2017 FELLOWS

SIXTH EDITION

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ABOUT THE NAI FELLOWS PROGRAM

Election to NAI Fellow status is the highest professional distinction accorded solely to academic inventors who have demonstrated a prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development, and the welfare of society.

With the induction of the 2017 class, the program has 912 Fellows worldwide representing more than 250 prestigious universities and governmental and non-profit research institutes. Collectively, the Fellows hold more than 32,000 issued U.S. patents, which have generated over 9,400 licensed technologies and companies, and created more than 1.3 million jobs. In addition, over $137 billion in revenue has been generated based on NAI Fellow discoveries.

NAI FELLOWS NOMINATION INFORMATION

- Nominees should have made outstanding contributions to innovation in areas such as patents and licensing, innovative discovery and technology, significant impact on society, and support and enhancement of innovation
- Nominees must be affiliated with an academic organization, e.g., university, college, non-profit research institute, or government agency
- Nominees do not have to be current members of, nor affiliated with, a Member Institution (although recommended) of the National Academy of Inventors
- U.S. and non-U.S. citizens are eligible for nomination
- Deceased nominees are not eligible
- Self-nomination, team submissions, and nominations submitted by relatives are not eligible
- Nominations do not have to be submitted by an individual affiliated with an NAI Member Institution (although recommended)

The following documents must be included with the online submission form:

- Nominee's full curriculum vitae
- Complete list of issued U.S. patents held by the nominee
- Letter of nomination signed and on letterhead
- Optional: Letter(s) of support, nominee's biography, etc.

Nominations open May – July annually

Submit nominations online at **www.AcademyofInventors.com/fellows.asp**

United States Patent and Trademark Office

Office of the Commissioner for Patents

February 6, 2018

Dear Friends:

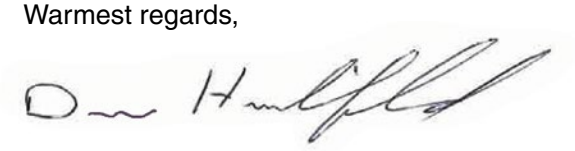
On behalf of the United States Patent and Trademark Office, I congratulate the National Academy of Inventor's newly elected 2017 class of Fellows. The USPTO is privileged to participate in recognizing these 155 academic luminaries of innovation and invention who have been bestowed the highest professional distinction through the Academy. Your discoveries and intellectual leadership provide an example to your colleagues and to succeeding generations, and have helped shape our future.

I also want to commend the NAI for continuing to celebrate and honor the top minds in academic research nationally and abroad. The USPTO recognizes the significant impact that NAI Fellows have made on our society and quality of life, and I am honored to serve on the Selection Committee for these distinguished individuals.

The USPTO values its collaboration with the NAI and the friendship which has developed through our shared mission to advance and protect invention and innovation. Our work together, now and in the future, will continue to benefit the innovation community worldwide.

Again, congratulations to the 2017 NAI Fellows. You are among the nation's top academic innovators and inventors and deserve much recognition for your outstanding achievements.

Warmest regards,



Andrew H. Hirshfeld
Commissioner for Patents
U.S. Patent and Trademark Office

P.O. Box 1450, Alexandria, VA 22313-1450 • ww.uspto.gov

2017 FELLOWS CEREMONY SPEAKERS

Welcome Remarks

Paul R. Sanberg

President, National Academy of Inventors

Paul R. Sanberg, Ph.D., D.Sc., FNAI, is founder and president of the National Academy of Inventors, and senior vice president for research, innovation, and knowledge enterprise at the University of South Florida. He trained at York University, University of British Columbia, Australian National University and Johns Hopkins University School of Medicine, among others, and held academic positions at Ohio University, University of Cincinnati, and Brown University. He holds 48 U.S. and over 110 foreign patents and has served on numerous scientific advisory boards for health-related foundations and companies. He is author of more than 650 scientific articles and 14 books, with over 30,000 citations to his work, co-editor-in-chief of *Technology and Innovation,* and serves on editorial boards for more than 30 scientific journals. He is an NAI Charter Fellow, AAAS Fellow, AIMBE Fellow, AAAS-Lemelson Invention Ambassador, Florida Inventors Hall of Fame inductee, Florida Academy of Sciences Medalist, and Fulbright Specialist.

Introduction of the Keynote Speaker

Randy E. Berridge

Former President, Florida High Tech Corridor Council

Randy E. Berridge held the position of president of the Florida High Tech Corridor Council since its inception in 1996. Berridge also serves as president of the Berridge Consulting Group, Inc. Previously he held management positions with AT&T including chair of its Central Florida Management Council, district manager of public relations for the Florida division and manager in the legal, HR and manufacturing divisions. Berridge currently serves on the board of governors of the Florida Chamber of Commerce. He is a past member of the Enterprise Florida Stakeholder Council, Florida Research Consortium, Foundation for Florida's State Colleges and the National Center for Simulation. He is an Emeritus Board Member of the Astronauts Memorial Foundation.

Keynote Speaker

Andrew H. Hirshfeld

Commissioner for Patents, United States Patent and Trademark Office
U.S. Department of Commerce

Andrew H. Hirshfeld, Esq., is commissioner for patents for the United States Patent and Trademark Office (USPTO). He was appointed to the position in July 2015. Hirshfeld leads and manages more than 10,000 employees as the patent organization's chief operating officer, and manages and directs all aspects of patent operations, examination policy, patent quality management, international patent cooperation, resources and planning, and budget administration. In his previous role as deputy commissioner for patent examination policy, he served as an authority on patent laws, rules, and examining practice and procedure, and provided oversight and direction for the Offices of Petitions, Patent Legal Administration, and the Manual of Patent Examining Procedure. Hirshfeld previously served as Chief of Staff to the Under Secretary of Commerce for Intellectual Property and Director of the USPTO. He began his career at the USPTO in 1994 as a Patent Examiner, became a Supervisory Patent Examiner in 2001, and was promoted to the Senior Executive Service in 2008 as a Group Director in Technology Center 2100, Computer Architecture and Software. Hirshfeld holds a bachelor's degree from the University of Vermont, and a juris doctorate degree from Western New England College School of Law. Hirshfeld served as a member of the 2017 NAI Fellows Selection Committee.

FELLOWS

Samuel I. Achilefu | *Washington University in St. Louis*

Samuel I. Achilefu, Ph.D., is Michel M. Ter-Pogossian Professor of Radiology, vice chair for Innovation and Entrepreneurship (Radiology) and director of the Molecular Imaging Center at Washington University in St. Louis. Achilefu is an expert in the development and use of light-sensitive drugs for cancer detection, imaging and therapy. He led the development of a wearable cancer viewing goggles for the accurate removal of cancer cells during surgery, and discovered a novel treatment paradigm for cancer using a special type of light and non-pharmacological doses of drugs to selectively trigger cancer cell death without harming healthy tissue. His innovations have resulted in more than 50 issued U.S. patents and over 300 scientific papers. He is recipient of many awards, including the St. Louis American Excellence in Healthcare, first Distinguished Investigator Award (DOD Breast Cancer Research Program) and Medical Innovation Award. Achilefu is a fellow of the Academy of Science–St. Louis, RSC, SPIE, and OSA, and editor-in-chief of *Current Analytical Chemistry.*

Dereje Agonafer | *The University of Texas at Arlington*

Dereje Agonafer, Ph.D., is Jenkins Garrett Professor of Mechanical and Aerospace Engineering and director of two centers at The University of Texas at Arlington. An internationally renowned expert in electronics cooling and packaging, Agonafer is the recipient of the IBM Outstanding Technical Achievement Award and flagship awards for significant contributions made in thermal and thermomechanical management of electronics including the THERMI, InterPACK Excellence and ITHERM Achievement awards. He also received the University of Colorado Boulder Distinguished Engineering Alumni Award in the category of research and invention and Howard University COE Dean's Centennial Award for Distinguished Engineering Scholarship and Service. He holds nine U.S. patents and six foreign patents. Agonafer has published 230 papers, two books and several book chapters, advised over 190 graduate students, served as editor of journals/book series, and presented numerous keynotes internationally. He is a fellow of AAAS and ASME.

Mark G. Allen | *University of Pennsylvania*

Mark G. Allen, Ph.D., is Alfred Fitler Moore Professor of Electrical and Systems Engineering and director of Singh Center for Nanotechnology at the University of Pennsylvania. Allen's research is directed toward new micro- and nanofabrication technologies, with emphasis on microelectromechanical devices and systems (MEMS). He is author or co-author of over 400 scientific publications, and holds nearly 60 U.S. patents. He was editor-in-chief of the *Journal of Micromechanics and Microengineering;* chaired and co-chaired the IEEE MEMS Conference, Power MEMS Conference, and Solid State Sensors, Actuators, and Microsystems Conference; and is currently on the editorial board of *Microsystems and Nanoengineering.* He has co-founded multiple MEMS-related companies, including Cardiomems, Axion Biosystems, and Enachip. Allen is a fellow of IEEE and received the IEEE Daniel P. Noble Award for contributions to research and development, clinical translation, and commercialization of biomedical microsystems.

James P. Allison | *The University of Texas MD Anderson Cancer Center*

James P. Allison, Ph.D., is chair of the Department of Immunology, executive director of the Immunotherapy Platform, and director of the Parker Institute for Cancer Immunotherapy at The University of Texas MD Anderson Cancer Center. Allison's findings on T-cell regulation gave rise to the field of immune checkpoint inhibition for cancer immunotherapy. Among many honors, he received the Breakthrough Prize, Lasker-DeBakey Clinical Medical Research Award, Balzan Prize, Kovalenko Medal, and King Faisal Prize for Medicine. He holds 12 U.S. patents, including patents for the CTLA inhibitor ipilimumab licensed to Bristol Myers Squibb, and co-founded Jounce Pharmaceuticals and Neon Therapeutics. Allison is a member of NAS and NAM, and fellow of AAM, AAAS, AACR Academy and American Academy.

Hiroshi Amano | *Nagoya University*

Hiroshi Amano, Eng.D., is director of the Center for Integrated Research of Future Electronics, Institute of Materials and Systems for Sustainability at Nagoya University in Japan. He is currently developing technologies for the fabrication of high-efficiency power semiconductor development and new energy-saving devices. He received the 2014 Nobel Prize in Physics with professors Isamu Akasaki and Shuji Nakamura for the invention of efficient blue light-emitting diodes which has enabled bright and energy-saving white light sources. He is an inventor on 34 issued U.S. patents and over 200 Japanese patents. He has published 542 papers (with reviews) and 27 book chapters. Amano is a fellow of APS, Great Britain's Institute of Physics, and Japan's Society of Applied Physics.

R. Rox Anderson | *Massachusetts General Hospital*

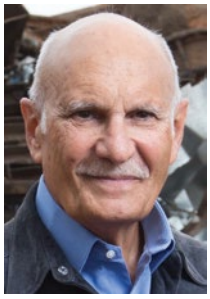
R. Rox Anderson, M.D., is professor and director of the Wellman Center for Photomedicine at Massachusetts General Hospital. Anderson graduated from Massachusetts Institute of Technology (MIT), and received his medical degree magna cum laude from the MIT-Harvard medical program, health sciences and technology. After completing his dermatology residency and NIH research fellowship at Harvard, he joined the faculty where he conceived and developed many of the non-scarring laser treatments widely used in medical care. These include treatments for birthmarks, microvascular and pigmented lesions, tattoos, permanent hair removal, vocal chords and glaucoma. His research provided insights about biological tissue optics, laser-tissue interaction mechanisms, photodynamic therapy and optical diagnostics. He co-invented fractional laser treatment and selective fat removal by tissue cooling. Recent inventions include new devices for wound grafting without scarring. Anderson has been awarded over 60 U.S. and foreign patents and has co-authored over 250 publications.

Leif Andersson | *Texas A&M University and Uppsala University, Sweden*

Leif Andersson, Ph.D., is professor at Texas A&M University and Uppsala University in Sweden. Andersson is a world leader in animal genomics and has developed a number of patents that have been applied in the animal breeding industry. He is the recipient of the 2014 Wolf Prize in agricultural sciences and several other prizes. He holds eight U.S. patents and nine foreign patents that have been licensed to a number of companies. He is the co-founder of four start-up companies and has published more than 300 original publications and more than 60 review papers and book chapters. Andersson serves on the editorial board for five peer-reviewed journals and is a member of NAS, APhilS, Royal Swedish Academy of Sciences, Royal Swedish Academy of Agriculture and Forestry, Royal Society of Sciences in Uppsala and Royal Physiographic Society in Lund.

J. Roger P. Angel | *The University of Arizona*

J. Roger P. Angel, D.Phil., is Regents' Professor of Astronomy and Optical Sciences at The University of Arizona. Angel founded the Steward Observatory Mirror Lab to cast and polish telescope mirrors. This lab makes the world's largest glass mirrors, up to 8.4m in diameter with internal honeycomb structure, and also smaller, thin glass mirrors with adjustable shape to correct atmospheric blurring. Using these mirrors, the Large Binocular Telescope in Arizona records images as much as ten times sharper than from the Hubble Space Telescope. Angel founded and is CTO of REhnu, a company applying optics to improve the efficiency of solar energy generation. He holds eight U.S. patents, mostly in the field of solar energy, and has published over 400 articles. Angel is a member of NAS, fellow of Royal Society, MacArthur Fellow (1996-2001), and recipient of the Kavli Prize in Astrophysics.



Diran Apelian | *Worcester of Polytechnic Institute*

Diran Apelian, Sc.D., is Alcoa-Howmet Professor of Engineering and founding director of the Metal Processing Institute at Worcester Polytechnic Institute. He is also Distinguished Visiting Professor at University of California, Irvine. Apelian is the recipient of many distinguished honors and awards and is credited with pioneering work in various areas of metals processing. He has over 700 publications, 19 patents, and has written, edited, or co-edited 15 books. Apelian serves on several corporate boards, as well as, strategic and science councils of several global corporations. With his colleagues and students, he has founded the following five companies: Materials Strategies LLC, Battery Resourcers Inc., Melt Cognition LLC, Kinetic Batteries LLC, and Solvus Global LLC. Apelian is a fellow of TMS, ASM, and APMI, and member of NAE, European Academy of Sciences, and Armenian Academy.

Plamen B. Atanassov | *The University of New Mexico*

Plamen B. Atanassov, Ph.D., is Distinguished Professor of Chemical & Biological Engineering and Chemistry & Chemical Biology at The University of New Mexico (UNM) and director of UNM Center for Micro-Engineered Materials. Atanassov's research is in nano-structured materials and new technologies for energy conversion and storage focusing on electrocatalysis and bio-electrocatalysis, fuel cells and bio-electrochemical systems. He is a fellow of The Electrochemical Society and served as a vice-president of the International Society of Electrochemistry. Atanassov is UNM Innovation Fellow and honorary professor of the Bulgarian Academy of Sciences. He holds 54 issued patents, a substantial number of which have been licensed and are at the core of catalyst products. He has published more than 360 peer-reviewed papers, 20 chapters in books and edited a book. Atanassov serves on the editorial board of *ACS Applied Energy Materials, ChemElectroChem* and *Electrocatalysis.*

Craig H. Benson | *University of Virginia*

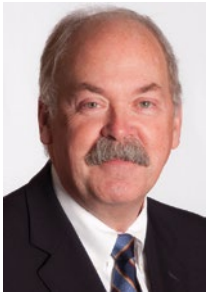
Craig H. Benson, Ph.D., P.E., is dean of the School of Engineering and Hamilton Chair in Engineering at the University of Virginia (UVA). Prior to UVA, Benson was Distinguished Professor, chair of the departments of civil and environmental engineering and geological engineering, and director of sustainability research and education at the University of Wisconsin-Madison. Benson is an international leader in environmental containment of solid, hazardous, radioactive, and mining wastes; sustainable infrastructure; and beneficial use of industrial byproducts. Benson received the Peck Award, Huber Research Prize, Alfred Noble Prize, Croes Medal (twice), Middlebrooks Award, Collingwood Prize, and Casagrande Award from the ASCE and Award of Merit and Best Practical Paper Award (twice) from ASTM International. Benson is a member of NAE and Environmental Engineering Committee of U.S. EPA's Science Advisory Board.

Cory J. Berkland | *The University of Kansas*

Cory J. Berkland, Ph.D., is Solon E. Summerfield Distinguished Professor in the departments of pharmaceutical chemistry and chemical engineering at The University of Kansas (KU). Berkland has made significant contributions in nanotechnology with a wide range of applications including formulations used in pulmonary medicine, gene therapy, and controlled release. In addition, he has developed polyelectrolytes that have applications in the petroleum industry and hydraulic fracturing fluid cleanup. He has received numerous scholarly awards including the Baxendale Commercialization Award from KU. He holds over 20 U.S. patents, of which several have been licensed to five companies. He is co-founder of four companies including Orbis Biosciences, Savara Pharmaceuticals, Orion BioScience, and Bond Biosciences, Inc. He has published approximately 150 articles and three book chapters and serves on multiple journal boards and scientific advisory boards. Berkland is a fellow of AIMBE.

Vijayakumar Bhagavatula | *Carnegie Mellon University*

Vijayakumar Bhagavatula, Ph.D., is U.A. & Helen Whitaker Professor of Electrical and Computer Engineering at Carnegie Mellon University (CMU). He is also the director of CMU Africa in Kigali, Rwanda. Bhagavatula has made pioneering research contributions to frequency-domain computer vision and pattern recognition methods, with applications in biometric recognition and autonomous driving. He has received many research awards including the 2008 Outstanding Faculty Research Award from the College of Engineering at CMU. Bhagavatula's publications include a book entitled *Correlation Pattern Recognition,* 24 book chapters, and more than 600 conference and journal papers. He is a co-inventor on 14 patents, some of which have been licensed to companies. Bhagavatula is co-founder of four startup companies and has served on many conference program committees and journal editorial boards. He has been elected as fellow of OSA, SPIE, IEEE, IAPR and AAAS.



David J. Bishop | *Boston University*

David J. Bishop, Ph.D., is director of the CELL-MET NSF Engineering Research Centers and head of the division of materials science and engineering at Boston University (BU). Bishop is also a professor of physics, electrical and computer engineering and materials science and engineering at BU. Previously, he was the associate dean for research and graduate programs for the BU College of Engineering. Prior to joining BU, Bishop has held positions as CTO and COO of LGS, president of government research, VP of physical sciences research and security solutions and VP of nanotechnology research at Bell Labs, and president of the New Jersey Nanotechnology Consortium. He is a recipient of the APS George E. Pake Award, author of more than 400 papers and talks, and named inventor on 47 issued U.S. patents. Bishop is fellow of Bell Labs and APS.

Donald L. Bitzer | *North Carolina State University*

Donald L. Bitzer, Ph.D., is Distinguished Research Professor in the department of computer science at North Carolina State University. Bitzer is co-inventor of the Programmed Logic for Automatic Teaching Operations system, which is the first system to combine graphics and touch-sensitive screens. He received an Emmy Award from the National Academy of Televisions Arts & Sciences in 2002 for his role in developing the plasma screen and was inducted into NIHF in 2013 and Consumer Electronics Association Hall of Fame in 2006. He holds 15 U.S. patents and is a 2002 National Academies National Associate of NAS, NAE, and NAM. Bitzer is life fellow of IEEE and member of NAE.

Randy D. Blakely | *Florida Atlantic University*

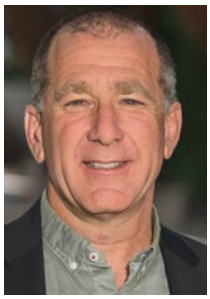
Randy D. Blakely, Ph.D., is the inaugural executive director of the Florida Atlantic University (FAU) Brain Institute and professor of biomedical science in the FAU Charles E. Schmidt College of Medicine. Blakely is an internationally renowned neuroscientist and leading expert in synaptic pharmacology, neurotransmitter transporters, and neurogenetics. Blakely's group uses a combination of genetic, molecular, and physiological approaches to elucidate mechanisms by which transporter proteins support normal brain function and how brain diseases arise from the dysfunction of these proteins. Blakely's research team has cloned multiple neurotransmitter transporter genes, and has identified multiple signaling pathways that regulate transporter expression and function. He is the recipient of the NIMH MERIT Award, and Astellas and Julius Axelrod Awards from the American Society of Pharmacology and Experimental Therapeutics. Blakely has published over 300 peer-reviewed manuscripts and book chapters, and is fellow of AAAS.

