

The National Academies of **SCIENCES • ENGINEERING • MEDICINE**

Emerging Areas of Science, Engineering, and Medicine for the Courts A Workshop

Speaker Biographies

Thomas D. Albright* is Professor and Conrad T. Prebys Chair at the Salk Institute for Biological Studies, where he joined the faculty in 1986. He is also Director of the Salk Institute Center for the Neurobiology of Vision and Adjunct Professor of Psychology and Neurosciences at the University of California, San Diego. Albright is an authority on the neural basis of visual perception, memory and visually guided behavior. His laboratory seeks to understand how visual perception is affected by attention, behavioral goals, and memories of previous experiences. An important goal of this work is the development of therapies for blindness and perceptual impairments resulting from disease, trauma or developmental disorders of the brain. A second aim of Dr. Albright's work is to use our growing knowledge of brain, perception and memory to inform design in architecture and the arts, to leverage societal decisions and public policy, and to advise on matters of law and justice. Albright received a Ph.D. in psychology and neuroscience from Princeton University. He is a member of the U.S. National Academy of Sciences, a fellow of the American Academy of Arts and Sciences, a fellow of the American Association for the Advancement of Science, and an associate of the Neuroscience Research Program. He is past-president of the Academy of Neuroscience for Architecture, a former member of the National Academy of Sciences Committee on Science, Technology, and Law, and a former member of the U.S. National Commission on Forensic Science. Albright is currently a member of the Human Factors Resource Committee of the NIST Organization of Scientific Area Committees for Forensic Science. Albright served as co-chair of the National Academy of Sciences Committee on Scientific Approaches to Eyewitness Identification, which produced the 2014 report *Identifying the Culprit: Assessing Eyewitness Identification*.

Dana Carroll is a distinguished professor in the Department of Biochemistry at the University of Utah School of Medicine. He was until recently Interim Director of the Public Impact Program at the Innovative Genomics Institute at the University of California, Berkeley. Dr. Carroll's research involves genome engineering using targetable nucleases. His lab pioneered the development of zinc-finger nucleases as gene targeting tools, and he continued working with the more recent TALENs and CRISPR/Cas nucleases, with much of the effort focused on optimizing the efficiency of these reagents for targeted mutagenesis and gene replacement. He received the Novitski Prize from the Genetics Society of America in 2012 and the Sober Lectureship Award from the American Society for Biochemistry and Molecular Biology in 2014. Dr. Carroll's current interests include the societal implications of genome editing. He was a member of the international commission that released a report on *Heritable Human Genome Editing* in September, 2020. He received his Ph.D. from the University of California, Berkeley, and did postdoctoral research at the Beatson Institute for Cancer Research in Glasgow, Scotland, and at the Carnegie Institution Department of Embryology in Baltimore. He is a member of the US National

Academy of Sciences, a fellow of the American Academy of Arts and Sciences and of the American Association for the Advancement of Science.

Ellen Wright Clayton is the Craig-Weaver Professor of Pediatrics, Professor of Law, and Professor of Health Policy at Vanderbilt Law School. Clayton's scholarship currently focuses on the translation of genomics to clinical care, and she currently is co-principal investigator of two grants, one involving a transdisciplinary Center for Excellence in Ethical, Legal, Social Implications Research addressing genomic privacy and another analyzing legal issues in liability, quality, privacy and access, and the clinical-research interface, all with the goal of developing more effective solutions.

An active participant in policy debates, Clayton has advised the National Institutes of Health as well as other federal and international bodies on an array of topics ranging from children's health to the ethical conduct of research involving human subjects. Her teaching interests include law and genomics, bioethics and law, reproductive rights, and public health and research ethics. Clayton has worked on numerous projects for the National Academy of Medicine, including serving as a member of its Advisory Council and chair of the Board on Population Health and Public Health Practice. She is currently co-chair of the Report Review Committee of the National Academies of Sciences, Engineering and Medicine. She is an elected Fellow of the American Academy for the Advancement of Science. Clayton earned her B.S. from Duke University, her M.D. from Harvard University, and her J.D. from Yale University.

