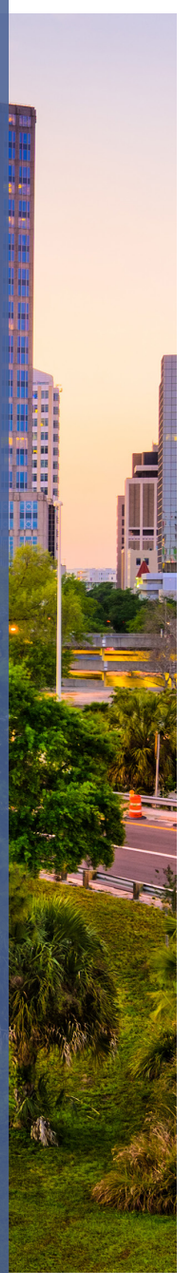

2020 FELLOWS

NINTH 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 2020 class, the program has 1,403 Fellows worldwide representing more than 250 prestigious universities and governmental and non-profit research institutes. Collectively, the Fellows hold more than 42,000 issued U.S. patents, which have generated over 13,000 licensed technologies and companies, and created more than 1 million jobs. In addition, over $3 trillion in revenue has been generated based on NAI Fellow discoveries.

NOMINATE SOMEONE FOR NAI FELLOWSHIP

Eligibility Requirements:

- 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 a named inventor on patent(s) issued by the United States Patent and Trademark Office (the median patent count among current NAI Fellows is 20)
- Nominees must be affiliated with an academic organization, e.g., university, college, non-profit research institute or government research agency
- Nominees do not have to be current members of nor affiliated with an NAI Member Institution (recommended)
- All 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

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

- Nominee's full Curriculum Vitae
- Complete list of issued U.S. patent(s) held by the nominee (excludes applications and pending patents)
- Letter of nomination signed and on letterhead
- Optional: Letter(s) of Support, Nominee's Biography, etc.

Nominations open May – July annually

Find more information at **www.AcademyofInventors.com/Fellows**

UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

November 3, 2021

Dear Colleagues:

On behalf of the United States Patent and Trademark Office (USPTO), I would like to congratulate the newly elected Fellows of the National Academy of Inventors (NAI). The USPTO is honored to acknowledge the 175 academic luminaries of innovation and invention who have been recognized with the highest professional distinction through the NAI.

I also commend the NAI for continuing to celebrate and honor the top academic inventors who have demonstrated a prolific spirit in innovation, both nationally and abroad. We greatly value the significant impact that NAI Fellows continue to make on the betterment of our society, economy, and quality of life, and I am grateful to serve on the selection committee for this most prestigious award.

Again, congratulations for your outstanding achievements, and thank you for all that you have contributed to the world around you.

Sincerely,

Andrew Hirshfeld
Performing the Functions and Duties of the
Under Secretary of Commerce for
Intellectual Property and Director of the
United States Patent and Trademark Office

P.O. Box 1450, Alexandria, Virginia 22313–1450 - WWW.USPTO.GOV

United States
of America

Congressional Record

PROCEEDINGS AND DEBATES OF THE *114th* CONGRESS, FIRST SESSION

House of Representatives

HON. KATHY CASTOR OF FLORIDA

Extension of Remarks

Honoring the 175 Inventors Inducted as the 2020 Fellows of the National Academy of Inventors

June, 24, 2021

Ms. CASTOR of Florida. Madame Speaker, I rise today to honor the 175 inventors who will soon be inducted as the 2020 Fellows of the National Academy of Inventors (NAI) in an induction ceremony in Tampa, FL that will feature a keynote address by U.S. Commissioner for Patents, Andrew Hirshfeld. To be named as a Fellow, these men and women were nominated by their peers and have undergone the scrutiny of the NAI Selection Committee, having had their innovations deemed as making significant impact on quality of life, economic development and welfare of society.

Collectively, this elite group holds nearly 4,800 patents. This year's class of Fellows includes individuals from 115 research universities and non-profit research institutes spanning across the United States and the world. The now 1,403-member group of Fellows is composed of more than 165 presidents and senior leaders of research universities and non-profit research institutes, nearly 600 members of the National Academies of Sciences, Engineering, and Medicine; 45 inductees of the National Inventors Hall of Fame, 63 recipients of the U.S. National Medal of Technology and Innovation and U.S. National Medal of Science, 40 Nobel Laureates, 392 AAAS Fellows, 264 IEEE Fellows and 184 Fellows of the American Academy of Arts & Sciences, among other awards and distinctions. The NAI was founded in 2010 to recognize and encourage inventors with patents issued from the U.S. Patent and Trademark Office, enhance the visibility of academic technology and innovation, encourage the disclosure of intellectual property, educate and mentor innovative students and translate the inventions of its members to benefit society.

We are greatly indebted to innovators such as the ones being inducted this month for their contributions to society through their inventions. I commend these individuals, and the organizations and taxpayers that support them, for the work they do to revolutionize the world we live in. As the following inventors are inducted, may it encourage future generations to strive to meet this high honor and continue the spirit of discovery and innovation.

The 2020 NAI Fellows include:

JD Albert, University of Pennsylvania; Naofal Al-Dhahir, The University of Texas at Dallas; Khalil Amine, Argonne National Laboratory; Ananth Annapragada, Baylor College of Medicine; Samuel Asirvatham, Mayo Clinic; William Bachovchin, Tufts University; George Barany, University of Minnesota; Randall Bateman, Washington University in St. Louis; Eric Beckman, University of Pittsburgh; Gary H. Bernstein, University of Notre Dame; Matt A. Bernstein, Mayo Clinic; Vaughn Betz, University of Toronto; Bir Bhanu, University of California; Riverside Venkat Bhethanabotla, University of South Florida;Ronald Biediger, Texas Heart Institute; Alexandra Boltasseva, Purdue University; Donal D.C. Bradley, King Abdullah University of Science and Technology; Bruce Branchaud, University of Oregon; Daniel Brown, Northwestern University; Susan K. Brown, Cornell University; Scott P. Bruder, Case Western Reserve; University Irwin Chaiken, Drexel University; V. Chandrasekar, Colorado State University;Chih-hung Chang, Oregon State University; Hsueh-Chia Chang, University of Notre Dame; Ramalingam Chellappa, Johns Hopkins University; Kuan-Neng Chen, National Chiao Tung University; Jianjun Cheng, University of Illinois at Urbana-Champaign; Mung Chiang, Purdue University; Ki Chon, University of Connecticut; Keith M. Chugg, University of Southern California; Mark Clarke, University of Houston; Jason (Jingsheng) Cong, University of California, Los Angeles; Liming Dai, University of New South Wales; Rajesh Dave', New Jersey Institute of Technology; Valina Dawson, Johns Hopkins University; Nancy DeMore, Medical University of South Carolina; Reza Derakhshani, University of Missouri-Kansas City; Robert Desnick, Mount Sinai Health System; Michael Diamond, Washington University in St. Louis; Steven Eschrich, H. Lee Mo¬tt Cancer Center & Research Institute; Gary Evans, Southern Methodist University; Robin Felder, University of Virginia; Albert J. Fornace Jr., Georgetown University; Gordon Freeman, Harvard University; Alexander Fridman, Drexel University ; Andrés García, Georgia Institute of Technology; Sharon Gerecht, Johns Hopkins University; M. Monica Giusti, The Ohio State University; Charles Glabe, University of California, Irvine;

Martin Gleave, The University of British Columbia; Michael Goldfarb, Vanderbilt University; Carol Greider, Johns Hopkins University; Paul Hansma, University of California, Santa Barbara; Joseph Harding, Washington State University; William Harris, Massachusetts General Hospital Research Institute; Jibo He, Wichita State University; Sidney Hecht, Arizona State University; Richard Heller, University of South Florida; Paul Hergenrother, University of Illinois at Urbana-Champaign; James Hickman, University of Central Florida; Rodney JY Ho, University of Washington; Eric Holmes, Florida State University; David Horsley, University of California, Davis; Tony Jun Huang, Duke University; Scott Hultgren, Washington University in St. Louis; David Hunn, The University of Texas at Arlington; Laurence Hurley, The University of Arizona; Louis Ignarro, University of California, Los Angeles; Bahram Jalali, University of California, Los Angeles; Susan James, Colorado State University; Nikil Jayant, Georgia Institute of Technology; Michael Jewett, Northwestern University; Lizy Kurian John, The University of Texas at Austin; Henry Kapteyn, University of Colorado Boulder; Thomas Katsouleas, University of Connecticut; Mark Kay, Stanford University; Michael Keidar, The George Washington University; Mark Kendall, Australian National University ; Michael Kessler, North Dakota State University; Nicholas Kotov, University of Michigan; Konstantin Kousoulas, Louisiana State University; Boris Kovatchev, University of Virginia; Chung-Chieh "Jay" Kuo, University of Southern California; Hoi-Sing Kwok, The Hong Kong University of Science and Technology; Michael Lebby, Glyndwr University in Wales, UK; Pooi See Lee, Nanyang Technological University, Singapore; Xiuling Li, University of Illinois at Urbana-Champaign; Lanny Liebeskind, Emory University; James Lillard, Morehouse School of Medicine; Chwee Teck Lim, National University of Singapore; Julia Ljubimova, Terasaki Institute for Biomedical Innovation; Laurie Locascio, University of Maryland; Gerald Loeb, University of Southern California; David Luzzi, Northeastern University; Hongbin Ma, University of Missouri-Columbia; Anant Madabhushi, Case Western Reserve University; Duncan J. Maitland, Texas A&M University; Tadeusz Malinski, Ohio University; John Mauro, The Pennsylvania State University; Bill McCutchen, Texas A&M University; Donald McDonnell, Duke University; John McGlone, Texas Tech University; Richard Melker, University of Florida; Anton Middelberg, The University of Adelaide, Australia; Richard Miles, Texas A&M University; Charles Mistretta, University of Wisconsin-Madison; Jin Kim Montclare, New York University; Margaret Murnane, University of Colorado Boulder ; Mitzi Nagarkatti, University of South Carolina; Vijaykrishnan Narayanan, The Pennsylvania State University; Denise Ney, University of Wisconsin-Madison; Robert A. Norwood, The University of Arizona; Thomas O'Halloran, Northwestern University; Ann Palmenberg, University of Wisconsin-Madison; Eleftherios Papoutsakis, University of Delaware; Keshab Parhi, University of Minnesota; Norbert Pelc, Stanford University; Vir V. Phoha, Syracuse University ; Peter Pidcoe, Virginia Commonwealth University; Leonard Pinchuk, University of Miami; Ralph Portier, Louisiana State University; Behnam Pourdeyhimi, North Carolina State University; David Puleo, University of Mississippi; Judit Puskas, The Ohio State University; David Putnam, Cornell University; Si Zhao (Joe) Qin, City University of Hong Kong; Tariq Rana, University of California, San Diego; Thomas Ranney, North Carolina State University; Vilupanur Ravi, California Polytechnic State University; E. Premkumar Reddy, Mount Sinai Health System; Elsa Reichmanis, Lehigh University; Martin Richardson, University of Central Florida; Naphtali Rishe, Florida International University; Michael A. Rogawski, University of California, Davis; Jannick Rolland, University of Rochester; Jean-Francois Rossignol, University of South Florida; Ashutosh Sabharwal, Rice University; Joshua Sakon, University of Arkansas; Ravi Sandhu, The University of Texas at San Antonio; Edward Schuchman, Mount Sinai Health System; Gregory Schultz, University of Florida; Yang Shao-Horn, Massachusetts Institute of Technology; Arlene Sharpe, Harvard University; Rahul Shrivastav, University of Georgia; Sachdev Sidhu, University of Toronto; Larry Sklar, The University of New Mexico; Daniel K. Sodickson, New York University; David Stephens, Emory University; Szymon Suckewer, Princeton University; Timothy Swager, Massachusetts Institute of Technology; Nongjian Tao, Arizona State University; Nitish Thakor, Johns Hopkins University; Albert H. Titus, University at Buffalo, The State University of New York; John Trent, University of Louisville; Van N. Truskett, The University of Texas at Austin; Din-Ping Tsai, The Hong Kong Polytechnic University; Ranji Vaidyanathan, Oklahoma State University; George Varghese, University of California, Los Angeles; John Volakis, Florida International University; Luis Von Ahn, Carnegie Mellon University; Bipin Vora, Illinois Institute of Technology; Haiyan Wang, Purdue University; Lihong Wang, California Institute of Technology; Joyce Y. Wong, Boston University; Neal Woodbury, Arizona State University; Han-Chung Wu, Academia Sinica; Changhuei Yang, California Institute of Technology; Gerald Zamponi, University of Calgary; Ling Zang, The University of Utah; Feng Zhang, Massachusetts Institute of Technology; Liangfang Zhang, University of California, San Diego; Jia Zhou, The University of Texas Medical Branch; MengChu Zhou, New Jersey Institute of Technology; S. Kevin Zhou, Chinese Academy of Sciences & The Chinese University of Hong Kong.

CLASS OF 2020 FELLOWS INDUCTION CEREMONY SPEAKERS

Welcome Remarks

Paul R. Sanberg

President, National Academy of Inventors

Paul R. Sanberg, Ph.D, FNAI, is the president and founder of the NAI. A Florida native, he is also a Distinguished University Professor of medicine, engineering and business, and the executive director of the Center of Excellence for Aging and Brain Repair at the University of South Florida. His work has been instrumental in translating new pharmaceutical and cellular therapeutics to clinical trials and commercialization for stroke, ALS, Alzheimer's, Tourette's syndrome, and Parkinson's disease. He has significant experience with start-ups, venture capital, and pharmaceutical companies. He is an inventor on 55 U.S. and over 100 foreign patents; author of over 700 scientific articles and 14 books and is highly cited. He has served on the editorial boards for over 30 scientific journals, is editor-in-chief of NAI's journal, Technology & Innovation, and has received numerous scientific awards. These have included AAAS-Lemelson Invention Ambassador; AIMBE Fellow Advocate Award; Australian National University Alumni Award; Bryden Alumni Award (York University); Florida Academy of Science Medal; Florida Inventors Hall of Fame Inductee; Fulbright Specialist to Australia; Johns Hopkins Society of Scholars; McGovern Science and Society Award; Fellow of AAAS, IEEE, BMES, ACNP, AIMBE, NAI (Charter), Sigma Xi (Inaugural) and ASEMFL (Inaugural). He was educated in Canada and Australia and elected Fellow of six Royal Societies, including Aeronautics (Master Flight Instructor), Arts, Biology, Chemistry, Public Health, and Medicine. He has served on numerous advisory boards and committees, e.g. U.S. National Medal of Technology and Innovation; USPTO-Smithsonian; and APLU Commission on Innovation, Competitiveness and Economic Prosperity.

Andrew H. Hirshfeld, Esq.

Commissioner for Patents
U.S. Patent and Trademark Office

As Commissioner for Patents, Drew Hirshfeld manages and leads the patent organization as its chief operating officer. He is responsible for managing and directing all aspects of the organization which affect administration of patent operations, examination policy, patent quality management, international patent cooperation, resources and planning, and budget administration.

During his time as Commissioner, Mr. Hirshfeld has led the Patent business unit by emphasizing both transparency and collaboration. He has managed efforts to ensure the consistency and reliability of patent grants. Mr. Hirshfeld has further played a lead role to ensure that the examining corps is provided with updated examination guidance and training.

Prior to serving as Commissioner for Patents, Mr. Hirshfeld held the positions of Deputy Commissioner for Patent Examination Policy and Chief of Staff to the Under Secretary of Commerce for Intellectual Property and Director of the USPTO. Mr. Hirshfeld began his career in 1994 as a Patent Examiner. He 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.
Mr. Hirshfeld received a Bachelor of Science from The University of Vermont, and a J.D. from Western New England College School of Law.

CLASS OF 2020 FELLOWS

Naofal Al-Dhahir | *The University of Texas at Dallas*

Naofal Al-Dhahir, Ph.D., is an Erik Jonsson Distinguished Professor at The University of Texas at Dallas. Al-Dhahir is an expert in broadband wireless and wireline communications and signal processing. He is the recipient of four IEEE best paper awards, including the 2006 Donald G. Fink Award. He received the 2019 IEEE SPCC Technical Recognition Award and 2021 Qualcomm Faculty Award. He holds 43 U.S. patents. He has published over 460 journal and conference papers and served as Editor-in-Chief of IEEE Transactions on Communications from January 2016 to December 2019. Al-Dhahir is a Fellow of the IEEE Class of 2008.

Jonathan (J.D.) Albert | *University of Pennsylvania*

JD Albert is a lecturer at the University of Pennsylvania in mechanical engineering and applied mechanics. Albert has developed products and technology used in the fields of electronics, photovoltaics, packaging, and the internet of things. He has been inducted into the National Inventors Hall of Fame and is named on over 100 U.S. Patents. He has founded two startup companies including E Ink, the world leader in electronic paper displays. He has been published in Nature, PDMA, Entrepreneur, and Wired.

Khalil Amine | *Argonne National Laboratory*

Khalil Amine, Ph.D., is an Argonne Distinguished Fellow and the head of the Advanced Battery Technology team at Argonne National Laboratory. He is also an adjunct professor at Stanford University and professor at The University of Chicago. Amine is known for inventing the NMC cathode used in most electric vehicles today as well as the first 5V cathode material that is used in smart grid. He is the recipient of the Global Energy Prize, Scientific American's Top Worldwide 50 Researcher Award, six R&D 100 Awards, the U.S. Federal Laboratory Award for Excellence in Technology Transfer, and ECS Battery Technology & Research awards. He holds 113 patents with over 24 that have been licensed to 12 companies including GM, BASF, LG, and Samsung. He has published 642 publications and served as the president of IMLB and associate editor of the Nano-Energy Journal. He is an ECS Fellow and a Fellow of the IAAM.

Ananth Annapragada | *Baylor College of Medicine*

Ananth Annapragada, Ph.D., is a professor of radiology, the director of basic research and vice-chief of research in the Edward B. Singleton Department of Radiology at Texas Children's Hospital and Baylor College of Medicine. In addition, he is a professor (by courtesy) of obstetrics and gynecology, and a member of the Dan L. Duncan Comprehensive Cancer Center. An engineer by training, Ananth received his Ph.D. in chemical engineering from The University of Michigan in 1989. After postdoctoral Fellowships at the University of Minnesota and MIT, he worked in the pharma and small biotech industry for 10 years before returning to academia. Ananth's research interests are broad, and include placental biology, oncology, Alzheimer's disease, new imaging technologies, 3D bioprinting, and artificial intelligence. He serves on the board and the Scientific Advisory Board of Alzeca Inc. and on the Scientific Advisory Board of Sante Ventures.

Samuel J. Asirvatham | *Mayo Clinic*

Samuel J. Asirvatham, M.D., is a cardiac electrophysiology consultant in the Division of Heart Rhythm Services, Department of Cardiovascular Medicine at the Mayo Clinic in Rochester, Minnesota, and holds the academic rank of professor of medicine and pediatrics at the Mayo Clinic College of Medicine and Science. Asirvatham is also recognized with the distinction of the James M. and Lee S. Vann Professorship in Cardiovascular Diseases. His work has resulted in approximately 50 U.S. patents and publication of over 500 peer-reviewed articles, abstracts, book chapters and commentaries in high-impact scientific journals. He has been the recipient of many awards including the Distinguished Teacher Award from the Heart Rhythm Society; Distinguished Educator Award from the American College of Cardiology; Mayo Clinic Awards for Individual Excellence and Partnership in Care and multiple Teacher of the Year awards. He was recognized with the Mayo Clinic Distinguished Educator Award in 2014 and Distinguished Inventor of the Year in 2020.

William W. Bachovchin | *Tufts University*

William W. Bachovchin, Ph.D., is a professor of molecular and chemical biology at Tufts University and principal of Bach BioSciences. Bachovchin is an author on more than 100 peer reviewed journal articles, and an inventor on more than 40 issued U.S. patents as well as numerous pending applications. He is a leader in the areas of NMR spectroscopy, enzymes mechanisms and drug design and discovery, especially in areas pertaining to the post proline cleaving family of enzymes. To date, three drugs designed by Bachovchin have entered human clinical trials and several more are in late-stage preclinical testing.

George Barany | *University of Minnesota*

George Barany, Ph.D., is currently a Distinguished McKnight University Professor of chemistry at the University of Minnesota – Twin Cities. Barany is a long-time leader and innovator in the field of peptide synthesis methodology, which includes the development of novel resin supports (PEG-PS, CLEAR), reagents and protecting groups (PAL, HAL, XAL, BAL, Clear-OX). He contributed to technologies for synthesis of antisense DNA and RNA, and the invention of universal DNA arrays for detection of genetic diseases. Barany received the Vincent du Vigneaud Award for outstanding achievements in peptide research from the American Peptide Society (1994), the Ralph F. Hirschmann Award in Peptide Chemistry from the ACS (2006), and the Murray Goodman Scientific Excellence & Mentorship Award from the American Peptide Society (2015). He holds 38 U.S. patents that have been licensed to a half-dozen companies. He has published approximately 170 refereed journal publications, 120 refereed proceedings, and 50 reviews, and has served on several editorial boards.

Randall Bateman | *Washington University in St. Louis*

Randall Bateman, Ph.D., is the Charles F. and Joanne Knight Distinguished Professor of Neurology, director of the Dominantly Inherited Alzheimer Network (DIAN), and director of the DIAN Trials Unit (DIAN-TU) at Washington University. His research focuses on the pathophysiology and development of improved diagnostics and treatments of Alzheimer's disease (AD). His lab reported a highly accurate blood test for AD amyloid plaques, which launched into commercial production as the first blood test to help diagnose AD. His research in DIAN has provided evidence for a cascade of events beginning decades before symptom onset that leads to AD dementia, supporting development of AD prevention trials. He is a productive innovator with 47 active/pending patents, and co-founder of C2N Diagnostics.

Eric J. Beckman | *University of Pittsburgh*

Eric J. Beckman, Ph.D., is the Bevier Distinguished Service Professor at the University of Pittsburgh. Beckman has made significant contributions to both green product design and the creation of novel biomedical devices. He is the recipient of the Presidential Green Chemistry Award and a National Young Investigator award from the U.S. National Science Foundation. Beckman holds over 40 U.S. patents of which 10 have been licensed or optioned to U.S, companies. He is the founder of three startup companies, including Cohera Medical, Inc. He has published over 200 peer-reviewed articles and book chapters.

Gary H. Bernstein | *University of Notre Dame*

Gary H. Bernstein, Ph.D., is the Frank M. Freimann Professor of Electrical Engineering at the University of Notre Dame. He is the recipient of an NSF White House Presidential Faculty Fellow Award, Indiana Master of Innovation Award from the Indiana Economic Development Corp. and Forbes Inc., and a 1st Source Bank Commercialization Award, as well as numerous teaching awards. He holds 15 U.S. patents. Bernstein is co-founder of Indiana Integrated Circuits, LLC, based in South Bend, Indiana. He has published 300 articles and book chapters. Bernstein is a member of the University of Connecticut School of Engineering Academy of Distinguished Engineers and is a Fellow of the IEEE.

Matt A. Bernstein | *Mayo Clinic*

Matt A. Bernstein Ph.D., is a professor of medical physics in the Department of Radiology at Mayo Clinic and has made substantial contributions to the field of MRI. He is a Distinguished Investigator of the Academy for Radiology & Biomedical Imaging Research and a recipient of the Distinguished Service Award from the International Society for Magnetic Resonance in Medicine (ISMRM). Bernstein has served on the Boards of the ISMRM and the American Board of Medical Physics and is a Certified Medical Physicist. He holds 36 U.S. patents that have been licensed to three companies. He has published 140 peer-reviewed articles and 275 abstracts. Bernstein has also co-authored two books: "Thinking About Equations" and "Handbook of MRI Pulse Sequences." He served as Editor-in-Chief of Magnetic Resonance in Medicine from 2011-2020. He is a Fellow of the ISMRM and AIMBE.

