

## Christine Mirzayan Science and Technology Policy Graduate Fellows 2016 Biographical Sketches



**Ryan Anderson** (2016; PGA/STS) is the Program and Communications Manager for the environmental non-profit Midwest Pesticide Action Center based in Chicago where he educates and trains urban residents on practices to reduce synthetic lawn pesticide and fertilizer use. Ryan graduated from Arizona State University with a master's of sustainable solutions in May of 2015. During his time at Arizona State, Ryan focused on developing and implementing policies that facilitated energy efficient and renewable technologies in urban areas, specifically cities in the Midwest. He has collaborated on carbon mitigation planning with the city of Indianapolis, contributed to research on corporate social responsibility at the Asia Global Institute, and led the online, academic journal *The Sustainability Review* (tSR) during their transition to a video format. Ryan has a dual bachelor's degree in biology and electronic journalism from Butler University. As a Mirzayan Fellow, Ryan supported the research and work of the Science and Technology for Sustainability Program and

constructed a concept paper for valuing the non-energy benefits of energy efficiency upgrades for low-income communities. (Updated 4/2016)

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**David Bolduc** (2016; PGA/OSP) received his PhD in biodefense from George Mason University. David's doctorate focused on the threats and mechanisms of chemical, biological, radiological and nuclear (CBRN) agents and CBRN proliferation issues such as treaties, histories and the managing of related mass casualty incidences. David is currently a Principal Investigator at the Armed Forces Radiobiology Research Institute. After earning his doctorate in biodefense in 2011, David developed new approaches within the field of biodosimetry. David used his doctoral research involving the development of mathematical models using socioeconomic and technological variables for estimating terrorists' propensities for developing CBRN, for developing biomarker based models for assessing individuals' radiation injury for triage application in mass casualty scenarios. David is eager to gain experience in policy as a Mirzayan Fellow. In moving toward a productive career in science policy, David hopes to gain training and experience in federal policymaking, and

enhance his policy research skills while providing sound scientific and technical knowledge to support the development of well-considered policies. In his spare time, David enjoys hiking and traveling.



**Nathan Boll** (2016; DEPS/SSB) is a Graduate Fellow at the Space Policy Institute of George Washington University where he is completing an M.A. in international science and technology policy at the Elliott School of International Affairs. His current focus is on building international and intergovernmental cooperation toward the exploration and development of outer space. Nathan holds an M.S. in space science and a graduate certificate in science, technology and public policy from the University of Michigan, as well as a B.S. in mathematics from the University of Montana Western. His research has included environmental analysis of Venus and Mars, and the development of the CYGNSS satellite constellation. Nathan has recently served in various divisions of NASA, including the Office of International and Interagency Relations and the Office of Education Infrastructure Division at NASA Headquarters, the NASA Space Academy and the Multidisciplinary Aeronautics Research Team Initiative programs at the Glenn Research Center, and the

Planetary Science Division of the Jet Propulsion Laboratory. Throughout, he has maintained a commitment to public service, completing multiple terms as a member of the Montana Space Grant Consortium Advisory Board and as an elected leader of student government.



**Kavita Chandra** (2016; NAE/NAE PO) is currently completing a Ph.D. in material science and engineering at Northwestern University and earned a bachelor's degree in material science from MIT. Her Ph.D. work focuses on nanoparticle synthesis for cancer therapeutic applications. Outside of research, Kavita has a passion for science outreach, specifically promoting women in STEM fields. She serves on the executive board of the Graduate Women Across Northwestern and participates in two yearlong mentorship programs at Niles High School and Science Club, housed in the Boys and Girls Program in Uptown. Kavita is excited to learn about a career in science policy as a Mirzayan Fellow with the NAE, specifically through improving access to STEM education for all K-12 students. For fun, Kavita loves traveling around the world, especially trying new foods. Additionally, due to this fervent love for food, she is a runner and dancer.

