



Emerging Leaders in Biosecurity Initiative

CLASS OF 2015 YEARBOOK

A competitive fellowship 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 2015

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



“Just as we step up our ability to prevent an attack, we must also bolster our capacity to protect against — and respond to — the threats that may come. When it comes to bioterror, this can mean the difference between a contained incident and a catastrophe. That’s why we need to invest in new vaccines, to reduce the risk posed by those who would use disease as a weapon. That’s why we must develop the technology to detect attacks and to trace them to their origin, so that we can react in a timely fashion. And to care for our citizens who are infected, we must provide our public health system across the country with the surge capacity to confront a crisis. Making these changes will do more than help us tackle bioterror — it will create new jobs, support a healthier population, and improve America’s capability to respond to any major disaster.”

President Barack Obama, July 16, 2008





Emerging Leaders in Biosecurity Class of 2015





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

We are proud to conclude the extraordinary third year of the Emerging Leaders in Biosecurity Initiative. We have no doubt that the Fellows in our 2015 ELBI class will make significant contributions in preventing, managing and responding to biosecurity threats in the years ahead. They are an impressive, highly skilled and engaged group of early career professionals who operate at the nexus of the life sciences and national security. In just a few short years, the 2015 Fellows may be in positions to guide the development of sound policies, or in some cases, to make policies themselves.

It's been both exciting and very rewarding to see the Emerging Leaders in Biosecurity Initiative flourish and grow since its creation in 2012. With leadership and support from the Defense Threat Reduction Agency of the US Department of Defense, the program attracts talented and ambitious professionals who seek 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 28 selected ELBI Fellows this year was striking. These individuals show enormous potential to provide new insights and energy to some of the most difficult problems we face in biosecurity. It has been gratifying to provide opportunities for this year's Fellows to interact with alumni from previous ELBI classes. As in the past, the alumni from the ELBI program have been eager to share experiences, information, and contacts with each other, and this type of personal networking will serve them—and the broader biosecurity community—well in the years ahead.

Through the ELBI program, the 2015 class of Fellows, representing the US, Canada, Australia and the UK, were provided with a behind-the-scenes look at cutting edge scientific facilities and networked with current leaders in the field. In the spring, they were received at the White House, Department of State and the Pentagon, and given an overview of how the US government approaches biosecurity. This fall, in a first for the program, the Fellows traveled to the UK, where they learned about biosecurity issues from our British allies and were taken on unique tours of both DSTL/Porton Down and the Pirbright Institute. We are very grateful to the Defence Academy of the UK and to Kings College of London for hosting the Fellows for such a rich and educational experience. At every meeting and site visit this year, the Fellows asked thoughtful questions, offered new perspectives, and engaged in meaningful dialogue.

The Department of Defense benefits from the Emerging Leaders program by strengthening its own biosecurity workforce, developing contacts with outside experts, and nurturing new international connections with allies. The Fellows benefit as so many senior leaders across the biosecurity space devote time, provide advice, and contribute goodwill to the program. We want to especially thank our esteemed Executive Steering Committee for their valuable input and program vision. We are proud to support the Emerging Leaders program.

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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

Richard Danzig, PhD, JD, A Director, Center for a New American Security

David Franz, DVM, PhD, Principal, SBDGlobal

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

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

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 for Medical Preparedness Policy, National Security Staff, The White House

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

James B. Petro, PhD, J9, DTRA, DoD

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:

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

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



Seth Baum

Dr. Seth Baum is Executive Director of the Global Catastrophic Risk Institute, a nonprofit think tank that he co-founded in 2011. Dr. Baum's research focuses on risk, ethics, and policy questions for major threats to human civilization, including nuclear war, global warming, pandemics, and emerging technologies. He received a PhD in geography from Pennsylvania State University and completed a postdoctoral fellowship with the Columbia University Center for Research on Environmental Decisions. He writes a monthly column in the *Bulletin of the Atomic Scientists*. He is an active member of the Society for Risk Analysis and has spoken at venues including the United Nations, the Royal Swedish Academy of Sciences, and the Future of Humanity Institute at Oxford University. He is based in New York City.



John Billington

John Billington is Director of Health Policy at the Infectious Diseases Society of America (IDSA) in Arlington, Virginia. At IDSA, Mr. Billington manages a broad public health policy portfolio and serves as assigned staff for IDSA's Public Health Committee (PHC) and Antimicrobial Resistance Committee (ARC). He is also coordinator for the US Stakeholder Forum on Antimicrobial Resistance (S-FAR), a national stakeholder partnership to advance US and global policies and practices in response to the growing public health threat of antimicrobial resistance. Prior to his role at IDSA, Mr. Billington was a manager in the health reform practice at Avalere Health, a health policy advisory firm in Washington, DC. He was also a legislative fellow for health policy in the DC office of Senator Sherrod Brown of Ohio. Mr. Billington received his JD and MPH degrees from Ohio State University in Columbus, Ohio. He received his undergraduate degree from Colgate University in Hamilton, New York. Mr. Billington has a particular interest in policy and legal issues related to vaccine and antimicrobial development and public-private partnership models for public health.



Lisa Brown

Lisa Brown is a Senior Program Analyst for Environmental Health, Pandemic Preparedness, and Catastrophic Response at the National Association of County and City Health Officials (NACCHO). At NACCHO, Ms. Brown works on a wide range of environmental health and preparedness issues to provide technical assistance, training, and education to the nation's local public health department officials. At NACCHO, she has researched radiation legal preparedness issues and served as project lead for medical countermeasures. Currently, Ms. Brown works on a variety of projects related to health security, such as assessing the capacity of pharmacies to administer pandemic influenza vaccine during increased surge, evaluating the capacity of the nation's rodent control programs, and researching the health impacts of climate change. Prior to working at NACCHO, Ms. Brown worked as an environmental public health scientist at Public Health England. While at Public Health England, she focused on the recovery process following disasters, as well as the environmental impact of droughts and floods on infectious disease incidence. Ms. Brown received her MPH from King's College London in 2012 and her BS in biology from the University of Findlay in 2010.



Remi Charlebois

Remi Charlebois is a senior scientist and consultant at Lalema, a Montreal-based company specializing in sanitary and antimicrobial solutions. He is an integral part of the research and development unit of the company. His expertise resides in the control and prevention of healthcare-associated infections with a focus on environmental hygiene. Mr. Charlebois obtained his MSc in microbiology from Laval University, where he studied the dissemination of healthcare-associated pathogens through the airborne route. He also has a BSc in microbiology from Laval University.



