



PLuS ALLIANCE

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SRA Continuing Education Workshop

New approaches to risk analysis in biosecurity

Global Security PLuS

2017 Society for Risk Analysis Annual Meeting

Arlington, Virginia, USA

Crystal Gateway Marriott

December 10th 2017

Our information systems, as well as our thinking, training, legislation and policies have lagged far behind the momentous changes in science, leaving us vulnerable to population-level harm from bioterrorism. Synthetic biology and genetic engineering of viruses are now common occurrences. These are examples of dual-use research of concern (DURC) – research intended for good which may also cause harm to humans. The public availability of methods for DURC genetic engineering, and risks of laboratory accidents, coupled with the insider threat, poses an unprecedented risk for global biosecurity for which we have not yet developed good risk analysis methods. Open access science, biohacking (Do It Yourself (DIY) biology labs) and tools such as CRISPR Cas 9 have accelerated the risk of such technology, and risk-analysis in this area is not yet well developed. There are many similarities to cybersecurity; this area has seen quantum advances in science and technology outpacing our regulatory frameworks and approaches to risk mitigation.



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In this workshop, we will introduce participants to game-changers in biosecurity, and explore new approaches to risk analysis. We will also cover methods for predictive modeling which can assist in risk analysis and rapid identification of epidemics, as well as tools for differentiating natural and unnatural epidemics. The workshop will be a combination of lectures, interactive case studies, group work and discussion, and will lead participants through the relevant background and new approaches to risk analysis.

No background in health or biology is required

Faculty include multidisciplinary experts from Global Security Plus, an expert group of the PLuS Alliance between UNSW Sydney, Arizona State University and Kings College London. Their research expertise includes pandemics, biosecurity, law enforcement, bioterrorism, bioinformatics, economics, and risk analysis.

Who should do this workshop?

Professionals working in emergency response, defense, law enforcement, health policy in government and non-government agencies. There are no pre-requisites.

Format

Lectures, tutorials, exercises, group work and discussion.

About Global Security PLuS

Quantum advances in science have outpaced our governance frameworks in areas such as cybersecurity and biosecurity, with revolutionary new tools and technologies equally able to benefit or harm humanity. Against a backdrop of global political instability and conflict, this accelerates the risk of war, terrorism, cyberattacks, bioterrorism, chemical, radiological and nuclear threats. In addition, disasters and forced displacement of people pose additional challenges which require an understanding of emergency response and disaster recovery. These threats extend beyond the reach of national boundaries, are converging in an unprecedented way, and require global solutions.

In 2016, Arizona State University, King's College London and UNSW Sydney, formed the PLuS Alliance. This unprecedented and innovative alliance between three of the world's leading universities enables us to join forces to help find research-led solutions to some of our most pressing global challenges. The three countries represented are also natural allies in security and defence, providing a framework for advancement of the first truly *global* security alliance in the world.

Mission statement

To enhance global security by preventing, detecting and mitigating global threats in the following areas:

- Violent conflict and war
- Cybersecurity
- Terrorism
- Disasters
- Biosecurity

Cross cutting expertise and methods

- Modelling and simulation
- Communication
- Ethics
- Policy
- Informatics
- Forensics
- Law and governance

Register here

Note: You can register without registering for the full conference. Go to this website:

