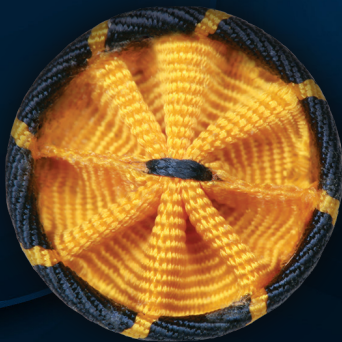


2020 AAAS *Fellows*





Fellowship Rosette

The AAAS Fellowship Rosette symbolizes the honor that AAAS bestows upon its members whose efforts on behalf of the advancement of science or its applications in service to society have distinguished them among their peers.

The rosette was adopted by the Board of Directors on 2 December 1989, as an emblem of Fellowship. Following heraldic tradition, the blue represents engineering and the gold represents science.



AMERICAN ASSOCIATION FOR
THE ADVANCEMENT OF SCIENCE

The American Association for the Advancement of Science is proud to present the distinguished members elected to the status of Fellow by the AAAS Council in October 2020. In a tradition stretching back 146 years, these individuals are recognized for their extraordinary achievements across disciplines.

We commend their dedication and commitment.

“Fellows shall be nominated ... from such of the members as are professionally engaged in science, or have by their labors aided in advancing science.”

AAAS Constitution
Adopted by the Standing Committee
12 August 1874

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HONORED GUEST SPEAKER: **Holden Thorp, Editor-in-Chief**

Holden Thorp became Editor-in-Chief of the *Science* family of journals on 28 October 2019. He came to *Science* from Washington University, where he was provost from 2013 to 2019 and where he is Rita Levi-Montalcini Distinguished University Professor and holds appointments in both chemistry and medicine.

Thorp joined Washington University after spending three decades at the University of North Carolina at Chapel Hill (UNC), where he served as the 10th chancellor from 2008 through 2013.

A North Carolina native, Thorp started at UNC as an undergraduate student and earned a bachelor of science degree in chemistry in 1986. He earned a doctorate in chemistry in 1989 at the California Institute of Technology, working with Harry B. Gray on inorganic photochemistry. He completed postdoctoral work at Yale University with Gary W. Brudvig, working on model compounds and reactions for the manganese cluster in the photosynthetic reaction center. He holds an honorary doctor of laws degree from North Carolina Wesleyan College and is a fellow of the National Academy of Inventors and the American Association for the Advancement of Science.

In his research career, Thorp studied electron-transfer reactions of nucleic acids, developed technology for electronic DNA chips, and cofounded Viamet Pharmaceuticals, which developed oteseconazole, now held by Mycovia Pharmaceuticals and in preparation for a new drug application in 2021 following successful Phase 3 trials. Thorp is a venture partner at Hatteras Venture Partners, a consultant to Ancora, and is on the board of directors of the College Advising Corps and Artizan Biosciences.

Thorp is the coauthor, with Buck Goldstein, of two books on higher education: *Engines of Innovation: The Entrepreneurial University in the Twenty-First Century* and *Our Higher Calling: Rebuilding the Partnership Between America and its Colleges and Universities*, both from UNC Press.

AGRICULTURE, FOOD, AND RENEWABLE RESOURCES

Ann M. Bartuska *Resources for the Future*: For her national leadership in forestry, ecosystem management, and agriculture, where she has championed sustainable, science-based research.

Carl Bernacchi *U.S. Department of Agriculture – Agricultural Research Service*: For outstanding contributions towards understanding photosynthesis from molecular to global scales.

Amy O. Charkowski *Colorado State University*: For distinguished contributions to the field of plant pathology, particularly for translating discoveries about the molecular basis of soft rot diseases to prevent crop losses.

Clarice J. Coyne *U.S. Department of Agriculture – Agricultural Research Service*: For international leadership in legume germplasm conservation, and contributions to the public understanding, global food security, and improved nutritional value of legumes.

Geoffrey E. Dahl *University of Florida*: For accomplishments in lactation biology and environmental physiology, particularly for his research demonstrating developmental programming of postnatal function caused by late-gestation heat stress.

Roch E. Gaussoin *University of Nebraska-Lincoln*: For distinguished contributions and service to the agronomic sciences, particularly in turfgrass and landscape systems, academic administration, and communicating science to the public.

Patrick M. Hayes *Oregon State University*: For distinguished contributions to the field of plant breeding with particular reference to barley in the areas of low temperature physiology, disease resistance, malting quality, and variety development.

TJ Higgins *CSIRO Agriculture and Food (Australia)*: For distinguished contributions to the field of molecular plant science, particularly using gene technology to transfer useful traits to grain legumes for food security.

Nancy Collins Johnson *Northern Arizona University*: For distinguished contributions to the field of soil microbial ecology, with particular reference to advancing knowledge of the abundance, diversity, and functioning of mycorrhizal fungi.

Shibu Jose *University of Missouri*: For distinguished contributions to agroforestry science, particularly in studying interspecific interactions for resources that define sustainability and ecosystem services of these alternative production systems.

Daniel Kliebenstein *University of California, Davis*: For distinguished contributions in the field of plant metabolomics and quantitative variation, and for exceptional service on his home campus and to the scientific community.

Rosemary Loria *University of Florida*: For distinguished contributions to the field of the molecular basis of bacterial diseases of plants, particularly regarding genetics and biochemistry of plant pathogenic Actinobacteria.

Shailaja K. Mani *Baylor College of Medicine*: For distinguished contributions to molecular and cellular neuroscience focused on molecular transcriptional regulation of steroid hormone receptors, signal transduction pathways and role of the microbiome.

Rafael Muñoz-Carpena *University of Florida*: For distinguished contributions to the field of hydrological water quality modelling in agricultural systems, particularly for mechanistic evaluation of agricultural best practices for water protection.

David D. Myrold *Oregon State University*: For distinguished contributions to the field of soil science, particularly for advancing the understanding of soil nitrogen cycling and the functioning of soil microbial communities.

K. Raja Reddy *Mississippi State University*: For distinguished contributions to the field environmental plant physiology and agricultural systems modeling and applications.

Taylor Henry Ricketts *University of Vermont*: For distinguished contributions to the fields of ecology and conservation, particularly for quantifying ecosystem services and using that understanding to inform management efforts.

Jean Ristaino *North Carolina State University*: For distinguished contributions to the science of plant pathology, particularly the population biology of historic plant disease outbreaks.

Jeanne Romero-Severson *University of Notre Dame*: For pioneering DNA marker technologies applied extremely successfully to forestry genetics and conservation.

Pablo Juan Ross *University of California, Davis*: For distinguished contributions to the fields of developmental and stem cell biology, particularly for studies of preimplantation embryo epigenetics and developing livestock embryonic stem cells.

Jennifer L. Tank *University of Notre Dame*: For distinguished contributions to aquatic biogeochemistry, with particular reference to carbon and nitrogen transformations and transport in agricultural landscapes and its impact on water quality.

William F. Tracy *University of Wisconsin - Madison*: Dr. William Tracy is national leader in plant breeding and germplasm, who has trained a generation of breeders and communicated breeding's importance to the public.

ANTHROPOLOGY

Margaret W. Conkey *University of California, Berkeley*: For distinguished contributions to the field of archaeology, particularly theoretical work on the role of art in ancient human evolution and gender studies in archaeology.

Anne Grauer *Loyola University Chicago*: For distinguished contributions to the field of biological anthropology, particularly to the development of paleopathology as a means of understanding social life in the past.

Debbie Guatelli-Steinberg *The Ohio State University*: For distinguished contributions to biological anthropology, particularly using dental hard tissues to advance understanding of growth and biological relationships in non-human primates and fossil hominins.

Edward B. Liebow *American Anthropological Association*: For distinguished contributions to the field of applied anthropology, and particularly for exemplary administration of professional societies and non-profit research and policy institutions.

J. Terrence McCabe *University of Colorado Boulder*: For distinguished contributions to anthropology, particularly for understanding how people adapt to arid rangelands of East Africa, and how they cope with changing socioeconomic conditions.

Denise Fay-Shen Su *Cleveland Museum of Natural History*: For notable contributions to the paleoecology of early hominins, descriptions of primate taxa, and overwhelming dedication to make science accessible to all through outreach.

ASTRONOMY

Nancy Susan Brickhouse *Harvard-Smithsonian Center for Astrophysics*: For outstanding contributions toward increasing diversity, equity, and inclusion in astronomy; for leadership in academia and professional societies to broaden participation for underrepresented groups.

John E. Carlstrom *University of Chicago*: For distinguished contributions to studies of the Cosmic Microwave Background at millimeter/sub-millimeter wavelengths and for leadership in the associated technical development projects.

Sean Carroll *California Institute of Technology*: For distinguished contributions to cosmology, gravity, and dark matter research, as well as exceptional contributions in communicating and promoting science to the public.

Timothy Heckman *Johns Hopkins University*: For distinguished contributions to the fields of galaxy evolution and supermassive black holes, and the relationship between the two.

Paul Martini *The Ohio State University*: For distinguished contributions to the development of astronomical instrumentation, and the evolution of black holes and galaxies.

Norman Murray *Canadian Institute for Theoretical Astrophysics*: For theoretical work providing key insights into a broad range of astrophysical topics encompassing planetary science, star formation, galaxy evolution, and active galactic nuclei.

Joan R. Najita *NSF's NOIRLab*: For distinguished contributions to astrophysics, particularly for theoretical modeling of protoplanetary disks and winds and the applications of these models to observations of young stars.

Liese van Zee *Indiana University*: For distinguished service as chair of the National Academy's Committee on Radio Frequencies and for incisive contributions to our understanding of galaxy formation and evolution.

Risa Wechsler *Stanford University*: For scientific contributions and leadership of large programs in cosmology and large scale structure to resolve the nature of dark matter and energy.

Ellen G. Zweibel *University of Wisconsin-Madison*: For distinguished contributions to quantify the role of magnetic fields in shaping the cosmos on all scales.

ATMOSPHERIC AND HYDROSPHERIC SCIENCE

Ghassem R. Asrar *Universities Space Research Association*: For outstanding research contributions to remote sensing of biosphere-atmosphere interactions, his scientific leadership and service to the Earth and Space community with great societal impact.

Elizabeth Boyer *Penn State*: For significant advances in ecohydrology, water quality, and the scientific underpinning for water management.

Deborah Bronk *Bigelow Laboratory for Ocean Sciences*: For substantial research advances on the marine nitrogen cycle and leadership in the ocean science research community.

Rong Fu *University of California, Los Angeles*: For seminal contributions to the understanding of rainfall and ecosystem interactions, and the scientific application for improving societal drought preparedness at regional scale.

Isaac Held *Atmospheric and Oceanic Sciences Program, Princeton University*: For major scientific advances in atmosphere science, climate, and geophysical fluid dynamics.

Forrest M. Hoffman *Oak Ridge National Laboratory*: For distinction in developing, comparing, and evaluating Earth system models with an emphasis on global biogeochemical cycles and feedbacks to the climate system.

William K.M. Lau *University of Maryland*: For profound contributions to the understanding of atmospheric low-frequency oscillations, monsoon dynamics, aerosol-monsoon interaction, and hydroclimate variability and change, through original data analysis and modeling.

Zhengyu Liu *The Ohio State University*: For distinguished contributions to our understanding of climate dynamics, particularly in pioneering data-model experiments to explore the physics of present and past climate variability.