Leremy Colf

Leremy Colf is a member of the Biological Threat Characterization team in the US Department of Homeland Security as a Science and Technology Policy Fellow with the American Association for the Advancement of Science. In this role, he is developing a framework to help the government address the risks of enhanced and advanced bioterrorism and emerging infectious diseases. He has also been extensively involved in the public health response to Ebola and is leveraging lessons learned from Ebola to better respond to future public health emergencies. Additionally, Dr. Colf is on the faculty of George Washington University as an Adjunct Assistant Professor of Clinical Research and Leadership.

Dr. Colf earned an undergraduate degree in biochemistry from the University of Arkansas, followed by a PhD in microbiology and immunology from Stanford. He has worked as a research scientist since 1997 in academia, industry, and government labs, studying a range of topics including the development of alternative fossil fuels, virus infectivity and replication, organ transplant rejection, and cancerous transformation. He has been extensively involved with the American Cancer Society in education and advocacy, promoting the value of scientific research in the fight against cancer.



Julia Dooher

Julia Dooher is a biologist at the Johns Hopkins University Applied Physics Laboratory in the Applied Biological Sciences Group. She serves as the Chief Science Coordinator for the Department of Defense's Joint Program Executive Office for Chemical and Biological Defense, where she supports science and technology activities related to strategic initiatives, engagements, and planning related to the advanced development of capabilities for the protection of military personnel. From 2012 to 2014, she served as an American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellow at the Department of Defense in support of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs and the Deputy Assistant Secretary of Defense for Chemical and Biological Defense.

During her AAAS fellowship, Dr. Dooher contributed scientific advising and coordination of several issues related to biological defense, military health, and global health security, particularly in the areas of biosurveillance, biopreparedness, and interagency and international collaboration on these activities. Dr. Dooher is a laboratory-trained bench scientist who received her MS and PhD degrees in pathobiology from the University of Washington School of Public Health, researching the cell biology and biochemistry of viral capsid assembly in 2002 and 2005. She performed postdoctoral studies on the molecular mechanism of cancer at the Johns Hopkins University School of Medicine. In 2011 she completed a Christine Mirzayan Science and Technology Policy Fellowship at the National Academies and Institute of Medicine. Dr. Dooher graduated magna cum laude from Tufts University in 1998, where she earned her BS in biology.



Jeff Drocco

Jeff Drocco is a Staff Scientist in the Biosciences and Biotechnology Division at Lawrence Livermore National Laboratory. He works in the Biodefense Knowledge Center, where he is responsible for analysis of emerging technologies and their impact on biosecurity. Dr. Drocco is interested in using quantitative and computational techniques to improve policy analysis and provide decision support. Previously, he was a Director's Postdoctoral Fellow at Los Alamos National Laboratory. He received a PhD in physics, specializing in biophysics, from Princeton University in 2011. He received his BS, also in physics, from the University of Notre Dame in 2004.



Victoria Earl

Victoria Earl is currently a PhD student at King's College London and in the Joint Services Command and Staff College at the Defence Academy of the United Kingdom, researching the extent to which the acquisition and proliferation of chemical weapons by violent nonstate actors shapes the face of future conflict. Ms. Earl achieved a 2.1 MEng (Hons) degree in Engineering (Aeronautics) and a MA Merit (Risk & Security) at Durham University. She then achieved an MSc (Forensic Engineering & Science) at Cranfield University at the Defence Academy. She joined the Army Reserves (135 Geographic Squadron Royal Engineers) in November 2012 and completed Trained Soldier Course (A) and Trained Soldier Course (Infantry). She commissioned from the Royal Military Academy Sandhurst in August 2014 into the Corps of Royal Engineers. She subsequently completed Young Officer training, passed the Royal Engineers Troop Commander's Course, and attended the Defence Geographic Information Systems (GIS) User Course. Ms. Earl is a Troop Commander at 135 Geographic Squadron, a Reserve unit supporting 42 Engineer Regiment (Geographic), which provides geographic support to all elements of UK defence.



Nicholas Evans

Nicholas G. Evans is a postdoctoral fellow in advanced biomedical ethics at the Department of Medical Ethics and Health Policy in the Perelman School of Medicine, University of Pennsylvania. Dr. Evans conducts research primarily on the security aspects of microbiology and infectious diseases, with a focus on dual-use virology research of concern. He has published in a variety of bioethics, health law, and science journals, including the *Journal of Medical Ethics*, *mBio*, *Science and Engineering Ethics*, *Law and Biosciences*, and the *Monash Bioethics Review*.

Dr. Evans maintains an active research program in military ethics; his first volume, *The Routledge Handbook of Ethics and War*, was released in 2013 and was selected as a 2014 winner of the Outstanding Academic Titles by Choice, the magazine of the American Library Association. Dr. Evans is currently pursuing a project examining the ethical aspects of military biopreparedness as they pertain to issues of gender and race, and the implications these dimensions of bioethics raise for the development of medical countermeasures for use in the event of biological warfare or terrorism. He has also conducted research on the ethical aspects of cyberwarfare, through a grant with the Australian National University's National Security College.

Prior to his appointment at the University of Pennsylvania, Dr. Evans was a Visiting Research Fellow at the Monash Center for Human Bioethics in Melbourne, Australia. Dr. Evans has also completed work as a policy officer with the Australian Department of Health (where he focused on the regulation of assisted reproduction services) and the Australian Therapeutic Goods Administration (where he developed internal accountability measures for the agency).



Malaya Fletcher

Malaya Fletcher is the Public Health Preparedness Planner at the Philadelphia Department of Public Health. Her primary responsibilities include regional coordination for the Philadelphia-Camden-Wilmington Metropolitan Statistical Area Public Health Workgroup (a compendium of public health officials, emergency management agencies, public information officers, healthcare coalitions, and other stakeholders across 4 states, 11 counties, and 2 federal regions) and emergency response planning for radiological incidents, as well as medication procurement. Ms. Fletcher has also worked in pandemic flu planning for Washington State Schools and is a member of the Advisory Board for the Systems-Level Mass Fatality Preparedness Study at the University of California-San Francisco Philip R. Lee Institute for Health Policy Studies. She has also researched maternal-child health in India as a Boren Scholar in 2007 and conducted capacity assessments in Ghanaian district hospitals. Ms. Fletcher received an MPH in epidemiology and global health from Columbia University in 2012. She also has a BS in microbiology from Arizona State University.