Rebecca Doerge is the Glen de Vries Dean of the Mellon College of Science at Carnegie Mellon University and a member of the Dietrich College of Humanities and Social Sciences' Department of Statistics and Data Science and the Mellon College of Science's Department of Biological Sciences. Doerge's research program focuses on statistical bioinformatics, an interdisciplinary component of bioinformatics that brings together many scientific disciplines for the purpose of asking, answering, and disseminating biologically interesting information in the quest to understand the ultimate function of DNA and epigenomic associations.

Doerge is an elected Fellow of the American Statistical Association (2007) and the American Association for the Advancement of Science (AAAS) (2007), and a Fellow of the Committee on Institutional Cooperation (2009). She declined the American Council on Education Fellowship in 2016 to become dean of the Mellon College of Science. She is also chair-elect of the AAAS Statistics Section (2019); a member of the Board of Trustees for the National Institute of Statistical Sciences and the Mathematical Biosciences Institute; a member of the Engineering External Review Committee at Lawrence Livermore National Laboratory; and a member of the Global Open-Source Breeding Informatics Initiative Advisory Board.

Prior to joining Carnegie Mellon University, Doerge was the Trent and Judith Anderson Distinguished Professor of Statistics at Purdue University. She joined Purdue University in 1995 and held a joint appointment between the Colleges of Agriculture (Department of Agronomy) and Science (Department of Statistics). Doerge obtained her Ph.D. in statistics from North Carolina State University.

Jeremy Epstein is Deputy Division Director of Computer and Information Science and Engineering (CISE) and Computer and Network Systems (CNS) at the National Science Foundation (NSF), where he oversees research in a range of computer science programs, including cybersecurity, cyber physical systems,

smart and connected communities, computer systems, networking, computer science education, technology transition, and other assorted topics.

Prior to (re)joining NSF in 2017, he was a program manager at DARPA I2O, and a program officer for NSF's Secure and Trustworthy Cyberspace (SaTC) program. He spent most of his career in industry, including at SRI International and webMethods. His areas of interest are in cybersecurity, particularly elections and voting security.

Epstein is also associate editor in chief of *IEEE Security & Privacy Magazine*, vice chair of the Association for Computing Machinery US Technology Policy Committee, and founder/director of ACSA Scholarships for Women Studying Information Security (SWSIS).

Yaniv Erlich is the Chief Executive Officer of Eleven Therapeutics and the Chief Science Officer of MyHeritage, a global consumer genomics company.

Prior to these positions, Erlich was an Associate Professor of Computer Science at Columbia University and was a PI at the Whitehead Institute at the Massachusetts Institute of Technology. He received his bachelor's degree (summa cum laude from) Tel-Aviv University, Israel (2006) and a Ph.D. from the Watson School of Biological Sciences at Cold Spring Harbor Laboratory (2010).

Erlich's research interests are computational human genetics. He has been an advisor for multiple companies in the area of genomics and bioinformatics. He authored over 40 peer-reviewed scientific studies, including multiple papers in *Science*, *Nature Genetics*, *Nature Methods*, and *AJHG* as a senior author. He holds five patents and has experience in both B2C and B2B in the area of genomics.

Erlich is a TEDMED speaker (2018), the recipient of DARPA's Young Faculty Award (2017), the Burroughs Wellcome Career Award (2013), Harold M. Weintraub award (2010), the IEEE/ACM-CS HPC award (2008), and he was selected as one of 2010 Tomorrow's PIs team of Genome Technology.

Josh Goldfoot is principal deputy chief of the Computer Crime and Intellectual Property Section (CCIPS) in the U.S. Department of Justice's (DOJ) Criminal Division, where he helps supervise a group of 40 attorneys who investigate and prosecute computer crimes and criminal intellectual property offenses. Beginning in 2005, Goldfoot worked at CCIPS prosecuting computer intrusions and wiretap offenses, as well as serving as an expert on the law of electronic evidence and online investigations. In 2013, He became deputy chief for cyber policy in the Department's National Security Division, and then returned to CCIPS in 2016, becoming principal deputy chief in 2019. Goldfoot has received the Attorney General's John Marshall Award for his work on remote computer searches, the Attorney General's Distinguished Service Award for his work on a botnet takedown, the FBI Director's Award for an international hacking case, and also four different Assistant Attorney General awards.