Natalie Mahowald *Cornell University*: For pioneering and sustained work on the role of aerosols in global biogeochemistry and climate.

Sally McFarlane *U.S. Department of Energy*: For extensive scientific professional service to AAAS, the U.S. Department of Energy, and the climate and atmospheric radiation dynamics communities.

Jerry Schubel *Aquarium of the Pacific*: For sustained contributions to ocean research, conservation, and public education.

Patricia L. Wiberg *University of Virginia*: For distinguished contributions to understanding the causes and consequences of sediment movements in aquatic systems.

BIOLOGICAL SCIENCES

Mary Catherine Aime *Purdue University:* For distinguished contributions to the field of mycology, especially discovery and evolutionary studies of fungi, professional service, and mentoring a diverse assemblage of students.

Suresh K. Alahari *Louisiana State University Health Sciences Center School of Medicine:* For distinguished contributions in cancer research and teaching, with a focus on signal transduction.

Gladys Alexandre *University of Tennessee, Knoxville:* For distinguished contributions to the field of molecular microbiology, particularly for characterizing bacterial sensing and chemotaxis signaling in beneficial plant-microbe associations.

Craig Reece Allen *University of Nebraska-Lincoln:* For distinguished contributions to resilience theory and its application to conservation and resource management, as well as the advancement of science through teaching and service.

Sonia M. Altizer *University of Georgia:* For distinguished contributions to the field of ecology, particularly understanding how animal movement and environmental change affect pathogen spread and evolution.

Swathi Arur *The University of Texas MD Anderson Cancer Center:* For discovery of Dicer1 phosphorylation by RAS/ERK signaling in *Caenorhabditis elegans* and implications for human fertility and cancer metastasis.

Alison M. Bell *University of Illinois at Urbana-Champaign:* For pioneering contributions to the field of animal behavior, particularly for conceptual and empirical advances in the mechanism and evolution of animal personality.

Elizabeth T. Borer *University of Minnesota:* For distinguished contributions to the field of ecology, particularly to nutrient dynamics of grassland ecosystems.

Lisa Brooks *National Human Genome Research Institute:* For distinguished contributions to human genomic sciences in shepherding the Human HapMap Project and the 1000 Genomes Project to successful completion.

John Michael Burke *University of Georgia:* For outstanding contributions to the field of evolutionary genomics and domestication of crops using sunflower as a model.

George A. Calin *The University of Texas MD Anderson Cancer Center:* For his landmark discovery linking human diseases and miRNAs, specifically downregulation of miRNAs in patients with leukemias; pioneered the concept of microRNAs involvement in neurogenesis.

Andrew G. Campbell *Brown University:* For research in infectious diseases in neglected populations, administrative leadership, and service to increase the full participation of all in science.

Alice Y. Cheung *University of Massachusetts Amherst:* For contributions to understanding the molecular and cellular biology of fertilization and polarized cell growth in plants.

Anita S. Chong *University of Chicago:* For distinguished and pioneering contributions to the immunology related to organ transplantation, tolerance, and immunosuppressive drug action.

Gregory P. Copenhaver *University of North Carolina at Chapel Hill:* For distinguished contributions to the field of plant molecular genetics, particularly for novel insights into plant reproductive biology.

Leah E. Cowen *University of Toronto (Canada):* For distinguished contributions in the field of microbial genomics, particularly for using functional and chemical genomic analyses to identify vulnerabilities in fungal pathogens.

Dana Crawford *Case Western Reserve University:* For distinguished contributions in pioneering phenome-wide association studies and in developing and leading genetic studies in under-represented minority populations.

Charles F. Delwiche *University of Maryland, College Park:* For distinguished contributions to molecular systematics, particularly algal evolution and biodiversity.

Diana M. Downs *University of Georgia*: For distinguished contributions to the field of bacterial metabolism and physiology, particularly metabolic pathway integration, stress.

Jeffrey Dukes *Purdue University*: For distinguished contributions to community and ecosystem ecology, particularly responses by invasive species, communities and ecosystems to environmental change.

Peter Dunn *University of Wisconsin -Milwaukee*: For distinguished contributions to evolutionary ecology, particularly sexual selection, mate choice and impacts of climate change in birds.

Jonathan Eisen *University of California, Davis*: For distinguished contributions to evolutionary biology, genomics and microbiology, for advancing gender equity within STEM fields, for science communication, and for service to the profession.

Eva Engvall *Sanford Burnham Prebys Medical Discovery Institute*: For distinguished contributions to molecular biology, particularly the development of the ELISA technique and advancing our understanding of parasitology and tissue biochemistry.

Valerie Eviner *University of California, Davis*: For distinguished contributions to community and ecosystem ecology, particularly the interactions among soils, plants, community structure and ecosystem processes.

Philip Martin Fearnside *INPA - National Institute of Amazonian Research (Brazil)*: For distinguished contributions to tropical ecology and environmental services, particularly the effects, processes and drivers of Amazonian deforestation.

Gloria Cruz Ferreira *University of South Florida*: For distinguished contributions to the field of iron-heme metabolism, particularly using enzymology and spectroscopy to study heme synthesis and the molecular basis of heme-related disorders.

J. Patrick Fitch *Los Alamos National Laboratory*: For distinguished research and science leadership in the application of genomics, host-pathogen biology, and biosafety to bioforensic analysis and threat characterization in biodefense.

John W. Fitzpatrick *Cornell University*: For advances in understanding cooperative birds, for leadership in conservation and citizen science, for co-founding the flagship birding platform, eBird.

Christopher Francklyn *University of Vermont*: For paradigm shifting discoveries that link control of protein synthesis with biological mechanisms and regulatory compromises in cancer, blindness and deafness.

Serita Frey *University of New Hampshire*: For distinguished contributions to microbial and ecosystem ecology, particularly the effect of anthropogenic stressors on soil microbial communities and microbial-mediated carbon and nitrogen cycles.

Andrea L. Graham *Princeton University*: For distinguished contributions to the field of ecological and evolutionary immunology.

Michael William Gray *Dalhousie University (Canada)*: For distinguished contributions to the field of molecular evolution, particularly in the area of endosymbiosis, organelle origins, molecular biology and genomics.

Karen Jeanne Guillemin *University of Oregon*: For using genetically tractable animal systems to uncover mechanisms that hosts and their microbial communities use to shape each other during development and disease states.

Paul Hardin *Texas A&M University*: For distinguished contributions to the field of biological rhythms, particularly for discovering molecular feedback loops that govern circadian timekeeping in all eukaryotes.

Stacey Lynn Harmer *University of California, Davis*: For distinguished contributions to the field of chronobiology, particularly mechanisms by which circadian rhythms regulate plant growth.

Jessica Hellman *University of Minnesota*: For distinguished contributions to and leadership in the fields of conservation biology and sustainability science, particularly organismal and societal adaptation to climate change.

Nancy Marie Hollingsworth *Stony Brook University*: For distinguished contributions to the field of Genetics, particularly the discovery of genes important for meiotic chromosome segregation.

Charles Hong *University of Maryland School of Medicine*: For distinguished contributions in combining high-throughput chemical screening with developmental genomic investigations to discover the role of PI3K in artery-vein specification.

Laura Foster Huenneke *Northern Arizona University*: For service to the discipline of ecology; to university education; and to advancing our understanding of relationships among biodiversity, ecosystem function and invasive species.

Mark O. Huising *University of California, Davis*: For fundamental contributions to the elucidation of the mechanisms and causes of Type 1 Diabetes.

Travis Huxman *University of California, Irvine*: For distinguished contributions to the field of physiological plant ecology, particularly functional trait evolution and influence in ecosystems under global change.

Kenneth D. Irvine *Rutgers, The State University of New Jersey*: For distinguished contributions to the field of developmental biology, particularly for understanding mechanisms that control organ growth.

Ursula Jakob *University of Michigan*: For seminal discoveries of how reactive oxygen species play pivotal roles in a range of biological processes and for method development to identify redox-regulated proteins/pathways.

Janet K. Jansson *Pacific Northwest National Laboratory*: For distinguished contributions to the field of microbial ecology, particularly to understanding complex microbiomes in soil, sediment and the human gut.

Susan Kaech *Salk Institute for Biological Studies*: For distinguished contributions to immunology by identifying genes and signaling molecules that generate memory T-cells during acute and chronic infections and their suppression by tumors.

Patricia Kiley *University of Wisconsin - Madison*: For distinguished contributions to understanding mechanisms that regulate E.coli's lifestyle in different oxygen environments, specifically how transcription factors exploit Fe-S metal centers for oxygen responses.

Joan Kobori *Agouron Institute*: For exemplary contributions to the fields of microbial oceanography, geobiology, and structural biology through funding research, conferences/workshops, training and fieldwork as Program Director, Agouron Institute.

Barbara N. Kunkel *Washington University in St. Louis*: For important discoveries of how the bacterium *Pseudomonas syringae* uses multiple strategies to manipulate its plant host's hormone biology to promote pathogenesis and disease.

Armand Michael Kuris *University of California, Santa Barbara*: For important investigations of the ecological role of infectious agents in ecosystems, for practical applications including control of schistosomiasis in Africa and mentoring diverse students.

Pui-Yan Kwok *University of California, San Francisco*: For distinguished contributions to the development of human genomic technologies for assaying genome variation in all forms, and genome discoveries for human disease.

Douglas Landis *Michigan State University*: For distinguished contributions to the field of ecology, particularly for elucidating the role of landscape structure in regulating insect biodiversity and ecosystem services.

Samuel J. Landry *Tulane University School of Medicine*: For distinguished contributions to the field of structural and molecular immunology, particularly for the analysis of protein immunogenicity and CD4+ T-cell epitope prediction.

Eaton Edwards Lattman *University at Buffalo, the State University of New York (Retired)*: For distinguished contributions in scholarship, education and leadership to the field of molecular biophysics and structural biology.

Rodney L. Levine *National Heart, Lung, and Blood Institute/NIH*: For distinguished contributions to our understanding of the effects of oxidative modifications of proteins.

Han Liang *The University of Texas MD Anderson Cancer Center*: For his pioneering integrative analysis of cancer genomic data and development of related bioinformatic tools to improve delivery of precision cancer medicine.

Senjie Lin *University of Connecticut*: For distinguished contributions to the field of marine genomics and ecology, particularly elucidating dinoflagellate biology in harmful algal blooms, coral symbiosis, and adaptation to eutrophication.

Hiten D. Madhani *University of California, San Francisco*: For distinguished contributions to the fields of molecular biology and genetics, particularly for developing fungal systems to uncover mechanisms of chromatin modifications and RNA splicing.

Jennifer B.H. Martiny *University of California, Irvine*: For distinguished contributions to the fields of environmental microbiology and microbiome research, particularly using the study of microbial populations to understand climate change.

John McCutcheon *Arizona State University*: For exceptional contributions to our understanding of the genetic underpinnings of symbiosis, in particular, several partner systems with conflict.

Rima McLeod *University of Chicago*: For distinguished contributions to understanding the medical consequences of *Toxoplasma gondii* infection, the molecular mechanisms contributing to these consequences, and potential treatments.

Paula McSteen *University of Missouri-Columbia*: For distinguished contributions to the field of plant genetics, particularly the role of the hormone, auxin, in maize reproductive development.

Matthew Meyerson *Dana-Farber Cancer Institute/Harvard Medical School*: For distinguished contributions and pioneering genomic discoveries in cancer biology.