Kim Gajewski

Kim Gajewski is a Presidential Management Fellow at the Defense Threat Reduction Agency, where she works as a Country Manager for the Cooperative Biologic Engagement Program. Her responsibilities include working with partner nations to enhance their biosurveillance, biosecurity, and biosafety capabilities to prevent the proliferation of biological weapons. She recently supported the Department of Defense's Ebola outbreak response in West Africa and previously worked for the Federal Emergency Management Agency. Ms. Gajewski received her Master's degree in epidemiology from Emory University in 2013 and Bachelor's degrees in biology and psychology from Duke University in 2011.



Kettner Griswold

Kettner Griswold, Jr., is the CTO of Evolutionary Solutions, a biotechnology company developing a novel error-checked long-write DNA synthesis technology for rapid, cheap development cycles in synthetic biology. Mr. Griswold was a Research Affiliate at Lawrence Berkeley National Lab, where most of the technology development for Evolutionary Solutions was performed. Prior to starting his company, Mr. Griswold led an iGEM team in 2011 developing a conjugating CRISPR-CAS plasmid as a strategy to counter antimicrobial resistance. He studied material science at Georgia Institute of Technology and, prior to college, performed independent research in the J. Craig Venter Institute's Synthetic Biology department.



Emily Kelley

Emily Kelley is an International Project Manager at the Defense Threat Reduction Agency's Cooperative Biological Engagement Program under the Cooperative Threat Reduction Program. She is a Country Manager in the Middle East and CENTCOM region, responsible for leading international biosafety, biosecurity, and biosurveillance projects with foreign partner countries while employing appropriate acquisition strategies and contracting actions to achieve programmatic goals and end states. Ms. Kelley has also served as Regional Science Lead for the Middle East and Southeast Asia regions, where she provided scientific subject matter expertise, conducted technical reviews for proposal selection and award, and led academic, US interagency, and foreign partner nation scientists through the proposal submission process. Previously, Ms. Kelley worked for Booz Allen Hamilton on a contract with the Department of Homeland Security's Science & Technology Directorate's Chemical and Biological Defense Division. There, she worked on DHS's response to Presidential Policy Directive 2, the National Strategy for Countering Biological Threats, supported the development of biological Material Threat Assessments and Determinations, and assisted in DHS's Bioassays Program. Ms. Kelley was also an engineer with BAE System's Advanced Technologies group, focused on performing basic research for innovative chemical and biological based applications for the Department of Defense. Ms. Kelley received her Masters in Engineering Management and a Bachelors in Biomedical Engineering with a focus on Mathematics from Duke University.



Andrew Kilianski

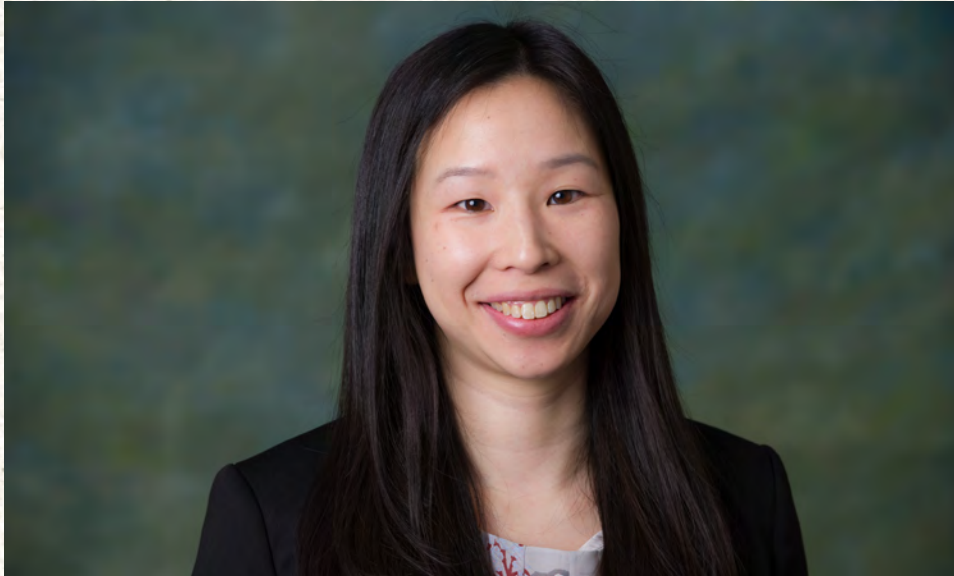
Andy Kilianski is a National Research Council Fellow in the BioSciences Division at Edgewood Chemical Biological Center. His research focuses on biosurveillance and the identification and characterization of novel agents that threaten today's warfighter. Dr. Kilianski's research interests also include emerging viral pathogens and public health and biodefense policy. He is currently the primary investigator on projects that evaluate nanopore sequencing for far-forward biointelligence, discover host therapeutic targets in alphavirus virions, and use comparative genomics to improve biosurveillance in the Republic of Korea.

His research has been published in peer-reviewed journals such as PLoS Pathogens, Journal of Virology, and Biosecurity and Bioterrorism; he has also published an op-ed piece in the Baltimore Sun. Dr. Kilianski received his PhD in microbiology and immunology from Loyola University Chicago, where his dissertation research involved uncoupling virus-host interactions important for coronavirus pathogenesis and developing antiviral compounds against emerging coronaviruses (SARS-CoV and MERS-CoV).



Judy Kruger

Judy Kruger is a senior health scientist with the National Center for Chronic Disease Prevention and Health Promotion at the Centers for Disease Control and Prevention (CDC). Before joining CDC, she worked as a technical advisor for community-based public health interventions at the Health Research Policy Centers and was a pre-doctoral fellow with the National Institutes of Health. Following that, she completed two years of Epidemic Intelligence Training (EIS) at CDC where she responded to the West Nile virus outbreak in Louisiana in 2002, and assisted with field investigations of Anthrax cases among media and postal service employees in New York City in 2001. She has worked at the CDC since completing her EIS training and her interests include using surveillance data to provide scientific guidance, community assessment, and on-the-ground support for emergency preparedness and response. She has authored and co-authored numerous manuscripts, policy papers and technical reports across the continuum of communicable and non-communicable research to identify, implement, and disseminate evidence-based public health approaches. In support of CDC's efforts in Global Health Security, she was deployed to Cote d'Ivoire in 2014 and Sierra Leone in 2015 to assist with Ebola response efforts. She serves as a surge staff member in times of need with CDC's Global Rapid Response Team and as an advisory committee member for numerous Federal agencies. She received her PhD from the University of Illinois at Chicago, School of Public Health.



Patricia Lau

Patricia Lau is a Senior Analyst, Risk and Capability Assessment, with the Office of Emergency Response Services (OERS) at the Public Health Agency of Canada (PHAC). In addition to her work in risk and capability assessment, Ms. Lau leads a team of analysts who provide recommendations to inform evidence-based decision making in the strategic management of assets related to emergency preparedness and response.