Goldfoot has trained hundreds of Assistant U.S. Attorneys and DOJ attorneys in electronic evidence, online investigations, computer intrusions, cybersecurity, and prosecuting cybercrime. He has authored or co-authored five law review articles about law and technology, and has received a United States patent in 2008 for shape recognition technology. Goldfoot is a graduate of Yale University and earned

his law degree from the University of Virginia School of Law in 1999. He has worked in technology law since 1999, when he advised Internet startups in Silicon Valley on intellectual property issues. Prior to joining the Department of Justice in 2005, he litigated civil cases, and clerked for Judge Alex Kozinski on the Ninth Circuit U.S. Court of Appeals. Goldfoot authored and operates the web site “sentencing.us,” which calculates U.S. federal sentencing guidelines.

Paul Hanle is Project Leader of the Climate Judiciary Project based at the Environmental Law Institute. He retired in 2018 from his position as President and Chief Executive Officer of Climate Central, which he had joined in 2011, reflecting his career-long dedication to increasing public understanding of environmental conservation and science. Earlier he had served in leadership roles for 24 years, as the first president of the Biotechnology Institute, president of the Academy of Natural Sciences of Philadelphia, and chief executive officer of the Maryland Science Center.

Hanle began his career in 1974 as a curator at the Smithsonian’s National Air and Space Museum in Washington D.C., rising to positions of space department chair and associate director for research. At the Science Center and the Academy, Hanle guided the launching of new educational initiatives including major national exhibits on women’s health, mathematics, a volunteer-based environmental education program in aquatic ecology, and two IMAX films on science.

Among his volunteer services, he advised the Obama Administration in its “Educate to Innovate” initiative and served on the Steering Committee of the Business and Industry STEM Education Coalition. Hanle earned a Ph.D. in the History of Science and Medicine and an M.S. in Physics from Yale University. He received his undergraduate degree in physics from Princeton University. He is a former member of The Institute for Advanced Study in Princeton and recently a Director’s Visitor there. At present he serves on the Boards of the Bermuda Institute of Ocean Sciences and the Association of Members of the Institute for Advanced Study.

Barbara Parker Hervey was elected to the Texas Court of Criminal Appeals in 2000. Prior to her election, Judge Hervey was an Assistant District Attorney for 16 years in the Appellate Section of the District Attorney’s Office in San Antonio. She earned her Bachelor of Arts Degree in 1975 from The University of North Carolina at Greensboro and her Juris Doctor in 1979 from St. Mary’s University School of Law in San Antonio.

Judge Hervey has been an author and speaker for over 450 lectures and legal seminars. She is currently a co-chair of the permanent Texas Judicial Commission on Mental Health and is a member of the Senior Advisory Board for the Center for Statistics and Applications of Forensic Evidence (CSAFE). She also founded the Texas Criminal Justice Integrity Unit and has been the Chair of the Court’s Grant Committee for 18 years. The Committee manages \$26 million per biennium to train judges, attorneys, and their staff.

A member of the State Bar of Texas, the American Law Institute, and the American Academy of Forensic Science, Judge Hervey was a Commissioner on the National Commission for Forensic Science and was an Advisor to the American Association for the Advancement of Science’s project, “Forensic Science Assessments: A Quality and Gap Analysis.” She was also an adjunct professor at St. Mary’s School of Law

for 10 years teaching Texas Criminal Procedure, was awarded the Appellate Advocacy Award from Region VI, Association of Government Attorneys in Capital Litigation, and a Certificate of Appreciation from the San Antonio Police Officers Association in recognition of work on the case of *Moore v. Texas*. Judge Hervey co-authored *The Appellate Prosecutor: "Professional Responsibility on Appeal"* and has been recognized as a distinguished alumnus by her high school and law school.

Russ Housley is the founder of Vigil Security, LLC, a company formed in September 2002 with the goal of helping customers design and implement diligently watchful security solutions. Housley has worked in the computer and network security field since 1982. Before starting Vigil Security, he worked at the Air Force Data Services Center (AFDSC), Xerox Special Information Systems (XSIS), SPYRUS, and RSA Laboratories. His security research and standards interests include security protocols, certificate management, cryptographic key distribution, and high assurance design and development practices. He has been active in many security standards organizations; his recent focus has been on the Internet Engineering Task Force (IETF). Housley has served as the one of the IETF Security Area Directors and IETF Chair. He has served as a member of the Internet Architecture Board (IAB) and later served as chair. In this position, Housley was able to provide architectural oversight for Internet protocols and procedures, provides liaison support on behalf of the IETF, review appeals of the Internet standards process, provide oversight of the RFC series and protocol parameter value assignment by Internet Assigned Numbers Authority, and provide technical advice to the Internet Society. Housley has served on the Internet Research Steering Group (IRSG) as an at-large member.

