the deceased, clinical care, staffing, education and training. Within this advisory role she contributes content to the courses offered through the NETEC to facilities developing programs to care for highly infectious disease patients and participates in site visits to facilities developing dedicated units to care for highly infectious disease patients.

Angela is an advocate for promoting education for clinicians to provide safe and effective clinical care for patients with a highly infectious disease and has presented at domestic and international conferences on these topics. Areas of interest include translating lessons learned within the Nebraska Biocontainment Unit for global application, advancing the availability of critical care for patients with highly infectious disease and furthering research in low income areas to help prevent future outbreaks of highly infectious diseases.



Krista Versteeg

Krista Versteeg is a 2016 Christine Mirzayan Science and Technology Policy Fellow at the National Academies of Sciences, Engineering and Medicine with the Committee on International Security and Arms Control (CISAC). As a fellow, she is embracing her opportunities to learn more about science policy while aiding CISAC as they promote global security. Ms. Versteeg is also currently completing a PhD in microbiology and immunology under the guidance of Dr. Thomas Geisbert in the Galveston National Lab at the University of Texas Medical Branch. She holds a BS in biochemistry and conducted her honors thesis on the synthesis of chemotherapeutic drugs. During her undergraduate years, she was motivated to pursue a PhD project in infectious diseases after an internship with the National Biodefense Analysis and Countermeasures Center. After graduating from college, Ms. Versteeg moved to Texas to begin work on her PhD; her dissertation is focused on identifying the immune response to various Ebola viruses. Her work in the high-containment laboratory at the Galveston National Lab will aid in the development of vaccines and therapeutics against highly pathogenic infectious diseases. Ms. Versteeg's interests include biodefense policy, specifically adherence to the Biological Weapons Convention; monitoring and control of natural biological threats; and advancing worldwide biological research while maintaining a biosecurity culture. She would ultimately like to use her knowledge and passion regarding infectious diseases to help government and industry prepare for future threats or outbreaks and assist with the eradication of disease worldwide.



Jennifer Weisman

Jennifer Weisman is a Senior Science & Technology Advisor at Strategic Analysis, Inc., where she advises the Office of the Assistant Secretary of Defense for Research and Engineering. She previously provided technical support to the Defense Advanced Research Projects Agency Biological Technologies Office on programs that aim to outpace the spread of infectious diseases through rapid diagnostics, nucleic acid-based vaccines, and novel immunoprophylaxis strategies. Prior to Strategic Analysis, Dr. Weisman was the Special Assistant to the Deputy Director of the National Institutes of Health (NIH), where she supported trans-NIH big data strategic planning and advisory committee activities. She also served in multiple capacities at the U.S. Department of Health and Human Services (HHS), working on human subjects protections related to patient privacy in clinical research within the Office for Civil Rights and the Personalized Medicine Initiative. Dr. Weisman was previously an American Association for the Advancement of Science (AAAS) Science & Technology Policy Fellow at HHS and NIH, a National Academies Christine Mirzayan Science & Technology Policy Fellow in the Koshland Science Museum, and a Giannini Family Foundation Medical Research Fellow at the University of California, San Francisco. Her research experience in antimalarial drug discovery spans rational design of novel inhibitors and biological assay development. She holds a PhD in physical chemistry from the University of California, Berkeley, and a BS in chemistry from the College of William & Mary.





Spring Workshop 2016: Biosecurity in Policy and Practice

Matthew Watson, ELBI Deputy Program Manager

The 2016 Class of the Emerging Leaders in Biosecurity Initiative held its first event in Washington, DC. Fellows from across the country converged to meet and discuss past, present, and future issues at the intersection of national security and the life sciences. At the Spring Workshop, we provided an introduction to the field of biosecurity and gave the Fellows an opportunity to meet one another and to hear from senior leaders in the field. From the program staff's perspective, it is a pleasure to welcome another smart, highly engaged group from various professional and academic backgrounds into the study and practice of biosecurity.