Prior to her work with OERS, Ms. Lau was a policy analyst, where her work centered primarily on intergovernmental health information sharing. In previous roles, she was a health economist with the Office of Public Health Practice, PHAC, where she was involved in the Economic Burden of Illness in Canada project as well as modeling the health and economic impacts of obesity. As a health economist, Ms. Lau also spent time on assignment with the Centre for Chronic Disease Prevention, where she contributed to neurological conditions and cardiovascular disease modeling. Before beginning her career at PHAC, Patricia worked at the University of British Columbia and the Rick Hansen Foundation. Ms. Lau has a BSc in biochemistry from the University of British Columbia and an MSc in public health from the London School of Hygiene and Tropical Medicine, University of London.



Andrew Leifer

Andrew M. Leifer is a Lewis-Sigler Fellow and a principal investigator at the Lewis-Sigler Institute for Integrative Genomics at Princeton University. Dr. Leifer's research group brings together techniques from physics, neuroscience, and molecular biology to investigate how neural activity generates behavior in the small nematode *C. elegans*. Dr. Leifer has pioneered the development of new optical instruments to manipulate and monitor the activity of neurons across the brain with cellular resolution in freely moving worms. Dr. Leifer holds a Lecturer appointment in the Department of Physics at Princeton University, where he teaches freshman-level integrated science. He is the recipient of awards and fellowships including the National Science Foundation Graduate Research Fellowship, the Derek C. Bok Certificate of Distinction in Teaching, and the Rieser Fellowship in Science Technology and Global Security. Dr. Leifer received his PhD in biophysics from Harvard University in 2012. He received a BS in physics and a BA in political science from Stanford University, where he graduated with interdisciplinary honors in international security studies in 2007. Dr. Leifer's undergraduate honors thesis explored the role that scientists played in advancing arms control agendas across the iron curtain during the Cold War.



Kevin Martin

Kevin Martin is a Biosafety Specialist and senior staff at the Defence Science and Technology Laboratory (Dstl), part of the UK Ministry of Defence (MoD). In this capacity, and with 10 years of practical and advisory experience in the high microbiological containment field, he leads the provision of biosafety advice in Dstl Biomedical Sciences Department. He has conducted high-containment research, held the position of Dstl Biological Safety Officer, and was seconded as a CBRN Scientific Advisor to the Office for Security and Counter-Terrorism within the Home Office. Currently he leads on specific biosafety initiatives and activities such as compliance to national and international biosafety and biosecurity standards, formulating safe systems of work in relation to manipulation of biological agents categorized as hazard group 2, 3, 4, and toxins and providing professional opinion on various containment systems in use or planned for implementation to ensure delivery of Dstl and MoD work streams. He also provides technical advice to wider government and the UK Biological Engagement Programme activities in a biorisk reduction role.

Mr. Martin is joint Secretariat for the Cross-Government High Containment Coordination Group, which reports to the Government's Chief Scientific Advisor, and is also a committee member of the British Standards Institute and Joint Working Group Member of the Organisation for International Standardisation (ISO) on biorisk. Kevin is a chartered biologist and fellow of the Society of Biology, a registered biosafety practitioner with the Institute of Safety in Technology and Research, has obtained a certificate in occupational safety and health from the British Safety Council, and is a Registered Biosafety Professional of the American Biological Safety Association. He received an MSc in medical genetics from the University of Glasgow in 2001 and a BSc (Hons) in medical biotechnology from the University of Abertay Dundee in 2000.



Amor Menezes

Amor Menezes is a postdoctoral scholar in the California Institute for Quantitative Biosciences at the University of California, Berkeley. He previously was a research fellow between 2010 and 2011 in the Department of Aerospace Engineering at the University of Michigan, where he received a PhD degree as an NSERC Post-Graduate Scholar and Michigan Teaching Fellow in 2010, and a master of science in engineering degree as a Milo E. Oliphant Fellow in 2006. He graduated from the University of Waterloo in 2005 with a bachelor of applied science degree in mechanical engineering with Distinction, Dean's Honors (top 10%), and the Sandford Fleming Co-op Medal. Dr. Menezes's research interests include the theory and application of control systems principles in synthetic and systems biology and also stochastic optimization, evolutionary computation, and the feedback control of novel dynamical systems. He was a guest editor for *Robotica* in 2011. He is a 2015 fellow of the Synthetic Biology Leadership Excellence Accelerator Program in recognition of his efforts to enable the practical application of synthetic biology to space.



Allison Mistry

Allison Mistry was recently a Health Science Policy Analyst at the National Institutes of Health (NIH) in the Office of Science Policy. In this position, she worked in the Office of Science Management and Reporting to provide analysis and expert advice on biomedical, scientific, and health policy issues affecting both NIH and the national biomedical research community. She previously staffed the National Scientific Advisory Board for Biosecurity (NSABB) and provided analysis and support for NSABB tasks involving the communication of sensitive biomedical research, the issues of personnel reliability, and the “culture of responsibility” regarding research involving select agents, and the oversight of dual-use research of concern (DURC). She contributed to the development of the US government’s oversight policies for DURC.

Previously, she served as a Research Analyst at the Science and Technology Policy Institute (STPI), where she addressed policy issues related to biomedical research, global health, research capacity building, S&T competitiveness, and homeland security. Prior to her time at STPI, Ms. Mistry was a Senior Analyst at Abt Associates, where she led and conducted evaluations and analyses of NIH, NSF, and SAMHSA programs. Ms. Mistry also worked for 2 years coordinating and managing an NIH-funded research program examining the role of commensal organisms as reservoirs of antimicrobial resistance. Her graduate research focused on the biochemistry of anaerobic metal-reduction of Geobacteracea. She holds a BA in biochemistry from Smith College, an MS in microbiology, and an MA from the University of Amsterdam.



Amanda Moodie

Amanda Moodie is a Research Analyst at the Center for the Study of Weapons of Mass Destruction. Her work focuses on strategic stability and regional security in East Asia, North Korea's WMD programs, and chemical and biological threat reduction. Before joining the WMD Center, she worked as a research associate at the James Martin Center for Nonproliferation Studies, where she supported the International Organizations and Nonproliferation Program. There she designed and implemented research projects on the international nonproliferation regime and developed curricula on various WMD issues, particularly the role of international treaties and law in establishing and reinforcing nonproliferation norms. Ms. Moodie has also worked at CSC (where she supported the Defense Threat Reduction Agency's International Counterproliferation Program), at Booz Allen Hamilton, and at the Washington office of the International Institute for Strategic Studies. Ms. Moodie has published articles in the *Nonproliferation Review* and *WMD Insights*. She holds a Master of Arts in law and diplomacy from Tufts University's Fletcher School of Law and Diplomacy, and a BA in political science and English from Duke University.



