



2019 FELLOWS

EIGHTH 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.

The program has 1,228 Fellows worldwide representing more than 250 prestigious universities and governmental and non-profit research institutes. Collectively, the Fellows hold more than 38,000 issued U.S. patents, which have generated over 13,000 licensed technologies and companies, and created more than 19.5 million jobs. In addition, over \$2.2 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 agency
- Nominees do not have to be current members of, nor affiliated with, a Member Institution of NAI (although 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 patent 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.asp



United States Patent and Trademark Office

Office of the Commissioner for Patents

February 10, 2020

Dear Friends:

On behalf of the United States Patent and Trademark Office (US PTO), I congratulate the National Academy of Inventors' newly elected 2019 class of Fellows. The USPTO is privileged to participate in recognizing 168 academic luminaries of innovation and invention who have been bestowed the highest professional distinction through the NAI. The leadership of these NAI Fellows serves as an inspiration to all of us and to future generations of inventors.

I also want to commend the NAI for continuing to celebrate and honor the top minds in academic research nationally and abroad. The USPTO recognizes the significant impact that NAI Fellows have made on our society and quality of life, and I am honored to give the keynote address at the Fellows Induction Ceremony this year to honor these distinguished individuals.

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

Again, congratulations to the 2019 NAI Fellows. You are among our nation's top academic innovators and inventors and recognition for your outstanding achievements is well-deserved.

Kind regards,

Warmest regards,

Deputy Under Secretary of Commerce for Intellectual Property
Deputy Director
U.S. Patent and Trademark Office

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

2019 FELLOWS CEREMONY SPEAKERS



Welcome Remarks

Paul R. Sanberg

President, National Academy of Inventors

Paul R. Sanberg, Ph.D., D.Sc., is president and founder of NAI and senior vice president for research, innovation and economic development, Distinguished University Professor of medicine, engineering, and business, and executive director of the Center of Excellence for Aging and Brain Repair at University of South Florida. His work has been instrumental in translating new pharmaceutical and cellular therapeutics to clinical trials and commercialization for Tourette syndrome, stroke, ALS, Alzheimer's, Huntington's and Parkinson's disease. He is an inventor on 163 U.S. and foreign patents; author of over 675 scientific articles and 14 books, with over 32,571 citations. He has served on editorial boards for over 30 scientific journals, is editor-in-chief of NAI's journal *Technology and Innovation*, and has received numerous scientific awards, including the AIMBE Advocate Award; Bryden Alumni Award (York University); Fulbright Specialist; McGovern Science & Society Award (Sigma Xi); Florida Academy of Sciences Medalist; Florida Inventors Hall of Fame inductee; fellow of AAAS, AIMBE, Royal Societies of Chemistry, Public Health and Medicine; and AAAS-Lemelson Invention Ambassador. He serves on the nomination evaluation committee, U.S. National Medal of Technology and Innovation; and advisory board, APLU Commission on Innovation, Competitiveness, and Economic Prosperity. He is a Charter Fellow of NAI.

Keynote Speaker

Laura A. Peter

Deputy Under Secretary of Commerce for Intellectual Property and Deputy Director of the U.S.PTO

Laura Peter is the Deputy Under Secretary of Commerce for Intellectual Property and Deputy Director of the U.S. Patent and Trademark Office (USPTO). In this role, she is responsible for all agency operations and managing approximately 13,000 employees. Prior to joining the U.S.PTO, Ms. Peter was the Deputy General Counsel of A10 Networks, where she oversaw daily legal matters related to commercial agreements, litigation, and intellectual property (IP) portfolio development. Ms. Peter has practiced IP law for over 20 years. She received a B.S. in industrial engineering from Cornell University and an M.P.P. from the University of Chicago. She also holds a J.D. from Santa Clara University School of Law and an L.L.M. in international business law from King's College London.

FELLOWS



Ernesto V. Abel-Santos | *University of Nevada, Las Vegas*

Ernesto Abel-Santos, Ph.D., is a professor of biochemistry at the University of Nevada, Las Vegas. Abel-Santos pioneered the use of anti-germination approaches to prophylactically target infectious diseases. He is the recipient of the Ellison Medical Foundation New Scholar Award, the CIAT Award, and Merck Forst Lecturer. He holds five U.S. patents that have been licensed to two companies. He is the founder of Able Therapeutics, Inc. He has published 72 peer-reviewed articles, conference abstracts, and book chapters. He edited a book on bacterial spores. Abel-Santos has served as an ad-hoc reviewer for SBIR/STTR grants for three years with the NIH. Abel Santos has also reviewed grants related to bio-defense, Chemistry of Life Processes, and Exobiology. Ernesto is a permanent reviewer/member for the Drug Discovery and Resistance study section of NIH.



David A. Ahlquist | *Mayo Clinic*

David A. Ahlquist, M.D., is 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 is co-inventor of the multi-target stool DNA test for colorectal cancer screening (Cologuard, Exact Sciences), and his current scientific focus is on molecular approaches to universal cancer screening. Dr. Ahlquist has over 400 total publications, served as a research mentor to more than 50 fellows and residents, and has received academic awards including Distinguished Inventor (Mayo Clinic), Investigator



Andrea Alù | *City University of New York*

Andrea Alù, Ph.D., is Einstein Professor and Founding Director at the Photonics Initiative, Advanced Science Research Center, City University of New York. Alù has seminally contributed to the fields of optics and photonics, metamaterials, electrodynamics, acoustics and mechanics. He is the recipient of the 2015 NSF Alan T. Waterman Award, 2016 ICO Prize in Optics, 2019 IEEE Kiyo Tomiyasu Award, 2013 OSA Adolph Lomb Medal, 2015 O'Donnell Award in Engineering, and 2011 URSI Issac Koga Gold Medal. He holds 8 U.S. patents, 1 foreign patent and 8 patent applications, licensed to 2 companies. He is the founder and chief technology officer of 1 startup company. He has published 525 articles, 1 edited book, 34 book chapters, and serves as associate editor of Applied Physics Letters, Physical Review B, and several other journals. Alù is President of Metamorphose VI since 2019, and a fellow of AAAS, IEEE, APS, OSA, and SPIE.



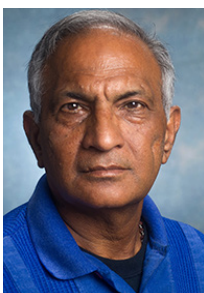
Guillermo A. Ameer | *University of California, Santa Barbara*

Guillermo A. Ameer, Sc.D., is the Daniel Hale Williams Professor of Biomedical Engineering and Surgery at Northwestern University. Ameer is the founding director of the Center for Advanced Regenerative Engineering. He pioneered the development of citrate-based biomaterials to improve wound healing and the regeneration of bone, cartilage, bladder, and blood vessels. He is the recipient of the Walder Award for Research Excellence, the AHA Established Investigator Award, and the Key to the City of Panama. He holds 18 U.S. patents and 13 foreign patents that have been licensed to 7 companies. Ameer has co-founded 3 companies. He has co-authored over 250 peer-reviewed journal publications, book chapters, and conference proceedings and serves as associate editor for the journals Science Advances and Regenerative Engineering and Translational Medicine. Ameer is a fellow of AIMBE, BMES, AIChE, and AAAS.



Subramaniam Ananthan | *Southern Research Institute*

Subramaniam Ananthan, Ph.D., is a fellow in the drug discovery division at Southern Research. Ananthan also holds an adjunct faculty appointment in chemistry at The University of Alabama at Birmingham. He has more than 30 years of experience in the design, discovery, and development of new therapeutics for the treatment of pain, addiction, central nervous system disorders, cancer, and infectious diseases. He has been the principal investigator on multiple research grants and has been a recipient of continuous funding support from NIH for more than 25 years. He is an inventor on 21 U.S. patents and has published over 85 peer-reviewed papers in the areas of organic and medicinal chemistry and structure-based drug design. He is a member of ACS, Society for Neuroscience, and other professional organizations.



Gattadahalli M. Anantharamaiah | *University of Alabama at Birmingham*

Gattadahalli M. Anantharamaiah, Ph.D., is a professor at the University of Alabama at Birmingham School of Medicine. Anantharamaiah has dedicated his nearly 50-year career to the advancement of peptide synthesis and protein analysis and is an international expert in the structure and function of plasma apolipoproteins. He holds 19 issued U.S. patents and 45 issued foreign patents in the field of peptide synthesis. Seventeen of his discoveries have been licensed, generating nearly \$2.1 million in license fees and royalties to date. He has published 228 peer-reviewed papers, two books, and book chapters and has published or presented more than 70 abstracts on apolipoprotein structure and function and peptide synthesis. Anantharamaiah served as an investigator on more than 30 grant awards throughout his career and holds appointments in the Comprehensive Center for Healthy Aging, O'Neal Comprehensive Cancer Center, UAB Center for AIDS Research, and UAB Nutrition Obesity Research Center.



Nirwan Ansari | *New Jersey Institute of Technology*

Nirwan Ansari is Distinguished Professor of electrical and computer engineering at New Jersey Institute of Technology. He co-authored three books and over 600 technical publications and holds 42 U.S. patents. He guest-edited special issues covering emerging topics in communications and networking. He has served on the editorial/advisory board of over ten journals including as associate editor-in-chief of IEEE Wireless Communications. He was elected to serve in IEEE Communications Society (ComSoc) Board of Governors as member-at-large, has chaired some ComSoc technical and steering committees, and is current Director of ComSoc Educational Services Board. Some of his recognitions include several excellence in teaching awards, several best paper awards, NCE Excellence in Research Award, several technical recognition awards, New Jersey Inventors Hall of Fame Inventor of the Year Award, Thomas Alva Edison Patent Award, Purdue University Outstanding Electrical and Computer Engineering Award, NCE 100 Medal, and designation as a COMSOC Distinguished Lecturer. He is also a fellow of IEEE.



Rodolphe Barrangou | *North Carolina State University*

Rodolphe Barrangou, Ph.D., is the T. R. Klaenhammer Distinguished Professor in Probiotics Research at North Carolina State University. Barrangou is focusing on the characterization of CRISPR-Cas systems and their applications in bacteria used in food manufacturing. Rodolphe also spent 9 years in research and development and M&A at Danisco and DuPont. For his work on CRISPR, Rodolphe received the 2016 Warren Alpert Prize, the 2016 Canada Gairdner International Award, the 2017 NAS Award in Molecular Biology and the 2018 NAS Prize in Food and Agriculture Sciences, and was elected into the NAS and the NAE. He is an inventor on over 20 patent families licensed and commercialized globally in dairy cultures and probiotics. Dr. Barrangou is also the former Chairman of the Board of Caribou Biosciences, a co-founder of Intellia Therapeutics, Locus Biosciences, and TreeCo, and the editor-in-chief of the CRISPR Journal.



Rena Bizios | *University of Texas at San Antonio*

Rena Bizios, Ph.D., is the Lucher Brown Chair Professor of Biomedical Engineering at the University of Texas at San Antonio. During her career in academia, she mentored students and junior faculty, taught undergraduate and graduate fundamental engineering courses as well as developed and taught new biomedical engineering courses. Her research interests include cellular and tissue engineering, cell interactions with materials (including nanostructured ones), biocompatibility, and tissue regeneration. She co-authored many peer-reviewed publications, presentations at conferences, and one textbook; she co-edited a book regarding tissue-biomaterial interactions, and co-authored patents. Several awards at the university, regional, and national levels recognized her education-related contributions and research accomplishments. She serves on the editorial boards of five journals. She is fellow of AIMBE, IUSBSE, BMES, AIChE, and AAAS, and member of the NAM, The Academy of Medicine, Engineering & Science of Texas, and IAMBE.



Michael Blaber | *Florida State University*

Michael Blaber, Ph.D., is a professor of Biomedical Sciences at Florida State University. Blaber is a recognized scholar in the area of protein structure, evolution and design. He is the recipient of the E.K. Frey-E. Werle Commemorative Gold Medal for research, and has twice been named the Outstanding Senior Faculty Researcher in the FSU College of Medicine. He holds 14 U.S. patents that have been licensed to two companies. He is a founder of Trefoil Therapeutics, Inc. He has published 130 research articles and serves on the editorial board of Proteins and Proteomics, Archives of Biochemistry and Biophysics, and Journal of Pharmaceutical Sciences.



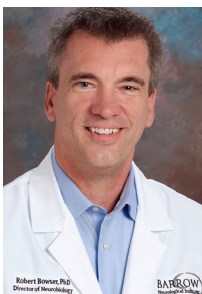
Anne J. Blaschke-Bonkowsky | *University of Utah*

Anne J. Blaschke-Bonkowsky, M.D., Ph.D. is Professor of Pediatrics at the University of Utah. She is a practicing clinician and researcher focused on developing novel diagnostics for infectious disease. For over 10 years Blaschke has collaborated with BioFire Diagnostics, a University of Utah-founded biotechnology company, on development of the FilmArray® System. Blaschke worked within the BioFire laboratories to develop foundational assays for the FilmArray. She holds 3 U.S. patents on molecular diagnostic techniques licensed to BioFire. As a physician and scientist in the BioFire laboratories, Blaschke was also an essential contributor guiding the clinical pathway for this test system. Blaschke has been PI or co-investigator on 7 NIH grants for development of the FilmArray technology. She has over 50 publications including the original manuscript describing the FilmArray. Blaschke is a fellow of the American Academy of Pediatrics, the Infectious Diseases Society of America and the Pediatric Infectious Diseases Society.