Housley received his B.S. in computer science from Virginia Tech in 1982, and he received his M.S. in computer science from George Mason University in 1992.

Steven E. Hyman is director of the Stanley Center for Psychiatric Research at Broad Institute of MIT and Harvard, a core member of the Broad Institute and Harvard University Distinguished Service Professor of Stem Cell and Regenerative Biology.

From 2001 to 2011, Hyman served as provost of Harvard University, the university's chief academic officer. As provost, he had a special focus on establishment of collaborative initiatives in the sciences and engineering spanning multiple disciplines and institutions. From 1996 to 2001, he served as director of the U.S. National Institute of Mental Health (NIMH), where he emphasized investment in neuroscience and emerging genetic technologies and initiated a series of large practical clinical trials that were forerunners of comparative efficacy studies.

Hyman is president of the American College of Neuropsychopharmacology (2018), past president of the Society for Neuroscience (2015), and founding president of the International Neuroethics Society (2008-2013), and he previously served as editor of the *Annual Review of Neuroscience* (2002-2016). He is a member of the U.S. National Academy of Medicine where he has served on the council. He chaired the Forum on Neuroscience and Nervous System Disorders of the National Academies of Sciences, Engineering, and Medicine (NASEM), which brought together industry, government, academia, patient groups, and foundations, and he has served on the governing board of the National Research Council, the operating arm of NASEM. Hyman is a fellow of the American Academy of Arts and Sciences and the American Association for the Advancement of Science, and he is a Distinguished Life Fellow of the

American Psychiatric Association. In 2016, he was awarded the Rhoda and Bernard Sarnat International Prize in Mental Health by the National Academy of Medicine.

Hyman received his B.A. *summa cum laude* from Yale College, an M.A. from the University of Cambridge, which he attended as a Mellon fellow studying history and philosophy of science, and an M.D. *cum laude* from Harvard Medical School.

Daniel Kahneman is Professor of Psychology and Public Affairs Emeritus at the Princeton School of Public and International Affairs, the Eugene Higgins Professor of Psychology Emeritus at Princeton University, and a fellow of the Center for Rationality at the Hebrew University in Jerusalem. Kahneman has held the position of professor of psychology at the Hebrew University in Jerusalem (1970-1978), the University of British Columbia (1978-1986), and the University of California, Berkeley (1986-1994). Kahneman received his B.A. from Hebrew University and his M.A. and Ph.D. from University of California, Berkeley. Kahneman is a member of the National Academy of Science, the Philosophical Society, the American Academy of Arts and Sciences and a fellow of the American Psychological Association, the American Psychological Society, the Society of Experimental Psychologists, and the Econometric Society. He has been the recipient of many awards, among them the Distinguished Scientific Contribution Award of the American Psychological Association (1982) and the Grawemeyer Prize (2002), both jointly with Amos Tversky, the Warren Medal of the Society of Experimental Psychologists (1995), the Hilgard Award for Career Contributions to General Psychology (1995), the Nobel Prize in Economic Sciences (2002), the Lifetime Contribution Award of the American Psychological Association (2007), and the Presidential Medal of Freedom (2013).

Subbarao Kambhampati is a professor of computer science at Arizona State University. Kambhampati studies fundamental problems in planning and decision making, motivated in particular by the challenges of human-aware AI systems. He is a fellow of Association for the Advancement of Artificial Intelligence, American Association for the Advancement of Science, and Association for Computing Machinery, and was an NSF Young Investigator. He was the president of the Association for the Advancement of Artificial Intelligence, trustee of International Joint Conference on Artificial Intelligence, and a founding board member of Partnership on AI. Kambhampati's research as well as his views on the progress and societal impacts of AI have been featured in multiple national and international media outlets. He writes a column on the societal and policy implications of the advances in Artificial Intelligence for *The Hill*.