Michelle Nalabandian

Michelle Nalabandian joined the Nuclear Threat Initiative (NTI) in 2009 and serves as Program Associate for the Scientific and Technical Affairs Program. In this role, she is responsible for managing technical and operational elements of the program, and conducts research and analysis in support of NTI's projects that strengthen nuclear materials security globally, reduce bio-security threats, and promote cybersecurity as it relates to nuclear facilities. Ms. Nalabandian plays an integral role in a number of NTI's high-profile initiatives in the field of nuclear and biological security that have contributed to global awareness of the dangers presented by such weapons. Prior to joining NTI, Ms. Nalabandian worked in the financial sector for asset management firms Global Environment Fund and Sciens Capital Management. Ms. Nalabandian holds a bachelor's degree in biology from George Mason University and received a certificate of mastery from the John F. Kennedy School of Government at Harvard University, in 'Central Challenges of American National Security, Strategy, and the Press'. She is a member of the 2015 class of the Nuclear Scholars Initiative, a project of the Center for Strategic and International Studies' Project on Nuclear Issues (PONI). Ms. Nalabandian is also a member of Women in International Security (WIIS) and is currently pursuing a master's degree in forensic science.



Alexandra Phelan

Alexandra Phelan is an Adjunct Professor in Public Health Law and Ethics, Doctor of Juridical Science (SJD) candidate, and General Sir John Monash Scholar at Georgetown University in Washington, DC. Ms. Phelan's doctoral research focuses on global health law and the prevention, control, and response to infectious disease threats. Ms. Phelan completed her Master of Laws (with merit) at the Australian National University (Canberra, Australia), specializing in international law, with a particular focus on global security challenges including pandemics and climate change. She completed her Bachelor of biomedical science/bachelor of laws (with honors) double degree at Monash University (Melbourne, Australia), specializing in international law and health human rights in her legal studies, and infectious diseases in her biomedical science studies. Her law honors thesis examined Australia's implementation of the International Health Regulations, and she is currently completing further research into the human rights implications of this implementation as an Honorary Associate at the Castan Centre for Human Rights Law at Monash University. As a passionate linguist, she also holds a Diploma of Languages in Mandarin Chinese from Monash University and is particularly interested in China's role in global health security.



Caitlin Rivers

Dr. Caitlin Rivers is an epidemiologist with the US Army Public Health Command. She holds an MPH in infectious disease and a PhD in computational epidemiology from Virginia Tech. Her doctoral work was funded by a Department of Defense Science, Mathematics and Research for Transformation fellowship. Dr. Rivers is interested in modeling of emerging zoonoses, including MERS and H7N9. She also used outbreak models during the Ebola outbreak to help public health responders make data-drive decisions. She is the developer of `epipy`, a Python package for epidemiology, and the founder of a popular repository for open Ebola data and is passionate about using open science to improve outbreak response.



Erin Sorrell

Erin M. Sorrell is a Senior Research Scientist in the Department of Health Policy and Management in the Milken Institute School of Public Health at George Washington University. She works with partners across the US government, international organizations, and ministries around the world to define, develop, and sustain programs for implementation of the International Health Regulations (2005) and Global Health Security. Previously, Dr. Sorrell was a program officer in the State Department's Biosecurity Engagement Program (BEP), where she also worked as an American Association for the Advancement of Science Executive Branch Fellow. At BEP, she provided strategic policy planning, program management, and oversight for foreign assistance activities in Sub-Saharan Africa, the Middle East, and North Africa. Dr. Sorrell was a postdoctoral fellow at Erasmus Medical Center, The Netherlands, and the University of Maryland, researching influenza virus transmission. She received a BS in animal science from Cornell University and an MS and PhD in molecular virology from the University of Maryland.



Ryan Stringer

Ryan Stringer contributes to emergency preparedness and health policy at the University of Pittsburgh. With the Center for Public Health Practice, he furthers preparedness research and policy in collaboration with the CDC and health departments, contributes to scholarship in preparedness law, and develops legal research tools for all-hazards scenarios. At the Health Policy Institute, he supports healthcare delivery system reforms that improve care coordination and integration. Mr. Stringer previously spent 4 years with the Institute for Social Research at the University of Michigan, where he concentrated on health, stress, and aging. In May 2015, Mr. Stringer will graduate with a JD degree, an MPH degree, and a certificate in health law. With Pitt Law, he served as the Senior Development Editor of the Pittsburgh Journal of Environmental and Public Health Law.



Justin Taylor

Justin Taylor worked recently as a Global Health Technical Specialist at Global Scientific Solutions for Health. In this role, he worked to implement laboratory capacity-building projects in developing countries such as Ethiopia, Benin, Togo, and Cambodia. The capacity-building projects have focused on improving quality in clinical laboratories to ensure timely, accurate diagnosis of infectious diseases. Dr. Taylor obtained his Bachelor's degree in molecular, cellular, and developmental biology from the University of Colorado-Boulder, followed by his PhD in molecular microbiology and immunology from the University of Maryland-Baltimore. During his PhD, Dr. Taylor's research focused on SARS-CoV pathogenesis and development of countermeasures against MERS-CoV. Prior to his research at University of Maryland-Baltimore, Dr. Taylor worked at the National Cancer Institute in the Laboratory of Genomic Diversity and the United States Army Medical Research Institute for Infectious Diseases in the Diagnostic Systems Division.



Amy Walker

Amy Walker is the Vaccines, Biodefense, and Diagnostics Policy Coordinator at the Biotechnology Industry Organization (BIO). She supports BIO's vaccine, biodefense, and antimicrobial resistance policy and advocacy initiatives through monitoring and analyzing policies and developments related to medical countermeasure development and infectious disease topics, assisting with the development of industry positions, providing subject matter expertise in Congressional and federal agency meetings, and coordinating industry meetings and activities. Prior to BIO, Ms. Walker was a legislative assistant with Drinker Biddle & Reath's health government relations practice group, where she provided research and advocacy support for the Alliance for Biosecurity. She also previously worked on Capitol Hill in the offices of Senator John Warner and Senator Jim Risch. Ms. Walker received a Bachelor of Arts in political science and European studies from the University of Notre Dame in 2008.