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**Anne Dare** – the Rosenblith Fellow – (2016; PGA/DSC) earned her Ph.D. from the top-ranked agricultural and biological engineering program in the country, Purdue University. While there, she advanced the understanding of the linkages between arid land water management, food security, and rural sanitation solutions while working across Palestine, Tunisia, and Qatar under the U.S. Borlaug Fellows in Global Food Security program. Currently, she serves as the co-founder and postdoctoral researcher in charge of Purdue Engineering's Innovation for International Development (I2D) Lab, where she facilitates channeling the University's vast expertise to sustainably solve global development challenges. In that role, she was invited as an expert to the Farmer-to-Farmer program with Universidad de Los Llanos in Colombia.



**Andrea Hodgson** (2016; DELS/BLS) received her PhD in molecular microbiology and immunology and a certificate in vaccine science policy from the Johns Hopkins Bloomberg School of Public Health. Her thesis work focused on examining the molecular interactions between pathogenic *E. coli* proteins and host immune proteins using a mouse model of infection. During her graduate career, Andrea worked on a number of diverse projects with topics ranging from influenza vaccines to maternal mental health to colon cancer. During her time as a Mirzayan Fellow, she provided research support for the consensus study, Microbiomes of the Built Environment, putting her microbiology background to work and integrating that knowledge with building systems and design. She is also planning a workshop with the Board on Chemical Sciences and Technology about safeguarding the bioeconomy through improve data management and security strategies. Andrea's career goals are ultimately to participate in bringing advancements in the research

community out of the lab and put them to use in the global community. (Updated 4/2016)



**Claire Yanyan Ji** (2016; DEPS/BMSA) is currently a physics PhD student at Georgia Tech. She has a BS in applied physics from Nanjing University of Aeronautics and Astronautics in Nanjing, China. Her thesis is devoted to aid in the understanding of mechanisms that initiate cardiac arrhythmia and to develop new state-of-the-art defibrillation methods using concepts from nonlinear dynamics and chaos that allow arrhythmia termination with low energy shocks. Claire has also served as a visiting researcher at FDA working on verifying and validating computer models for the study of cardiac fibrillation and defibrillation and has completed an internship at Boston Scientific developing ablation catheter models. Claire considers the Mirzayan Fellowship as a great opportunity to learn more about science policy as well as to network with both senior mentors and peer fellows.

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**Christopher Jones** (2016; PGA/STEP) is a program officer for the Board on Physics and Astronomy where he serves as study director for several large committees of academic, industrial, and policy experts. His committees focus on various exciting scientific issues of the day—such as generating a national strategic plan for magnetically-confined fusion energy—as well as core physics topics and decadal assessments related to those fields. Prior to joining the Academies, Chris worked as a AAAS/ACS Congressional fellow in the Senate on cleantech and grid issues, a White House fellow working on materials science and water quality issues, and a Fulbright grantee assessing arsenic removal technologies for contaminated drinking water. Chris received his Ph.D. from Rice University and B.S. from Florida State University, both in chemistry. (Updated 3/2019)



**Hannah Leker** – Gulf Research Fellow – (2016; GRP) received her M.S.P.H. in the Department of Environmental Sciences and Engineering from the University of North Carolina at Chapel Hill Gillings School of Global Public Health. She also completed her B.S.P.H at the UNC School of Public Health with a minor in chemistry. Hannah's master's thesis focused on evaluating the relationship between race and levels of access to regulated and treated community water and sewer services throughout the state of North Carolina. Hannah has also worked as a research assistant at the UNC School of Public Health, as a research support staff member for the Water Institute at UNC, and on program evaluation efforts for the National Institute of Environmental Health Sciences. Hannah is passionate about the pursuit of knowledge as well as the improvement of health and well-being. Following her time as a Mirzayan Fellow, she is continuing to work on human health and well-being projects with the Gulf Research Program for the time being while searching for new

opportunities to integrate public health, research, and policy making. (Updated 4/2016)



**Nicholas Macfarlane** (2016; DELS/OSB) received his PhD in biological oceanography from MIT and the Woods Hole Oceanographic Institution. His research focuses on underwater acoustics, using biologging tags in the Mediterranean and the Gulf of Mexico to study the impacts of manmade sound in the ocean and the ways that toothed whales and dolphins coordinate their underwater behavior. To complement the tagging studies, Nicholas partnered with WHOI's Deep Submergence Lab to design and develop a portable 3D geocoding stereo camera system that allows precise and accurate field spatial observations to be taken with a resolution that was previously impossible. Pursuing a passion for applied research, he also completed simultaneous M.A. degrees in technology and policy from MIT's Engineering Systems Division. Prior to graduate school, Nicholas worked as a teacher and divemaster, and studied psychology and neuroscience at Princeton.