Constance Millar *U.S. Forest Service (Retired)*: For distinguished contributions to the fields of forest genetics and resource conservation, particularly science-based ecosystem management under climate change, and for creating lasting scientific networks.

Lisa A. Miller *University of California, Davis*: For distinguished contributions to our understanding of the health effects of air pollution and environmentally induced lung injuries.

Beronda L. Montgomery *Michigan State University*: For distinguished contributions to plant biology and microbiology, particularly using photobiological analyses to investigate physiological and morphogenic adaptation of photosynthetic organisms.

Tuli Mukhopadhyay *Indiana University*: For distinguished contributions to the field of virology, particularly in structure and assembly of arthropod-borne viruses.

Katsuhiko (Katsu) Murakami *Penn State*: For outstanding contributions in the field of structural biology, particularly the role of RNA polymerase in prokaryotic gene regulation.

William J. Murphy *Texas A&M University*: For distinguished contributions to the field of comparative genomics, particularly for mammalian chromosome and felid evolution advances.

Rama Natarajan *City of Hope National Medical Center*: For distinguished contributions to the field of diabetes and its vascular complications, particularly for studies showing the roles of epigenetics and non-coding RNAs.

Nicholas E. Navin *The University of Texas MD Anderson Cancer Center*: For seminal contributions to understanding clonal evolution in breast cancer and inventing the first single-cell DNA sequencing methods, establishing the field of single cell genomics.

Anthony V. Nicola *Washington State University*: For distinguished contributions to the field of herpes simplex virus biology, particularly for herpesviral entry into host cells.

Basil Nikolau *Iowa State University*: For distinguished contributions to the field of biochemistry, particularly for the characterization of novel metabolic processes.

E. Michael Ostap *University of Pennsylvania Perelman School of Medicine*: For distinguished contributions to the fields of biophysics and biochemistry, particularly for using single-molecule and biochemical techniques to study cytoskeletal motors.

Franklin Wayne Outten *University of South Carolina*: For distinguished research contributions deciphering the mechanisms for iron sulfur cluster biogenesis, its regulation and its roles in microbial physiology and stress responses.

Abraham Palmer *University of California, San Diego*: For distinguished contributions to our understanding of model systems and human genetics of addiction, substance abuse, neuropsychiatric and behavioral traits.

Maria C. Pellegrini *W.M. Keck Foundation*: For proactive administrative service at the highest levels of academic and philanthropic institutions and for strong advocacy for advancement of interdisciplinary science.

Len Pennacchio *Lawrence Berkeley National Laboratory*: For distinguished and pioneering contributions to understanding how the non-coding genome works to regulate gene expression and to affect normal mammalian development and disease.

Philip S. Perlman *Howard Hughes Medical Institute*: For advancing the missions of the Howard Hughes Medical Institute including graduate training for research and for research on gene splicing.

James Pinckney *University of South Carolina*: For distinguished contributions to estuarine and marine ecology, particularly the role of benthic primary production in ecosystem processes and the mechanisms regulating phytoplankton diversity.

Judith A. Potashkin *Rosalind Franklin University of Medicine and Science*: For identification of dysregulated pathways and molecular networks shared between Parkinson's and Alzheimer's diseases and for identification of new biomarkers for Parkinson's disease and dementia.

P. Hemachandra Reddy *Texas Tech University Health Sciences Center*: For pioneering contributions to the fields of Alzheimer's disease and mitochondrial neurobiology, particularly in discovering key role of mitochondria in neurodegenerative diseases and their treatment.

William S. Reznikoff *Marine Biological Laboratory*: For deciphering the molecular details of transposition by studying a model bacterial transposon.

Joan T. Richtsmeier *Penn State*: For development of imaging and genetic approaches that have elucidated contributions of growth pattern to morphology, with an emphasis on craniofacial growth patterns in primates.

Taylor Henry Ricketts *University of Vermont*: For distinguished contributions to the fields of ecology and conservation, particularly for quantifying ecosystem services and using that understanding to inform management efforts.

Isidore Rigoutsos *Thomas Jefferson University*: For the Teiresias algorithm for discovery of patterns in data streams and the Berger-Rigoutsos algorithm, a standard technique for handling clustering in adaptive mesh refinement.

Charles Rock *St. Jude Children's Research Hospital*: For cutting edge research on bacterial lipid metabolism, the results of which have advanced the promise of fatty acid synthesis inhibitors as new bacterial antibiotics.

Antonis Rokas *Vanderbilt University*: For distinguished contributions to the field of evolutionary biology, particularly combining phylogenetic and molecular approaches to study the evolution of fungal and animal genomes.

Jeffrey Ross-Ibarra *University of California, Davis*: For the application of evolutionary approaches to understand the processes and mechanisms underlying adaptation, domestication, and improvement in maize and its wild relatives.

James A. Roth *Iowa State University*: For distinguished contributions to the field of immunology, particularly for control of infectious diseases in food producing animals.

Daniel Schaid *Mayo Clinic*: For distinguished contributions to human statistical genetics and the genetics of prostate cancer and other common diseases and traits.

G. Eric Schaller *Dartmouth University*: For distinguished contributions to the field of plant signaling, particularly for novel insights into plant hormone biology.

Jeremiah Scharf *Massachusetts General Hospital*: For distinguished contributions to genetic and genomic studies of Tourette Syndrome.

Karen Sears *University of California, Los Angeles*: For distinguished contributions to the field of biology, particularly the developmental mechanisms driving morphologic diversification in mammals.

Mark Seielstad *University of California, San Francisco*: For distinguished contributions to the genetics of type 2 diabetes, the genetics of immune and inflammatory diseases, and population genetics studies in diverse human populations.

Peter Setlow *UConn Health*: For distinguished contributions to knowledge about spores of Bacillales, including their formation, resistance, killing and germination.

Sally Shaywitz *Yale University*: For distinguished contributions to our understanding of the biological basis and natural history of dyslexia and communicating these discoveries to the public.

Alan Shuldiner *University of Maryland School of Medicine*: For distinguished contributions and pioneering efforts in genetic studies of the Amish for type 2 diabetes, cardiovascular disease and pharmacogenomics.

Nathan Michael Springer *University of Minnesota*: For distinguished contributions to genomics and epigenetics of crop plants, and their impact on variation of gene expression.

Jason E. Stajich *University of California, Riverside*: For distinguished contributions at the interface of computational, genomic and evolutionary biology, using integrative approaches to study how fungi and other microorganisms evolve.

James V. Staros *University of Massachusetts Amherst*: For distinguished contributions in cell biology on the mechanisms by which binding of polypeptide hormones to their surface receptors are transduced into signals.

David Johnston Stewart *Cold Spring Harbor Laboratory*: For helping advance biomedical research across the world through his outstanding leadership of the Meetings and Courses programs at Cold Spring Harbor Laboratory.

Joel A. Swanson *University of Michigan Medical School*: For distinguished contributions to the field of cell biology, particularly for advancing our understanding of how cells organize their cytoplasm for spatially organized activities.

Rick L. Tarleton *University of Georgia*: For distinguished contributions to the field of biological sciences, particularly for his research contributions and leadership to control Chagas Disease.

Nektarios Tavernarakis *Foundation for Research and Technology-Hellas/University of Crete Medical (Greece)*: For distinguished contributions to the fields of aging, neuroscience, mitochondrial biology, cell death and autophagy, and leadership in developing *C. elegans* as a model system.

Eric W. Triplett *University of Florida*: For distinguished contributions in biology, particularly microbial ecology, metagenomics, and host-microbe interactions, and for increasing access of underrepresented minorities to STEM education.

Geoffrey C. Trussell *Northeastern University*: For distinguished contributions integrating ecology and evolution to understand the functional role of species in ecological communities.

Walter Reinhart Tschinkel *Florida State University*: For distinguished contributions to the field of experimental behavioral ecology and sociobiology, particularly chemical ecology, sociometry, sociogenesis and unraveling the complex nest architecture in ants.

Kan Wang *Iowa State University*: For advances in genetic engineering in plants using *Agrobacterium tumefaciens*.

CHEMISTRY

José R. Almirall *Florida International University*: For distinguished contributions to the field of forensic chemistry, particularly for efforts to standardize approaches in the detection and analysis of drugs, explosives and materials.

Rohit Bhargava *University of Illinois at Urbana-Champaign*: For pioneering contributions to chemical imaging, including infrared spectroscopic imaging theory, development of instrumentation, and its applications to realize all-digital cancer pathology.

Paul V. Braun *University of Illinois at Urbana-Champaign*: For distinguished contributions to the field of materials chemistry, particularly for new pathways for synthesizing high energy density Li-ion battery materials and 3D structured optics.

Joan Blanchette Broderick *Montana State University*: For distinguished contributions to the field of bioinorganic chemistry, particularly for elucidating the novel chemistry of iron-sulfur clusters in biological radical initiation.

Felix (Phil) N. Castellano *North Carolina State University*: For distinguished contributions to the fields of solar energy conversion, photochemistry, and photophysics, particularly for developing photochemical upconversion and strategies for manipulating excited state behavior.

Joy K. Ward *Case Western Reserve*: For helping us understand the impact of rising carbon dioxide concentrations on the development, physiology, and growth of plants.

Vassie Ware *Lehigh University*: For contributions to understanding ribosomes and for outstanding initiatives in undergraduate science education.

Stephen T. Warren *Emory University School of Medicine*: For seminal discoveries identifying the gene responsible for fragile X syndrome in humans, characterizing the first trinucleotide repeat mutation and paving the way toward treatments.

Wyeth W. Wasserman *BC Children's Hospital/University of British Columbia (Canada)*: For distinguished contributions to the field of computational biology and genetics, particularly for the bioinformatics analysis of cis-regulatory sequences controlling gene transcription.

Daniel J. Wozniak *The Ohio State University*: For contributions to defining patho-adaptive processes and evolution of bacteria during infection in the context of biofilms and animal models of chronic infection.

Jin-Rong Xu *Purdue University*: For distinguished contributions to the field of plant-fungal interactions, particularly fungal genes important for pathogenesis.

Soojin Yi *Georgia Tech*: For advances in epigenetics and evolutionary genomics and how they impact our understanding of evolution.

Havva Fitnat Yildiz *University of California, Santa Cruz*: For distinguished contributions to the field of microbiology, particularly for study of bacterial signal transduction pathways and molecular mechanisms of biofilm formation.

Fanxiu Zhu *Florida State University*: For advances in our understanding of viral evasion of host antiviral innate immune responses, signaling pathways, and viral genes in the Kaposi sarcoma-associated herpes virus.

Lee Zou *Massachusetts General Hospital Cancer Center/Harvard Medical School*: For distinguished contributions to the fields of biochemistry and cancer, particularly for studies on the maintenance of genome stability.

David E. Chavez *Los Alamos National Laboratory*: For distinguished contributions to the field of energetic materials, particularly the development of highly energetic, fundamentally novel and environmentally friendly materials important to national security.

Kelsey D. Cook *National Science Foundation*: For research and service at interfaces among disciplines and sectors; and for work advancing science and science policy from universities through the White House.

Yi Cui *Stanford University*: For his outstanding contributions on materials chemistry for energy and the environment, particularly on the next generation of batteries.

Wibe A. de Jong *Lawrence Berkeley National Laboratory*: For seminal contributions in advancing scientific computing through the development of scientific tools and approaches used worldwide, enabling advancement in the chemical sciences.

William Dichtel *Northwestern University*: For distinguished contributions to the fields of organic and polymer chemistry, particularly for the synthesis and applications of two-dimensional polymers and porous polymer networks.