Helen M. Blau | *Stanford University*

Helen M. Blau, Ph.D., is Donald E. and Delia B. Baxter Foundation Professor and director of the Baxter laboratory for stem cell biology at Stanford University (SU). Blau's world-renowned research in regenerative medicine includes nuclear reprogramming and demonstration of the plasticity of cell fate using cell fusion which provided the scientific underpinnings for mammalian cloning and induced pluripotent stem cells. She led with novel approaches to treating muscle damaged due to disease, injury, or aging and pioneered the design of biomaterials to mimic the in vivo microenvironment and direct stem cell fate. She has received the McKnight Technological Innovations for Neuroscience Award, SU Outstanding Inventor Award and induction into SU's Office of Technology and Licensing Hall of Fame. Blau holds seven U.S. licensed patents and 23 patents worldwide. She founded Myoforte Therapeutics, Inc. to focus on novel molecules and therapeutic strategies for the treatment of muscle wasting in disease and aging, and her lab pioneered the use of beta-galactosidase complementation as a reporter of protein-protein interactions in live cells, which became a highly successful platform for drug discovery developed by DiscoveRx. She served as president of the American Society for Developmental Biology and of the International Society for Differentiation, on the Board of Overseers at Harvard University and on the Ellison Medical Scientific Advisory Board. Blau is a member of NAM, NAS, PAS, AIMBE, AAA&S and fellow of AAAS.

Timothy M. Block | *Baruch S. Blumberg Institute*

Timothy M. Block, Ph.D., is president and co-founder of the Hepatitis B Foundation, its research arm, the Baruch S. Blumberg Institute, and the Pennsylvania Biotechnology Center. Block's most significant contributions to therapeutic drug and biomarker of disease screening and discovery include methods of DNA co-transfer to mammalian cells and discovery of antiviral drugs and biomarkers of liver cancer. He has received numerous honors, including an honorary medical degree from the Bulgarian National Academy, elected fellow of AAAS and Glycobiology Institute of the University of Oxford. He holds 20 issued patents and 23 patent applications, has co-authored more than 240 scholarly papers, and was named a "Visionary in Hepatitis" by the World Hepatitis Alliance in 2017. Block is also adjunct professor at Geisinger Commonwealth School of Medicine and University of Pennsylvania Perelman School of Medicine.



Daniel J. Blumenthal | *University of California, Santa Barbara*

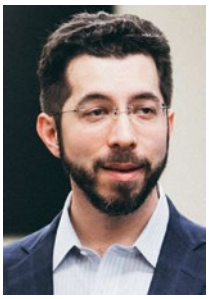
Daniel J. Blumenthal, Ph.D., is professor of electrical and computer engineering at the University of California, Santa Barbara and director of the Terabit Optical Ethernet Center. Blumenthal has made significant contributions in fiber optic communications and photonics with broad impact on commercially deployed networks and systems-on-chip for communications and sensing. His research has focused on areas in optical switching, ultra-low loss waveguide and indium phosphide photonics, and ultrafast optical signal processing. He is recipient of PECASE, NSF New Young Investigator and Office of Naval Research Young Investigator Program awards. He has served on the board of directors of National Lambda Rail and as an elected researcher on Internet-2 Advisory Council. He holds 22 U.S. patents, of which 18 are licensed or directly assigned to companies. He is co-founder of two companies, Calient Networks and Packet Photonics and has over 410 journal and conference publications, five book chapters, a leading book on tunable laser diodes, invited papers in the *Proceedings of the IEEE* and in *Scientific American,* and has served as guest editor for numerous IEEE journal special issues. Blumenthal is fellow of IEEE and OSA.

Susmita Bose | *Washington State University*

Susmita Bose, Ph.D., is Herman and Brita Lindholm Endowed Chair Professor at the School of Mechanical and Materials Engineering at Washington State University. Bose's interdisciplinary research interest lies at the interface of chemistry, materials science, mechanical engineering, bioengineering and biology, focusing on 3D printed bone scaffolds (which has been featured on television, radio stations, magazines and news sites worldwide), implant materials and drug delivery vehicles. Bose received the CAREER award and PECASE from NSF. She has advised over 40 graduate students, published over 220 technical articles including over 180 journal articles, 10 book chapters, seven edited books, and eight patents. She was invited as Kavli Fellow by NAS, received the PACE and Fulrath Awards from ACerS and International Society for Ceramics in Medicine Research Excellence Award. Bose was named Life Science Innovation Northwest Women to Watch Honoree by Washington Biotechnology and Biomedical Association. Bose is fellow of AAAS, AIMBE and ACerS, and has been elected to Washington State Academy of Sciences.

Steven T. Boyce | *University of Cincinnati*

Steven T. Boyce, Ph.D., is professor in the department of surgery and adjunct professor in biomedical engineering at the University of Cincinnati. Boyce developed systems for propagation and cryogenic storage of normal human skin cells, and early models of engineered skin substitutes from cells and degradable polymers. Those models have been translated to clinical trial for treatment of burn injuries and other skin wounds. He has received the Harvey Stuart Allen Award for Distinguished Service and Clinical Research Award from the American Burn Association (ABA), among others. He holds 11 U.S. patents and eight foreign patents that have been licensed to Clonetics Corporation and Cutanogen Corporation, both of which Boyce founded. He has authored more than 150 peer-reviewed articles and book chapters, and has served as a reviewer for numerous journals and funding agencies. Boyce is member of several academic societies and trustee of ABA.



Edward S. Boyden | *Massachusetts Institute of Technology*

Edward S. Boyden, Ph.D., is professor of biological engineering and brain and cognitive sciences at Massachusetts Institute of Technology (MIT) Media Lab and McGovern Institute. Boyden leads the Synthetic Neurobiology Group, which develops tools including expansion microscopy and enables complex biological systems to be imaged with nanoscale precision, and optogenetic tools, which enable the activation and silencing of neural activity with light. He co-directs the MIT Center for Neurobiological Engineering, which aims to develop new tools to accelerate neuroscience progress. Amongst other recognitions, he has received the Breakthrough Prize in Life Sciences, the BBVA Foundation Frontiers of Knowledge Award, Jacob Heskel Gabbay Award, Grete Lundbeck Brain Prize, NIH Director's Pioneer Award, and Perl/UNC Neuroscience Prize, and is fellow of the American Academy. Boyden has contributed to over 400 peer-reviewed papers and has given over 400 invited talks.

Anthony B. Brennan | *University of Florida*

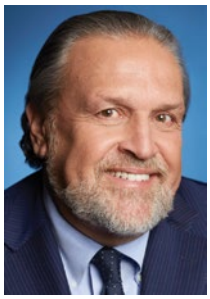
Anthony B. Brennan, Ph.D., is Margaret A. Ross Professor of Materials Science and Engineering and professor of biomedical engineering at University of Florida. Brennan is also chairman and founder of Sharklet Technologies, Inc., a company that uses biomimicry in their products to control bioadhesion. His inventions effectively inhibit bacterial colonization, migration and biofilms on numerous medical devices and high contact surfaces. Brennan's research has focused on the fundamental physics of biological adhesion and led to the issuance of 17 U.S. patents, 10 foreign patents and 16 pending patents. Most recently, his work demonstrated the thermodynamic foundation of the Sharklet pattern to enhance mammalian cell growth for wound healing applications. He has published over 135 papers, graduated 31 doctoral students and served as trustee of University of Florida. Brennan is member of ACS and Society for Biomaterials.

Carrie L. Byington | *Texas A&M University and System*

Carrie L. Byington, M.D., is Jean and Thomas McMullin Professor and dean of the college of medicine, senior vice president of health sciences and vice chancellor for health services for Texas A&M University and System. Byington is co-inventor of the FilmArray Diagnostic system (Biofire Diagnostics, Salt Lake City) and has made important contributions to the field of infectious diseases through invention and innovation. She is the recipient of numerous federal grants and awards including recognition from the Association for American Medical Colleges Women in Medicine and Science Leadership award. She holds one U.S. patent and has published over 200 manuscripts and book chapters. She serves as chair of the American Academy of Pediatrics Committee on Infectious Diseases and editorial board member for *Academic Medicine*. Byington is fellow of American Academy of Pediatrics and Infectious Diseases Society of America, and is member of NAM.

Marvin H. Caruthers | *University of Colorado Boulder*

Marvin H. Caruthers, Ph.D., is Distinguished Professor of Biochemistry and Chemistry at University of Colorado Boulder. The methodologies that are used for chemically synthesizing DNA and RNA were developed in his laboratory. DNA or RNA as prepared by these methods is used for research, diagnostic, and therapeutic applications. Caruthers is the recipient of many academic and research awards including the U.S. National Medal of Science, the nation's highest distinction honoring scientific achievement, ACS Award for Creative Invention, and NAS Award in the Chemical Sciences. He holds over 40 U.S. patents and is co-founder of Amgen and Applied Biosystems. He remains active in the biotechnology arena – most recently as co-founder of Array BioPharma and miRagen Therapeutics. Caruthers is a NAS member, NIHF inductee, American Academy Fellow and German Academy of Science Gottingen corresponding member.



Dennis S. Charney | *Icahn School of Medicine at Mount Sinai*

Dennis S. Charney, M.D., is Anne and Joel Ehrenkranz Dean of the Icahn School of Medicine at Mount Sinai and president for academic affairs for the Mount Sinai Health System. Charney is a world expert in the neurobiology and treatment of mood and anxiety disorders, making fundamental contributions to understanding the causes of human anxiety, fear, and depression, and the discovery of new treatment for mood and anxiety disorders. His research on depression has led to the discovery of new and novel therapies for treatment resistant depression including Lithium and Ketamine. He has been honored with major awards for his scientific research, including ACNP Julius Axelrod Mentorship Award, World's Most Influential Scientific Minds 2014 and 2015, and 48 out of 1,360 most highly cited life science researchers in the world. His discovery of Ketamine for treatment-resistant depression was named by Cleveland Clinic on its top 10 list of 2017 Health Care Innovations. He holds three U.S. patents, and 19 U.S. and foreign patent applications, 10 of which are licensed to two companies. He has published 624 articles, 109 chapters, and 16 books, including *Resilience: The Science of Mastering Life's Greatest Challenges,* and *Charney & Nestler's Neurobiology of Mental Illness 5th Edition*. Charney is member of NAM.

Yang-Tse Cheng | *University of Kentucky*

Yang-Tse Cheng, Ph.D., is Frank J. Derbyshire Professor of Materials Science and professor of physics and astronomy at University of Kentucky. Cheng has made significant contributions over a broad range of materials science and engineering issues, including nanoindentation modeling and measurements of mechanical properties; growth, structure, and properties of nanostructured materials; microscopic shape memory and superelastic effects; magnetorheological fluids; superhydrophobic and superhydrophilic surfaces; ion-solid interactions and ion beam modification of materials; automotive applications of new materials and processes, such as electrical contacts, high power-density engines and transmissions, environmentally friendly machining processes, hydrogen sensors, fuel cells, metal hydride batteries, and lithium ion batteries. He holds 48 U.S. patents and has published 173 articles, edited eight books and special volumes. Cheng serves as principal editor for the *Journal of Materials Research* and is fellow of MRS and APS.

Yet-Ming Chiang | *Massachusetts Institute of Technology*

Yet-Ming Chiang, Sc.D., is professor of materials science and engineering at Massachusetts Institute of Technology. Chiang is an inventor and developer of advanced materials and energy storage technologies. He is a recipient of The Economist's Innovation Award in Energy and Environment, two World Economic Forum Technology Pioneer awards, Electrochemical Society's Battery Division's Battery Technology Award, MRS Plenary Lecturership, R&D100 Editor's Choice Award, and Thompson-Reuters Top 100 Materials Scientist award. He holds 78 U.S. patents of which 60 have been licensed to eight companies. He is founder of American Superconductor Corporation, A123 Systems, 24M Technologies, Desktop Metal, and Form Energy, and has published 260 papers, one textbook, and 13 book chapters and edited volumes. Chiang is a member of NAE and fellow of ACerS and MRS.

Joanne Chory | *Salk Institute for Biological Studies*

Joanne Chory, Ph.D., is professor and director of the Plant Biology Laboratory at Salk Institute for Biological Studies and HHMI Investigator. Chory is known for her studies that have shown how plants alter their shape and size in response to changes in their environment. Chory is the recipient of the Breakthrough Prize in Life Sciences and the L'Oréal Prize for Women in Science, among others. She holds 13 patents on manipulating plant growth by altering the levels of plant hormones or changing the strength of their signaling pathways. Chory has authored over 300 scientific publications and reviews, and is a member or fellow of six academies worldwide, including NAS, AAAS, American Academy, and the Royal Society.

Mooi Choo Chuah | *Lehigh University*

Mooi Choo Chuah, Ph.D., is professor in the department of computer science and engineering at Lehigh University. Chuah received her doctorate in electrical engineering from University of California, San Diego and spent 12 years at Bell Laboratories where she was involved in designing future wireless internet systems. Her work at Bell Laboratories resulted in 63 awarded U.S. patents and 15 foreign patents in multiple areas, including quality of service in wireless networks. She joined Lehigh University in 2004 and directed the Wireless Infrastructure and Network Security Laboratory. She was NSF advance chair and elected fellow of IEEE. She has served as associate editor in several top journals including *IEEE Transactions on Mobile Computing*. Chuah has served as technical co-chair for IEEE INFOCOM in 2010 and Globecom Next Generation Networking Symposium in 2013.

David E. Clemmer | *Indiana University*

David E. Clemmer, Ph.D., is Distinguished Professor and Robert and Marjorie Mann Chair of Chemistry at Indiana University. Clemmer pioneered nested ion mobility mass spectrometry instrumentation and methodology used for analysis of complex molecular mixtures in emerging fields such as proteomics, glycomics, and lipidomics. He was recognized with multiple awards from ACS and awarded the Biemann Medal from American Society for Mass Spectrometry. He holds nearly 15 U.S. and 45 foreign patents, and has participated in starting several companies; commercial versions of his ion mobility instruments are now available at most research universities and many chemical and pharmaceutical companies around the world. Clemmer has published approximately 250 peer-reviewed papers that have been cited more than 15,000 times and is fellow of AAAS and RSC.

Geoffrey W. Coates | *Cornell University*

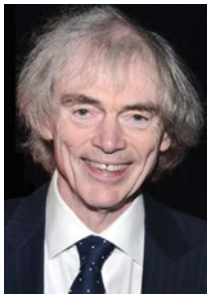
Geoffrey W. Coates, Ph.D., is Tisch University Professor in the department of chemistry and chemical biology at Cornell University. Coates is known for his work on the development of new catalysts for the synthesis of small molecules and polymers. Following a bachelor's degree in chemistry from Wabash College, Coates received his doctorate from Stanford University. He was NSF Postdoctoral Fellow at the California Institute of Technology until joining the Cornell University faculty in 1997. In 2011, he was identified by Thomson Reuters as one of the world's top 100 chemists for the impact of his scientific research. He holds 51 issued U.S. patents, many of which have been licensed to companies, and is scientific co-founder of Novomer Inc. and Ecoelectro Inc., and associate editor of *Macromolecules*. Coates is fellow of the American Academy and AAAS, and member of NAS.

Stanley N. Cohen | *Stanford University*

Stanley N. Cohen, M.D., is Kwoh-Ting Li Professor of Genetics and professor of medicine at Stanford University. He and his colleague, Herbert W. Boyer, revolutionized the disciplines of biology and chemistry with their discovery of methods to transplant and clone genes; they are the inventors on the basic patents underlying the field of genetic engineering. Cohen is author of more than 360 scientific publications and recipient of numerous honors and awards, including the National Medal of Science, National Medal of Technology, Lasker Award for Basic Medical Research, Wolf Prize in Medicine, and Shaw Prize in Life Science and Medicine. Cohen is a member of NAS and NAM, inductee of NIHF and APhilS, fellow of American Academy, and Einstein Professor of the Chinese Academy of Sciences.

James E. Crowe, Jr. | *Vanderbilt University Medical Center*

James E. Crowe, Jr., M.D., is director of the Vanderbilt Vaccine Center and Ann Scott Carell Chair at Vanderbilt University Medical Center. Crowe is an innovator who has developed unique methods for isolation of human monoclonal antibodies and vaccine candidates. He is the director of the Human Immunome Program, an ambitious effort to identify the sequence of all human transcripts for adaptive immune receptors. He has received major prizes for research, including the Daland Prize, ASCI Korsmeyer Award, and Rosenthal Foundation Prize. He holds 32 U.S. patents awarded or applied for and the same number of foreign patents, which have been licensed to eight companies. He is the founder of IDBiologics and has published over 300 articles, books, book chapters and reviews. Crowe is an elected member of NAM and fellow of AAAS, AAM, ASCI, AAP, among others.



Pieter R. Cullis | *The University of British Columbia*

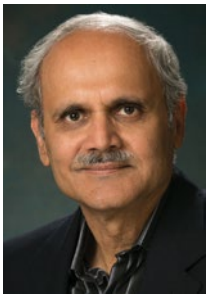
Pieter R. Cullis, Ph.D., is director of NanoMedicines Research Group and professor in the department of biochemistry and molecular biology at The University of British Columbia. Cullis and co-workers are responsible for fundamental advances in the design and application of lipid-based nanomedicines for personalized therapies, including gene therapies. This work has contributed to three drugs that have been approved by regulatory agencies in the U.S. and Europe for the treatment of cancer and its complication, and a fourth drug to treat a previously untreatable hereditary condition that is likely to receive regulatory approval. Cullis has received many awards including the Prix Galien, Canada's premier prize for achievements in pharmaceutical R&D. He has published more than 300 peer-reviewed articles, holds more than 50 issued U.S. patents and has co-founded 10 biotechnology companies that currently employ approximately 300 people. Cullis is an elected fellow of the Royal Society of Canada.

Mari Dezawa | *Tohoku University*

Mari Dezawa, Ph.D., M.D., is professor and chairperson of the department of stem cell biology and histology in the Graduate School of Medicine at Tohoku University in Japan. Dezawa contributed to regenerative medicine by discovering non-tumorigenic reparative pluripotent stem cells, Multilineage-differentiating stress enduring (Muse) cells that reside in our body. She is the recipient of prizes for science and technology from the Japanese government, Inoue Foundation for Science, Japanese Association of Anatomists and Japanese Society of Microscopy, and recipient of the Everfront Award. She holds five U.S. patents and 10 foreign patents, all of which were licensed to Life Science Institute Inc., a group company of Mitsubishi Chemical Holdings. She has published more than 120 original articles in international journals, four book chapters and served as editor of *The Anatomical Record* and editorial board member of *Cell Transplantation*, *Stem Cells and Cloning* and *Neural Regeneration Research*. Dezawa is a board member of the Japanese Society for Regenerative Medicine.

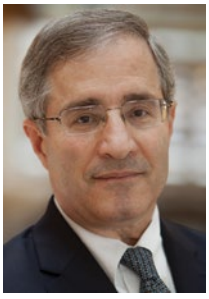
William L. Ditto | *North Carolina State University*

William L. Ditto, Ph.D., is professor of physics and electrical engineering at North Carolina State University. A pioneer in controlling chaos in physical and biological systems and utilizing chaos for computation, Ditto has published over 200 articles and holds more than 25 U.S. and foreign patents including patents in antennas, neural control, cardiac rhythm management, synthetic biology and chaos computing. He founded ChaoLogix Inc., which develops novel computer chips based on chaotic elements and was recently acquired by ARM Ltd. Most recently, he started the Nonlinear Artificial Intelligence Laboratory with a focus on developing cognitive artificial Intelligence based on morphable chaos computing VLSI chip technologies. Ditto is a fellow of AIMBE and APS.



Prabir K. Dutta | *The Ohio State University*

Prabir K. Dutta, Ph.D., is Distinguished University Professor at The Ohio State University. Dutta's research specialization is in the area of zeolitic materials and their applications, particularly in the area of health-related materials and sensors. He is the recipient of three R&D 100 Awards and two awards from NASA for sensor development, and holds 16 patents with 12 patents pending. His patents are currently licensed to three companies. He is the co-founder of a startup company ZeoVation and has published 262 papers and co-edited two books. Dutta is a fellow of AAAS.