Vaughn Betz | *University of Toronto*

Vaughn Betz, Ph.D., is a professor and the NSERC/Intel Industrial Research Chair in Programmable Silicon at the University of Toronto. Betz pioneered new approaches to evaluating and optimizing Field Programmable Gate Array (FPGA) computer chip architectures and created the widely used VPR architecture evaluation CAD tool. He is one of the architects of the first five generations of Intel's Stratix and Cyclone FPGA devices and of Intel's Quartus CAD tool which are used by design engineers worldwide to realize a myriad of electronic systems. His research has received 13 best or most significant paper awards from leading conferences and the Professional Engineers of Ontario Medal for Engineering Excellence. He co-founded Right Track CAD and the Intel Toronto Technology Centre and holds 101 issued U.S. patents. Betz has published over 130 technical articles, one book, and four book chapters. He is an associate editor of ACM TRETS, a Fellow of the IEEE, and a faculty affiliate of the Vector Institute for Artificial Intelligence.

Bir Bhanu | *University of California, Riverside*

Bir Bhanu, Ph.D., is Bourns Endowed University of California Presidential Chair in Engineering and Distinguished Professor of Electrical and Computer Engineering at the University of California, Riverside (UCR). He was the founding first faculty of Bourns College of Engineering and served as founding Chair of Electrical Engineering (1991-94) and founding director of an interdisciplinary Center for Research in Intelligent Systems (1998-2019). Prior to UCR, he was Senior Fellow at Honeywell. He holds 18 patents; his inventions are in computer vision and machine learning for navigation, medical, sports, and recognition of people/vehicles. He has authored 560 reviewed publications, including 164 journal papers, 60 book chapters and 12 books. Bhanu received the Faculty Research Lecturer Award, the highest Academic Senate research award of UCR in 2019, the first award to an engineer in 30 years, and an award from the CEO of Honeywell. Bhanu is a Fellow of AAAS, IEEE, IAPR, SPIE and AIMBE.

Venkat R. Bhethanabotla | *University of South Florida*

Venkat R. Bhethanabotla, Ph.D., is a professor of chemical and biomedical engineering at the University of South Florida. Bhethanabotla is known for his contributions to point of need chemical and biological sensors, especially issues related to rapid sensing from real samples and to materials modeling for energy and environmental catalysis. He holds 15 U.S. patents that have been licensed and optioned to four companies. He is the co-founder of three startup companies. He has published 140 journal articles and serves as associate editor for IEEE Sensors Journal. Bhethanabotla is a Fellow of AIChE, AAAS and AIMBE.

Ronald J. Biediger | *Texas Heart Institute*

Ronald Biediger, Ph.D., is currently the director of medicinal chemistry, molecular cardiology research at the Texas Heart Institute. Biediger leverages his expertise in small molecule therapeutics to treat, diagnose, and prevent cardiovascular disease. He holds 27 U.S. Patents and more than 70 foreign patents that have been licensed to four companies. He is an industry trained medicinal chemist with over 25 years of experience in drug discovery and multi-step synthesis. His teams have discovered five new chemical entities that have entered human clinical testing. He is a co-founder of 7Hills Pharma, LLC, which has recently progressed 7HP349, a small molecule integrin activator that he discovered, into Phase 1 clinical trials for cancer immunotherapy and as a vaccine adjuvant. He is an author of 11 articles and one book chapter.

Alexandra Boltasseva | *Purdue University*

Alexandra Boltasseva, Ph.D., is a Ron and Dotty Garvin Tonjes Professor of Electrical and Computer Engineering with courtesy appointment in Materials Engineering at Purdue University. Boltasseva specializes in nanophotonics, nanofabrication, optical materials, and quantum photonics. She is a 2018 Blavatnik National Award for Young Scientists Finalist and received the 2013 IEEE Photonics Society Young Investigator Award, 2013 Materials Research Society (MRS) Outstanding Young Investigator Award, the MIT Technology Review Top Young Innovator (TR35), the Young Researcher Award in Advanced Optical Technologies from the University of Erlangen-Nuremberg, Germany, and the Young Elite-Researcher Award from the Danish Council for Independent Research. She is a Fellow of the IEEE, OSA, and SPIE. She served on the MRS Board of Directors and is currently Editor-in-Chief for OSA's Optical Materials Express journal.

Donal D.C. Bradley | *King Abdullah University of Science and Technology*

Donal D.C. Bradley, Ph.D., is the Vice President for Research and Distinguished Professor of Materials Physics and Device Engineering at KAUST. Bradley has made seminal contributions to the science and engineering of soluble semiconductors for application in displays, lighting, solar energy, electronics, sensing, and photonics. He is the recipient of many awards, including ESF European Latsis Prize, SID Rajchman Prize, IOP Faraday Gold Medal, Royal Society Bakerian Medal, IET Faraday Medal and E-MRS Czochralski Gold Medal. He holds 16 U.S. and 11 foreign patents, directly assigned or licensed to three companies. He is a founder of Cambridge Display Technology, Molecular Vision, Solar Press UK, and PeroLED Ltd. He has published over 650 Google Scholar-listed articles (>88,000 citations, h=130) and was founding editor of Organic Electronics and NPG Flexible Electronics. Bradley is an elected Fellow of the Royal Society, IET, IOP, RSA and received a CBE for his services to science.

Bruce P. Branchaud | *University of Oregon*

Bruce P. Branchaud, Ph.D., has been a faculty member in the Department of Chemistry and Biochemistry at the University of Oregon since 1983 and is currently Professor Emeritus. He is also a Distinguished Scientist (2017 – present) in the Knight Cancer Institute at Oregon Health and Science University. He was Director of Global Chemistry at Invitrogen (2005-2008) and Research Fellow at Life Technologies (2008-2011). Branchaud is the co-founder or co-owner of four biotech startup companies. Branchaud's research expertise includes synthetic and mechanistic organic chemistry, chemical biology, biochemistry, chemistry-enabled biotechnology, and biochemistry-enabled biotechnology. He is sole inventor or co-inventor on 17 granted U.S. patents and 28 U.S., 19 European, 20 WIPO(PCT) and two Japanese patent applications He has published 74 peer-reviewed research articles. Branchaud was a Fellow of the Alfred P. Sloan Foundation and is a AAAS Fellow.

Daniel P. Brown | *Northwestern University*

Daniel P. Brown, Ph.D., is an award-winning designer, serial inventor, entrepreneur, member of the PPAC (Patent Public Advisory Council) and full-time professor in the Segal Design Institute – Northwestern University. Brown has received over 40 U.S. patents for his novel new product solutions in industry and entrepreneurially, taking many to market himself as a founder of two startups. He has seen both sides of the American Dream with his American Made Bionic Wrench invention; innovation-based market success, while at the same time having to continuously fight knockoffs in the marketplace almost destroying his business. Brown believes that the best social system for our society is a good job, but job creation and the economic benefits of innovation fundamentally depend on the ability of the inventor-entrepreneurs to protect their investments through their intellectual property. He has committed himself to this important cause and continues to work towards an equitable, protectable, and sustainable intellectual property system for all inventors.

Susan K. Brown | *Cornell University*

Susan K. Brown, Ph.D., is the Herman M. Cohn Professor of Agriculture and Life Sciences at Cornell University. Brown is the inventor of nine cherry varieties and seven apple varieties, her field of research is apple breeding and genomics. She is the recipient of the New York Senate Woman of Distinction Award (2014), the Garden Club of America Zone Commendation Award (2019), the Wilder Medal of the American Pomological Society (2016) and the SUNY Chancellor's Award for Faculty Service (2013). She holds 11 U.S. plant patents and foreign IP protection is being licensed to select companies globally. She has published 65 refereed publications, 62 outreach articles, nine book chapters and is completing her first book. Brown is a Fellow of the ASHS.

Scott P. Bruder | *Case Western Reserve University*

Scott P. Bruder, M.D., Ph.D., is the founder and CEO of the Bruder Consulting & Venture Group, providing product development, regulatory, compliance and commercialization support for companies and HCPs engaged in tissue repair and regeneration. He is the former chief medical and scientific officer of Stryker Corporation, and member of FDA's Advisory Panel on Human Cell, Tissue and Gene Therapy. Over the last 25 years, he has launched dozens of products, published over 125 papers, abstracts and chapters, and received the highest scientific awards from the AAOS, ORS, ABJS and AIMBE. His landmark patents on the use of MSCs for treating orthopaedic conditions moved the entire platform from autologous to allogeneic cell therapy in a variety of companies around the world. Bruder maintains his academic ties as an Adjunct Professor of Biomedical Engineering at Case Western Reserve University, where he trained and has actively collaborated with Professor Arnold Caplan since 1985.

Irwin M. Chaiken | *Drexel University*

Irwin M. Chaiken, Ph.D., is professor of biochemistry and molecular biology at Drexel University College of Medicine. Chaiken is co-inventor of the anti-interleukin five asthma medication Nucala (mepolizumab, GlaxoSmithKline). He also holds U.S. and international patents for macrocyclic peptidomimetic and recombinant protein HIV-1 antivirals targeting virus Env protein. His research field is protein and peptide sciences, and protein recognition mechanisms and machines in health and disease. He has been principal investigator of research grants of international scope, including the NIH Program Project "Structure-Based Antagonism of HIV-1 Envelope Function in Cell Entry" currently in its 24th year. He has published widely in primary research literature, and is a continuing journal and grant reviewer. He was founding editor of the Journal of Molecular Recognition. Chaiken's memberships include the American Society of Biochemistry and Molecular Biology, ACS, American Peptide Society, Protein Society, American Society of Microbiology and Society of Molecular Recognition.

V. Chandrasekar | *Colorado State University*

V. Chandrasekar (Chandra), Ph.D., is a University Distinguished Professor at Colorado State University. He has been a Distinguished Visiting Scientist with the NASA/GSFC, and a Distinguished Professor of Finland. He is the research director of the NSF Engineering Research Center for Collaborative Adaptive Sensing of the Atmosphere. He is a pioneer in the areas of weather radar technology and science and is an avid experimentalist, conducting large scale experiments. Chandrasekar has served in many National Academy of Sciences Committees preparing technology and policy direction documents. He is an elected Fellow of IEEE, the American Meteorological Society, and the International Union of Radio Science (URSI). He is a recipient of the NASA Technical Achievement Award, the NASA Robert H. Goddard Exceptional Achievement Award, the NOAA/NWS Directors Medal of Excellence, IEEE (GRSS) Distinguished Achievement Award and the education award. He was knighted by the Government of Finland in the year 2016.

Chih-Hung (Alex) Chang | *Oregon State University*

Chih-hung Chang, Ph.D., is currently a professor in the School of Chemical, Biological, and Environmental Engineering at the Oregon State University. Microreactor-Assisted Nanomaterial Deposition, a developed technique by his group, was recognized by the Society of Manufacturing Engineers as the 2011 SME "Innovations That Could Change the Way You Manufacture" Watch List. Chang is a SHARP Labs of America scholar, an Intel Faculty Fellow, and a recipient of the National Science Foundation's CAREER award. He is the founder and director of Oregon Process Innovation Center, part of National Nanotechnology Coordinated Infrastructure at OSU. Chang is a founder of Pellucere Technologies, a cleantech venture that develops and manufactures optical coatings technologies and proprietary application systems that serve a wide range of energy and industrial needs. He has more than 150 refereed publications and 15 issued patents. He is an editor of the IEEE Journal of Photovoltaics

Hsueh-Chia Chang | *University of Notre Dame*

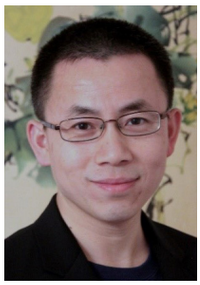
Hsueh-Chia Chang Ph.D., is the Bayer Corporation Chair Professor of chemical engineering at the University of Notre Dame. Chang is a leader in the field of electrokinetics and has invented numerous molecular diagnostic technologies based on non-equilibrium electrokinetic phenomena. He is the recipient of the American Physical Society Francois N. Frenkiel Award, the American Electrophoresis Society Lifetime Achievement Award, the UK Royal Society of England Distinguished Visiting Fellowship, and the University of Notre Dame First Source Commercialization Award. He holds 15 U.S. patents and five foreign patents that have been licensed to five companies. He is a co-founder of Aopia Biosciences. He has published over 290 journal papers and two books and is the founding editor of Biomicrofluidics. Chang is Fellow of the APS.

Ramalingam Chellappa | *Johns Hopkins University*

Rama Chellappa, Ph.D., is a Bloomberg Distinguished Professor in the Departments of Electrical and Computer Engineering and Biomedical Engineering with a secondary appointment in the Department of Computer Science at Johns Hopkins University, and is also affiliated with CIS, CLSP, Malone Center and MINDS. He holds a non-tenure position as a College Park Professor in the ECE department at the University of Maryland. His research interests are in computer vision, pattern recognition, machine learning and artificial intelligence. He is a recipient of the 2020 IEEE Kilby Medal for Signal Processing and the 2012 K. S. Fu Prize from the International Association of Pattern Recognition, the Society, Technical Achievement, and Meritorious Service Awards from the IEEE Signal Processing Society, and the Technical Achievement and Meritorious Service Awards from the IEEE Computer Society. In 2016, he received the IEEE Biometrics Council Leadership Award. He is a Fellow of AAAI, AAAS, ACM, IAPR, IEEE, NAI and OSA and holds seven patents

Kuan-Neng Chen | *National Chiao Tung University*

Kuan-Neng Chen, Ph.D., is vice president for international affairs, associate dean of the International College of Semiconductor Technology, and Chair Professor of Department of Electronics Engineering at National Yang Ming Chiao Tung University. Chen is the leader and pioneer in the field of 3D IC, heterogeneous integration, and advanced packaging. He is the recipient of IEEE EPS Exceptional Technical Achievement Award, MOST Outstanding Research Award, MOST Futuristic Breakthrough Technology Award, NCTU Outstanding Industry-Academia Cooperation Achievement Awards (five times), CIE Outstanding Professor Award, CIEE Outstanding Professor Award, and IBM Invention Achievement Awards (five times). He holds 51 U.S. patents and 32 foreign patents and has licensed his technologies to 15 companies. He has published three books, six book chapters, and 323 journals and conference papers, and served as general chair of IEEE IITC and committee member of many prestigious conferences. He is a Fellow of IEEE and IET.



Jianjun Cheng | *University of Illinois at Urbana-Champaign*

Jianjun Cheng. Ph.D., is the Hans Thurnauer Professor of materials science and engineering at the University of Illinois at Urbana-Champaign. He obtained a bachelor's degree from Nankai University in 1993, a master's degree at Southern Illinois University at Carbondale in 1996, and a Ph.D. degree in materials science at the University of California, Santa Barbara in 2001. He was a senior scientist at Insert Therapeutics, Inc. from 2001 to 2004 and a postdoctoral scientist at MIT from 2004 to 2005 before he joined the faculty at UIUC in 2005. Cheng is the co-inventor of 40 issued patents and has over 200 publications. Cheng is the editor-in-chief of Biomaterials Science, RSC. He is a Fellow of the AAAS, AIMBE and the American Chemical Society-Division of Polymer Chemistry.

Mung Chiang | *Purdue University*

Mung Chiang, Ph.D., is the John A. Edwardson Dean of the College of Engineering and the Roscoe H. George Distinguished Professor of Electrical and Computer Engineering at Purdue University. In 2020, he was the science and technology adviser to the Secretary of State and led tech diplomacy in the U.S. Department of State. Prior to July 2017, he was the Arthur LeGrand Doty Professor of Electrical Engineering at Princeton University. His research on communication networks received the 2013 Alan T. Waterman Award, the highest honor to scientists and engineers under the age of 40 in the U.S. He is a recipient of Guggenheim Fellowship, IEEE Tomiyasu Technical Achievement Award, ASEE Terman Education Award, and a foreign member of Royal Swedish Academy of Engineering Sciences. He founded the Princeton EDGE Lab in 2009, and co-founded a few startup companies and a non-profit industry consortium in mobile data, IoT, and AI.

Ki H. Chon | *University of Connecticut*

Ki H. Chon, Ph.D., is the Krenicki Endowed Chair Professor of biomedical engineering at the University of Connecticut. Chon is internationally recognized for his innovations and leadership in biosignal processing, biosensors, wearable devices, and mobile health. His innovative research in the area of atrial fibrillation detection using smartphones, smartwatches, and Holter monitors has had a significant impact on the field of wearable devices and cardiac health monitoring. He holds 12 U.S. patents and nine foreign patents, and several companies license his intellectual property. He has published 177 refereed journal articles, three book chapters, 64 conference proceedings, and 50 abstracts, and serves as associate editor for several peer-reviewed journals in the areas of biomedical engineering and smart health. Chon is a Fellow of both the International AIMBE and AIMBE.

Keith M. Chugg | *University of Southern California*

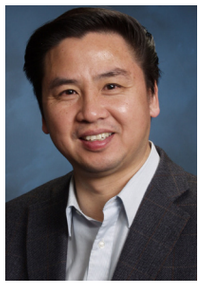
Keith Chugg, Ph.D., is a professor in the Ming Hsieh Department of Electrical and Computer Engineering at the University of Southern California. At USC, he has served as director of the Communication Sciences Institute, associate department chair, as well as an associate editor for the IEEE Transactions on Communications. He received the Fred W. Ellersick award for the best unclassified paper at MILCOM 2003 and the ASEE Frederick Emmons Terman Award in 2008. Chugg also co-founded TrellisWare Technologies in 2000 and serves as TrellisWare's chief scientist. TrellisWare is a leading provider of software defined radio technology for U.S. armed forces. He is a Fellow of the IEEE, an inventor on over 30 U.S. and international patents, and has published over 150 scholarly papers in leading conferences and journals.

Mark Clarke | *University of Houston*

Mark Clarke, Ph.D., is associate provost for the University of Houston. Prior to joining the Office of the Provost in 2015, he served for three years as associate VC/VP for technology transfer and was responsible for building a robust innovation and entrepreneurial ecosystem at UH including establishing the NSF-funded UH I-Corps™ Site. His research has been funded by NASA, DARPA, NSF, DOE and NIH as well as private industry. He has published over 120 peer-reviewed scientific articles, book chapters and technical reports. He currently holds 13 U.S. patents and 12 international patents, has received seven NASA Technical Innovation Space Act Awards, and has been a founder in two life sciences startups. Nationally, he serves on the Executive Committee of the Commission for Innovation, Competitiveness and Economic Prosperity and actively contributed to the development the APLU/CECE "Talent, Innovation and Place" Framework currently used by over 60 U.S. academic institutions.

Jingsheng (Jason) Cong | *University of California, Los Angeles*

Jingsheng Jason Cong, Ph.D., is the Volgenau Chair for Engineering Excellence at the UCLA Computer Science Department, the director of Center for Customizable Domain-Specific Computing, and the director of the VAST (VLSI Architecture, Synthesis, and Technology) Laboratory. Cong made seminal contributions to electronic design automations and customizable computing. He has five patents and over 500 publications in these areas, including 16 best paper awards and three 10-Year Retrospective Most Influential Paper Awards. Cong is the first who received the Technical Achievement Award from both the IEEE Circuits and System Society and IEEE Computer Society. He is also the recipient of the ACM/IEEE Richard Newton Technical Impact Award in Electric Design Automation and the University Research Award for excellence in semiconductor design research from the Semiconductor Industry Association and the Semiconductor Research Corporation. Cong is a Fellow of ACM and IEEE, and a member of NAM.



Liming Dai | *University of New South Wales*

Liming Dai Ph.D., is a Scientia Professor, an Australian Laureate Fellow, and director of the Australian Carbon Materials Centre at University of New South, Sydney. Dai is a pioneer and leading authority in the field of carbon-based metal-free electrocatalysts. He is the recipient of the 2019 IUMRS-Somiya Award from the International Union of Materials Research Societies. He holds about 20 U.S. patents that have been licensed to several companies. He published over 550 refereed journal papers, seven books, over 40 book chapters, and serves as an associate editor for Nano Energy, International Journal of Smart and Nano Materials, Energy Materials editor-in-chief for Frontiers in Materials, and a member of the advisory editorial board for more than 10 peer-reviewed journals. Dai is a Fellow of the European Academy of Sciences, AIMBE, RSC, and the International Association of Advanced Materials.

Rajesh N. Davé | *New Jersey Institute of Technology*

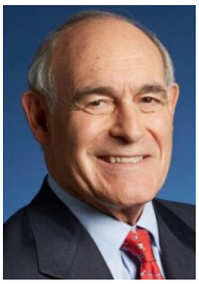
Rajesh N. Davé, PhD, is a Distinguished Professor at New Jersey Institute of Technology. Davé is an internationally renowned expert in engineered particulates. His notable innovations include film coating of very fine particles, bioavailability enhancement, taste-masking, thin-films for patient compliance, and engineered excipients for pharmaceutical applications. He is the recipient of 2018-19 Fulbright Fellowship, 2015 AIChE PTF Lectureship Award in Fluidization, 2016 Thomas Alva Edison Patent Award, and New Jersey Inventors Hall of Fame 2015 Innovators Award. He holds 15 U.S. and four foreign patents, many of which have been licensed or optioned to and/or in commercial use by four companies. He is the founder of the R&D Excellence Center, New Jersey Center for Engineered Particulates, and co-founder of NSF-Engineering Research Center. He has published 180 peer reviewed articles (H-index 56) and serves as the U.S. editor-in-chief of Advanced Powder Technology. Davé is a Fellow of the AIChE and AAPS.

Valina L. Dawson | *Johns Hopkins University*

Valina L. Dawson, Ph.D., is a Daniel Nathans Innovator at Johns Hopkins University School of Medicine and Director of the Neuroregeneration and Repair Program and the Stem Cell Program in the Institute for Cell Engineering. Dawson studies the signaling events in neuronal death in a pathway she named Parthanatos. Her discoveries provide insight to stroke, Parkinson's disease, Alzheimer's disease, and AIDS dementia and acute injury in a variety of tissues for which drugs are under development as new therapeutics. Her team identified a small molecule inhibitor of neuroinflammation which is protective in models of Parkinson's and Alzheimer's disease and which has advanced to clinical trials under Neuraly, Inc. She continues to identify disease effectors and develop new therapies to treat these devastating diseases. Dawson co-founded Valted Seq which is focused on the discovery of neurodegenerative pathways and biomarkers to inform and accelerate development of new therapeutics and diagnostics.

Reza R. Derakhshani | *University of Missouri-Kansas City*

Reza R. Derakhshani, Ph.D., is a professor of computer science and electrical engineering at the University of Missouri, Kansas City. Derakhshani is also the consulting chief scientist and technology inventor at EyeVerify (dba ZOLOZ), a Kansas City biometric startup that was acquired by Alibaba's Ant Financial in 2016 for over 100 million dollars. His research interests are in biometrics, computational imaging, and machine learning. His research is focused on mobile biometric methods centered around vasculature seen on the white of the eye (commercially known as Eyeprint ID), presentation attack detection for ocular and face biometrics, privacy-preserving biometrics, key generation, hyperfocal biometrics, and non-obtrusive affective-cognitive analysis. He holds over 130 issued or allowed U.S. and foreign patents, with many pending. Derakhshani's work has been featured in numerous and prominent radio, TV, and web/print media pieces around the world.



Robert Desnick | *Mount Sinai Health System*

Robert J. Desnick, Ph.D., M.D., is the dean for genetics and genomic medicine, professor and chair emeritus at the Icahn School of Medicine at Mount Sinai. Desnick, a medical geneticist, developed novel, patented diagnostics and therapies for inherited metabolic diseases. He is a past chair of the Association of American Medical Colleges and a recipient of the University of Minnesota Outstanding Achievement Award. He holds 26 U.S. and multiple foreign patents licensed to six companies. He is the scientific co-founder of Amicus Therapeutics (NASDQ: FOLD) and is currently on the SAB of Sangamo Therapeutics. He has published over 550 peer-reviewed articles, over 255 chapters, and ten edited books, and has served/serves on the editorial boards of 15 peer-reviewed international journals and has been/is a member of the Scientific Advisory Committees of 15 medical foundations or public biopharmaceutical companies. He is an AAAS Fellow and a member of NAM.

Michael S. Diamond | *Washington University in St. Louis*

Michael S. Diamond, M.D., Ph.D., is the Herbert S. Gasser Professor of Medicine at Washington University. He is recognized internationally for his work involving Zika, West Nile, chikungunya, and related emerging viruses. This past summer he developed a mouse model of SARS-CoV-2, which facilitated the development of a nasal vaccine that prevented infection in mice. Diamond and his team also recently identified new receptors for multiple alphaviruses, and has translated these discoveries into soluble receptor decoy molecules with therapeutic potential molecule. Diamond is an elected member of the American Society of Clinical Investigation, AAAS, the Association of American Physicians, and NAM. He is also currently a member of the Scientific Advisory Board of the Investigators in the Pathogenesis of Infectious Disease program at the Burroughs Wellcome Fund and an elected councilor for the Association of American Physicians.