As in previous years, the program has been fortunate to be able to expose the Fellows to national biosecurity policy by having them learn directly from the men and women who are responsible for advising its creation and ensuring its implementation. On the first day of the Workshop, White House staff from the National Security Council and Office of Science and Technology Policy delivered a series of briefings to the Fellows on the US government's response to Ebola, planning for pandemic influenza, and the White House reaction to the ongoing Dual Use Research of Concern debates. What became clear during that visit to the White House is that multiple biosecurity-related issues are recognized and routinely deliberated at the highest levels of our government.

On March 15th, the Fellows traveled to CENTRA Technology, Inc., located in Arlington, VA, to attend a series of talks by senior biosecurity leaders, both in and out of government. Speakers

on that day included: Col. Randall Larsen, who provided some historical context for biological threat; a panel on public health lessons learned from the Ebola crisis; a panel discussion on the state of the art of biosurveillance; and two talks on medical countermeasures development and biosecurity from a homeland security perspective.

That night, the Fellows attended a dinner where Dr. Robert Kadlec, Deputy Staff Director of the Senate Select Committee on Intelligence, delivered some remarks on biosecurity history and legislative affairs.

The Spring Workshop was capped off by a site visit to the National Interagency Confederation for Biological Research at Fort Detrick, MD. There, the Fellows toured and were briefed by staff at the US Army Research Institute for Infectious Diseases and the National Institutes of Health Integrated Research Facility.

In sum, the 2016 class – who proved to be as knowledgeable and committed as the members of the classes that have preceded them – gained valuable exposure to a wide range of federal biosecurity and biodefense programs. It is our hope that as their careers continue to develop, some of the Fellows will support, and in some cases run, those programs. In addition to their leadership, it will be important for the Fellows to continue the conversations that we began, as the nation will be looking to the members of this unique network to provide protection from the vast array of biological threats that we face.



Spring Workshop Program Agenda, March 14-16, 2016

March 14 | White House Discussion on Biosecurity

- Hosted by: White House National Security Council Staff

March 15 | Workshop Day 1 – Arlington, VA

- Public Health and National Security
 - Randall Larsen, National Security Advisor, UPMC Center for Health Security

- **Ebola: Implications for Future Public Health Emergencies?**
 - Dan Hanfling, Contractor, Office of the Assistant Secretary for Preparedness and Response (ASPR), Office of Emerging Management, HHS
 - Brooke Courtney, Senior Regulatory Counsel, Office of Counterterrorism and Emerging Threats, FDA
- **Biosurveillance: The Latest in Theory and Practice**
 - Jennifer Nuzzo, Senior Associate, UPMC Center for Health Security
 - Caitlin Rivers, Computational Epidemiologist, US Army, 2015 ELBI Alumna
 - Franca Jones, Chief, Global Emerging Infections Surveillance and Response System (GEIS), Armed Forces Health Surveillance Center, DoD
- **Where Are We in MCM Creation and What Is the Future?**
 - Richard Hatchett, Acting Director, BARDA, HHS
- **DHS and Biosecurity: Risk Assessment, Environmental Monitoring, BWC Compliance Review Process**
 - Gerald Epstein, Deputy Assistant Secretary for Chemical, Biological, Radiological, and Nuclear Policy, DHS
- **Networking Dinner for Fellows, Speakers, and Alumni**
 - Robert Kadlec, Deputy Staff Director, Senate Select Committee on Intelligence

March 16 | Workshop Day 2 – Ft. Detrick

- **USAMRIID Overview and Presentation of Projects**
- **IRF Organizational Brief**
- **NIAID-IRF Project Presentations**
- **IRF Tours**



Emerging Leaders in Biosecurity Fellows USAMRIID Visit - 16 March 2016





Fall Workshop 2015: Biotech Innovation and Biosecurity

Matthew Shearer, ELBI Program Staff

The ELBI Fellows attended the fall 2016 workshop in the San Francisco Bay Area—the program’s first trip to California since the inaugural ELBI class in 2012—with a day at the Lawrence Livermore National Laboratory (LLNL) and a day at Stanford University. By splitting the events between two locations, the conference was able to provide the Fellows with perspectives from government, academia, and industry on recent advancements in biological science and biosecurity issues that arise with those rapid advancements.