Jack A. Elias | *Brown University*

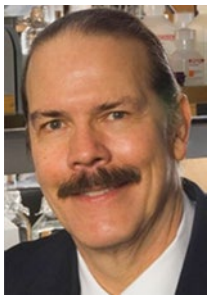
Jack A. Elias, M.D., is senior vice president for health affairs, dean of medicine and biological sciences, and Frank L. Day Professor of Biology at Warren Alpert Medical School at Brown University. Elias was previously chair of the department of internal medicine at Yale University School of Medicine, and councilor, vice president, and president of AAP. His research has resulted in continuous funding from the NIH since 1982. He holds seven patents with several pending and has co-authored four textbooks and over 400 articles, editorials and abstracts. Elias has served numerous editorial boards, including the *American Journal of Medicine* and the *Journal of Allergy and Clinical Immunology*. Elias is a member of NAM, American Thoracic Society and AAP.

Zhigang Zak Fang | *The University of Utah*

Zhigang Zak Fang, Ph.D., is a scientist and innovator in the field of materials and metallurgical engineering. Prior to joining the faculty of metallurgical engineering at the University of Utah in 2002, Fang had a successful industrial R&D career and held various technical and management positions in a number of large international corporations. He is named sole or co-inventor on 50 issued U.S. patents and was a winner of the R&D100 Award in 2009. He is editor-in-chief of the *International Journal of Refractory Metals and Hard Materials*, and has authored or co-authored over 320 publications. Fang has given over 25 invited plenary and keynote lectures, and is fellow of ASM and APMI.

Tim A. Fischell | *Michigan State University*

Tim A. Fischell, M.D., is professor of medicine at Michigan State University. Fischell is a prolific medical device inventor, innovator, scholar and entrepreneur. He founded or co-founded more than 10 medical device startup companies and is currently the founder and CEO of Ablative Solutions, Inc., a chemical renal denervation company with a device-based treatment for hypertension. He is the recipient of numerous prestigious awards including the CRT Top Cardiovascular Innovation Award, and Erasmus Thorax Center Cardiology Gruentzig Award for Inventor of the Year. He holds approximately 90 U.S. patents on medical devices, including a cluster of patents on stent design commercialized by Johnson and Johnson, with more than five million stents implanted between 1998 and 2010. He has published more than 120 papers in peer-reviewed journals, and 30 book chapters. He serves on the editorial board of the *Cardiovascular Revascularization Medicine*, *Journal of Invasive Cardiology*, and *Journal of Interventional Cardiology*. He is a fellow of the American College of Physicians, AHA, Society for Cardiac Angiography and Interventions, and American College of Cardiology.



Paul B. Fisher | *Virginia Commonwealth University and Columbia University*

Paul B. Fisher, MPH, Ph.D., is chairman of human and molecular genetics, director of the Institute of Molecular Medicine, and Thelma Newmeyer Corman Chair in Cancer Research in the Massey Cancer Center in the School of Medicine at Virginia Commonwealth University. Fisher is also Emeritus Professor at Columbia University. His seminal discoveries have enhanced our understanding of cancer development and progression to metastasis. He pioneered molecular approaches to identify genes involved in important physiological processes, including cancer, neurodegeneration and infectious diseases. He has continuous funding from the NIH, DOD and private foundations. Fisher was awarded the 2014 Virginia Outstanding Scientist, and issued 55 U.S. patents. He is founder of GenQuest (merged with Corixa, traded on NASDAQ and was acquired by GSK), Cancer Targeting Systems, InVaMet Therapeutics, and InterLeukin Combinatorial Therapeutics. Fisher is author or co-author on over 580 primary papers and review articles, and serves on 28 editorial boards.

Edward Paul Furlani | *University at Buffalo, SUNY*

Edward Paul Furlani, Ph.D., is professor of electrical engineering and chemical and biological engineering at the University at Buffalo, SUNY. His record of scientific innovation spans over 30 years, with notable contributions to the fields of applied magnetics, inkjet, microfluidics and microsystems technology and optoelectronics. Furlani joined academia following a 27 year career in the Eastman Kodak Research Labs. He is among Kodak's most prolific inventors and holds 152 U.S. and 40 foreign patents, many of which directly enhanced Kodak's products. In recognition, he received the Prolific Inventor Award from the Society for Imaging Science and Technology and Kodak's Chief Technology Officer Century Award. He serves on the advisory board of various companies, editorial board of *Scientific Reports*, and is symposium organizer for international conferences. Furlani has authored over 190 peer-reviewed articles, numerous book chapters and an authoritative book on applied magnetics.

Guangping Gao | *University of Massachusetts Medical School*

Guangping Gao, Ph.D., is Endowed Professor, co-director of the Li Weibo Institute For Rare Diseases Research, and director of the Horae Gene Therapy Center at University of Massachusetts Medical School. He is a renowned scientist and prominent investigator in gene therapy, and was instrumental in reviving the field by developing new generations of adeno-associated virus vectors for gene therapy applications, hugely impacting many currently untreatable human diseases. He holds 39 U.S. and 92 foreign patents, of which some were licensed to more than 10 companies. He cofounded Voyager Therapeutics and has published 225 research papers, six book chapters and five edited books. He serves as editor of *Human Gene Therapy*, senior editor of the *Gene and Cell Therapy* book series, associate editor of *Signal Transduction and Targeted Therapy*, and on editorial boards of several other gene therapy and virology journals. Gao is also vice president of the American Society of Gene and Cell Therapy.

Suresh V. Garimella | *Purdue University*

Suresh V. Garimella, Ph.D., is inaugural executive vice president for research and partnerships and Goodson Distinguished Professor of Mechanical Engineering at Purdue University. Garimella oversees Purdue's $660 million research enterprise, including Discovery Park, an interdisciplinary complex for grand-challenge research. His role supporting the university's entrepreneurship and innovation ecosystem contributed to Purdue ranking 12th worldwide in U.S. patent production in 2016. He is an expert in micro- and nano-scale transport phenomena, thermal management and energy efficiency in electronics systems, and renewable and sustainable energy systems technology and policy. He has served as a Jefferson Science Fellow at the U.S. Department of State and senior fellow of the State Department's Energy and Climate Partnership of the Americas. He has 12 patents, co-authored over 500 widely cited publications, and serves in editorial roles with leading energy-related journals. Garimella is fellow of AAAS and ASME.

Bruce E. Gnade | *Southern Methodist University*

Bruce E. Gnade, Ph.D., is executive director of the Hart Center for Engineering Leadership at Southern Methodist University. Gnade has made significant contributions in three areas of electronic materials and devices; 1) dielectric materials for scaled silicon CMOS, 2) vacuum microelectronics, and 3) flexible electronics. He holds 77 U.S. patents and 55 foreign patents. Approximately 65 of his U.S. patents are assigned to Texas Instruments (TI), with many of the inventions included in TI products through the years. Gnade was vice president for research at The University of Texas at Dallas for over 10 years and has published more than 190 peer reviewed journal publications. He is currently on the board of directors of Oak Ridge Associated Universities, and has served as associate editor of *Journal of Vacuum Science & Technology B* and the IEEE / OSA *Journal of Display Technology*. Gnade is fellow of APS.

Larry Gold | *University of Colorado Boulder*

Larry Gold, Ph.D., is professor and previous chairman of the molecular, cellular, and developmental biology department at University of Colorado Boulder (CU). Gold is also founder, chairman of the board, and past chief executive officer of SomaLogic. Prior to SomaLogic, he founded NeXagen, Inc., and in 999, NeXagen merged with Gilead Sciences, Inc. to form a global organization committed to the discovery, development and commercialization of novel products that treat infectious diseases. He is also co-founder of Synergen, Inc., a biotechnology company later acquired by Amgen, Inc. He holds more than 180 U.S. patents and has received many honors including the CU Distinguished Lectureship Award, NIH Merit Award, Career Development Award, and Chiron Prize for Biotechnology. In addition, Gold is a member of NAS and fellow of the American Academy.

Sheila A. Grant | *University of Missouri*

Sheila A. Grant, Ph.D., currently serves as the associate dean of research in the college of engineering and full professor in the department of bioengineering at the University of Missouri. Grant's research program focuses on the development of nanostructured and microstructured autonomous materials and biomaterials for biosensing and tissue engineering applications. She holds 13 patents and patent applications with numerous foreign patents. Grant is the founder of three start-up companies, with five of her patents being licensed to outside companies. She has published over 100 peer-reviewed scientific articles and proceedings, serves as a reviewer or editorial board member for major peer-reviewed journals, and has been a member of multiple scientific review boards. Grant is fellow of AIMBE and recipient of the R&D 100 Award.

Mark A. Griswold | *Case Western Reserve University*

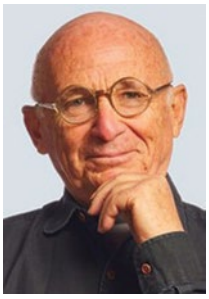
Mark A. Griswold, Ph.D., is professor of radiology at Case Western Reserve University with secondary appointments in biomedical engineering, physics, electrical engineering and computer science. Griswold received his bachelor's in electrical engineering from the University of Illinois, Urbana-Champaign and his doctorate in physics from the University of Wurzburg, Germany. He is known for his research in developing fast approaches to Magnetic Resonance Imaging (MRI), including the development of the GRAPPA method for parallel imaging, which is currently employed on nearly 85% of all MR scanners worldwide. More recently he led the team that developed a quantitative measurement of tissue states called Magnetic Resonance Fingerprinting, which was featured in the journal *Nature* in March 2013. He holds 50 U.S. patents, with 26 pending. Griswold is a fellow of AIMBE and International Society of Magnetic Resonance in Medicine.

Horng-Jyh Harn | *Hualien Tzu Chi Hospital*

Horng-Jyh Harn, M.D., Ph.D., currently serves at the department of pathology as professor and surgical pathologist at Tzu-Chi University and associate vice president of the Bioinnovation Center at the Tzu Chi Foundation. Harn received a doctorate in pathology from Duke University and was a professor in the department of pathology at the National Defense Medical Center, Taipei, Taiwan. He received his surgical pathology training at Tri-Service General Hospital, Taipei, Taiwan. Harn was appointed director of molecular medicine at Tzu-Chi Buddhist General Hospital in Hualien, Taiwan and chairman of pathology at China Medical University in Taichung, Taiwan. His main research fields include molecular biology, tumor oncology, stem cell research and new drug development against neurological disease. Harn is author of over 120 original research articles and has been granted over 30 U.S. and foreign patents.

Robert W. Heath, Jr. | *The University of Texas at Austin*

Robert W. Heath Jr., Ph.D., is Cullen Trust Endowed Professor at The University of Texas at Austin and director of the Situation-Aware Vehicular Engineering Systems Research Center. Heath is a pioneer in the area of multiple-input multiple-output wireless communication systems, which has been a primary means of increasing data rates and reliability in commercial wireless systems the past ten years. He is a recipient of the EURASIP Technical Achievement Award and more than 25 other awards. He holds 57 U.S. patents and a number of related foreign patents. Heath has published more than 550 peer-reviewed conference and journal articles, and three books. Heath is an elected member of the IEEE Signal Processing Society Board of Governors, on the editorial board for *IEEE Access*, and serves as editor-in-chief of *IEEE Signal Processing Magazine*. He is fellow of IEEE.



Walter Brown Herbst | *Northwestern University*

Walter Brown Herbst, Ph.D., is Charles Deering McCormick Distinguished Clinical Professor at Northwestern University and director of the Master of Product Design and Development Management program, which he founded in 2001. He is a recipient of 'Faculty of the Year' of the same program, Associated Student Government award, Distinguished Alumni of the Year – University of Illinois; and Outstanding Faculty of the Year for Institute of Design Engineering and Applications. He is co-founder of Herbst Produkt, a creative design agency specializing in transforming complex design challenges into simple, powerful solutions. The work has resulted in three gold; four silvers and one bronze Edison Awards from 2012–17, in health, consumer electronics and industrial design. Herbst holds 124 patents in medical and consumer products.

Mark C. Hersam | *Northwestern University*

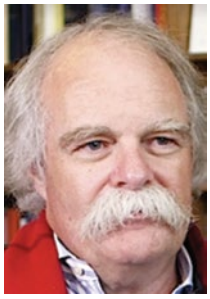
Mark C. Hersam, Ph.D., is Walter P. Murphy Professor of Materials Science and Engineering and director of the Materials Research Center at Northwestern University. Hersam is inventor and chief developer of density gradient ultracentrifugation purification and separation of carbon nanotubes, graphene, plasmonic nanoparticles, transition metal dichalcogenides, boron nitride, black phosphorus, and related nanomaterials. He is the recipient of several honors including the Presidential Early Career Award for Scientists and Engineers, TMS Robert Lansing Hardy Award, AVS Peter Mark Award, MRS Outstanding Young Investigator, U.S. Science Envoy, and MacArthur Fellowship. He holds 66 issued and pending patents, 14 of which have been licensed to NanoIntegris, which is a startup company that he co-founded to commercialize semiconducting carbon nanotubes. Hersam has published nearly 425 journal articles and serves as an associate editor for ACS Nano. He is a fellow of several professional societies including MRS, AVS, APS, AAAS, SPIE, and IEEE.

David M. Holtzman | *Washington University in St. Louis*

David M. Holtzman, M.D., is professor and chair of neurology at Washington University in St. Louis. Holtzman is a pioneer in the study of pathogenesis, diagnosis and treatment of Alzheimer disease (AD). He has shown how ApoE contributes to AD and has developed new methods to monitor production and clearance of amyloid-β (Aβ) and other proteins in the CNS. His lab has studied and developed antibodies against Aβ, tau, and apoE, proteins whose accumulation appears to initiate, drive, or modify AD. They found that an antibody to Aβ could decrease Aβ deposition and bind soluble Aβ in the CNS and plasma. A humanized version (Solanezumab) is being tested in two prevention trials in AD. His lab developed anti-tau antibodies that block the spread of tau pathology. One antibody has been humanized and is the first anti-tau antibody to enter human clinical trials, now in phase II in AD. Holtzman holds 10 U.S. patents and several foreign patents, and has license agreements with 12 companies.

Ming Hsieh | *University of Southern California*

Ming Hsieh is trustee of the University of Southern California, and chairman, chief executive officer (CEO), and founder of Fulgent Genetics, a leading genetic testing and molecular information company. He is also CEO and founder of Fulgent Pharma, a leading nanoencapsulation of drug compounds in the area of cancer treatment and research. Prior to Fulgent Genetics and Pharma, he was the chairman, CEO, and founder of Cogent Inc. Under Hsieh's leadership, Cogent became the worldwide leader in providing law enforcement, military, and commercial enterprises, as well as civil government agencies with large-scale, reliable, accurate, and real-time biometric identification services. This was made possible with Cogent's proprietary massive parallel data processing hardware and intelligent pattern recognition software. Hsieh's prolific work in biometric identification has revolutionized the automated fingerprint identification system and continues to have an indelible and profound impact on a global scale. He holds four U.S. and foreign patents, and is recipient of the Ellis Island Medal of Honor and member of NAE.



Ian W. Hunter | *Massachusetts Institute of Technology*

Ian W. Hunter, Ph.D., is Hatsopoulos Professor of Mechanical Engineering at Massachusetts Institute of Technology (MIT). Hunter's main areas of research are instrumentation, micro-robotics, medical devices and biomimetic materials. Over the years he and his students have developed many instruments and devices including: confocal laser microscopes, scanning tunneling electron microscopes, miniature mass spectrometers, new forms of Raman spectroscopy, needle free drug delivery technologies, nano- and micro-robots, micro-surgical robots, robotic endoscopes, high performance Lorentz force motors, and micro-array technologies for massively parallel chemical and biological assays. He has over 500 publications and has invented instruments and devices based on this research. This has led to over 150 issued and pending patents. His inventions have been used by numerous companies, and he has founded or co-founded over 20 companies. Hunter loves teaching and has been the recipient of several teaching awards at MIT.

Mikko Markus Hupa | *Åbo Akademi University*

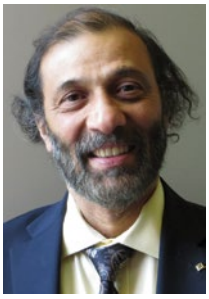
Mikko Markus Hupa, Ph.D., is president and professor of chemical engineering at the Åbo Akademi University in Turku, Finland. Hupa has been the head of a research group working with high-temperature chemistry and chemistry in combustion processes. He has worked intimately with industrial companies and international research partners to support the development of clean and reliable combustion technologies for demanding fuels, such as biomasses and industrial wastes. His work has resulted in around 400 reviewed journal papers, more than 40 Ph.D. theses, and a number of patents. Hupa has been president of the International Flame Research Foundation, an international organization with 250 member organizations in twenty countries in the area of industrial combustion. Hupa is fellow or honorary member of three scientific academies in Finland, a recent member of the Royal Swedish Academy of Engineering Sciences, and fellow of Technical Association of the Pulp and Paper Industry in the U.S.

Oliver C. Ibe | *University of Massachusetts, Lowell*

Oliver C. Ibe, Sc.D., is professor of electrical and computer engineering at the University of Massachusetts, Lowell. Ibe has made important contributions in seamless roaming in mobile wireless networks and in the methods to automatically partition communication networks for effective network management. He holds 10 U.S. patents in various telecommunication technologies, all of which have been licensed. He is a co-founder of two companies and author of five books on communication network technologies and six books on applied probability. He has also contributed to six books on communication networks and published more than 60 journal and conference papers. He was the managing editor of *Computer Networks and ISDN Systems*. Ibe is a senior member of IEEE and fellow of the African Academy of Sciences.

Eric D. Isaacs | *The University of Chicago*

Eric D. Isaacs, Ph.D., is executive vice president for research, innovation and national laboratories and Robert A. Millikan Distinguished Service Professor in the Department of Physics at The University of Chicago. He oversees a broad research portfolio, including Argonne and Fermilab, and an organization of diverse resources that enables faculty and students to tackle cutting-edge, sponsored research and to translate their discoveries for commercial impact. As Provost, he oversaw the growth of the faculty and educational programs at the intersection of many disciplines in the sciences, applied sciences, social science, humanities and professional schools. He served as director of Argonne, where he positioned the laboratory as a leader in addressing major scientific and technological challenges, including the next-generation coherent synchrotron source, exascale computing and energy storage. Isaacs holds three patents and is author or co-author of more than 150 scholarly publications, and is a fellow of APS.



Subramanian S. Iyer | *University of California, Los Angeles*

Subramanian (Subu) S. Iyer, Ph.D., is Distinguished Professor and Charles P. Reames Endowed Chair in the Electrical Engineering Department at University of California, Los Angeles and is Director of the Center for Heterogeneous Integration and Performance Scaling. Prior to that, he was an IBM Fellow. His key technical contributions included the development of the world's first SiGe base HBT, Salicide, electrical Fuses, embedded DRAM and 45nm technology node used to make the first generation of truly low power portable devices. He was among the first to commercialize bonded SOI for CMOS applications through a startup called SiBond LLC. He has published over 300 papers and holds over 70 patents and was a master inventor at IBM. His current technical interests and work lie in advanced packaging constructs for system-level scaling and new integration and computing paradigms as well as the long-term semiconductor and packaging roadmap for logic, memory and other devices. He has received several outstanding technical achievements and corporate awards at IBM. He is fellow of IEEE and APS, distinguished lecturer of the IEEE EDS and EPS, as well as treasurer of EDS, and member of the Board of Governors of IEEE EPS. Iyer is distinguished alumnus of IIT Bombay and received the IEEE Daniel Noble Medal for emerging technologies in 2012.

Joseph A. Izatt | *Duke University*

Joseph A. Izatt, Ph.D., is Michael J. Fitzpatrick Professor of Engineering at Duke University. Izatt is widely recognized for foundational contributions to the technology and applications of optical coherence tomography (OCT), a non-invasive micrometer-scale biomedical imaging technique. OCT has become the standard of care imaging modality for diagnosis and treatment planning of blinding diseases in ophthalmology. Izatt and his collaborators and trainees have made many pioneering contributions to OCT technology, its applications in ophthalmic, endoscopic, hand-held, and intrasurgical imaging, and its extensions for functional assessment of tissues. He has served on multiple editorial, review, and advisory boards, and was the founding editor-in-chief of OSA's open-access journal *Biomedical Optics Express*. He holds more than 60 U.S patents and has been cited over 32,000 times. Izatt is a fellow of AIMBE, SPIE, and OSA, and has won the Dastgheib Pioneer Award in Ocular Innovation and NVIDIA Global Impact Award.