Stephen Boppart | *University of Illinois at Urbana-Champaign*

Stephen Boppart is the Abel Bliss Professor of Engineering at the University of Illinois at Urbana-Champaign in the departments of electrical and computer engineering, and bioengineering. His Biophotonics Imaging Laboratory at the Beckman Institute for Advanced Science and Technology develops novel optical biomedical imaging technologies and translates them into clinical applications. Boppart received his Ph.D. in medical and electrical engineering from the Massachusetts Institute of Technology and his M.D. from Harvard Medical School. He has published over 400 papers and has mentored over 150 interdisciplinary researchers. Boppart has co-founded four start-up companies to disseminate his optical technologies, based on over 45 patents. He is a fellow of AAAS, IEEE, OSA, SPIE, AIMBE, and BMES. Boppart has been a strong advocate for the integration of engineering and medicine to advance human health and our healthcare systems, and has been involved in visioning and establishing the first engineering-based Carle Illinois College of Medicine.



Robert P. Bowser | *Barrow Neurological Institute*

Robert P. Bowser, Ph.D. is Chief Scientific Officer and John and Betty VanDenburgh Endowed Professor of Neurology and Neurobiology at the Barrow Neurological Institute and St. Joseph's Hospital and Medical Center in Phoenix, Arizona. Bowser is an international leader and pioneer in the discovery and clinical use of biomarkers related to amyotrophic lateral sclerosis (ALS) and other neurologic diseases. He is the recipient of the Sheila Essey Award for ALS Research, numerous awards for innovation from academic and state organizations, and was an IBM Big Data and Analytics Hero. He holds 9 patents on technologies developed in his laboratory that have been licensed to 3 companies. He is the founder of Knopp Biosciences, LLC and Iron Horse Diagnostics, Inc focused on developing drug treatments and diagnostic/prognostic assays for neurologic disorders. He has published over 200 peer-reviewed manuscripts and book chapters, over 150 conference publications, and over 185 invited or plenary presentations.



Michael Brown | *University of Texas Southwestern Medical Center*

Michael Brown, M.D., is Regental Professor and Director of the Jonsson Center for Molecular Genetics at the University of Texas Southwestern Medical Center. Dr. Brown and Joseph Goldstein have supervised a joint laboratory since 1972. They discovered the low density lipoprotein (LDL) receptor, receptor mediated endocytosis and the genetic defect in familial hypercholesterolemia. They discovered SREBP transcription factors and their activation by Regulated Intramembrane Proteolysis. With Merck they helped develop statins that lower LDL and prevent heart attacks. Their honors include the 1985 Nobel Prize in Physiology or Medicine, U.S. National Medal of Science, and Lasker, Gairdner, Horwitz, and Passano Awards. Brown holds 11 honorary degrees and 29 U.S. patents. He served as Director of Pfizer and Regeneron. He is a former University of Pennsylvania Trustee, member of the U.S. NAS, NAM, American Philosophical Society, AAA&S, and Royal Society. He helped found The Academy of Medicine, Engineering and Science of Texas.



Ardeshir (Adi) Ratan Bulsara | *Naval Information Warfare Center - Pacific*

Adi Bulsara, Ph.D., is a Senior Scientist/Technologist serving as the Senior Research Scientist for Nonlinear Dynamics at Space and Naval Warfare Systems Command (SPAWAR) Systems Center Pacific (SSC Pacific) in 2009. He is currently the principal mentor of the Applied Dynamics Research group, globally recognized as one of the premier groups for research in nonlinear dynamics. In 2018, he received the Navy's Fred Saalfeld Award for lifetime achievement; this is ONR's highest award. Bulsara has 24 patents awarded, 3 patents pending award, and some 240 (peer-reviewed) publications in the physics and engineering literature, several of which are foundation papers. Additionally, he frequently reviews and serves as final publication authority of journal manuscripts and is often an invited speaker at international scientific meetings, seminars, and academic colloquia.



Jason A. Burdick | *University of Pennsylvania*

Jason A. Burdick, Ph.D., is the Robert D. Bent Professor of Bioengineering at the University of Pennsylvania. Burdick is a leader in the engineering of biomaterials to address biomedical needs, including in tissue repair and regeneration. He holds 8 issued and 9 pending U.S. patents that have been licensed to 4 companies. He is the founder of 3 companies, which are Myostratum, Prohibix, and Prolifagen, and sits on the advisory board for several others. He has published over 250 peer-reviewed manuscripts and serves as an Associate Editor for ACS Biomaterials Science & Engineering, and is currently on the boards of Biofabrication, Tissue Engineering, and Advanced Healthcare Materials. Burdick is a fellow of AIMBE and BMES and recently received the Clemson Award from the Society for Biomaterials, the George H. Heilmeyer Faculty Award for Research Excellence, and the Acta Biomaterialia Silver Award.



Lewis C. Cantley | *Cornell University*

Lewis Cantley, Ph.D., has made significant advances in cancer research stemming from his discovery of the signaling pathway phosphoinositide 3-kinase (PI3K) in 1984. A graduate of West Virginia Wesleyan College (B.S., Chemistry, 1971) and Cornell University (Ph.D., Biophysical Chemistry, 1975), Cantley has been a professor at Tufts University and Harvard University. He served director of the Beth Israel Deaconess Cancer Center and is currently the Meyer Director of the Sandra and Edward Meyer Cancer Center at Weill Cornell Medicine. The author of more than 400 papers and 50 book chapters, Cantley has received several prestigious accolades, including membership in the AAA&S, the NAS, the Institute of Medicine of the National Academies, and the European life sciences academy EMBO.



Michael L. Chabinyc | *University of California, Santa Barbara*

Michael L. Chabinyc, Ph.D., is a professor and department chair of the materials department at University of California, Santa Barbara. Chabinyc is a leading researcher in the areas of organic electronics and thin film materials with an emphasis on connecting physical properties with electronic behavior. He holds 47 U.S. patents that have been licensed to several companies. He has published more than 200 journal articles and has been an associate editor for the Journal of Materials Chemistry A. Chabinyc is a fellow of the MRS, APS, RSC, and a member of AAAS and ACS.



Bryce Chackerian | *University of New Mexico*

Bryce Chackerian, Ph.D., is professor and vice-chair of the department of molecular genetics and microbiology at the University of New Mexico School of Medicine. Chackerian is a leader in the field of vaccine design, and in particular, the use of virus-like particles (VLPs) as a platform technology to develop vaccines for both infectious and chronic diseases. VLP-based vaccines developed by Chackerian for Alzheimer's Disease, Malaria, opioid abuse, and for lowering cholesterol, among others, are in clinical development. He holds 12 U.S. patents that have been licensed to 3 companies and is the cofounder of Agilvax, Inc. He has published 63 peer-reviewed articles and three book chapters and has been continuously funded by the NIH since 2006. Chackerian received the Innovation Fellow award, the highest honor for technological innovation at the University of New Mexico, in 2017



Paul Citron | *University of California, San Diego*

Paul Citron is adjunct faculty at the University of California, San Diego. Citron is an inventor of 10 medical technology patents. Most notable is the “tined” cardiac pacing lead that dramatically reduced spontaneous lead dislodgement, a serious complication following pacemaker system implantation. Lead dislodgement occurred in more than 8% of patients and would render cardiac pacing ineffective. The tined lead reduced dislodgement to about 1% and became the pacing lead of choice among physicians. Because of dramatically improved patient outcomes the tined lead patent was broadly licensed. Millions of patients have received this innovation. Citron's career involved industrial practice (Medtronic) and academic positions at Georgia Tech and UCSD where he taught corporate entrepreneurship. Courseware included exploration of the important role of patents for a vigorous innovation ecosystem. Citron was elected Founding Fellow of AIMBE and fellow of NAE.



John P. Cooke | *Houston Methodist Research Institute*

John P. Cooke, M.D., Ph.D., is professor and chair of the department of cardiovascular sciences at Houston Methodist Research Institute. Cooke has a record of generating fundamental insights in endothelial and stem cell biology, and in translating these fundamental insights toward transformative therapies, with over 30 patents and >30,000 citations; h-index = 94 (Scopus 6-5-19), and was named by Stanford University as an Inventor of the Year in 2015. Important contributions include the elucidation of the mechanisms of endothelial dysfunction in vascular disease; the effect of nicotine to stimulate pathological angiogenesis in tumor and age-related macular degeneration; the role of cell-autonomous innate immune activation in DNA accessibility and cellular plasticity during regeneration. He has founded or co-founded 4 biotechnology companies. He is founder and past-president of the Society of Vascular Medicine, and has served on the editorial boards of Vascular Medicine, Circulation, and Circulation Research.



Jerome R. Cox, Jr. | *Washington University*

Jerome R. Cox, Jr., Sc.D., is president of Q-Net Security, Inc. and senior professor at Washington University. Cox contributed significantly to the areas of biomedical computing, multimedia communications and computer networking. He was the founding chairman of the Washington University computer science department. He is recipient of the Chancellor's Award for Innovation and Entrepreneurship, Eliot Society Search Award, Distinguished Faculty Award, and an Honorary Doctor of Science from Washington University, as well as a Lifetime Achievement Award from the St. Louis Academy of Science. Cox holds 13 U.S. patents. He is the founder of Growth Networks, Blendics, Multi-Ears, LLC, and Q-Net Security. He has published 130 articles and book chapters. Cox is a member of NAM, Eta Kappa Nu, Sigma Xi, and Tau Beta Pi, and a fellow in the Acoustical Society of America, the American College of Medical Informatics and IEEE.



Seamus Curran | *University of Houston*

Seamus Curran is a physics professor at the University of Houston's physics department, adjunct professor at the Technical University of Dublin's FOCAS Institute and chairman of both Curran Nanotech, Inc. and Integricote, Inc. Curran's research includes publishing over 100 articles and papers cited about 6,150 times, h-index of 33, awarded 19 U.S. patents, 12 U.S. patent applications and a further 40 international patents. His focus is nanotechnology specializing in nanocomposite formation, nanomaterials for non-linear optical limiting and organic polymers for photovoltaics; while his commercialization efforts are currently in hydrophobic coatings that are applied to surfaces and porous substrates. Core to this is developing an understanding of the electronic, spectroscopic and morphological properties of the nano-constituents and composites. He has won two entrepreneurial international competitions for his commercialization efforts which includes specially designed hydrophobic coatings that have found commercial use in construction and architectural industries that is sold across Southern and North Eastern U.S



Cristina E. Davis | *University of California, Davis*

Cristina E. Davis, Ph.D., is professor and chair of the department of mechanical and aerospace engineering at the University of California, Davis. Davis is a world leader in the field of trace chemical sensing. She is the recipient of the 2016 UC Davis Chancellor's Innovation Award, the 2016 Best Newcomer Award for the World Agri-tech Investment Summit, the 2016 Ideas Energized Award by the Larta Institute, the 2017 Sacramento Region Innovation Award for Food & Agribusiness, the 2018 Department of the Air Force Commander's Public Service Award, and the 2019 UC Davis Distinguished Scholarly Public Service Award. She holds 12 U.S. patents that have been licensed to 7 companies. She is a co-founder of SensIT Ventures, Inc. and XTB Laboratories, Inc. She has published 110 papers and 13 book chapters, and she serves as a member of the editorial board for the Journal of Breath Research. She is a member of the Intelligence Science and Technology Experts Group (ISTEG), which is administered by the Intelligence Community Studies Board (ICSB) of the National Academies. She was a member of the U.S. Air Force Scientific Advisory Board (SAB) from 2014 to 2018. Davis is a 2011 fellow of The Hartwell Foundation, a 2016 fellow of AIMBE, and a 2019 fellow of AAAS (AAAS).



Pamela Davis | *Case Western Reserve University*

Pamela Davis earned her A.B. summa cum laude from Smith College, M.D. and Ph.D. from Duke. At Case Western Reserve University she rose from assistant professor to dean of the School of Medicine and Senior Vice President for Medical Affairs. Her focus on cystic fibrosis therapeutics produced over 130 publications and 7 patents. She served on NIH National Advisory Councils, study sections, search committees, and ad hoc panels, and as president of the Medical Section of the AAAS. She is a member of NAM and the National Academy of Inventors. She achieved three chief goals as dean: facilitating translation of SOM technologies to patients, resulting in a quadrupling of annual spinouts and professional investments; excellence in health education, resulting in innovative curricula and the opening of a new purpose-built health education campus; and impacting community health by advancing big data analytics and collaborative community programs.



Susan Davis Allen | *Embry-Riddle Aeronautical University*

Susan Davis Allen, Ph.D., is Distinguished Professor of Mechanical Engineering and Associate Dean for Research in the College of Engineering at Embry-Riddle Aeronautical University (ERAU). Prior to joining ERAU, she was Distinguished Professor and Director of the Arkansas Center for Laser Applications and Science at Arkansas State University (ASU), Vice Chancellor for Research and Academic Affairs, Senior Advisor to the Chancellor and the ASU System representative to Congress. Other administrative positions include Florida State University, Tulane University, and the University of Iowa. Allen's research focuses on the interaction of light with matter—ranging from the development of laser sensors to laser materials processing to light-based disinfection. An author of 170-plus papers and 10 patents, Allen also helped establish and support several university offices of technology transfer. She served on the President's Committee on the National Medal of Science, NSF, and DoD advisory boards and is a fellow of SPIE and senior member of IEEE.