The visit to LLNL began with presentations from the Lawrence Livermore faculty. Director of Lawrence Livermore’s Biodefense Knowledge Center (BKC), Dr. Tom Bates, discussed the wide range of subjects covered by the BKC, including synthetic biology, and the support they provide via modeling and material threat assessments for the Department of Homeland Security and other agencies. Dr. Crystal Jiang, Applied Genomics Group Leader, described advances in genetic sequencing capabilities and their potential for use in threat detection and biosurveillance systems. The afternoon session on Day 1 challenged the Fellows with an interactive exercise scenario, Viral Storm, in which the Fellows conducted real-time policy analysis and developed recommendations for national advisors in support of the global response to a smallpox bioterrorist attack. Day 1 concluded with a formal dinner in Livermore with an address by Dr. David Rakestraw, Senior Program Director for Lawrence Livermore’s Global Security Principal Directorate. Dr. Rakestraw discussed his career in computational biology and its growing impact on national security.

On the second day of the workshop, the Fellows were hosted at Stanford University by 2016 Fellow Dr. Megan Palmer. The morning session consisted of a discussion panel at the Stanford Department of Bioengineering addressing the biosecurity opportunities and challenges arising from recent and future advances in bioengineering and biotechnology, followed by a tour through the bioengineering laboratory facilities. After a scenic walk across the beautiful Stanford campus to the Center for International Security and Cooperation (CISAC), the afternoon session began with a panel on national and international policy considerations for biosecurity with Dr. Megan Palmer, Senior Research Scholar at CISAC, and Dr. David Relman, Co-Director of CISAC. The afternoon continued with the keynote address by current Director of the Preventive Defense Project and former Secretary of Defense, The Honorable Dr. William Perry. Dr. Perry discussed biological warfare, current WMD policies, and the changing landscape of global WMD norms. The afternoon session concluded with a panel comprised of members of the local biotechnology and Do-It-Yourself biology (DIY bio) community as well as a representative from the FBI WMD Directorate. This panel addressed biosecurity challenges in the evolving biotechnology ecosystem, emerging technologies in biology, and ways to engage the biotechnology community to maintain the delicate balance between scientific progress and security.

The workshop was a great learning experience for all, and we heartily thank the experts at LLNL and Stanford for hosting us and giving generously of their time and expertise. In particular, we thank Dr. Megan Palmer for hosting her class of ELBI Fellows and showing us around campus.



Fall Workshop Program Agenda | September 13-14, 2016

September 13 | Workshop Day 1 – Lawrence Livermore National Laboratory

- **Lawrence Livermore and S Program Overview**
 - David Rakestraw, Senior Program Director, Global Security Principal Directorate, LLNL
- **Threat Awareness**
 - Tom Bates, Biological Knowledge Center, LLNL
- **Biodetection**
 - Crystal Jiang, Group Leader of the Applied Genomics group at the Biosciences and Biotechnology Division, Physical & Life Sciences Directorate, LLNL
- **Viral Storm Exercise**
 - Randall Larsen, National Security Advisor, UPMC Center for Health Security
 - Crystal Boddie, Senior Associate, UPMC Center for Health Security
 - Matthew Watson, Senior Analyst, UPMC Center for Health Security
 - Matthew Shearer, Analyst, UPMC Center for Health Security
- **Formal Dinner Speaker**
 - David Rakestraw, Senior Program Director, Global Security Principal Directorate, LLNL