Goodwin Liu is an Associate Justice of the California Supreme Court. Nominated by Governor Jerry Brown, Justice Liu was sworn into office in 2011 and retained by the electorate in 2014. Before joining the state's highest court, Justice Liu was Professor of Law and Associate Dean at the University of California, Berkeley School of Law. His primary areas of expertise are constitutional law, education law and policy, and diversity in the legal profession.

Justice Liu attended Stanford University and earned a bachelor's degree in biology in 1991. He attended Oxford University on a Rhodes Scholarship and earned a masters degree in philosophy and physiology. Upon returning to the United States, he went to Washington D.C. to help launch the AmeriCorps national service program and worked for two years as a senior program officer at the Corporation for National Service.

Justice Liu graduated from Yale Law School in 1998, becoming the first in his family to earn a law degree. He clerked for Judge David Tatel on the U.S. Court of Appeals for the D.C. Circuit and then worked as Special Assistant to the Deputy Secretary of the U.S. Department of Education. He went on to clerk at the U.S. Supreme Court for Justice Ruth Bader Ginsburg during the October 2000 Term. From 2001 to 2003, he worked in the litigation practice of O'Melveny & Myers in Washington, D.C.

Justice Liu continues to teach constitutional law as a visiting professor at Harvard Law School. He is an elected member of the American Philosophical Society, American Academy of Arts and Sciences, and the American Law Institute. He serves on the Council of the American Law Institute, on the Board of Directors of the James Irvine Foundation, and on the Yale University Council. He has previously served on the California Commission on Access to Justice, the National Academy of Sciences Committee on Science, Technology, and Law, the Board of Trustees of Stanford University, and the governing boards of the American Constitution Society, the National Women's Law Center, and the Public Welfare Foundation.

Gary Marchant is a Regents Professor of Law and director of the Center for Law, Science and Innovation at Arizona State University (ASU). His research interests include legal aspects of genomics and personalized medicine, the use of genetic information in environmental regulation, risk and the precautionary principle, and governance of emerging technologies such as nanotechnology, neuroscience, biotechnology and artificial intelligence.

Prior to joining ASU in 1999, Marchant was a partner at the Washington, D.C., office of Kirkland & Ellis, where his practice focused on environmental and administrative law. During law school, he was Editor-in-Chief of the Harvard Journal of Law & Technology and editor of the Harvard Environmental Law Review and was awarded the Fay Diploma (awarded to top graduating student at Harvard Law School).

Marchant frequently lectures about the intersection of law and science at national and international conferences. He has authored more than 150 articles and book chapters on various issues relating to emerging technologies. Among other activities, he has served on six National Academy of Sciences committees, has been the principal investigator on several major grants, and has organized numerous academic conferences on law and science issues.

Xiao-Li Meng is the Whipple V. N. Jones Professor of Statistics and the Founding Editor-in-Chief of *Harvard Data Science Review*. Meng is well known for his depth and breadth in research, his innovation and passion in pedagogy, his vision and effectiveness in administration, as well as for his engaging and entertaining style as a speaker and writer. Meng was named the best statistician under the age of 40 by COPSS (Committee of Presidents of Statistical Societies) in 2001, and he is the recipient of numerous awards and honors for his more than 150 publications in at least a dozen theoretical and methodological areas, as well as in areas of pedagogy and professional development. He has delivered more than 400 research presentations and public speeches on these topics, and he is the author of "The XL-Files," a thought-provoking and entertaining column in the IMS (Institute of Mathematical Statistics) Bulletin. His interests range from the theoretical foundations of statistical inferences (e.g., the interplay among Bayesian, Fiducial, and frequentist perspectives; frameworks for multi-source, multi-phase and multi-resolution inferences) to statistical methods and computation (e.g., posterior predictive p-value; EM algorithm; Markov chain Monte Carlo; bridge and path sampling) to applications in natural, social, and medical sciences and engineering (e.g., complex statistical modeling in astronomy and astrophysics,

assessing disparity in mental health services, and quantifying statistical information in genetic studies). Meng received his B.S. in mathematics from Fudan University in 1982 and his Ph.D. in statistics from Harvard in 1990. He was on the faculty of the University of Chicago from 1991 to 2001 before returning to Harvard, where he served as the Chair of the Department of Statistics (2004-2012) and the Dean of Graduate School of Arts and Sciences (2012-2017).