Spring Workshop 2015: Biosecurity in Policy and Practice

Matthew Watson, ELBI Deputy Program Manager

The spring workshop, held in Washington, DC, was the first opportunity for the 2015 class of emerging leaders to meet with their peers, the ELBI program staff, and many current leaders in biosecurity. Because biosecurity draws from a large variety of professional disciplines, the spring workshop serves as a way to baseline the group's knowledge about the field.

Jumping right into the action, the Fellows initially gathered at the White House to attend an exclusive meeting in the historic Indian Treaty Room of the Eisenhower Executive Office Building, hosted by the National Security Council (NSC) and Office of Science and Technology Policy (OSTP). Here, the Fellows heard about the range of biosecurity policy work being conducted by the NSC and OSTP staff, including executive action around dual use research of concern (DURC), antimicrobial resistance, and the Global Health Security Agenda. Following the White House briefing, the group walked a short distance to Old Ebbitt Grill, the "oldest saloon in Washington," founded in 1856 and frequented by US presidents beginning with Ulysses S. Grant.

The next day, the Fellows attended a full day workshop in Arlington, VA, where they were introduced by leaders in the field to multiple aspects of biosecurity, including historical context, recent innovations in science and technology, and international issues. Speakers, including Randall Larsen, Luciana Borio, and

Bob Kadlec, gave presentations and also stayed around to continue discussions in the hallways and at lunch. That evening, the Fellows were treated to a dinner presentation by Tara O'Toole, who spoke about the history, evolution, and future of technology.

On the third day of the workshop, the Fellows travelled by bus to the Pentagon where they toured the facility and met with CDR Franca Jones, Director of Medical Programs at the Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs, to learn about various components of DoD's biodefense enterprise.

We ended the third day with a visit to the State Department, where the Fellows heard from experts about the international response to Ebola, the BWC, and work by the department on non-proliferation and cooperative biological engagement.

Our first impressions of the 2015 class were that the Fellows were bright, eager, knowledgeable, and indeed poised to become leaders in the field. We were excited to continue the conversations begun in the spring workshop with further activities throughout the year.



Spring Workshop Program Agenda, March 10-12, 2015

March 10 | White House Discussion on Biosecurity

- **Biosecurity Discussion:**

- ▶ Lawrence Kerr, Director for Medical Preparedness Policy, White House National Security Staff
- ▶ Susan Coller-Monarez, Assistant Director for National Health Security and International Affairs, White House Office of Science & Technology
- ▶ Elizabeth Cameron, Director, Countering Biological Threats, White House National Security Staff
- ▶ Richard Hunt, White House National Security Staff

March 11 | Workshop Day 1 – Arlington, VA

- **Biological Threats: Past, Present, and Future:** Randall Larsen, National Security Advisor, UPMC Center for Health Security
- **Perspectives on the US Ebola Response:**
 - Jim Blumenstock, Chief Program Officer, Health Security, Association of State and Territorial Health Officials
 - Lewis Rubinson, Associate Professor of Medicine, University of Maryland
- **Domestic and International Medical Countermeasures Development and Deployment:**
 - Luciana Borio, Assistant Commissioner for Counterterrorism Policy and Acting Deputy Chief Scientist, US Food and Drug Administration
 - Ryan Morhard, Branch Chief, International Partnerships, Office of the Assistant for Preparedness and Response, US Department of Health and Human Services
- **Biodefense: Perspectives from the White House and Congress:** Robert Kadlec, Deputy Staff Director, Senate Select Committee on Intelligence
- **Networking Dinner for Fellows, Speakers, and Alumni:** Tara O'Toole, Executive Vice President, In-Q-Tel, and Former Undersecretary for Science & Technology, US Department of Homeland Security

March 12 | Workshop Day 2 – Washington, DC

- **Pentagon Site Visit and Tour:** CDR Franca Jones, Director, Medical Programs, Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs
- **US Department of State Site Visit:**
 - Amy Wilson and Stephen Knight, Special Assistants to Ambassador Bonnie Jenkins, US Department of State
 - Andrew Weber, Deputy Coordinator for Ebola Response, US Department of State
 - Alex Stolar, Team Chief, Biosecurity Engagement Program, US Department of State
 - Rebecca Katz, Consultant, Biological Policy Staff, Bureau of International Security and Nonproliferation, US Department of State, and Associate Professor of Health Policy, George Washington







Fall Workshop 2015: Biosecurity in the US and UK

Matthew Shearer, ELBI Program Staff

The fall workshop, co-hosted by King's College London at the Defence Academy of the UK in Shrivenham, England, was the first international function for the ELBI Fellowship. The Fellows picked up right where they left off after the spring conference and summer seminars, and did not hesitate to engage the wide range of outstanding US and UK biosecurity experts assembled for the three-day event.

The first day consisted of a number of discussion panels, composed of biosecurity experts from both the US and the UK. The first panel provided an orientation to the differences between biosecurity priorities and perspectives in the two countries. Topics for the subsequent panels ranged from the Ebola response, to global health, to synthetic biology, and the Fellows challenged the speakers with questions highlighting the diversity of this year's ELBI class. The day came to a close with a formal dinner and address by Professor Bernard Silverman, Chief Science Adviser for the UK Home Office.

The second day kicked off with a keynote address by Dr. Stephen Redd, Director of CDC's Office of Public Health Preparedness and Response, followed by followed by an expert panel which addressed a wide range of emerging biosecurity issues. At lunch, ELBI 2012 Alumna Renee Wegrzyn spoke to the current Fellows, discussing her Fellowship experience and her cutting-edge work with the Defense Advanced Research Projects Agency. Throughout the day, the five winners of this year's ELBI paper competition presented their work and received some of the most enthusiastic responses and questions of the fall conference, from Fellows and presenters alike. The day concluded with an interactive exercise, Viral Storm, in which the Fellows were challenged with providing real-time technical and policy analysis for federal leadership in support of global response to a smallpox bioterrorist attack.

The fall meeting wrapped up with site visits to two world-renowned facilities. We toured the facilities and interacted with members of the scientific staff at the Defence Science & Technology Laboratory at Porton Down, followed by a stop at the Pirbright Institute, the UK's foremost center for animal disease surveillance and zoonotic disease research.

The first international ELBI event was a tremendous success, and we are grateful to all of the speakers and Fellows from the US who made the long trip across the pond. Thanks particularly to the UK speakers and Fellows and the Defence Academy staff who were so integral to organizing the event.

Finally, special thanks go to the King's College London (KCL) team including Susan Martin in the Department of War Studies, who led the KCL effort; and to Isabelle Anstey, Geoffrey Chapman, and Hassan Elbahtimy, who supported all aspects of planning and execution of the event.