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**Kathryn Martin** (2016; HMD/BGH) is currently the New and Emerging Talent Initiative Programme Officer in Child Health at UNICEF-China in Beijing. She received her M.P.H. in population and family health as well as humanitarian assistance from Columbia University's Mailman School of Public Health. Kathryn's studies focused on the well-being and nutritional health of children in adverse conditions. At Columbia, she served as the research assistant for two Uganda-based projects exploring trends in adolescent HIV risk and acquisition, fertility desires, and family practices. She also worked as a qualitative researcher with Helen Keller International in Cambodia, leading a focused ethnographic study on infant and young child feeding practices. Prior to graduate school, Kathryn served for two years as the elective teacher and health educator in rural Yunnan with Teach for China. As a Georgetown undergraduate, she focused on health and environmental concerns in Asia and Latin America while interning with the Pan-American Health Organization and the State

Department. Kathryn enjoys cooking spicy Yunnan dishes, backpacking across countries, and working with young learners to master challenging concepts. As a Mirzayan Fellow, Kathryn was with the National Academy of Medicine's Health and Medicine Division, working with the Forum for Investing in Young Children Globally (iYCG) and Innovation to Incubation (i2I). (Updated 4/2016)



**Kimberly Maxfield** (2016; HMD/HCS) received her Ph.D. from the pharmacology department in the School of Medicine at the University of North Carolina at Chapel Hill in 2015. Her doctorate focused on dissecting tumor cell biology to support rational design of new therapies for triple-negative breast cancer patients. Due to a laboratory relocation, Kimberly completed the last two years of her dissertation at the University of Texas Southwestern Medical Center (UTSW) in Dallas, Texas. While at UTSW, Kimberly served on the leadership team establishing the first science policy graduate student organization, SPEaC – Science Policy Education and Communication. She also served as the professional liaison for SPEaC's inaugural year, initiating contacts and developing ongoing relationships with local federal congressional offices. Kimberly received a BSc in biology with distinction from the University of Virginia. Prior to graduate school, she had employment positions, first at a cardiovascular pathology consulting company, CVPPath Institute, Inc. and

second at the Georgetown University Lombardi Comprehensive Cancer Center. As a Mirzayan Fellow at the National Academies of Sciences, Engineering, and Medicine, Kimberly served on the Board of Health Care Services working on health care topics such as the clinical implementation of immunotherapies, lung cancer diagnostic screening, cancer survivorship care and defining a new drug development paradigm in oncology. For her career, Kimberly strives to leverage her scientific training in the field of regulatory science to serve at the intersection of drug development, regulation and public policy and promote the safety and efficacy of new and innovative therapeutics. (Updated 4/2016)

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**Robin Miller** (2016; DELS/BLS) recently received her Ph.D. from the emerging infectious diseases graduate program at the Uniformed Services University. Robin received her B.S. in biology from the George Washington University. Prior to beginning her graduate studies, Robin was a postbaccalaureate trainee in the Laboratory of Parasitic Diseases at the National Institute of Allergy and Infectious Diseases. Robin's doctoral thesis is focused on improving detection and surveillance methods for vector-borne diseases using molecular epidemiology, geospatial modeling, and next generation sequencing tools. Robin also collaborates with the U.S. Military HIV Research Program and the Nigerian Ministry of Defense on a multilateral partnership to improve malaria detection and expand malaria research capacity in Nigeria. As a Mirzayan Fellow, Robin is eager to integrate her research background with scientific policy to address global scientific challenges, promote capacity building, and foster scientific collaboration in the U.S. and

globally.