William R. Jacobs, Jr. | *Albert Einstein College of Medicine*

William R. Jacobs Jr., Ph.D., is professor of microbiology and immunology at Albert Einstein College of Medicine and an HHMI investigator. Jacobs pioneered the use of molecular genetics by using mycobacteriophages to introduce foreign DNA into mycobacteria for the first time. Since then, he's used these phages to develop transformation systems, transposon systems, efficient allelic exchange systems, and rapid diagnostic tests for drug susceptibility of tuberculosis. Jacobs has collaborated with Dr. Betsy Herold at Einstein to develop a new vaccine that provides complete protection against herpes simplex viruses (HSV). Current efforts of his group are focused on using attenuated mycobacterial mutants and attenuated herpes viruses to generate vaccines against a variety of different diseases. He recently started the company X-Vax with Herold to develop an efficacious HSV vaccine and is in the process to start clinical trials. He has over 30 U.S. patents and published over 300 papers in peer-reviewed journals and was the editor of two books about the tuberculosis bacilli for ASM. Jacobs has been a member of NAS since 2013 and serves as an editor for the *Proceedings of the NAS*.

Rakesh K. Jain | *Massachusetts General Hospital and Harvard Unviersity*

Rakesh K. Jain, Ph.D., is Andrew Werk Cook Professor of Radiation Oncology (Tumor Biology) at Harvard Medical School, and director of the Steele Laboratories at Massachusetts General Hospital. He is widely known for groundbreaking contributions at the interface of engineering and oncology, including tumor microenvironment, drug delivery, and imaging; and for discovering principles guiding the development and novel use of drugs for cancer and non-cancerous diseases. An author of more than 690 publications, he holds seven U.S. and one foreign patents. He is among the top 1% cited researchers in clinical medicine, and has served or serves on the editorial boards of 24 journals. A recipient of more than 80 awards, Jain is a member of all three U.S. National Academies – NAS, NAE and NAM – and fellow of American Academy and AAAS; he is also the recipient of the U.S. National Medal of Science.

Stephen Albert Johnston | *Arizona State University*

Stephen Albert Johnston, Ph.D., directs the Center for Innovations in Medicine (CIM) at the Biodesign Institute, Arizona State University (ASU). CIM is unique in its focus on inventing disruptive technologies in biomedicine. The mission is to contribute to the transformation of medicine through technologies that allow prevention, early detection and new therapeutic treatment of disease. CIM is focusing on developing three of Johnston's inventions, including creating a universal, preventative cancer vaccine, developing a system for continuous, comprehensive, inexpensive health monitoring, and inventing a product to make new therapeutics and targeted anti-infectives. He was inventor/co-inventor of pathogen derived resistance, mitochondrial transformation, TEV protease system, the gene gun, gene immunization, expression library immunization, linear expression elements, synbodies and immunosignaturing. Johnston was professor and director of the Center for Biomedical Inventions at UT-Southwestern Medical Center and professor of biology and biomedical engineering at Duke University before moving to ASU.

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Ranu Jung, Ph.D., is WH Coulter Eminent Scholar Endowed Professor and Chair of the Department of Biomedical Engineering at Florida International University (FIU). Jung is a leader in neural engineering and computational neuroscience. Her team developed the first wirelessly-controlled, implantable, neural-interface system for restoring sensations to amputees and received an investigational device exemption from the FDA to conduct a first-in-human trial. Her honors include the FIU 2016 Outstanding Faculty Torch Award, 2011 Florida Boost Award, 2002 Kentucky Science and Engineering Award, and appointment as commissioner, Arizona Biomedical Research Commission. She holds seven U.S. patents and is founder of an R&D company; her publications include an edited book, over 130 research articles and book chapters, and a four-volume encyclopedia of computational neuroscience. Jung is fellow of AIMBE, senior member of IEEE and Society of Women Engineers, and elected member of the International Women's Forum.

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Brian L. Justus, Ph.D., is head of the optical physics branch at the U.S. Naval Research Laboratory in Washington, D.C. He is recognized for innovations in several fields, including nanotechnology, optical fiber technology, radiation sensitive optical materials, and radiation dosimetry based on both optically stimulated luminescence and laser-heated thermoluminescence mechanisms. In particular, he developed a fiber-optic-coupled, remote radiation dosimetry system that provides real-time, in vivo patient dose verification for patients undergoing external beam radiotherapy. Justus holds 30 U.S. patents and 22 foreign patents, five of which have been licensed to two companies. He has published 60 articles in peer-reviewed journals, co-authored three book chapters, and has served for over 12 years on the editorial board of the journal, *Optics Letters*. Justus is a fellow of OSA and is currently serving as a feature editor with *Optics Letters*.

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Alexander V. Kabanov, Ph.D., is Mescal Swaim Ferguson Distinguished Professor, director of Center for Nanotechnology in Drug Delivery and co-director of Carolina Institute for Nanomedicine at University of North Carolina at Chapel Hill. He conducted pioneering research in nanomedicine and drug delivery using polymeric micelles, block ionomer complexes, nanogels and exosomes for delivery of small drugs, nucleic acids and polypeptides to treat cancers and diseases of the central nervous system. He co-invented the first polymeric micelle drug to enter clinical trials. Overall his work led to establishment of polymeric micelles as only the second (after liposomes) clinically validated and marketed nanotechnology for drug delivery. He holds 34 U.S. patents and co-founded several startup companies. He has published over 300 scientific papers and was named Thomson Reuters highly cited scientist. Kabanov is a member of Academia Europaea and fellow of AIMBE.

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Aravinda Kar, Ph.D., is professor of optics in CREOL, the college of optics and photonics, mechanical and aerospace engineering, and materials science and engineering at the University of Central Florida. Kar has made significant contributions to invention and innovation in the areas of laser advanced manufacturing, materials processing, advanced materials development, optical modeling for laser beam engineering and thermos-fluid modeling for manufacturing science motivated by advancing the laser processing science and technology to new frontiers. He is the recipient of the Teaching Incentive Program Award. He holds 29 U.S. patents that have been licensed to various companies and has published 280 articles in technical journals and conference proceedings, a book on *Theory and Application of Laser Chemical Vapor Deposition*, four book chapters and serves on the editorial boards of two peer-reviewed journals. Kar is a fellow of Laser Institute of America.

Kazunori Kataoka | *The University of Tokyo*

Kazunori Kataoka, Ph.D., is director of the General of Innovation Center of NanoMedicine at Kawasaki Institute of Industrial Promotion and professor at Policy Alternatives Research Institute of The University of Tokyo. Kataoka invented novel drug delivery systems of polymeric micelles made by the self-assembly of block copolymers, and revealed their utility in the treatment of intractable diseases, including cancer. He has received several awards including the Clemson Award from the Society for Biomaterials, Founder's Award from the Controlled Release Society, Humboldt Research Award from Alexander von Humboldt Foundation, Leo Esaki Prize, and Gutenberg Research Award from the University of Mainz. He holds 27 U.S. patents and 236 foreign patents that have been licensed to several companies, and is co-founder of five startup companies. Kataoka serves as editor for *Journal of Biomaterials Science, Polymer Edition* and associate editor for *ACS Nano*. He has published over 500 peer-reviewed articles, and is a foreign member of NAE.

Howard E. Katz | *Johns Hopkins University*

Howard E. Katz, Ph.D., is professor and immediate past chair of materials science and engineering at Johns Hopkins University. His research interests include organic, hybrid, and interfacial electronics, with applications in chemical and biomolecule sensors, dielectric heterostructures, compound semiconductor-organic hybrid structures, self-assembled nanostructures, and thermoelectric energy conversion. He has published over 280 papers and obtained over 50 patents, with an H-index above 70. He is a fellow of four professional societies and has two R&D100 Awards. He earned a bachelor of science from MIT and doctorate in organic chemistry from UCLA. Katz was distinguished member of technical staff at Bell Laboratories and president of MRS. He served as the DOE Materials Chemistry meeting chair and an NIH panel member in 2014, has been on multiple company and journal advisory boards, and is presently an elected member of the Johns Hopkins University Academic Council.

Arie E. Kaufman | *Stony Brook University, SUNY*

Arie E. Kaufman, Ph.D., is Distinguished Professor of computer science at Stony Brook University and served as chair of the department from 1999 to 2017. Kaufman is most well-known for developing virtual colonoscopy, a colon cancer-screening technique that has been licensed, FDA approved and commercialized; and the Reality Deck, the largest resolution immersive visualization facility, enabling visual analytics of big data. He received the prestigious IEEE Visualization Career Award and was inducted into the LI Technology Hall of Fame. He holds 33 U.S. patents and 66 foreign patents, 52 of which have been licensed to nine companies. He is the co-founder of Viatronix, Inc., and has published in excess of 330 refereed papers, books, chapters, and more than 300 conference presentations, and was the founding editor-in-chief of *IEEE Transaction on Visualization and Computer Graphics*. Kaufman is a member of the European Academy of Sciences and fellow of IEEE and ACM.

Donald B. Keck | *University of South Florida*

Donald B. Keck, Ph.D., is professor at the Institute for Advanced Discovery & Innovation, University of South Florida. Keck with colleagues, Robert Maurer and Peter Schultz, invented the materials and process technology and demonstrated the first low-loss optical fibers. This work enabled today's high-speed optical communications network and without which the Internet could not exist. He is recipient of the National Medal of Technology, Department of Commerce American Innovator Award, and OSA/IEEE John Tyndall Award. He holds 38 U.S. and numerous foreign patents. He has published more than 150 articles, five books and served as editor of the OSA and IEEE *Journal of Lightwave Technology*. Keck is fellow of IEEE, honorary member of OSA, inductee of NIHF, and member of NAE. He is a Michigan State University distinguished alumnus, and holds an honorary doctorate of science from Rensselaer Polytechnic Institute.

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Jeffery W. Kelly, Ph.D., is Lita Annenberg Hazen Professor of Chemistry at The Scripps Research Institute. Kelly discovered the first regulatory-agency-approved drug for the treatment of familial amyloid polyneuropathy, a neurodegenerative disease caused by the aggregation of transthyretin. He is the recipient of numerous awards, most recently, the AIC Chemical Pioneer Award, Jacob and Louise Gabbay Award in Biotechnology and Medicine and the RSC Jeremy Knowles Award in 2016. He holds 13 U.S. patents and 17 foreign patents that have been licensed to three companies. He is the founder of three biotech companies: FoldRx Pharmaceuticals (acquired by Pfizer), Proteostasis Therapeutics (NASDAQ), and Misfolding Diagnostics. Kelly has more than 330 publications (*h*-index >90) and has served on seven journal editorial boards. He is a fellow of the RSC and a member of the American Academy.

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David V. Kerns, Jr., Ph.D., is Franklin and Mary Olin Distinguished Professor Emeritus of electrical and computer engineering at Olin College of Engineering. After holding prestigious academic positions at Auburn and Vanderbilt universities, Kerns was Olin's founding provost. He is recognized as an engineering education innovator and co-recipient of the NAE Bernard M. Gordon Prize. In addition to being a highly regarded researcher and prolific author with three textbooks and over 100 technical articles and publications, Kerns has also been a creative inventor and technology entrepreneur. He has licensed multiple patents personally and in connection with Vanderbilt University on the use of nanodiamond technology to enhance thermal management in liquid cooling systems, and in high-temperature, extreme environment electronics. Kerns has 12 issued U.S. patents and more pending, of which many have been licensed as commercial products to companies including some that he has founded himself such as InSouth Microsystems and FemtoScience, Inc.

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Robert S. Keynton, Ph.D., is Interim Executive Vice President for Research & Innovation, Professor and Lutz Endowed Chair of Bioengineering at the University of Louisville. Keynton's research focuses on lab-on-a-chip devices and microsensors for chemical and biomedical applications as well as bionanotechnology. He has led a number of highly competitive innovation programs at Louisville including the Wallace H. Coulter Foundation Translational Research Partnership, NSF I-Corps Site and AWARE:ACCESS – a model program for building innovation capacity through diversity. He received the Outstanding Young Scientist Award from HSEMB and was recognized by BBC, ACS, MIT Technology Review, and Institute of Physics for his work. His research has resulted in eight issued U.S. and two foreign patents that have been licensed to four companies with one of these technologies currently in human clinical trial. He is co-founder of Assenti, LLC, UltraTrace Detection, LLC, and CoulSense, LLC. He has published 145 refereed journal/conference papers and 9 book chapters. Keynton is fellow of AIMBE and member of AAAS, ASME, BMES, and IEEE.

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Dennis K. Killinger, Ph.D., is Distinguished University Professor Emeritus of Physics at the University of South Florida. Killinger was an early pioneer in laser radar/lidar, tunable laser development and spectroscopy, and laser remote sensing of the atmosphere. He has made seminal contributions which include developing new lasers and sensing techniques for detection of atmospheric methane, CO, ammonia, and CO2, ultra-sensitive laser fluorescence detection of trace organics and leached plasticizers (BPA) in drinking water, and laser remote sensing of trace explosives. His lidar technique to measure CO2 concentrations in the atmosphere is now used by NASA and NOAA for global CO2 measurements. His group also developed and licensed HITRAN-PC© software now used world-wide for analysis of laser absorption and light transmission through the atmosphere. Killinger, who is a founding member of the NAI Board of Directors, has served as associate editor for *Optics Letters* and *Applied Optics*. He has several hundred publications, eight patents, and is a fellow of OSA, SPIE, and AAAS.

Kwang Jin Kim | *University of Nevada, Las Vegas*

Kwang Jin Kim, Ph.D., is NV Energy Professor of Energy and Matter and director of the Active Materials and Smart Living Laboratory of the mechanical engineering department at University of Nevada, Las Vegas. Kim's research centers on finding unique properties of materials related to smart materials and energy systems. He has authored and co-authored more than 380 technical publications including 180 referred journal papers and three books. He holds three issued U.S. patents and several patent-pending products in the field of smart materials and energy systems that have been licensed to two companies. Kim has received several awards for research excellence and serves on the editorial board of *Smart Materials and Structures* and *Scientific Reports*. Kim is a fellow of ASME.

Wayne H. Knox | *University of Rochester*

Wayne H. Knox, Ph.D., is professor of optics, physics, materials science and visual science at the University of Rochester (UR). His previous academic positions at UR include associate dean of engineering and director of The Institute of Optics. He started at Bell Laboratories in 1984 as a postdoctoral researcher, advancing to director of the advanced photonics research department. He is a leading researcher in the field of ultrafast laser technology, science and applications, and has received numerous awards including the NAS W.O. Baker Award, AAPT Richtmyer Award, and R.B. Goergen Teaching Award. He has published over 150 publications and holds 50 U.S. patents and 153 foreign patents. Knox is chief science officer of Clerio Vision, Inc., a startup company that he co-founded, and is fellow of OSA and APS.

Philip T. Kortum | *Rice University*

Philip T. Kortum, Ph.D., is associate professor at Rice University. His primary interests are in the research and development of highly usable systems in the voting and mobile computing domains and in the characterization of measures of usability and usable systems. Prior to joining Rice University he worked for over 15 years in the defense and telecommunications industry, where he researched and helped field award-winning user-centered systems. He has authored two books and published over 90 peer-reviewed scientific papers. He currently holds 53 U.S. patents, with contributions in hardware design, image quality and user interfaces. Kortum is a member of the Human Factors and Ergonomics Society and ACM.

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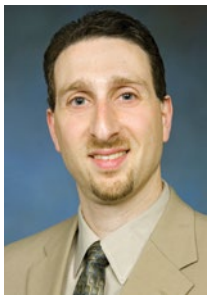
Philip T. Krein, Ph.D., is Grainger Endowed Chair Emeritus in electric machinery and electromechanics and director of Grainger Center for Electric Machinery and Electromechanics at University of Illinois-Champaign. He is also executive dean of the Zhejiang University-University of Illinois Institute for Engineering in Haining, China. His current research interests include power electronics, machines, drives, electric transportation, and electrical energy, with emphasis on nonlinear control approaches. He received the IEEE William E. Newell Award in Power Electronics. Krein was president of IEEE Power Electronics Society, and founder and member of the board of directors of SolarBridge Technologies, Inc., a developer of long-life integrated inverters for solar energy, and now part of Sunpower. He holds 34 U.S. patents with additional patents pending. He is editor-at-large of *IEEE Transactions on Power Electronics*, associate editor of *IEEE Journal of Emerging and Selected Topics in Power Electronics*, and chair of IEEE Transportation Electrification Community. Krein is member of NAE and helped initiate the International Future Energy Challenge, a student competition involving fuel cell power conversion and energy efficiency.



John J. La Scala | *U.S. Army Research Laboratory*

John J. La Scala, Ph.D., is team leader for polymer additive manufacturing at the U.S. Army Research Laboratory. He is a Department of Defense leader in the area of environmentally friendly high performance polymers, composites, and coatings, and as such is the Army Pollution Prevention Co-Chair. He is the co-recipient of the 2013 Presidential Green Chemistry and Engineering Challenge Award for Renewable Thermosets and the 2011 Secretary of Defense Environmental Excellence in Weapon System Acquisition for Sustainable Painting Operations for the Total Army. He holds nine U.S. patents and six foreign patents, five of which have been licensed to two companies for development of high performance environmentally friendly resins for polymer matrix composites. He also has a dozen U.S. and foreign patent applications under review and has published over 50 open literature publications. La Scala is a member of ACS and AICHE.

Jonathan J. Langberg | *Emory University*

Jonathan J. Langberg, M.D., is professor of medicine and director of clinical cardiac electrophysiology at Emory University School of Medicine. Langberg is a pioneer in the field of radiofrequency catheter ablation of cardiac arrhythmias, and published the first series of patients treated in the U.S. He has also authored seminal papers regarding the biophysics of cardiac ablation and the use of other types of ablative energy sources. He is the recipient of 17 patents, including a balloon ablation device that has become the standard of care for catheter ablation of atrial fibrillation. He was co-founder of Atrionix, Inc. and Mitralife, Inc., startups dedicated to minimally invasive treatment of heart disease. Langberg has authored over 160 peer-reviewed papers and served on numerous scientific advisory and editorial boards. He is a member of the American College of Physicians, American College of Cardiology, and Heart Rhythm Society.

Fred C. Lee | *Virginia Tech*

Fred C. Lee, Ph.D., is Distinguished Professor Emeritus at Virginia Tech. He was the founder and director of the Center for Power Electronics Systems (CPES) from 1983 to 2017. Lee led a program that encompasses research, outreach, industry collaboration, and technology transfer. The CPES's renowned Industry Partnership Program enables its principal members to sponsor graduate fellowships and provides them the opportunity to direct research, and access to a pool of IPs generated collectively by all industry-funded fellowships on a royalty-free and non-exclusive basis with seamless technology transfer. To date, more than 215 companies worldwide have benefited from this industry partnership program. The center has been cited by NSF as a model engineering research center for its outcomes. He is a member of NAE, academician of Taiwan's Academia Sinica, and foreign member of the Chinese Academy of Engineering. Lee is a recipient of the 2015 IEEE Medal in Power Engineering.

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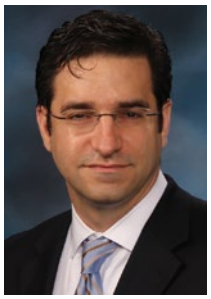
Sang Yup Lee, Ph.D., is Distinguished Professor and dean at Korea Advanced Institute of Science and Technology (KAIST). Lee is the recipient of National Order of Merit, National Science Medal, Ho-Am Prize, James Bailey Award, International Metabolic Engineering Award, Marvin Johnson Award, and many other awards. He holds 60 U.S. patents and more than 540 foreign patents, many of which are licensed. He has published more than 570 journal papers and 80 books/book chapters, and serves as editor-in-chief of *Biotechnology Journal* and editor and board member of many journals. He is a fellow of AAAS, AAM, AIMBE, World Academy of Sciences, Korean Academy of Science and Technology, NAE Korea, among others. Lee is one of only a few people elected as foreign member to both NAE and NAS.



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Eric C. Leuthardt, M.D., is a neurosurgeon and professor in the departments of neurological surgery, biomedical and mechanical engineering, and director of the Center for Innovation in Neuroscience and Technology and the Brain Laser Center at Washington University in St. Louis (WUSTL). Leuthardt specializes in brain tumors, gamma knife, surgical treatment of epilepsy, and inoperable tumors using Monteris Neuroblate. He is known for brain mapping techniques that allow him to remove brain tumors while preserving speech and motor function. He is founder of six startup companies, including Neurolutions, and co-inventor of the Ipsi Hand — a device used to restore function to patients with a neurological injury. He has 1,706 U.S. patents for medical devices and brain-computer interface technologies and is WUSTL Chancellor's Fellow for Innovation and Entrepreneurship. In addition to over 100 peer reviewed publications, he is the author of *RedDevil 4* and *Limb*, editor-in-chief of *Frontiers in Neuroprosthetics*, and serves on numerous advisory committees. Leuthardt is inaugural fellow of the Health Innovators Fellowship and member of the Aspen Global Leadership Network.