Steven A. Eschrich | *H. Lee Moffitt Cancer Center & Research Institute*

Steven A. Eschrich, Ph.D., is a senior member at the Moffitt Cancer Center and professor in the Department of Oncologic Sciences, Morsani College of Medicine, University of South Florida. Eschrich is a translational bioinformatician focused on cancer research and has developed a number of gene signatures for cancer diagnosis, prognosis and response to therapy. He has developed, with co-Inventor Dr. Torres-Roca, a predictive gene signature of radiation response in cancer patients which has led to numerous publications, patents and a startup company (Cvergenx, Inc). He holds seven U.S. patents that have been licensed to two companies. He is the co-founder of Cvergenx, Inc., a genomic informatics company focused on individualizing radiation therapy in oncology. He has published 106 articles and currently serves as an associate editor for Cancer Medicine. Eschrich is a member of the ACM, IEEE and AACR.

Gary A. Evans | *Southern Methodist University*

Gary A. Evans, Ph.D., after a postdoctoral year at Caltech, was a visiting assistant professor at the University of Washington, worked at the Aerospace Corporation, TRW and RCA Laboratories before joining Southern Methodist University. He co-founded Photodigm and Photon Sciences and is a past president of the SMU Faculty Senate and a past member of the SMU Board of Trustees. He has more than 300 publications and 40 patents. His research interests include high performance semiconductor lasers, waveguide isolators, grating couplers, detectors and other photonic devices and their applications. He was elected a Fellow of IEEE for "contributions to the development, fabrication, and understanding of semiconductor lasers." He has served and continues to serve on numerous national and international technical committees and was an Associate Editor of the IEEE Journal of Quantum Electronics.

Robin A. Felder | *University of Virginia*

Robin A. Felder, Ph.D., is professor of pathology, and associate director of laboratory medicine at the University of Virginia Health System. Felder is a prolific inventor and researcher in both robotics as well as the field of human biochemistry. He is the recipient of 27 prestigious prizes, including the Engelberger Robotics Award for Leadership, the Edlich-Henderson Innovator of the Year Award, the American Association for Clinical Chemistry Annual Researcher Award, the National Academy for Clinical Biochemistry Annual Award, the Association for Clinical Biochemists (United Kingdom) and American Association for Clinical Chemistry Transatlantic Lectureship Award, and the Japanese Clinical Laboratory Automation Annual Chairman's Award. He holds 22 U.S. patents and three foreign patents, and over 350 peer reviewed publications. He is the founder of nine companies, including WellAWARE Systems, Global Cell Solutions and Medical Automation, a non-profit organization dedicated to reducing costs and improving efficiency in health care systems.

Albert J. Fornace Jr. | *Georgetown University*

Albert J. Fornace Jr., M.D., is a Professor at Georgetown University, and previously Harvard and NIH. Fornace is an internationally recognized expert in stress-signaling mechanisms and is considered one of the founders of genotoxic-stress gene field. He has received numerous awards including the Public Health Service Outstanding Service Medal, the Failla (career) Award and Excellence in Mentoring Award from the Radiation Research Society, and the first recipient of the Molecular Cancer Research Chair at Georgetown. He is the founder and first director of the Waters Center of Innovation in Metabolomics and the Center for Metabolomic Studies at Georgetown. He holds nine U.S. patents, which have been licensed to more than a dozen companies, and is the founder of the startup company Nextgen Toxicology LLC. He has published 403 scientific articles, reviews, and book chapters, and has served on editorial boards of numerous journals including senior editor of Molecular Cancer Research.

Gordon Freeman | *Harvard University*

Gordon J. Freeman, Ph.D., is professor of medicine at the Dana-Farber Cancer Institute, Harvard Medical School. Freeman's research identified the major pathways that control the immune response by inhibiting T cell activation (PD-1/PD-L1 and B7-2/CTLA-4) or stimulating T cell activation (B7-2/CD28). In 2000, Freeman discovered PD-L1 and PD-L2, and showed they were ligands for PD-1, thus defining the PD-1 pathway and the drug target: block the interaction. He received the first patent claiming blockade of PD-L1/PD-1 for cancer immunotherapy. He received the 2014 William B. Coley Award for Distinguished Research in Tumor Immunology, 2017 Warren Alpert Foundation award, and the 2020 Richard Smalley, M.D., Memorial Award from the Society for Immunotherapy of Cancer. He holds 77 U.S. patents and 439 foreign patents that have been licensed to nine companies. He is a founder of three companies. He has published 431 papers and serves as an editor for Cancer Immunology Research. He is a Fellow of the AACR Academy.

Alexander Fridman | *Drexel University*

Alexander Fridman, Ph.D., D.Sc., is Nyheim Chair Professor and director of the Nyheim Plasma Institute of Drexel University. A world leader in plasma science and technology, he made significant contribution to plasma fundamentals and applications to material processing, electronics, fuel conversion, environmental control, cosmetics, agriculture, and food processing. Fridman is focused on direct use of plasma for wound healing, blood coagulation and treatment of diseases not effectively treated before. He is the founding president of the International Society of Plasma Medicine. Fridman is a recipient of numerous prestigious awards, including International Plasma Medicine Award, State Prize of the USSR, Stanley Kaplan Distinguished Professorship in Chemical Kinetics and Energy Systems, George Soros Distinguished Professorship in Physics, Chernobyl Nuclear Accident Medal, Kurchatov Medal for Scientific Achievements in Nuclear and Plasma Sciences, Reactive Plasma Award, as well as Plasma Chemistry Award. He holds more than 30 patents and wrote eight monograph books and more than thousand journal papers.

Andrés José García | *Georgia Institute of Technology*

Andrés José García, Ph.D., is the executive director of the Institute for Bioengineering and Bioscience and Regents' Professor at the Georgia Institute of Technology. García's research integrates innovative engineering, materials science, and cell biology to create cell-instructive biomaterials for regenerative medicine and generate new knowledge in mechanobiology. He is a co-founder of three startup companies (CellectCell, CorAmi Therapeutics, iTolerance). He is an elected Fellow of Biomaterials Science and Engineering, the AAAS, the ASME, and the AIMBE. He is an elected member of NAE.

Sharon Gerecht | *Johns Hopkins University*

Sharon Gerecht, Ph.D., is a professor of chemical and biomolecular engineering at Johns Hopkins University, with joint appointments in materials science and engineering, biomedical engineering and oncology departments. Gerecht made significant contributions to stem cell engineering with focus on vascular differentiation and regeneration. She received the CARRER award from the National Science Foundation and both the National Scientist Development Award and the Established Investigator Award from the American Heart Association. She holds eight U.S. patents and 15 U.S. patents in applications of which several are licensed to companies. She founded one company. She has published over 160 articles, books and book chapters, and serves on the editorial board of four peer-reviewed journals. Gerecht is an elected member of the NAM and is an elected Fellow of the AIMBE and the AAAS.

M. Monica Giusti | *The Ohio State University*

M. Monica Giusti, Ph.D., is a professor in the food science and technology department at The Ohio State University and visiting professor at Universidad Nacional Agraria, La Molina. A leading researcher of natural food colorants, Giusti's discoveries enable the use of health-promoting natural colorants instead of synthetic dyes. She has received numerous awards including the 2020 CFAES Senior Faculty Researcher of the Year, OSU; 2019 William V. Cruess Excellence in Teaching Award, IFT; 2017 NACTA Educator Award, NACTA; 2013 Early Career Innovator of the Year, OSU; 2012 Outstanding Women in Technology, TechColumbus. She holds five U.S. patents and four foreign patents, which are licensed to three companies. She has published over 100 peer-reviewed articles, four edited books, and 24 book chapters, and her work has been cited over 15,000 times. Giusti serves on the editorial board of two peer-reviewed journals. She is also a member of IFT, ACS and AOAC.

Charles G. Glabe | *University of California, Irvine*

Charles G. Glabe, Ph.D., is Distinguished Professor of molecular biology and biochemistry at the University of California, Irvine. Glabe is the inventor of amyloid peptides and conformation-dependent antibodies that distinguish pathologically distinct aggregation states of the amyloid ß peptide that are standard reagents in the field of Alzheimer's disease that have been used in more than 4,000 publications. He is the recipient of a Chancellor's Professorship and the Thompson-Reuters highly cited researcher award. He holds four U.S. patents and three foreign patents that have been licensed to two companies. He was the founder and chief scientific officer of Kinexis, Inc. He has published over 160 peer reviewed journal articles, book chapters and reviews and has served on the editorial board of the Journal of Biological Chemistry, Molecular Neurodegeneration and the Journal of Neuromolecular Medicine. He is a Fellow of the AAAS and a member of The Cure Alzheimer's Disease consortium.

Martin Gleave | *The University of British Columbia*

Martin Gleave, M.D., is a Distinguished Professor and Chairman of the Department of Urologic Sciences at UBC, and a British Columbia Leadership Chair. He co-founded and directs the Vancouver Prostate Centre, now a UBC and National Centre of Excellence, and has published over 600 papers with more than 60,000 citations, an H-Index of 119, and over $120M in research funding. Gleave is a surgeon-scientist whose research characterizes molecular mechanisms mediating treatment resistance in cancer, and design of co-targeting strategies to improve cancer control. He patented several anti-cancer drugs and founded OncoGenex Pharmaceuticals to develop OGX-011 and OGX-427, inhibitors of cytoprotective chaperones clusterin and Hsp27 which progressed to Phase III trials world-wide. OncoGenex was awarded Canadian Biotech Company of the Year in 2010. Gleave also recently co-founded TRiADD and Sustained Therapeutics. He is the recipient of numerous awards, including appointment to the Order of Canada in 2017.

Michael Goldfarb | *Vanderbilt University*

Michael Goldfarb, Ph.D., is the H. Fort Flowers Professor of Mechanical Engineering at Vanderbilt University. Goldfarb conducts research on the design and control of wearable robotic devices that improve mobility and functionality for people with physical disabilities. Among his contributions is the exoskeleton now sold as the Indego exoskeleton, which enables individuals with paraplegia to stand and walk. He received the NIH NIBIB Edward Nagy Award in 2011; the IEEE Wyss Institute Translational Award in 2012; and was named one of the top 10 Innovators Who Changed the World by Popular Mechanics in 2013. He holds over 35 U.S. patents as lead inventor, and numerous corresponding foreign patents, which have been licensed to five companies. He has published over 200 papers, including papers that were awarded best-paper awards in 1997, 1998, 2003, 2007, 2009, 2013, and 2020, and papers that were best paper finalists in 2015 and 2017.

Carol W. Greider | *Johns Hopkins University*

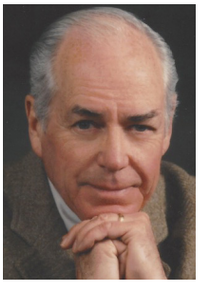
Carol W. Greider, Ph.D., is a Distinguished Professor of Molecular, Cell and Developmental Biology University of California Santa Cruz and University Professor at Johns Hopkins University. In 1984, working together with Dr. Elizabeth Blackburn, she discovered telomerase, an enzyme that maintains telomeres, or chromosome ends. In 1988, she went to Cold Spring Harbor Laboratory where, as an independent Cold Spring Harbor Fellow, she cloned and characterized the RNA component of telomerase. In 1990, she was appointed as an assistant investigator at Cold Spring Harbor Laboratory, followed later by appointment to Investigator in 1994. She expanded the focus of her telomere research to include the role of telomere length in cellular senescence, cell death and in cancer. In 1997, she moved her laboratory to the Department of Molecular Biology and Genetics at The Johns Hopkins University School of Medicine. In 2003, she was appointed as the Daniel Nathans Professor, and Director of the Department of Molecular Biology and Genetics. At Johns Hopkins University, her group continued to study telomerase and determined the secondary structure of the human telomerase RNA. In 2009, she shared the Nobel Prize in Physiology or Medicine with Drs. Elizabeth Blackburn and Jack Szostak for their work on telomeres and telomerase. In 2020, Greider established her laboratory at the University of California Santa Cruz where her research group studies fundamental mechanisms of telomere length regulation.

Paul Hansma | *University of California, Santa Barbara*

Paul Hansma, Ph.D., is a physicist at the University of California, Santa Barbara and a researcher in the Neuroscience Research Institute. His inventions include Atomic Force Microscopes that function with samples in air or fluid, which have been commercialized by Digital Instruments (now Bruker) and Asylum Research (now part of Oxford Instruments), the Scanning Ion Conductance Microscope, and Bone Diagnostic Instruments including the Osteoprobe® commercialized by Active Life Scientific. It had been used on over 3,000 patients by 2015. The OsteoProbe® obtained European regulatory approval and is now CE Marked. The FDA granted it De Novo status on July 11, 2018. His current research focus is on devices to quantify and reduce chronic pain as a part of a brain retraining program that includes education and activities. He has over 350 publications, with over 48,000 citations and an H factor of 111.

Joseph Warren Harding | *Washington State University*

Joe Harding Ph.D., received his BS in Chemistry from Allegheny College in 1970 and his Ph.D. in Chemistry from the University of Delaware in 1974. After two years of postdoctoral training at the Roche Institute of Molecular Biology, he joined the faculty in the College of Veterinary Medicine at Washington State University where he remains today. He has graduated over 50 Ph.D. students, published over 200 scientific articles, served on multiple boards and review panels, is the lead inventor on numerous U.S. and international patents, and has founded several biotechnology companies including Athira Pharma, a Seattle company. His work, which has been supported by the NIH, NSF, DOD, AHA, Alzheimer's and Alzheimer's Drug Discovery Foundations, the Michael J. Fox Foundation, the National Multiple Sclerosis Society, and Life Sciences Discovery Fund, has focused on developing therapeutics directed at growth factor systems with applications directed at neurodegenerative diseases, cancer, and wound repair.

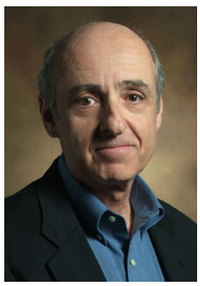


William Harris | *Massachusetts General Hospital Research Institute*

William H. Harris, M.D., D.Sc., is the Alan Gerry Clinical Professor of Orthopedic Surgery Emeritus at Harvard Medical School and founder of the Harris Orthopedic Laboratory at the Massachusetts General Hospital. Harris advanced medicine through multiple, substantial innovations, unique implant designs for total hips, improved surgical concepts, and creative understandings of basic disease processes. While doing so, he played a dominant role in essentially eliminating two worldwide scourges, namely periprosthetic osteolysis, the severe iatrogenic bone resorption around total joints, by developing crosslinked polyethylene and fatal pulmonary embolism following total joint surgery. These contributions massively reduced deaths, and morbidity, and costs in the United States of one billion dollars annually. His three Lifetime Achievement Awards reflected wide adoption of his multiple inventions. The American Orthopedic Association granted him their Distinguished Contributions to Orthopedics Award and Haverford College the Kannerstein Award. He published 525 refereed, original scientific articles and six books.

Jibo He

Jibo He, Ph.D., has a research interest in eye movement and attention, and the application of psychological theories and paradigms in real-world tasks, for example, human computer interaction and driving. The goal of his research is to understand human cognitive processes and develop technologies to improve performance, increase user experience, and mitigate human error. He has published over 25 peer-reviewed journal articles in psychology, computer science and transportation safety. He has invented eight patents, which have been filed in United States, China, and 27 European countries. He has received funding of over $1,140,760 USD, including funding from the National Science Foundation. He is the recipient of Star of Tomorrow Award from Microsoft and Most Valuable Graduate from University of Illinois.

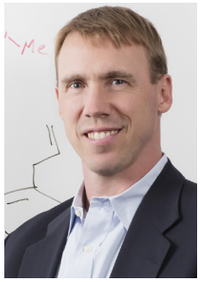


Sidney M. Hecht | *Arizona State University*

Sidney Hecht, Ph.D., is the director of the Biodesign Center for BioEnergetics and professor of chemistry at Arizona State University. He served on the MIT Chemistry faculty (1971-79). He was the John W. Mallet Professor of Chemistry at UVA (1978-2008). He held concurrent appointments (1981-87) at Smith Kline & French Laboratories, (Vice President Preclinical R&D, then Chemical R&D). He was an Alfred P. Sloan Fellow, and a John Simon Guggenheim Fellow. In 1966, Hecht received the ACS Cope Scholar Award and was Virginia's Outstanding Scientist. He received the 1998 Research Achievement Award (American Society of Pharmacognosy), and the 2011 ASU Faculty Achievement Award (Defining Edge Research: Innovation). Current research interests include the chemistry of the mitochondrial ETC to enable therapeutic strategies for mitochondrial diseases. His laboratory is a leader in the study of proteins containing non-proteinogenic amino acids.

Richard Heller | *University of South Florida*

Richard Heller, Ph.D., is a professor of medical engineering at the University of South Florida. A pioneer in developing efficient delivery systems for plasmid DNA and chemotherapeutics, Heller demonstrated that plasmid DNA can be delivered using pulse electric fields to a multiple tissue targets including solid tumors, skin, muscle, liver and heart. He is the recipient of the Iwao Yasuda Award from Society for Physical Regulation in Biology and Medicine, Society for In Vitro Biology Distinguished Service Award, Frank Reidy Award for Outstanding Contribution to the Field of Bioelectrics, and Eminent Scholar designation from Old Dominion University. He holds 37 U.S. patents, 14 of which have been licensed to four companies. His research has been continuously funded by NIH and other U.S. federal agencies. He has more than 152 publications; serves on editorial board for six journals, and is a reviewer for over a dozen journals, as well as for NIH, DOD and ACGT Study Sections. Heller is Fellow, Society for In Vitro Biology; IEEE Senior Member; and Charter Member of USF's NAI Chapter.



Paul J. Hergenrother | *University of Illinois at Urbana-Champaign*

Paul J. Hergenrother, Ph.D., is the Kenneth L. Rinehart Endowed Chair in Natural Products Chemistry at the University of Illinois, Urbana-Champaign. Hergenrother has made numerous contributions to the development of novel anticancer and antibacterial drugs, and novel diagnostic tests including leading the team the developed a widely utilized, and Emergency Use Authorized, saliva test for covid-19. He is the recipient of Sosnovsky Award for Cancer Research, the Cope Scholar Award, the Eli Lilly Award in Biological Chemistry, and the Sato Memorial International Award, among many others. He holds 40 issued U.S. patents and numerous foreign patents, many of which have been licensed to five companies; through these licenses four anticancer drugs discovered in the Hergenrother laboratory are either being evaluated in clinical trials or will be shortly. He is the founder of Vanquish Oncology, Inc. He has published 150 peer-reviewed journal articles and serves on the advisory board for several journals.

James J. Hickman | *University of Central Florida*

James J. Hickman is the Founding Director of the NanoScience Technology Center and professor of nanoscience technology, chemistry, biomolecular science, material science and electrical engineering at the University of Central Florida. Previously, he was the Hunter Endowed Chair in the Bioengineering Department at Clemson University. Hickman has a Ph.D. from MIT in Chemistry. For the past thirty years, he has been studying the interaction of biological species with modified surfaces, first in industry and in the latter years in academia. He has worked at NSF and DARPA in the area of biological computation. He is also the founder and current chief scientist of a biotechnology company, Hesperos, that is focusing on cell-based systems for drug discovery. He has 155 publications and 20 book chapters, in addition to 29 issued patents. He is a Fellow of AIMBE (2004), the AVS (2007) and the International Academy of Nanobiotechnology (2019).

Rodney JY Ho | *University of Washington*

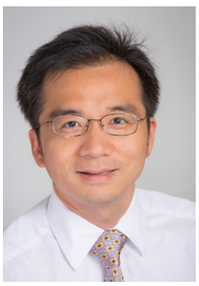
Rodney JY Ho, Ph.D., FAAAS and FAAPS, is a professor of pharmaceutics and bioengineering at the University of Washington and the founding executive director of the Washington Entrepreneurial Research Evaluation and Commercialization Hub for the Pacific Northwest. Ho is a distinguished leader in pharmaceutical sciences and pharmacology with a proven track record of innovation and advancements in long-acting, more effective and targeted drug combination therapies for AIDS and Cancer. He is the recipient of the Paul Dawson Biotechnology, Volwiler Research Achievement and AAPS Biotechnology awards. He holds over 21 U.S. and international patents that have been licensed to a number of startup and established companies. He is also the founder of several startup companies developing innovative drugs, biologics and therapeutics. He has published over 200 articles, books and book chapters and serves as editor for the Journal of Pharmaceutical Sciences. Ho is a Fellow of AAAS and AAPS.

Eric H. Holmes | *Florida State University*

Eric Holmes, Ph.D., received a Ph.D. in Biochemistry from the University of California, Davis and conducted postdoctoral work at the Fred Hutchinson Cancer Research Center in Seattle. He moved on to the Pacific Northwest Research Foundation, the parent organization of the FHCRC, and conducted research on cell surface carbohydrates associated with cancer, their regulation of biosynthesis, and use as markers for diagnostics and therapy. He is a co-founder of Northwest Biotherapeutics, a public company focused on immunotherapy of cancer, and worked in the field of drug discovery and delivery in the biotech industry in senior positions. He has over 20 issued and pending U.S. patents along with multiple foreign counterparts and is an author of over 90 research publications. He served as director of research at the University of Hawaii's John A. Burns School of Medicine and presently is the assistant vice president for research at Florida State University.

David A. Horsley | *University of California, Davis*

David A. Horsley, Ph.D., is a professor of mechanical and aerospace engineering at the University of California, Davis, and an adjunct professor of mechanical engineering at the University of California, Berkeley, where he is co-director of the Berkeley Sensor and Actuator Center (BSAC). Horsley is known for his pioneering work in ultrasonic microelectromechanical systems (MEMS). He co-founded Chirp Microsystems in 2013 to commercialize MEMS ultrasonic sensors and served as CTO through Chirp's acquisition by TDK in 2018. Horsley is also the inventor of an ultrasonic fingerprint sensor that was commercialized by TDK and is used today for biometric authentication in laptops and other consumer products. Horsley is a recipient of the National Science Foundation's CAREER Award, the Outstanding Junior Faculty Award at UC Davis, and the 2016 NSF I/UCRC Association's Schwarzkopf Award for Technological Innovation. He has authored or co-authored over 150 scientific papers and holds over 22 patents.



Tony Jun Huang | *Duke University*

Tony Jun Huang, Ph.D., is the William Bevan Distinguished Professor of mechanical engineering and materials science at Duke University. Among many of his innovations, he invented surface acoustic wave (SAW) tweezers. With this invention, the capabilities of acoustic tweezers have expanded from simplistic trapping of large particles (mm scale) in air to the precise 3D translation and rotation of nanoparticles (e.g., 10 nm), cells, and organisms in complex solutions (e.g., aqueous solutions and blood). Huang is the recipient of a 2010 NIH Director's New Innovator Award, the 2014 IEEE Sensors Council Technical Achievement Award, the 2017 ACS Analytical Chemistry Young Innovator Award, the 2019 ASME Van Mow Medal, and the 2019 IEEE EMBS Technical Achievement Award. He holds 12 issued and 16 pending US/international patents. He has published more than 400 peer-reviewed articles. He is a Fellow of the following six professional societies: AAAS, AIMBE, ASME, IEEE, IOP, and RSC.

Scott J. Hultgren | *Washington University in St. Louis*

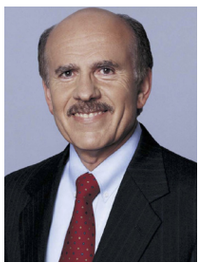
Scott J. Hultgren, Ph.D., is the Helen Lehbrink Stoever Professor of molecular microbiology and director of the Center for Women's Infectious Disease Research at Washington University in St. Louis. Hultgren has developed antibiotic-sparing therapeutics for treatment of UTIs and a vaccine to prevent recurrent UTI. He has received the 2nd Century Award, the Eli Lilly award, a Nobel Fellowship, an NIH Merit grant, an honorary Doctor of Philosophy at Umeå University and was named a College Luminary by Indiana University. He holds 37 U.S. patents and 51 foreign patents that have been licensed to seven companies. He is a co-founder of Fimbrion Therapeutics, Inc. and QureTech Bio. He has published 331 articles, books and book chapters. Hultgren is a member of the NAS and NAM.