September 14 | Workshop Day 2 – Stanford University

- **Bioengineering Progress and Biosecurity Puzzles**
 - Drew Endy, Associate Professor of Bioengineering, Stanford University
 - Tim Stearns, Chair, Department of Biology, Stanford University
 - Milana Trounce, Clinical Associate Professor of Emergency Medicine, Stanford University
 - Manu Prakash, Prakash Lab, Stanford University
- **Tour of the Bioengineering Facilities**
- **Biosecurity & National and International Policy**
 - Megan Palmer, Senior Research Scholar; William J. Perry Fellow in International Security, Center for International Security and Cooperation (CISAC), Stanford University
 - David Relman, Co-Director, Center for International Security and Cooperation (CISAC), Stanford University
- **Keynote Address**
 - William Perry, Director, Preventive Defense Project, CISAC; Former Secretary of Defense
- **The Evolving Biotechnology Ecosystem and Biosecurity**
 - Patrik D'haeseleer, Co-Founder and Chair of Counter Culture Labs and Computational Biologist, LLNL
 - James Diggans, Senior Manager, Bioinformatics and Biosecurity, Twist Bioscience
 - Andy May, Chief Scientific Officer, Caribou Biosciences
 - Sara Wood, Special Agent, WMD Directorate, Federal Bureau of Investigation



Dr. William Perry, Director, Preventive Defense Project, CISAC, Stanford University, and Former Secretary of Defense. Speaking at the ELBI Workshop at Stanford University on September 14, 2016

Fellows' Perspectives on Practical Problems in Biosecurity: Winning Paper Abstracts

One of the goals of the Emerging Leaders in Biosecurity Initiative is to elicit fellows' new ideas and proposals for overcoming current and future challenges in biosecurity. To this end, fellows were encouraged to write papers describing an innovative approach to solving an as yet unsolved practical problem in the field. The following are abstracts of the winning submissions.

Additive Manufacturing and Biological Weapons: How 3D May Give Rise to Unforeseen Biosecurity Threats

Francisco Cruz

The advent of additive manufacturing, a process often referred to as 3D printing, has sparked what some are calling a new industrial revolution. With the right equipment and software, a person can build almost anything from toys to single-family homes. Although additive manufacturing has attracted interest from manufacturers, the technology runs the risk of posing a security threat. Additive manufacturing has already been used to build firearms, leading to a concern regarding unrestricted access to weapons. Additive manufacturing has also created inexpensive hardware for research laboratories in the life sciences. With individuals already looking for ways to create weapons, and its application in the life sciences, can additive manufacturing make the leap into aiding biological weapons proliferation? Terrorists groups and curious individuals have shown an ability to make crude biological weapons with limited resources. Additive manufacturing may refine the ability to create a biological weapon. Policymakers must stay ahead of the technology and begin to look into the future. Regulations will need to be restructured to account for additive manufacturing. Additionally, policymakers may need to partner with cyber security experts to prevent the spread of software required to build the hardware for a biological weapon. As hobbyists lead the way, the community will need to establish a code of ethics to ensure the technology does not get abused for nefarious purposes. A multi-pronged approach may help bring light to this gap in biosecurity before it is exposed on a large scale.

Disease Containment Versus Caring Presence in the West Africa Ebola Outbreak

Kristin Post

The unprecedented scale of the West African Ebola epidemic in 2014-2015 caught the world by surprise. One reason is geography. The virus had not previously been documented in Guinea, Sierra Leone or Liberia, the three countries where the outbreak became most virulent. Local and international health surveillance, already weak in these countries, was slow to recognize that the disease was Ebolavirus as it spread throughout the region. As governments and humanitarians struggled to gain control over the rapid spread of the virus, attempts to restrict movement and regulate the food supply by preventing bush meat trade and consumption failed. Bush meat prohibitions alone threatened to deepen already existing food insecurity, and were confusing to those who subsisted on wild game for their livelihoods. Given the rampant spread of the disease, these containment messages likely appeared to give only lip service to care, further distancing the region from their governments and the humanitarian organizations supporting them. These failures to provide effective assistance are going to remain in the public psyche, and will have to be addressed in any future efforts to meet the health needs of this region. As infectious disease specialists and other health scientists shift their focus from disease response to disease prevention, now is the time to engage in more collaborative research that leverages local knowledge and behaviors rather than marginalizing them.