Nathan S. Lewis | *California Institute of Technology*

Nathan S. Lewis, Ph.D., is George L. Argyros Professor of Chemistry at the California Institute of Technology where he has been a faculty member since 1988. Lewis is best known for developing artificial photosynthesis technology that enables sustainable production of hydrogen fuel using sunlight, water and carbon dioxide as well as an "electronic nose" for artificial olfaction. Currently, he serves as editor-in-chief of *Energy and Environmental Science,* a journal focusing on sustainable energy research, published by RSC. He is the recipient of the Princeton Environmental Award and ACS Award in Pure Chemistry. He holds approximately 70 U.S. and foreign patents. Lewis has authored more than 500 papers and mentored more than 100 graduate students and postdoctoral researchers.

Tsu-Jae King Liu | *University of California, Berkeley*

Tsu-Jae King Liu, Ph.D., is TSMC Distinguished Professor of Microelectronics in the department of electrical engineering and computer sciences at the University of California, Berkeley. Liu is best known for the development of polycrystalline silicon-germanium thin film technology for applications in integrated circuits and microsystems, and for co-developing the three-dimensional "FinFET" transistor design that is used in all leading-edge microprocessor chips today. Her awards include the DARPA Significant Technical Achievement Award (2000) for development of the FinFET, IEEE Kiyo Tomiyasu Award (2010) for contributions to nanoscale MOS transistors, memory devices, and MEMs devices, Semiconductor Industry Association Outstanding Research Award (2014), and Semiconductor Research Corporation Aristotle Award (2016). She has authored or co-authored over 500 publications and holds over 90 patents. Liu is a fellow of IEEE and member of NAE.

Chih-Yuan Lu | *National Taiwan University*

Chih-Yuan (C.Y.) Lu, Ph.D., is Distinguished Chair Professor of physics at National Taiwan University. Lu is a prolific inventor and an innovative contributor in the field of electronic devices and material, semiconductor integrated circuits technology. He is the recipient of IEEE Frederik Philips Award, IEEE Third Millennium Medal, Taiwan Presidential Science Prize, National Science and Technology Medal from Taiwan Prime Minister, and The World Academy of Sciences (TWAS) Prize in Engineering Sciences, among others. Lu holds 66 U.S. patents and more than 160 foreign patents; he founded three very successful startup companies. Lu has published over 480 peer reviewed technical papers and has served as an editor for *IEEE Transactions on Electronic Devices*. Lu is an ITRI Laureate, life fellow of IEEE, and fellow of APS.

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Michele Marcolongo | *Drexel University*

Michele Marcolongo, Ph.D., P.E., is department head and professor of materials science and engineering, biomedical engineering and mechanical engineering at Drexel University. Marcolongo has made contributions to polymeric orthopaedic biomaterials and medical devices, including finger joint replacements (product sold by Johnson & Johnson for twenty years) and spinal disc replacements. She co-founded three companies including, Gelifex, which was sold to a major orthopaedics manufacturer and Invisalert Solutions. She authored a book, *Academic Entrepreneurship*, a "how-to" on translating research from discovery to commercialization for academics. Marcolongo is a fellow of AIMBE and Alpha Sigma Mu.

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Laura Marcu, Ph.D., is professor of biomedical engineering and neurological surgery at University of California, Davis. She has made significant contributions to the development of biophotonic techniques for label-free tissue characterization, specifically clinical translation of fluorescence lifetime-based instrumentation. Marcu pioneered the application of fluorescence lifetime imaging (FLIM) to intraoperative diagnosis of tumors during surgical interventions including brain tumors and head and neck cancer. She developed the first practical intravascular FLIM-IVUS catheter for in vivo assessment of coronary vessels and diagnosis of atherosclerotic cardiovascular disease. She holds seven patents, published over 170 articles and is co-editor of the textbook, *Fluorescence Lifetime Spectroscopy and Imaging: Principles and Applications in Biomedical Diagnostics*. Currently she serves as associate editor of the *Biomedical Optics Express* and is an editorial board member for the *Journal of Biophotonics*. Marcu is a fellow of OSA, SPIE, BMES, and AIMBE.

R. Kenneth Marcus | *Clemson University*

R. Kenneth Marcus, Ph.D., is professor of analytical chemistry at Clemson University. Marcus' research activities have centered on the development of novel chemical instrumentation across the spectrum of atomic and mass spectrometries, as well as liquid chromatography stationary phases targeted for biomacromolecule separations. He holds 11 U.S. patents, a number of which have been commercially successful. He serves on the editorial advisory board for three international journals and was the recipient of the 2001 S.C. Governor's Award for Excellence in Science Research. Marcus is a fellow of RSC, AAAS, and Society for Applied Spectroscopy.

Gary S. Margules | *Nova Southeastern University*

Gary S. Margules, Sc.D., is vice president of research and technology transfer at Nova Southeastern Unversity (NSU). He has several decades of business experience in technology management, academic technology transfer, strategic planning, corporate ventures, R&D/project management, licensing, regulatory affairs, clinical trials, and product development. Prior to joining NSU, he spent nearly 30 years in research management, including eight years with Cordis Corporation as senior scientist, three years with Pfizer Hospital Products as assistant director of technology development, three years with Senmed Medical Ventures as director, medical technology, and 15 years with the University of Miami as assistant vice provost for technology transfer and industry research. An inventor on four issued U.S. patents, he has also helped many inventors identify, patent and commercialize their inventions throughout his career. Margules serves as the NSU NAI institutional member representative.

Mary Helen McCay | *Florida Institute of Technology*

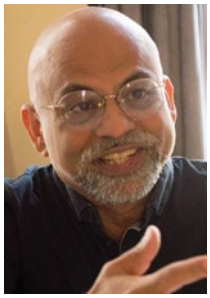
Mary Helen McCay, Ph.D., is university research professor and director of the National Center for Hydrogen Research at Florida Institute of Technology (Florida Tech). Previously, she served as a NASA astronaut alternate and principal investigator at Marshall Space Flight Center and was awarded the Scientific Achievement Medal. McCay was professor of engineering science and mechanics, chair of the Center for Laser Applications, and adjunct professor of metallurgical engineering and materials science at the University of Tennessee (UT) Space Institute. Her pioneering research in lasing-induced surface improvement earned her 22 of her 24 patents, and she received the American Museum of Science and Energy Award for Technical Achievement, and UT Wheeley Award for Excellence in Technology Transfer for laser innovations and UT Chancellor's Award for Creativity in Research. The founding president of Florida Tech's NAI Chapter, McCay has published over 130 technical articles and serves as reviewer on eight peer-reviewed journals.

Kishor C. Mehta | *Texas Tech University*

Kishor C. Mehta, Ph.D., is P.W. Horn Professor of Civil Engineering at Texas Tech University. Mehta pioneered the development and application of technology to document, analyze, understand and design tornadoes. His significant contributions are in development of EF-scale to rate intensity of tornadoes (currently used by the U.S. National Weather Service), establishing criteria for design of tornado shelters in schools and residences, understanding wind-structure interaction through experiments in natural wind, and guiding national standards for wind loads on buildings and structures as chairman of the committee. He is recipient of the Jack E. Cermak Medal and Walter P. Moore award from ASCE. He holds three patents related to vibration of cables in wind and rain. He has published 160 articles, six books and book chapters and is on the editorial advisory board for *Non-Synoptic Wind Storms*. Mehta is a member of NAE and distinguished member of ASCE.

Deirdre R. Meldrum | *Arizona State University*

Deirdre R. Meldrum, Ph.D., is Distinguished Professor of Biosignatures Discovery; professor of electrical engineering; director, Center for Biosignatures Discovery Automation, the Biodesign Institute; and previous dean for the Ira A. Fulton Schools of Engineering at Arizona State University (ASU). Meldrum is a pioneer in live single cell analysis, heading the first NIH Center of Excellence in Genomic Sciences, Microscale Life Sciences Center, from 2001-2013. She is the recipient of a Presidential Early Career Award for Scientists and Engineers, NIH Special Emphasis Research Career Award, and is a charter member of the ASU NAI Chapter. She has 35 U.S. patents including seven issued, all licensed or under an option agreement. She is founder of Clotho, Inc., and has published 231 peer-reviewed publications including 122 journal articles, and served as a founding senior editor for *IEEE Transactions on Automation Science and Engineering*. Meldrum is fellow of AAAS, IEEE, and AIMBE.



Bhubaneswar Mishra | *New York University*

Bhubaneswar (Bud) Mishra, Ph.D., is professor of computer science, mathematics, cell biology and engineering at New York University's Courant Institute, School of Medicine and Tandon School of Engineering. Mishra is an inventor, mentor and educator in a wide variety of fields ranging from computer hardware, robotics and biotechnology to logic, algebra and game theory. He holds 21 issued and 23 pending U.S. and foreign patents some of which have been licensed to several companies. He is the founder of more than three startup companies (OpGen, Seqster, MRTechnology) and advisor to several others. He has authored more than 200 archived publications and a textbook on algorithmic algebra. Mishra is a fellow of IEEE, ACM, AAAS, as well as a distinguished alumnus of India Institute of Technology and NYSTAR Distinguished Professor.

Gregory Möller | *University of Idaho*

Greg Möller, Ph.D., is professor of environmental chemistry and toxicology at the University of Idaho. Möller's research and teaching focus on sustainable water and food systems. He is a Fulbright Scholar and a fellow of the International Union of Pure and Applied Chemistry. Möller is the recipient of the national teaching award from APLU and USDA National Institute of Food and Agriculture. He received the Water Environment Federation Eddy Medal for vital contributions to water research. His technologies appear in the list "25 Innovations that Changed the World" by AUTM. Möller's "Clean Water Machine Team" are semi-finalists in the $10 million Everglades Foundation George Barley Prize, addressing global phosphorus pollution. Möller has six U.S. patents licensed to industry, and three patents pending. These innovations are currently treating billions of gallons of water each year, giving millions of people a softer footprint on the planet.

Clayton Daniel Mote, Jr. | *University of Maryland*

Clayton Daniel Mote, Jr., Ph.D., is president of NAE, and Regents Professor on leave from the University of Maryland where he served as president from 1998-2010. Mote is recognized for the impact he has made as a scholar, inventor, educator, mentor, and leader who has advanced higher education, innovation and the engineering profession. He is the recipient of the ASME Medal, NAE Founders Award, and Humboldt Prize of the Federal Republic of Germany. He has authored/co-authored over 300 publications, and holds four U.S. patents. Mote is an honorary fellow of ASME, honorary member of ASEE, and fellow of American Academy, American Academy of Mechanics, ASA, and AAAS. He was elected member of NAE in 1988 and president in 2013. Mote was elected to the Chinese Academy of Engineering, and as honorary academician of the Academia Sinica, Taiwan.

Shouleh Nikzad | *NASA's Jet Propulsion Laboratory, Division of California Institute of Technology*

Shouleh Nikzad, Ph.D., is senior research scientist, principal engineer, lead for the Advanced Detector, Systems and Nanoscience Group, co-lead and technical director for the medical engineering forum at NASA's Jet Propulsion Laboratory, and visiting faculty at California Institute of Technology. She holds 17 U.S. patents many of which have been licensed by the imaging industry. Her inventive work has resulted in multiple awards and has achieved high performance in ultraviolet imaging technology enabling new science. Her pioneering work on human-eye inspired curved image sensors resulted in patent licensed by several companies. She has over 100 publications and is associate editor in *Journal of Astronomical Telescopes Instruments & Systems*, lead guest editor for *Neurophotonics*, on editorial advisory board for *Journal of Electronic Materials*, and past associate editor in *NeuroImage*. Nikzad is the former president for Society for Brain Mapping and Therapeutics, and is a fellow of SPIE and APS.

John R. Nottingham | *Case Western Reserve University and Cleveland Clinic*

John R. Nottingham, Ph.D., is trustee of Cleveland Clinic, advisor to Case Western Reserve University, and co-president of Nottingham Spirk, a leading product innovation firm. Nottingham has co-invented and commercialized hundreds of products with combined sales of over $50 billion including Crest SpinBrush: the largest selling powered toothbrush line, Swiffer Sweep+Vac, Axe Bullet Body Spray, Dirt Devil, Dutchboy Twist & Pour, ViewRay MRI and Medtronic EC Vue. He is the recipient of numerous awards including Ohio Academy of Science Patent Impact Award, Edison Gold Award, DuPont Gold Award, IDSA Gold Award, World Presidents Organization Award, Inside Business Hall of Fame and EY Entrepreneur of the Year. He is a lead inventor on over 300 patents which have been licensed to 31 companies. Nottingham is co-founder of 42 venture companies, many of which have been acquired by major corporations.

M. Parans Paranthaman | *Oak Ridge National Laboratory & University of Tennessee, Knoxville*

M. Parans Paranthaman, Ph.D., is corporate fellow and leader of the Materials Chemistry Group at Oak Ridge National Laboratory with a joint faculty appointment at the University of Tennessee, Knoxville. Paranthaman is recognized for his synthesis and fabrication skills to create new materials and technology to solve energy science problems. His contributions have impacted the field of materials chemistry and applied technology, which has influenced the research of many scientists worldwide. He has won three DOE outstanding mentor awards, seven R&D 100 Awards and three national and two regional Federal Laboratory Consortium Awards. He has authored or co-authored over 390 journal publications and 15,000 citations with an "h-index" of 60. He holds 37 U.S. patents with 26 U.S. patent applications related to superconductivity, energy storage and solar cells, and has commercialized and licensed several inventions to more than six companies, including American Superconductor, SuperPower, and Samsung. Paranthaman serves as the associate editor for the *Journal of American Ceramic Society* and is fellow of MRS, AAAS, ACerS, ASM International, and the Institute of Physics, London.

Christopher R. Parish | *Australian National University*

Christopher R. Parish, Ph.D., is group leader at John Curtin School of Medical Research at Australian National University. Parish is an immunologist and cancer biologist whose discoveries resulted in better vaccine design and development of novel, carbohydrate-based, anti-cancer drugs. He is the recipient of the Gottschalk Medal (1979), Ramaciotti Medal for Excellence in Biomedical Research (2005), Burnet Oration and Medal (2007), NHMRC Marshall and Warren Award (2010) and the Canberra Citizen of the Year Award (2014). He holds 17 U.S. and 22 foreign patents that have been licensed to 13 companies. He is the founder of three startup companies: Biotron, Lipotek and Beta Therapeutics. He has published 313 articles, two books and 28 book chapters, and was editor-in-chief of *Immunology and Cell Biology* for 19 years. Parish is a fellow of the Australian Academy of Technological Sciences and Engineering and Australian Academy of Health and Medical Research.

Peter L.T. Pirolli | *Florida Institute for Human and Machine Cognition*

Peter L.T. Pirolli, Ph.D., is senior research scientist at Florida Institute for Human and Machine Cognition. His research involves cognitive science, artificial intelligence, and human-computer interaction, with applications in digital health, sensemaking, and information foraging, among others. Previously, he was at the Palo Alto Research Center and professor in the School of Education at the University of California, Berkeley. He currently holds 76 U.S. patents in the areas of digital property rights, information visualization, web interaction, and digital health; the most significant of which led to a spinout company for digital content protection, ContentGuard. He has published over 100 refereed articles and serves as associate editor for the journal *Human-Computer Interaction*. He is a fellow of AAAS, APA (Div 3 and Div 21), Association for Psychological Science, NAE, and ACM Computer-Human Interaction Academy.

Daniel A. Portnoy | *University of California, Berkeley*

Daniel A. Portnoy, Ph.D., is professor in biochemistry, biophysics, and structural biology; molecular and cell biology; and infectious diseases and vaccinology, within the School of Public Health at the University of California, Berkeley. Portnoy holds the Edward E. Penhoet Distinguished Chair in Global Public Health and Infectious Diseases, and has received many honors including the NIH MERIT Award, and Eli Lilly and Company Research Award in Microbiology and Immunology from ASM. He holds 21 U.S. patents, most of which have been licensed to the Regents of the University of California. He also has two pending U.S. patents related to his research on *Listeria monocytogenes* and its use as an attenuated, recombinant vaccine vector for infectious disease applications and cancer immunotherapy. Portnoy has been awarded research support from NIH, including for a consortium of investigators in the Bay Area studying intracellular pathogens and innate immunity. He has published 116 peer-reviewed research articles, 36 reviews and chapters, and has served on the editorial boards of numerous journals. Portnoy is a consultant and SAB member of Aduro Biotech and Bell Biosystems, and elected fellow of AAM and member of NAS.

Dennis W. Prather | *University of Delaware*

Dennis W. Prather, Ph.D., is Endowed Professor in the electrical and computer engineering department at University of Delaware. Prather's research focuses on the theoretical and experimental aspects of RF-photonic elements and their integration into imaging, communications as well as radar systems for broadband applications. He began his professional career by enlisting in the US Navy in 1982, where he still serves in the reserves and holds the rank of CAPT (O-6) as an Engineering Duty Officer. He was previously a senior research engineer with the Army Research Laboratory, where he worked on optical devices and architectures for information processing. Prather has authored or co-authored over 500 scientific papers, holds over 30 patents, written 14 books/book-chapters and graduated over 50 master's and doctoral students.

Paul R. Prucnal | *Princeton University*

Paul R. Prucnal, Ph.D., is professor of electrical engineering at Princeton University. Prucnal is the inventor of the Optical Counter-Phase System for RF Interference Cancellation, the first device to cancel in-band jamming of radio signals for defense and commercial wireless communications, and the Terahertz Optical Asymmetric Demultiplexer, an ultrafast optical switch for multiplexing and routing in fiber-optic telecommunication networks. He is the recipient of the Rudolf Kingslake Medal from SPIE, Gold Medal from Faculty of Mathematics, Physics, and Informatics at Comenius University, and President's Award for Distinguished Teaching at Princeton. He holds 26 U.S. patents and one foreign patent, 19 of which have been licensed to six companies. Prucnal is co-founder of Bascom Hunter Technologies, a company that has commercialized advanced wireless interference-cancellation technology. He has published 300 journal papers, two books, and 30 book chapters. Prucnal is a fellow of IEEE and OSA.

Nirmala Ramanujam | *Duke University*

Nirmala (Nimmi) Ramanujam, Ph.D., is professor of biomedical engineering and director of Center for Global Women's Health Technologies at Duke University. Ramanujam leads a multi-disciplinary translational research program focused on the development of novel optical technologies for noninvasive or minimally invasive assessment of breast and cervical cancer. In October 2013, she founded the Global Women's Health Technologies Center, a partnership between the Pratt School of Engineering and the Duke Global Health Institute. The center's mission is to increase research, training and education in women's diseases, with a focus on breast and cervical cancer. She holds 19 U.S. patents, seven of which have been licensed to Zenalux, a company which she founded. She has published 106 peer reviewed articles, 12 book chapters, and one edited book. Ramanujam is a fellow of the Society of Photo-Optical Instrumentation Engineers, AIMBE, and OSA.

Jennifer L. Rexford | *Princeton University*

Jennifer L. Rexford, Ph.D., is Gordon Y.S. Wu Professor of Engineering and chair of computer science at Princeton University. Before joining Princeton, she worked for eight years at AT&T Labs Research. Rexford's research at AT&T set the groundwork for managing Internet backbone networks, including measurement (of the traffic, topology, and routing), modeling (computing traffic matrices and optimizing routing), and control (configuring IP routers). These techniques were in daily use at AT&T for many years, and became a prevalent "design pattern" for network management. She is a named inventor on 21 issued U.S. patents. She co-authored the book *Web Protocols and Practice* and served as chair of ACM SIGCOMM. She received the ACM's Grace Murray Hopper Award for outstanding young computer professional, ACM Athena Lecturer Award, and NCWIT Harrold and Notkin Research and Graduate Mentoring Award. Rexford is a fellow of ACM, IEEE, American Academy, and member of NAE.