<https://ssl4.westserver.net/birenheide/sra/2017AM/registration/start.php>

Use the promo code: "SRA2017" to save 10%

Inquiries

Elizabeth Kpozehouen:
info@globalsecurityplus.org

Website

Global Security PLuS:
globalsecurityplus.org



PROGRAM

8.30am	Registration
9.00am	Introduction to workshop <i>Dr Sally Kane, UNSW Sydney</i> Introduction to synthetic genomics, genetic engineering and dual-use research of concern <i>Dr George Poste, Arizona State University and Global Security PLuS</i> Current threats in bioterrorism and health security <i>Dr Raina MacIntyre, UNSW Sydney, Arizona State University and Global Security PLuS</i> Lessons from smallpox eradication and risk of re-emergence <i>Dr J Mike Lane, Emory University</i> Laboratory risk and insider threat <i>Chief Thomas Engells, The University of Texas Medical Branch at Galveston, UNSW Sydney and Global Security PLuS</i>
10.30am	Break
10.45am	A One Health Approach to Population Health Surveillance <i>Dr Matthew Scotch, Arizona State University, UNSW Sydney and Global Security PLuS</i> Differentiating natural and unnatural epidemics <i>Dr Raina MacIntyre and Dr Matthew Scotch</i> Risk analysis approaches to gain of function research – case study and small group exercise in calculating risk Protection of first responders from biological threats <i>Chief Thomas Engells and Dr Raina MacIntyre</i>
1.00pm	Lunch
2.00pm	Data mining and modeling as a tool for biosecurity <i>Dr Kathleen Steinhofel, Department of Informatics, Kings College London</i> Genetic evolution of pathogens demystified - introduction to phylogenetic risk analysis and phylogeography for the lay person <i>Dr Matthew Scotch</i> Challenges in tracking trade in biological weapons <i>Dr George Poste, Chief Thomas Engells and Dr Raina MacIntyre</i>
4.00pm	Wrap-up and Close <i>Dr Sally Kane, UNSW Sydney</i>

Dr George Poste, Arizona State University and Global Security PLuS

Dr George Poste is Chief Scientist, Complex Adaptive Systems Initiative (CASI), Regents' Professor and Del E. Webb Chair in Health Innovation at Arizona State University. He assumed this post in February 2009. This program links expertise across the university in research on synthetic biology, ubiquitous sensing and healthcare informatics for personalized medicine. He served as a member of the Defense Science Board from 2003 to 2009 and Health Board of the US Department of Defense (DoD) and is currently a member of the US Institute of Medicine Board on Global Health. He has served as a member of Advisory Committees for multiple U.S. Government Agencies in areas of defense, national security and healthcare.

Dr Raina MacIntyre, UNSW Sydney, Arizona State University and Global Security PLuS

Dr MacIntyre is Professor of Infectious Disease Epidemiology and runs a research program spanning pandemics, vaccinology, bioterrorism, mathematical modeling and risk analysis in infectious diseases. She leads a Centre for Research Excellence in Epidemic Response, ISER, which addresses gaps in global systems for epidemic response and biosecurity. This includes an epidemic observatory, Epiwatch, which is focused on developing automated intelligence systems for epidemic alerts and methods to differentiate natural from unnatural outbreaks.

Dr Matthew Scotch, Arizona State University, UNSW Sydney and Global Security PLuS

Dr Matthew Scotch is an Associate Professor in the Department of Biomedical Informatics and Associate Director of the Biodesign Center for Environmental Health Engineering at Arizona State University. He is also a Senior Visiting Fellow at UNSW. His research focuses on phylogeography to study zoonotic RNA viruses with a particular interest in influenza A viruses.

Dr J Mike Lane, Emory University

Dr Lane is emeritus professor of preventive medicine at Emory University School of Medicine, Atlanta, Georgia. His research interests are smallpox, adverse events after smallpox vaccination, and smallpox vaccination policy. He was formerly Director of Smallpox Eradication at US CDC.

Chief Thomas Engells, The University of Texas Medical Branch at Galveston, UNSW Sydney and Global Security PLuS

Thomas Engells, CPP is the Chief of Police at UTMB and the Chief Security Officer at the Galveston National Laboratory. He is an adjunct academic at UNSW Sydney. He is an honors graduate of The University of Texas (BA) and was subsequently awarded a Masters of Science Degree in Criminal Justice Management and a Masters of Arts Degree in Homeland Defense and Security from The United States Naval Postgraduate School.

Dr Kathleen Steinhofel, Department of Informatics, Kings College London

Dr Steinhofel is a computer scientists working on local Search Algorithms for Combinatorial Optimisation; Energy Landscape Analysis; Applied Algorithmics; Structure Prediction in Molecular Biology; Evolutionary Computation.

Dr Sally Kane, UNSW Sydney

Dr Sally Kane is an independent risk and economics consultant with extensive US government, research, and policy experience. She is an adjunct academic at UNSW Sydney and currently is a SRA Council Member.