Judge **Kathleen McDonald O'Malley*** was appointed to the U.S. Court of Appeals for the Federal Circuit by President Obama in 2010. Prior to her elevation to the Federal Circuit, Judge O'Malley was appointed to the U. S. District Court for the Northern District of Ohio by President Clinton in 1994. Prior to her appointment to the bench, Judge O'Malley served as First Assistant Attorney General, Chief of Staff, and Chief Counsel to the Attorney General for the State of Ohio. Judge O'Malley was also in private practice with Jones Day and Porter, Wright, Morris & Arthur. Judge O'Malley began her legal career as a law clerk to the Hon. Nathaniel R. Jones, U.S. Court of Appeals for the Sixth Circuit.

Judge O'Malley has been an active speaker and educator, having delivered over 50 speeches and lectures, taught a number of law school courses, published articles, and been active in Inns of Court and bar functions. Judge O'Malley has received numerous awards during her 25 years on the bench. For her contributions to intellectual property alone, Judge O'Malley has been awarded the Sedona Conference Lifetime Achievement Award, the New Jersey Intellectual Property Law Association Jefferson Medal, the New York Intellectual Property Law Association Outstanding Public Service Award and was named to Globe Business Media Group's IP Hall of Fame. Recently, an IP Inn of Court in Cleveland, Ohio bearing her name has been chartered by the American Inns of Court.

V. Ram Ramanathan is Edward A. Frieman Endowed Presidential Chair in Climate Sustainability at the Scripps Institution of Oceanography at the University of California, San Diego. He is an elected member of the U.S. National Academy of Sciences, Royal Swedish Academy of Sciences that awards Nobel Prizes and a council member of Pope Francis' Pontifical Academy of Sciences and in this capacity served as the Science Advisor to the Holy See delegation to the Paris Climate Summit in 2015. His honors include: United Nation's Champion of Earth for 2013; Foreign Policy Magazine's Top 100 Global Thinkers for 2014; Volvo Prize in 1997; Tyler environment Laureate in 2009; Tang Environment Laureate for 2018. He is the editor and co-author of the book *Bending the Curve: Climate Change Solutions*.

Ramanathan discovered the greenhouse effect of halocarbons, particularly, chlorofluorocarbons (CFCs) in 1975, and along with R. Madden, predicted in 1980 that global warming would be detected by 2000. In 1985, he led the first international NASA/WMO/UNEP assessment on the climate effects of non-CO₂ greenhouse gases and concluded that they are as important as CO₂ to global climate change. In 1989, he led a NASA study that showed that clouds had a large global cooling effect. He led an international field experiment in the 1990s that discovered the widespread Atmospheric Brown Clouds (ABCs) over S. Asia, which have devastating health and climate impacts. He developed lightweight unmanned aerial vehicles to track pollution plumes from S. Asia, E. Asia and N. America. His recent finding is that mitigation of short lived climate pollutants (black carbon, methane, ozone and hydrochlorofluorocarbons) will slow down global warming significantly during this century. He leads the 10-campus University of California's Bending the Curve: Climate Solutions initiative and education/climate literacy protocol.

Joellen L. Russell is the Thomas R. Brown Distinguished Chair of Integrative Science and Professor at the University of Arizona in the Department of Geosciences. Her research uses global climate and earth system models to simulate the climate and carbon cycle of the past, the present and the future, and develops observationally-based metrics to evaluate these simulations. Russell is the lead for the modeling theme of the Southern Ocean Carbon and Climate Observations and Modeling project (SOCCOM) including its Southern Ocean Model Intercomparison Project (SOMIP). She currently serves as Co-Chair of the NOAA Science Advisory Board's Climate Working Group, as an Objective Leader for the Scientific Committee on Antarctic Research's AntarcticClimate21, and on the National Center for Atmospheric Research's Community Earth System Model Advisory Board. Prof. Russell is one of the 14 scientists behind an amicus curiae brief supporting the plaintiff in the historic 2007 U.S. Supreme Court decision on carbon dioxide emissions and climate change, *Commonwealth of Massachusetts, et al. v. U.S. Environmental Protection Agency*. Before joining UA, Russell was a Research Scientist at Princeton University and the National Ocean and Atmospheric Administration's Geophysical Fluid Dynamics Laboratory (NOAA/GFDL). She received her A.B. in Environmental Geoscience from Harvard and her PhD in Oceanography from Scripps Institution of Oceanography, University of California, San Diego.