Kenner C. Rice | *National Institutes of Health*

Kenner C. Rice, Ph.D., is chief of the section on drug design and synthesis in the National Institute on Drug Abuse, National Institutes of Health. Rice is widely recognized as a leader in the medicinal and organic chemistry of drug abuse research, which has provided potential medications, new research tools, and valuable technology. He is the recipient of numerous research awards including the Chemical Society of Washington Hillebrand Prize, ACS Division of Medicinal Chemistry Award, Bristol Myers-Squibb Smissman Award in Medicinal Chemistry, and Nathan B. Eddy Award of the College on Problems of Drug Dependence. He was inducted into the ACS Medicinal Chemistry Hall of Fame. He holds 46 patents and is author or co-author of 825 articles and book chapters, and has served as scientific reviewer for 34 research journals. Rice is a member of Federal Senior Biomedical Research Service, a charter fellow of College on Problems of Drug Dependence, and elected member of Cosmos Club in Washington, DC.

Camillo Ricordi | *University of Miami*

Camillo Ricordi, M.D., is professor and director of the Diabetes Research Institute and Cell Transplant Program at the University of Miami. Ricordi's contributions include the development of the method for large scale production of human pancreatic islets and strategies for immunomodulation and tolerance induction. He performed the first series of successful clinical islet allotransplants to reverse diabetes and is chairperson of the NIH CIT Consortium that completed the first FDA Phase III trial of islet transplantation. He has received numerous honors including being Knighted in Italy. He has authored over 1,000 scientific publications, with over 37,000 citations and has been awarded 22 U.S. patents and four foreign patents. Founder of Converge Biotech Inc. and Ophysio Inc., he is also on the advisory board of several other biotech corporations. Ricordi is editor-in-chief of *CellR4*, the official journal of The Cure Alliance.

Gabriel Alfonso Rincón-Mora | *Georgia Institute of Technology*

Gabriel Alfonso Rincón-Mora, Ph.D., is professor of electrical and computer engineering at the Georgia Institute of Technology (Georgia Tech). Rincón-Mora holds 25 U.S. patents and 17 foreign patents that have been incorporated into cell phones and other portable electronics since 1994. Georgia Tech inducted him into the Council of Outstanding Young Engineering Alumni, and *Hispanic Business* magazine named him one of "The 100 Most Influential Hispanics". He received the National Hispanic in Technology Award from Society of Hispanic Professional Engineers, Charles E. Perry Visionary Award from Florida International University, Commendation Certificate from the Lieutenant Governor of California, IEEE Service Award, and Orgullo Hispano and the Hispanic Heritage awards from Robins Air Force Base. Other scholarly products include nine books, four book chapters, 42 patents, 177 articles, 26 commercial designs, and 133 international talks. Rincón-Mora is fellow of IEEE and IET for contributions to power-conditioning and energy-harvesting microchips.

Bruce R. Rosen | *Massachusetts General Hospital*

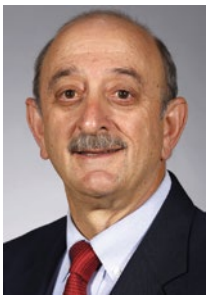
Bruce R. Rosen, M.D., Ph.D., is director of the Athinoula A. Martinos Center for Biomedical Imaging at Massachusetts General Hospital, MIT, and Harvard Medical School. Rosen is a leader in the development and application of physiological and functional nuclear magnetic resonance techniques, including the introduction and continued advancement of functional magnetic resonance imaging (fMRI), as well as new approaches to combining fMRI data with information from other imaging technologies including PET, optical, EEG and MEG. He holds seven U.S. patents with several others pending, and has published more than 400 peer-reviewed articles, book chapters and reviews. Rosen is the recipient of the KFJ Prize of the Rigshospitalet Internationale, received the Distinguished Researcher Award from the Radiological Society of North America, and is a gold medalist and fellow of the International Society of Magnetic Resonance in Medicine. Rosen is a member of NAM, and fellow of the American Academy and AIMBE.

Barbara O. Rothbaum | *Emory University*

Barbara O. Rothbaum, Ph.D., is professor in psychiatry and associate vice chair of clinical research at the Emory School of Medicine Department of Psychiatry and Behavioral Sciences, and director of the Emory Healthcare Veterans Program and Trauma and Anxiety Recovery Program at Emory University. Rothbaum holds the Paul A. Janssen Chair in neuropsychopharmacology and was awarded the 2010 "Award for Outstanding Contributions to the Practice of Trauma Psychology" for APA's division of Trauma Psychology, as well as the Robert S. Laufer Award for Outstanding Scientific Achievement from the International Society for Traumatic Stress Studies. She holds two U.S. patents that have been licensed to one company. She is a co-founder of Virtually Better, Inc. which uses virtual reality environments for the treatment of anxiety disorders. She has authored over 300 scientific papers and chapters, published five books on the treatment of PTSD and edited three others on anxiety. Rothbaum is fellow of the American College of Neuropsychopharmacology, Association for Behavioral and Cognitive Therapy, and APA's division of Trauma Psychology.

Jonathan M. Rothberg | *Yale University*

Jonathan M. Rothberg, Ph.D., is adjunct professor of genetics at the Yale School of Medicine. He is the recipient of the National Medal of Technology for inventing high-speed, "Next-Gen" DNA sequencing. *The New England Journal* described his innovation as "The New Age of Molecular Diagnostics". He is the first person to be named a World Economic Forum's Technology Pioneer four times, received *The Wall Street Journal*'s First Gold Medal for Innovation, *Nature Methods* First Method of the Year Award, Connecticut Medal of Technology, and DGKL Biochemical Analysis Prize. He holds over 140 U.S. issued patents and nearly 70 foreign patents, and has started more than 10 companies. He is the author or co-author of over 40 publications in scientific journals. He is a member of NAE, Connecticut Academy of Science and Engineering, and trustee of Carnegie Mellon University. Rothberg also holds an honorary doctorate from Mount Sinai School of Medicine.

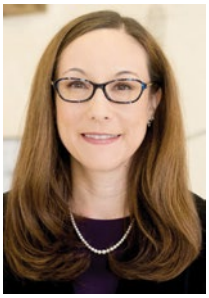


Max F. Rothschild | *Iowa State University*

Max F. Rothschild, Ph.D., is Curtiss Distinguished Professor of Agriculture and Life Sciences and Ensminger Endowed Chair in International Animal Agriculture at Iowa State University. Rothschild is a world leader in livestock genomics, inventing over 20 genomic tests to improve all aspects of pork production. He is the recipient of two R&D 100 awards, Iowa Inventor of the Year, Morrison Award from the American Society of Animal Science and Award of Distinction from the College of Agriculture at the University of California, Davis. He holds 12 U.S. and five foreign patents licensed to three companies. He has published 390 refereed articles, 17 book chapters, edited four books, and has 500 other publications. He has served on editorial boards for many peer-reviewed journals. Rothschild is a member of the International Society of Animal Genetics and fellow of AAAS, Jefferson Science and American Society of Animal Science.

Clinton T. Rubin | *Stony Brook University, SUNY*

Clinton T. Rubin, Ph.D., is SUNY Distinguished Professor of Biomedical Engineering, and director of the Center for Biotechnology at Stony Brook University, SUNY. Rubin's research is targeted towards understanding the cellular mechanisms responsible for the growth, healing, and homeostasis of bone, and how mechanical stimuli mediate these responses through the control of mesenchymal and hematopoietic stem cell differentiation and proliferation, to establish non-drug treatment strategies for osteoporosis, obesity and diabetes. He holds nearly 30 patents in the area of wound repair, stem cell regulation, and treatment of metabolic disease, and is founder of Exogen, Juvent, and Marodyne Medical, which use physical signals to regulate biologic processes. He has published over 300 articles, has been cited nearly 24,000 times, with an H-index of 80. Rubin is a fellow of AAAS and AIMBE, and recipient of the Presidential Young Investigator Award from NSF.



Shelly E. Sakiyama-Elbert | *The University of Texas at Austin*

Shelly E. Sakiyama-Elbert, Ph.D., is department chair of biomedical engineering and Fletcher Stuckey Pratt Chair in Engineering at The University of Texas at Austin. Sakiyama-Elbert developed novel drug delivery systems to treat bone, skin, tendon, and nerve injury. Her ability to utilize engineering design approaches and partner with leading clinician scientists has enable the translation of research from bench to bedside. She is the recipient of the Clemson Award from Society for Biomaterials, Distinguished Faculty Award from Washington University, and "30 under 30" from St. Louis Business Journal (2002). She holds eight U.S. patents and three foreign patents that have been licensed to three companies. She has published more than 90 articles and six book chapters and serves as associate editor/editorial board member for three journals and one book. Sakiyama-Elbert is fellow of the International Union of Societies of Biomaterials Science and Engineering, AAAS, BMES, and AIMBE.

Henry Samueli | *University of California, Los Angeles and University of California, Irvine*

Henry Samueli, Ph.D., is chief technical officer of Broadcom Limited, professor of electrical and computer engineering at University of California, Los Angeles (UCLA), and Distinguished Adjunct Professor of Electrical and Computer Engineering at UC, Irvine. Samueli's early research in broadband communication circuits at UCLA led to the founding in 1991 of Broadcom Corporation, a global leader in providing semiconductor solutions for broadband wired and wireless communications. Samueli is the recipient of the UC Presidential Medal, UC Irvine Medal, UCLA Medal, IEEE Circuits and Systems Society Industrial Pioneer Award, IEEE Communications Society Distinguished Industry Leaders Award, Global Semiconductor Alliance Dr. Morris Chang Exemplary Leadership Award, Marconi Society Prize and Fellowship, and two honorary doctorates from the Technion-Israel Institute of Technology and National Chiao Tung University in Taiwan. He holds 75 U.S. patents and has published over 100 technical papers. Samueli is fellow of IEEE, member of NAE, and fellow of the American Academy.

Ulrich S. Schubert | *Friedrich-Schiller-University Jena*

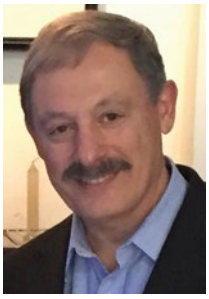
Ulrich S. Schubert, Ph.D., is currently full professor of organic and macromolecular chemistry at the Friedrich-Schiller-University Jena, Germany, as well as external scientific member of the Max Planck Institute for Colloid and Interfaces, Potsdam, Germany. Schubert has made important contributions to polymer-based organic batteries, new pharmaceutically relevant polymers, nanomedicine, self-healing materials, metallo-supramolecular polymers and inkjet printing processes. He was recipient of a Heisenberg-Fellowship (German Science Foundation), a VICI award (The Netherlands Organization for Scientific Research), a Molecular Science Forum Professorship (CAS, China) and the "Thüringer Forschungspreis" (State of Thuringia, Germany). Schubert holds eight U.S. patents and a number of foreign patents that have been licensed to several companies. He is the founder of four startups. He has published over 950 articles/reviews. Schubert is a member of the German National Academy of Science and Engineering (acatech) and fellow of ACS's Polymer Division and RSC.

Paul A. Seib | *Kansas State University*

Paul A. Seib, Ph.D., is Professor Emeritus in grain science and industry at Kansas State University, but began his academic career at the Institute of Paper Chemistry in Appleton, WI, now the Renewable Products Institute in Atlanta, GA. Seib's research interests include sugars, starches, wheat-based foods, and vitamin C. He is the past chair of the divisions of carbohydrates in ACS, Institute of Food Technologists, and AACC-International. He served as program chair of the USA Starch Round Table, and on the boards of editors of *Cereal Chemistry*, *Starch/Starke*, and *Carbohydrate Polymers*. In 2001, Seib was among highly cited researchers listed by ISI Thompson Scientific. Seib received the ACS M. L. Wolfrom, Japanese Society of Applied Glyosciences Award of Merit, Alsberg-Schoch-French Memorial Lectureship Award and AACC-International Burr Osborne Medal. Seib and co-workers have published over 220 journal articles, 10 book chapters, and 20 patents. He is a fellow of AAAS.

Terrence J. Sejnowski | *Salk Institute for Biological Studies & University of California, San Diego*

Terrence J. Sejnowski, Ph.D., is Francis Crick Chair at Salk Institute for Biological Studies and Distinguished Professor at the University of California, San Diego. Sejnowski is also president of the Neural Information Processing Systems Foundation, the premier conference on machine learning and neural computation. He is a pioneer in neural computation and his goal is to understand the principles that link brain to behavior. He has published over 500 scientific papers and 14 books, including *The Computational Brain*, and holds eight U.S. patents and one foreign patent. He helped shape the BRAIN Initiative that was announced at the White House in 2013 and served on the working group of the advisory committee to the Director of NIH for the BRAIN Initiative. Sejnowski received his doctorate in physics from Princeton, and is a member of NAS, NAM and NAE, and fellow of AAAS, American Academy, American Physiological Society, and APS.



Mohammad Shahidehpour | *Illinois Institute of Technology*

Mohammad Shahidehpour, Ph.D., is University Distinguished Professor, Bodine Chair Professor of Electrical and Computer Engineering, associate director of the Wanger Institute for Sustainability and Energy Research, and director of the Robert W. Galvin Center for Electricity Innovation at Illinois Institute of Technology. Shahidehpour has also been, for the last 35 years, principal investigator of several major research grants on sustainable energy systems. He is the recipient of the 2009 honorary doctorate from the Polytechnic University of Bucharest and serves as a research professor in 15 international universities. He has co-authored six books and 600 technical papers on electric power system operation and planning, received 10 IEEE technical awards, and served as founding editor-in-chief of the *IEEE Transactions on Smart Grid*. Shahidehpour is a fellow of IEEE, AAAS and member of NAE.

Yun Qing Shi | *New Jersey Institute of Technology*

Yun Qing Shi, Ph.D., is professor of electrical and computer engineering at New Jersey Institute of Technology. Shi has made important contributions to digital watermarking, reversible data hiding, steganography and steganalysis, and information forensics in addition to his research on multidimensional signal processing. He has obtained 30 U.S. patents, some of which have been filed internationally. He is an author or co-author of more than 300 research papers, including more than 100 journal papers and one book on *Image and Video Compression for Multimedia Engineering: Fundamentals, Algorithms, and Standards*. He is editor-in-chief of *Transactions on Data Hiding* and *Multimedia Security* and co-author of six published book chapters, 14 edited conference/workshop proceedings and three edited journal special issues. Shi is a member of NAE and fellow of IEEE.

Subhash L. Shinde | *University of Notre Dame*

Subhash L. Shinde, Ph.D., is associate director of the Center for Sustainable Energy (Notre Dame Energy) at the University of Notre Dame. Shinde works to develop corporate relationships to support the faculty at Notre Dame in initiating global research programs and large-center research grants. Previously, he held leadership roles in IBM's Research and Microelectronics Divisions, as well as research staff and management positions at Sandia National Laboratories. His research interests include nanoscale thermal transport, 3D integration of microprocessors, memory, and photonic components for computing and ultrafast imaging, and concentrated solar technologies for power production, hydrogen production, desalination, and process heat. He holds more than 65 U.S. patents and 18 foreign patents, which have applications at IBM and Sandia as solutions for advanced thermal management for mainframe computers and technology portfolio for high thermal conductivity Aluminum Nitride modules (IBM) and projects in phonon interactions and ultrafast imaging (Sandia). Shinde is a fellow of IEEE, author on more than 40 publications and editor of three books.

Richard W. Siegel | *Rensselaer Polytechnic Institute*

Richard W. Siegel, Ph.D., is Robert W. Hunt Professor of Materials Science and Engineering at Rensselaer Polytechnic Institute. Siegel has performed important materials research on metals, ceramics, composites, and biomaterials leading to more than 300 published articles and patents (21 in the U.S.), ten edited books, and over 500 invited lectures presented worldwide. His work is highly cited. He chaired the World Technology Evaluation Center worldwide study of nanostructure science and technology that led to the U.S. National Nanotechnology Initiative. He was the founding chairman of the International Committee on Nanostructured Materials; founding editor of the journal *Nanostructured Materials*; and founder and director of Nanophase Technologies Corporation. In recognition of his outstanding accomplishments, he received a Humboldt Foundation Senior Research Prize in Germany and a RIKEN Eminent Scientist award in Japan. Siegel is a fellow of MRS and AIMBE.

Krishna P. Singh | *University of Pennsylvania*

Krishna P. Singh, Ph.D., is president and chief executive officer of Holtec International, senior fellow of the mechanical engineering department, overseer of the School of Engineering and Applied Science and trustee of the University of Pennsylvania. Singh received the "Thomas Alva Edison Award" and was named "South Jerseyan of the year" by Rutgers University. He has authored scientific journals (70 technical papers, one textbook and numerous symposia volumes) and is a prolific inventor with 79 patents issued and several pending. Over 150 power plants worldwide employ Holtec's patented systems/equipment. Thanks to his transformative patents, Holtec is widely held to be pre-eminent in used nuclear fuel technologies. Holtec's "walkaway" safe small modular nuclear reactor (SMR-160) has been hailed as a "game changer" for commercial nuclear energy. Singh was named fellow of ASME and member of NAE.

Hyongsok Soh | *Stanford University*

Hyongsok (Tom) Soh, Ph.D., is professor of electrical engineering and radiology at Stanford University. Soh is a pioneer in the fields of molecular engineering and biosensor technologies. He invented many key methodologies for efficiently generating synthetic antibodies (aptamers) and demonstrated the first 'real-time biosensors' for continuously measuring small molecule drugs in the body. He is a founder of CytomX, which later became CytomX Therapeutics and Cynvenio Biosystems. He holds 18 U.S. and foreign patents that have been licensed to three companies and he has published over 100 peer-reviewed articles. Soh is a Guggenheim fellow, Humboldt fellow and Chan-Zuckerberg Biohub investigator.

Steven L. Stice | *University of Georgia*

Steve L. Stice, Ph.D., is Georgia Research Alliance Eminent Scholar Endowed Chair, DW Brooks Distinguished Professor, and director of the Regenerative Bioscience Center at University of Georgia. Stice is co-founder of several biotech start-ups, including ArunA Bio; the first company to commercialize a stem cell product used to facilitate approval of Pfizer's current cognitive enhancing pharmaceuticals. Stice, a 30 year veteran researcher in bio-manufacturing technologies and regenerative medicine, is world-renowned for developing the first human pluripotent stem cell (hPSC), which has led to 16 U.S. patents in stem cells, cloning and regenerative medicine, including the first U.S. patent on animal cloning and therapeutic cloning from adult animal cells. As an invited member, he sits on the scientific advisory board for the FDA, and is serving on the governing committee of the first institute funded by the U.S. Department of Commerce, the National Institute for Innovation in Manufacturing Biopharmaceuticals.

Steven L. Suib | *University of Connecticut*

Steven L. Suib, Ph.D., is director of the Institute of Materials Science and Board of Trustees Distinguished Professor of Chemistry at the University of Connecticut. Suib has made important contributions in materials science and synthesis of new porous materials. He is the recipient of the ACS Exxon Faculty Fellowship, Solid State Chemistry SUNY Outstanding Achievement Award, Chemical Pioneer Award, and Excellence in Catalysis Award from NY Metropolitan Catalysis Society. Suib received the Connecticut Medal of Science for contributions to fundamental chemistry of porous metal oxide materials. He holds over 74 U.S. and foreign patents, and has published over 650 peer reviewed articles, seven books, and 44 book chapters. He serves as editor-in-chief of *Frontiers in Chemistry* and regional editor of *Microporous and Mesoporous Materials*. Suib is a fellow of ACS and AIC, and member of ACS, ACerS, AAAS, Phi Lambda Upsilon, Phi Kappa Phi, Sigma Xi, and MRS.

Russell H. Taylor | *Johns Hopkins University*

Russell H. Taylor, Ph.D., is John C. Malone Professor of Computer Science with joint appointments in mechanical engineering, radiology, and surgery, and is also director of the Engineering Research Center for Computer-Integrated Surgical Systems and Technology (CISST ERC) and of the Laboratory for Computational Sensing and Robotics (LCSR) at Johns Hopkins University. While at IBM Research, Taylor developed the AML robot language and managed the automation technology department and computer-assisted surgery group. He is a recipient of numerous awards, including the Maurice Müller Award for Excellence in Computer-Assisted Orthopaedic Surgery, IEEE Robotics Pioneer Award, MICCAI Society Enduring Impact Award, IEEE EMBS Technical Field Award, and Honda Prize. He is the author of over 425 peer-reviewed publications and holds 48 U.S. patents. Taylor is a fellow of IEEE, AIMBE, MICCAI Society, and Engineering School of the University of Tokyo.