Vishva Dixit *Genentech, Inc.*: For pioneering studies defining the biochemical framework illuminating many of the key components of the cell death pathway.

Paul J. Dyson *Swiss Federal Institute of Technology Lausanne (Switzerland)*: For distinguished contributions to the field of organometallic chemistry, particularly for the development of sustainable processes.

Laura Gagliardi *University of Chicago*: For her outstanding accomplishments in developing and applying quantum mechanical electronic structure methods to multi-configurational problems in bonding, catalysis, and inorganometallic chemistry.

Jiaxing Huang *Northwestern University*: For distinguished contributions to the field of materials, particularly for the synthesis and processing of colloidal nanomaterials and their new applications for better living.

Prashant K. Jain *University of Illinois at Urbana-Champaign*: For distinguished contributions to the field of nanomaterial chemistry leading to atomistic understanding of artificial photosynthesis, multielectron transfer, catalysis and phase transitions.

Phillip E. Klebba *Kansas State University*: For distinguished contributions to the understanding of the membrane transport mechanisms of bacteria relevant to their practical applications in human and health.

Kenneth L. Knappenberger *Penn State*: For distinguished contributions to the understanding of the electronic and optical properties of metal nanostructures through the use of ultrafast spectroscopy.

Yamuna Krishnan *University of Chicago*: For the development of DNA-based fluorescent reporters and quantitative imaging of the ionic and chemical contents of sub-cellular organelles in live cells and animals.

Jason S. Lewis *Memorial Sloan Kettering Cancer Center*: For his ground-breaking work in molecular imaging and radiochemistry and on the clinical translation of novel oncological imaging agents.

Hongbin Li *University of British Columbia (Canada)*: For distinguished contributions to the field of single molecule biophysical chemistry, particularly for force spectroscopy studies on protein mechanics and protein folding/unfolding dynamics.

David R. Liu *Harvard University*: For pioneering advances such as base editing and DNA-encoded libraries that creatively integrate chemistry, evolution, and molecular biology to impact medicine and the life sciences.

Tianbo Liu *University of Akron*: For fundamental contributions to the development of the field of macro ionic solutions, which fill the gap between simple ions and colloids.

Tadeusz ('Ted') Franciszek Molinski *University of California, San Diego*: For his insightful and highly creative contributions to the field of marine natural products, including the innovation of new conformational methods, synthetic transformations and spectroscopic tools.

Janet R. Morrow *University at Buffalo, the State University of New York*: For distinguished contributions to the field of inorganic complexes and their biomedical applications, particularly for magnetic resonance imaging contrast agents and for nucleic acid modifications.

John W. Olesik *The Ohio State University*: For distinguished contributions to the field of analytical chemistry, particularly in optical spectroscopy and mass spectrometry.

Nicola Pohl *Indiana University*: For distinguished contributions to the automation of oligosaccharide synthesis, production of noncovalent fluororous-interaction-based microarrays, and de novo mass spectrometry analysis of isobaric sugars.

Daniel Raftery *University of Washington*: For distinguished contributions to the fields of metabolomics and nuclear magnetic resonance, especially for advanced analytical methods with applications in biomarker discovery and cancer diagnosis.

Michael D. Sevilla *Oakland University*: For distinguished contributions to the field of radiation effects on biomolecules using computational chemistry, particularly for work employing innovative applications of modern theoretical methods.

David S. Sholl *Georgia Tech*: For seminal contributions in connecting atomic-scale modeling with practical applications in chemical separations, energy storage and data reproducibility.

Sara E. Skrabalak *Indiana University*: For her significant contributions to nanomaterial synthesis and design, and her advocacy for access and advancement for students and faculty who are underrepresented in science.

Brian Space *North Carolina State University*: For distinguished contributions in theoretical chemistry including insights into interfaces and porous materials, particularly developing theories of nonlinear spectroscopy and force fields in complex systems.

Raymond C. Stevens *University of Southern California*: For the development of technologies to significantly accelerate protein structure determination and drug discovery, including GPCRs, that have led to new biological insights and therapeutics.

James M. Takacs *University of Nebraska-Lincoln*: For distinguished contributions to synthetic organic chemistry, commitment to mentoring and excellence in postsecondary chemical education, and the advancement of science through academic administration.

Chuanbing Tang *University of South Carolina*: For distinguished contributions to the field of polymer chemistry, particularly for sustainable polymers and charged metallopolymers.

H. Holden Thorp *Science family of journals*: For distinguished contributions to research in inorganic chemistry, leadership roles at two great American research universities, and stewardship of the *Science* family of journals.

Gregory Tschumper *University of Mississippi*: For distinguished contributions in the fields of physical chemistry and computational quantum chemistry, including seminal studies of water clusters, hydrogen bonding and non-covalent interactions.

Christopher D. Vanderwal *University of California, Irvine*: For distinguished contributions to the field of organic chemistry, particularly for efficient chemical synthesis of bioactive active alkaloids and chlorinated natural products.

Nathalie A. Wall *University of Florida*: For distinguished contribution to the field of radiochemistry, particularly for experimental work on the fate of radionuclides in the environment.

Rory Waterman *University of Vermont*: For innovative research in synthetic main group chemistry, particularly bond formation catalyzed by transition metals, and his work developing the careers of chemistry faculty.

Charles Weschler *Rutgers, The State University of New Jersey*: For distinguished contributions to the field of indoor chemistry, particularly for improving our understanding of chemicals present in indoor air, their sources and their fate.

Robert F. Williams *Los Alamos National Laboratory*: For seminal contributions to the field of Bioorganic Chemistry, in particular stable isotope labeling as well as detection and mitigation of chemical and biological threats.

Frankie Wood-Black *Northern Oklahoma College*: Recognized for her work in the areas of sustainability, chemical health and safety and science communication to the general public.

Karen Wooley *Texas A&M University*: For distinguished contributions to the fields of organic and polymer chemistry, particularly for the synthesis and applications of two-dimensional polymers and porous polymer networks.

Peidong Yang *University of California, Berkeley*: For his pioneering work on semiconductor nanowire-based technology, including molecularly designed nanosystems to solve some of the most vexing energy problems of our time.

DENTISTRY AND ORAL HEALTH SCIENCES

Renny Theodore Franceschi *University of Michigan*: For distinguished contributions to the fields of transcriptional control mechanisms of bone formation, signaling and extracellular matrix biology of osteoblast differentiation, teaching and service.

Dennis F. Mangan *Chalk Talk Science Project*: For distinguished contributions to Dental and Oral health research, science administration, teaching and science communication.

Frank C. Nichols *University of Connecticut School of Dental Medicine*: For distinguished contributions to the field of periodontology, particularly his seminal work in determining the role of bacterial lipids in the pathogenesis of periodontal disease.

Stefan Hans-Klaus Ruhl *University at Buffalo, the State University of New York*: For distinguished contributions to the oral biology field, particularly for work on glycan-mediated microbial adhesion in the oral cavity.

EDUCATION

James Bell *Center for Advancing of Informal Science Education*: For his distinguished work building capacity and infrastructure to promote broadening participation in STEM through informal science education.

Michael J. Dougherty *GenomEducation Consulting/University of Colorado School of Medicine*: For exemplary contributions to biology education, particularly in human genetics, and for vigorous defense of the teaching of evolution.

John Kermit Haynes *Morehouse College*: For distinguished contributions to national efforts to enhance STEM diversity, remarkable contributions to science education and training and significant research in cell biology.

Henry Vincent Jakubowski *College of St. Benedict/St. John's University*: For distinguished contributions to molecular modeling chemistry education and for faculty development in molecular visualization.

Stacey Kiser *Lane Community College*: For distinguished contributions to leadership in community college education through national and local initiatives.

Richard L. Kopec *St. Edward's University*: For distinguished contributions to transforming institutional STEM curricula and for leadership in the STEM institutional change community.

Xiufeng Liu *University at Buffalo, the State University of New York*: For distinguished contributions to the fields of science education research and communicating and interpreting science to the public.

David J. Marcey *California Lutheran University*: For distinguished contributions to molecular modeling education and for creation of the online molecular museum and other tools.

Marsha Lakes Matyas *Evaluation for Excellence*: For distinguished contributions to the field of STEM education, particularly in developing studies, curricular materials, and professional development programs that promote diversity among STEM professionals.

Linda Nicholas-Figueroa *Iñisaġvik College*: For 20 years of excellence in teaching and mentoring Native Alaskan students and for her scholarship on culturally sensitive and place-based approaches to learning science.

Dee Unglaub Silverthorn *The University of Texas at Austin Dell Medical School*: For distinguished contributions to the field of STEM education, particularly for early adoption and promotion of active learning technique.

Edward J. Smith *Virginia Tech*: For distinguished contributions to comparative animal genomics, research education, and diversity in STEM, particularly the training of students from underrepresented groups.

David W. Szymanski *Bentley University*: For his distinguished work in professional societies on policy, and preparing future business leaders to address the complex challenges of sustainability through systemic change.

Edna Tan *University of North Carolina at Greensboro*: For her distinguished work in the learning sciences focused on equitable and consequential STEM teaching, and learning targeting individual and collective outcomes among underrepresented populations.

Stephen Young *TriCore Reference Laboratories*: For distinguished accomplishments in the development of diagnostic tests for bacterial and viral diseases as well as his service to professional societies and teaching.

Hinda Zlotnik *Retired*: For distinguished leadership and commitment to increasing the participation of underrepresented groups in biomedical research through scientific research administration and public service.

Mohammad S. Alam *Texas A&M University*: For distinguished contributions to the field of pattern recognition, particularly for modeling and development of ultrafast architectures and algorithms for detection, recognition and tracking.

Laura Albert *University of Wisconsin-Madison*: For distinguished contributions to the application operations research methodologies to public policy, and for communicating her research to the public.

William R. Bickford *L'Oréal, Inc.*: For his innovative contributions to consumer-based product design through pioneering work in advanced technologies, concepts and products for the cosmetic, pharmaceutical and medical device industries.

L. Catherine Brinson *Duke University*: For distinguished contributions to the field of mechanics of materials, particularly for hierarchical characterization and modeling of nanostructured polymers and shape memory alloys.

Ruben G. Carbonell *North Carolina State University*: For distinguished contributions to the field of chemical and biomolecular engineering, particularly innovations in multiphase reactor design, high-pressure thin-film coating, and novel bioseparation processes.

Michael L. Chabiny *University of California, Santa Barbara*: For distinguished contributions to the field of polymer science, particularly for elucidating the relationship of the structure and electronic properties of organic semiconductors to device properties.

Manish Chhowalla *University of Cambridge (United Kingdom)*: For distinguished contributions to the field of two-dimensional materials, particularly using phase engineering to study their electronic, electrocatalytic and energy storage properties.

Edwin K.P. Chong *Colorado State University*: For distinguished contributions to optimization and control theory and methods, particularly for stochastic networks and wireless systems.

Kristen P. Constant *Iowa State University*: For distinguished contributions to the design and fabrication of photonic structures and her influential role in materials engineering education and broadening participation in STEM disciplines.

Susan Daniel *Cornell University*: For pioneering work that has yielded new approaches to the study of the biophysical interactions at cellular membranes, particularly involving microvesicles and viruses.

Angela Phillips Diaz *University of California, San Diego*: For her outstanding leadership, commitment to excellence, and dedication to public service through advocacy to advance science, engineering, and innovation.