New Tech, Old Problems: Practical and Legal Challenges to Using Innovative Technology in the Assessment of Medical Countermeasures

Greg Measer

Novel and innovative technologies have made our lives easier in many respects. However, coordination at the federal level of medical product surveillance and assessment strategies is lacking. Companies often struggle to adequately monitor their medical products on the market in the absence of clear guidance, incentives, or consequences. In response to a public health emergency, this effect is magnified. Medical countermeasures authorized for use during a public health emergency may be unapproved, or used for an unapproved indication, due to their investigational nature. As a result, medical countermeasures with limited human safety and effectiveness data may be assessed for safety and effectiveness for the first time in the setting of a public health emergency. While the technology likely exists to facilitate this assessment, the coordination does not. Logistical challenges abound, including barriers imposed by a legal landscape that is slow to adapt. As the United States continues to face the threat of emerging infectious diseases like H1N1, Ebola, and now Zika, there is a critical need to be able to use technology to ensure that we are fully prepared to respond to the next emergency with safe and effective MCMs.

Safety, Security, and Sovereignty: The Need for Global Guidelines for Sample Collection During Outbreaks

Claire Standley

The 2014-2015 West Africa Ebola epidemic revealed numerous shortcomings in the systems and structures for global response, including a lack of uniform and recognized guidelines for many aspects of the response effort. One such area, with significant repercussions for biosecurity, was the inconsistency of sample management after their use in diagnosis. Samples taken from patients throughout the outbreak, primarily for clinical diagnosis, were also critical for research that helped guide decision-making during the crisis, and will have further utility for preparedness and response to future epidemics, such as for the development of diagnostics and countermeasures. However, the collection and storage of samples containing high consequence pathogens, such as the Ebola virus, also pose a safety and security risk, and have implications for sovereignty of genetic material. Organizations operating diagnostic facilities across the three countries most heavily impacted by the Ebola outbreak had no consistent guidelines, with the result that now, after the outbreak, many questions remain regarding the long-term fate of those samples, as both a research resource but also safety and security risk. This paper describes the importance of establishing guidelines for the considered collection of samples in the context of an epidemic, in order to maximize future research potential and country ownership while minimizing safety and security issues. It proposes the World Health Organization (WHO) as the appropriate body to develop such guidelines, ideally integrated into the current broader consultative process around research and development (R&D) for pandemic prevention and response, in order take the full spectrum of perspectives into account and ensure organizations responding to future outbreaks are well prepared to collect samples consistently, ethically, and securely.

Use of Unannounced “Mystery Patient Drills” to Assess Hospital Emergency Department Preparedness for Communicable Disease of Public Health Concern in New York City, 2016

Mary Foote

The West African Ebola (EVD) epidemic of 2014-2015 and the associated cases diagnosed in the United States highlighted the importance of rapid recognition and isolation of patients with potentially severe infectious diseases. In response, the NYC Department of Health & Mental Hygiene (NYCDOHMH) carried out a series of unannounced “Mystery Patient Drills” to assess Emergency Department’s (ED) ability to rapidly identify and respond to patients at risk for communicable diseases of public health concern. Methods: Three scenarios were developed and carried out with an actor presenting to an ED describing symptoms consistent with EVD, measles or Middle East Respiratory Syndrome (MERS Co-V). A standard exercise evaluation tool was utilized to capture key performance measures including: times to identify, isolate and inform. Additionally, report narratives were reviewed, coded, extracted and analyzed to identify additional strengths and challenges. Results: Ninety-eight no-notice drills were conducted in 49 NYC EDs from December 2015 to May 2016. Each hospital participated in 2 drills with a majority utilizing measles (n=52) and MERS Co-V (n=43) scenarios. In 81% of drills, the patient was masked and isolated appropriately. Of those, the median time from entry to masking was 1 minute and the median time from entry to patient isolation was 9 minutes. Key recommendations for improvement include implementing standardized screening questionnaires, utilizing ‘fever+travel’ protocols to guide masking and isolation of at-risk patients and improving isolation room signage. Conclusions: ‘Unannounced mystery patient drills’ can be a useful tool to evaluate communicable disease response capabilities in the acute care setting. A standardized approach can improve data collection, allow facilities to identify areas for improvement and guide health departments in developing targeted interventions to strengthen healthcare system preparedness.