Jeffrey A. Toretsky | *Georgetown University*

Jeffrey A. Toretsky, M.D., is professor and clinical practitioner of oncology and pediatrics and division chief of pediatric hematology/oncology at Georgetown University. In his laboratory, Toretsky leads a team to investigate mechanisms and functions of intrinsically disordered protein interactions such as mRNA splicing. His research identifies small molecules that inhibit protein interactions as candidates for targeted anticancer drugs. This multidisciplinary work led to the first drug in clinical trial that directly inhibits a Ewing sarcoma fusion oncoprotein. He is the recipient of a Burroughs Wellcome Clinical Scientist Award in Translational Research; a participant in a National Academies Keck Futures Initiatives Conference and member of American Society of Clinical Investigators. He holds six licensed U.S. patents, is co-founder of Oncternal Therapeutics, Inc. and serves as chairman of the scientific advisory board for Children's Cancer Foundation, Inc. Toretsky has published over 100 peer-reviewed articles and serves on many editorial boards.

Rocky S. Tuan | *The Chinese University of Hong Kong and University of Pittsburgh*

Rocky S. Tuan, Ph.D., is vice chancellor and president of The Chinese University of Hong Kong, with a joint appointment as Distinguished Professor at the University of Pittsburgh. Tuan is an innovator in stem cell and biomaterial based musculoskeletal tissue engineering and regeneration. Awards for his research achievements include Marshall Urist Award, Carnegie Science Award, Clemson Award, and University of Pittsburgh Chancellor's Distinguished Research Scholar Award. He holds eight granted and 10 pending U.S. patents, and two current and four pending foreign patents, with one technology licensed. He has published more than 450 research articles and over 100 reviews/book chapters (*h* index, 101). He is founding editor of *Stem Cell Research and Therapy* and *Birth Defects Research*, serves as associate editor for *Stem Cell Translational Medicine*, and is an editorial board member of *Tissue Engineering* and *FASEB Journal*. Tuan is a fellow of AIMBE.

Robert Vince | *University of Minnesota*

Robert Vince, Ph.D., is professor of medicinal chemistry and director of the Center for Drug Design at the University of Minnesota (UMN). Vince is the inventor of the anti-HIV drug, Ziagen, that is marketed worldwide by GlaxoSmithKline for the treatment of AIDS. He received a career development award from NIH, 1979 UMN Scholar of the Year award, Certificate of Commendation by the MN Governor, Outstanding Alumni Award of the New York Cayuga Community College, and "Scholars Walk and Wall of Discovery" recognition at UMN. He received an honorary doctor of science degree from SUNY at Buffalo, and has also received the UMN Innovation Impact Award, and Antonin Holy Memorial Lecture Award (International Society for Antiviral Research). Vince is fellow of AAAS and inductee of Medicinal Chemistry Hall of Fame by ACS, MN Inventors Hall of Fame, and MN Science and Technology Hall of Fame.

Andrew J. Viterbi | *University of Southern California*

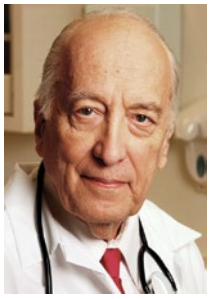
Andrew J. Viterbi, Ph.D., is trustee and presidential chair professor of electrical engineering at the University of Southern California. Viterbi is also president of the Viterbi Group, LLC, and is internationally known for his development of the Viterbi algorithm, its transformational impact on digital wireless communications, and its significant applications in speech recognition synthesis and in bioinformatics. He has received numerous honors both in the U.S. and internationally, including the NAE Charles Stark Draper Prize, National Medal of Science, IEEE Medal of Honor, and inducted into the NIHF. He holds 14 U.S. patents and over 30 foreign patents. He co-founded QUALCOMM, Inc., a developer and manufacturer of mobile satellite communications and digital wireless telephony. He also co-founded LINKABIT Corporation, a digital communications company. Viterbi is a member of NAE, NAS (of which he is past chair of the Computer and Information Science section) and is fellow of the American Academy and IEEE.

Tuan Vo-Dinh | *Duke University*

Tuan Vo-Dinh, Ph.D., is R. Eugene and Susie E. Goodson Distinguished Professor of Biomedical Engineering, professor of chemistry, and director of the Fitzpatrick Institute for Photonics at Duke University. Vo-Dinh has an exceptional contribution of innovations in optical sensing, diagnostic and therapeutic technologies for protecting the environment, early diagnostics and treatment of diseases. He has received numerous awards including seven R&D 100 Awards, the Gold Medal Award, Society for Applied Spectroscopy, Languedoc-Roussillon Award (France), Distinguished Scientist of the Year Award, Oak Ridge National Laboratory, Thomas Jefferson Award, Martin Marietta Corporation, Inventor of the Year Award, Tennessee Inventors Association, Distinguished Inventors Award, UT-Battelle, Exceptional Services Award, Department of Energy, and Award for Spectrochemical Analysis, ACS. He holds over 47 patents and has over 400 peer-reviewed articles. Vo-Dinh is fellow of AIMBE, AIC, and SPIE.

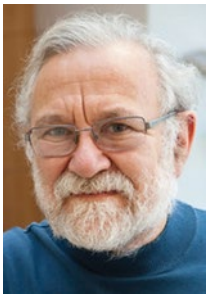
Scott A. Waldman | *Thomas Jefferson University*

Scott A. Waldman, M.D., Ph.D., is chair of the department of pharmacology & experimental therapeutics at Thomas Jefferson University. He is a leader in clinical pharmacology whose research has led to clinical trials examining the utility of GUCY2C for prevention and clinical management of gastrointestinal cancers. He has received numerous honors and awards including the Reynold Spector Award in Clinical Pharmacology from the American Society for Pharmacology and Experimental Therapeutics, and the Rawls Palmer Progress in Medicine Award from the American Society for Clinical Pharmacology and Therapeutics. He has authored over 100 U.S. and foreign patents that have been licensed to five companies, and is a founder of Targeted Diagnostics & Therapeutics, Inc. He has published over 300 articles, books, and chapters and serves as editor-in-chief for *Clinical Pharmacology and Therapeutics* and *Biomarkers in Medicine*. Waldman is a fellow of the American College of Clinical Pharmacology and AHA.



Thomas A. Waldmann | *National Cancer Institute*

Thomas A. Waldmann, M.D., is chief of the Lymphoid Malignancies Branch at the National Cancer Institute (NCI). Waldmann received his medical degree from Harvard Medical School and joined NCI in 1956. Over his 60-year career, he defined IL-2 receptor subunits, IL-2R beta and IL-2R alpha using first-ever reported anti-cytokine receptor monoclonal antibody (anti-Tac, daclizumab). These studies culminated in the definition of the IL-2 receptor as an exceptionally valuable target for monoclonal antibody therapy for leukemia and multiple sclerosis. He co-discovered IL-15, elucidated its role in persistence of NK and CD8 memory T-cells and completed a first in-human trial of IL-15 in patients with metastatic malignancy. His honors include: Ehrlich Medal, Abbott Laboratories Prize, Bristol-Myers Squibb Award, Milken Family Medical Foundation Award, Artois-Baillet Latour Health Prize, Ralph Steinman Award, and election to NAS, American Academy, and NAM.



Peter Walter | *University of California, San Francisco*

Peter Walter, Ph.D., is Distinguished Professor of Biochemistry and Biophysics at University of California, San Francisco and HHMI Investigator. Walter's prolific research on how proteins within cells communicate with one another has been instrumental in shaping scientific understanding of how cells are organized and how they function. He received his master of science in organic chemistry from Vanderbilt University and his doctorate in biochemistry at The Rockefeller University. He holds five U.S. patents and five foreign patents and his awards include the Eli Lilly Award, Passano Award, Wiley Prize, Stein & Moore Award, Gairdner Award, E.B. Wilson Medal, Otto Warburg Medal, Jung Prize, 2012 Ehrlich and Darmstaedter Prize, 2014 Shaw Prize, 2014 Lasker Award, 2015 Vilcek Prize and 2018 Breakthrough Prize. Walter is a member of the Leopoldina Academy of Scientists and the National Academy of Sciences. He is an elected fellow of the American Academy and AAM.

Fei Wang | *The University of Tennessee, Knoxville*

Fei (Fred) Wang, Ph.D., is Condra Chair Professor of Excellence in Power Electronics at the University of Tennessee, Knoxville (UTK) and Oak Ridge National Laboratory. He serves as the technical director of NSF/DOE Engineering Center CURENT at UTK. Wang was a lead designer for the world's first three-level medium-voltage GE Innovation Series drives based on IGBT and IGCT, which earned him the prestigious GE Dushman Award. He led the development of several world-leading high-density converters using SiC power semiconductors with numerous innovations. He received eight IEEE best paper prizes, and two faculty research achievement awards at UTK. He holds six U.S. patents that were adopted in industry products or licensed to industry, and he and his students have published over 400 peer-reviewed papers. Wang is a fellow of IEEE.

Scott C. Weaver | *The University of Texas Medical Branch*

Scott C. Weaver, Ph.D., is John Sealy Distinguished University Chair in Infections and Immunity, and chair of microbiology and immunology at the University of Texas Medical Branch. An expert on arboviruses, Weaver has developed attenuation methods and vaccines for alphaviruses, as well as vaccine vectors and new diagnostics. He is the recipient of the Walter Reed Medal from the American Society of Tropical Medicine and Hygiene (ASTMH) for distinguished accomplishments in tropical medicine, and Robert Gallo Award for Scientific Excellence from the Global Virus Network, for which he chairs Chikungunya and Zika Task Forces. He holds nine U.S. and over 20 foreign patents licensed to Takeda Pharmaceuticals and Inbios International. He has published over 300 peer-reviewed papers, 90 reviews and book chapters, and serves as editor for prominent journals including *PLoS Neglected Tropical Diseases*. Weaver is a fellow of ASTMH and AAM.

Thomas J. Webster | *Northeastern University*

Thomas J. Webster, Ph.D., is Art Zafiropoulo Chair and chemical engineering department chair at Northeastern University. Webster is a leader in translational biomaterials research receiving honors including: Chinese Academy of Sciences International Materials Research Lee-Hsun Lecture Award, Zheijiang-1000-Talent Award, Wenzhou-580 Award, and Acta Biomaterialia Silver Award. He served as president of the U.S. Society for Biomaterials and has appeared on CNN, NBC, ABC, Fox News, BBC and numerous other media outlets talking about biomaterials. He holds 21 patents/patent applications that have been licensed to eight companies and is the technical founder of five companies. He co-founded the first NSF International Academy of Nanomedicine, co-directed the Indo-U.S. Center for Biomaterials for Healthcare, and co-directs four other international centers. He is founder and editor of *International Journal of Nanomedicine* and serves as associate editor of *Nanomedicine: NBM*. Webster is a fellow of AANM, AIMBE, BMES, and IUSBE.

Chin-Long Wey | *National Chiao Tung University*

Chin-Long Wey, Ph.D., is a Chair Professor Emeritus of Electrical and Computer Engineering at National Chiao Tung University, Hsinchu, Taiwan. Wey is a technology leader in education and design service in integrated circuits and systems. His wonderful leadership and innovative entrepreneurship made important contributions to Taiwan's Integrated Circuit industry. He is the recipient of several medals from international invention contests and several outstanding contribution awards in Science and Technology from Taiwan National Applied Research Laboratories (NARL) for his patents, TSMC Distinguished Chair Professor, NARL Distinguished Research Fellow, and IEEE best paper awards. He holds seven U.S. patents and 10 foreign patents that have been licensed to two system companies in Taiwan. He is the co-founder and founding president of JMicron Technology Corp., Hsinchu, Taiwan, and JMicron USA, Irvine, California. He has published more than 300 journal articles, conference papers, and book chapters. Wey is a life fellow of IEEE.

Lorne A. Whitehead | *The University of British Columbia*

Lorne A. Whitehead, Ph.D., P.Eng., is special advisor on entrepreneurship, innovation, and research at The University of British Columbia (UBC). Whitehead's inventions in illuminating engineering, electrical engineering and information display are found in television and computer displays and in lighting systems. At UBC, he was previously dean pro tem, provost, and leader of education innovation. Whitehead received the CAP Prize for Innovative Young Physicists, Manning Award for Innovation in Canada, BC Gold Medal for Innovation, CAP Medal for Achievement in Applied Physics, SID Special Recognition Award, IES Special Citation for design excellence and IES Taylor Award for top research paper. He holds 126 U.S. patents and 155 foreign patents, yielding eight licenses and seven startup companies. He has published 165 articles and one book. Whitehead serves on the board of CIE and is a fellow of IES.

Cheryl L. Willman | *The University of New Mexico*

Cheryl L. Willman, M.D., is Distinguished Professor of Pathology and Director & CEO of the Comprehensive Cancer Center at The University of New Mexico (UNM). An internationally recognized leukemia researcher, Willman studies the use of comprehensive genomic technologies and computational modeling tools to discover new genomic abnormalities in the acute leukemias that serve as diagnostic and therapeutic targets. Her work, published in *Nature Genetics*, was the first to report a specific spectrum of leukemia mutations associated with genetic ancestry. She has disclosed 17 inventions, received 6 U. S. issued patents, and licensed her nanotechnology to startup Alpine Biosciences, which was sold in 2014 to Cascadian Therapeutics for $27 million. Willman is recipient of the Stowell-Orbison Award, Benjamin Castleman Award, UNM Innovation Fellow Award, and UNM Regents Meritorious Service Medal. Willman founded and was president of the Association of Molecular Pathology and is a member of the U.S. DOE Women in Science Hall of Fame.

Alan N. Willson, Jr. | *University of California, Los Angeles*

Alan N. Willson, Jr., Ph.D., is Charles P. Reames Professor Emeritus at University of California, Los Angeles (UCLA). Willson founded Pentomics, Inc. in 1991, through which he and many UCLA graduate students have patented significant research breakthroughs. He is a recipient of the IEEE Gustav Robert Kirchhoff Award, his numerous research and teaching awards include: John J. Guarrera, Educator of the Year Award, Vitold Belevitch Award, and W.R.G. Baker Award, given for "the most outstanding original work published in all Transactions and Journals of the IEEE Societies and in the IEEE Proceedings." He holds 20 U.S. patents, 18 through Pentomics of which several have been licensed to Analog Devices, Inc. He has published 90 journal papers, 175 conference papers, one book, and three book chapters, and was editor-in-chief of the *IEEE Transactions on Circuits and Systems*. Willson is a member of NAE.

Teresa K. Woodruff | *Northwestern University*

Teresa K. Woodruff, Ph.D., is Thomas J. Watkins Memorial Professor of Obstetrics and Gynecology in the Feinberg School of Medicine, professor of biomedical engineering in the McCormick School of Engineering, and dean of The Graduate School at Northwestern University. Woodruff founded and directs the Women's Health Research Institute and is director of the Center for Reproductive Science. An expert on ovarian biology and reproductive science, she is an internationally recognized leader in fertility research. Woodruff coined the term "oncofertility" and invented clinical practice management strategies that merged two fields: oncology and fertility. Oncofertility is a recognized field of medicine and provides reproductive options for young cancer patients around the globe. She holds 11 U.S. patents and has published 334 research papers and authored six published books. Among her recent contributions are the invention of a 3D printed ovarian bioprosthetic, a microfluidic system that mimics a 28-day menstrual cycle, and the co-discovery that zinc is a signal of oocyte competence necessary to the transition between meiosis and early development.

Amy E. Wright | *Florida Atlantic University*

Amy E. Wright, Ph.D., is research professor at the Harbor Branch Oceanographic Institute of Florida Atlantic University. Wright has contributed to innovations in the discovery of marine natural products with therapeutic activity and conducted pioneering work on the exploration of deep-water marine habitats using manned submersibles. She has contributed to the discovery and investigation of over 100 natural products with therapeutic potential including leiodermatolide and neopeltolide and defining the role of manzamine A as an autophagy inhibitor. She defined key structural features of ecteinascidins 729 and 743 solving a 20-year-old question and freeing these compounds to move forward into clinical approval for the treatment of cancer. She is an inventor on 33 U.S. patents and 17 foreign patents and is co-author of over 95 scientific articles and four book chapters. Wright serves on the editorial advisory boards of the *Journal of Natural Products* and *Molecular Cancer Therapeutics*.

Eli Yablonovitch | *University of California, Berkeley*

Eli Yablonovitch, Ph.D., is director of the NSF Center for Energy Efficient Electronics Science (E3S), a multi-University Center headquartered at University of California, Berkeley. Yablonovitch introduced the idea that strained semiconductor lasers could have superior performance due to reduced valence band (hole) effective mass. With almost every human interaction with the internet, optical telecommunication occurs by strained semiconductor lasers. In his photovoltaic research, Yablonovitch introduced the 4(n squared) ("*Yablonovitch Limit*") light-trapping factor, in world-wide use for almost all commercial solar panels. Based on his mantra that "a great solar cell also needs to be a great LED", his startup company Alta Devices Inc. holds the world record for solar cell efficiency, now 28.8% at one sun. He is regarded as a Father of the Photonic BandGap concept, and he coined the term "Photonic Crystal." The geometrical structure of the first experimentally realized Photonic Bandgap, is sometimes called "*Yablonovite*." His startup company Ethertronics Inc., has shipped over two billion cellphone antennas. Yablonovitch has been elected to NAE, NAS, American Academy, and is foreign member, UK Royal Society. Among his honors is the IEEE Edison Medal, Buckley Prize of the APS, and Isaac Newton Medal of the UK Institute of Physics.

Paul Yager | *University of Washington*

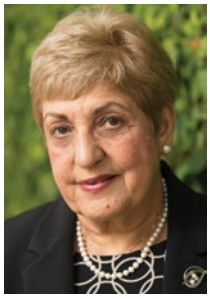
Paul Yager, Ph.D., is professor in the department of bioengineering at the University of Washington. After seven years at the Naval Research Laboratory, he joined the University of Washington in 1987, was promoted to professor in 1995, and served as department chair from 2007 to 2013. Initially working on self-organizing lipid microstructure and optically-based biomedical sensors, since 1992 his lab has explored the fundamentals of microfluidics, and applications thereof in analysis of biological fluids for point-of-care medical diagnostics in the developed and developing worlds. Yager has worked toward rapid low-cost sensitive pathogen identification with support from the Bill & Melinda Gates Foundation, NIH, NSF, DARPA and DTRA. Today, his lab focuses on developing two-dimensional porous (paper) networks for ultra-low-cost instrument-free point-of-care pathogen identification. He has authored 153 research publications in refereed journals, 15 book chapters, and has 40 issued patents. Yager is a fellow of AIMBE and the Washington State Academy of Sciences.

Jackie Y. Ying | *Institute of Bioengineering and Nanotechnology*

Jackie Y. Ying, Ph.D., is founding executive director of Institute of Bioengineering and Nanotechnology in Singapore, and previously professor of chemical engineering at MIT. For her research on nanostructured materials, Ying has been recognized with the ACerS Purdy Award, David and Lucile Packard Fellowship, Office of Naval Research Young Investigator Award, NSF Young Investigator Award, Camille Dreyfus Teacher-Scholar Award, ACS Solid-State Chemistry Award, Technology Review's Inaugural TR100 Young Innovator Award, AIChE Colburn Award, World Economic Forum Young Global Leader, International Union of Biochemistry and Molecular Biology Jubilee Medal, and the inaugural $500,000 Mustafa Prize "Top Scientific Achievement Award". She is a fellow of German NAS, MRS, RSC, AIMBE, AAAS, and Singapore NAS. She is editor-in-chief of *Nano Today*. Ying has over 180 primary patents granted/pending, 32 of which have been licensed to multinational and start-up companies.

Bin Yu | *SUNY Polytechnic Institute*

Bin Yu, Ph.D., is professor at College of Nanoscale Science & Engineering at SUNY Polytechnic Institute. Yu is a recognized pioneer and key promoter in commercializing multiple silicon-based integrated chip technology, including FinFET. As one of the most prolific inventors in the field of semiconductor electronics and nano-devices, he holds 306 awarded U.S. patents and dozens of awarded foreign patents, covering key innovations in ultra-scaled silicon transistors, silicon-on-insulator MOSFETs, 3-D transistor FinFET, micro/nanofabrication, emerging device architectures and materials, among others. He is a fellow of IEEE and recipient of NASA Innovation Award and IBM Faculty Award. He has published more than 250 peer-reviewed research papers and eight contributed book chapters, delivered more than 120 keynote/invited speeches to academia and industry worldwide, and served as editor of *IEEE Electron Device Letters*, associate editor of *IEEE Transactions on Nanotechnology*, editor of *Nano-Micro Letters*, and guest editor of *IEEE Transactions on Electron Devices*.