Elizabeth C. Dickey *Carnegie Mellon University*: For distinguished contributions to materials engineering research and education, particularly for the utilization of electron microscopy techniques for quantifying atomic-to micrometer-scale structure of materials.

Peter S. Fedkiw *North Carolina State University*: For distinguished contributions to electrochemical engineering, including electrochemical-based mass transfer separation processes, optimal control of electrochemical reactors and composite electrolytes for rechargeable lithium batteries.

Eric M. Furst *University of Delaware*: For seminal contributions to a range of topics in soft matter science and engineering, with a particular focus on colloid science and rheology.

Sharon Gerecht *Johns Hopkins University*: For distinguished contributions to the field of biochemical engineering, particularly establishing dynamics of cellular microenvironments for vascular differentiation and tissue regeneration.

Richard D. Gitlin *University of South Florida*: For seminal discoveries in the co-invention of DSL (digital subscriber line), which made the Internet possible via telephone networks, and in wireless communication and networking.

Michael C. Jewett *Northwestern University*: For distinguished contributions to the field of engineering, particularly using synthetic biology and cell-free systems to enable new applications in biomanufacturing, diagnostics, and education.

Vistasp M. Karbhari *The University of Texas at Arlington*: For distinguished contributions to the field of composites in civil infrastructure particularly in low-cost processing, durability and damage tolerance, rehabilitation and multi-threat mitigation.

Michael R. Kessler *North Dakota State University*: For distinguished contributions to the understanding and development of self-healing composites and bio-renewable polymers.

Behrokh Khoshnevis *University of Southern California*: For innovations in manufacturing and construction, including the application of 3-D printing methods.

Kristi L. Kiick *University of Delaware*: For contributions to the synthesis and application of peptide-based self-assembled materials for tissue engineering and drug delivery, and administrative leadership at University of Delaware.

Catherine Klapperich *Boston University*: For distinguished contributions to the field of biomedical engineering, particularly the development of integrated microsystems for point-of-care diagnosis of disease for global and women's health.

Gerhard Klimeck *Purdue University*: For the quantum mechanical modeling theory and simulation tools to design today's nanotransistors and for leadership of the global nanotechnology community as Director of nanoHUB.

Sanjay Kumar *University of California, Berkeley*: For distinguished contributions to the field of bioengineering, particularly the development of biomaterial and single-cell technologies to investigate mechanobiological signaling in health and disease.

Ju Li *Massachusetts Institute of Technology*: For pioneering work on understanding the fundamental properties of ultra-strength materials and development of elastic strain engineering.

JoAnn Slama Lighty *Boise State University*: For impactful contributions to academics and scholarship through administration, air quality research, and professional service, within the context of diversity and inclusion.

Ivan M. Lorković *Raytheon Vision Systems*: For outstanding contributions to major advances in chemistry, catalysis, materials and space systems engineering, and commitment to providing societal benefits in service, education and mentorship.

Laura Marcu *University of California, Davis*: For research and development of optical instrumentation and techniques for tissue spectroscopy and imaging, with applications in management of critical human disease and regenerative medicine.

Sudip K. Mazumder *University of Illinois at Chicago*: For distinguished contributions to the field of multi-scale control and analysis of power-electronic systems.

Triantafillos (Lakis) Mountziaris *University of Massachusetts Amherst*: For significant research contributions in the synthesis of nanostructured photonic materials and for national research leadership impacting the science and engineering community.

Uday B. Pal *Boston University*: For pioneering work providing novel materials-based solutions in the field of green engineering as applied to energy conversion and primary production of materials.

Ah-Hyung (Alissa) Park *Columbia University*: For outstanding research and professional contributions to developing the fundamental understanding of reactions and materials for carbon dioxide capture, utilization and storage.

Hridesh Rajan *Iowa State University*: For distinguished contributions to data driven science, particularly to modularity and modular reasoning in computer software and the development of the Boa language and infrastructure.

Gintaras Reklaitis *Purdue University*: For leading contributions to process systems engineering, including batch processing, supply chain and enterprise-wide optimization and pharmaceutical manufacturing, and for achievements in education and service.

Robert Oliver Ritchie *University of California, Berkeley*: For distinguished contributions to the understanding of the fracture of materials and structures, from metals, ceramics and composites to aircraft, medical devices and biological materials.

J. Paul Robinson *Purdue University*: For distinguished contributions to the field of advanced cytometric analysis and expanding cellular and microbial detection technologies.

Nancy R. Sottos *University of Illinois at Urbana-Champaign*: For outstanding and sustained contributions to the experimental mechanics of materials and for pioneering contributions and initiating the new field of autonomous materials systems.

Georgia (Gina) D. Tourassi *Oak Ridge National Laboratory*: For distinguished contribution in biomedical informatics, particularly using artificial intelligence for diagnostic interpretation of medical images and clinical natural language processing.

Paul J. Turinsky *North Carolina State University*: For distinguished contributions to nuclear engineering, particularly the development of simulation technology for the safety, economic operation and life extension of nuclear power facilities.

John L. Volakis *Florida International University*: For leadership in engineering education, authorship of important texts, game-changing contributions to electromagnetics, and for developing and transitioning hybrid finite element into commercial tool sets.

Qing Wang *Penn State*: For distinguished contributions to the field of polymers and composites, particularly for the development of ferroelectric polymers and dielectric materials for energy storage and conversion.

Lan Yang *Washington University in St. Louis*: For groundbreaking contributions to the fields of photonics, particularly for pioneering experimental studies on non-Hermitian photonics, optical sensing, and light-matter interactions in optical resonators.

GENERAL INTEREST IN SCIENCE AND ENGINEERING

Nan Broadbent *Seismological Society of America*: For outstanding contributions as a science communicator for scientific societies, particularly the American Association for the Advancement of Science and the Seismological Society of America.

Tinsley Davis *National Association of Science Writers*: For distinguished leadership that has increased the vibrancy of the U.S. science writing community, enhanced public engagement with science, and strengthened science communication globally.

Linda D. Harrar *WGBH Educational Foundation*: For tireless devotion and outstanding leadership in television science journalism focusing on human health, the global environment, biodiversity, and remarkable women leaders in developing countries.

James H. Lambert *University of Virginia*: For distinguished contributions to the field of risk analysis, particularly using systems engineering tools to address critical infrastructure risk and resilience.

Andrew D. Maynard *Arizona State University*: For distinguished contributions to the public's understanding of science, risk and responsible innovation in the fields of nanotechnology, artificial intelligence and other emerging technologies.

Jeremy B. Searle *Cornell University*: For distinguished contributions in the field of evolutionary biology and for the promotion of science through teaching, international work, media activities and science-based natural history.

Ronald M. Thom *Pacific Northwest National Laboratory (Emeritus)*: For distinguished contributions to coastal and estuarine ecosystem restoration, in assessment of cumulative effects of multiple restoration actions and adaptive management of restored systems.

Cliff Wang *U.S. Army Research Office/North Carolina State University*: For distinguished contributions to the field of science of security, and outstanding leadership in national research and transforming results into high impact cyber defense capabilities.

Nan Yao *Princeton University*: For outstanding achievements in materials and structural analysis and distinguished contributions in related education, research, and service to advance science and engineering and their applications.

GEOLOGY AND GEOGRAPHY

Li An *San Diego State University*: For distinguished contributions to complex human-environmental systems theory and methodological breakthroughs in modeling human decisions, agent-based modeling, land survival & latent trajectory analysis.

David Cairns *Texas A&M University*: For distinguished contributions to the understanding of tree-line dynamics and cold-climate ecotones, along with fostering interdisciplinary Arctic science and academic administration.

Richard Walter Carlson *Carnegie Institution for Science*: For outstanding research, leadership, innovation and service to the community in geochemistry and geology.

Charles B. "Chuck" Connor *University of South Florida*: For distinguished contributions to the field of geosciences, particularly for advancement of volcanology and natural hazard assessment through development of numerical models of volcanic phenomena.

Peter B. de Menocal *Woods Hole Oceanographic Institution*: For fundamental contributions to understanding human physical and cultural evolution in relation to paleo-environmental change on the African continent.

Andrea Donnellan *NASA Jet Propulsion Laboratory*: In recognition of outstanding research, innovation, project management and service to the community in geodesy, seismology, geophysics and technology.

Joshua S. Fu *University of Tennessee, Knoxville*: For distinguished contributions to the field of air quality and climate modeling and informing national and international management and policies involving these issues.

George Helz *University of Maryland, College Park*: In recognition of outstanding research, leadership, innovation, teaching and service to the community in aqueous and environmental geochemistry.

Tessa M. Hill *University of California, Davis*: For outstanding contributions to research, teaching and outreach related to processes in the past and present oceans based on geochemistry and paleobiology.

David A. Hodell *University of Cambridge (United Kingdom)*: For distinguished contributions to the field of paleoclimatology, including the processes responsible for the Ice Ages and the impact of climate change on ancient civilizations.

“Max” Qinhong Hu *The University of Texas at Arlington*: For outstanding and sustained contributions in the research field of nanopetrophysics within the context of energy geosciences, teaching & mentorship, and service to professional society.

Hitoshi Kawakatsu *The University of Tokyo (Japan)*: In recognition of outstanding research, innovation, project management and service to the community in seismology, geophysics and technology.

Sheryl Luzzadder-Beach *The University of Texas at Austin*: For distinguished contributions to the field of geoarchaeology, particularly the hydrology and geomorphology of the ancient Maya world.

Vicki McConnell *Geological Society of America*: In recognition of outstanding research, leadership, project management and service to the community in geology and volcanology.

Carolyn Olson *U.S. Geological Survey*: In recognition of outstanding research, leadership, project management and service to the community in soil science, agriculture, hydrology and climate change.

Lewis A. Owen *North Carolina State University*: For distinguished contributions to the field of Quaternary paleoenvironmental change & landscape evolution in tectonically active regions.

David Sandwell *Scripps Institution of Oceanography*: For recognition of outstanding research, innovation, project management and service to the community in geodesy, geophysics and oceanography.

Nathan Dale Sheldon *University of Michigan*: For distinguished contributions and extraordinary achievements in developing, refining, and applying geochemical measurements of paleosols to reconstructing paleo-pCO₂ levels and ancient climates on Earth.

May Yuan *The University of Texas at Dallas*: For contributions to fundamental and applied geographic information science, especially by developing new data models and analytical methods to address problems of significant societal concerns.

HISTORY AND PHILOSOPHY OF SCIENCE

Colin Allen *University of Pittsburgh*: For his significant contributions to philosophy of science, philosophy of biology, philosophy of cognitive science, and in logic, computation and artificial intelligence.

Rachel Ankeny *University of Adelaide (Australia)*: For her contributions to our understanding of the foundational roles that organisms play in biological research and her leadership in history and philosophy of science.

David Cassidy *Hofstra University*: For distinguished contributions to the fields of history and physics, his broader scholarship linking physics and societal challenges, and communicating science to the public.

Marsha L. Richmond *Wayne State University*: For foundational contributions to the history of evolution and genetics, particularly the role of women investigators, and distinguished service to the history of science profession.

INDUSTRIAL SCIENCE AND TECHNOLOGY

Suresh K. Bhargava *RMIT University (Australia)*: For an exceptional contribution to the fields of industrial chemistry and technology, particularly for molecular engineering, catalysis and nanotechnology bringing innovative solutions to the industries.

Aaron Dominguez *Catholic University of America*: For distinguished contributions to experimental high-energy physics.