“Antimicrobial resistance poses a fundamental, long-term threat to human health, sustainable food production and development. It is not that it may happen in the future. It is a very present reality—in all parts of the world, in developing and developed countries; in rural and urban areas; in hospitals; on farms and in communities. We are losing our ability to protect both people and animals from life-threatening infections.”

Ban Ki-moon, UN Secretary General, in his remarks on September 21, 2016

Behind the Scenes in Biosecurity with Leaders in the Field

Interactive Seminars

During the year, fellows were invited to participate in 2 interactive seminars/webinars hosted at the UPMC Center for Health Security in Baltimore, one led by award-winning reporter Maryn McKenna, and the other by Dr. David Franz, former Commander of the US Army Medical Research Institute of Infectious Diseases (USAMRIID).



Reporting on Infectious Diseases and Disasters

Maryn McKenna, Journalist and Author Specializing in Public Health, Global Health, and Food Policy

On July 6, 2016, Maryn McKenna gave a thought provoking talk and held an interactive discussion about the role of the press in reporting on biosecurity and health security issues. She discussed her experiences reporting on events such as Ebola in the US, the current Zika outbreak, and past disasters including the Indian Ocean Tsunami and Hurricane Katrina. Ms. McKenna also discussed how, as experts, the Fellows can effectively engage with the press to help shape media analysis of issues in this field. Ms. McKenna is an award winning journalist and author, and she provided an interesting and useful perspective for the Fellows to take with them as they move forward in their careers and interact with the media about their work.



US Biodefense: Past and Future

David Franz, DVM, PhD, Senior Associate, Principal, SBDGlobal, Former Commander of USAMRIID

On August 20, 2016, David Franz came to Baltimore for a seminar/webinar with the fellows, focused on the history and future of US biodefense. Dr. Franz gave a fascinating presentation about his work as a member of the first two US-UK teams that visited Russia in support of the Trilateral Joint Statement on Biological Weapons and as a member of the Trilateral Experts' Committee for biological weapons negotiations. Dr. Franz discussed his experience in biological threat reduction and reflected on the importance of personal and professional connections as a critical component of scientific diplomacy. Dr. Franz also spoke about his role as the former commander of the US Army Medical Research Institute of Infectious Diseases (USAMRIID), and his outlook for the future of biodefense in a rapidly advancing biotechnology environment.

Presentation of Winning Papers

On October 26, 2016, the winners of the ELBI paper competition joined in person and online to present their ideas to the ELBI Alumni. During this seminar/webinar, each winning fellow presented on his/her chosen topic and engaged the audience in Q&A.



UPMC Center for Health Security

The UPMC Center for Health Security is an independent nonprofit organization that works to protect people's health from the consequences of epidemics and disasters and to ensure that communities are resilient to major challenges.

An important part of our mission is to connect diverse and international communities of health and science experts, industry representatives, and government officials to strengthen collective efforts to improve health security.

We do this work through the combined talents of our scholars in science, medicine, public health, national security, law, social sciences, and economics.

Emerging Leaders in Biosecurity Program Staff

While several Center for Health Security staff work on the Emerging Leaders in Biosecurity Initiative on a daily basis, virtually everyone in the Center has helped by providing ideas, contributing to meetings, reviewing papers, and advising fellows.

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CENTRA Technology, Inc.

CENTRA is a high-technology business providing security, analytic, technical, engineering, and management support to the government and private sectors. It has been delivering services to a wide range of customers in the security, defense, aerospace, and international communities since 1985.

CENTRA's staff members have worked tirelessly to provide the ELBI program, our sponsors, and Fellows with a full range of support—including contract management, note-taking and conference report development, hosting of meetings, budgeting, logistics, conference planning and management, and meeting other ELBI requirements as defined by our sponsors. Thanks, Team CENTRA.

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Yearbook Credits

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