Peter B. Dervan | *Placeholder*

Placeholder



Tejal A. Desai | *University of California, San Francisco*

Tejal A. Desai is the Prien Endowed Chair and Cowan Endowed Professor in the Department of Bioengineering & Therapeutic Sciences at University of California, San Francisco. She is also professor in residence in the UC Berkeley department of bioengineering and Director of the UCSF Health Innovation Via Engineering Initiative. Desai's research is at the cutting-edge in precision medicine, enabled by advancements in micro and nanotechnology, engineering, and cell biology directed to clinical challenges in disease treatment. She has published over 200 peer-reviewed articles and holds more than a dozen patents. Her efforts have earned recognition including Technology Review's "Top 100 Young Innovators," and "Popular Science's Brilliant 10." She is president-elect of the American Institute for Medical and Biological Engineering. Desai was elected to NAM and is a fellow of the International Academy of Medical and Biological Engineering. Desai is a strong advocate for STEM education and outreach to underrepresented students.



Christos Dimitrakopoulos | *University of Massachusetts Amherst*

Christos Dimitrakopoulos received his Ph.D. in materials science from Columbia. Since 2013, he is professor of chemical engineering at the University of Massachusetts Amherst, investigating 2D materials for electronics and ultrastrong/ultralight structures including graphene metamaterials for ballistic armor, and perovskite photovoltaics with enhanced stability. Before UMass, he was a research staff member at IBM T. J. Watson Research Center for 18 years, working on organic semiconductors, epitaxial graphene, and ultra-low k dielectrics. Earlier he was a postdoctoral Fellow at Philips Research Labs in The Netherlands, working on pentacene transistors. He holds 90 U.S. patents. His publications have received more than 22,500 citations. He has given 70 invited talks worldwide. Awards include: Paul Rappaport Award by IEEE; Extraordinary Technical Accomplishment Award, Outstanding Innovation Award, and IBM Research Award, by IBM; Technology of the Year Award (Industry Week); Master Inventor at IBM.



Jon P. Dobson | *University of Florida*

Jon P. Dobson, Ph.D., is the J Crayton Pruitt Family Professor of Biomedical Engineering and currently holds UF Research Foundation and UF Term Professorships at the University of Florida. He did his postdoctoral training in geomagnetism and biophysics at both the ETH-Zurich and The University of Western Australia (UWA), before taking a faculty position at UWA, and later, at Keele University in the United Kingdom. In 2011, he returned to the University of Florida as professor of biomaterials and biomedical engineering, and founding director of the Institute for Cell and Tissue Science and Engineering (ICTSE). He is a fellow of the AAAS, AIMBE, The Royal Society of Biology, The Royal Society of Medicine, and a past Royal Society of London Wolfson Research Merit Fellow. In 2002, he was selected for the Wellcome Trust's Sir Henry Wellcome Showcase Award, and in 2008 the UK Medical Research Council's César Milstein Award. Dobson has authored or co-authored more than 200 peer-reviewed publications.



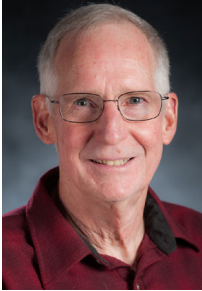
Francis J. Doyle III | *Harvard University*

Francis J. Doyle III, Ph.D., is the John A. Paulson Dean of the Paulson School of Engineering and Applied Sciences at Harvard University, where he also is the John A. & Elizabeth S. Armstrong Professor. Doyle is a leader in the field of biomedical control and has pioneered the design of advanced control algorithms to enable the commercial development of the artificial pancreas. His innovative algorithms are the basis of 8 U.S. patents and 16 foreign patents. He has published over 300 journal articles and has mentored over 80 Ph.D. students and postdoctoral fellows. He serves on the editorial boards of multiple journals including Nature Systems Biology & Applications, Engineering, and Translational Medicine. Doyle is a fellow of multiple professional organizations including: AIChE, IEEE, IFAC, AIMBE, and AAAS. He is a fellow of NAM.



Dongsheng Duan | *University of Missouri-Columbia*

Dongsheng Duan, Ph.D., is the Margaret Proctor Mulligan Professor in Medical Research at the University of Missouri. Duan has made many important contributions in the field of gene therapy, in particular, in the development of the adeno-associated virus vector and Duchenne muscular dystrophy gene therapy. He is the recipient of American Society of Gene Therapy Outstanding New Investigator Award in 2006. He also received Spurgeon Distinguished Medical Research Award in 2004, Chancellor's Award for Outstanding Research and Creative Activity at the University of Missouri in 2009. He holds 18 U.S. patents and 9 foreign patents. His patents have been licensed to four companies. He has published 171 research articles and edited/co-edited three books. His papers have been cited by more than 10,138 times. He serves as an associate editor for Human Gene Therapy and Frontiers in Physiology. He is also on the editorial boards for Molecular Therapy and Current Biotechnology.



Dean B. Edwards | *University of Idaho*

Dean B. Edwards received his Ph.D. in mechanical engineering from the California Institute of Technology in 1977. Upon graduation, he went to work at the Jet Propulsion Laboratory (JPL) where he pursued his interests in control systems and batteries for electric and hybrid electric vehicles. He moved to the University of Idaho in 1986 and continued this work. His work resulted in patents involved with batteries, particularly high-performance sealed lead acid batteries, and power electronics directed toward developing cost-effective solutions for powering these vehicles. Some of his research at JPL was later transferred to the private sector and resulted in General Motors Impact vehicle and eventually the EV1. His research interests at UI also included fuzzy logic control systems and autonomous vehicles. He has written over sixty papers and was awarded the College of Engineering Research Faculty of the Year Award in 2004-05 and the University Research Excellence Award in 2005-06.



Ayman El-Baz | *University of Louisville*

Ayman El-Baz, Ph.D., is Distinguished Professor and Chair of the Bioengineering Department at the University of Louisville, KY. In 2019 he was elected as a fellow of AIMBE for outstanding achievement in medical imaging and outstanding leadership in education, scholarship, and service to the field of bioengineering. Moreover, El-Baz was named a Coulter Fellow for his contribution to biomedical translational research. In 2018, El-Baz was selected by BMES to be an ABET program evaluator. El-Baz has 20 years of hands-on experience in the fields of bio-imaging modeling and non-invasive computer-assisted diagnosis systems. He has been PI and Co-PI of many research projects funded by DOD, NIH, NAS, NSF, the Coulter foundation, the American Cancer Society, KCF, and KSEF. Autism Diagnostic, Inc. has licensed his technology for early diagnosis of Autism. He has authored or coauthored more than 700 technical articles.



John F. Engelhardt | *University of Iowa*

John F. Engelhardt, Ph.D., is professor and chair of the department of anatomy and cell biology in the Carver College of Medicine at the University of Iowa, and director of the Center for Gene Therapy. He has made major contributions to the field of gene therapy, including the development of viral vector systems and animal models to test efficacy, methods to enhance gene delivery, and the identification of stem cell targets. He currently holds 12 issued U.S. patents, 41 issued foreign patents, and has 23 active patent applications. Patents and applications in his portfolio have been licensed to 6 companies, including 2 start-ups and a Fortune 100 company. He cofounded the gene therapy company Talee Bio, which was sold and is now Spirovent Sciences. He has published 263 articles and book chapters, holds the Carver Chair in Molecular Medicine, has been awarded \$74 million in NIH grants, and has served on five editorial boards.



Laura Ensign | *Wilmer Eye Institute At Johns Hopkins Hospital*

Laura Ensign, Ph.D., is the Marcella E. Woll Professor of Ophthalmology and the Vice Chair for Research for the Wilmer Eye Institute. An engineer by training, Dr. Ensign's laboratory in the Center for Nanomedicine (CNM) designs more efficacious formulations for prophylactic and therapeutic drug delivery. The youngest endowed professor in department history, her chair was partially funded by an award from the Maryland E-Innovation Initiative Fund. She holds 8 U.S. patents and 11 foreign patents, most of which are licensed by Kala Pharmaceuticals. Kala launched INVELTYS® in January 2019, and recently filed an NDA for a second product. Several of her additional 34 pending patents are licensed by her co-founded startup company Bluejay Biomedical. She has published 39 papers, is the youngest member of the editorial board of the Journal of Controlled Release, and was recently inducted into American Institute for Medical and Biological Engineering).



William J. Federspiel | *University of Pittsburgh*

William J. Federspiel, Ph.D., is a John A. Swanson Professor of Bioengineering at the University of Pittsburgh. Federspiel's lab primarily develops clinical devices for the treatment of lung failure, including most recently, compact wearable artificial lungs for adults and children suffering from lung disease. He is an elected fellow of several prestigious societies including BMES and the American Institute of Medical and Biomedical Engineering. Federspiel holds 12 U.S. patents issued with an additional 5 pending, over 60 foreign patents issued and pending, and 8 completed licenses. He is the co-founder of ALung Technologies Inc., a Pittsburgh-based medical device startup developing the Hemolung® Respiratory Assist System, a dialysis-like alternative to mechanical ventilation, which has been approved in Europe and is in clinical trials in the U.S. He has published over 120 peer-reviewed journal articles, prepared 9 books/book chapters, and serves as editorial board member for 3 journals.



Terri Fiez | *University of Colorado Boulder*

Terri Fiez is Vice Chancellor for Research and Innovation at University of Colorado Boulder. Fiez is a distinguished researcher in analog and mixed-signal integrated circuits and innovative education. She is the recipient of the NSF Young Investigator Award, IEEE Educational Activities Board Innovative Education Award, IEEE Undergraduate Teaching Award, and IEEE Education Society Harriett B. Rigas Award. She holds 4 U.S. patents, 1 foreign patent and 1 copyright licensed. She was a co-founder of the startup company Azuray Technologies. She has published over 150 conference and journal papers, advised 85 M.S. and Ph.D. students and has served as Distinguished Lecturer for IEEE Solid-State Circuits and IEEE Circuits and Systems Societies, and as Associate Editor of IEEE TCASII and Guest Editor for IEEE Journal of Solid-State Circuits. Dr. Fiez is a fellow of IEEE.



F. Stuart Foster | *University of Toronto*

F. Stuart Foster is currently a senior scientist at Sunnybrook Research Institute and Professor Department of Medical Biophysics, University of Toronto. His pioneering inventions in the field of micro-ultrasound have enabled powerful high-resolution noninvasive imaging for the study of disease development and the translation of micro-ultrasound to clinical applications. Stuart is a fellow of the IEEE, the American Institute of Ultrasound in Medicine, the Royal Society of Canada and the Canadian Academy of Engineering. He is the founder and former Chairman of Fujifilm VisualSonics Inc., a company dedicated to preclinical and clinical micro-ultrasound. He has previously been the recipient of numerous distinctions in biomedical engineering including the Eadie Medal, the Queen's Golden Jubilee Medal, the Manning Award of Distinction for Canadian Innovation, the Ontario Premier's Discovery Award, and the IEEE Rayleigh Award. He was elected to foreign membership of the U.S. NAE in 2017 and was awarded the 2020 Biomedical Engineering Award from IEEE..



Kaizhong Gao | *Argonne National Library*

Kaizhong Gao, Ph.D., is the founder and Chief Scientist for International Business and Technology Service Corporation, where his team has become the only small business who received national award from the U.S. Department of Energy, Office of Electricity in its inaugural Electricity Industry Technology and Practice Innovation Challenge in 2019. He has been a group leader at Argonne National Laboratory where he became the fastest R&D 100 awards lead inventor, and an IEEE Fellow in 2018. He has been in magnetic data storage industry where he has multiple technologies that became HDD-industry standard for the past 15 years, still utilized for billions of drives shipped today, along with more than 180 patents worldwide. His theory of digital universe has been featured in talks at google, and his recording architecture and design still being featured as the future technology baseline by HDD-industry as part of the press released technologies. Gao received his Ph. D. from the University of California, San Diego, and has been named as young engineer of the year for the State of Minnesota in 2009.



Adolfo Garcia-Sastre | *Howard Mount Sinai Health System*

Adolfo García-Sastre, Ph.D., is Professor at the Departments of Microbiology and Medicine, and at the Tisch Cancer Institute at Icahn School of Medicine at Mount Sinai, New York. He is also the Director of the Global Health and Emerging Pathogens Institute also at Mount Sinai. García-Sastre is a leader in the areas of virus pathogenesis, virus host-interactions, innate immunity and vaccines. He is a fellow of American Association of Microbiology and International Society for Vaccines, and has been president of the International Society for Vaccines. He holds numerous U.S. patents and foreign patents (more than 50) in the areas of vaccines, antivirals and cancer therapy that have been licensed to several companies, such as AstraZeneca, Merck and Avimex, among others. He is the founder of the startup companies Vivaldi, Pagoda and Vaxalto. He has published more than 500 articles in international scientific journals and serves as editor for PLoS Pathogens, Journal of Virology, and Virus Research. García-Sastre is a fellow of NAS.