Fall Workshop Program Agenda | August 4-6, 2015

August 4 | Workshop Day 1 – Defence Academy of the UK

- **UK and US National Approaches to Biosecurity:**
 - Nicola Commander, Chemical and Biological Threats Policy Science Advisor/Science Lead, Office for Security and Counter-Terrorism, UK Home Office
 - Sophie Brice, Chemical and Biological Threats Policy Lead, Office for Security and Counter-Terrorism, UK Home Office
 - Ken Bernard, Former Special Assistant to the US President for Biodefense and Former Senior Advisor to the WHO Director-General
- **Biological Risk: Perception and Policy:**
 - Julia Pearce, Research Fellow, Department of War Studies, King's College London
 - Alick Simmons, Deputy Chief Veterinary Officer and Director for Plant and Animal Health, UK Department for Environment, Food & Rural Affairs
- **Global Governance: BWC, IHR, and GHSA:**
 - Lorna Miller, Senior Biological Adviser on Non-Proliferation, UK Defence Science & Technology Laboratory, Porton Down
 - Caitriona McLeish, Senior Fellow, Science Policy Research Unit, University of Sussex, and Co-Director of the Harvard Sussex Program on Chemical and Biological Weapons
- **Promise and Peril of Synthetic Biology:**
 - Gigi Kwik Gronvall, Senior Associate, UPMC Center for Health Security
 - Filippa Lentzos, Senior Research Fellow, Department of Social Science, Health & Medicine, King's College London
- **International Ebola Response:**
 - Jacob Cohn, Director, Governmental Affairs, Bavarian Nordic
 - Natasha Price, Policy Lead, Global Health Security, UK Department of Health
 - Tom Inglesby, Chief Executive Officer and Director, UPMC Center for Health Security

- **Formal Dinner Remarks:** Bernard Silverman, Chief Scientific Adviser, UK Home Office

AUGUST 5 | WORKSHOP DAY 2 – DEFENCE ACADEMY OF THE UK

- **Keynote Remarks:** Stephen Redd, Director, Office of Public Health Preparedness and Response, US Centers for Disease Control and Prevention
- **Fellows' Presentations:**
 - John Billington, Patricia Lau, and Leremy Colf
- **Current and Emerging Issues in Biosecurity:**
 - James Reville, Research Fellow, Science Policy Research Unit, University of Sussex, Harvard Sussex Program
 - Malcolm Dando, Professor of International Security, University of Bradford
 - Jonathan Forman, Science Policy Adviser, Organization for the Prohibition of Chemical Weapons
- **Lunch Speaker:** Renee Wegrzyn, Contractor for the US Defense Advanced Research Projects Agency, ELBI Alumna
- **Fellows Presentations:**
 - Kimberly Gajewski and Andrew Leifer
- **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

AUGUST 6 | SITE VISITS

- **Defence Science & Technology Laboratory, Porton Down Site Visit:**
 - Kevin Martin, Biosafety Specialist and ELBI Fellow
 - Simon Earwicker, CBR Division Head, DSTL
 - Stuart Reeman, Technical Lead, Identify, CBRN Disablement, DSTL
 - Tim Atkins, Microbiology Group Strategy Lead, DSTL Fellow for Microbiology
 - SRT Team
- **Pirbright Institute Site Visit:**
 - Wendy Marshall, Safety Professional, The Pirbright Institute
 - Michael Johnson, Director of Capability, The Pirbright Institute
 - Helen Roberts, UK Animal and Plant Health Agency



“ELBI is helping to strengthen ties between the US and UK on biosecurity issues and is building the next generation of leaders who will work together to solve our toughest international biosecurity problems. It has been a fantastic opportunity for the UK fellows to provide their perspectives to this impressive and expanding network.”

Martin Reynolds, British Defence Staff and ELBI ESC Member

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.

The ABCs of the US Broad Spectrum Antimicrobial Program: Antibiotics, Biosecurity, and Congress

John Billington

Antibiotic resistance (AR) has been increasing at an alarming rate in the U.S. and globally for decades, but the problem has only recently gained broad attention at the highest levels of U.S. Government (USG). More and more patients are dying of infections that do not respond to antibiotics currently available. Meanwhile, the antibacterial product pipeline is running dry due to a lack of commercial incentives for pharmaceutical companies to enter or remain in the market. The Biomedical Advanced Research and Development Authority (BARDA) Broad Spectrum Antimicrobial (BSA) program leads the USG effort to bridge this gap by advancing new antibiotics through late stages of clinical development. Other commentators have described BARDA's structure and its role in antibiotic development. This commentary examines the emerging politics of AR in the context of biosecurity politics and medical countermeasure (MCM) development. It identifies promising developments and difficult challenges that together will ultimately determine whether BARDA can become a global leader for antibiotic development.

Preparing for Enhanced, Advanced, and Emerging Bioterrorism Risks

Leremy Colf

The United States Government is actively engaged in developing and implementing plans to protect against biological warfare threats. Current defense approaches vary, but are largely focused on a set of traditional agents designated as the highest risk for use and/or consequence. Resources are allocated to address knowledge gaps, develop medical countermeasures, etc. for agents on 'the list', with minimal efforts addressing all other possible biological threat risks, including emerging infectious diseases, additional agents, engineered or advanced agents, or non-agent based threats. I propose a rational approach to address the most likely threat risks on the near-term horizon and establish a biodefense framework to address: 1) the immense breadth of possible existing, emerging, enhanced, or advanced biological threats, 2) the difficulty of predicting and preparing for future risks, and 3) limited resources to prepare for, prevent, and respond to both current and future threats. The approach is based on systematic identification of key functional elements: by identifying the critical components of a disease, limited time, efforts, and resources can be focused to address not only the critical components that make a biological agent dangerous, but also a large area of uncharacterized risk space encompassing emerging, engineered, advanced, and non-agent risks that are highly likely to utilize critical aspects of known agents to achieve disease. Thus, focused research can buy down a large area of risk space while still addressing traditional threats and mission needs.

PKEMRA and the Ebola Crisis: Opportunities for Legislative Reform

Kimberly Gajewski

In 2005, Hurricane Katrina decimated much of the South. Across every level of government, there were numerous gaps in response and coordination mechanisms that ultimately contributed to a notoriously insufficient response. On the Federal level, lessons learned from Hurricane Katrina drove the development of the Post-Katrina Emergency Management Reform Act (PKEMRA). PKEMRA made numerous adjustments to the Federal emergency management response structure as well as altered some key aspects of the Federal-State disaster response relationship.

