Incentivizing urgency, speed and scale to support future U.S. Innovation

October 15-16, 2024

TUESDAY, OCTOBER 15, 2024

Purpose

The traditional funding and incentivizing model for R&D has evolved rapidly within the last decade. Traditional academic research processes are ill-suited to induce a rapid transition to real-world applications and markets. New and diverse funding structures have been developed to carry technology through from basic research to societal applications. Are these models well suited to work at scale and with the speed needed to keep up with scientific change? This workshop will consider models that address balancing risk and speed for new technologies across multiple players (industry, university, philanthropy, and government) and incentivize risk-taking to address urgent problems not well-served by traditional strategies.

4:00-4:15pm Opening Remarks

- **Danielle Merfeld**, GUIRR Council Co-Chair, Executive Vice President and Global Chief Technology Officer, Qcells
- **Darryll Pines**, GUIRR Council Co-Chair, President, University of Maryland
- **Michael Nestor**, Board Director, GUIRR

4:15-5:30 Universities on a Tightrope: Balancing National Security with Demands for Rapid Innovation

This panel will examine the challenges universities face in managing security risk as they grow international collaborations, import talent from around the world, and develop models for externalizing innovation beyond the campus. Models that successfully balance international growth with national security interests while rapidly deploying innovations into the marketplace will be discussed.

Moderator: Judi Brown Clarke, Vice President for Equity & Inclusion and Chief Diversity Officer, Stony Brook University

- **David Brown**, Executive Director, National Security Collaboration Center, University of Texas at San Antonio
- **Nadya Bliss**, Executive Director, Global Security Initiative (GSI), Arizona State University
- **Michael Shannon,** Executive Vice President – Government Solutions, IP Talons
- **Tam Dao**, Assistant Vice President for Research Security, Rice University

5:30-6:30 Networking Reception

6:30-8:00 **Dinner & Keynote**

Moderator: Darryll Pines, President, University of Maryland

- **Stefanie Tompkins**, Director, DARPA

END OF DAY 1

WEDNESDAY, OCTOBER 16, 2024

8:30-9:00am **Breakfast & Check-in**

9:00–10:15 **Promises made promises kept? The ARPA model and innovation ecosystem**

The ARPA model of supporting research was initiated to accelerate the development of novel technologies that benefit the nation. This panel will examine whether it is a uniformly useful model for accelerating technologies across sectors and whether there are additional "ARPA-like" opportunities for driving a more effective innovation ecosystem.

Moderator: Ivan Amato, Science Communications Manager, Zuckerman Mind Brain Behavior Institute, Columbia University

- **John Paschkewitz**, Partner & Associate Director, Boston Consulting Group
- **Tamara Carleton**, CEO and Founder, Innovation Leadership Group
- **Daniel Cunningham,** Deputy Director for Technology, ARPA-E
- **Benjamin Reinhardt,** CEO, Speculative Technologies

10:15-10:30 **Break**

10:30–11:40 **Managing institutional incentives and cultures to accelerate cross-sector collaborations**

Designing a successful partnership requires an understanding of each collaborator's overlapping and distinct culture. This panel will examine how partners can understand and address mismatches in institutional cultures to find the right balance of risk and speed for the success of collaborative R&D projects.

Moderator: Pips Veazey, Director of the Portland Gateway, University of Maine

- **Eric Toone**, Technical Lead, Investment Committee, Breakthrough Energy Ventures
- **Khara Ramos**, Vice President of Neuroscience & Society, Dana Foundation
- **Stacey Adam**, Vice President, Science Partnerships, Foundation for the National Institute of Health
- **Michal Preminger**, Regional Head, Johnson & Johnson Innovation, East North America

11:40-11:50 **End of panel programming/end of virtual attendance**

11:50-12:00 **Pick up lunch and move to breakout session rooms**

12:00-2:30 **GUIPRR Future of Science Interest Group: Developing Robust State and Regional Innovation Ecosystems (Lunch/Breakout Discussion) – in person only**

Increased global scientific competition in recent decades has challenged the foundation of the American innovation ecosystem. Developing new strategies for strengthening connectivity between scientific institutions and a robust scientific workforce will profoundly impact our national and economic security for decades. State and regional ecosystems are the principal drivers for innovation across the United States. Government-university-industry-philanthropy partnerships formed amongst local leaders are essential supports for new technology and market development.