Glenn R. Gaudette | *Worcester Polytechnic Institute*

Glenn R. Gaudette is the William Smith Dean's Professor of Biomedical Engineering and the Director of the Curtis and Dudley Carlson Value Creation Initiative at Worcester Polytechnic Institute. Gaudette pioneered the use of plants, including spinach leaves, as scaffolds for tissue regeneration. His work was the 7th Most Popular Story of 2017 in National Geographic and has been featured throughout the world including on Bill Nye Saves the World, CBS's Innovation Nation, the BBC, and Popular Science. He holds 5 issued patents and founded a company based on the technology developed in his laboratory. He has over 75 peer-reviewed publications and co-edited a book on cardiovascular regeneration. Gaudette is a fellow of the American Institute for Medical and Biological Engineering.



Georgios B. Giannakis | *University of Minnesota*

Georgios B. Giannakis, Ph.D., is a University of Minnesota McKnight Presidential Chair in ECE, a Wireless Telecommunications Endowed Professor, and Center director. Giannakis has made fundamental contributions to wireless communications, signal processing, networking, and data science, having major impact to several fields, including the Internet of Things, and the smart power grid with renewables. He holds 33 U.S.-patents; published 460 journal and 760 conference papers; 25 book chapters, two edited books and two research monographs, that have received 9 best journal paper awards from the IEEE Signal Processing (SP) and Communications Societies (ComSoc), and more than 74,000 citations(H-index=144). Giannakis received the IEEE-SPS Nobert Wiener Award, Technical Achievement Awards, the ComSoc Education Award, and the IEEE Fourier Technical Field Award. He is a fellow of the IEEE and EURASIP, and has served the IEEE in several posts, including those of editor-in-chief, Board of Governors member, and Distinguished Lecturer.



Murray Gibson | *Florida A&M University-Florida State University*

J. Murray Gibson is dean of the FAMU-FSU College of Engineering, a unique institution which produces engineers for Florida A&M and Florida State universities. Since his appointment in 2016, he has led the college to a 19-point rise in national rankings and development of new undergraduate and graduate degree programs. He came to the college after serving as Founding Dean of the College of Science at Northeastern University. His past appointments also include Associate Laboratory Director at Argonne National Laboratory, professor of engineering at the University of Illinois Urbana Champaign, and head of the electronic and photonic materials research department at AT&T Bell Laboratories. Gibson has published more than 200 papers in the area of atomic structure of nanomaterials, and his published work has received more than 17,000 citations. He is a fellow of APS, AAAS, and the Royal Microscopical Society.



Joseph L. Goldstein | *University of Texas Southwestern Medical Center*

Joseph L. Goldstein, M.D., is Regental Professor at University of Texas Southwestern Medical Center. Goldstein and his colleague Michael S. Brown are physician- scientists who have supervised a joint laboratory in Dallas since 1972. Together, they discovered the LDL receptor that removes toxic cholesterol-carrying LDL from blood and identified the molecular defect in familial hypercholesterolemia. This work help lay the conceptual groundwork for development of statin drugs that lower LDL by increasing LDL receptors, thereby reducing coronary disease. For this work, they received Nobel Prize in Physiology or Medicine, Lasker Award in Basic Research, and National Medal of Science. More recently, they discovered the SREBP family of membrane-bound transcription factors that activate genes for synthesis of cholesterol, fatty acid, and triglycerides. They are co-inventors on 29 patents. Goldstein serves on Boards of Howard Hughes Medical Institute, Rockefeller University, and Regeneron Pharmaceuticals. His memberships include NAS, NAM, and Royal Society.



Kenneth Goodson | *Stanford University*

Kenneth Goodson is a professor of mechanical engineering and (by courtesy) of materials science and engineering at Stanford University, where he holds the Davies Family Provostial Professorship. Goodson is a heat transfer researcher specializing in electronics cooling. He has co-authored more than 30 patents including several owned or licensed by his startup company Cooligy, which built heat sinks for the Apple G5 workstation and was acquired by Emerson in 2006. Goodson's lab has pioneering publications & patents on novel heat conducting materials and microfluidic heat sinks. Nearly half of Goodson's 45 Ph.D. alumni are professors at MIT, UC Berkeley, Stanford, and other schools. Goodson is a Fellow with ASME, IEEE, APS, & AAAS and a recipient of the Kern Award, the Kraus Medal, the Richard Chu Achievement Award, the InterPACK Achievement Award, the THERMI Award, the SRC Technical Excellence Award, and the Heat Transfer Memorial Award.



Renukaradhya J. Gourapura | *The Ohio State University*

Renukaradhya J. Gourapura, DVM, MS, Ph.D., is a professor at The Ohio State University. Gourapura's research interests are in the area of mucosal immunology and development of nanoparticle based intranasal and oral vaccines. His 12 years of research leadership has led to invention of innovative intranasal nanoparticle-based vaccines for porcine reproductive and respiratory syndrome and swine influenza viral infections, and a salmonella oral vaccine for poultry. His trainees were recipients of several awards in American Association of Veterinary Immunologists (AAVI) meetings. He holds six U.S. patents, one of his patents is being patent protected in China and Europe, and two are seeking patent protection in six other countries. He is the founder of a startup company 'Nanicula'. He has published 72 peer-reviewed research articles, four book chapters, and serves as editor of two peer-reviewed journals. Gourapura is the current president of the AAVI, and a member of the Nanovaccine Institute Iowa State University.Europe.



David Grewell | *North Dakota State University*

David Grewell received a BS, MS and Ph.D. in Industrial Systems and Welding Engineering from The Ohio State University with minors in biomedical engineering and polymer processing in 1989, 2002 and 2005, respectively. He holds 18 patents, has been given numerous honors and awards and as well as numerous publications, including two books. His interests include joining of plastics, micro-fabrication, laser processing of materials, bioplastics and biofuels. He currently works at North Dakota State University as a Chair of the Department of Industrial and Manufacturing Engineering (IME), Walter B. Booth Distinguished Professorship. Dr. Grewell is the Director of the NSF Center for Bioplastics and Biocomposites, a Board Member of the Ultrasonic Industry Association, Society of Plastics Industry and Society of Plastics Engineers as well as a fellow within the Society of Plastics Engineers. He also has a position at the University of Erlangen in Germany.



David G. Grier | *New York University*

David G. Grier, Ph.D., is a professor of physics and Director of the Center for Soft Matter Research at New York University. Grier's research seeks out Nature's fundamental organizing principles through experimental studies of model soft-matter systems. This program has fostered innovations in holographic microscopy and holographic optical trapping, including the world's first working tractor beams. Beyond their research missions, these technological advances have applications for product development, process control and quality assurance in industries such as biopharmaceuticals, semiconductor processing, and environmental remediation. Grier holds 68 U.S. patents and 71 foreign patents that have been licensed to five companies, including two entrepreneurial startups that Grier co-founded. He is the author of 160 peer-reviewed articles and serves on the editorial board of Physical Review E. Grier is a Packard Fellow and a fellow of APS and was named a Technology Pioneer by the World Economic Forum. .



Robert E. Guldberg | *University of Oregon*

Bob Guldberg joined the Phil and Penny Knight Campus for Accelerating Scientific Impact in August 2018. Guldberg studies muscle and bone growth and development, focusing on potential regenerative therapies following traumatic injuries and in degenerative diseases such as osteoporosis and osteoarthritis. He holds bachelor's, master's, and doctoral degrees in mechanical engineering as well as a master's degree in bioengineering, all from the University of Michigan. Prior to joining the Knight Campus, Guldberg was at Georgia Tech, where he served as executive director of the Parker H. Petit Institute for Bioengineering and Bioscience, and was a professor at the George W. Woodruff School of Mechanical Engineering and the School of Biomedical Engineering. His primary research funding comes from the NIH, U.S. Department of Defense, NSF, and several biotechnology companies.



B. Frank Gupton | *Virginia Commonwealth University*

Frank Gupton, Ph.D., is a professor at Virginia Commonwealth University and holds joint appointments in the departments of chemistry and the department of chemical and life science engineering. He is the Floyd D. Gottwald Chair of Pharmaceutical Engineering and also serves as department chair of chemical and life science engineering. His thirty-year industrial career centered on the development and commercialization of chemical processes for pharmaceutical applications. Gupton received his Bachelors of Science degree in chemistry from the University of Richmond and graduate degrees in organic chemistry from Georgia Tech and Virginia Commonwealth University. His research efforts have focused on streamlining pharmaceutical processes. He is the recipient of the 2018 ACS Award for Affordable Green Chemistry, the Presidential Award for Green Chemistry, and the Peter J. Dunn Award for Green Chemistry and Engineering Impact in the Pharmaceutical Industry from the ACS Green Chemistry Institute Pharmaceutical Round Table.



Horst Hahn | *University of California, Irvine*

Horst Hahn, Ph.D., is executive director of the Institute of Nanotechnology at Karlsruhe Institute of Technology. Hahn is an expert in the field of nanomaterials, with many contributions to fundamental science and application-oriented developments such as energy materials and printed systems. He is the recipient of the Robert Franklin Mehl Award of The Minerals, Metals & Materials Society, the Heyn Denkmünze of Deutsche Gesellschaft für Materialkunde and Fellow of MRS. He is Distinguished Professor at IIT Madras, India and Distinguished Visiting Professor at University of California Irvine. He holds 14 U.S. patents and 75 patents and patent applications in 18 patent families that led to the foundation of start-up companies. He has published 500 articles in peer-reviewed journals and edited several books. Hahn is member of the U.S. NAE, the European Academy of Sciences and the National Academy of Germany, Leopoldina.



Yousef Haik | *Hamad Bin Khalifa University*

Yousef Haik, Ph.D., is a professor of mechanical engineering and associate provost for academic affairs at Hamad Bin Khalifa University. Haik is an internationally recognized scholar in the field of nanotechnology. He made notable contributions to the creation of novel nanomaterial that have seen applications in cell separation, magnetic hyperthermia, stimuli-sensitive theranostic for targeted imaging-guided drug delivery, and inorganic antimicrobials. He is the recipient of Florida State University and the Arab Innovators Awards. He holds 21 U.S. patents and 23 foreign patents that have been licensed to national and international companies. He has published over 250 articles, books and book chapters and serves on the editorial board of more than a dozen journals. Haik is a fellow of ASME and a member of a dozen professional organizations. His academic career includes appointments in engineering (Mechanical, Biomedical and Nanoengineering) and science (Medicinal Chemistry, Physics and Nanoscience) programs.



Robert P. Hammer | *Louisiana State University*

Robert P. Hammer received his B.S. in chemistry with distinction from the University of Illinois-Urbana in 1985 where he performed research with Scott E. Denmark on new silicon protection groups. He then attended graduate school at the University of Minnesota where he worked under the direction of George Barany on new methods for solid-phase peptide synthesis. After receiving his Ph.D. in 1990, Hammer worked with Professor Albert Eschenmoser at the Swiss Federal Institute of Technology (ETH) in Zürich, Switzerland on the synthesis and biophysical characterization of hexose-based nucleic acids. He joined the faculty of the department of chemistry at Louisiana State University in 1992 where he progressed through the ranks to full professor and held the title of William A. Pryor Professor of Chemistry. He has published over 100 research articles and has been co-inventor on 39 U.S. and international patents. His scientific honors include Phi Beta Kappa, LSU Distinguished Faculty Award, Scientific American 50, and membership on the editorial board of the Journal of Peptide Research.



Luis Herrera-Estrella | *Texas Tech University*

Luis Herrera-Estrella, Ph.D., is President's Distinguished Professor of Plant Genomics at Texas Tech University and Emeritus Professor at the Centro de Estudios Avanzados in Mexico. Herrera-Estrella is a pioneer in plant genomics and biotechnology, having discovered some of the essential tools for gene transfer in plants and the development of technology for the control of weeds without the need of herbicides. He is the recipient of the Minuro and Ethel Tsutsui Award from the New York Academy of Science, the Haved Hussain Prize from UNESCO and the Gold Medal from the World Intellectual Property Organization. Herrera-Estrella holds 6 U.S. patents and 5 foreign patents that have been licensed to 10 companies and is the founder of three startup companies. He has published 186 articles, 2 books and 46 book chapters and serves as member of the editorial board for 3 peer-reviewed journals. Herrera-Estrella was elected member of the NAS in 2003 and named by Scientific American in 2017 as one of the 100 most influential people in biotechnology.



Bertrand Hochwald | *University of Notre Dame*

Bertrand M. Hochwald, Ph.D., serves as the Frank M. Freimann Professor of Electrical Engineering and co-director of the Wireless Institute at the University of Notre Dame. Hochwald has invented and co-invented technologies and published research articles that have become mainstays of communication theory and practice, including various wireless standards. He holds 47 U.S. patents, many of them invented while he was Vice President of Systems Engineering at Beceem Communications, which was sold for \$316M to Broadcom Corporation. He has published more than 100 papers, has served as an editor for various Institute for Electrical and Electronic Engineer journals and is a fellow of IEEE. He is currently working on millimeter-wave radio circuits, sixth-generation cellular technologies, and methods to reduce human exposure to electromagnetic radiation from cell phones.



Robert S. Hodges | *University of Colorado, Anschutz*

Robert S. Hodges, Ph.D., is clinical professor of biochemistry and molecular genetics at the University of Colorado, Anschutz Medical Campus. The Hodges laboratory has made the most important discovery in antimicrobial peptide research in the past 30 years. Hodges is the recipient of numerous honors and awards. In 1991 he became a fellow of the Royal Society of Canada and a “Life Member” in 2016. In 2002, he received the Vincent Du Vigneaud Award from the American Peptide Society for outstanding achievements in peptide research. In 2017 he received the most prestigious award in peptide chemistry, the Bruce Merrifield Award for outstanding lifetime accomplishment in peptide research recognizing the highest level of scientific creativity. He holds over 70 U.S. and international patents, the technology was licensed to numerous companies with the most recent antimicrobial peptide technology licensed to AMP Discovery, LLC, for which Hodges is Founder and CSO. He has published 569 articles, book chapters and books.