On a scale of disaster severity, the US Ebola crisis came nowhere near the level of destruction wrought by the series of Southern storms in 2005. However, this small crisis revealed several critical fissures between State and Federal responders strongly reminiscent of the fissures that contributed to the poor response to Hurricane Katrina. Common issues plagued responders to both events, such as ideological or political interference, lack of local capacity, dissolution of public trust and mixed public messaging, and trouble related to the identification of services and transportation protocols. Just as PKEMRA incorporated lessons learned during the Hurricane Katrina response to improve the abilities of Federal responders as well as State-Federal relationships, there is an opportunity to incorporate lessons learned during the Ebola crisis to improve national and state response capabilities to infectious disease outbreaks.

Beyond a Risk and Benefit Analysis for Evaluating Gain-of-Function Mutation Experiments

Andrew Leifer

In response to controversy surrounding the safety of gain-of-function (GOF) mutation experiments involving potentially pandemic pathogens, the United States government paused federal funding, issued a voluntary moratorium and embarked on a year-long deliberative process to re-evaluate its policy towards GOF research. The centerpiece of the government's deliberation is a formal risk and benefit assessment to evaluate GOF experiments in influenza, MERS and SARS. A risk and benefit analysis, in principal, could directly address the heart of the current controversy surrounding GOF research. In practice, however, there are severe limitations in our ability to estimate both the risks and the benefits associated with this particular line of research. Moreover, focusing too narrowly on the results of this specific analysis would be a missed opportunity for generating a broader consensus towards subjecting these experiments to higher scrutiny and continual reevaluation. This work seeks to highlight challenges and uncertainties inherent in estimating risk and benefits of GOF research and proposes potential paths forward in the context of so much uncertainty. Finally, additional lines of scientific research are proposed to decrease uncertainty and increase our understanding of the risks and benefits associated with GOF.

Development of Medical Countermeasures: Perspectives on Determining Human Efficacy

Patricia Lau

Given the scientific, regulatory and ethical challenges associated with the licensure of medical countermeasures (MCMs), their development often involves atypical considerations and processes. Through the use of the FDA's *animal rule*, MCMs can be licensed without the completion of human efficacy trials. In these cases, determining true human efficacy is a worthwhile and necessary endeavour, but overcoming the ethical and logistical challenges is extremely complex. Using a hypothetical Ebola outbreak as a case study, the author touches on the many challenges that could be encountered, including the concept of *equipose*, to discuss possible pathways for determining the human efficacy of an *animal rule* licensed MCM. The MCM's status as a licensed pharmaceutical, whether through the *animal rule* or not, confers a certain level of legitimacy and validity; thus, the author argues that the most ethical approach is to conduct an adaptive clinical trial that begins with a single-arm design. Given that the development and licensure of MCMs varies widely depending on the disease, current available treatments, and scenario, one process does not fit all; therefore, to further the dialogue, the author concludes by providing several general suggestions for consideration in the development of MCMs.

Behind the Scenes in Biosecurity with Leaders in the Field

Interactive Seminars

During the year, fellows were invited to participate in 3 interactive seminars, including 1 in person full day seminar held at the UPMC Center for Health Security in Baltimore, and 2 webinars; one led by Dr. Amesh Adalja and the other by Pulitzer Prize-winning reporter Lena Sun.



Alien Disease Threats: A View of History

DA Henderson, Distinguished Scholar, UPMC Center for Health Security

On May 20, 2015 Dr. DA Henderson gave a thought provoking presentation on the history of, and his personal involvement in, biodefense and health security policy and practice in the US from 1960 through the events of 2001, until present day. Dr. Henderson challenged the fellows to think about and discuss what they would have done in response to the threat of bioterrorism in 2001. Would they have made similar decisions? Would the same assumptions from 2001 hold true today? Dr. Henderson's presentation made clear the critical role of technical advice and council during public health emergencies. Dr. Henderson shared some great insights from his years leading the global campaign to eradicate smallpox at the WHO, and his experience as a leader on biodefense in the federal government.



Community Values and the Allocation of Scarce Resources in Disasters

Eric Toner, Senior Associate, UPMC Center for Health Security; Lee Daugherty Biddison, Vice Chair for Clinical Affairs, Johns Hopkins Medicine; Jacqueline Toner, Clinical Psychologist

Also on May 20, 2015, Dr. Eric Toner led a presentation with Drs Lee Biddison and Jacqueline Toner on a community engagement project that their team has worked on related to allocation of scarce resources in a disaster. The team first presented some ethical tenets of decision making in a scarce resource environment, and then asked the group to apply those tenets to a flu pandemic scenario in which there are too few respirators for patients who need them. Dr. Jacqueline Toner led a contentious group discussion about how and what decisions should be made in this scenario. Finally, the team reviewed the group's decisions and compared and contrasted them with decisions resulting from other public forums held on the topic throughout the state of Maryland. The discussion was lively and highlighted a number of difficult issues that the fellows might have to face someday during their work.



All Things Anthrax

Amesh Adalja, Senior Associate, UPMC Center for Health Security

On June 24, 2015 Dr. Amesh Adalja spoke to the fellows and alumni about *Bacillus anthracis*. In his talk, Dr. Adalja covered the topic thoroughly by talking about the organism itself, clinical manifestations of the disease anthrax, past use of *B. anthracis* as a biological weapon, and recent challenges with laboratory work on the organism. In addition to his work at the UPMC Center for Health Security, Dr. Adalja is a Clinical Assistant Professor in the Department of Critical Care Medicine, Clinical Assistant Professor in the Department of Emergency Medicine, and Adjunct Instructor in the Department of Medicine's Division of Infectious Diseases at the University of Pittsburgh School of Medicine and UPMC. He also serves on the City of Pittsburgh's HIV Commission and as a member of the Infectious Disease Society of America's (IDSA) Public Health Committee. He is board certified in internal medicine, emergency medicine, infectious diseases, and critical care medicine.



Biosecurity in the Media

Lena Sun, National Reporter for the Washington Post

On July 27, 2015, Lena Sun gave a talk and held an interactive discussion about the role of the press in reporting on biosecurity and health security issues. She also gave tips to the fellows about how, as experts, they can effectively engage with the press to help shape media analysis of issues in this field. Ms. Sun's work focuses on covering health issues including public health and healthcare delivery, and she recently reported on the Ebola epidemic in West Africa and cases in the US, and on the MERS epidemic which originated in the Middle East. Ms. Sun was one of a team of reporters who were awarded the Pulitzer Prize in 2002 for coverage of the war on terrorism.



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'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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