David Hunn | *The University of Texas at Arlington*

David L. Hunn, Ph.D., is an adjunct professor at The University of Texas at Arlington. Hunn has made significant contributions in the application of specialty engineering materials for advanced aerospace structural applications. Hunn was awarded Engineer of the Year by the ASME, Inventor of the Year by Lockheed Martin and selected as a University of Texas at Arlington Distinguished Alumni. In 2011, he won the Louis and Edith Zernow Award; presented by the International Ballistic Society for the top technical paper that made the most significant contribution to the advancement of fundamental understanding in the fields of ballistic science. Hunn is co-founder of the non-profit North Star School. He holds 40 U.S. patents that have been licensed to one company. Hunn is a Senior Member of the International Ballistic Society, the Society of Automotive Engineers and the ASME.

Laurence Hurley | *The University of Arizona*

Laurence Hurley, Ph.D., is professor emeritus of medicinal chemistry at The University of Arizona and CEO of Reglagene LLC. Most recently his research has centered on secondary DNA structures, particularly G-quadruplexes and C-quadruplexes (also called i-motifs), as gene targets for drug design. He is a recipient of the 1988 George Hitchings Award in Innovative Methods in Drug Design and the 1989 Volwiler Research Achievement Award from the American Association of College of Pharmacy. He received the 1992 APhA Research Achievement Award in Medicinal Chemistry and the 1994 American Chemical Society Medicinal Chemistry Award. In 2005 he was awarded the George & Christine Sosnovsky Award in Cancer Therapy by the RCS, and in 2007 he was inducted into the American Chemical Society Medicinal Chemistry Hall of Fame and named Innovator of the Year by The University of Arizona. He was presented with the 2008 AACP Paul Dawson Biotechnology Award and the 2011 Nucleic Acids Award from the RSC; and in 2017 he was named Arizona Biosciences Researcher of the Year and in 2018 Innovator of the Year—Academia: Arizona Technology Council's Governor's Celebration of Innovation.



Louis J. Ignarro | *University of California, Los Angeles*

Louis J. Ignarro, Ph.D., is distinguished professor emeritus at the UCLA School of Medicine. Ignarro has been a pioneer in the field of cell signaling and communication. He was the first to demonstrate the production of nitric oxide by mammalian cells, the mechanism of action of nitroglycerin, the role of nitric oxide in the prevention of stroke and heart attack, and his basic research led to the development of Viagra for the treatment of erectile dysfunction. He is the recipient of the 1998 Nobel Prize in Physiology or Medicine. He has published over 750 original articles, reviews, books and book chapters, serves as editor for several journals including the Proceedings of the National Academy of Sciences, and is founder of the Nitric Oxide Society. Ignarro is a member of the NAS, NAM, and AAAS.

Bahram Jalali | *University of California, Los Angeles*

Bahram Jalali, Ph.D., is the director of the Photonics Laboratory, the Fang Lu Endowed Chair in Engineering, and professor of electrical and computer engineering at UCLA with joint appointments in biomedical engineering, and the California NanoSystems Institute (CNSI). The recipient of the R.W. Wood Prize from the Optical Society of America for the first silicon laser, Bahram has received the Aaron Kressel Award from IEEE, and the Achievement Medal from IET U.K., and the Pioneer in Technology Award from the Society of Brain Mapping & Therapeutics for invention of radio-frequency and time-stretch microscopy techniques. Bahram was the Founder and CEO of Cognet Microsystems, a company that pioneered CMOS ICs for optical networks and which was acquired by Intel in 2001. In 2005, he was elected into the Scientific American Top 50 and MIT Technology Review Magazine Top 10. He is a Fellow of IEEE, OSA, APS, AIMBE, and SPIE.

Susan P. James | *Colorado State University*

Susan P. James, Ph.D., is the vice provost for faculty affairs at Colorado State University. James is a pioneer in the development of hyaluronan/synthetic plastic materials used in orthopedic and cardiovascular medical devices. She has received multiple awards for innovation, university service and her diversity, equity and inclusion work. She holds 16 U.S. patents and eight foreign patents, several of which have been licensed to two startup companies. She is the co-founder and chief operating officer of YoungHeartValve Inc. She has published six book chapters/edited proceedings, 46 journal articles and 86 conference proceeding abstracts.

Nikil S. Jayant | *Georgia Institute of Technology*

Nikil S. Jayant, Ph.D., is an emeritus chaired professor at Georgia Tech and adjunct professor at the University of California at Santa Barbara. Jayant has made pioneering contributions, as personal innovator and team leader, to the field of audiovisual signal processing and communications. He is the recipient of two IEEE Prize Paper awards, the IEEE Third Millennium award and the Distinguished Alumnus award of the Indian Institute of Science. He holds 36 U.S. patents and their international versions, which have been licensed to AT&T, Lucent Technologies, and Arris Corporation. He is the co-founder of two startup companies in video communications at Georgia Tech. He is the author or co-author of 175 papers and five books. He is the founding editor-in-chief of the IEEE Signal Processing magazine. Jayant is a Fellow of the IEEE, member of NAE and an inductee of the New Jersey Inventors Hall of Fame.

Michael C. Jewett | *Northwestern University*

Michael C. Jewett, Ph.D., is the Walter P. Murphy Professor of chemical and biological engineering and director of the Center for Synthetic Biology at Northwestern University. Jewett is the co-chair of the Engineering Biology Research Consortium. He is the recipient of the David and Lucile Packard Fellowship in Science and Engineering, Camille-Dreyfus Teacher-Scholar Award, and a Finalist for the Blavatnik National Awards for Young Scientists, among others. He holds more than 10 U.S. patents that have been licensed to three companies. He is the co-founder of SwiftScale Biologics, Stemloop, Pearl Bio, Induro Therapeutics, and Design Pharmaceuticals. He has published more than 150 articles, books, and book chapters and serves as associate editor of ACS Synthetic Biology. Jewett is a Fellow of prestigious organizations such as AIMBE and AAAS.

Lizy Kurian John | *The University of Texas at Austin*

Lizy K. John, Ph.D., is Cullen Trust for Higher Education Endowed Professor in engineering in the Electrical and Computer Engineering Department at The University of Texas at Austin. She has contributed to computer architecture and computer system design by contributions in microprocessor design. She is in Hall of Fame of IEEE/ACM International Symposium on Computer Architecture (ISCA) and HPCA (High Performance Computer Architecture) Symposium. She is recipient of NSF CAREER award, UT Austin Engineering Foundation Faculty Award, Halliburton, Brown and Root Engineering Foundation Young Faculty Award 2001, University of Texas Alumni Association (Texas Exes) Teaching Award 2004, The Pennsylvania State University Outstanding Engineering Alumnus 2011, etc. She has co-authored approximately 300 scholarly articles, and multiple books on Digital Systems Design. She holds 14 U.S. patents and is a Fellow of IEEE, and a Fellow of ACM. She is currently the Editor-in-Chief of IEEE MICRO.

Henry C. Kapteyn | *University of Colorado Boulder*

Henry Cornelius Kapteyn, Ph.D., is a professor in the Department of Physics and JILA, University of Colorado at Boulder and NIST, and is CTO of Kapteyn-Murnane Laboratories Inc. He and his wife and collaborator, Margaret Murnane, are well known for their research in femtosecond lasers, and for understanding how to coherently upconvert this light to make a "tabletop x-ray laser." In recent years, they have applied this source to pioneering studies of nanoscale ultrafast dynamics. His work has been honored through the 2021 Benjamin Franklin Medal in Physics, the Schawlow Prize of the APS, the Ahmed Zewail Award of the ACS, and the R.W. Wood prize and Adolph Lomb Medal of the OSA. He holds 14 U.S. patents on ultrashort-pulse laser technology and coherent imaging, licensed to KMLabs Inc. (which he co-founded). He has published >300 peer-reviewed articles, in fields of physics, advanced imaging, chemical dynamics, laser technology, and quantum materials. He is a member of the NAS, AAAS, and a Fellow of the AAAS, APS, and OSA.

Thomas C. Katsouleas | *University of Connecticut*

Thomas C. Katsouleas, Ph.D., is president of the University of Connecticut. Katsouleas is a pioneer in the emerging field of plasma-based particle accelerators and high-powered light sources. He is the inventor or co-inventor of several concepts for making ultra-high gradient accelerators realizable including the surfatron, plasma afterburner, plasma lenses, plasma wave wigglers for FELs and the plasma wakefield accelerator. He is the recipient of numerous awards including the Plasma Science Achievement Award of the IEEE Nuclear and Plasma Sciences Society, 2011. He holds a U.S. patent for a concept to make designer radiation pulses of arbitrary waveform, dubbed a DARC source or DC to AC Radiation Converter. Katsouleas has edited six books and journal issues, co-authored 272 journal publications and served as Associate Editor of IEEE Transactions on Plasma Science. Prof. Katsouleas is a Fellow of both the APS and the IEEE.

Mark A. Kay | *Stanford University*

Mark A. Kay, M.D., Ph.D., is the Dennis Farrey Family Professor of Pediatrics and Genetics at Stanford University and is head of the Division of Human Gene Therapy in Pediatrics. Kay has made seminal contributions in the fields of Gene and Genome Engineering Based Therapeutics, RNAi and Non-coding RNA biology. Kay was a founding board member of the American Society for Cell and Gene Therapy and served as the President of the Society in 2006. He received the Outstanding Investigator Award in 2013. He served on the Board of Directors of the Oligonucleotide Therapeutics Society for 10 years. He has published over 260 peer reviewed papers and serves as an editor of several journals. He is an inventor on many patents including those related to key gene therapy vectors and the use of RNAi in whole mammals. He has co-founded four companies and serves on many biotech/pharmaceutical advisory boards.

Michael Keidar | *The George Washington University*

Michael Keidar, Ph.D., is the A. James Clark Professor of engineering. His research concerns plasma physics and engineering with application in plasma medicine, advanced spacecraft propulsion, and plasma-based nanotechnology. He has authored over 300 journal articles, 300 conference papers, author of textbook "Plasma Engineering" and book "Plasma Cancer Therapy". He received the 2017 Davidson Award in Plasma Physics. In 2016 he received the AIAA Engineer of the Year award for his work on micropropulsion resulted in the successful launch of nanosatellite with thrusters developed by his laboratory. Keidar serves as an AIP Advances academic editor, Associate Editor of IEEE Transactions in Radiation and Plasma Medical Sciences and member of editorial board of half a dozen journals. He is an elected Fellow of APS and AIAA. He is the elected President of the Electric Rocket Propulsion Society.

Mark Kendall | *Australian National University*

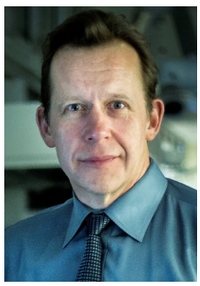
Mark Kendall is a biomedical engineer, inventor, scientist, entrepreneur and business-builder and currently serving as the vice-chancellor's entrepreneurial professor at Australian National University. He is the Founder and CEO of WearOptimo, advancing Microwearable sensors for precision medicine. His companies licensing his patents and technologies have generated a combined economic value of $2 Billion. He is internationally-recognized as a leading innovator in producing technology solutions to global health problems; and a translator of commercial technologies focusing on delivery of drugs to skin and skin-based disease diagnostics. He has spent more than 23 years researching, developing, innovating and authoring more than 200 refereed publications. He holds more than 140 patents. In recognition of his innovation and translation, he has received more than 40 awards. He is a Fellow of the RSA in U.K. and The Australian Academy of Technology and Engineering (ATSE).

Michael R. Kessler | *North Dakota State University*

Michael R. Kessler, Ph.D., P.E., is the dean of the College of Engineering at North Dakota State University. Kessler is a leader in the development of multifunctional materials, bio-renewable polymers and composites, and materials characterization using experimental mechanics and thermal analysis. He is the recipient of the Army Research Office Young Investigator Award, the Air Force Office of Scientific Research Young Investigator Award, the NSF CAREER Award, the Elsevier Young Composites Researcher Award from the American Society for Composites, and is an inaugural member of the Academy of Engineering & Engineering Technology at LeTourneau University. He holds 20 U.S. patents, has published over 260 peer-reviewed papers, and edited 14 books. Kessler is a Fellow of the ASME, ASM International, and the AAAS.

Nancy Klauber-DeMore | *Medical University of South Carolina*

Nancy Klauber-DeMore, M.D., is a professor of surgery, BMW Endowed Chair in Cancer Research, program director of the MSTP Program, and medical director of the Breast Cancer Center at MUSC. Klauber-DeMore's research program has focused on discovery of novel angiogenesis targets and subsequent drug development for rare diseases, as well as surgical device development for breast cancer. She is the recipient of Society of Surgical Oncology New Technologies Award, Top 10 Women in South East Med Tech Award from Southeastern Medical Device Association, and was selected to represent the American Surgical Association for the French Academy of Surgeons Exchange Program. She holds six U.S. patents or patents pending, four of which have been licensed. She is the co-founder of Enci Therapeutics and Innova Therapeutics. She has published 62 articles, books, and book chapters. Klauber-DeMore is a member of the American Surgical Association, the nation's oldest and most prestigious surgical society.



Nicholas A. Kotov | *University of Michigan*

Nicholas Kotov, Ph.D., made foundational discoveries in biomimetic nanostructures. He demonstrated that the ability to self-organize into complex structures is the unifying property of all nanostructures. With this insight, he created versatile family of composite materials with extraordinary properties that had previously been deemed unattainable. His research methodologies and biomimetic composites and nanoparticle assemblies have seen widespread adoption by researchers and industries being utilized in chemical, energy, environmental, food, optoelectronic and other technologies.

Konstantin (Gus) Kousoulas | *Louisiana State University*

JGus Kousoulas, Ph.D., is a professor of virology and biotechnology head, Department of Pathobiological Sciences and director of the Division of Biotechnology & Molecular Medicine at Louisiana State University. Kousoulas received a Fellowship of the American Cancer Society and NIH Sexual Transmitted Disease Training Fellowship as a postdoctoral Fellow, the distinguished faculty award, the distinguished faculty scholar award, and the Rainmaker award at LSU among others, and a Mentoring Excellence Award from Southern University. He is a S. Niarchos Foundation Fellow and an elected president of the National Association of IDeA Principal Investigators. He holds 10 patents, three of which have been licensed to three companies. He is the founder of Ios Biomedical Group Inc. and the vice president for Basic Sciences for Rational Vaccines, Inc. He has published 140 articles in peer reviewed journals and serves on the editorial board of the Journal of Virology and reviewer for top life science journals. He is a member of the American Society of Microbiology, the American Society of Virology and the AAAS.

Boris P.Kovatchev | *University of Virginia*

Boris P. Kovatchev, Ph.D., is a professor at the University of Virginia (UVA) School of Medicine, adjunct professor at UVA's School of Engineering and Applied Science, and the founding director of the UVA Center for Diabetes Technology. Kovatchev has a 30-year track record in mathematical modeling and computing, and is currently principal investigator of several projects dedicated to the development and testing of closed-loop control (known as the artificial pancreas) and decision support systems for diabetes. Kovatchev is author of over 220 peer-reviewed publications and holds 91 U.S. and international patents. In 2008 he received the U.S. Diabetes Technology Leadership Award; in 2011, he was named the UVA's Edlich-Henderson Inventor of the Year, and in 2013 he was the recipient of JDRF's Gerold and Kayla Grodsky Award presented for outstanding scientific contributions to diabetes research.

Chung-Chieh (Jay) Kuo | *University of Southern California*

C.-C. Jay Kuo, Ph.D., is the William H. Hogue Professorship in Electrical and Computer Engineering and the director of the Multimedia Communication Laboratory (MCL) at the University of Southern California (USC). He received his Ph.D. from MIT in 1987. He was Research Assistant Professor in the Department of Mathematics at the University of California, Los Angeles from 1987 to 1988. He has been with the USC since 1989. Kuo's research activities lie in multimedia and green computing. He is a co-author of 300 journal papers and 30 patents. Kuo was the recipient of the 2017 IEEE Leon K. Kirchmayer Graduate Teaching Award, the 2017 IEEE SPS Carl Friedrich Gauss Education Award, and the 2019 IEEE SPS Claude Shannon-Harry Nyquist Technical Achievement Award. He has guided 156 students to their Ph.D. and supervised 30 postdoctoral Fellows. He is a Fellow of IEEE, AAAS and SPIE.

Hoi-Sing Kwok | *The Hong Kong University of Science and Technology*

Hoi-Sing Kwok, Ph.D., is the director of the State Key Laboratory of Advanced Displays and Optoelectronics. Kwok obtained his Ph.D. from Harvard University in 1978. He taught at the State University of New York at Buffalo from 1980 to 1992 and became full professor in 1985. In 1992 he became chair professor at The Hong Kong University of Science and Technology. He was a U.S. Presidential Young Investigator in 1984. He was given the New York State Excellence Award in 1991 and the Slottow-Owaki Prize of SID in 2013. He was awarded the Rajchman Prize, the highest honor at SID in 2019. He is an Elected Member of the Asia-Pacific Academy of Materials and the Hong Kong Academy of Engineering Sciences. He is also a Fellow of IEEE, SID and OSA. Professor Kwok has published over 900 papers and holds more than 100 patents in the areas of optoelectronics and semiconductor technologies.

Michael Lebby | *Glyndwr University in Wales, U.K.*

Michael S. Lebby, Ph.D., is both an entrepreneur and intrapreneur in the photonics field. He has a Ph.D., D.Eng, and MBA from Bradford University U.K. He co-invented a diode laser (oxide VCSEL) at Motorola in 1992 which is now used in unit volumes of billions in mobile phones that include 3D sensing, personal computers laser mice, and internet fiber optic interconnects. He is currently CEO of Lightwave Logic Inc. and full Professor (part-time) at Glyndŵr University, Wales. He holds over 220 issued USPTO utility patents and over 450 if international derivatives are included. He has been cited by the USPTO to be in the most prolific 75 inventors in USA from 1988-1997. He is an expert witness with over 100 patent litigation cases. He has led the USA trade association in optoelectronics (OIDA) in DC and represented the industry on Capitol Hill. He is a Fellow of IEEE and OSA.

Pooi See Lee | *Nanyang Technological University, Singapore*

Pooi See, Lee, Ph.D., is a professor at the Nanyang Technological University. Lee is a leading expert in the field of soft and stretchable electronics, nanomaterials for energy, and human-machine interface. She is the recipient of the Norman Hackerman Young Author Award 2002, TechConnect Innovation Award 2015, National Research Foundation Investigatorship Award 2016, Nanyang Research Award 2016, and the Nanyang Innovation and Enterpreneurship Award 2018. She holds 22 filed U.S. patents of which 13 patents have been granted. She has additional 60 patents filed at different regions, of which 26 patents were filed in Singapore, several of which have been licensed to companies and one startup company has been spun-off. She is the program co-leader of the SHARE CREATE funded by National Research Foundation, Singapore. She has been a member of the MRS, U.S. since 2014.

Xiuling Li | *University of Illinois at Urbana-Champaign*

Xiuling Li, Ph.D., is the Donald Biggar Willett Professor in Engineering and interim director of Holonyak Micro and Nanotechnology Laboratory at University of Illinois, Urbana-Champaign. Li is the inventor of an unorthodox semiconductor etching method, Metal-Assisted Chemical Etching (MacEtch), for plasma-free site-controlled semiconductor nanostructure fabrication with unpresented aspect ratio. Li pioneered a 3D strain-induced self-rolled-up membrane nanotechnology for passive electronic components miniaturization and integration. Li discovered selective lateral epitaxy of self-aligned planar nanowire arrays and 3D stacking of nanowires for high performance transistors. She is the recipient of NSF CAREER, DARPA Young Faculty Award, and ONR Young Investigator Award. She holds 20 U.S. patents, including one licensed to a major global microelectronics company. She has published 155 peer-reviewed journal articles and serves as a Deputy Editor of Applied Physics Letters. Li is a Fellow of IEEE, APS, and OSA.

Lanny S. Liebeskind | *Emory University*

Lanny S. Liebeskind, Ph.D., is the Samuel Candler Dobbs Professor of Chemistry at Emory University. An award-winning teacher-scholar (Alfred P. Sloan Foundation Fellowship, Camille and Henry Dreyfus Foundation Teacher–Scholar Award, Alexander von Humboldt Senior Scientist Research Award, Clifford C. Furnas Memorial Award from SUNY Buffalo, Herty Award of the Georgia Section of the ACS, Cope Scholar Awardee of the ACS, and Fellow of ACS, he has published more than 170 peer-reviewed manuscripts, holds 13 patents, and has presented 310 invited lectures at universities, pharmaceutical companies, and major conferences throughout the world. Liebeskind's research interests are focused on the discovery of new chemical reactions and their application to important biomedical problems. He currently is a science advisor to Prayog Life Sciences, Ltd (Hyderabad, India) and serves on the International Scientific Advisory Board of the Institute of Organic Chemistry and Biochemistry, Prague, of the Czech Academy of Sciences.

James W. Lillard | *Morehouse School of Medicine*

James W. Lillard, Jr., Ph.D., MBA, is a professor and the associate dean for Research Affairs at the Morehouse School of Medicine. He holds 38 issued patents and over 40 pending patent applications for his work using biologics to better treat, diagnose, and/or prevent cancers, infectious diseases, and autoimmune disorders. Lillard was among the first to use antibodies to block the chemokine-mediated effects on chronic diseases. These efforts have led to new ventures and resulting products have reached the market and others are being tested in clinical trials. As of April 2021, he has authored more than 300 scientific communications that have been cited over 8,200 times and received over $40 million in funding for his research. He serves on numerous editorial boards and scientific review panels and boards for the National Institutes of Health, Veterans Affairs, Department of Defense, United States Food and Drug Administration, and industry.

Chwee Teck Lim | *National University of Singapore*

Chwee Teck Lim, Ph.D., is the NUS Society Professor at the National University of Singapore. Lim is a serial inventor and renowned for his microfluidic technologies for disease diagnosis, monitoring and precision therapy. He is the recipient of over 100 research awards including IP Champion for the WIPO-IPOS IP Awards 2019, ASEAN Outstanding Engineering Achievement Award 2016, Wall Street Journal Asian Innovation Award (Gold) 2012, President's Technology Award 2011 and the IES Prestigious Engineering Achievement Award 2010 and 2016. He holds four U.S. patents and over 40 foreign patents that have been licensed to six companies. He is co-founder of five startups and one public listed company. He has published over 430 peer reviewed journal articles, 33 book chapters and serves as associate editor or editorial board member of over 20 journals. Lim is a Fellow of AIMBE, IAMBE, Academy of Engineering, Singapore and the Singapore National Academy of Science.

Julia Yuri Ljubimov | *Terasaki Institute for Biomedical Innovation*

Julia Yuri Ljubimova, Ph.D., M.D., is a professor at Terasaki Institute for Biomedical Innovation, Los Angeles, California. Ljubimova's discovery-oriented research resulted in a number of high impact inventions in the new class of nanomedicines and cancer treatment methods. The unique nanoconjugate technology is based on natural biopolymer and biologically active components that allowed a production of anti-cancer agents with minimum side effects known for conventional cancer therapy. Novel nanomedicines that are non-toxic and fully biodegradable have revolutionized the field of nanomedicine in cancer treatment. Ljubimova has a demonstrated record of significant NIH funding, teaching, designing and directing successful, innovative and productive research projects in an area of high relevance to cancer management and new nanomedicine drug design, clinical development and commercialization. She is a holder of international scientific awards and a member of editorial boards of several scientific journals.

Laurie E. Locascio | *University of Maryland*

Laurie E. Locascio, Ph.D., is the vice president for research at the University of Maryland, College Park and the University of Maryland, Baltimore. Locascio has publications and patents on nanoscale phenomena, instrumentation, and materials, cited in over 8,000 publications. Two companies were spun out of Luzzi's research lab. She is a professor in Maryland's Fischell Department of Bioengineering, and professor (secondary) in the Department of Pharmacology at the University of Maryland School of Medicine. Dr. Locascio previously worked at the National Institute of Standards and Technology (NIST), most recently as acting principal deputy director and associate director responsible for leading the internal scientific research and laboratory programs across two campuses in Gaithersburg, M.D. and Boulder, CO. As a biomedical researcher, she published more than 100 scientific papers and 12 patents.