Johney B. Green *National Renewable Energy Laboratory*: For distinguished contributions and technical leadership that have made innovative and impactful contributions in the fields of energy efficiency, transportation, renewable power, and systems engineering.

James D. Kindscher *University of Kansas Medical Center*: For distinguished contributions to the field of anesthesiology, public health, operating room management, and liver transplantation.

Daniela Rus *Massachusetts Institute of Technology*: For distinguished contributions to robotics, mobile computing, and data science.

Steven Suib *University of Connecticut*: For preeminent contributions to the tailored synthesis, characterization and practical assessment of novel catalysts, surfaces, ceramics and other materials of industrial significance.

Erik B. Svedberg *National Academies of Sciences, Engineering, and Medicine*: For distinguished contributions to materials research, particularly thin films, and for guidance to science and engineering policy making processes in the materials and manufacturing fields.

INFORMATION, COMPUTING AND COMMUNICATION

James Allen *University of Rochester/Institute for Human and Machine Cognition*: For broad contributions to artificial intelligence and natural language understanding, including seminal contributions in temporal logic.

James Hampton Anderson *University of North Carolina at Chapel Hill*: For contributions to the implementation and analysis of multiprocessor and multicore real-time systems, and for service to the real-time systems research community.

Carla Brodley *Northeastern University*: For outstanding national service towards diversifying computing combined with broadly impactful research in the field of machine learning.

Edwin K.P. Chong *Colorado State University*: For distinguished contributions to optimization and control theory and methods, particularly for stochastic networks and wireless systems.

Lorrie Cranor *Carnegie Mellon University*: For contributions to usable privacy and security research, policy and education.

Pedro Domingos *University of Washington*: For wide-ranging contributions to artificial intelligence and machine learning, especially the introduction of Markov Logic Networks to unify logical and probabilistic reasoning.

Kenneth D. Forbus *Northwestern University*: For distinguished contributions to artificial intelligence, particularly the use of qualitative reasoning, machine learning, and natural language understanding.

Yolanda Gil *University of Southern California*: For outstanding contributions to the field of artificial intelligence for supporting scientific discovery.

Leana Golubchik *University of Southern California*: For distinguished contributions to design and analysis of multimedia and content collection systems, and sustained dedication to fostering careers of women in science and engineering.

Yuri Gurevich *University of Michigan*: For distinguished contributions to logic, particularly finite model theory, and the development of abstract state machines.

Murat Kantarcioglu *The University of Texas at Dallas*: For distinguished contributions to the field of secure and privacy-preserving data storage, querying, and mining, and adversarial machine learning.

Maria Klawe *Harvey Mudd College*: For exceptional leadership and contributions to increasing the participation of women in computer science and STEM fields.

Peter M. Kogge *University of Notre Dame*: For distinguished contributions to the field of computer architecture, particularly including massively parallel processing architectures.

Patrick Drew McDaniel *Penn State*: For distinguished contributions to the field of computational security and privacy, particularly for advancing algorithms for the formal analysis of mobile devices and applications.

Debasis Mitra *Columbia University*: For distinguished contributions to the field of networks and systems, particularly for mathematical modeling, design and optimization.

John Douglas Owens *University of California, Davis*: For fundamental contributions to commodity parallel computing, particularly in the development of GPU algorithms, data structures, and applications.

Timothy Mark Pinkston *University of Southern California*: For distinguished contributions to the field of computer architecture, particularly interconnection network routing algorithms, and leadership in expanding computing research and broadening participation in computing.

William C. Regli *University of Maryland, College Park*: For his work at the interface between science and government primarily at the Defense Advanced Research Projects Agency.

Munindar P. Singh *North Carolina State University*: For distinguished contributions to the field of computer science, particularly to foundations of multiagent systems and their applications in service-oriented computing, sociotechnical systems, and governance.

Anuj Srivastava *Florida State University*: For distinguished contributions to the field of statistical pattern recognition, particularly for development of differential geometric approaches to statistical shape analysis.

David Touretzky *Carnegie Mellon University*: For combining high quality impactful research in machine learning with equally high quality impactful educational activities using robotics to engage students in computing.

Jeffrey S. Vetter *Oak Ridge National Laboratory*: For leadership, innovation, and distinguished contributions to high performance computing, particularly to extreme-scale heterogeneous architectures and programming systems.

Toby Walsh *University of New South Wales - Sydney and CSIRO Data61 (Australia)*: For intellectual leadership and significant contributions to automated deduction, constraint programming, and fairness in artificial intelligence.

Daniel S. Weld *University of Washington/Allen Institute for Artificial Intelligence*: For distinguished contributions to artificial intelligence planning, software agents, crowdsourcing, and internet information extraction as well as the commercialization of artificial intelligence technologies.

Hui Xiong *Rutgers, The State University of New Jersey*: For distinguished contributions to the fields of data mining and mobile computing.

LINGUISTICS & LANGUAGE SCIENCES

John Baugh *Washington University in St. Louis*: For distinguished contributions to scholarly work, combined with major contributions in bringing linguistic science to bear on issues of public policy and social justice.

Bryan Gick *University of British Columbia (Canada)*: For distinguished contributions to the field of experimental phonetics, notably for advances in multimodal perception and biomechanics.

Colin Phillips *University of Maryland*: For outstanding contributions to psycholinguistics, advocacy for Linguistics and Language Science, superior mentorship and teaching, and a vision of what linguistic education should be.

Joan A. Sereno *University of Kansas*: For distinguished contributions to the field of linguistics and the language sciences, particularly for psycholinguistic investigations of the multimodal mechanisms underlying language comprehension and production and their neurological foundations.

Matthew W. Wagers *University of California, Santa Cruz*: For innovative research extending the methodology of experimental psycholinguistics to investigations of understudied minority languages.

MATHEMATICS

Harold P. Boas *Texas A&M University*: For outstanding contributions to research in complex analysis, communication of mathematics, and service to the profession.

Leslie Hogben *Iowa State University/American Institute of Mathematics*: For distinguished contributions to the field of linear algebra and mentoring the next generation of mathematicians.

Kristin Lauter *Microsoft Research Lab - Redmond*: For distinguished contributions to computational number theory, particularly for path-breaking work on homomorphic encryption, and for effective leadership in advancing careers of women in mathematics.

Paul K. Newton *University of Southern California*: For outstanding contributions in applied mathematics, mathematical oncology, and the development of nonlinear dynamical systems models of the Euler and Navier-Stokes equations.

Esmond G. Ng *Lawrence Berkeley National Laboratory*: For distinguished contributions to research in numerical algebra and high-performance computing, and for scientific leadership.

Karen Hunger Parshall *University of Virginia*: For outstanding contributions to the history of mathematics, combined with extraordinary service to the mathematical and historical sciences.

Malgorzata Peszynska *Oregon State University*: For outstanding contributions to multidisciplinary mathematical and computational modeling of flow and transport in porous media.

Jack Xin *University of California, Irvine*: For outstanding contributions to research in applied mathematics and data science.

MEDICAL SCIENCES

Stephen B. Baylin *Johns Hopkins University School of Medicine*: For seminal research supporting the concept that epigenetically mediated loss of gene function is a major player in the progression of cancer.

Barbara D. Beck *Gradient*: For meritorious contributions to the fields of toxicology and risk assessment, particularly for pioneering work on the evaluation of health risks of environmental chemicals.

Yasmine Belkaid *National Institute of Allergy and Infectious Disease/NIH*: For seminal work on host-microbe interactions in tissues, recently demonstrating the induction of adaptive immunity to skin and gut pathogens requires microbiota.

Barry B. Bercu *University of South Florida*: For distinguished contributions and foundational research advancing the field of pediatric endocrinology and for seminal characterizations of Growth Hormone Neurosecretory Dysfunction and the “Bercu Patient”.

Shi-Yuan Cheng *Northwestern University Feinberg School of Medicine*: For outstanding contributions in molecular and translational cancer research, by developing and exploiting cellular and preclinical models for human tumor biology and therapy.

Keith C. Cheng *Penn State College of Medicine*: For distinguished contributions to functional genomics and imaging, particularly related to zebrafish as a model organism for human disease and skin pigmentation genetics.

Ronald W. Davis *Stanford University*: For pioneering work in functional genomics and clinical genomics, and in particular his development of novel technologies.

Catherine Drennan *Massachusetts Institute of Technology*: For her structures of metalloenzymes and insights that show how nature harnesses and redirects the reactivity of enzyme metalcenters to perform challenging reactions.

Dongsheng Duan *University of Missouri*: For distinguished contributions toward the development of adeno-associated virus transduction biology, and particularly for advances in viral gene therapy for Duchenne muscular dystrophy.

Carol Fuzeti Elias *University of Michigan*: For distinguished contributions to the field of reproductive and metabolic physiology, particularly for elucidating the mechanisms that couple metabolism to the neuroendocrine control of reproduction.

Hudson Freeze *Sanford Burnham Prebys Medical Discovery Institute*: For identifying and characterizing the mechanistic underpinnings of many glycosylation diseases and work towards new treatments.

Marcia B. Goldberg *Massachusetts General Hospital/Harvard T.H. Chan School of Public Health*: For distinguished contribution to the field of microbial pathogenesis, particularly the molecular mechanisms of host-pathogen interactions.

David H. Gutmann *Washington University School of Medicine in St. Louis*: For distinguished contributions to the field of human neurogenetics, particularly for defining the cellular and molecular etiologies underlying the pathogenesis of neurofibromatosis and related disorders.

Thomas H. Haines *City College of New York (Retired)*: For initiating and setting up the CUNY Medical School at City College of New York to educate minority and disadvantaged students.

Raymond C. Harris *Vanderbilt University School of Medicine*: For distinguished contributions to the field of nephrology particularly in elucidating hormonal regulation of renal function.

Jeffrey P. Krischer *University of South Florida*: For distinguished contributions in diabetes research, particularly for advancing understanding of mechanisms of autoimmunity and disease progression and designing, conducting, analyzing multi-center clinical trials worldwide.

Thomas E. Lane *University of California, Irvine*: For distinguished research and service in the field of neurodegenerative disease including Multiple Sclerosis and in spinal cord repair.

W. Jonathan Lederer *University of Maryland School of Medicine*: For contributions to our understanding of calcium signaling in cardiac, smooth and skeletal muscle, and fundamental discoveries in chemo-mechanical transduction, mitochondrial biology, and cardiac electrophysiology.

Bruce T. Liang *University of Connecticut School of Medicine*: For distinguished contributions to physiology and pharmacology, elucidating novel therapeutic targets and advancing them for translation.

Jeffrey D. Lifson *Frederick National Laboratory for Cancer Research*: For distinguished contributions to innovative scientific and collaborative support of AIDS research, sustained quality mentorship, and scientific community service over multiple decades.

Faina Linkov *Duquesne University*: For services to biobehavioral cancer research and for improving publishing opportunities to scientists in the developing world.

Shan-Lu Liu *The Ohio State University*: For distinguished contributions to our understanding of virus-host interaction and viral pathogenesis, as well as impact on scientific communication, diversity, and international collaboration.

Karl L. Magleby *University of Miami, School of Medicine*: For notable contributions to ion channel biophysics as the molecular basis of synaptic transmission, and by pioneering electrophysiological and computational approaches that advanced the field.

Sendurai Mani *The University of Texas MD Anderson Cancer Center*: For demonstrating that cancer can make its own cancer stem cells and promote plasticity, resulting in metastasis and chemoresistance by activating latent embryonic epithelial-mesenchymal transition.