Philip Sabes is Professor Emeritus in Physiology at the University of California, San Francisco (UCSF). He directs the UCSF Swartz Center for Theoretical Neuroscience and is a member of the UCSF Kavli Institute for Fundamental Neuroscience and the University of California, Berkeley/UCSF Center for Neural Engineering and Protheses. Sabes studies how the brain uses sensory feedback to maintain accurate and adaptive movement control. His lab also applies this research to the development of Brain Machine Interfaces (BMIs). It recently demonstrated a novel learning-based approach to providing artificial sensory feedback to the brain. A goal of this work is to allow users to feel artificial devices they control via BMIs. Sabes' lab is also developing neural interfaces for both next-generation studies of brain-wide sensorimotor circuits and for the combined "read out" and "write in" of BMI signals across these circuits.

Benjamin Santer is an atmospheric scientist at Lawrence Livermore National Laboratory. Santer's early research contributed to the historic "discernible human influence" conclusion of the 1995 Report by the Intergovernmental Panel on Climate Change. His recent work has attempted to identify human factors in a number of different climate variables.

Santer holds a Ph.D. in Climatology from the University of East Anglia, England. He spent five years at the Max-Planck Institute for Meteorology in Germany, and worked on the development and application of climate fingerprinting methods.

Santer served as convening lead author of the climate-change detection and attribution chapter of the 1995 Intergovernmental Panel on Climate Change report. He was the convening lead author of a key chapter of the U.S. Climate Change Science Program's report on "Temperature Trends in the Lower Atmosphere". His awards include the Norbert Gerbier-MUMM International Award, a MacArthur Fellowship, the U.S. Department of Energy's E.O. Lawrence Award, a Distinguished Scientist Fellowship from the U.S. Department of Energy, Office of Biological and Environmental Research, a Fellowship of the American Geophysical Union, and membership in the U.S. National Academy of Sciences.

Patti B. Saris became Chief Judge of the United States District Court for the District of Massachusetts on January 1, 2013. She was Chair of the United States Sentencing Commission in Washington, DC from January, 2011 to January, 2017. Saris is a graduate of Radcliffe College '73 (Magna Cum Laude, Phi Beta Kappa) and Harvard Law School '76 (Cum Laude). After graduating from law school, she clerked for the Supreme Judicial Court, and then went into private practice. When Senator Edward M. Kennedy became chairman of the Senate Judiciary Committee, she moved to Washington D.C. and worked as staff counsel. Saris later became an Assistant United States Attorney, and eventually chief of the Civil Division. In 1986, Saris became a United States Magistrate Judge, and in 1989, she was appointed as an Associate Justice of the Massachusetts Superior Court. In 1994, she was appointed to the United States District Court.

Thomas D. Schroeder* is the Chief Judge of the United States District Court for the Middle District of North Carolina. He attended the University of Cincinnati College-Conservatory of Music, graduated from Kansas University in 1981 with a B.S. in Business Administration, and received his law degree in 1984 from Notre Dame Law School, where he served as Editor-in-Chief of the *Notre Dame Law Review*. Upon graduation, he served as law clerk for the Honorable George E. MacKinnon, United States Court of Appeals for the District of Columbia Circuit. He practiced law for over 22 years, handling litigation and trials involving a variety of business and product liability matters, many in the capacity as national counsel in litigation pending in state and federal courts throughout the country. After ten years on the bench, Judge Schroeder became chief judge in 2017. He is an elected member in the American Law Institute and a periodic Senior Lecturing Fellow at Duke University Law School. Upon appointment by the Chief Justice, he serves on the Federal Rules of Evidence Advisory Committee of the United States Judicial Conference and chaired a subcommittee on Rule 702 addressing admissibility of expert witness testimony.

Leonard P. Stark is a graduate of the University of Delaware (Honors B.A. Political Science '91, B.S. with Distinction Economics '91, M.A. European History '91), University of Oxford (Magdalen College) (D. Phil. British Politics 1993), and Yale Law School (J.D. 1996). He clerked for the Honorable Walter K. Stapleton of the U.S. Court of Appeals for the Third Circuit during the 1996-97 term. From 1997 to 2001, Stark was a litigation associate in the Wilmington, Delaware office of Skadden, Arps, Slate, Meagher & Flom. Between 2002 and 2007, he served as an Assistant United States Attorney for the District of Delaware. Stark was appointed to a newly-created federal magistrate judge position for the United States District Court for the District of Delaware on August 6, 2007. On March 17, 2010, he was nominated by President Obama as a District Judge for the District of Delaware and, following Senate confirmation on August 5, 2010, he was appointed to this position on August 16, 2010. He became Chief Judge on July 1, 2014.