Gerald E. Loeb | *University of Southern California*

Gerald Loeb, M.D., is a professor of biomedical engineering and director of the Medical Device Development Facility at the University of Southern California. He received his B.A. and M.D. degrees from Johns Hopkins University and surgical training at The University of Arizona. From 1973 to 1988, he was an intramural research scientist and chief of the section on neurokinesiology in the Laboratory of Neural Control at the National Institutes of Health. He was a professor of physiology and director of the Biomedical Engineering Unit at Queen's University in Kingston, Canada, until 1999. Loeb is an inventor on over 70 U.S. patents, mostly related to implanted medical devices, including cochlear implants, spinal cord stimulators, injectable neuromuscular stimulators, cardiac pacemakers, RFID biochips and various types of electrodes. He was Chief Scientist at Advanced Bionics Corp. and is a founding director of SynTouch Inc. He has published over 400 articles, most related to fundamental sensory-motor neurophysiology.

David Luzzi | *Northeastern University*

David Luzzi, Ph.D., is a professor of mechanical and industrial engineering, senior vice provost for research and vice president of the Northeastern University Innovation Campus, and senior advisor to the president. He is the chairman of the board of the George J. Kostas Research Institute for Homeland Security at Northeastern University, LLC and the former dean of engineering. Luzzi leads applied research and workforce training programs funded by the U.S. Army, Navy, and Air Force on materials and manufacturing, expeditionary cyber, expeditionary maneuver, shipyard modernization, advanced intelligence and analysis, and detection and countering of autonomous systems. He has authored more than 130 scientific articles, publications and patents on nanoscale phenomena, instrumentation, and materials, cited in over 8,000 publications. He is a member of the board of directors of the Advanced Cyber Security Center and is a founding director of the International Cyber Security Center of Excellence. He has been awarded the Air Force Meritorious Civilian Service Medal, the Ellis Island Medal of Honor, and the George Heilmeier Award for Research Excellence.

Hongbin Ma | *University of Missouri-Columbia*

Hongbin Ma, Ph.D., is a professor and the department chair in the Department of Mechanical & Aerospace Engineering at University of Missouri. Ma has made significant contributions to invention and innovation not only in scientific fundamental research but also in engineering applications in the field of phase change heat transfer, which has led to the establishments of ThermAvant Technology (TAT), and ThermAvant International (TAI). TAT, where he is co-founder and president, manufactures and sells oscillating heat pipe cooling devices, which led to earning the 2018 100 R&D Award. TAI, where he is co-founder and CEO, develops and manufactures innovative drink-now and heatzorb coffee mugs. He has a number of granted U.S. patents. He has published 280 publications, including one book, six book chapters, and 162 journal papers. He was an associate editor of the ASME Journal of Thermal Science and Engineering Applications, and Heat Transfer Research. He is a Fellow of ASME.

Anant Madabhushi | *Case Western Reserve University*

Anant Madabhushi, Ph.D., is Donnell Institute Professor, Biomedical Engineering, and director for the Center for Computational Imaging & Personalized Diagnostics at Case Western Reserve University. Madabhushi develops novel computational imaging and machine vision tools for diagnosis, prognosis, and treatment response prediction of disease. He is a recipient of the IEEE Engineering in Medicine and Biology Society Award. He holds 65 U.S. patents and has had patents licensed to four companies. He is co-founder of Ibris Inc. and vascuVis Inc. His research has garnered roughly $60M in grant funding. He has published more than 400 journal publications, conference papers, books, and book chapters and serves on the editorial board for journals including Medical Image Analysis, IEEE Journal of Translational Engineering in Health and Medicine, and Journal of Medical Imaging. Madabhushi is also Fellow of AIMBE and IEEE.

Tadeusz Malinski | *Ohio University*

Aadeusz Malinski, Ph.D. Dr.h.c.m., is the Marvin and Ann White Chair of bioanalytical chemistry and distinguished professor at Ohio University. Dr. Malinski is a pioneer in the field of nanomedicine where he has developed an array of nanomedical nanosensors and other nanodevices to monitor biochemical processes in situ in single cells used for early medical diagnosis and treatment of neurodegenerative and cardiovascular diseases. He is the recipient of the Albrecht Fleckenstein Memorial Award from the International Academy of Cardiology, the Marie Curie award from the Pilsudski Institute of America, and the Grande Medaille d'Or from the Paris Society of Arts-Science-Letters. He holds five U.S. patents and six foreign patents. He has published more than 400 articles and book chapters with more than 10,000 citations and serves on the editorial boards for 15 journals. Malinski is a member of the Polish Academy of Sciences and the Academy of Sciences and Letters.

Duncan Maitland | *Texas A&M University*

Duncan J. Maitland, Ph.D., is a Professor in the Department of Biomedical Engineering at Texas A&M University. Maitland is best known for the commercial translation of porous shape memory polymer (SMP) medical devices. He has recently been honored with multiple entrepreneurial awards including an R&D 100 and National Federal Laboratory Consortium Excellence in Technology Transfer Award. He led the development of four cleared or approved biodegradable SMP devices for vascular occlusion that are commercially available in the U.S., Europe and Japan. Over 700 patients have been treated for conditions including neurovascular aneurysms, dissected aortas, abdominal aortic aneurysms and pulmonary arterial-venous malformations. The number of patients treated with these devices are growing rapidly. He has 44 U.S. and four foreign issued patents with the majority being licensed to the company that he co-founded, Shape Memory Medical, Inc. Maitland is a Fellow of the AIMBE.

John Christopher Mauro | *The Pennsylvania State University*

John C. Mauro, Ph.D., is Professor of Materials Science and Engineering at The Pennsylvania State University. Mauro is an internationally recognized leader in fundamental and applied glass science, the inventor/co-inventor of new commercial glasses, including Corning Gorilla Glass products, and the inventor of new modeling approaches for glass composition design, viscosity, relaxation behavior, topology, statistical mechanics, and more. He is the recipient of numerous international awards, including the W.A. Weyl International Glass Science Award, V. Gottardi Prize, Sir Alastair Pilkington Award, S. Donald Stookey Award, R.M. Fulrath Award (2015), W.H. Zachariasen Award (2015), Karl Schwartzwalder Professional Achievement in Ceramic Engineering Award, and the P.F. Robertson Award for Research Breakthrough of the Year (2020). He holds 58 granted U.S. patents. He has published over 290 journal articles, two textbooks, and he serves as editor of Journal of the American Ceramic Society. Mauro is Fellow of the ACerS and the Society of Glass Technology.

Bill F. McCutchen | *Texas A&M University*

Bill McCutchen, Ph.D., received his B.S. and M.S. from Texas A&M University, and Ph.D. from University of California – Davis. He joined E.I. DuPont de Nemours ('94) as a crop science researcher and ended a 12-year tenure as an executive and research Fellow. McCutchen received the Young Scientist Award, American Chemical Society ('92), DuPont Innovation Award ('98), DuPont Research Fellow, DuPont ('02), Inventor of the Year Award R&D, Pioneer Hi-Bred ('04); and Henry A. Wallace Award, DuPont de Nemours and Pioneer Hi-Bred International ('07). McCutchen returned to Texas A&M University ('06) as Executive Associate Director and is currently Center Director of Texas A&M AgriLife Research. At Texas A&M University he was awarded: Excellence in Innovation for Recognition of Innovative Research & Commercialization, Texas A&M University ('11) Chair, National Biotechnology Council ('10 – '11), Granted over 70 U.S. patents.

Donald P. McDonnell | *Duke University*

Donald McDonnell, Ph.D., is the Glaxo-Wellcome Professor of Molecular Cancer Biology in the Department of Pharmacology and Cancer Biology at Duke University School of Medicine. His research focuses on the development and application of mechanism-based approaches to identify novel therapeutics for use in the treatment and prevention of hormonally responsive cancers. Specifically, he is engaged in the pharmaceutical exploitation of the estrogen and androgen receptors as therapeutic targets in breast and prostate cancers and in defining how these receptors influence the pathogenesis of these diseases. From his work has emerged several drugs that are at various stages of clinical development. He received his Ph.D., from Baylor College of Medicine, and his B.S. in Biochemistry at the National University of Ireland, Galway. He is a member of the NAM.

John J. McGlone | *Texas Tech University*

John J. McGlone, Ph.D., is a faculty member at Texas Tech University where he studies animal behavior, physiology, and welfare. McGlone earned his B.S. (1977) and M.S. (1979) in Animal Science at Washington State University. He has over 200 refereed scientific papers (179) or book chapters (27) and many patents in the USA and other countries. His work has over 9,000 citations; his Google Scholar h-index is 52 and his i10-index is 128 (March 2021). His research and innovation activities are in the areas of animal behavior and physiology related to animal welfare and olfactory modulation of behavior. He has made significant contributions in farm animal welfare the areas of housing systems, transportation, aggressive behavior, castration and other painful practices. His development of olfactory enrichment for farm and pet environments will continue to improve the lives of millions of farm and companion animals.

Richard J. Melker | *University of Florida*

Fiorenzo G. Omenetto, Ph.D., is the Frank C. Doble Professor of Engineering, and a professor Richard J. Melker, M.D., Ph.D., is emeritus professor of anesthesiology at the University of Florida College of Medicine. His career in pediatrics, emergency medicine and anesthesiology included basic and applied research with funding from NIH, NSF, NASA, the State of Florida and industry contributing to technology for pulse oximetry, mechanical ventilation, emergency airway management, medication adherence monitoring and hand hygiene. He helped establish the Biomedical Engineering Program in the College of Engineering. He received numerous prizes, honors and awards. He holds 71 U.S. and 110 foreign patents, most licensed to the medical device industry. He founded several companies including Xhale, Inc. in 2006 where he served as CTO until 2017 when it was acquired by Philips Healthcare. He has over 76 book chapters and referred publications and served on Editorial Boards for several medical journals. He is a Fellow at AIMBE.

Anton Peter Middelberg | *The University of Adelaide*

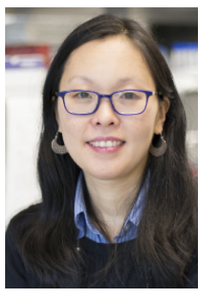
Anton Peter Middelberg, Ph.D., is the deputy vice chancellor and vice president (research) of The University of Adelaide. He is an elected Fellow of the Australian Academy of Technology and Engineering. After a Fulbright Fellowship at Berkeley, he joined the University of Cambridge as a tenured academic in Chemical Engineering with Fellowship of Selwyn College and the Cambridge-MIT Institute. In 2003 he returned to Australia as a Federation Fellow of the Australian Research Council. Professor Middelberg is an internationally-recognized research and thought leader in the fields of advanced biomanufacturing, peptide surfactants and bio-nanotechnology.

Richard B. Miles | *Texas A&M University*

Richard Bryant Miles, Ph.D., is University Distinguished Professor and O'Donnell Foundation Chair V at Texas A&M University and Robert Porter Paterson Professor Emeritus at Princeton University. He is the recipient of a Hertz Foundation Fellowship, the 2000 AIAA Aerodynamic Measurement Technology Award, and the 2012 AIAA Plasmadynamics and Lasers Award. He holds 12 U.S. patents and one foreign patent that have been licensed to one company. He is the founder of Plasma TEC Inc. He has published 189 peer reviewed articles, 342 conference manuscripts and eight book chapters. He serves on the Board of Directors of the Hertz Foundation, the Board of Trustees of Pacific University (Oregon), and on the Board of Directors of Precision Optics, Inc. Prof. Miles is a member of the NAM, a Fellow of the AIAA and the OPA.

Charles A. Mistretta | *University of Wisconsin-Madison*

Charles A Mistretta, Ph.D., is emeritus professor of medical physics at the University of Wisconsin Madison. Mistretta has been engaged in Medical Imaging Research since 1971and has established key methods for real-time angiographic imaging. He is the recipient of several honors including the J. Allyn Taylor International Prize in Medicine, RSNA Outstanding Researcher for 2010, Edith H. Quimby Lifetime Achievement Award, Marie Curie, Skłodowska Award, NAE, IEEE medal for Innovations in Healthcare Technology, Gray Medal and ICRU He holds 64 U.S. patents and foreign versions of these. Several patents have been licensed to companies such as Philips, GE Healthcare, and Siemens. He has published 190 peer reviewed publications. He is the founder of Mistretta Medical LLC.



Jin Kim Montclare | *New York University*

Jin Montclare, Ph.D., is a professor of chemical and biomolecular engineering, chemistry, biomaterials, and radiology at New York University. She is performing groundbreaking research in engineering proteins to mimic nature and, in some cases, work better than nature. She exploits nature's biosynthetic machinery and evolutionary mechanisms to design new artificial proteins. Her lab focuses on two research areas: (1) developing protein biomaterials and (2) engineering functional proteins/enzymes for particular substrates with the aim of targeting human disorders, drug delivery and tissue regeneration. Montclare leads the multidisciplinary Convergence of Innovation and Entrepreneurship (CIE) Institute. She has garnered several awards and honors including but not limited to the Air Force Young Investigator Award, ACS Women Chemists Committee Rising Star Award, AIMBE Fellow and the AAAS Leshner Fellowship on Human Augmentation.

Margaret M. Murnane | *University of Colorado Boulder*

Margaret M. Murnane, Ph.D., is a Fellow of JILA and a distinguished professor at the University of Colorado. She runs a joint, multi-disciplinary, research group with her husband, Professor Henry Kapteyn. She received her B.S. and M.S. degrees from University College Cork, Ireland, and her Ph.D. degree from UC Berkeley. Murnane, with her group and collaborators, uses coherent beams of laser and x-ray light to capture and manipulate the structure and interactions in materials at the nanoscale. She is a Fellow of the APS and the AAAS, and a member of the NAS and the American Philosophical Society.

Mitzi Nagarkatti | *University of South Carolina*

Mitzi Nagarkatti, Ph.D., is SmartState Endowed Chair of the Center for Cancer Drug Discovery, Carolina Distinguished Professor, and chair of the Department of Pathology, Microbiology and Immunology at the University of South Carolina School of Medicine. Nagarkatti's research examines inflammatory diseases, obesity, cancer, complementary and alternative medicine, and toxicology. Nagarkatti's currently principal investigator (PI) on three R01 grants and Multi-PI on two Center grants from National Institutes of Health. Nagarkatti has been the recipient of Pfizer Award, Breakthrough Leadership Award, Diversity and Inclusion Leadership Award. She has published over 325 papers, presented ~600 abstracts, has 15 patents and disclosures, of which two are licensed to companies and one approved by FDA as a therapeutic. Nagarkatti is Fellow of AAAS and American Academy of Microbiology and Academy of Toxicological Sciences.

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Vijaykrishnan Narayanan, Ph.D., is the Robert Noll Chair Professor of computer science and engineering and electrical engineering at The Pennsylvania State University. Narayanan has made important contributions to embedded vision systems, power-aware computer systems, and circuit design with post-CMOS technologies. He is the recipient of the 2021 IEEE CS Edward McCluskey Technical Achievement Award, 2020 NAGS Geoffrey Marshall Mentoring Award, two test of time paper awards and multiple best paper awards. He holds eight U.S. patents and published 450 peer-reviewed journal and conference papers. He served as the founding co-editor-in-chief of ACM Journal of Emerging Technologies in Computer Systems and as an editor-in-chief of IEEE Transactions on Computer-Aided Design for Integrated Circuits and Systems. He is a Fellow of IEEE and ACM.

Denise Ney | *University of Wisconsin-Madison*

Denise M. Ney, Ph.D., is a professor of nutritional sciences at the University of Wisconsin-Madison. Ney invented a way to use glycomacropeptide (GMP), a whey protein produced during cheesemaking, to formulate good-tasting medical foods with a safe source of protein low in phenylalanine for individuals with the genetic disorder, phenylketonuria (or PKU). Before Ney's GMP research, individuals with PKU received most of their daily protein from bitter-tasting amino acid formulas. A licensed patent and production of GMP medical foods by three companies has improved life for PKU patients worldwide. Ney is the recipient of the Spitze Land Grant Faculty Award and Mary Schwartz Rose and Fellow Awards from the American Society for Nutrition. She is recognized as a "Rare Disease Hero" for her research to develop GMP medical foods for PKU by the FDA Office of Orphan Products Development. Ney has published 134 research articles, 10 book chapters and two textbooks.

Robert A. Norwood | *The University of Arizona*

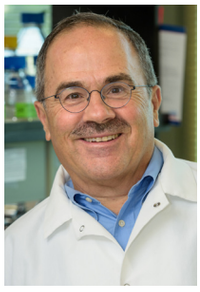
Robert A. Norwood, Ph.D., is a professor of optical sciences at The University of Arizona. Norwood is a leader in the fields of integrated photonics and optical materials, with a focus on polymeric materials and nonlinear optics. He is the Innovator of the Year in Arizona in 2017. He holds 40 U.S. patents that have been licensed to more than 10 companies, and has founded two startup companies, Photon-X and Norcon Technologies. He has published more than 180 refereed journal articles and seven book chapters, while also serving as an Associate Editor for Optica, Optical Materials Express, and IEEE Photonics Technology Letters. Norwood is a Fellow of the Optical Society and SPIE and a member of the American Physical Society and IEEE.

Thomas V. O'Halloran | *Northwestern University*

Thomas V. O'Halloran, Ph.D., is founding director of the Elemental Health Institute and Michigan State University Foundation Professor. O'Halloran is an innovator at the interface of inorganic chemistry and biology whose therapeutic and diagnostic inventions address infertility, infectious and metabolic diseases and cancer. He is the recipient of NSF Presidential Young Investigator Award, Searle Scholars Award, Dreyfus Foundation Teacher-Scholar Award, ASBMB Schering-Plough Award, David Denks Award, Royal Society of Chemistry Dalton Award, NIH MERIT etc. He holds 15 issued and pending U.S. patents. He is the founder of several biotech companies which have advanced drug candidates in late-stage clinical trials. He is the author of 183 scientific articles in Nature, Cell, Science, EMBO, Clinical Cancer Research, Proceedings National Academy of Science, Angewandte Chemie, JACS and Nature Chemistry. He is a Fellow of AAAS, JSPS, the Sloan and Guggenheim Foundations and the RSC.

Ann Palmenberg | *University of Wisconsin-Madison*

Ann C. Palmenberg, Ph.D., is a professor at the University of Wisconsin-Madison in the Department of Biochemistry. She was elected to the NAI for her discovery and application of viral Internal Ribosome Entry Sites (IRES). Palmenberg is the Roland Rueckert WARF Professor of Biochemistry and Molecular Virology; and has received a UW-Madison Hilldale Faculty Achievement Award in the Biological Sciences; UW Romnes Faculty Fellowship; CALS Pound Research Award; Vilas Associate Award; International Data Corp (IDC) High Performance Computing Innovation Excellence Award; Sir Michael Stoker Award, Center for Virus Research (Scotland); and is a past President of the American Society for Virology (2007-08). She holds nine patents that have been licensed to multiple pharmaceutical companies. She has published about 160 peer-reviewed articles and currently serves on the editorial boards of three peer-review journals. Palmenberg is a Fellow of the American Academy of Microbiology, and the AAAS.



Eleftherios Terry Papoutsakis | *University of Delaware*

Eleftherios Terry Papoutsakis, Ph.D., is the Unidel Eugene DuPont Professor at the University of Delaware. Papoutsakis is a leader in both microbial and animal-cell biotechnology. He is the recipient of numerous prestigious awards including the ACS, E. V. Murphree Award in Industrial Engineering Chemistry, the ASM Applied Biotechnology Award, the DIC Wang Biochemical Engineering Award (SBE/ AIChE), the James E. Bailey Award (SBE/AIChE) and the International Metabolic Engineering Award. He holds 12 issued and three pending U.S. and two foreign patents that have been licensed to four companies. He is the founder of two startup companies. He has over 300 referred articles & book chapters, and serves as Editor of mBio, Associate Editor to Science Advances and on the editorial board of several biotechnology journals. Papoutsakis is a member of the NAE and a Fellow of ACS, AIChE, AIMBE, AAAS, and the American Academy of Microbiology.

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Keshab K. Parhi, Ph.D., is the Edgar F. Johnson Professor at the University of Minnesota. Parhi is a prolific inventor and a pioneering researcher in the fields of VLSI architectures for digital signal processing and communications systems, and for machine learning systems. He is the recipient of the 2003 the IEEE Kiyo Tomiyasu Technical Field Award; the 2017 Mac Van Valkenburg Award, 2012 Charles A. Desoer Technical Achievement Award and 1999 Golden Jubilee Medal from the IEEE Circuits and Systems Society; the 2004 F.E. Terman Award from the ASEE; and the 1992 NSF Young Investigator Award. He holds 31 U.S. patents and four foreign patents. He was the Founder of Leanics Corporation. He has published 650 articles and seven books; and served as the Editor-in-Chief of the IEEE Transactions on Circuits and Systems, Part-I. Parhi is Fellow of IEEE, AAAS and the ACM.

Norbert Pelc | *Stanford University*

Norbert J. Pelc, Sc.D., is the Boston Scientific Applied Biomedical Engineering Professor, and professor of radiology, emeritus, and past chair of bioengineering at Stanford University. Pelc is credited with significant contributions to the development of diagnostic imaging technologies, especially Computed Tomography (CT) and Magnetic Resonance Imaging (MRI). He is a member of the U.S. National Academy of Engineering and was granted an Honorary Doctor of Medicine by the Friedrich Alexander University of Erlangen-Nuremberg. His awards include Distinguished Investigator from the Academy of Radiology Research, Outstanding Researcher Award from the RSNA, and the Edith H. Quimby Award from the AAPM. He holds 95 U.S. patents that have been licensed to major imaging companies and are used in commercial systems. He has published over 200 peer-reviewed articles and serves as Advisory Editor for the Journal of Medical Imaging. Pelc is a Fellow of the AAPM, AHA, AIMBE, ISMRM, and SPIE.

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Vir V. Phoha, Ph.D., is a professor of electrical engineering and computer science at Syracuse University. Phoha pioneered the development of authentication methods that use routine interaction with computing devices such as typing, browsing, swiping, walking, etc. as signatures of an individual's identity. He received the 2017 IEEE Region-1 Technical Innovation award and 2007 Outstanding Faculty and the Circle of Excellence award at Northeastern State University, OK. He won technical-innovation awards at Louisiana Tech in 2002, 2006, 2008, and 2009. He was an ACM Distinguished Speaker (2012-15). His paper received the Highest-Impact award at IEEE-CVPR Biometrics workshop 2018. He holds 14 U.S. patents; five of which have been licensed. He published over 270 articles, six books, and multiple book chapters and serves on the editorial board of journals-IEEE TCSS and ACM Digital Threats-Research and practice. Phoha is a Fellow of AAAS; a Fellow of SDPS, and a Distinguished Scientist of ACM.

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Peter E. Pidcoe, Ph.D., PT, DPT, is a member of the Department of Physical Therapy and has joint appointments in the School of Engineering's Department of Biomedical Engineering and the School of Medicine's Department of Physical Medicine and Rehabilitation. He teaches kinesiology and biomechanics in the entry level DPT program. In the Ph.D. in rehabilitation and movement science program, he teaches bioinstrumentation and neuromuscular performance. His clinical practice is in orthopedics and the VCUHS out-patient clinic. He is the director of the Engineering and Biomechanics Lab, which blends students from engineering and physical therapy to work on projects that link engineering principles with physical therapy treatment and human performance measures.

Leonard Pinchuk | *University of Miami*

Leonard Pinchuk, Ph.D., D.Sc., (h.c.) is a Distinguished Research Professor of biomedical engineering at the University of Miami. He has 135 issued U.S. patents, 100+ publications and founded 10 companies. His major accomplishments include the invention of the Nylon 12 angioplasty balloon (used by all interventional cardiology companies), the helical wire stent, the modular stent-graft, a drug-eluting stent, several biomaterials, a novel glaucoma tube and the next generation intraocular lens. His inventions are used in more than a hundred million patients with a financial impact well over $100 billion. He was inducted into the NAE in 2012, was awarded the 2017 Society for Biomaterials Innovation and Technology Award, San Antonio's BIOMED SA Award (2017) and the Ohio University/NAE 2019 Fritz J. and Dolores H. Russ Prize. He is also a Fellow of AIMBE and the International College of Fellows of Biomaterials Science & Engineering.