Jeffrey Hollinger | *Carnegie Mellon University*

Jeffrey Hollinger, D.D.S., Ph.D., is professor emeritus of biomedical engineering at Carnegie Mellon University. Throughout his career, Dr. Hollinger has received more than \$100 million in grant funding from the NIH, NSF, DoD and NIST as the principal or co-principal investigator. He has been a grant reviewer and section chairman for the aforementioned agencies. Hollinger has been a co-editor and manuscript reviewer for over 20 leading peer-reviewed clinical and basic science professional journals. He has served as a scientific board member for 8 corporate and federal agencies. Hollinger has 7 issued patents. He received the prestigious Clemson award in biomaterials in 2008. Hollinger has over 350 peer-reviewed publications, abstracts, text book chapters and text books on bone biology, bone grafting, biological factors, wound healing, tissue regeneration and biomaterials.



Victor J. Hruby | *The University of Arizona*

Victor J. Hruby, Ph.D., is Regents Professor Emeritus at the University of Arizona. Hruby has made numerous contributions and innovations in chemistry, chemical biology, biophysics and computational methods in peptide science, especially hormones and neurotransmitters and their receptors and downstream signaling. He is past president of the American Peptide Society and was an elected councilor of medicinal chemistry for ACS and was on several international committees. He holds over 30 U.S. patents, several of which have been licensed to companies by the University of Arizona. He is a co-founder of three companies. He has published over one thousand articles in peer-reviewed scientific journals and books, over fifty book chapters/reviews, co-authored two books and was editor for several others. He served as the editor of the International Journal of Peptide and Protein Research and has served on the editorial boards of numerous peer-reviewed



Hong Hua | *The University of Arizona*

Hong Hua, Ph.D., is a professor of optical sciences at the University of Arizona. Hua is a recognized expert in the fields of 3D display technologies, complex visualization systems, and image acquisition systems. She received multiple awards and honors, including NSF CAREER award, faculty research awards by Google and Intel, and many Best Paper or Distinguished Paper Awards at top scientific conferences. She was honored as one of the five University of Arizona Researchers @ Leading Edge. Hua holds 48 combined foreign and U.S. patents, 37 of which have been licensed to 7 different companies. Hua has published over 200 technical papers and delivered numerous keynote addresses and invited talks worldwide. Hua is an associated editor for the journal of Science Advances, and serves as chairs of several scientific conferences, workshops, and symposium for professional societies. Hua is a fellow SPIE and OSA.



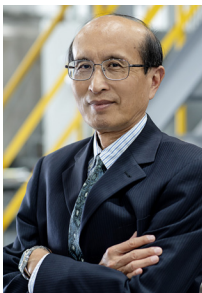
Jessica E. Huber | *Purdue University*

Jessica E. Huber, Ph.D., is a professor of speech, language, and hearing sciences and associate dean for research in the College of Health and Human Sciences at Purdue University. Huber is known for her contributions to theoretical and applied research on speech treatments for older adults with Parkinson disease (PD). She is the inventor of a small wearable device, the SpeechVive device, to treat communication impairments in people with PD. She is the founder and CTO of the start-up company, SpeechVive, Inc., and holds two U.S. patents related to her device. Huber has published over 40 articles and book chapters. She has raised nearly \$6M to support her research and student training. She has served as associate editor and editorial board member for a number of top-tier journals in her field, and she currently serves as a standing member of the MFSR study section at NIH.



J. David Irwin | *Auburn University*

J. David Irwin, Ph.D. is professor and department head emeritus in the electrical and computer engineering department at Auburn University. Irwin has contributed to technology that protects communication devices from Denial of Service Attacks, and other areas in cybersecurity. He is past president of both the IEEE Education and Industrial Electronics Societies. He is the recipient of numerous awards including the IEEE James H. Mulligan Jr. Education Medal, the State of Alabama Engineering Hall of Fame and the IEEE Industrial Electronics Society established the J. David Irwin Early Career Award in his honor. He jointly holds 10 patents with colleagues. He is the author/co-author of numerous journal papers, conference proceedings and 9 textbooks, one is currently in the 12th edition. He served as editor-in-chief of the IEEE Transactions on Industrial



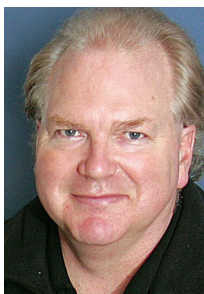
Bor Zeng Jang | *National Cheng Kung University*

Bor Z. Jang is a pioneer in graphene technology. Jang was the world's first to discover graphene in 2002. He is recognized as the world's number 1 graphene inventor with over 250 graphene-related U.S. patents and numerous international patents. On top of this, he is the co-inventor on over 300 U.S. patents on battery, fuel cell, and supercapacitor technologies. Prior to starting Global Graphene Group, Dr. Jang served as the head of the department of mechanical engineering and applied mechanics at North Dakota State University from 2002 to 2005 and was promoted to dean of the College of Engineering and Computer Science at Wright State University from 2005 until 2010.



Jules Janick | *Purdue University*

Jules Janick was born in 1931 in New York City and obtained his B.S. degree in agriculture from Cornell University in 1951, and his M.S. (1952) and Ph.D. (1954) in genetics and breeding from Purdue University where he is now the James Troop Distinguished Professor of Horticulture. Janick served as the President of the American Society for Horticultural Science (ASHS) in 1986-87 and was inducted in its Hall of Fame in 2009. He has received four honorary degrees. His research career has involved genetics, fruit breeding, and tissue culture. He is the holder of 6 utility patents involving somatic embryogenesis and 23 plant patents for releases in apple and pear. He was the founder and editor Horticultural Reviews and Plant Breeding Reviews. He also has a deep interest in iconography, art, and history in reference to horticulture. He has edited, authored, or coauthored over 140 volumes.



Wilfred A. Jefferies | *University of British Columbia*

Professor Wilfred A. Jefferies, D.Phil. (OXON), is a Principal Investigator of the Michael Smith Laboratories at the University of British Columbia, and the Vancouver Prostate Centre at Vancouver General Hospital. Jefferies is a co-inventor of patented discoveries on the role of antigen-processing and T lymphocytes in cancer immune-surveillance, mechanisms underpinning dendritic cell triggering immune responses, pathways regulating cytokine-storm in sepsis, calcium channels controlling immune cells and drug-delivery to the brain as well as describing angiogenesis and vascular remodelling in Alzheimer's disease. He holds over 60 patents worldwide that form the core technologies of several biotechnology companies. He is a Royal Commission for the Exhibition of 1851 Scholar (1981), a Wellcome Trust Fellow (1985), and a Killam Trust Fellow (2001) and a member of the Faculty of 1000. He has published over 100 peer-reviewed manuscripts in scientific journals including Nature, Immunity, PNAS, Nature Immunology, Journal of Experimental Medicine, Nature Medicine, EMBO Journal, and Nature Biotechnology.



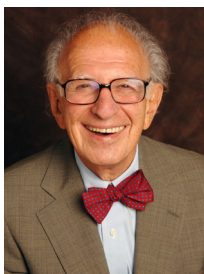
Jerome B. Johnson | *University of Alaska Fairbanks*

Jerome B. Johnson, Ph.D., is a research professor (ret.) at the Institute of Northern Engineering and Senior Advisor to the Alaska Center for Energy and Power, both at the University of Alaska Fairbanks. Johnson founded and directed the Alaska Hydrokinetic Research Center, chaired the U.S. Technical Advisory Group for International Electrotechnical Commission (IEC) Technical Committee 114, setting standards for characterizing river hydrokinetic potential; assistant editor of the J. Glaciology; participating scientist on NASA Mars Polar Lander and Mars Exploration Rovers missions and for JPL's Mars thermal drill design. He led national and international project teams in conducting problem-specific applied research for NASA, the U.S. Army, Michelin Tire Company, U.S DOE, Honeybee Robotics, Alaska DOE, Department of the Interior, Cornell University, and Johns Hopkins University. Awards include Haley Space Flight Award, NASA MER Mission Group Award, ERDC-CRREL Employee Hall of Fame, Army Research and Study Fellowship, Alaska Innovators Hall of Fame, UAF Innovators Hall of Fame, and NASA Langley Director's Group award for the Asteroid Robotic Redirect Mission Concept Study. He holds four patents, licensed to three companies. Johnson co-founded Coupi, Inc., a company focused on improving products and manufacturing through complex simulation and visualization technology. He has published in 140+ journals and books.



Wayne E. Jones Jr. | *University of New Hampshire*

Wayne E. Jones Jr., Ph.D., is Provost and Vice President for Academic Affairs and Professor of Chemistry at the University of New Hampshire. Jones is an inorganic and materials chemist whose research has led to new technologies in the area of molecular wires, electrically and thermally conducting nanomaterials, organic/inorganic hybrid materials, photocatalysts for degradation of toxic agents and fluorescent conjugated polymer sensors. He is a fellow of ACS and the recipient of numerous research and teaching awards including the State University of New York Chancellor's Award. He holds 9 U.S. patents that have been licensed to a half dozen companies. He is a founder of two start up companies including Chromanotech, LLC. He has published 160 articles, books, and book chapters and serves on the editorial board of Fibers and the Journal of Educational Technology Systems.



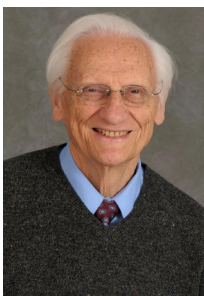
Eric R. Kandel | *Columbia University*

Eric R. Kandel, M.D., is University Professor at Columbia University; Kavli Professor and Director, Kavli Institute for Brain Science; Co-Director, Mortimer B. Zuckerman Mind Brain Behavior Institute; and an Investigator at the Howard Hughes Medical Institute. He is an editor of Principles of Neural Science, the standard textbook in the field now in its 5th edition. Kandel has received 24 honorary degrees, is a member of the U.S. NASs as well as being a Foreign Member of the Royal Society of London and a member of the National Science Academies of Austria, France, Germany and Greece. He has been recognized with the Albert Lasker Award, the Heineken Award of the Netherlands, the Gairdner Award of Canada, the Harvey Prize and the Wolf Prize of Israel, the National Medal of Science USA and the Nobel Prize for Physiology or Medicine in 2000.



Kristi L. Kiick | *University of Delaware*

Kristi L. Kiick, Ph.D., is the Blue and Gold Distinguished Professor of Materials Science and Engineering at the University of Delaware. Kiick has developed a wide variety of polypeptide- and peptide-based materials with responsive behavior for potential use in biomedical therapies. Her work has been publicized internationally and she is the recipient of multiple international awards, most recently a Fulbright Scholarship and a Leverhulme Visiting Professorship. She holds over 20 U.S. patents, has authored over 150 articles and book chapters, and delivered nearly 200 invited lectures. She serves on the editorial boards of a number of international journals, and is a fellow of ACS, the ACS Division of Polymer Chemistry, and AIMBE.



Israel Kleinberg | *Stony Brook University*

Israel Kleinberg, D.D.S., Ph.D., D.Sc., F.R.C.D.(C), retired after 45 years at Stony Brook University where he was the founding chair of the department of oral biology and pathology and director of translational oral biology. Kleinberg developed multiple products with the potential for the enhancement of human health and wellbeing. He is recognized for his work in many areas; especially the biochemistry and physiology of complex mixed bacterial populations. His inventions include PerioTron, Smartmouth™, BasicBites®, dentifrice products manufactured and distributed by a leading oral care product company and FDA approved the Ortek ECD which is ready for commercialization this year. He is the recipient of numerous academic honors and awards, including the 2014 IADR Distinguished Scientist Award for Research in Dental Caries, the ADA's ADEA Gies Award for Innovation as a dental educator, the Outstanding Inventor Award from State University of New York, an Honorary Doctor of Science degree from the University of Manitoba, the Canada Centennial Medal for contributions to the development of dental research in the nation. He was named a State University of New York Distinguished Professor. Kleinberg holds 21 patents and numerous foreign patents. His research has led to the start-up company, Ortek Therapeutics. He had mentored 24 Ph.D. students, 10 postdoctoral trainees and 10 senior scientists. He has over 300 scientific publications and had over 60 years of continuous research funding.



Leonard Kleinrock | *University of California, Los Angeles*

Leonard Kleinrock, Ph.D., is Distinguished Professor of Computer Science at UCLA. Kleinrock developed the mathematical theory of packet networks, the technology underpinning the Internet. The birth of the Internet occurred in his UCLA laboratory when his Host computer became the first node of the Internet in September 1969 and it was from there that he directed the transmission of the first message to pass over the Internet on October 29, 1969. He is the recipient of the National Medal of Science, the Ericsson Prize, the NAE Draper Prize, the Marconi Prize, the Dan David Prize, the Okawa Prize and many others. He holds 18 U.S. patents, is the founder of 6 startup companies, and has published 250 articles, 6 books, and 11 book chapters. Kleinrock is a member of NAE, an eminent member of Eta Kappa Nu, and a fellow of prestigious organizations such as IEEE, ACM, AAAS, IEC, INFORMS.