This session examines how to catalyze unique cross-sector partnerships to develop diverse regional innovation approaches focused on strengthening the STEM workforce. By partnering state-level economic development boards, Governors' offices on economic development, and philanthropic organizations with traditional scientific institutions from industry, academia, and government, new ways of developing domestic STEM talent that can compete globally will be explored.

MEETING ADJOURNS

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Speaker Biographies

Keynote

Stefanie Tompkins is the director of the Defense Advanced Research Projects Agency (DARPA). Prior to this assignment, she was the Vice President for Research and Technology Transfer at Colorado School of Mines.

Tompkins has spent much of her professional life leading scientists and engineers in developing new technology capabilities. She began her industry career as a senior scientist and later assistant vice-president and line manager at Science Applications International Corporation, where she spent 10 years conducting and managing research projects in planetary mapping, geology, and imaging spectroscopy. As a program manager in DARPA's Strategic Technology Office, she created and managed programs in ubiquitous GPS-free navigation as well as in optical component manufacturing. Tompkins has also served as the deputy director of DARPA's Strategic Technology Office, director of DARPA's Defense Sciences Office – the agency's most exploratory office in identifying and accelerating breakthrough technologies for national security – as well as the acting DARPA deputy director.

Tompkins received a Bachelor of Arts degree in geology and geophysics from Princeton University and Master of Science and Doctor of Philosophy degrees in geology from Brown University. She has also served as a military intelligence officer in the U.S. Army.

Universities on a Tightrope: Balancing National Security with Demands for Rapid Innovation

Judi Brown Clarke is a distinguished thought leader and strategic partner, currently serving as the Vice President of Equity & Inclusion, Chief Health Equity Officer, and Chief Diversity Officer at Stony Brook University and Stony Brook Medicine. She holds a bachelor's degree in clinical audiology & speech sciences, a master's in kinesiology with a concentration in sports administration, and a doctorate in public policy and administration.

With over 16 years of experience on senior management teams, Judi has been instrumental in shaping strategic plans for diversity and creating frameworks for inclusive excellence and sustainable equity. She emphasizes accountability metrics to track progress and employs data-driven, evidence-based practices for informed decision-making. Her expertise lies in facilitating open dialogues on challenging topics, building trust, and empowering diverse stakeholders.

Judi's work focuses on the intersection of climate change and health disparities, advocating for vulnerable populations in research and healthcare solutions. She leads initiatives that ensure equitable access to resources, data, and interventions, while fostering collaboration among researchers, policymakers, and community stakeholders to drive systemic change.

In addition to her professional accomplishments, Judi has a remarkable athletic background. She is a four-time national champion, a 12-time Big Ten Champion, and a silver medalist in the 1984 Olympic Games. Judi also earned three gold medals at the Pan American Games and was recognized as the 1987 Sports Illustrated Woman of the Year. Her athletic achievements reflect her dedication, resilience, and commitment to excellence, which she now channels into her advocacy for equity and inclusion in health and research.

David Brown currently serves as the Executive Director of the National Security Collaboration Center (NSCC) at the University of Texas San Antonio (UTSA). With decades of experience leading collaborative research and development (R&D) ecosystems supporting U.S. national defense strategies, Brown is a trusted, well-connected leader in civilian and military communities nationwide. Brown's network of strong relationships within U.S. Department of Defense (DoD) organizations, laboratories and industry has gained him national recognition for his transformative leadership in federal R&D initiatives and projects. Prior to the NSCC, he served as the Defense Program Development Director at Lawrence Livermore National Laboratory (LLNL) where, as an employee of Battelle Memorial Institute, he served in several senior leadership roles focused on supporting government affairs and laboratory strategy. Several key initiatives from these programs include; technology development and tech transfer, threat detection & risk deterrence, infrastructure sustainability & security, and countering cyberattacks. In addition to his experience, Brown also holds a doctorate degree in Microbiology (Immunology) from Ohio State University.