Douglas L. Mann *Washington University School of Medicine in St. Louis*: For distinguished contributions to cardiology, particularly for discovering the role of cytokine mediated inflammation in producing heart failure and for suggesting novel therapeutic approaches based on this concept.

Rodger P. McEver *Oklahoma Medical Research Foundation*: For services to cardiovascular biology and hematology; in particular to understanding the forces that govern cell-cell adhesion, and for distinguished scientific leadership.

Ross Erwin McKinney, Jr. *Association of American Medical Colleges*: For critical work developing therapies for children with HIV infection and advancing the national dialogue regarding conflicts of interest, informed consent, and other ethical issues.

Hiroyoshi Nishikawa *National Cancer Center/Nagoya University (Japan)*: For distinguished contributions to the field of tumor immunology and immunotherapy, particularly for basic understanding of regulatory T cells in animal models and patients with cancer.

Oladele (Dele) A. Ogunseitan *University of California, Irvine*: For distinguished contributions in studies using fundamental science to inform impacts of toxic components in manufacturing on human and environmental health with significant societal impacts.

Richard M. Peek *Vanderbilt University Medical Center*: For distinguished contributions to the field of microbial-induced carcinogenesis, particularly for development of innovative ex vivo and tractable in vivo models to define bacterial oncoproteins.

Sallie R. Permar *Weill Cornell Medicine*: For distinguished contributions to the prevention and treatment of neonatal viral infections, particularly for identification of protective immune responses that guide maternal/infant vaccine development.

W. Kimryn Rathmell *Vanderbilt University Medical Center*: For distinguished contributions elucidating molecular mechanisms and translational approaches in renal and other hypoxia-driven cancers.

D. Nageshwar Reddy *Asian Institute of Gastroenterology (India)*: For pioneering work in gastroenterology, particularly advances in therapeutic pancreatic biliary endoscopy and innovations in transgastric endoscopic surgery; and for service to international gastroenterology societies.

John Jeffrey Reese *Vanderbilt University Medical Center*: For distinguished contributions to the field of reproductive biology and fetal vascular development, particularly for insights into prostaglandin signaling and fetal-maternal communication during pregnancy.

Alan Saghatelian *Salk Institute for Biological Studies*: For mass spectrometry-centered work identifying novel endogenous peptides and lipids in cells, and determining their regulation and targets.

Suzanne Scarlata *Worcester Polytechnic Institute*: For leadership in the biophysics community and developing fluorescence methods to probe dynamics of signaling proteins both in vivo and in vitro.

Brian Leslie Strom *Rutgers, The State University of New Jersey*: For distinguished contributions to the field of pharmacoepidemiology, the study of the use and effects of pharmaceuticals in populations.

Jie Tian *Chinese Academy of Sciences (China)*: For distinguished contributions to the field of multi-modality molecular imaging technologies and radiomics, and its biomedical applications and clinical translation.

Georgia (Gina) D. Tourassi *Oak Ridge National Laboratory*: For distinguished contribution in biomedical informatics, particularly using artificial intelligence for diagnostic interpretation of medical images and clinical natural language processing.

Jerrold Ross Turner *Brigham and Women's Hospital/Harvard Medical School*: For distinguished contributions to cell biology, physiology, pathobiology, and diagnosis in gastrointestinal science, particularly for defining functions, regulatory mechanisms, and molecular therapies targeting mucosal barriers.

Matthew Bret Weinger *Vanderbilt University Medical Center*: For distinguished contributions to the fields of human factors, clinician performance, and patient safety.

NEUROSCIENCE

Patrick Aebischer *Swiss Federal Institute of Technology Lausanne (Switzerland)*: For his pioneering studies in the use of virus for modelling diseases and gene therapy and innovative leadership of a major academic center.

Michel Baudry *Western University of Health Sciences*: For distinguished contributions to the field of molecular and translational neuroscience, in particular, to the understanding of the roles of calpain-1 and calpain-2 in synaptic plasticity and neurodegeneration.

Nicole Calakos *Duke University*: For pioneering work in optogenetic approaches, and substantial contributions in the area of synaptic plasticity with a focus on striatal circuitry of the basal ganglia.

Gabriel Corfas *University of Michigan*: For distinguished contributions to the field of cellular and molecular neuroscience, particularly on the roles and mechanisms of neuron-glia interactions and their implications to disease.

Aaron DiAntonio *Washington University School of Medicine in St. Louis*: For distinguished contributions to the field of molecular and cellular neuroscience, particularly for studies of axon injury response pathways and mechanisms of pathological axon degeneration.

Nita A. Farahany *Duke University*: For distinguished contributions to the field of neuroethics, enabling responsible and equitable development and implementation of new knowledge and technologies in neuroscience.

Eva Lucille Feldman *University of Michigan*: For distinguished contributions to neuroscience and neurology, particularly through leadership, mentoring, and basic and clinical research, leading to new disease therapies and important clinical guidelines.

Eberhard Erich Fetz *University of Washington*: For pioneering contributions to understanding the role of the cerebral cortex in control of ocular and forelimb movements, and to motor circuit plasticity.

Alan L. Goldin *University of California, Irvine:* For distinguished contributions in understanding the function of sodium channels and their role in seizure susceptibility, and for promoting the development of physician-scientists.

Steve A.N. Goldstein *University of California, Irvine School of Medicine:* For making-outstanding contributions to the basic understanding of ion channels and their function, and for striving to create structural support and integration for biomedical science education and training.

John Krystal *Yale University:* For transformative contributions to human neuroscience, particularly work on glutamate signaling and resultant development of ketamine as a novel rapid antidepressant.

Debomoy (Deb) K. Lahiri *Indiana University:* For distinguished contributions to the field of molecular and translational neuroscience, particularly roles of epigenetics and microRNA on neuronal physiology and eventually treating human neurodegenerative diseases.

Stephen G. Lisberger *Duke University:* For fundamental contributions to understanding of the organization and function of brain mechanisms that underlie sensorimotor learning, using visually-driven eye movements as a model system.

Wendy Blair Macklin *University of Colorado Denver:* For ground breaking studies on oligodendrocyte differentiation and myelin formation in healthy development and pathological situations and high level contributions to teaching and administration.

Stefan M. Pulst *University of Utah:* For distinguished contributions to neurology, including discovery of genes responsible for ataxias and ALS, and for leadership in professional organizations and academic departments of neurology.

Nirao M. Shah *Stanford University:* For exceptional contributions to the field of behavioral neuroscience, particularly the dissection of neural circuits and transcriptomics controlling social behaviors.

Steven L. Small *The University of Texas at Dallas:* For distinguished contributions to the neurobiology of language, particularly in brain imaging of speech and language, and in founding the society and journal.

Paul Taghert *Washington University School of Medicine in St. Louis:* For distinguished contributions to the field of circadian rhythm neuroscience, including the role of neuropeptide signaling in chronobiology.

Rachel Tyndale *Centre for Addiction and Mental Health/University of Toronto (Canada):* For outstanding contributions to understanding of the role of drug metabolism in addiction and in particular, how genetic polymorphisms alter behaviors relevant to nicotine addiction.

Linda Jo Van Eldik *University of Kentucky College of Medicine:* For distinguished contributions on how aberrant glia-neuronal interactions impact neurodegenerative processes, focusing on identification of signal transduction pathways that mediate neuroinflammatory responses of activated glia.

PHARMACEUTICAL SCIENCES

Patricia Babbitt *University of California, San Francisco:* For distinguished contributions to the field of computational biology and bioinformatics particularly related to protein structure/function and applications to drug target identification and drug design.

Joseph R. Haywood *Michigan State University:* For distinguished contributions to the field of cardiovascular pharmacology, particularly on central nervous system control of blood pressure and for leadership in the biomedical sciences.

Julie A. Johnson *University of Florida:* For significant discoveries in cardiovascular drug pharmacogenomics, and for advancing use of genetic data in clinical practice to improve clinical outcomes with drug therapy.

Lyn H. Jones *Dana-Farber Cancer Institute:* For distinguished contributions to the field of medicinal chemistry, particularly using chemical biology to advance drug discovery research.

PHYSICS

M.N.V. Ravi Kumar *Texas A&M University:* For distinguished contributions to the field of drug delivery, particularly the next-generation polyesters and non-competitive targeting strategies are of profound significance to the human health.

Susan L. Mooberry *University of Texas Health Science Center at San Antonio:* For distinguished contributions to the field of cancer pharmacology, particularly on discovery and development of natural product anti-microtubule agents for treatment of cancer.

Walter H. Moos *University of California, San Francisco:* For distinguished contributions to the fields of pharmaceutical sciences and medicinal chemistry targeting human health and disease.

Raymond Felix Schinazi *Emory University School of Medicine:* For distinguished contributions to the field of pharmacology and medicinal chemistry, particularly for antiviral therapies that have saved millions of lives.

Thomas D. Schmittgen *University of Florida:* For distinguished contributions to the field of microRNA biology, particularly using real time PCR to quantify microRNA expression in tissues, extracellular vesicles, cell lines and tumors.

Charles H. Bennett *IBM Thomas J. Watson Research Center:* For seminal contributions to quantum information science, in particular for the founding and development of the areas of quantum cryptography and quantum teleportation.

Eberhard Bodenschatz *Max Planck Institute for Dynamics and Self Organization (Germany):* For outstanding research and administrative contributions to nonlinear science including fluid turbulence, cardiac dynamics, cloud physics, thermal convection, chemotaxis, and Lagrangian dynamics.

Steven E. Boggs *University of California, San Diego:* For his contributions to high energy astrophysics, including gamma ray sources and nucleosynthesis, and his leadership in science administration at the Universities of California, Berkeley and San Diego.

Jesse Brewer *University of British Columbia (Canada):* For his pioneering work developing muSR, in which muons are used to probe quantum materials, with critical applications ranging from high-temperature superconductivity to solid-state chemistry.

Bulbul Chakraborty *Brandeis University:* For important theoretical contributions to diverse areas of condensed matter physics, particularly disordered systems including frustrated magnets and granular materials.

Andre De Gouvea *Northwestern University:* For his contributions to our understanding of the physics of neutrinos and their role in extensions of the Standard Model of particle physics.

Peter Fisher *Massachusetts Institute of Technology:* For imaginative contributions to at the interface of particle, nuclear and cosmic ray physics, and for his leadership in promoting a values-based approach to science policy.

Chris L. Fryer *Los Alamos National Laboratory:* For distinguished contributions to computational and theoretical astrophysics.

Alexandra Gade *Michigan State University:* For distinguished contributions to the field of nuclear physics, particularly for gamma-ray spectroscopy of rare isotopes and elucidating the structural properties of nuclei.

Graciela Gelmini *University of California, Los Angeles:* For her contributions to our understanding of dark matter and the Universe

Neil Gershenfeld *Massachusetts Institute of Technology:* For his insights at the intersection of physics and computer science, in areas ranging from the physics of information technology to digital fabrication

Tony Gherghetta *University of Minnesota:* For distinguished contributions to the field of theoretical particle physics, particularly using extra dimensions to study grand unification, supersymmetry and the fermion mass hierarchy.

Marcelo Jaime *Los Alamos National Laboratory*: For distinguished contributions to the field of experimental physics, particularly for the study of strongly correlated electron systems and quantum phase transitions in extreme magnetic fields.