Melissa Knothe Tate | *University of New South Wales*

Melissa L Knothe Tate, Ph.D., is the Inaugural Paul Trainor Chair and Professor of Biomedical Engineering at the University of New South Wales in Australia. She is a global thought leader in healthcare innovation and 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 welfare of society. As the recipient of more than 40 international awards, she holds three U.S. patents and 10 foreign patents that have been licensed to three companies. She is the founder of a consulting company and three startup companies. She has published over 100 articles, one book, and eight book chapters, and serves on the editorial boards of journals such as Current Opinion in Biomedical Engineering. Knothe Tate is a fellow of ASME, BMES, the American Institute of Medical and Biomedical Engineering, and Engineers Australia.



Julia Kornfield | *California Institute of Technology*

Julia A. Kornfield is the Elizabeth W. Gilloon Professor of Chemical Engineering at the California Institute of Technology (Caltech). She is an expert in polymer science, particularly how polymers influence and are influenced by flow. She has applied small angle neutron and x-ray scattering to diverse systems, including end-associative polymers for aviation safety and security (Wei et al., Science 2015), flow-induced crystallization of polymers and the effects of flow on polymer self-assembly. Since she joined the Caltech faculty in 1990, Kornfield has received the Dillon Medal of APS, been elected fellow of APS and AAAS, and received the Bingham Medal of the Society of Rheology, among other honors. She holds 39 patents and is a co-founder of Calhoun Vision, which uses polymers developed at Caltech to customize vision by noninvasively optimizing a lens after it is implanted into a patients' eye.



David M. Kranz | *University of Illinois at Urbana-Champaign*

David M. Kranz, Ph.D., is the Phillip A. Sharp Professor of Biochemistry at the University of Illinois at Urbana-Champaign. Kranz's scientific contributions include the identification and characterization of T-cell receptors; design of bispecific agents targeting T-cells to cancer; co-development of the protein-engineering platform termed yeast display, and engineering T-cell receptors for therapeutic uses in cancer. For his exceptional and innovative research, he has received the Searle Scholar Award, Arnold Beckman Research Award, Arthritis Foundation Biomedical Science Award, James S. McDonnell Foundation Research Award, Medical Foundation Fellowship, Illinois Biotechnology Industry Innovator Award, Technology Transfer Award; and two Alumni Achievement Awards. Kranz holds 20 U.S. patents and 22 foreign patents, all of which have been licensed. He co-founded two successful start-up companies, BioDisplay Technologies (acquired by Abbott Laboratories) and ImmuVen (acquired by AbbVie). He has published over 200 peer-reviewed articles and was named the inaugural Phillip A. Sharp Professor of Biochemistry.



Jack H. Ladenson | *Washington University in St. Louis*

Jack H. Ladenson, Ph.D., DABCC, is the Oree M. Carroll and Lillian B. Ladenson Professor of Clinical Chemistry in the department of pathology and immunology at Washington University School of Medicine. Ladenson developed antibodies and assays for myoglobin, creatine kinase MB isoenzyme and Troponin I in blood. Elevation of troponin in blood is now part of the definition of acute myocardial infarction. He has received a number of awards from the American Association for Clinical Chemistry; the International Federation of Clinical Chemistry; Washington University and its alumni groups including the first Chancellor's Award for Innovation and Entrepreneurship from Washington University; and the 2nd Century Award from its medical school. He holds seven U.S. patents and 26 foreign patents and has published over 160 peer-reviewed papers. He also works with the NGO Pathologists Overseas, Inc. in clinical laboratory improvement, training of personnel and clinician education in developing countries.



Gianluca Lazzi | *University of Southern California*

Gianluca Lazzi, Ph.D., MBA, is Provost Professor of Ophthalmology, Electrical Engineering, Clinical Entrepreneurship and Biomedical Engineering at the University of Southern California, where he is also the holder of the Fred H. Cole Professorship and the Director of the Institute for Technology and Medical Systems. He has authored or coauthored more than 250 international journal papers, conference presentations, and book chapters on implantable devices, neuroengineering, medical applications of electromagnetics, antenna design, and bioelectromagnetics. He holds patents on liquid metal technology, with applications to consumer electronics, military and textile industries. He served as the editor-in-chief of IEEE AWPL and on the editorial board of several leading publications. He was a recipient or co-recipient of numerous awards, including the URSI Young Scientist Award (1996), R&D 100 Award (2009), ALCOA Foundation Engineering Research Award (2003), and IEEE APS Wheeler Award (2006). He is a fellow of IEEE and AIMBE.



Walter S. Leal | *University of California, Davis*

Walter S. Leal is a Distinguished Professor of Molecular and Cellular Biology at the University of California, Davis. Worldwide, he holds more than 20 insect-pheromone patents commercialized by start-up, small, and medium-sized pheromone suppliers. He has published 220 papers and 21 book chapters; his work has been cited more than 11,000 times. Leal co-chaired the 2016 International Congress of Entomology. He received the Technology Prize, Society for Bioscience, Biotechnology, and Agrochemistry (Japan); Nan Yao Su Award for Innovation and Creativity, Entomological Society of America (ESA); the Silver Medal, International Society of Chemical Ecology; Medal of Achievement, Entomological Society of Brazil; and is a corresponding member of the Brazilian Academy of Sciences. Leal is a fellow of ESA, AAAS, and the California Academy of Sciences, as well as an honorary fellow of the Royal Entomological Society and (fellow equivalent) of the Japanese Society of Applied Entomology and Zoology.



Fred J. Leonberger | *University of South Florida*

Fred J. Leonberger, Ph.D., is a professor at the University of South Florida Institute of Advanced Discovery and Innovation. He is a widely known technology and business leader in photonics, especially in the field of integrated optical circuits. The LiNbO₃ electrooptic modulators he and his colleagues have developed have been used pervasively for over two decades for multi-Gb/sec data encoding for fiber optic telecommunications and CATV signal distribution and in optical sensing. He is the recipient of the IEEE Photonics Award and OSA Richardson Medal, as well as numerous other awards. He has received 18 patents, co-founded 4 companies, and authored or co-authored over 180 papers and conference presentations. He has served as associate editor of two journals and chairman of several conferences. Leonberger is a member of the NAE, and a fellow of IEEE and OSA.



Danuta Leszczynska | *Jackson State University*

Danuta Leszczynska is professor of environmental engineering and environmental science at Jackson State University in Jackson, Mississippi. Currently, she is conducting experimental and computational research on the properties, impact and incidental interactions of engineered nanomaterials in natural environment under oxidative stress, and she is developing techniques and tools based on nanotechnology for environmental and medical applications. She has served as a referee for over 40 journals, international and national panels and review boards, and she is author and co-author of over 200 peer-reviewed publications and 12 book chapters. Dr. Leszczynska is a Fulbright Scholar and she has been internationally recognized and awarded with numerous appointments as honorary professor. Dr. Leszczynska is a holder of two patents: international on nano-magnetoliposomes composition for targeted treatment of tumors, and U.S. patent on artificial coatings enforced by graphene and used for titanium-based bone implants.



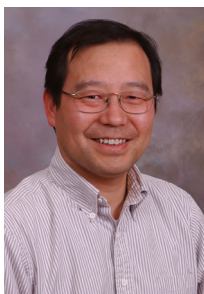
Yiannis A. Levendis | *Northeastern University*

Yiannis A. Levendis, Ph.D., is a Distinguished Professor of Engineering at Northeastern University in Boston, Massachusetts. Levendis is an expert in energy, combustion and air pollution and fire containment. He obtained B.S. and M.S. Degrees from the University of Michigan, and Ph.D. from Caltech. He is the recipient of the George Westinghouse Gold Medal of ASME, the Percy Nicholls Award of ASME/SME, the John McCambridge Award of the Institute of Hazardous Materials Management. He holds 12 U.S. patents and several international patents. He published 330 peer-reviewed journal articles, conference proceedings and book chapters. He is a fellow of RSC, the Combustion Institute, the Society of Automotive Engineers (SAE), ASME. He is a member of the engineering honor societies of TBPI, ΠΤΣ, ΦΚΦ, member of ASEE (American Society of Engineering Education), AAAS and of the AIAA.



Jonathan S. Lewin | *Emory University*

Jonathan S. Lewin, M.D., FACR, is Executive Vice President for Health Affairs at Emory University, executive director of the Woodruff Health Sciences Center, and president, CEO, and Chairman of the Board of Emory Healthcare. Lewin is an international leader in interventional and intraoperative MRI and in academic medicine strategy and integrated healthcare delivery. He is the recipient of Gold Medal Awards from the American Roentgen Ray Society and the Association of University Radiologists and of the National Medical Fellowships Pioneer Award. He holds 27 U.S. patents and 7 foreign patents and has published more than 200 peer-reviewed scientific manuscripts and 70 book chapters, reviews, and other papers. He has presented more than 200 invited lectures and has been PI or co-PI on grants with awards of more than \$10 million. Lewin is a fellow of both the International Society for Magnetic Resonance in Medicine and the American College of Radiology.



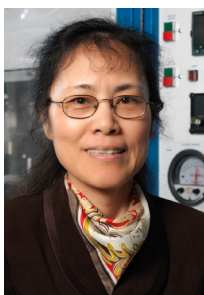
Jun Li | *Kansas State University*

Jun, Li, Ph.D., is a professor at Kansas State University. Li has made pioneering contributions to integrating nanomaterials, particularly nanostructured carbon materials, semiconductor nanowires and nanostructured core-shell hybrid materials, into functional devices for biosensors, energy conversion and storage, and nanoelectronics. He holds 12 U.S. patents and two foreign patents that have been licensed to four companies for development and commercialization. He is the recipient of the first annual Nano 50 Innovator Awards in 2005 by Nanotech Briefs for pioneering achievements in advancing the state of the art in nanotechnology and 2005 NASA Ames Honor Award for excellence in Commercialization and Technology Transfer. He has over 179 scientific publications, including 131 peer-reviewed journal articles, one edited book, 25 referred proceeding papers, and 22 book chapters, and serves as a senior editor of IEEE Transactions on Nanotechnology and on the editorial board of other 14 peer-reviewed journals.



David Lightfoot | *Southern Illinois University*

David Lightfoot, Ph.D., is professor of biotechnology and genomics at Southern Illinois University. He received his Ph.D. in genetics from the University of Leeds, UK. His research focuses on biotechnology, genetics and genomics. He is 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 4 inventions, 9 pending. He has trained 18 Ph.D. and 31 M.S. students. He is senior editor for BMC Genomics and associate editor for the Theoretical and Applied Genetics, PLoS One, and Journal of Biotechnology and Biomedicine journals. He owns a spin-off business, GAAB-LLC in Biotech. He acts as CSO for a local maize genetics business and a local fertilizer company.



Jingyu Lin | *Texas Tech University*

Jingyu Lin is the Linda Whitacre Endowed Chair and Horn Distinguished Professor in the department of electrical and computer engineering at Texas Tech University. She is one of the original inventors of III-nitride microLED, microdisplay and single-chip high-voltage AC/DC LEDs. MicroLED is regarded as the ultimate display technology with massive global market opportunities for next generation mobile, wearable, 3D/AR/VR and large flat panel displays as well as ideal light source for neural interface and optogenetics. The single-chip high-voltage AC/DC LEDs have been widely commercialized worldwide for general illumination. She has pioneered the development of BN neutron detectors with unprecedented detection efficiency and potential to displacing He-3 gas detectors. She has 19 issued and 3 pending patents and over 400 publications. Lin is also a fellow of the AAAS, APS, OSA, and SPIE.



Yuehe Lin | *Washington State University*

Yuehe Lin is a professor at Washington State University and a Laboratory Fellow at Pacific Northwest National Laboratory (PNNL). Lin is well-known for his contributions to the development of BioMEMS's devices and biosensors for biomedical applications. He has been named among the world's most highly cited researchers every year from 2014 to 2019 by the Web of Science Group. He received five PNNL Outstanding Performance Awards. He holds 20 patents that have been licensed to five companies. He obtained three Battelle-PNNL Key Contributor Awards for successful technology commercialization. He has published over 500 papers and two books with total citations over 52,000 and serves as editor or editorial board member for 20 international journals. Lin is a fellow of AAAS, RSC, and AIMBE as well as a member of the Washington State Academy of Sciences.



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Fu-Tong Liu, Ph.D., M.D., is vice president at Academia Sinica, in Taiwan. Liu is a pioneer and leading investigator in the study of the galectin family of animal lectins. He was instrumental in the identification of this family and has shaped the development of the field, both in academia and industry, through his scholarly activities and inventions. Developments in this field have had major implications for all medical specialties. He is the recipient of 2015 Khwarizmi International Award. He holds seven U.S. patents; one of them represents the discovery of galectin-3. The reagents and tools he developed have benefitted the development of galectin inhibitors as therapeutic agents. He has published over 350 original articles and review papers and serves as section editors or on editorial boards for a number of scientific journals in the field of allergy/immunology, dermatology, and glycobiology. Liu is a fellow of AAAS and academician of Academia Sinica in Taiwan.