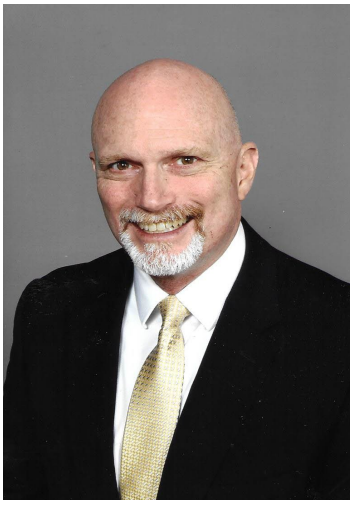
Nadya Bliss is a computer scientist focused on national security research and engineering including specific expertise in cybersecurity, graph algorithms and disinformation. As the Executive Director of the Global Security Initiative at Arizona State University, she leads a pan-university organization advancing research, education, and other programming at the intersection of technology and national security. GSI centers focus on cybersecurity, artificial intelligence, data visualization and analytics, and disinformation. Prior to leading GSI, Dr. Bliss spent time as Assistant Vice President, Research Strategy at ASU and a decade in various positions at MIT Lincoln Laboratory, most recently as the founding Group Leader of the Computing and Analytics Group. Dr. Bliss is a Professor of Practice and Graduate Faculty in ASU's School of Computing and Augmented Intelligence.

Actively involved in national service, she currently chairs the Computing Community Consortium. Bliss also serves on multiple National Academies engagements, including: the Cyber Resilience Forum; Climate Security Roundtable; and a Standing Committee on Transformative Science and Technology for the Department of Defense. In July 2024, she was appointed as a member of the National Academies' Army Research Laboratory Technical Assessment Board (ARLTAB) and as chair of its Panel on Assessment of Network, Cyber, and Computational Sciences. She is a past chair and current steering committee member of DARPA's Information Science and Technology Study Group.

Tam Dao is the Assistant Vice President (AVP) for Research Security at Rice University where he is responsible for the strategy and implementation of Rice University's research security efforts. He works with faculty, staff, and students across the university to safeguard the means, know-how, and products that originate from the Rice University research ecosystem against foreign and domestic adversaries. In this role, he serves as the primary liaison for law enforcement and intelligence agencies that seek involvement or assistance with Rice University.

Dr. Dao comes from Rice University from the Federal Bureau of Investigation, where he has held a variety of roles. In 2020, he was promoted to oversee the FBI's Counterintelligence Task Force, leading the efforts to expose, prevent and investigate economic espionage. He has provided more than 300 classified briefings to senior White House staff, members of Congress, heads of U.S. federal funding agencies and university administrators. His investigation into the malign foreign talent programs in 2014 to the identification of more than 400 instances of foreign influence on extramural research, as well as the identification of over 200 scientists at more than 65 academic institutions with foreign influence concerns. Dr. Dao is recognized as a subject matter expert on research security, economic espionage, and foreign influence on federally-funded research. He is a certified FBI Hostage Negotiator and regularly teaches at the FBI's Crisis Negotiation Unit and the FBI's Counterintelligence Training Center. In 2021, he received the FBI's Medal of Excellence for his work in counterintelligence.

Before joining the FBI, he was a tenure-track professor at the University of Houston. Dr. Dao is the recipient of the Walter G. Klopfer Award for distinguished contribution to the literature in personality assessment and the University of Houston Faculty Research Excellence Award for excellence in research and scholarship. He has been awarded federal and state grants for his research and has published more than 50 scientific articles and book chapters on personality assessment. He holds a bachelor's degree in psychology from the University of Texas at Austin, a master's from the University of Pennsylvania and a doctorate from Florida State University. He completed a postdoctoral fellowship in advanced psychology and psychiatry at the Michael E. DeBakey Veterans Affairs Medical Center in Houston.



Mike Shannon is CEO of the RBR Group, offering advisory services on technology products & services innovation and commercialization working with Fortune Global 500 clients. He is an active angel investor, advises several venture capital firms in the areas of energy and technology, and serves on the boards of several startup companies.

Promises made promises kept? The ARPA model and innovation ecosystem

Ivan Amato is a longtime science and technology writer, editor and communicator. His work has appeared in many newspapers and magazines, among them *Time, Fortune, Washington Post, Technology Review, Discover, Quanta, Nautilus* and *Scientific American*. He has been a staff writer and editor on several magazine mastheads, a founder of science cafes on both coasts, and a science correspondent for NPR. He has written books on topics ranging from the materials in our constructed landscape to the history of space technology. He is recipient a James T. Grady-James H. Stack Award for Interpreting Chemistry for the Public and a Foresight Prize for his writings on nanotechnology. In his work at the Defense Advanced Research Projects Agency's public information office, he helped tell the agency's story by working with journalists, creating and producing the podcast Voices from DARPA and developing public-facing content. He currently works as the science communications manager for Columbia University's Zuckerman Mind Brain Behavior Institute and co-producer for Climate Parables, a stage-performance-based climate communication project.