Ralph J. Portier | *Louisiana State University*

Ralph J. Portier, Ph.D., is distinguished professor emeritus in environmental sciences at Louisiana State University. Portier's research involves evaluation of fate and effect of carcinogens in aquatic/marine environments, the evaluation of microorganisms for detoxification of contaminated soils and sediments and the development of new technologies using immobilized biofilms for the continuous detoxification of contaminated industrial effluent/groundwater. He is the recipient of George W. Goethals Medal, (Society of American Military Engineers), Best Innovative Technology in Pollution Engineering Award (Pollution Engineering), Construction Man of The Year Award Finalist (Engineering News Record), LSU Distinguished Faculty Award and the Joseph D. Martinez Environmental Achievement Award. (Air & Waste Management). He holds nine U.S. patents that have been licensed to four companies. He has published 176 articles, nine book chapters, and serves on the editorial board for the journal Remediation. Portier is a member of the Society of Environmental Toxicology and Chemistry, AAAS, ACS, and ASM.

Behnam Pourdeyhimi | *North Carolina State University*

Behnam Pourdeyhimi, Ph.D., is the William A. Klopman Distinguished Professor of materials in the Wilson College of Textiles at NC State University and is also an affiliated professor in the departments of chemical and biomolecular engineering. He also serves as associate dean in the Wilson College of Textiles and is the executive director of The Nonwovens Institute. He joined NC State in part to lead the establishment of the Nonwovens Institute (NWI). NWI is the largest university-based research institute in the U.S. across all disciplines. He received the ASTM D-13 Dewitt Smith Medal and the Fiber Society Distinguished Scientist award in 1994. His work in the area of filtration won him the O' Max Gardner award and The Holladay Medal for Excellence. Pourdeyhimi has published over 450 publications and three books, has presented over 250 conference presentations, holds 28 U.S. patents and 65 international patents, and has founded or co-founded several spin-outs.

David A. Puleo | *University of Mississippi*

David A. Puleo, Ph.D., is dean of the School of Engineering and professor of biomedical engineering at the University of Mississippi. Puleo is known for his pioneering work in biomaterial surface engineering to control cell functions pertinent to new tissue formation. He holds more than 12 patents, patent applications, provisional applications, intellectual property disclosures, with two technologies being commercialized and another being negotiated for licensing. Puleo has a startup company focused on regenerative biomaterials, and he is an advisory board member for two other companies. He published over 130 peer-reviewed articles, two books, and seven book chapters. He served on the editorial boards for the Journal of Biomedical Materials Research Part A and Part B, and was an associate editor for the latter. Puleo is a Fellow of the AIMBE, BMES, and International Union of Societies of Biomaterials Science and Engineering.

Judit E. Puskas | *The Ohio State University*

Judit E. Puskas, Ph.D., P.Eng., joined the Department of Food, Agricultural and Biological Engineering (FABE) at The Ohio State University as a tenured full professor on January 1, 2019. She was named distinguished professor in January 2020. Her research is focuses on the integration of breast cancer diagnosis and treatment with breast reconstruction, in collaboration with the Cleveland Clinic and Semmelweis Medical University of Hungary. In 2012 was one of the five winners of the GE Healthymagination Breast Cancer Challenge Award, selected from 400 international applications. She is the winner of the 2017 Charles Goodyear Medal, the most prestigious award given by the Rubber Division of the American Chemical Society. She is a Fellow of AIMBE and the International Union of Pure and Applied Chemistry.

David Putnam | *Cornell University*

David Putnam, Ph.D., is a professor at Cornell University. Prior to Cornell, he was a postdoc at MIT (Robert Langer), and a graduate student at The University of Utah (Jindrich Kopecek). His research focuses on the design and synthesis of functional biomaterials with applications in drug delivery, osteoarthritis and vaccines. He is an inventor on 18 issued U.S. patents, and on over 70 U.S. and international pending patent applications. Current inventions focus on energy-efficient water desalination for the developing world, and low-energy snow making systems. He also leads a non-profit effort to build affordable housing for the rural poor in Upstate New York. From 2000 until 2002, he was Scientific co-founder of TransForm Pharmaceuticals, Inc (acquired by J&J in 2005). In 2008-2009 he was an entrepreneur-in-residence at PureTech Ventures in Boston, MA. He is the founder/co-founder of Versatope Therapeutics, Inc., Articulate Biomedical, LLC and ProVis Medical, Inc.

Si-Zhao (Joe) Qin | *City University of Hong Kong*

Si-Zhao Joe Qin, Ph.D., is chair professor of Data Science at the City University of Hong Kong. Qin is a world-renowned leader in advanced chemical, material, and semiconductor manufacturing, digital energy, asset optimization, performance diagnosis, machine learning, and data analytics. He holds over a dozen U.S. patents that have been commercially practiced by four U.S. companies. He has published around 400 peer-reviewed journal or conference articles, book chapters, and plenary, keynote, or regular conference talks, and serves as Associate Editor of Journal of Process Control and Member of the Editorial Board for Journal of Chemometrics. Qin is a Fellow of AIChE, IEEE, and IFAC. He is the recipient of the U.S. National Science Foundation CAREER Award, Northrop Grumman Best Teaching Award at USC Viterbi School of Engineering, DuPont Young Professor Award, Halliburton/Brown & Root Young Faculty Excellence Award, and IFAC Best Paper Prize.

Tariq Rana | *University of California, San Diego*

Tariq M Rana, Ph.D., is a distinguished professor, head of genetics, and V/C for Innovation in Therapeutics at University of California San Diego. Rana is a multidisciplinary RNA Biologist and inventions from his lab have provided the foundation for several pharmaceutical companies and for developing a number of RNA drug candidates for a variety of diseases such as viral infections, immune and central nervous system disorders, wound healing, metabolic disorders, cancer, and mRNA vaccines. Some of his awards include the Presidential Talent Award, a Research Career Award from the NIH, Outstanding Scientific Achievement Award from Nature and Johnson & Johnson, and NIH Director's Avant- Garde Award which is given to individual scientists of exceptional creativity with high-impact research. Rana is an elected Fellow of AAAS for "distinguished contributions to the field of chemical biology, particularly using chemistry to study RNA regulation and gene silencing to treat human disease."

Thomas G. Ranney | *North Carolina State University*

Thomas G. Ranney, Ph.D., is the JC Raulston Distinguished Professor at NC State University. Ranney has a distinguished career in university research, teaching and outreach with a focus on plant breeding and new crop development. He is known for his creative and innovative work in developing new cultivars with greater adaptability, pest resistance, non-invasiveness, and meaningful uniqueness. He is the recipient of the Outstanding Publication Award, Distinguished Achievement Award, Outstanding Graduate Educator Award, Fellow, and Outstanding Researcher from the American Society for Horticultural Sciences.; the H. Marc Cathey Award and Luther Burbank Award; the Porter Henegar Memorial Award (2006) from the Southern Nursery Association.; Fellow from the International Plant Propagators' Society; and The Scott Medal from the Scott Arboretum. He has published 87 refereed journal articles, 121 research reports, five Extension publications, 43 abstracts, and 26 popular articles.

Vilupanur A. Ravi | *Cal Poly Pomona*

Vilupanur A. Ravi, Ph.D., is a professor and chair of the Department of Chemical and Materials Engineering at California State Polytechnic University, Pomona. Ravi's research and inventive contributions are in the areas of high temperature materials, coatings and corrosion, thermoelectric devices, and biomedical materials and bio-corrosion. He is a recipient of the NACE Technical Achievement Award and the NACE Western Area Engineer of the Year Award. He holds 15 U.S. patents and seven foreign patents. He has published 93 peer-reviewed journal and conference papers, two book chapters and edited three conference proceedings volumes; and serves as editor for Materials at High Temperatures, editorial board member for International Materials Reviews and guest editor/advisor for JOM. Ravi is a Fellow of AAAS, ASM International, NACE International, Institute of Materials, Minerals and Mining, and the Indian Institute of Metals. He has served as President of the Pacific Division of AAAS, and Alpha Sigma Mu.

E. Premkumar Reddy | *Mount Sinai Health System*

E. Premkumar Reddy, Ph.D., is a professor in the Department of Oncological Sciences at the Icahn School of Medicine at Mount Sinai, New York. Reddy has pioneered the development of small molecule inhibitors targeted against oncogenes and cell cycle regulators for cancer therapy. One of the drugs developed by Reddy, Rigosertib, which inhibits RAS signaling by a unique mechanism, is currently in clinical trials for the treatment of RAS mutant lung cancers. In addition to Rigosertib, Reddy has developed six different cancer drugs, three of which have entered clinical trials. Reddy founded two international cancer journals, Oncogene and Genes & Cancer for which he serves as the Editor. He is the recipient of the American Cancer Society's Scientific Achievement Award. He holds 49 U.S. patents and 64 foreign patents that have been licensed to multiple companies. He is the founder of Onconova Therapeutics Inc and AACT Inc. He has published 300 research articles, books, book chapters. Dr. Reddy is a member of AAAS and AACR.

Elsa Reichmanis | *Lehigh University*

Elsa Reichmanis, Ph.D., is a professor and Carl Robert Anderson Chair in chemical engineering in the Department of Chemical and Biomolecular Engineering at Lehigh University. Prior to joining Lehigh, she was at the Georgia Institute of Technology. She started her independent career at Bell Labs where she was Bell Labs Fellow and Director of the Materials Research Department. She received her Ph.D. and B.S. degrees in chemistry from Syracuse University. Her research interests include the chemistry, properties and application of materials technologies for photonic and electronic applications. She is a member of the NAE and is recipient of several awards, including the ACS Awards in the Chemistry of Materials and Applied Polymer Science, AICHE Rousseau Pioneer Award for Lifetime Achievement by a Woman Chemical Engineer, and the Society of Chemical Industry's Perkin Medal. She was 2003 President of the ACS is an Executive Editor for Chemistry of Materials.

Martin C. Richardson | *University of Central Florida*

Martin Richardson, Ph.D., directs the Laser Plasma Laboratory in the College of Optics at the University of Central Florida, where he founded the Townes Laser Institute in 2006, and more recently (2020) a new center for directed energy. His current activities are in high power and ultrafast lasers and investigations for directed energy applications. He is an expert in high power lasers and their applications. He currently has over 30 patents in this domain, with several new disclosures in process. With graduate degrees (Ph.D., B.Sc., ARCS) from Imperial College in London he first worked for more than a decade at the National Research Council in Ottawa, developing new high power lasers and laser-plasma science, including the UV-preionized TEA laser, commercialized by Lumonics, before moving for another decade to lead laser-fusion related experiments at the Laboratory for Laser Energetics at the University of Rochester.

Naphtali D. Rishe | *Florida International University*

Naphtali D. Rishe, Ph.D., is a professor of computer science and the inaugural Outstanding University Professor at Florida International University in Miami. Rishe is the Director of the National Science Foundation's Industry-University Cooperative Research Center for Advanced Knowledge Enablement, a multi-university consortium. Rishe has been awarded $55 million in grants. Rishe has published six books and 430 papers. He holds 22 U.S. patents. Rishe's geographic data management system, TerraFly, has been featured in FOX TV News, New York Times, USA Today, NPR, Science and Nature journals, and in the National Science Foundation's annual report to Congress.

Michael A. Rogawski | *University of California, Davis*

Michael A. Rogawski, M.D., Ph.D., is professor of neurology and pharmacology at the University of California, Davis School of Medicine. He is widely recognized for research in neuropharmacology, cellular neurophysiology and neurotherapeutics. His research has laid the groundwork for the development of medications used in the treatment of epilepsy. He holds seven granted U.S. patents, including the key patent for Zulresso™, the first FDA-approved drug for the treatment of postpartum depression. He has published 165 peer-reviewed original research articles and 88 reviews and book chapters, and is a co-editor of four books. Rogawski is the recipient of the NIH Director's Award, the ASPET Epilepsy Research Award, the American Epilepsy Society's Service Award, the American Academy of Neurology Neuroendocrine Research Award, and the 2019 UC Davis Chancellor's Innovator of the Year Award. He is a Fellow of ANA and AAAS. Rogawski received his M.D. and Ph.D. from Yale, and trained in neurology at Johns Hopkins.

Jannick Rolland | *University of Rochester*

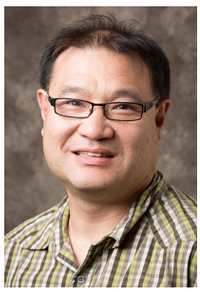
Jannick P. Rolland, Ph.D., is the Brian J. Thompson Professor in optical engineering at the University of Rochester. Rolland is an international leader in freeform optics and innovative optical instrumentation across various applications, including augmented and virtual reality and microscopy. She is the director of the National Science Foundation Center for Freeform Optics (CeFO). Rolland invented and fully developed Gabor-domain optical coherence microscopy, commercialized by LighTopTech Corp, which she co-founded. Rolland is a recipient of the OSA David Richardson Medal, the University of Rochester Edmund A. Hajim Outstanding Faculty Award, The University of Arizona College of Optical Sciences Alumna of the Year award, and OSA's Joseph Fraunhofer Award /Robert M. Burley Prize. She holds 54 U.S. patents and eight foreign patents licensed to nine companies. She has published over 400 papers and is Topical Editor of Optics Letters. Rolland is a Fellow of the OSA, SPIE, and the European Academy of Sciences (EUAS).

Jean-Francois Rossignol | *University of South Florida*

JJean-Francois A. Rossignol, Ph.D., M.D., is co-founder, chair of the board of directors, and chief science officer for Romark, L.C.; and a collaborative professor of medicine at the University of South Florida Morsani College of Medicine. Rossignol is a physician, pharmaceutical chemist and microbiologist who invented four drugs, including one that is considered by global health experts to be among the most important medicines for the treatment of parasitic diseases, and a new class of broad-spectrum antiviral drugs (thiazolides) for the treatment of viral respiratory infections and vector-borne viruses. Rossignol is the recipient of two honorary doctorates, the SGS Life Science Life Achievement in Drug Discovery Award, and is featured on London's Wall of Honour—Royal Society of Medicine. He holds 45 U.S. patents, many licensed around the world. He has authored 119 articles, co-authored seven books, and served as reviewer for dozens of international journals. Rossignol is a Fellow of the Philadelphia College of Physicians, RSC, Royal College of Pathologists; and Honorary Fellow, Faculty of Pharmaceutical Medicine, Royal College of Physicians.

Ashutosh Sabharwal | *Rice University*

Ashutosh Sabharwal, Ph.D., is a professor and department chair at Rice University. Sabharwal invented a new communications technology, called full-duplex that can double Internet speeds, invented software-defined radios that started a new product category, and invented multiple novel medical devices for asthma care, assisting surgeries, and intensive care. He is the recipient of the 2017 IEEE Jack Neubauer Memorial Award and the 2018 IEEE Communications Society Award for the invention of full-duplex communications, the 2019 ACM Sigmobile Test-of-time Award for the invention of software-defined radios, and the 2019 ACM Community Contribution Award for the invention of a programmable clinical trial platform. He holds 19 patents licensed by two companies. His research led to five startups, and he co-founded one of them. He has published 195 articles and five book chapters and served on the editorial board for multiple peer-reviewed journals and conferences. Sabharwal is a Fellow of IEEE.



Joshua Sakon | *University of Arkansas*

Joshua Sakon, Ph.D., is a tenured professor at the University of Arkansas. His curiosity in crystallography and enzymology has resulted in 15 patents, which several have been company licensed, and over 90 articles published. His involvement in industry has led him to be a founder of two companies, Biologics M.D. LLC (VC funded) and S3 Biologics LLC (launched in 2021). Joshua is active in both local community events and international research organizations, including Advances in Mineral Metabolism. He is an avid runner and has run the Boston Marathon in two hours and thirty-six minutes.

Ravi Sandhu | *The University of Texas at San Antonio*

Ravi Sandhu, Ph.D., is the Lutcher Brown Chair in cyber security at The University of Texas at San Antonio, where he is executive director of the Institute for Cyber Security and its subsidiary NSF Center for Security and Privacy Enhanced Cloud Computing. Sandhu's seminal work on role-based access control established it as the dominant cybersecurity protection tool implemented at virtually all levels of computing, overcoming the limitations of earlier military-driven models. His current focus is on convergence of multiple security models in the context of Cloud-Enabled Internet of Things. His numerous awards include the IEEE Innovation in Societal Infrastructure Award, the IEEE Computer Society Technical Achievement Award, and the IFIP TC 11 Kristian Beckman Award. He holds 31 U.S. patents and has published over 300 refereed articles. He co-founded the Internet security company TriCipher (acquired by VMWare in 2010). Sandhu is a Fellow of AAAS, ACM and IEEE.

Edward H. Schuchman | *Mount Sinai Health System*

Edward H. Schuchman, Ph.D., MPH, is the Genetic Disease Foundation-Francis Crick Professor of Genetics & Genomic Sciences at the Icahn School of Medicine at Mount Sinai. His research career has spanned over 30 years, and is focused on the understanding the pathophysiology of lysosomal storage disorders and developing new treatments. He has published over 250 peer-reviewed scientific articles and has authored over 50 book chapters. Over the years Schuchman has received numerous awards for his research, including NY Intellectual Property Inventor of the Year (2013) and Inventor of the Year at Mount Sinai (2019). He serves on the Scientific Advisory Board for numerous organizations, including the National Niemann-Pick Disease Foundation (NNPDF), where a research Fellowship is offered in his name.

Gregory Scott Schultz | *University of Florida*

Gregory S. Schultz, Ph.D., is emeritus professor of obstetrics and gynecology and director of the Institute for Wound Research at University of Florida. Schultz is an international leader in the field of molecular and cellular regulation of wound healing, including growth factor and cytokine regulation of scar formation and the role of bacterial biofilms in converting healing wounds into chronic wounds. He was designated an Innovation Leader by TIME magazine in the area of antimicrobial coatings for medical devices and was awarded Medicinae Doctorem (honoris causa) by University of Linköping, Sweden. He served as President of the Wound Healing Society. He holds 24 U.S. patents and 11 international patents that are licensed by four companies and is a co-founder of two successful biotech companies. He has published over 400 papers cited over 21,000 times (h-index = 75) and on the editorial board of six research journals. Schultz is a Silver Fellow of the Association for Research in Vision and Ophthalmology.

Yang Shao-Horn | *Massachusetts Institute of Technology*

Yang Shao-Horn, Ph.D., is W.M. Keck Professor of Energy at the Massachusetts Institute of Technology. Shao-Horn is a widely regarded contributor to the fields of energy storage including hydrogen, fuel cell and battery research, and developing key electrochemical innovations towards more efficient and clean battery technology. She holds a total of seven issued U.S. patents, eight published applications, five Patent Corporation Treaties, and seven published foreign applications. She has published over 320 journal articles and currently serves on the advisory board of the Journal of Physical Chemistry, Cell Press Chem, Joule, Matter and Cell Reports Physical Science, Advanced Energy Materials, and Materials Today, on the Editorial board of Energy and Environmental Science, and a Senior Editor for Accounts of Material Research. Shao-Horn is an AAAS Fellow, a member of NAE, and a Fellow of ISE, ECS, and RSC.

Arlene H. Sharpe | *Harvard University*

Arlene Sharpe, M.D., Ph.D., is the George Fabyan Professor of comparative pathology and ahair of the Department of Immunology at Harvard Medical School. Sharpe earned her M.D. and Ph.D. degrees from Harvard Medical School and completed her residency in pathology at Brigham and Women's Hospital. Sharpe is a leader in the field of T cell costimulation. Her laboratory has discovered and elucidated the functions of T cell costimulatory pathways, including the immunoinhibitory functions of the CTLA-4 and PD-1 pathways, which have become exceptionally promising targets for cancer immunotherapy. Her laboratory currently focuses on the roles of T cell costimulatory pathways in regulating T cell tolerance, effective antimicrobial and antitumor immunity, and translating fundamental understanding of T cell costimulation into new therapies for autoimmune diseases and cancer.

Rahul Shrivastav | *University of Georgia*

Rahul Shrivastav, Ph.D., is vice president for instruction at the University of Georgia. Shrivastav has developed new methods for voice and speech analyses, as well as ways to tune hearing devices such as cochlear implants, hearing aids or mobile phones to maximize speech intelligibility. In his administrative role, he has been a strong promoter of research commercialization, entrepreneurship and in efforts to develop close collaboration between industry partners and higher education. He holds nine U.S. patents and is the founder of three startup companies. He has published over 50 articles and book chapters and has served as an Associate Editor, on the editorial board or as a reviewer for several peer-reviewed journals. His research has been funded by the NIH and the VA Rehabilitation R&D Service. He is a Fellow of the American Speech, Language and Hearing Association.

Sachdev S. Sidhu | *University of Toronto*

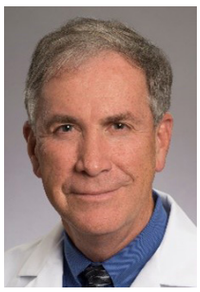
Sachdev S. Sidhu, Ph.D., is a professor at the Donnelly Centre, Department of Molecular Genetics, and Institute of Biomaterials and Biomedical Engineering at the University of Toronto. He was recruited to Toronto in 2008 after ten years as a Principal Investigator at Genentech, Inc., where he led the development of synthetic antibody libraries. Sidhu is an expert in phage display technology and structure-based and combinatorial protein engineering. His research has been instrumental for therapeutic antibody and synthetic protein development in cancer and other diseases. Sidhu is the recipient of the University of Toronto's 2012 Inventor of the Year Award and the Protein Society's 2015 Christian B. Anfinsen Award. He holds 41 U.S. patents and is the founder of seven startup companies. He has published over 250 articles, currently sits on the editorial board of three peer-reviewed journals and is a member of AACR, ASBMB, and the Protein Society.

Larry A. Sklar | *The University of New Mexico*

Larry A. Sklar, Ph.D., is a Distinguished Professor Emeritus, founding/former director of The University of New Mexico Center Molecular Discovery, and has over 450 publications and patents in biotechnology, drug discovery and repurposing. With Bruce Edwards and Fritz Kuckuck he invented the HyperCyt high throughput flow cytometry platform, co-founded the Albuquerque startup company IntelliCyt, and contributed to several startup companies and clinical trials. IntelliCyt's acquisition by Sartorius represented a commercialization landmark for UNM. Currently outreach co-PI for NIH's Illuminating the Druggable Genome, recent leadership roles included UNM Chemical Biology Consortium Center for the NExT Program; Drug Repurposing Network for the UNM Clinical and Translational Science Center; Cancer Therapeutics Program/Budke and Anderson Chair in Cancer Drug Discovery for UNM Comprehensive Cancer Center, and board member Cures Within Reach. Awards include: UNM 53rd Annual Research Lecturer, UNM Innovation Fellow, AIMBE Fellow and UNM Presidential Award of Distinction.

Daniel K. Sodickson | *New York University*

Daniel K. Sodickson, M.D., Ph.D., is the vice chair for research in radiology and director of the Center for Advanced Imaging Innovation and Research at New York University Grossman School of Medicine. He is credited with founding the field of parallel magnetic resonance imaging, which is used routinely to perform rapid MRI scans in millions of patients around the world. He is the recipient of the Gold Medal of the International Society for Magnetic Resonance in Medicine and a Distinguished Investigator of the Academy for Radiology & Biomedical Imaging Research. He holds 24 U.S. patents and associated foreign patents that have been licensed to three companies. He is a founding director of NYU's Tech4Health Institute. He has published 149 articles, eight editorials, and nine book chapters, and he serves as an Associate Editor of the Journal of Magnetic Resonance Imaging. Sodickson is a Fellow and the former President of ISMRM.