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Kunlei Liu, Ph.D, is associate professor of mechanical engineering at the University of Kentucky and associate director for research at the Center for Applied Energy Research. He has over 29 years' experience directing research projects concerning combustion, gasification, and emissions control. He has received many awards from the U.S. DOE, State of Kentucky, and an industrial consortium to develop a robust and cost-effective technology for pollution control, water treatment, CO₂ capture and utilization from power generation processes that covers advanced catalytic solvent development and evaluation, process integration, membrane-based solvent enrichment, chemical looping combustion/gasification, and metal behavior in the post- combustion carbon capture system. His research interests include fossil fuel combustion and gasification, emission control, carbon management in power plants and biomass utilization for fuels and chemicals. He has authored 153 manuscripts on these and other topics. He received his bachelors of engineering and Ph.D. in Thermoenergy engineering from Southeast University in Nanjing, China.



Liang Liu | *Macau University of Science and Technology*

Liang Liu, Ph.D., is the president of Macau University of Science and Technology, academician of the Chinese Academy of Engineering and director of the State Key Laboratory of Quality Research in Chinese Medicine of China. He is a world-class scholar in the fields of Chinese medicine and rheumatology. He has been awarded with 14 awards and honors at the national and provincial/ministerial levels, including two 2nd prizes of the National Science and Technology Advancement Award, two 1st prizes of the Natural Sciences Awards of the Ministry of Education, and Certificate of Merits in the 1st National Innovation Pioneer Award. As the first inventor he holds 10 U.S. patents and other 17 overseas patents, among which 7 have been licensed to industrial companies. Also, he has been prolific in academic publications with over 230 articles published in prestigious journals like Nature and Science supplements, Nature Medicine, Annals of Rheumatic Diseases, and Microbiome.



K.J. Ray Liu | *University of Maryland, College Park*

K.J. Ray Liu, Ph.D., is a Distinguished University Professor at the University of Maryland, College Park. Liu is a world leader in signal processing for wireless sensing and communications. He is the recipient of 2016 IEEE Leon Kirchmayer Award on graduate teaching and mentoring, IEEE Signal Processing Society 2014 Society Award, IEEE Signal Processing Society 2009 Technical Achievement Award, 2017 CEATEC Grand Prix award, Web of Science Highly Cited Researcher and over a dozen of best paper awards. He holds over 40 U.S. patents and has won the Invention of the Year Award three times from the University's Office of Technology Commercialization. He is the founder of Origin Wireless, pioneering wireless AI for indoor tracking and wireless sensing. He has published over 10 books and 800 papers and served as president of IEEE Signal Processing Society and IEEE vice president, Technical Activities. Liu is a fellow of IEEE and AAAS.



Karen Lozano | *University of Texas Rio Grande Valley*

Karen Lozano, Ph.D., is a Julia Beecherl Endowed Professor and Founding Director of the University of Texas Rio Grande Valley Nanotechnology Center obtained an MS and Doctorate degree from Rice University in Houston, TX. She is a prolific inventor, co-founded Fiberio Technologies Corporation, a company that focused on the industrial production of nanofibers by the Forc spinning® technology. She received several awards for this invention such as the Innovations That Could Change the Way You Manufacture granted by the Society of Manufacturing Engineers and the R&D 100. She is the recipient of several honors/awards such as the 2019 U.S. Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM), TEDx Speaker, and Engineer of the Year by Great Minds in STEM among others.



G.Q. Max Lu | *University of Surrey*

G.Q. Max Lu is president of University of Surrey. He is a member of the Prime Minister's Council for Science and Technology, and Director of the Boards of UKRI and National Physical Laboratory. Lu lectured at Nanyang Technological University from 1991 to 1994. He then held various academic and leadership positions at the University of Queensland, rising to Provost position, prior to his current role. Lu founded the Australian Research Council's Centre of Excellence for Functional Nanomaterials. He was awarded Australian Research Council Federation Fellowship in 2003 and in 2008. A pre-eminent chemical engineer and nanotechnologist, Lu is a highly cited academic in the world (with over 500 papers, 62,000 citations and h-index of 122). He is co-inventor of more than 20 granted international patents, and has been honoured with numerous awards including the Medal of the Order of Australia.



Anita Mahadevan-Jansen | *Vanderbilt University*

Anita Mahadevan-Jansen, Ph.D., is an internationally acclaimed leader in biomedical photonics. She developed technologies for use in clinical care for cancer diagnosis and therapy guidance. Mahadevan-Jansen, Orrin H. Ingram Professor of Biomedical Engineering at Vanderbilt University, is director of the Vanderbilt Biophotonics Center. Her FDA-approved technology changed the way thyroid and parathyroid surgery is performed. An optical imaging technology developed by Mahadevan-Jansen and her group, in partnership with a medical device company, won a 2019 R&D 100 Award. The handheld system enables safe, rapid localization of parathyroid tissue intraoperatively. The FDA approved it for clinical use in 2018. Mahadevan-Jansen is vice president of SPIE. She will be president-elect in 2021 and president in 2022. She is a fellow of SPIE, OSA, and AIMBE.



Radenka Maric | *University of Connecticut*

Radenka Maric, Ph.D. is Vice President for Research, Innovation and Entrepreneurship and Named Professor of Sustainable Energy at the University of Connecticut. Maric has been honored for distinguished contributions to the field of nano-catalysis for clean energy, particularly for pioneering novel materials and synthesis approaches for optimized electrochemical interface for fuel cells, batteries, and electrochemical sensors. She is a fellow of AAAS, elected member of the Connecticut Academy of Science and Engineering, and the Connecticut Technology Council Woman of Innovation. She holds six patents. Prior to becoming faculty, she worked for large corporations in Japan, and a start-up in Atlanta. She has published over 300 articles in refereed journals, 21 book chapters or invited review articles, and serves on review panels for federal sponsors. Maric is a member of the International Academy of Electrochemical Energy Science, Electrochemical Society of Japan, ACS, and ACerS.



Olimpia Meucci | *Drexel University*

Olimpia Meucci, M.D., Ph.D., is professor and chair of pharmacology and physiology at Drexel University College of Medicine, Director of the Center for Neuroimmunology and CNS Therapeutics of Drexel's Institute of Molecular Medicine and Infectious Disease, and fellow of the Hedwig van Ameringen Executive Leadership in Academic Medicine (ELAM®) program. Her major discoveries in the field of neuroimmunology (HIV-associated cognitive decline and opiate abuse) and cancer therapeutics led to one foreign and four U.S. patents. Meucci published over 100 peer-reviewed papers (including 25 book chapters), and two books as editor; she served on 35 NIH study panels, six editorial boards and reviewed articles for over 30 scientific journals. Other leadership positions include the SNIP Executive Council and chairmanship of SNIP Communications Committee. She co-founded reGAIN Therapeutics, a Drexel-based biopharmaceutical startup. She received multiple accolades, including the distinctive MERIT award from NIH's National Institute of Drug Abuse.



Sanjit K. Mitra | *University of California, Santa Barbara*

Sanjit K. Mitra obtained his M.S. and the Ph.D. degrees from the University of California, Berkeley in 1960 and 1962, respectively. He has been awarded three honorary doctorate degrees. Mitra has published over 700 papers in the areas of analog and digital signal processing, and image processing. He has also authored and co-authored 12 books, and holds six patents. He has presented 29 keynote and/or plenary lectures at conferences held in the U.S. and 16 countries abroad. He is a member of the U.S. NAE and Norwegian Academy of Technological Sciences, an academician of the Academy of Finland, a foreign member of the Finnish Academy of Sciences and Arts, the Croatian Academy of Sciences and Arts, the Croatian Academy of Engineering, and the Academy of Engineering, Mexico, and a foreign fellow of NASs, India and the Indian NAE.



John P. Mugler, III | *University of Virginia*

John P. Mugler, III, Ph.D., is professor of radiology & medical imaging, and biomedical engineering, at the University of Virginia. Mugler invented MRI techniques used daily around the world for clinical imaging, and for numerous clinical trials that expand understanding of brain structure, development, and neurologic diseases. He is first author of one of the 30 most influential out of 9000 papers published in Magnetic Resonance in Medicine during its first 30 years, as recognized by the International Society for Magnetic Resonance in Medicine (ISMRM). He holds 16 U.S. patents licensed to 5 international companies, and has published 120 peer-reviewed articles. Mugler is a fellow of the American Institute for Medical and Biological Engineering, elected for "outstanding contributions to the development of rapid imaging techniques which are now used in routine clinical MRI practice," a fellow of ISMRM, and a Distinguished Investigator of the Academy for Radiology & Biomedical Imaging Research.



Priyabrata Mukherjee | *University of Oklahoma*

Priyabrata Mukherjee, Ph.D., conceived the idea of “self-therapeutic” property of nanomaterials and demonstrated how self-therapeutic property could be exploited to identify new therapeutic targets in cancer. His pioneering work also led to the understanding of fundamental processes that dictate cell nanomaterial interaction. He also pioneered the area of biological synthesis of nanoparticles that have earned him several patents. He has received several awards including the Outstanding Achievement Award by the Society of Asian American Scientists in Cancer Research (SAASCR), Fred G. Silva Award for outstanding contribution in Pathology and Laboratory medicine at OUHSC, Presbyterian Health Foundation Presidential Professor Award. He is also an elected fellow of RSC, UK (FRSC) and AIMBE.



Satish Nagarajaiah | *Rice University*

Satish Nagarajaiah, Ph.D., is professor of computer engineering and mechanical engineering at Rice University in Texas. He has developed advanced computational techniques for nonlinear dynamic analysis of base isolated structures that has resulted in the software 3D-BASIS that is used widely by academics and professionals in analysis-and-design of numerous seismically-base-isolated-structures, such as San Francisco International airport and Apple headquarters, in U.S.A, and in many countries around the world. He has invented adaptive stiffness structural systems. NSF and ASCE have recognized his contributions to adaptive stiffness structural systems by awarding the NSF-CAREER award in 1998 and ASCE-Moissieff award in 2015, respectively. He has developed widely cited structural system identification algorithms based on sparse time-frequency methods, sparse regularization, statistical/machine learning and low rank methods, for which he received 2017 ASCE-Raymond-Reese Research Prize. He pioneered, co-invented contact and laser based non-contact strain sensing skin using nanomaterials (in 2004) for 2D/3D strain mapping (in 2012).



Madhavan Nair | *Florida International University*

Madhavan Nair, Ph.D., is the Distinguished Professor and chair of the department of immunology and nanomedicine at Herbert Wertheim College of Medicine at Florida International University. Nair was first to report that HIV recombinant purified gene products possess significant biological activities. His discovery had a profound effect on the role of cocaine and methamphetamine on HIV disease progression. He is the first FIU researcher to earn an NIH MERIT Award recognizing outstanding competence and productivity. Nair is also the recipient of the: Presidential Leadership Operational Excellence Award FIU, ABAP Lifetime Achievement Award in Biotechnology, Hind Rattan “Jewel of India” Award, Herman Friedman Founder Award for Society on Neuroimmune Pharmacology, and the Nelson Mandela Leadership Award (NRI). He holds 14 U.S. patents and is the founder of FIU Institute for Neuroimmune Pharmacology and his own Society for Personalized Nanomedicine. Nair has published more than 150 papers as first and/or senior author and has served in numerous committees as member/chair, including numerous NIH study sections, and organized and participated in various international conferences. He is currently supported with two major NIH grants.



Balaji Narasimhan | *Iowa State University*

Balaji Narasimhan, Ph.D., is Anson Marston Distinguished Professor of Engineering and director of the Nanovaccine Institute at Iowa State University. Narasimhan has invented nanoparticle-based platform technologies and devices for drug and vaccine delivery that are being developed and commercialized into next generation nanomedicines and nanovaccines. He is the recipient of a Society of Biomaterials Clemson Award for Contributions to the Literature, a Whitaker Foundation Biomedical Engineering Research Award, a 3M Non-Tenured Faculty Award, and a TR-100 Award by MIT's Technology Review Magazine. He holds eight U.S. patents and one foreign patent that have been licensed to three companies. He is a co-founder of a new startup, ImmunoNanoMed Inc. He has published over 275 journal articles, book chapters, and proceedings papers, and serves as associate editor of Science Advances and Biological Engineering section editor of Current Opinion in Chemical Engineering. Narasimhan is a fellow of AAAS, AIMBE, and IAMBE.



Kathryn R. Nightingale | *Duke University*

Kathryn R. Nightingale, Ph.D., is the Theo Pilkington Professor of Biomedical Engineering at Duke University. Nightingale pioneered the development and clinical translation of acoustic radiation force based elasticity imaging and shear wave imaging techniques. She is a recipient of the Marion Capers Distinguished Research and Teaching Award, the Klein Family Distinguished Teaching Award, and the Lois and John L. Imhoff Distinguished Teaching Award at Duke University. She holds 10 patents, each of which has been licensed by one or more companies. She has published 80 peer-reviewed journal articles and 6 book chapters in the areas of ultrasound and elasticity imaging, and has served as a charter member of the BMIT-B and IGIS NIH study sections, and is an Associate Editor for Ultrasonic Imaging. Nightingale is a senior member of IEEE, a member of the American Institute of Ultrasound in Medicine and BMES, and is a fellow of AIMBE.