Tamara Carleton is an award-winning professor, industry advisor, and expert in radical innovation and strategic foresight. As the founder and CEO of Innovation Leadership Group, Tamara helps leaders and teams to build innovation capacity and map bold futures. She is the rare leader who truly works globally and multidisciplinary. As a professor of practice, Tamara is on the faculty of multiple business schools and technical universities around the world. Tamara holds the UNESCO Chair in Anticipatory Leadership for Innovative and Better Futures at Tecnológico de Monterrey in Mexico and was recognized as one of the Top 50 Women Leaders in Education (in 2023 and 2024) by Women We Admire. She has written several seminal books on innovation, including *Building Moonshots: 50+ Ways to Turn Radical Ideas into Reality*, *Inventing the Almost Impossible*, and the *Playbook for Strategic Foresight and Innovation*. She holds a doctorate in mechanical engineering from Stanford University.

Daniel Cunningham, is the Deputy Director for Technology at the Advanced Research Projects Agency – Energy (ARPA-E), where he advises on the development of new technical programs and funding opportunities, and supports disruptive low carbon energy technologies transition from the lab to the market.

Cunningham previously worked at BP Group Technology in the Chief Scientist's Office evaluating emerging energy technologies and assessing their impact on future business. He also worked for BP Solar as the Director of Technology and a Program Manager for Silicon Materials. Cunningham has authored over 70 publications and 12 patent publications. He earned a Ph.D. in Chemistry specializing in electrochemistry and in-situ reflectance spectroscopy, and a B.Sc. (Hons) in Chemistry at the University of Southampton, UK. He is also a Senior Member of the IEEE and a Fellow of the Royal Society of Chemistry.

John Paschkewitz is a Partner and Associate Director at Boston Consulting Group. His work focuses on helping clients discover and accelerate new product and process innovations to break performance/profit/sustainability tradeoffs. John has worked with clients around the world in consumer-packaged goods, fashion, chemicals, food, and health care, to accelerate and transform the R&D function in order to unlock growth and sustainable competitive advantage. Before joining BCG, John spent over 20 years in corporate and government R&D leadership roles including six years as a Program Manager at DARPA (Defense Advanced Research Projects Agency) in the Defense Sciences and Strategic Technology Offices and five years as a research area manager at (Xerox) PARC. He received his SB and SM from MIT and his PhD from Stanford University in chemical engineering.

Benjamin Reinhardt Ben Reinhardt is the CEO and founder of Speculative Technologies -- a nonprofit industrial research lab focused on unlocking technologies that don't have a home in academia, startups, or large companies. He's also the author of well-known pieces on Why DARPA Works and building ARPA-inspired organizations.

In the past he has worked at NASA, Bay Area startups and VC firms, started a startup to build robots for elder care, and mentored people starting companies in Singapore. He has a PhD in Space Robotics from Cornell University.

Managing institutional incentives and cultures to accelerate cross-sector collaborations

Pips Veazey specializes in tackling complex societal challenges by working with experts at the intersection of business, law, policy, and science. With decades of experience in team science leadership and collaborative research, she skillfully curates and facilitates interdisciplinary collaborations focused on addressing pressing global issues. A highly sought-after speaker and facilitator, she recently co-designed a cutting-edge graduate course titled *Complex Problem-Solving for Future Leaders*, in partnership with a dozen faculty from three universities.

She is the founding director of the University of Maine Portland Gateway and a founding board member of the International Network of the Science of Team Science. Holding a PhD in Team Science Leadership from the University of Alaska and a BS in Psychology from Bates College, she served as the Principal Investigator for the Alaska NSF Established Program to Stimulate Competitive Research (EPSCoR), a major multi-million dollar research program aimed at building statewide research capacity in partnership with institutions of higher education, industry/business, and municipal leaders. With a focus on Arctic social-ecological systems, AK NSF EPSCoR addressed our changing climate and its impact on interrelated social, physical and biological landscapes.

Her earlier research expeditions took her to Alaska, Greenland, and Antarctica—where, despite the cold, she discovered her passion for working with people.