Spencer R. Klein *Lawrence Berkeley National Laboratory/University of California, Berkeley*: For distinguished contributions in the interface of astrophysics, nuclear physics, and particle physics, including neutrino astrophysics and ultra-peripheral collisions of heavy ions.

Yuri V. Kovchegov *The Ohio State University*: For foundational contributions to the theoretical understanding of parton saturation effects in Quantum Chromodynamics and their manifestation in high-energy collisions with strongly interacting particles.

Ying-Cheng Lai *Arizona State University*: For distinguished contributions to the field of nonlinear dynamics and chaos, particularly in relativistic quantum chaos and transient chaos.

Konrad W. Lehnert *National Institute of Standards and Technology/University of Colorado, Boulder*: For pioneering contributions to quantum science, particularly quantum control and measurement of mechanical oscillators, and sub-quantum limited measurement with applications to dark matter searches.

Manfred Lindner *Max Planck Institute for Nuclear Physics (Germany)*: For distinguished contributions to both theoretical and experimental particle physics, particularly through advancing the technology to use ultra-clean detectors to probe weakly interacting particles.

Eric Mazur *Harvard University*: For advancing the physics and applications of ultrashort-pulse lasers and nonlinear optical devices, and for sparking worldwide adoption of active learning techniques through Peer Instruction.

Michael A. McGuire *Oak Ridge National Laboratory*: For distinguished contributions to materials physics, particularly the use of crystal growth and solid-state chemistry to discover and study thermoelectric, superconducting, magnetic, and 2D materials.

Roberto Morandotti *INRS - National Institute of Scientific Research (Canada)*: For distinguished contributions to the field of nonlinear and quantum optics, particularly for his work on photonics lattices, nondiffractive beams, frequency microcombs and THz technology.

Jason Petta *Princeton University*: For seminal contributions to the development of quantum computing devices using semiconducting quantum dots.

Thomas Proffen *Oak Ridge National Laboratory*: For his contribution to the development of techniques to determine the local structure of materials and his leadership in promoting scientific excitement among young people.

Laura J. Pyrak-Nolte *Purdue University*: For outstanding contributions to understanding the physics of fractures in rocks and their interactions with fluids and seismic waves.

Talat Shahnaz Rahman *University of Central Florida*: For distinguished contributions to computational and theoretical nanoscience, in predictions of chemical, vibrational, and structural properties of low-dimensional systems, together with diversity in STEM.

Susan Seestrom *Sandia National Laboratories*: For her pathbreaking work in nuclear physics, especially using ultra cold neutrons, and for her leadership, both in her community and at national laboratories.

Jonathan V. Selinger *Kent State University*: For contributions to the theoretical physics of liquid crystals and other soft materials.

Arthur John Stewart Smith *Princeton University*: For his many contributions to physics, especially for his leadership of the BaBar experiment, which led to discovery of CP violation in the B system.

PSYCHOLOGY

Christopher Stubbs *Harvard University*: For his pathbreaking work at the intersection of particle physics, gravitational physics, and cosmology, and for his contributions to arms control and international security issues.

Nandini Trivedi *The Ohio State University*: For her contributions to the theoretical understanding of quantum matter, characterized by innovative use of quantum Monte Carlo techniques and close experimental collaborations.

Yuhai Tu *IBM Thomas J. Watson Research Center*: For distinguished contributions to the field of biological physics, particularly using statistical physics methods to study dynamics and energetics of information processing in living systems.

Clare Yu *University of California, Irvine*: For her contributions across condensed matter and biological physics, with special emphasis on disordered systems, intracellular transport, the physics of cancer, and quantum computing.

Anvar A. Zakhidov *The University of Texas at Dallas*: For creative, pioneering contributions to design, processing & understanding of functional nanomaterials: nanotubes, fullerenes, perovskites.

Tammy D. Allen *University of South Florida*: For distinguished contributions to the field of psychology, particularly pioneering advancements in the nascent area of work-family interface, and developing theories, methodologies and tools.

Peter R. Finn *Indiana University*: For distinguished contributions to the field of Clinical Psychology, particularly for the study of decision making, behavioral disinhibition, and cognitive function in Substance Use Disorders.

Howard Goldstein *University of South Florida*: For distinguished contributions to the field of psychology, particularly for development of intervention strategies to promote early development of language, literacy, and social skills.

William (Bill) P. Hetrick *Indiana University*: For distinguished contributions to the field of experimental psychopathology, particularly for understanding sensorimotor and cognitive function in schizophrenia spectrum disorders.

Stefan Hofmann *Boston University*: For distinguished contributions to the study and practice of cognitive behavioral therapy, especially for anxiety disorders.

Elaine Hull *Florida State University*: For distinguished research on the neuroendocrine control of male rat sexual behavior, including the role of dopamine and glutamate in sexual experience.

Blair T. Johnson *University of Connecticut*: For distinguished contributions both in methodology to cumulate evidence accurately, and in theory in relation to psychological phenomena.

Angeline S. Lillard *University of Virginia*: For distinguished contributions to developmental science in theory of mind, children's play, and education, and particularly for establishing the scientific basis of Montessori schooling.

Raymond G. Miltenberger *University of South Florida*: For significant contributions advancing applied behavior analysis research, including pioneering functional assessment to improve clinical outcomes and in-situ assessment and training to enhance generalization.

Jay Myung *The Ohio State University*: For distinguished applied and basic research on computational cognition, Bayesian cognitive modeling, optimal experimental design, adaptive design optimization, model selection and evaluation, and neural networks.

Steven L. Neuberg *Arizona State University*: For distinguished contributions integrating evolutionary and social psychology to understand how fundamental social goals direct social perception, social cognition, and social behavior.

Barbara A. Wanchisen *National Academies of Sciences, Engineering, and Medicine*: For outstanding leadership in supporting and promoting the behavioral, psychological, and cognitive sciences, including securing funding and overseeing reports on pressing applied research topics.

Cathy Spatz Widom *John Jay College of Criminal Justice*: For distinguished contributions to the fields of criminology and traumatic stress, particularly her research on the consequences and intergenerational transmission of child abuse and neglect.

SOCIAL, ECONOMIC AND POLITICAL SCIENCES

John Maron Abowd *U.S. Census Bureau/ Cornell University*: For distinguished contribution to the statistical understanding of U.S. population dynamics, and the critical role of the census in shaping public policy and understanding.

Melissa S. Anderson *University of Minnesota*: For seminal contributions to the science of research integrity and to the study of scientists and higher education, and for excellence in fostering responsible conduct.

Janet Box-Steffensmeier *The Ohio State University*: For distinguished contributions to political methodology, including duration analysis and time series, and service to the advancement of political methodology and study of American politics.

R. Alta Charo *University of Wisconsin - Madison*: For influential work on bioethics and public policy, including outstanding scholarship incorporating ideas and research from philosophy, law, biology and the social and behavioral sciences.

Nazli Choucri *Massachusetts Institute of Technology*: For innovative contributions and continuing impact at the interface of international relations and cybersecurity and for work on global sustainability problems and solution strategies.

Elizabeth Cooksey *The Ohio State University*: For distinguished contributions to the field of social demography, with specializations, in life course transitions, adolescent sexual behavior, and the development of youth and children.

Paul Allen David *Stanford University*: For contributions to theoretical and statistical “new economic history” of U.S., path dependence, and economics of science and technology.

Joane P. Nagel *University of Kansas*: For distinguished contributions to the scientific study of race, ethnicity, gender, and sexuality as they shape political actions, social movements, and engagement.

Kristen Olson *University of Nebraska-Lincoln*: For distinguished contributions to survey research methodology, particularly understanding and reducing measurement and survey nonresponse errors, service to the field, and commitment to mentoring students.

Susan E. Short *Brown University*: For important contributions to the fields of Chinese and African social demography and to interdisciplinary science at the intersection of genetics, gender, and social structure.

SOCIETAL IMPACTS OF SCIENCE AND ENGINEERING

Gregg M. Garfin *University of Arizona*: For linking fundamental climate and paleoclimate science to climate services and decision making, through climate assessment, knowledge exchange, and the development of translational ecology.

Leah Gerber *Arizona State University*: For leadership in balancing conservation priority-setting, ecosystem-based management, adaptive monitoring, marine recreation, endangered species recovery plans, and estimating extinction risk.

Ramanan Laxminarayan *Center for Disease Dynamics, Economics & Policy/Princeton University*: For distinguished contributions to the field of economic epidemiology, with particular reference to the spread and control of antimicrobial resistance.

Mary E. Maxon *Lawrence Berkeley National Laboratory*: For outstanding contributions to science-informed policymaking, wise policies for life sciences research, research management, and science philanthropy.

James Bradley Miller *Smithsonian National Museum of Natural History*: For vision, leadership, dedication, and distinguished contributions to addressing long-standing obstacles to public understanding of science and technology, particularly within religious communities.

Oladele (Dele) A. Ogunseitan *University of California, Irvine*: For distinguished contributions in studies using fundamental science to inform impacts of toxic components in manufacturing on human and environmental health with significant societal impacts.

Taylor Henry Ricketts *University of Vermont*: For distinguished contributions to the fields of ecology and conservation, particularly for quantifying ecosystem services and using that understanding to inform management efforts.

Lawrence J. Satkowiak *Oak Ridge National Laboratory*: For distinguished contributions to verification and security for nuclear and radiological material, which have helped protect the world from nuclear terrorism.

Vaughan Charles Turekian *National Academies of Sciences, Engineering and, Medicine*: For outstanding contributions to global scientific progress, international scientific advice, international scientific cooperation, and science diplomacy.

SECTION ON STATISTICS

Sudipto Banerjee *University of California, Los Angeles*: For innovative contributions to Bayesian methodology with focus on spatially indexed information, for high-impact applications, for educational and mentoring excellence, professional service and academic administration.

David L. Banks *Duke University*: For leadership at the Statistical and Applied Mathematical Sciences Institute, research on risk analysis, and editorial service.

Deborah J. Donnell *Fred Hutchinson Cancer Research Center*: For distinguished contributions to the field of HIV prevention research, particularly for design and analysis of clinical trials of pre-exposure prophylaxis and treatment as prevention.

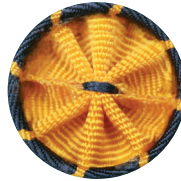
Timothy C. Hesterberg *Google, Inc.*: For excellent research in importance sampling and bootstrap methodology, important contributions to statistics education using resampling, and outstanding leadership and service to the profession.

Qi Long *University of Pennsylvania*: For distinguished contributions to analysis of incomplete data, causal inference and analysis of big data for advancing precision health.

Ying Lu *Stanford University School of Medicine*: For distinguished contributions to the advancement of statistics in medical and biomedical research, particularly for the quality control and risk prediction associated with medical diagnosis.

Richard L. Smith *University of North Carolina at Chapel Hill*: For distinguished contributions to statistics, particularly the statistical analysis of extreme events and environmental applications including climate change and air pollution.

Elizabeth A. Stuart *Johns Hopkins Bloomberg School of Public Health*: For highly influential contributions to development and application of causal inference methods, for excellence in teaching and mentoring, and for distinguished professional leadership in statistics.



CONGRATULATIONS to all of the 2020 Fellows

Nominations for Fellows

A Fellow is “a Member whose efforts on behalf of the advancement of science or its applications are scientifically or socially distinguished.” Nominations for Fellows are made by the section committee steering groups from the membership rolls; by the Executive Officer; and by groups of three current AAAS Fellows, provided that at least two of the three are not currently affiliated with the institution of the nominee.

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