David S. Stephens | *Emory University*

David S. Stephens, M.D., is the Stephen W. Schwarzmann Distinguished Professor of medicine at Emory University and vice president for research in the Robert W. Woodruff Health Sciences Center and is Chair of the Department of Medicine in the Emory School of Medicine. Stephens is also professor of microbiology and immunology in the School of Medicine and professor of epidemiology at Emory's Rollins School of Public Health. His laboratory is an international leader in efforts to define the molecular basis for the virulence of vaccines to prevent bacterial meningitis, especially disease caused by Neisseria meningitidis and Streptococcus pneumoniae. He has contributed 300+ publications in infectious diseases, molecular pathogenesis, epidemiology, vaccinology, and immunology. His work has led to seven patents and one licensing agreement. He is currently principal investigator of the NIH (NIAID) Infectious Diseases Clinical Research Consortium that encompasses the nation's long-standing Vaccine and Treatment Evaluation Units.

Szymon Suckewer | *Princeton University*

Szymon Suckewer, Ph.D., D.Sc., is professor emeritus and senior scholar and director of X-Ray Laser and Ultra Intense Lasers at Princeton University of NJ. He is a highly recognized scientist in the development of compact ultra-intense lasers and their applications for tattoo removals and new type of Flapless Fsec Lasik. He patented tattoo removal and flapless Lasik and co-founded startup companies, based on both patents. In total, he holds 25 issues and three pending U.S. patents. He authored more than 250 scientific articles, edited three books on X-ray lasers and he is recipient of 2007 Arthur Schawlow Prize, the highest Laser Science Award of APS "for pioneering contributions to the generation of ultra-shot wavelength lasers and x-ray microscopy" and 2005 Lamb Medal for Science and Quantum Optics "for outstanding contributions to laser science especially the development of X-ray lasers". Suckewer is Fellow of American Physical and American Optical Societies.

Timothy M. Swager | *Massachusetts Institute of Technology*

Timothy M. Swager, Ph.D., is the John D. MacArthur Professor of chemistry and the director of the Deshpande Center for Technological Innovation at the Massachusetts Institute of Technology. He has more than 500 peer-reviewed papers and 100 issued/pending patents. Swager's honors include: Election to the National Academy of Sciences, an Honorary Doctorate from Montana State University, the Linus Pauling Medal, and the Lemelson-MIT Award for Invention and Innovation. His research interests are in design, synthesis, and study of organic-based electronic, sensory, membrane, high-strength, liquid crystalline, and colloid materials. FidoTM explosives detectors based on his amplifying polymer are sold by FLIR Systems. He is the scientific co-founder of DyNuPol, Iptyx, PolyJoule, C2 Sense, and Xibus Systems.

Nitish V. Thakor | *Johns Hopkins University*

Nitish V. Thakor, Ph.D., is a professor of biomedical engineering at Johns Hopkins University. His technical expertise is in the fields of medical instrumentation and neuroengineering, where he has carried out research on many technologies for brain monitoring, implantable neurotechnologies, neuroprosthesis and brain-machine interface. He has published over 425 refereed journal papers (GH Index 85), obtained 16 U.S. and international patents and co-founded three active companies. He was previously the editor-in-chief of IEEE Transactions on Neural Systems and Rehabilitation Engineering, and currently the EIC of Medical and Biological Engineering and Computing (Springer/Nature). He received a Research Career Development Award from NIH and a Presidential Young Investigator Award from the NSF, and is a Fellow of AIMBE, Life Fellow of IEEE, BMES, and IAMBE. He is a recipient of a Distinguished Alumnus Award from Indian Institute of Technology, India, and a Centennial Medal from the University of Wisconsin School of Engineering.

Albert H. Titus | *University at Buffalo, The State University of New York*

Albert H. Titus, Ph.D., is a professor and chair of the Department of Biomedical Engineering at the University at Buffalo, the State University of New York. Prior to joining the faculty at Buffalo, he was an assistant professor at the Rochester Institute of Technology. His research interests include integrated sensors, bioinstrumentation, analog VLSI implementations of artificial vision, and optoelectronics systems. He was instrumental in founding and creating the Department of Biomedical Engineering at the University at Buffalo, and was recognized for his efforts by being awarded a SUNY Chancellor's Award for Excellence in Service in 2017. He is a recipient of an NSF CAREER award and was named Western New York Inventor of the Year in the Physical Sciences (2010). As a researcher, he has over 100 papers, presentations, and talks, and eight patents awarded. He is a senior member of the IEEE, and a member of BMES and ASEE.

John O. Trent | *University of Louisville*

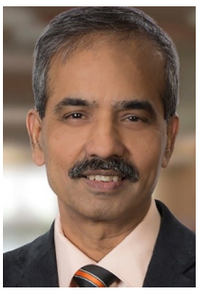
John O. Trent, Ph.D., is a professor of medicine, biochemistry and molecular genetics at the University of Louisville. Trent has expertise in structural biology, chemistry, biophysics, and drug discovery and development. He applies this to study the structure of nucleic acids and proteins and uses this information for structure-based drug design. His research has resulted in three agents entering clinical trial programs from "Bench to Bedside". Trent is the deputy director of basic and translational tesearch at the UL Health Brown Cancer Center, University of Louisville. He has been awarded the Apple Innovator of Science Award, and the University of Louisville 2020 Epic Career Impact Award. He has over 50 patents, 24 of which are U.S., and eight licenses and option agreements with potential commercial partners. He has over 126 peer-reviewed publications, seven book chapters and has been involved in over $50MM of federal funding.

Van N. Truskett | *The University of Texas at Austin*

Van N. Truskett, Ph.D., currently holds positions at The University of Texas at Austin as the executive director of the Texas Innovation Center and director of the Technology Innovation Development in the Office of the Vice President of Research. Truskett has demonstrated a highly prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on the quality of life, economic development, and society's welfare in the area of nanoimprint lithography. Her track record of business results addressed its introduction and used in semiconductors and emerging markets. Her work has taken jetting technology from scholarship to practice internationally, enabling lower production costs. She is the recipient of The Academy of Medicine, Engineering and Science of Texas Edith and Peter O'Donnell Award in Technology Innovation, 2016 and the American Institute of Chemical Engineers Industrial Research and Development Award, 2014. She holds 17 U.S. and 62 foreign patents.

Din-Ping Tsai | *The Hong Kong Polytechnic University*

Din Ping, Tsai, Ph.D., is head and chair-professor at the Department of Electronic and Information Engineering at The Hong Kong Polytechnic University. Tsai has important contributions to the fields of nanophotonics, near-field optics, plasmonics, metamaterials, green photonics, bio-photonics, quantum photonics, and meta-devices. He is the recipient of the Mozi Award, Futuretech Breakthrough Award, China's Top 10 Optical Breakthroughs in 2018, and Outstanding Achievement Award in Science and Technology. He holds 19 U.S. patents and 49 foreign patents. He was the founder and chief technology officer of one startup company. He has published 326 SCI articles and 67 book chapters and books, and serves as editor for two peer-reviewed journals, Light: Advanced Manufacturing and Progress in Quantum Electronics. Tsai is a former President of Taiwan Photonics Society and Taiwan Information Storage Association, and current Fellow of AAAS, APS, EMA, IEEE, OSA, SPIE, TPS and Japan Society of Applied Physics.



Ranji Vaidyanathan | *Oklahoma State University*

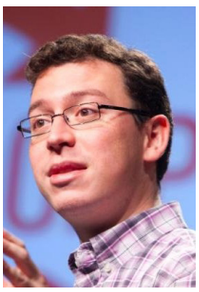
Ranji K. Vaidyanathan, Ph.D., is the Varnadow Professor of Materials Science and Engineering at Oklahoma State University (OSU). Vaidyanathan has developed eight technologies from concept to commercialization including low-cost composite tooling, hybrid nano-additives, and additive manufacturing. He is the recipient of an R&D 100 award for Aquacore™ and Aquapour™ used by the polymer composites industry and won the Oklahoma State University President's Cup for creative interdisciplinarity for assisting three student companies that created forty (40) jobs in Oklahoma. He holds 18 U.S. patents and five foreign patents that have been licensed to three companies. He is the founder of one startup company and mentor of three startup companies. He has published 60 peer-reviewed articles, two book chapters, 88 conference proceedings, and serves as associate editor for the International Journal of Ceramic Technology. Vaidyanathan is a member of prestigious organizations such as ASEE, MRS and Society for Advanced Manufacturing and Process Engineering..

George Varghese | *University of California, Los Angeles*

George Varghese, Ph.D., is a Chancellor's Professor in the Computer Science Department at UCLA. Varghese is known for his inventions to help build make the Internet faster, a field he calls Network Algorithmics, with notable contributions to fast Internet routers. He is the recipient of the ACM SIGCOMM Award in 2004 and the IEEE Kobayashi Award in 2004 both for his lifetime achievements in networking. He holds 26 U.S. Patents with colleagues some of which have been licensed to nine companies. He co-founded NetSiftInc. in 2004 which was acquired by Cisco in 2005. He has published over 100 papers and is the author of the textbook "Network Algorithmics" published by Morgan Kaufman in 2004. He has been a Fellow of the ACM since 2002 and was elected to the National Academy of Engineering in 2017.

John L. Volakis | *Florida International University*

John L. Volakis, Ph.D., is the dean of the College of Engineering and Computing at Florida International University, and a professor of electrical and computer engineering since 2017. His previous appointments include 19 years as Professor at The University of Michigan-Ann Arbor, 15 years as the Chope Chair Professor at Ohio State, and two years at Boeing (formerly, Rockwell International-North American Aircraft Operations). He also served as Director of the Ohio State ElectroScience Laboratory for 14 years (2003-2016) and as Director of the University of Michigan Radiation Laboratory (1998-2000). He has published over 440 journal papers, 900 conference papers, eight books, 30 book chapters, and over 30 patents/disclosures. His google h-index=71 with over 26000 citations (as of Jan 2021). He has mentored nearly 100 Ph.D./postdocs and has written with them 43 papers that received best paper awards. He is an IEEE, AAAS, URSI and ACES Fellow.



Luis Von Ahn | *Carnegie Mellon University*

Luis Von Ahn, Ph.D., is a consulting professor in the Computer Science Department at Carnegie Mellon University in Pittsburgh, Pennsylvania. He is known as one of the pioneers of crowdsourcing. He is the founder of the company reCAPTCHA, which was sold to Google in 2009, and the co-founder and CEO of Duolingo, the world's most popular language-learning platform. In 2018, Von Ahn is also the winner of the 2018 $500,000 Lemelson-MIT Prize for his groundbreaking inventions, commitment to youth mentorship, and dedication to improving our world through technological invention.

Bipin Vora | *Illinois Institute of Technology*

Bipin Vora joined IIT as an adjunct professor in Chemical and Biological Engineering Department after 48 years at UOP. Products. Vora has been credited to leading development and commercialization of several new process technologies, among them UOP OleflexTM process for propane and isobutane dehydrogenation; higher conversion PacolTM, DeFineTM and UOP/Cepsa DetalTM alkylation processes for the production of linear alkylbenzenes, a raw material for synthetic detergents; and UOP/Hydro MTOTM process for conversion of methanol to olefins. He holds 95 U.S. Patents and over 200 international patents. He has over 150 publications in various technical and trade journals, including contributions to Kirk-Othmer Encyclopedia of Chemical Engineering, Encyclopedia of Chemical and Process Design, Handbook of Detergents, Handbook of Heterogeneous Catalysis, Handbook of Industrial Catalytic Processes, Applied Catalysis, Handbook of Petroleum Refining, Advances in Carbon Management Technologies and Studies in Surface Science and Catalysis.

Haiyan Wang | *Purdue University*

Haiyan Wang, Ph.D., is the Basil R. Turner Professor of engineering in the School of Materials Engineering and School of Electrical and Computer Engineering at Purdue University. Wang specializes in high temperature superconductors, coated conductors, nanostructured functional ceramics for solid oxide fuel cells, plasmonics and photonics, ferroelectric and multiferroics, and radiation tolerance materials, and bulk structural metals and ceramics. She pioneered the designs of vertically aligned nanocomposites and the design and processing of ductile high temperature ceramics via non-equilibrium processing techniques. She holds 11 issued and three pending U.S. patents that have been licensed to three companies. She has published over 550 journal articles (with 20500 citations and an H-index of 68) and presented over 300 invited and contributed talks at various international conferences. She serves as an associate editor for Science Advances (since 2018). Wang is a Fellow of NAI, MRS, APS, AAAS, ACerS, and ASM International.

Lihong Wang | *California Institute of Technology*

Lihong Wang is the Bren Professor of medical and electrical engineering at California Institute of Technology. His book entitled "Biomedical Optics" won the Goodman Book Writing Award. He has published 550 peer-reviewed journal articles and delivered 540 invited talks. His Google Scholar h-index and citations have reached 140 and 82,000, respectively. His laboratory was the first to report functional photoacoustic tomography, 3D photoacoustic microscopy, and CUP (world's fastest camera). He received the NIH Director's Pioneer, NIH Director's Transformative Research, and NIH/NCI Outstanding Investigator awards. He also received the OSA C.E.K. Mees Medal, IEEE Technical Achievement Award, IEEE Biomedical Engineering Award, SPIE Britton Chance Biomedical Optics Award, IPPA Senior Prize, and OSA Michael S. Feld Biophotonics Award. He is a Fellow of AAAS, AIMBE, Electromagnetics Academy, IAMBE, IEEE, OSA, and SPIE. An honorary doctorate was conferred on him by Lund University, Sweden. He was inducted into the National Academy of Engineering.

Joyce Y. Wong | *Boston University*

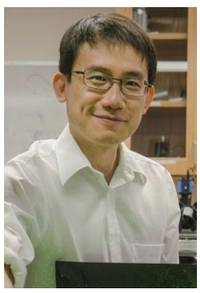
Joyce Y. Wong, Ph.D., is a professor of biomedical engineering and materials science and engineering at Boston University. Her research is in the area of developing biomaterials for the early detection and treatment of disease. Her current projects include pediatric bioengineered blood vessel patches, ultrasound contrast agents to detect and treat abdominal surgical adhesions, and biomaterials for reproductive health. She has published over 100 peer-reviewed publications, 11 pending or issued patents, and has mentored over 100 trainees. In 2017 she received the Charles DeLisi Distinguished Lecture and Award, the highest honor in Boston University's College of Engineering. She is an Associate Editor of Drug Delivery and Translational Research. She is currently Chair of College of Fellows for AIMBE. In 2020, she received the Clemson Award for Basic Research from the Society for Biomaterials. Wong is a Fellow of AAAS, AIMBE, and BMES.

Neal Woodbury | *Arizona State University*

Neal Woodbury, Ph.D., is vice president of research and chief science and technology officer in Arizona State University's Knowledge Enterprise. During his 33 years with ASU, Woodbury has advised ASU leadership on issues related to the university's major research activities and developed new, large-scale collaborative projects. He is concurrently a senior sustainability scientist in the Julie Ann Wrigley Global Institute of Sustainability, and a faculty member in the Biodesign Center for Innovations in Medicine, the School of Molecular Sciences and Global Security Initiative. Previously, he was deputy director of the Biodesign Institute. Woodbury is a past CEO of Science Foundation Arizona, has published more than 165 scientific works, and is an expert in electron transfer and photosynthesis. He expanded his research repertoire as a human disease detective, co-founding HealthTell with ASU Professor Stephen Johnston, focusing on diagnostic technology known as immunosignaturing.

Han-Chung Wu | *Academia Sinica*

Han-Chung Wu, Ph.D., is a Distinguished Research Fellow and professor at the Institute of Cellular and Organismic Biology, as well as the director of the Biomedical Translation Research Center at Academia Sinica, Taiwan. Wu's research mainly focuses on infectious diseases and cancer, including the identification of novel tumor antigens, development of targeted drug delivery systems and antibody drugs for treatment of human diseases. He holds 27 U.S. patents and 68 foreign patents, which have been licensed to 11 companies. He is the founder of three startup companies. Seven of the licensed technologies serve as the basis for products that are currently in clinical trials or already on the market. Seven of the technology transfers are currently in preclinical trials for the development of therapeutics. He has published more than 110 articles, received 25 honors and awards, and serves on the editorial boards of four international journals.



Changhuei Yang | *California Institute of Technology*

Changhuei Yang, Ph.D., is a professor of electrical engineering, bioengineering, and medical engineering at the California Institute of Technology. His research efforts are in the areas of novel microscopy development and time-reversal based wavefront shaping. He has received the NSF Career Award, the Coulter Foundation Early Career Phase I and II Awards, and the NIH Director's New Innovator Award. In 2008 he was named one of Discover Magazine's '20 Best Brains Under 40'. He is a Coulter Fellow, an AIMBE Fellow and an OSA Fellow. He was elected as a Fellow of the National Academy of Inventors in 2020. His contributions include the co-invention and development of the optofluidic microscope, ePetri and Fourier Ptychographic Microscopy. He also developed key technologies for use in time-reversal based methods for deep tissue optical imaging and stimulation.

Gerald W. Zamponi | *University of Calgary*

Gerald W. Zamponi, Ph.D., FRSC, FCAHS, is a professor and senior associate dean for research at the University of Calgary. He has developed a series of novel calcium channels blocking molecules for the treatment of chronic pain and epilepsy. Zamponi received numerous awards, such as Alberta Innovates-Health Solutions Scientist, CIHR Investigator, and a Senior Scientist Award from the Canadian Society for Pharmacology and Therapeutics. He holds 12 U.S. patents and 47 foreign patents, many of which have been licensed to NeuroMed Pharmaceuticals (now Zalicus). Dr. Zamponi was a co-founder of Neuromed Pharmaceuticals recently founded Zymedyne Therapeutics. He has published over 300 articles, has given over 250 invited lectures across the globe and has attracted over $25 Million in research support. He is a Canada Research Chair in Molecular Neurobiology, as well as a Fellow of both the Royal Society of Canada, and the Canadian Academy of Health Sciences.

Ling Zang | *The University of Utah*

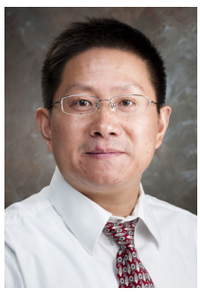
Ling Zang, Ph.D., is a professor at The University of Utah. Zang is a leading expert in the fields of nanoscale imaging and molecular probing, organic semiconductors and nanostructures, optoelectronic sensors and nanodevices, and photocatalysis for conversion of solar energy, with the goal to achieve broad applications in the areas of public safety, renewable energy and environmental protection. He is an Alexander von Humboldt Fellow, a K.C. Wong Research Fellow, and the recipient of the NSF CAREER Award.. He holds 12 U.S. patents that have been licensed to two companies. He is the founder of Vaporsens Inc., now a company of Gentex. He has published 139 articles, one book and two book chapters, and serves as associate editor for Science of Advanced Materials and on editorial board of Scientific Reports and Chemosensors.

Liangfang Zhang | *University of California, San Diego*

Liangfang Zhang, Ph.D., is a professor of nanoengineering and bioengineering and the director of the Chemical Engineering Program at the University of California San Diego. Zhang is internationally recognized for his pioneering work in the field of biomimetic nanotechnology and nanomedicine. He has invented the cell membrane coating nanotechnology for a myriad of medical applications. He is the recipient of Victor K. LaMer Award, MIT Technology Review's TR35 Innovator Award, Allan P. Colburn Award, and Kabiller Young Investigator Award. He holds 15 U.S. patents and 18 foreign patents that have been licensed to six companies. He is the founder of Cellics Therapeutics and Cello Therapeutics. He has published 224 articles and serves on the editorial board for nine peer-reviewed journals. Zhang is a Fellow of the AIMBE and AAAS.

Feng Zhang | *Massachusetts Institute of Technology*

Feng Zhang, Ph.D., is a molecular biologist focused on improving human health. He played an integral role in the development of two revolutionary technologies, optogenetics and CRISPR-Cas systems, including pioneering the use of Cas9 for genome editing and discovering CRISPR-Cas12 and Cas13 systems and developing them for therapeutic and diagnostics applications. Current research in the Zhang laboratory is centered on the discovery of novel biological systems and processes, uncovering their mechanisms, and developing them into molecular tools and therapies to study and treat human disease. Zhang is a core member of the Broad Institute, an investigator at the McGovern Institute for Brain Research, the James and Patricia Poitras Professor of Neuroscience at MIT, and a Howard Hughes Medical Investigator. He is also a member of both the NAS and the AAA&S.



Jia Zhou | *The University of Texas Medical Branch*

Jia Zhou, Ph.D., is a tenured professor at The University of Texas Medical Branch (UTMB). Zhou is an established medicinal chemist, and has made significant contributions on drug discovery and development of target-specific small molecule therapeutics for central nervous system disorders, cancer, inflammation, and infectious diseases. He has received numerous honors and awards including Sanofi Innovation Award, Congressionally Directed Medical Research Programs Breakthrough Award, and the Crohn's & Colitis Foundation Entrepreneurial Investing Initiative Award. Zhou holds 26 U.S. and PCT patents. His technology portfolio including drug candidates and target-based chemical probes has been licensed to several companies for further human clinical development or commercially available to the research community as pharmacological tools. He is a Co-Founder of QuadraGenics, Inc. He has published 190+ scientific papers in prestigious journals and seven book chapters and serves as the Editor-in-Chief of the journal Current Topics in Medicinal Chemistry. Zhou is a member of ACS, AACR and SFN.

Meng Chu Zhou | *New Jersey Institute of Technology*

MengChu Zhou, Ph.D., is a distinguished professor at New Jersey Institute of Technology (NJIT). Zhou has made pioneering contributions to Petri nets, intelligent automation, and semiconductor manufacturing. He is a recipient of Humboldt Research Award for U.S. Senior Scientists, Franklin V. Taylor Memorial Award and the Norbert Wiener Award from IEEE Systems, Man and Cybernetics Society, Excellence in Research Prize and Medal from NJIT, and Edison Patent Award from the Research & Development Council of New Jersey. He holds 16 U.S. patents and 13 foreign patents that have been licensed to several companies. He is the co-founder of IKAS Industrial Automation Co. Ltd. and AIVacua LLC. He has published 12 books, 600+ journal papers, 350+ conference papers, and 29 book-chapters. He serves as Editor of IEEE/Wiley Book Series on Systems Science and Engineering, EiC of IEEE/CAA Journal of Automatica Sinica, and AE of IEEE Internet of Things Journal, IEEE Transactions on Intelligent Transportation Systems, and IEEE Transactions on Systems, Man, and Cybernetics: Systems. He is a Fellow of IFAC, CAA, IEEE and AAAS.

S. Kevin Zhou | *Chinese Academy of Sciences*

S. Kevin Zhou, Ph.D., is a professor and executive dean of biomedical engineering at University of Science and Technology of China and an adjunct professor at Chinese Academy of Sciences and The Chinese University of Hong Kong. Zhou has made significant contributions to medical imaging with his patented algorithms translated into over 10 products, impacting the clinical decision making for millions of patients in ten thousands of hospitals worldwide. He is the recipient of R&D 100 Award (Oscar of Inventions), Thomas Edison Patent Award, and others. He holds 104 U.S. issued patents and 36 foreign granted patents assigned to Siemens. He has authored and edited five monographs, published 200+ peer-reviewed papers and book chapters. He serves as a treasurer and board member for MICCAI Society, an advisor for Project MONAI, an editorial board member for Medical Image Analysis and IEEE Transactions on Medical Imaging journals. Zhou is a Fellow of IEEE and AIMBE.

IN MEMORIAM

1951-2020
2019 NAI Fellow

David Ahlquist | *Mayo Clinic*

Dr. David A. Ahlquist was Emeritus Consultant in Gastroenterology & Hepatology and Professor of Medicine at Mayo Clinic and scientific advisor to Exact Sciences Corporation. Dr. Ahlquist's research has dealt primarily with novel approaches to cancer detection. He was co-inventor of the multi-target stool DNA test for colorectal cancer screening (Cologuard, Exact Sciences), and his scientific focus was on molecular approaches to universal cancer screening. Dr. Ahlquist has over 400 total publications, served as research mentor to >50 Fellows and residents, and has received academic awards including Distinguished Inventor (Mayo Clinic), Investigator of the Year (Mayo Clinic), William Beaumont Award for Contributions to Medicine (American Gastroenterological Association), and Lifetime Achievement Award (Inventions & Innovations Symposium, Israel 2019). He held 44 issued U.S. patents (many are also internationally issued); all are licensed to Exact Sciences. He held numerous leadership positions within Mayo Clinic (including staff president) and professional organizations.