Stacey Adam is a Vice President of Science Partnerships at the FNIH, leading many public-private partnerships, such as Pediatric Medical Device-PPP Design Phase; Accelerating COVID-19 Therapeutic Interventions and Vaccines (ACTIV); the Biomarkers Consortium (Cancer and Metabolic Disorders Steering Committees) and their projects; Accelerating Medicines Partnerships (AMPs)-Common Metabolic Diseases and Heart Failure; Partnership for Accelerating Cancer Therapies (PACT); and the Lung Master protocol (Lung-MAP) clinical trial.

Prior to FNIH, Dr. Adam was a Manager at Deloitte Consulting in the Federal Life Sciences and Healthcare Strategy practice where she supported many federal and non-profit client projects. Before Deloitte, Dr. Adam conducted her postdoctoral fellowship at Stanford University School of Medicine, where she was both an NIH and American Cancer Society supported fellow, and she earned her Ph.D. in Pharmacology with a Certificate in Mammalian Toxicology from Duke University.

Michal Preminger is Head of Johnson & Johnson Innovation, East North America. Located at the J&J Innovation Center in Cambridge, she leads the J&J Innovation team to build, advance, and manage the External R&D portfolio of co-investments spanning across pharmaceutical, consumer health and medical devices.

Prior to joining J&J, Michal served as the Executive Director of Harvard University's Office of Technology Development (OTD) Harvard Medical School site, where she was responsible for development and commercialization of technologies emerging from research at HMS laboratories and for the strategy and execution of all industry collaborations. She negotiated agreements with major biopharma, life sciences, food and cosmetics companies to advance the translation of discoveries into products and create a revenue-generating product pipeline and worked with scientific founders and investors to create new startup companies.

Before joining Harvard University's OTD in 2005, Michal held a number of senior business and technology development leadership positions in the biotech and tech industries and co-founded a biotechnology startup.

Michal serves on the Scientific Advisory Boards FutuRx Accelerator, and, prior to joining J&J was a member of the SAB of a Member of the Board of Directors of a number of not-for-profit entities and companies, including Prize4Life, Compugen Ltd and Alma Lasers.

She holds a Ph.D. in Biological Sciences from the Weizmann Institute of Science, an MBA from INSEAD, Fontainebleau, France, and a BA in Medicine from Hadassah Medical School, Hebrew University, Jerusalem.

Khara Ramos, a neuroscientist with extensive scientific management and communications expertise, is passionate about the intersection of science and society, particularly the ethical, legal, and societal implications of neuroscience research. She is the Vice President of Neuroscience & Society at the Dana Foundation, where she leads the Foundation's programmatic strategy and grantmaking activities. Before joining the Dana Foundation, she worked at the National Institutes of Health (NIH) for nearly 10 years. She was the inaugural Director of the National Institute of Neurological Disorders and Stroke (NINDS) Neuroethics Program and led the Neuroscience Content and Strategy Branch in the NINDS communications office. Dr. Ramos catalyzed the establishment and rapid growth of neuroethics efforts for the NIH BRAIN Initiative, positioning the NIH as a global leader in the emerging field of neuroethics. She also served as co-chair of the NIH Coordinating Committee for Bioethics Research and Training. Prior to NINDS, Dr. Ramos worked as a special assistant to the deputy Director of the National Institute of Dental and Craniofacial Research at NIH. Dr. Ramos holds a Ph.D. in neurosciences from the University of California, San Diego, and a bachelor's degree with honors in Symbolic Systems from Stanford University.

Eric Toone leads science, technology, and engineering across the entire Breakthrough Energy platform. As Managing Partner at Breakthrough Energy Ventures, Eric serves on the Investment Committee and is responsible for the overall technical direction of the organization, with responsibilities ranging from thesis development to technical diligence. Dr. Toone is responsible for the Fellows Program at Breakthrough Energy and directs technology diligence at Catalyst and other BE components. Prior to BEV Eric was a member of the faculty of Chemistry at Duke University and is the former Director of DOE's Advanced Research Program Agency – Energy (ARPA-E).

Originally trained as a bioorganic/physical organic chemist, Eric has long worked in both exploratory science and the translation of that science to practical implementation. At Duke University he authored nearly 300 original papers and abstracts. From 2012 – 2016 he served as Vice Provost and Director of Duke's Innovation and Entrepreneurship Initiative. He is also listed as an inventor on over 30 patents and is the founder of three venture backed pharmaceutical companies.