**Emma Moran** (2016; DBASSE/BECS) is completing a Ph.D. program in ecology at Washington University in St. Louis. Her doctoral work focuses on understanding the many processes that shape large-scale biodiversity patterns, specifically working in pond ecosystems. Prior to her doctoral work, Emma was involved in several other research programs, including marine ecology, the ecology and evolution of acorn woodpecker social groups, and the ecosystems that live within the leaves of carnivorous pitcher plants. During her time as a Mirzayan Fellow, Emma worked on several projects at the intersection of human behavioral and social sciences with climate change policy and action. She is excited to continue working in science policy to help people make smart decisions when it comes to their impacts on the environment, while facilitating more equitable access to natural resources.(Updated 4/2016)



**Alex Morgan** (2016; DELS/BASC) received her MPhil in earth sciences from the University of Cambridge and her BA in both earth and planetary sciences and environmental engineering from Harvard University. She is passionate about working toward the global stabilization of atmospheric carbon. Such can be seen by the two research projects she designed and conducted in 2014 and 2015: (1) observing effects of anthropogenic ocean acidification in Hawaiian waters via SCUBA; and (2) examining samples collected from a carbon capture and storage project to better understand the long-term security of geologically injected CO<sub>2</sub>. She has also examined the disappearance of the Ediacaran biota from the fossil record 542 million years ago.

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**Charles Morgan** (2016; DBASSE/BOSE) recently received his Ph.D. in chemistry and chemical biology from the University of California, San Francisco (UCSF). His doctoral research in the laboratory of Jim Wells focused on utilizing protein and cellular engineering strategies, inducible and selective proteolysis, to interrogate programmed cell death. As a volunteer scientist with the UCSF Science and Health Education Partnership, he partnered with teachers in K12 classrooms to enhance students' exposure to high quality science education through development of inquiry-based labs. As a testament to his dedication to community education, science teaching and learning he was awarded the UCSF Chancellor's Award for Public Service. He received a B.A. in chemistry from Lewis & Clark College. Charlie highly values his international experiences having been a Congress-Bundestag Youth Exchange student in Germany, an AFS exchange student in Ecuador, and an Amigos community health organizer in Mexico. Recently he has presented at international research meetings in Chile and Spain, and at International Teacher Scientist Partnership conferences. In his spare time he enjoys kitchen chemistry, cycling, and the great outdoors.



**Rebecca Nebel** (2016; DBASSE/BCYF) received her PhD in biomedical sciences at Albert Einstein College of Medicine. Rebecca's doctoral research focused on the genetics of neurodevelopmental disorders and creating a human-based model system to better understand why certain individuals are at increased risk for developing these disorders. During her doctorate, Rebecca served as a virtual intern for the Higher Education Solutions Network (HESN) at USAID promoting HESN projects and working to spur future collaborations through written interviews and blog posts. She also organized the inaugural symposium for the Scientista Foundation to help support undergraduate women in STEM. As a Mirzayan Fellow with the Board on Children, Youth, and Families, Rebecca worked on a consensus study about fostering the educational success of dual language learners. In her spare time, Rebecca enjoys baking, Crossfit, and listening to podcasts. (Updated 4/2016)



**Nicole Parker** (2016; PGA/BHEW) is a Ph.D. candidate in biochemistry and molecular biology at Johns Hopkins Bloomberg School of Public Health. She holds a risk sciences and public policy certificate from Johns Hopkins and a B.S. in biochemistry, with sociology minor from University of Maryland-Baltimore County. Her Ph.D. thesis focuses on investigating potential clinical treatments for infertile men that lack germ cells by studying the mechanism of a growth factor that is required for the production of germ cells. In addition, Nicole is a teaching assistant for the Introduction to Risk Sciences and Public Policy course and serves as a mentor to several M.A. and junior Ph.D. students. In her spare time, Nicole enjoys doing science demos at the farmer's market, volunteering with several local community service agencies, and spending time with friends and family. Through the Mirzayan Fellowship, she hopes to gain a better understanding of scientific policy in order to utilize this information to act on her passion for changing and improving science higher

education.