1958-2019
2016 NAI Fellow

Craig C. Beeson | *Medical University of South Carolina*

Craig Beeson, a beloved mentor and accomplished research scientist at the Medical University of South Carolina College of Pharmacy was professor of Drug Discovery and Biomedical Science at MUSC and president and CEO of both MitoChem Therapeutics and MitoHealth. He joined MUSC in 2002, rising to the rank of full professor and acting as director of the Metabolomics and MUSC/Seahorse Biosciences Development Core. He held 10 U.S. patents. His research has resulted in more than 100 peer-reviewed publications funded by over 30 grants on which he was the PI or co-PI, with additional NRSA grants obtained by postdoctoral Fellows in his laboratory.

1955-2020
2015 NAI Fellow

Sanjiv Sam Gambhir | *Stanford University*

Sanjiv Sam Gambhir was the Virginia and D.K. Ludwig Professor in Cancer Research and director of the Molecular Imaging Program at Stanford (MIPS), and had international recognition as a pioneer of molecular imaging. He received the 2020 European Society of Molecular Imaging (ESMI) annual award. In 2019 he was honored with IEEE Marie Sklodowska-Curie Award, IEEE Advancing Technology for Humanity. He passed away on July 18 from cancer at 57 years old.

1951-2021
2014 NAI Fellow

Juan C. Lasheras | *University of San Diego*

Juan C. Lasheras was instrumental in founding the University of San Diego Aerospace Engineering program and in forming the Dept. of Mechanical and Aerospace Engineering. He was also the founding director of the Center for Medical Devices, and was a member of NAE and the Spanish Royal Academy of Engineering. He held 50 U.S. Patents.

1960-2020
2019 NAI Fellow

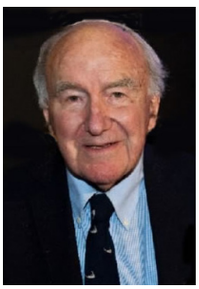
David A. Lightfoot | *Southern Illinois University*

David Lightfoot, Ph.D., was a professor of biotechnology and genomics at Southern Illinois University. He received his Ph.D. in genetics from the University of Leeds, U.K. His research focused on biotechnology, genetics and genomics. He was head of the Genomic Science Facility at SIUC. He was an Illinois Humanities Commission Road Scholar and won Illinois Soybean Researcher of the year twice. He has published 223 peer-reviewed articles, one book, sixteen book chapters, and thousands of DNA sequences. He has been awarded patent rights to four inventions, nine pending. He has trained 18 Ph.D. and 31 M.S. students. He served as senior editor for BMC Genomics and associate editor for the Theoretical and Applied Genetics, PLoS One, and Journal of Biotechnology and Biomedicine journals. He owned a spin-off business, GAAB-LLC in Biotech. He was as CSO for a local maize genetics business and a local fertilizer company.

1938-2020
Charter NAI Fellow

Thomas A. Lipo | *Florida State University*

Thomas Lipo was Research Professor at Florida State University's (FSU) Center for Advanced Power Systems (CAPS) whose pioneering innovations in the field of electrical machinery and power electronics have improved the technology that runs subway cars as well as paved the way for hybrid and electric vehicles. Lipo was known worldwide as an industry authority on the design and analysis of electric machines and power electronic drives that have helped move power technology from concept to practical application. Lipo was an Institute of Electrical and Electronics Engineers (IEEE) Life Fellow, National Academy of Inventors (NAI) Fellow, and member of the National Academy of Engineering (NAE) and U.K. Royal Academy of Engineering. In 2014, he received the IEEE Medal in Power Engineering, the highest award presented by IEEE for research in the field of power engineering. Lipo holds 45 U.S. patents and 20 foreign patents.



1923-2020
2016 NAI Fellow

Ed Merrill | *Massachusetts Institute of Technology*

Ed Merrill, from MIT, was a founder of Biomaterials, a member of the National Academies of Engineering, Medicine and Inventors as well as the American Academy of Arts and Sciences, a Founders Award recipient of AIChE, SFB, a Pierre Galletti recipient from AIMBE, and "one of the 100 engineers of the modern era" according to AIChE. Ed had 4,600 Ph.D.s and postdocs in his academic family tree." Ed was 97 years old.

1946-2021
2016 NAI Fellow

John C. Spence | *Arizona State University*

John C. Spence was Regent's Professor of Physics at Arizona State University. Spence devoted his career to the invention and development of new forms of microscopy and new electron microcopy techniques in condensed matter physics. He was Director of Research for the seven-campus "BioXFEL" Science and Technology Center, funded by NSF for a decade for applications of the recently-invented X-ray laser to structural biology. He was the recipient of the Buerger Medal of the American Crystallographic Society, the Cowley Medal of the International Federation of Societies for Microscopy, and the Distinguished Scientist Medal of the Microscopy Society of America. He held seven U.S. patents (four pending) and one foreign patent (3 pending) that have been licensed to one company. He served as a board member of the Xradia company for many years. He published over five hundred peer-reviewed scientific publications, four books, and served as editor of IUCrJ. He has severed on many journal editorial boards and was editor for North American of Acta Crystallographica A (Diffraction Physics) for a decade. Spence is a Fellow of the Royal Society, the Australian Academy of Science, the American Association for the Advancement of Science, and the American Institute of Physics

1963-2020
2020 NAI Fellow

Nongjian (NJ) Tao | *Arizona State University*

NJ came to Arizona State University in 2001 where he joined the faculty in the School of Electrical, Computer and Energy Engineering. He quickly established himself as an expert in personal sensing technologies and in 2008 became the founding director of the Biodesign Center for Bioelectronics and Biosensors (BCBB). Known around the world, NJ has been an influencer in the fields of molecular electronics, nanoelectronics, chemical and biological sensors, and wireless devices for mobile health. He's received more than 25 U.S. patents, published over 300 papers and has been cited thousands of times. But what might be his greatest professional legacy are the teams of scientists who trained under him. Scientists, who are now improving the world in labs around the globe. His work lives on in them.

2020 FELLOWS SELECTION COMMITTEE

Norman R. Augustine | *Retired Chairman and CEO of the Board, Lockheed Martin Corporation, National Medal of Technology and Innovation Recipient, National Academy of Science Member*

Norm Augustine is retired Chairman and CEO of the Board of the Lockheed Martin Corporation. Prior to joining Martin Marietta, he served as Assistant Secretary of the Army (R&D) from 1973-75 and Undersecretary from 1975-77. He was a Professor at Princeton, his alma mater, from 1997-99. Mr. 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 the Department of Defense's highest civilian decoration, the Distinguished Service Medal. He has been elected to membership in the American Philosophical Society, the National Academy of Science, the American Academy of Arts & Sciences, the Explorers Club, Tau Beta Pi, Phi Beta Kappa and Sigma Xi.

Betsy Boyle | *Director of Operations and Prize Programs, Lemelson-MIT Program Director of Operations and Prize Programs*

Betsy Boyle manages operations for the Lemelson-MIT Program, and previously oversaw the LMIT inventor prize programs. She has more than 25 years of experience in non-profit management and higher education, and has managed programs focusing on green building and energy efficiency. Betsy received a Bachelor of Science from the University of Massachusetts, Amherst, and a Master of Public Administration from the Harvard Kennedy School.

Karen J.L. Burg, Ph.D | *Vice President for Research, University of Georgia, AAAS-Lemelson Invention Ambassador and NAI Board Member, NAI Fellow*

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). Prior to joining UGA, she served as vice president for research and professor of chemical engineering at Kansas State University. Honors to Karen include the Presidential Early Career Award for Scientists and Engineers, the inaugural Swiss AO Research Prize, recognition as an American Association for the Advancement of Science-Lemelson Invention Ambassador, an American Association for the Advancement of Science Fellow, an American Council on Education Fellow, an American Institute for Medical and Biological Engineering Fellow, a Biomedical Engineering Society Fellow, an International Union of Societies for Biomaterials Science and Engineering Fellow, a Massachusetts Institute of Technology TR Young Innovator, a National Academy of Inventors Fellow, and a U.S. Department of Defense Era of Hope Scholar. Karen is the inventor of record of eight issued patents, with licenses serving as the foundation for a thriving diagnostics company. Karen served as a member of the United States delegation for the 2017 Global Entrepreneurship Summit (GES) in Hyderabad, India and as alumna ambassador for the 2019 GES in The Hague, The Netherlands.

Anne H. Chasser | *Former Commissioner for Trademark, U.S. Patent and Trademark Office*

Anne H. Chasser is an Author and Intellectual Property Strategist and Expert. From 1999-2004 Anne served as the Commissioner for Trademarks at the United States Patent and Trademark Office. 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 at the USPTO, 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. Anne co-authored two books: Brand Rewired and Domain Rewired, published by John Wiley. In 2014, Anne was awarded the Distinguished Career Award by The Ohio State University, John Glenn School of Public Affairs.

Elizabeth Lea Dougherty, J.D. | *Eastern Regional Outreach Director, U.S. Patent and Trademark Office*

As the Eastern Regional Outreach Director for the U.S. Patent and Trademark Office (USPTO), Elizabeth Dougherty carries out the strategic direction of the Under Secretary of Commerce for Intellectual Property and Director of the USPTO, and is responsible for leading the USPTO's East Coast stakeholder engagement. Focusing on the region and actively engaging with the community, Ms. Dougherty ensures the USPTO's initiatives and programs are tailored to the region's unique ecosystem of industries and stakeholders. Ms. Dougherty has more than 25 years of experience working at the USPTO. She served as the Senior Advisor to the Under Secretary of Commerce for Intellectual Property and Director of the USPTO. In this role, she worked closely across the Agency's leadership to implement the policies and priorities for the USPTO. She began her career at the USPTO as a patent examiner after graduating from The Catholic University of America with a bachelor's degree in physics. While a patent examiner, Ms. Dougherty went on to obtain her J.D. from The Columbus School of Law at The Catholic University of America and served as a Senior Legal Advisor in the Office of Patent Legal Administration for a significant part of her career. Over the years, she has also served in the USPTO's Office of Petitions, the Office of Innovation Development, and the Office of Government Affairs.

Ms. Dougherty has dedicated much of her career to the USPTO's outreach and education programs focusing on small businesses, startups and entrepreneurs. In this effort she has developed, implemented, and supervised programs that support the independent inventor community, small businesses, entrepreneurs, and the intellectual property interests of colleges and universities. Similarly, Ms. Dougherty has spearheaded a number of special projects with federal, state and local governments, and private organizations to promote and support invention and innovation in the United States.

Ms. Dougherty is a member of the Virginia Bar, the Giles S. Rich American Inn of Court, the Pauline Newman American Inn of Court, the American Bar Association, the Federal Circuit Bar Association, the American Intellectual Property Law Association, the Patent and Trademark Office Society, the Supervisory Patent Examiners and Classifiers Organization, Women in Science and Engineering, Federally Employed Women, and the Network of Executive Women.

Andrew H. Hirshfeld, Esq. | *Commissioner for Patents, U.S. Patent and Trademark Office*

See page 9.

Bethany Johns, Ph.D. | *Assistant Director, Research Policy, APLU*

Dr. Bethany R. Johns is the Assistant Director of Research Policy at APLU. She works on research policy and regulatory issues related to sustaining the excellence of public research universities, as well as staff the Council on Research. Before joining APLU, Dr. Johns worked in Government Relations for the American Institute of Physics (AIP) managing the government relations advocacy services and administering tailored, nuanced strategies to educate, inform and constructively influence policy and policymakers. Dr. Johns has worked on a broad spectrum of issues regarded science and innovation including: Agriculture, energy, and environmental science for American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America; Science policy consultant to the Commercial Spaceflight Federation, the premier trade association of over 40 businesses at the forefront of commercial aerospace; and at the American Astronomical Society's public policy office successfully in securing millions of federal dollars appropriated for the space sciences. Dr. Johns obtained her Ph.D. and Masters in Physics from Clemson University with an emphasis in policy studies and a B.A. in Physics from Kenyon College.

Robert S. Langer Sc.D., FNAI | *David H. Koch Institute Professor at Massachusetts Institute of Technology , National Medal of Technology and Innovation Recipient, National Medal of Science Recipient, National Inventors Hall of Fame Inductee,*

Robert S. Langer is the David H. Koch Institute Professor at MIT (there are 13 Institute Professors at MIT; being an Institute Professor is the highest honor that can be awarded to a faculty member). He has written more than 1,400 articles. He also has over 1,300 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), 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 is one of the very few individuals ever elected to the National Academy of Medicine, the National Academy of Engineering ,the National Academy of Inventors and the National Academy of Sciences.

Cato T. Laurencin, M.D., Ph.D., FNAI | *University Professor & Albert and Wilda Van Dusen, Distinguished Professor of Orthopaedic Surgery, University of Connecticut, NAI Board Member, NAI Fellow*

Cato T. Laurencin, M.D., Ph.D., is the University Professor and Albert and Wilda Van Dusen Distinguished Endowed Professor of Orthopaedic Surgery at the University of Connecticut. A surgeon-engineer-scientist, he is Professor of Chemical, Materials, and Biomedical Engineering at UConn. He serves as Chief Executive Officer of the Connecticut Convergence Institute for Translation in Regenerative Engineering, at UConn Health. He earned his B.S.E. in Chemical Engineering from Princeton University, his M.D., Magna Cum Laude, from the Harvard Medical School, and his Ph.D. in Biochemical Engineering/Biotechnology from the Massachusetts Institute of Technology. Dr. Laurencin has produced seminal research and technologies on nanotechnology and tissue regeneration, polymer/ceramic systems for bone regeneration, and biomaterials for soft tissue regeneration. Dr. Laurencin is a pioneer of the field of Regenerative Engineering. He received the NIH Director's Pioneer Award, and the National Science Foundation's Emerging Frontiers in Research and Innovation Grant Award for this field. For his work he has received singular honors including the American Association for the Advancement of Science Philip Hauge Abelson Prize given 'for signal contributions to the advancement of science in the United States', the Simon Ramo Founder's Award from the National Academy of Engineering and the Walsh McDermott Prize from the National Academy of Medicine. He is the first in history to win all three of these awards. Dr. Laurencin is a world leader in invention and innovation, and he is the recipient of the National Medal of Technology and Innovation, America's highest award for technological achievement, award by President Barack Obama in ceremonies at the White House.

Arthur Molella | *Director Emeritus, Smithsonian Lemelson Center for the Study of Invention & Innovation*

Arthur P. Molella, Ph.D., was the founding director, now emeritus, of the Smithsonian Institution's Lemelson Center for the Study of Invention and Innovation at the National Museum of American History. He received his Ph.D. in the history of science from Cornell University and a Doctor of Science, honoris causa, from Westminster University, U.K (2005). At the National Museum of American History, he served variously as curator of electricity, chairman of the Department of History of Science and Technology, and assistant director for History. At Johns Hopkins University, he has served as Senior Lecturer, Dept. History of Science, and currently Lecturer M.A. in Museum Studies, On-Line, Advanced Academic Programs. He was head curator of the Smithsonian's Science in American Life exhibition, co-curator of the international exhibition, Nobel Voices. He has published and lectured widely on the history of science, invention, technology, and modern technological culture. His most recent books include Places of Invention (Smithsonian, 2015), World's Fairs on the Eve of War (Pittsburgh, 2015), World's Fairs in the Cold War (Pittsburgh, 2019). In addition to serving on the Executive Advisory Board of the National Academy of Inventors, he is on the board of the Florida Inventors Hall of Fame. He received the 2020 Leonardo da Vinci Medal of the Society for the History of Technology, the international society's highest award.

Rini Paiva | *Executive Vice President for Selection and Recognition, National Inventors Hall of Fame*

Rini Paiva is the Executive Vice President for Selection and Recognition, National Inventors Hall of Fame (NIHF). In this role, she oversees the annual Inductee Selection process for the 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. In addition, Paiva facilitates the Collegiate Inventors Competition (CIC), which brings recognition to the country's outstanding college students who create the technologies that shape the future. Both the NIHF and the CIC are dedicated to recognizing and fostering invention, creativity, and entrepreneurship. Paiva also provides oversight for the NIHF Museum in Alexandria, Virginia, which features the life-changing Inductees of the NIHF and demonstrates the power of intellectual property and innovation. Also integral to her work is encouraging NIHF Inductees to be involved in the organization's education programs, Camp Invention and Invention Project, so that they may serve as inspiration, encouragement, and examples to younger generations. With the National Inventors Hall of Fame since 1995, Paiva is an authority on the topic of U.S. invention.

Laura Savatki, MBA, CLP, RTTP | *Technology Transfer Officer at Versiti, Blood Research Institute, AUTM*

Laura is the Technology Transfer Officer for the non-profit organization Versiti | Blood Research Institute. In this role, she is responsible for technology protection, commercialization, and partnership development. Laura has a diverse background as a research scientist, entrepreneur, and startup advisor, and broad experience bringing inventions to market. Laura's early career in medical research focused on vaccine trials, molecular virology, stem cell biology, transplant/oncology, and cellular assays. Her past roles include Vice President and Chief Operating Officer for Prodesse, a company she co-founded, which make molecular infectious disease diagnostic products and is now part of Hologic. Laura currently serves as the AUTM Board representative for the Alliance of Technology Transfer Professionals (ATTP).

Jessica A. Sebeok | *Deputy Vice President for Federal Relations and Counsel Policy, AAU*

Jessica Sebeok has served at AAU since August 2014. As the Deputy Vice President for Federal Relations and Counsel for Policy, she has primary responsibilities for issues related to intellectual property and information technology and technology transfer. She shares responsibilities for a wide range of other regulatory, compliance and legal issues that affect research universities. She is the lead staff for the AAU Council on Federal Relations and the AAU General Counsels Committee. 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 Assistant General Counsel of Yale University.

Jessica received her JD from Yale Law School and her master's degree from the University of Oxford, where she was a Marshall Scholar. She earned her BA in History from The University of Chicago.

Phillip Singerman | *Associate Director for Innovation and Industry Services, National Institute of Standards and Technology (NIST)*

Phillip Singerman is the Senior Advisor on Technology Transfer and Commercialization to the Montgomery County Economic Development Corporation and Elected Fellow of the National Academy of Public Administration. From 2011-2020 he served as the Associate Director for Innovation and Industry Services at the National Institute of Standards and Technology (NIST). In this capacity he was responsible for the NIST suite of external partnership programs, including the Hollings Manufacturing Extension Partnership, the Baldrige Performance Excellence Program, the Office of Advanced Manufacturing, NIST technology transfer, economic analysis, and small business innovation research awards.

Singerman has more than 40 years of experience in tech based economic development; he was the first chief executive of two of the best known and longest lasting private-public partnerships; the Ben Franklin Technology Center of Southeastern Pennsylvania and the Maryland Technology Development Corporation. During the Clinton Administration he served as U.S. Assistant Secretary of Commerce for Economic Development, a Presidential appointment requiring Senate confirmation.

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

James K. (Jim) Woodell, Ph.D., helps to realize the economic and societal impact of higher education. He provides professional services to institutions of higher education, and to their current and prospective partners in the private, civic, and government sectors. Spanning multiple areas of impact, his expertise includes: community development and improved quality of life in regions through higher education engagement, outreach, and public service; education, training, and workforce development, including strategies for design and delivery of programs; and R&D and innovation, including technological advancement, entrepreneurship, and regional technology-based economic development.

Woodell recently served as Vice President for Economic Development and Community Engagement at the Association of Public and Land-grant Universities (APLU), where he worked closely with member institutions to develop tools and resources to enhance their regional engagement and economic development efforts. He served as the staff director for APLU's Commission on Innovation, Competitiveness and Economic Prosperity (CICEP), and also the organization's Council on Engagement and Outreach (CEO), advancing APLU's economic and community engagement agenda. Woodell maintains APLU's strong presence in national issues related to the economic and social impacts of public research universities.

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Denise Zannino, Ph.D. | *Science Policy and Communications Analyst, National Science Foundation*

Denise Zannino, Ph.D., is a Science Policy and Communications Analyst at the National Science Foundation in the Office of Legislative and Public Affairs. In this capacity she is responsible for internal communications and strategic visioning, project management for special events such as press conferences and symposiums, and general science outreach and communications projects. Prior to this role Denise was a AAAS Science & Technology Policy Fellow in the same office.

Denise earned her Ph.D. in neuroscience from Vanderbilt University, and a B.S. in biology and psychology from James Madison University. She is passionate about utilizing her scientific background and experience in biomedical research to communicate science to a varied range of audiences including the public, media, and other scientists, and to promote scientific programs, outreach, and awareness.

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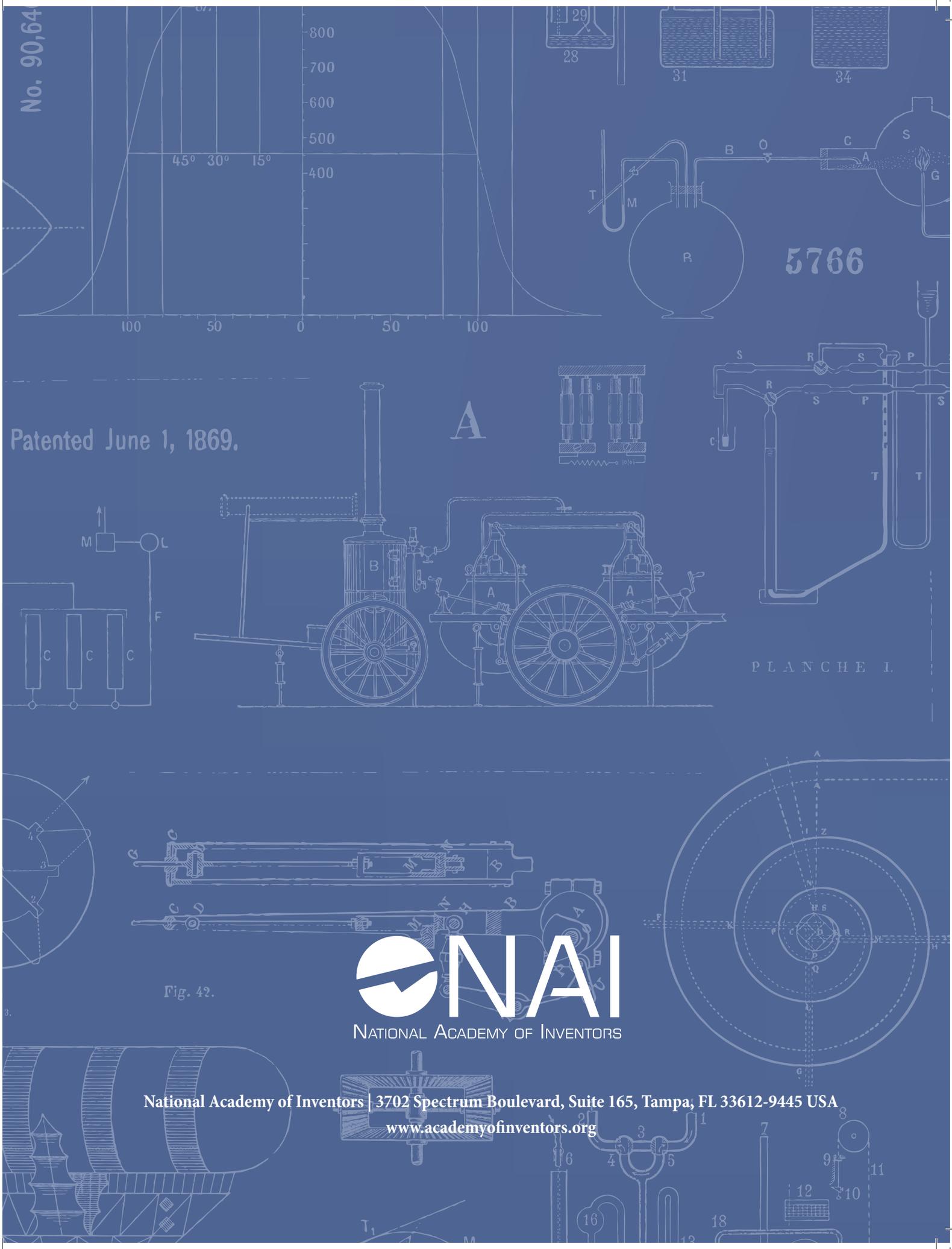
COMMON ABBREVIATIONS

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
AAU..... American Association of Universities
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
NAI ..... National Academy of Inventors
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
NIST ..... National Institute of Standards
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
USPTO ..... United States Patent and Trademark Office



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