Sarah S. Vance is a United States District Judge of the United States District Court for the Eastern District of Louisiana. Vance joined the court in 1994 after being nominated by President Bill Clinton. Vance served as chief judge from 2008-2015, and was appointed to the chair of the Judicial Panel on Multidistrict Litigation in 2014. Vance has served as an Adviser on the American Law Institute's Recognition & Enforcement of Foreign Judgments project and as an Adviser on the Principles of the Law of Liability Insurance project. Before joining the bench in 1994, she was a partner in the New Orleans firm of Stone Pigman Walther Wittmann & Hutchinson, where her practice focused on antitrust

and commercial litigation. Vance received a B.A. from Louisiana State University and a J.D. from Tulane Law School.

Donald J. Wuebbles is the Harry E. Preble Professor of Atmospheric Science at the University of Illinois. He is also a Presidential Fellow at the University of Illinois, with the aim of helping the university system develop new initiatives in urban sustainability. From 2015 to early 2017, Wuebbles was Assistant Director with the Office of Science and Technology Policy at the Executive Office of the President in Washington DC, where he was the White House expert on climate science. He was Head of the Department of Atmospheric Sciences at the University of Illinois from 1994 to 2006. Wuebbles led the development of the School of Earth, Society, and Environment, and was its first director. While Department Head, he led the development of two highly successful undergraduate programs, one in Atmospheric Sciences, and the other, an interdisciplinary major, in Earth, Society and Environmental Sustainability (ESES).

Wuebbles is an expert in atmospheric physics and chemistry, with over 500 scientific publications related to the Earth's climate, air quality, and the stratospheric ozone layer. However his work goes well beyond that through providing analyses and development of metrics used in national and international policy and in developing analyses for understanding climate impacts on society and ecosystems, plus potential resilience and societal responses. He has co-authored a number of international and national scientific assessments, including being a Coordinating Lead Author on several international climate assessments led by the Intergovernmental Panel on Climate Change (IPCC) that resulted in IPCC being awarded the Nobel Peace Prize in 2007. He was a leader in both the 2013 IPCC international assessment of climate science and the 2014 3rd U.S. National Climate Assessment. More recently, he co-led the first volume of the 4th U.S. National Climate Assessment published in November 2017 that assesses the science of climate change and its effects on the United States, as required by the U.S. Congress under the 1990 Global Change Act. He also coauthored Volume 2 of the 4th U.S. National Climate Assessment, released in November 2018. He led a new assessment on the impacts of climate change on the Great Lakes that was published in March 2019.

Wuebbles has two degrees in Electrical Engineering from the University of Illinois (1970, 1972) and a Ph.D. in Atmospheric Sciences from the University of California, Davis (1983).

Alice Xiang is a Senior Research Scientist at Sony AI, where she leads research on responsible AI. Xiang previously worked as the Head of Fairness, Transparency, and Accountability Research at the Partnership on AI, where she built a team of interdisciplinary researchers and a portfolio of multi-stakeholder research initiatives. Core areas of Xiang's research include bridging technical and legal approaches to algorithmic bias, assessing explainability techniques in deployment, and examining risk assessment tools. Xiang's work sits at the intersection of social justice and AI; she seeks to ensure that algorithms can be used to enhance human creativity without entrenching societal inequities. She was recognized as one of the 100 Brilliant Women in AI Ethics, and has been quoted in the *Wall Street Journal*, *MIT Tech Review*, *Fortune*, and *VentureBeat*, among others, for her work on algorithmic bias and transparency, criminal justice risk assessment tools, and AI ethics generally. Xiang is both a lawyer and statistician and has previously worked on developing machine learning models and serving as legal counsel for technology companies. Xiang holds a Juris Doctor from Yale Law School, a Master's in

Development Economics from Oxford, a Master's in Statistics from Harvard, and a Bachelor's in Economics from Harvard.

*Member of the Workshop Planning Committee