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**Corinna Raimondo** – the J. Herbert Hollomon Fellow – (2016; NAE/CEES) received her PhD in physical chemistry from the Institut de Science et d'Ingénierie Supramoléculaire of the University of Strasbourg (France) after completing her BS and MS in chemistry at University of Genoa (Italy). Corinna was awarded the Marie Curie Fellowship in partnership with BASF-SE Corporation. This offered her the opportunity to collaborate with researchers around Europe. She also performed research at the KU Leuven (Belgium). Corinna's early research focused on the synthesis, characterization and application in devices of light-sensitive nanomaterials. Subsequently, she started working as postdoctoral fellow in the chemical and chemical engineering departments at Northwestern University, studying the synthesis and application of nanomaterials in the most diversified fields, ranging from pure electrochemistry to cell biology. She is doing her postdoctorate in the chemical engineering department at Northwestern University where

her main focus is developing novel heterogeneous catalysts for epoxidations and carbonylations. She realized that there are complicate problems of ethics in science, whose implications are enormous. Corinna is co-teaching a course on responsible conduct of research, and is currently working on a MS in law from the Pritzker School of Law at Northwestern University. As a Mirzayan Fellow, she hopes to learn from policy leaders in the area of science and engineering, and to discover ways in which she can apply these lessons to affect policy decision-making. (Updated 2/2016)



**Sara Saghir** (2016; DBASSE/BCYF) is currently completing her doctorate in nursing practice at George Washington University (GWU). Sara received her M.S. in nursing at GWU and her B.S. in nursing at George Mason University. She has created a research proposal on domestic sex trafficking within the United States. She hopes to create educational seminars on sex trafficking prevention that is facilitated by healthcare professionals for adolescent females within high schools across the nation. Sara was also the recipient of the 2015 GE Foundation-National Medical Fellowship Primary Care Leadership Program Scholarship in which she created an independent service learning project (ISP) titled *Improving the Process: Rochester's Refugee Deaf and Hard-of-Hearing Patients*. She created a referral card that acted as a visual aid so the deaf and hard-of-hearing refugee patients would be able to receive the care they need. The ISP was also accepted to present at the 2015

National Association of Community Health Centers Community Health Institute & Expo. She hopes to continue to build a career that involves science and health policy.



**Charles Stotler** (2016; PGA/CSTL) is an attorney and a researcher for Aviation Advocacy--an aviation consulting firm. He recently completed an LL.M. (Air and Space Law) at McGill University. His thesis examined the effects of globalization and the fragmentation of international law on the regulation of commercial space transportation. More broadly, it considered the interplay of legal regimes where advancing technologies create a confluence of regulatory actors who function under different mandates, laws and regulatory systems. Past experiences include internships with the UN Office for Outer Space Affairs in Vienna, Aerospace Industries Association in Washington, D.C., the UN Counter-Terrorism Executive Directorate in New York, as well as participation in an interagency UN aerospace learning group. Through the Mirzayan Fellowship, Charles hopes to gain a better understanding of the relationship between science, technology and policy so that he might assist in the creation of policies that empower researchers, scientists and

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engineers in the exploration of outer space and in the use of space applications for sustainable development on Earth.



**Gabrielle Tepp** (2016; NAS/Koshland) completed her Ph.D. in physics at the University of Rochester. Her thesis focused on analyzing seismic and magmatic processes in the Galapagos Islands and East Africa. She is very interested in both the science and policy of natural hazards, especially volcanoes and earthquakes. While working on her Ph.D., she was an instructor for general physics and introductory college writing. Gabrielle received her B.S. in physics and astrophysics from Michigan State University and did her senior thesis project in psychoacoustics. She also was very involved in science outreach and worked on summer research projects in space physics at MIT Haystack Observatory and in planetary geology at Northern Arizona University. Gabrielle hopes to continue developing new perspectives that will allow her to better connect non-scientists with science. (Updated 4/2016)