Mona Elwakkad Zaghloul | *The George Washington University*

Mona Elwakkad Zaghloul, Ph.D., is professor of electrical and computer engineering (ECE) and director of the Institute of MEMS and VLSI Technologies at The George Washington University (GWU). Zaghloul served as chair of the ECE Department at GWU, and its predecessor, department of electrical engineering and computer science. She earned her doctorate and masters in electrical engineering and master of mathematics in applied analysis and computer science from University of Waterloo, Canada. Her areas of research include sensors at the micro and the nano scales; MEMS/NEMS and CMOS-MEMS sensors; chemical, gas, and bio-sensors; and 2D-material electronics. She received numerous awards including IEEE Circuits and Systems Jubilee Golden Medal, 2000, and Honorary Doctorate Degree from University Waterloo, in recognition of academic career in the international electrical engineering community. Zaghloul is an IEEE life fellow, and has published more than 400 journal and conference papers, and eight books and book chapters.

Zeev Zalevsky | *Bar-Ilan University*

Zeev Zalevsky, Ph.D., is professor of engineering at Bar-Ilan University in Israel. Zalevsky has made significant contributions to the fields of super-resolution and imaging, bio-medical remote sensing and electro-optical devices. He is the recipient of the Krill prize, ICO prize, Juludan prize, SAOT Young Researcher Prize, Taubenblatt Prize, young investigator nanotechnology award, international Wearable Technologies World-Cup Prize, Image Engineering Innovation Award, Outstanding Young Scientist Award, Serial Innovator Award, SPIE Startup Challenge Prize, IAAM Medal, Furumoto Young Investigator Award and Asian Advanced Materials Award. He holds more than 50 issued U.S. and foreign patents of which most were licensed to about 10 companies. He is the co-founder of Civcom, Explay, Exceed Imaging, ContinUse Biometrics, Z-Square and CyberOptix. He has published more than 750 papers, 10 books, 30 chapters and serves as associate editor of *Optics Express*, *IEEE Access and Imaging Science and Technology* journals. Zalevsky is a fellow of OSA, SPIE, EOS, IET, IOP, NANOSMAT and a senior member of IEEE.

Lynn Zechiedrich | *Baylor College of Medicine*

Lynn Zechiedrich, Ph.D., is Kyle and Josephine Morrow Chair and Professor in Microbiology at Baylor College of Medicine. She developed minivectors to study DNA, the enzymes that act on DNA, and the drugs that inhibit these enzymes. Minivectors are also excellent gene therapy delivery vectors. Among other honors, she won the New Investigator Award from the Burroughs Wellcome Fund, Curtis Hankamer Research Award, and funding from the Human Frontier Science Program. She was Baylor College of Medicine's BRASS Mentor of the Year in 2013. She holds two issued U.S. patents and three issued foreign patents that are licensed to Twister Biotech, Inc., a company she founded in 2011, and has multiple patents pending. She has published more than 60 articles and book chapters and given over 170 invited talks. She served on numerous grant review committees, reviews for 40 different peer-reviewed journals, and serves on three editorial boards.

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Mary Albertson | *Association of University Technology Managers*

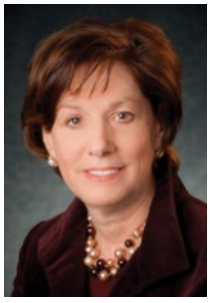
Mary Albertson is president of the Association of University Technology Managers, and senior associate at Stanford University's Office of Technology Licensing, where she has worked for more than two decades supporting academic research commercialization. Albertson manages technologies — from evaluation through to licensing — in the life sciences and medical devices fields. She is involved in information management, the analysis of technology transfer business processes and information collection systems.

Norman R. Augustine | *Lockheed Martin Corporation*

Norman R. Augustine is retired chairman and CEO of the board of the Lockheed Martin Corporation. Prior to joining Martin Marietta, Augustine served as Assistant Secretary of the Army (R&D) from 1973-75 and Undersecretary from 1975-77. He was also a professor at Princeton, his alma mater. Augustine has been presented the National Medal of Technology by the President of the United States and received the Joint Chiefs of Staff Distinguished Public Service Award. He has five times received DoD's highest civilian decoration, the Distinguished Service Medal. Augustine has been elected to membership in the American Philosophical Society, NAS, the American Academy, the Explorers Club, Tau Beta Pi, Phi Beta Kappa and Sigma Xi.

Karen J.L. Burg | *University of Georgia*

Karen J.L. Burg, Ph.D., is professor and Harbor Lights Endowed Chair in the College of Veterinary Medicine at the University of Georgia (UGA). Previously, she served as vice president for research and a professor of chemical engineering at Kansas State University. Honors to Burg include a Presidential Early Career Award for Scientists and Engineers, inaugural Swiss AO Research Prize, recognition as a MIT's TR100 Young Innovator, a DoD Era of Hope Scholar, and an AAAS-Lemelson Invention Ambassador. She has seven patents issued, fifteen disclosures and/or provisional patent applications recorded, with one patent serving as the basis for a diagnostics company. A Burg invention was one of ten technologies featured in the inaugural Avon Foundation for Women - NIH - Center for Advancing Innovation Breast Cancer Start-Up Challenge. Karen served as the principal investigator for the 2015 NSF Innovation-Corps L (I-Corps L) Team Flipped Research Mentoring and as a member of the 2016 NSF I-Corps L teaching team. She is a member of the Board of Directors and Fellow of the NAI.



Anne H. Chasser | *United States Patent and Trademark Office*

Anne H. Chasser is an author and intellectual property strategist and expert. Previously, Chasser served as the commissioner for trademarks at the USPTO, appointed by the President Clinton Administration and confirmed by the United States Senate. She served in both the Clinton and Bush administrations, where she oversaw the trademark operations at the USPTO. During her term, the trademark operations implemented full electronic processing of trademark applications and examination and implemented the Madrid Protocol. She was recognized by Managing Intellectual Property Magazine as one of the Fifty Most Influential People in Global Intellectual Property. She has co-authored two books: *Brand Rewired* and *Domain Rewired,* published by John Wiley. In 2014, Chasser was awarded the Distinguished Career Award by The Ohio State University, John Glenn School of Public Affairs.

Elizabeth L. Dougherty | *United States Patent and Trademark Office*

Elizabeth L. Dougherty, J.D., is director of Inventor Education, Outreach, and Recognition in the Office of Innovation Development at the USPTO. In this capacity, she develops, implements and supervises programs that support the independent inventor community, small businesses, entrepreneurs and the intellectual property interests of colleges and universities; she supervises the development of outreach programs to women, minority and other underserved communities; she also builds and maintains relationships with state and local governments to promote local programs that support invention and innovation in the United States. Currently, Dougherty is on special assignment to the USPTO's Office of Government Affairs where she is coordinating outreach to the Congressional Caucuses of the 115th Congress to inform and educate stakeholders about the importance of intellectual property.

Eric R. Fossum | *Dartmouth College*

Eric R. Fossum, Ph.D., is professor at the Thayer School of Engineering at Dartmouth and associate provost for entrepreneurship and technology transfer. While at the NASA Jet Propulsion Laboratory at Caltech, he invented the CMOS image sensor used in billions of camera phones, webcams, DSLRs, swallowable pill cameras, dental x-ray sensors, and many other applications. He co-founded and co-led Photobit to further develop and commercialize the technology which was acquired by Micron. An early Photobit sensor and camera is on display in the National Museum of American History. He later served as CEO of MEMS startup Siimpel Corp. He holds over 160 U.S. patents and has published over 290 technical papers. He is a fellow of the IEEE and OSA, and co-founder and past president of the International Image Sensor Society. He is a Charter Fellow of NAI, member of NAE, inductee of NIHF, and serves as AAAS-Lemelson Invention Ambassador. He is a recipient of the Queen Elizabeth Prize (2017), the highest global honor in engineering, for the creation of digital imaging sensors.

Andrew H. Hirshfeld | *United States Patent and Trademark Office*

Andrew H. Hirshfeld, Esq., is commissioner for patents for the USPTO. He was appointed to the position in July 2015. He leads and manages more than 10,000 employees as the patent organization's chief operating officer, and manages and directs all aspects of patent operations, examination policy, patent quality management, international patent cooperation, resources and planning, and budget administration. In his previous role as Deputy Commissioner for Patent Examination Policy, Mr. Hirshfeld served as an authority on patent laws, rules, and examining practice and procedure, and provided oversight and direction for the Offices of Petitions, Patent Legal Administration, and the Manual of Patent Examining Procedure. Mr. Hirshfeld previously served as Chief of Staff to the Under Secretary of Commerce for Intellectual Property and Director of the USPTO. He began his career at the USPTO in 1994 as a Patent Examiner, became a Supervisory Patent Examiner in 2001, and was promoted to the Senior Executive Service in 2008 as a Group Director in Technology Center 2100, Computer Architecture and Software. Mr. Hirshfeld holds a Bachelor of Science degree from the University of Vermont, and a J.D. from Western New England College School of Law.

Robert S. Langer | *Massachusetts Institute of Technology*

Robert S. Langer, Sc.D., is David H. Koch Institute Professor at Massachusetts Institute of Technology (MIT). There are 13 Institute Professors at MIT, which is the highest honor that can be awarded to a faculty member. He has written more than 1,300 articles and has over 1,250 issued and pending patents worldwide. His many awards include the United States National Medal of Science, the United States National Medal of Technology and Innovation, the Charles Stark Draper Prize (considered the engineering Nobel Prize), the Breakthrough Prize, the Kyoto Prize, Albany Medical Center Prize (largest U.S. medical prize), the Wolf Prize for Chemistry and the Lemelson-MIT prize, for being "one of history's most prolific inventors in medicine." Langer has been elected to NAM, NAE, and NAS.

Cato T. Laurencin | *University of Connecticut*

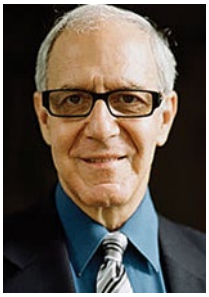
Cato T. Laurencin, M.D., Ph.D., is a designated university professor at the University of Connecticut (UConn). He is the Albert and Wilda Van Dusen Distinguished Professor of Orthopaedic Surgery and Professor of Chemical Engineering, Professor of Materials Science and Engineering, and Professor of Biomedical Engineering at the school. He serves as Director of the Institute for Regenerative Engineering, and Director of the Raymond and Beverly Sackler Center for Biomedical, Biological, Physical and Engineering Sciences at the UConn Health Center. In addition, he serves as Chief Executive Officer of the Connecticut Institute for Clinical and Translational Science at UConn. Laurencin earned a B.S.E. in chemical engineering from Princeton, his medical degree magna cum laude from Harvard Medical School and his Ph.D. in biochemical engineering/biotechnology from M.I.T. He is an elected member of NAM and NAE. Internationally, he is a fellow (associate) of the African Academy of Sciences, fellow of The World Academy of Sciences, and academician and member (foreign) of the Chinese Academy of Engineering. Laurencin is a recipient of the National Medal of Technology and Innovation, America's highest honor for technological achievement and a fellow of NAI.

Robert J. Lefkowitz | *Duke University*

Robert J. Lefkowitz, M.D., is James B. Duke Professor of Medicine and Professor of Chemistry and Biochemistry; and has been an Investigator of the Howard Hughes Medical Institute since 1976, He is most well-known for his discovery of the large family of G-protein-coupled receptor (GPCRs) and of the two families of proteins which regulate them, the GPCR kinases and β-arrestins. He is a member of NAS, American Academy of Arts and Sciences and NAM. Lefkowitz has received more than 70 awards including the Nobel Prize in Chemistry, National Medal of Science, Shaw Prize in Life Sciences and Medicine and Albany Medical Center Prize in Medicine and Biomedical Research.

Shirley M. Malcom | *American Association for the Advancement of Science*

Shirley Malcom, Ph.D., is head of Education and Human Resources Programs at AAAS. She works to improve the quality and increase access to education and careers in STEM fields as well as to enhance public science literacy. Malcom is a trustee of Caltech and a regent of Morgan State University, and a member of the SUNY Research Council. She is a former member of the National Science Board, the policymaking body of NSF, and served on President Clinton's Committee of Advisors on Science and Technology. Malcom, a native of Birmingham, Alabama, received her doctorate in ecology from The Pennsylvania State University, masters in zoology from UCLA and bachelor's with distinction in zoology from the University of Washington. She holds 16 honorary degrees.

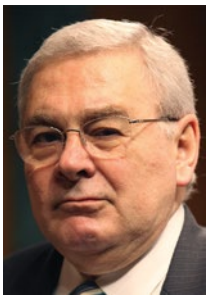


Arthur Molella | *Smithsonian Lemelson Center for The Study of Invention & Innovation*

Arthur Molella, Ph.D., is Director Emeritus of the Smithsonian Institution's Lemelson Center for the Study of Invention and Innovation at the National Museum of American History. He was the Center's founding director. He received his master's and doctorate degrees in the history of science from Cornell University and was awarded a doctor of science, honoris causa, from Westminster University, U.K. At the National Museum of American History, he has served as curator of electricity, chairman of the department of history of science and technology, and assistant director for history. He is also senior lecturer in the department history of science and technology at Johns Hopkins University. He was head curator of the Smithsonian's Science in American Life exhibition, co-curator of the international exhibition, Nobel Voices, and curator Making a Modern Museum: celebrating the 50th Anniversary of the National Museum of American History. With colleagues at Westminster and Johns Hopkins Universities, he is co-sponsor of the International Eco-city Initiative. He has published and lectured widely on the history of science, invention, technology, and modern technological culture. His recent publications include such books as *Inventing for the Environment* (MIT, 2003), *Cultures of Innovation* (Comparative Technology Transfer and Society, special vol. 5, 2007), *Invented Edens: Techno-Cities of the 20th Century* (MIT, 2008), *Places of Invention* (Smithsonian, 2015). In addition to NAI, Molella serves on the boards of NIHF and the MIT Museum.

Rini Paiva | *National Inventors Hall of Fame*

Rini Paiva is vice president for selection and recognition at the National Inventors Hall of Fame (NIHF). In this role, she oversees the annual Inductee Selection process for NIHF, working with a wide-ranging group of experts in science, technology, engineering, intellectual property, and history to ultimately recognize the world's foremost patented inventors for their life-changing and innovative work. Paiva also facilitates NIHF Inductee involvement with the Collegiate Inventors Competition (CIC), which brings recognition to the country's outstanding college students who create the technologies that shape the future. Paiva also works to integrate NIHF Inductees into all of the organization's education programs, including Camp Invention and Invention Project, so that they may serve as inspiration, encouragement, and examples to younger generations. All of NIHF's programs are dedicated to recognizing and fostering invention, creativity, and entrepreneurship. With NIF since 1995, Paiva is an authority on the topic of U.S. invention.



John P. Palafoutas | *United States Patent and Trademark Office*

John P. Palafoutas is program manager for the National Medal of Technology and Innovation (NMTI) within the Department of Commerce and United States Patent and Trademark Office. The NMTI is the nation's highest honor for technological achievement, bestowed by the President of the United States on America's leading innovators. His other duties include oversight of the USPTO's relationship with NIHF and its intellectual property education programs, Camp Invention and the Collegiate Inventors Competition. Previously, he was the executive director of the Task Force on American Innovation, a non-partisan alliance of U.S. industry, academia, and science, supporting federally-funded scientific research and promoting its benefits to America's economy, security, and quality of life. Palafoutas is an Army veteran, who served two tours of duty in Vietnam.

Andrew Rathmann-Noonan | *National Science and Technology Medals Foundation*

Andy Rathmann-Noonan is executive director of the National Science and Technology Medals Foundation (NSTMF). The NSTMF is a D.C.-based non-profit that focuses on inspiring the next generation of STEM professionals and the general public through the incredible stories and contributions of the National Medal of Science (NMS) and National Medal of Technology and Innovation (NMTI) Laureates. The Foundation works with the White House, USPTO, and NSF to support the NMS and NMTI programs while also independently creating programs that create environments where inspiration can occur. The NSTMF focuses on bringing the accomplishments of the Laureates into the public space through the celebration and acknowledgment of America's best and brightest. Rathmann-Noonan believes that the individual narratives of each Laureate, as well as their accomplishments, can serve as powerful positive motivating forces for individuals both young and old.

Kent Rochford | *National Institute of Standards and Technology*

Kent Rochford, Ph.D., is Acting Secretary of Commerce for Standards and Technology and Acting NIST Director. Rochford's current permanent position is NIST's Associate Director for Laboratory Programs (ADLP). As ADLP, he provides direction and operational guidance for NIST's scientific and technical mission-focused laboratory programs and serves as principal deputy to the Under Secretary of Commerce for Standards and Technology and NIST director, among other duties. Rochford was formerly the founding director of NIST-Boulder Labs and the Communications Technology Laboratory, headquartered in Boulder, CO. Rochford received his doctorate degree in optical sciences from the University of Arizona, bachelor of science degree in electrical engineering at Arizona State University, and master's of business administration from the University of Colorado.

Jessica A. Sebeok | *Association of American Universities*

Jessica A. Sebeok, J.D., is associate vice president for policy at the Association of American Universities. Her portfolio includes intellectual property, tax, and a range of legal issues. She previously served as counsel for policy and international affairs in the U.S. Copyright Office, special assistant to the Assistant Secretary of State for Educational and Cultural Affairs, and as assistant general counsel of Yale University. Sebeok received her juris doctor degree from Yale Law School and her master's degree from the University of Oxford, where she was a Marshall Scholar. Sebeok also has a bachelor's degree in History from the University of Chicago.

James K. Woodell | *Association of Public and Land-grant Universities*

James K. Woodell, Ph.D., is assistant vice president for innovation and technology policy at the Association of Public and Land-grant Universities (APLU). He works closely with member institutions to develop tools and resources to enhance their regional engagement and economic development efforts. Serving as lead staff member for APLU's Commission on Innovation, Competitiveness and Economic Prosperity (CICEP), Woodell advances APLU's economic engagement agenda, and the public university role in innovation and economic development. Woodell holds a master's in education from Harvard University, and a doctorate degree in higher education from The Pennsylvania State University.

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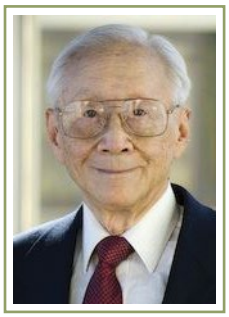

Nai Yuen Chen

1926-2017
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John N. Vournakis

1939-2017
Medical University of South Carolina
NAI Fellow Inductee, 2013

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COMMON ABBREVIATIONS

American Academy	American Academy of Arts and Sciences
AAAS	American Association for the Advancement of Science
AACR	American Association for Cancer Research
AAM	American Academy of Microbiology
AAP	Association of American Physicians
ACerS	American Ceramic Society
ACM	Association for Computing Machinery
ACS	American Chemical Society
AHA	American Heart Association
AIC	American Institute of Chemists
AIChE	American Institute of Chemical Engineers
AIMBE	American Institute for Medical and Biological Engineering
APA	American Psychological Association
APLU	Association of Public and Land-grant Universities
APMI	American Powder Metallurgy Institute
APS	American Physical Society
APhilS	American Philosophical Society
ASCE	American Society of Civil Engineers
ASCI	American Society for Clinical Investigation
ASEE	American Society for Engineering Education
ASM	American Society for Microbiology
ASM International	American Society for Metals International
ASME	American Society of Mechanical Engineers
AUTM	Association of University Technology Managers
BMES	Biomedical Engineering Society
DARPA	Defense Advanced Research Projects Agency
FDA	U.S. Food and Drug Administration
HHMI	Howard Hughes Medical Institute
IAPR	International Association of Pattern Recognition
IEEE	Institute of Electrical and Electronics Engineers
IET	Institution of Engineering and Technology
ISD	International Society for Differentiation
MRS	Materials Research Society
NAE	National Academy of Engineering
NAEd	National Academy of Education
NAM	National Academy of Medicine
NAS	National Academy of Sciences
NCI	National Cancer Institute
NIH	National Institutes of Health
NIHF	National Inventors Hall of Fame
NSF	National Science Foundation
OSA	Optical Society of America
PAS	Pontifical Academy of Sciences
PECASE	Presidential Early Career Award for Scientist and Engineers
RSC	Royal Society of Chemistry
SDB	Society for Developmental Biology
SFB	Society for Biomaterials
SPIE	International Society for Optics and Photonics
TMS	The Minerals, Metals and Materials Society
U.S. DoD	United States Department of Defense
U.S. DOE	United States Department of Energy

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