**Krista Versteeg** (2016; PGA/Committee on International Security and Arms Control) is currently completing a Ph.D. in microbiology and immunology under the guidance of Dr. Thomas Geisbert in the Galveston National Lab at the University of Texas Medical Branch. She holds a B.S. in biochemistry and conducted her honors thesis on the synthesis of chemotherapeutic drugs. During her undergraduate years, she was motivated to pursue a Ph.D. project in infectious diseases after an internship with the National Biodefense Analysis and Countermeasures Center. After graduating from college, Krista moved to Texas to begin work on her Ph.D.; her dissertation is focused on identifying the immune response to various Ebola viruses. Her work in the high containment laboratory at the Galveston National Lab will aid in the development of vaccines and therapeutics against highly pathogenic infectious diseases. Krista is excited to be joining the Mirzayan Fellowship in 2016 and hopes to gain a better understanding of the many opportunities available for

PhDs within the government. She would ultimately like to use her knowledge and passion regarding infectious diseases to help government and industry prepare for future threats or outbreaks and assist with the eradication of disease worldwide.



**Benjamin Wender** (2016; DEPS/BEES) is a PhD candidate and EPA STAR Fellow in the School of Sustainable Engineering and the Built Environment at Arizona State University (ASU). His research develops forward-looking tools for life cycle assessment of emerging technologies such as nanomaterials and photovoltaics such that potential environmental impacts of future technologies may be identified and mitigated prior to commercialization. Ben received an M.S. in civil, environmental, and sustainable engineering from ASU in 2013 and a B.A. in physics from Hampshire College in 2008. Throughout his graduate career Ben participated in several research internships under the mentorship of researchers from national labs, the Army Corps of Engineers, and General Electric Global Research Center, which introduced him to diverse research environments. He spent the last two summers with the science policy immersion program Science Outside the Lab organized by the Consortium for Science Policy and Outcomes, first

as a participant and later as student instructor. These experiences solidified his interest in the intersection of

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scientific research and policy making, and he is excited to have the 2016 Christine Mirzayan Fellowship serve as his first step into the science policy arena.



**Rochelle Williams** (2016; NAE/NAE PO) is the director of programs and research at ABET Headquarters in Baltimore, Md. In this capacity, she is responsible for partnering with faculty and industry in robust, relevant technical education research, and for providing educational opportunities worldwide on continuous improvement and sustainable assessment processes. This includes ABET's Institute for the Development of Excellence in Assessment Leadership (IDEAL), ABET's Program Assessment Workshops, and the ABET Symposia. Rochelle joined ABET with extensive project management skills and a passion for broadening participation in technical education. She served as the science laboratory manager at Baton Rouge Community College, where she was responsible for the day-to-day operations of the physics, biology, and chemistry labs. Additionally, Rochelle taught developmental mathematics as an adjunct faculty member in the mathematics department. Before completing her doctoral work, Rochelle served as a graduate assistant at

Southern University teaching composite materials, materials science, and metallurgy. Rochelle received her B.S. in physics from Spelman College, a master's mechanical engineering and her Ph.D. in science and mathematics education from Southern University. Her research interests include assessment and quality management systems and broadening participation in technical education.



**Naisi Zhao** (2016; HMD/FNB) is a Dr.P.H. candidate at Tufts University School of Medicine. Building on her B.A. in economics, she has received graduate training in health economics from Johns Hopkins Bloomberg School of Public Health. Her doctoral dissertation work focuses on the use of scientific evidence in health-related policy making. Naisi has extensive experience in using economic tools to evaluate the impact of policy and public health programs. For the last decade, she has also participated in the implementation and evaluation of gut microbiota-targeted dietary interventions that alleviate simple and genetic obesity. As a Mirzayan Fellow, Naisi hopes to deepen her understanding of how scientific evidence is synthesized for policy making and how to better evaluate the impact of evidence reports. Since the emerging research on microbiome will likely redefine our understanding of health in the next decade, Naisi believes that a better understanding of evidence use in policy making will help promote more effective health-related policies.