Valentine Asongu Nzungu | *University of Georgia*

Valentine Asongu Nzungu, Ph.D., is a professor of environmental geochemistry at the University of Georgia. For nearly 20 years, he has worked to move innovative environmental remediation technologies from the academic laboratory to the field. Nzungu holds multiple patents for proprietary green and sustainable remediation technologies, most notably breakthrough technologies for neutralization and destruction of conventional and homemade explosives, propellants and chemical warfare agents. His inventions are designated by the U.S. Environmental Protection Agency and the National Academies of Science, Engineering and Medicine as mature alternative technologies to open burning and detonation of conventional explosives. He is the founder of MuniRem Environmental, LLC, and in 2016 was named the University of Georgia's Entrepreneur of the Year. Nzungu has published more than 110 book chapters, peer-reviewed journal articles, conference proceedings and reports, and he serves on multiple editorial boards for professional journals and review panels for federal agencies. Nzungu is a member of several international explosives associations and a fellow of the National Academies.



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Fiorenzo G. Omenetto, Ph.D., is the Frank C. Doble Professor of Engineering, and a professor of biomedical engineering at Tufts University. He also holds appointments in the department of physics and the department of electrical engineering. He also serves as dean for research for the School of Engineering. He has proposed and pioneered the use of silk as a material platform for advanced technology with uses in photonics, optoelectronics and nanotechnology applications, is co-inventor on several disclosures on the subject, and is actively investigating applications that rely on this technology base both for technical and design applications. He has co-founded three startups and has active roles in their governance. Omenetto was formerly a J. Robert Oppenheimer Fellow at Los Alamos National Laboratories, a Guggenheim Fellow, and is a fellow of OSA and of the APS.



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Boon S. Ooi, Ph.D., is a professor and chair of electrical engineering at the King Abdullah University of Science and Technology, and the director of KACST Technology Innovation Center for Solid State Lighting. Ooi is a leader in the fields of semiconductor photonics and optical sensors. He has done pioneering work on the development of novel optoelectronics and distributed optical fiber sensors for communication, oil and gas, and agriculture industries. He holds 44 pending or issued U.S. and foreign patents that have been licensed to 7 companies. He has published more than 250 articles in peer-reviewed journals. He has served on the editorial board for IEEE Photonics Journal, OSA Optics Express, and SPIE Journal of Nanophotonics. Ooi is a fellow of OSA, SPIE, and IoP.



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Ebru Oral, Ph.D., is an associate professor at the department of orthopaedic surgery at Harvard Medical School and the associate director of the Harris Orthopaedic Laboratory at Massachusetts General Hospital. Oral is a researcher and an inventor in the field of orthopaedic medical devices, specifically in the antioxidant stabilization of joint implants. She is the recipient of the American Academy of Orthopaedic Surgeons Young Investigator Fellowship, the 'HAP' Paul Award of the International Society for Technology in Arthroplasty, the Partners Healthcare Innovation Recognition and is a Fellow of the American Institute of Medical and Biological Engineers. She is an inventor on 16 U.S. patents and 25 foreign patents, which have been licensed to numerous orthopaedic companies for enabling the manufacture of joint implant components used worldwide for improved oxidative longevity. She has published more than 50 peer-reviewed articles (h-index of 30) and numerous book chapters.



Mihrimah Ozkan | *University of California, Riverside*

Mihrimah Ozkan, Ph.D., is a professor of electrical and computer engineering department at the University of California, Riverside. Ozkan is the Climate Action Champion and Change Maker professor. She made breakthroughs in electrode raw materials, new battery technologies, material processing and battery manufacturing with game changer ideas of using waste bottles and renewable sources such as sand, biomass and silly putty towards powering smart cities, vehicles and electronics for zero-emission. Ozkan holds 10 granted and 19 pending U.S. patents and ~90 filed invention disclosures. She is the recipient of Humanitarian Star, National Medal for Engineering Science, Emerging Scholar, Inventor, Young Investigator and Achievement in Technical Ingenuity, the Top 100 Science Spinoffs awards, and named as John Guarrera Engineering Educator, Climate Global Winner, Nature Top 100 Author. She has published 173 journal and 123 conference articles, eight book chapters and one book. Ozkan is fellow of Frontier NAE and Keck NAS.



Peter Palese | *Mount Sinai Health System*

Peter Palese, Ph.D. is the chair of the department of microbiology, and a professor of microbiology and medicine at the Icahn School of Medicine at Mount Sinai. His research is in the area of RNA-containing viruses with an emphasis on influenza viruses. He defined the mechanism of neuraminidase inhibitors (now FDA-approved anti-influenza virus drugs) and pioneered the field of reverse genetics (i.e., genetic manipulation) of negative strand RNA viruses, which is fundamental for developing improved vaccines. He received the Robert Koch Prize, the Sanofi-Institut Pasteur Award, the Beijerinck Virology Prize, and the Maurice Hilleman/Merck Award. Palese holds 63 U.S. patents and 246 foreign patents of which many have been licensed. He has started 10 companies, published 441 articles and 29 books/book chapters, serves on the editorial board for PNAS, and is a member of the NAS, NAM, the Austrian Academy of Sciences, and the German Academy of Sciences.



Keith Paulsen | *Dartmouth College*

Keith Paulsen is the Robert A. Pritzker Professor of Biomedical Engineering at Dartmouth College. Paulsen also serves as professor of radiology and surgery at the Geisel School of Medicine, Scientific Director of both the Advanced Imaging Center and the Center for Surgical Innovation at Dartmouth-Hitchcock Medical Center, and co-director of the Translational Engineering in Cancer Research Program at Norris Cotton Cancer Center. Paulsen's research focuses on the development and translation of advanced imaging technology, primarily for cancer detection, diagnosis, therapy monitoring, and surgical guidance. Along with his team, he has developed and patented devices and methods for intraoperative quantitative fluorescence imaging, image updating with stereovision and 3D ultrasound, and magnetic resonance elastography of brain and supine MRI imaging and image-guidance for breast surgical oncology. Paulsen has authored 450 scientific publications and has maintained an active research program, continuously funded by NIH over the past 30 years.



David S. Peabody | *The University of New Mexico*

David S. Peabody, Ph.D., is professor of molecular genetics and microbiology at the University of New Mexico School of Medicine. For more than two decades, Peabody studied the RNA recognition and self-assembly properties RNA bacteriophage coat proteins. That work eventually led him to adapt RNA phage virus-like particles (VLPs) to serve as a platform for both the discovery of vaccine epitopes and for their presentation to the immune system in a highly immunogenic format. He holds 10 U.S. patents and is a cofounder of Agilvax, a startup company based on the VLP vaccine technology. He is the author of 77 publications in peer-reviewed journals and in 2017 was named Innovation Fellow of the Science and Technology Corporation (STC.UNM).



Carlos Maria Pignataro | *North Carolina State University*

Carlos Maria Pignataro is an adjunct lecturer at North Carolina State University and a distinguished engineer and CTO at Cisco Systems. Pignataro has made significant contributions to advancements and innovations in the fields of computer networking. He currently holds 118 U.S. issued patents, 28 foreign issued patents, and over 130 and 60 pending U.S. and foreign patents. He is a founding member of the International Society of Service Innovation Professionals and the recipient of several awards including 2019 IEEE Communications Society Industrial Innovation Award and Cisco Pioneer Award. Pignataro has co-authored over 50 Internet Requests for Comments and co-authored three books on computer networking.



Albert P. Pisano | *University of California, San Diego*

Albert ("Al") P. Pisano was appointed dean of engineering at University of California, San Diego in 2013. He held appointments at University of California, Berkeley for 30 years, serving in several leadership positions. He was elected to NAE in 2001 and to ASME Fellow status in 2004. As dean, he holds the Walter J. Zable Chair of Engineering and is a Distinguished Professor in Mechanical and Aerospace Engineering and in Electrical and Computer Engineering. From 1997 to 1999, he served as Program Manager for MEMS at DARPA where he expanded the research portfolio to 83 contracts nationwide with research expenditures in excess of \$168 million over 3 fiscal years. He graduated nearly 70 Ph.D. students and 75 MS students, is an author of over 400 journal papers and 36 patents, and is a 10-time entrepreneur. His research interests include MEMS for many applications, including harsh environment sensors systems and wearable sensors.



Leslie S. Prichep | *New York University*

Leslie S. Prichep, Ph.D., is adjunct professor of psychiatry in the school of medicine at New York University. Prichep is also the chief scientific officer at BrainScope, Inc., a medical neuro-technology company that is pioneering the assessment of brain injury, including concussion. She was a full-time faculty member at NYU for almost 40 years, from 1976 to 2015, becoming professor in 2005 and director of the Brain Research Laboratories at NYU in 2009. Prichep has over 125 publications, with another 55 book chapters, books, published proceedings and monographs and holds 18 issued U.S. patents, in addition to numerous foreign patents and pending applications, and is considered one of the preeminent research scientists in the field of computerized electrophysiology. Almost all of her patents have been licensed to industry in multiple licenses to a number of different companies.



Yihong Qi | *University of Science and Technology & Western University*

Yihong Qi, Ph.D., is an adjunct professor at Missouri University of Science and Technology and Western University in Canada. He is dean and full professor at Behavior Big Data institute in Southwest Jiaotong University in China. Qi is a visionary leader and inventor with significant industrial and societal contributions through successfully merging the fundamental research breakthroughs of electromagnetics with the applications in wireless communications. He received IEEE EMC technical achievement award and top 10 entrepreneur award in the Pearl Delta. Qi is an inventor of with 148 granted U.S. patents, 207 foreign patents and 67 pending patents, his patents have been applied or licensed to 11 companies. He has published more than 100 scientific papers and two books. Qi founded five technology companies, including General Test Systems, Link-E, Mercku and Sunway communications, employing more than 12,500 people globally. He is a fellow of Canadian Academy of Engineering.



Roderic P. Quirk | *University of Akron*

Roderic P. Quirk, Ph.D., is Emeritus Distinguished Professor of Polymer Science at the University of Akron (UA). Quirk is a world expert in anionic polymerization (AP), especially functionalized elastomers, used extensively in the rubber and tire industry. Quirk was 2019 Charles Goodyear Medal recipient, the highest technical honor awarded by ACS Rubber Division, 2004 ACS Rubber Division Whitby Award recipient for teaching excellence, co-recipient of the 2000 Cooperative Research Award of the PMSE Division of the ACS, 1995 UA Alumni Association Outstanding Researcher Award recipient, 1990 fellow of the Japanese Society for the Promotion of Science and 1985 NASS Specialist and Educational Consultant for the Chinese University Development Project. He holds 34 U.S. patents, many of which are jointly owned and used by industrial research partners. He has published 372 peer-reviewed publications and a co-authored (with H. Hsieh) a widely used research tome on AP.



John Michael Ramsey | *University of North Carolina at Chapel Hill*

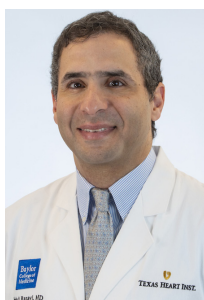
John Michael Ramsey, Ph.D., is the Minnie N. Goldby Distinguished Professor of Chemistry, and a faculty member of the departments of biomedical engineering and applied physical sciences at the University of North Carolina at Chapel Hill. Ramsey holds seminal patents in the areas of micro- and nano-fluidics, and other miniaturized chemical measurement technologies such as high-pressure mass spectrometry. He is the recipient of numerous national and international awards. He has published over 300 peer-reviewed articles and holds 65 U.S. and 94 foreign granted patents with 144 patents licensed to various companies, primarily his own startups. He is the sole scientific founder of Caliper Technologies, Inc. (Acquired by PerkinElmer in 2011), 908 Devices Inc., and Genturi Inc. Ramsey is a member of NAE and a fellow of ACS, AIMBE, and OSA.

A. Gururaj Rao | *Iowa State University*



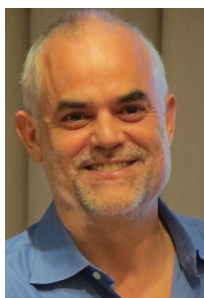
A. Gururaj Rao, Ph.D., is associate vice president for research at Iowa State University. Rao is internationally renowned for his innovative research combining mechanistic protein biochemistry and systems biology for crop improvement and the applications of his cutting-edge research are encapsulated in 28 patents. He serves as an academic editor on the journal PLoS One and associate editor on the Journal of Proteins and Proteomics. Rao's outstanding accomplishments are further illustrated in more than 70 peer-reviewed publications, invited presentations and articles, book chapters as well as federal research awards, including the NSF I-Corps award for fostering entrepreneurial activity at ISU. ISU honored Rao with the Roy J. Carver endowed Professorship for his singular achievements in science and service to the department. In 2016, Rao was elected fellow of AAAS and was an invitee to The White House Summit on America's Bioeconomy, held at the White House in October 2019.

Mehdi Razavi | *Texas Heart Institute*



Mehdi Razavi is the director of Electrophysiology Clinical Research & Innovations at the Texas Heart Institute and involved with numerous clinical trials assessing the efficacy of cutting-edge technology in the field of cardiac electrophysiology. He holds 12 U.S. patents, 11 that have been licensed to four companies with six patent applications pending. He founded multiple medical device startups, including Saranas, which markets a newly FDA-cleared smart cardiology introducer sheath (Early Bird™ Bleed Monitoring System) to detect internal bleeding complications. Additionally, Razavi supervises the development of a number of technologies in collaboration with Rice University and Texas A&M University. He has published more than 70 peer-reviewed journal articles, and his innovations have been featured in Scientific American, Houston Chronicle, InnovationMap and Voice of America. He is an associate professor of medicine at Baylor College of Medicine and he is a member of AHA, the Heart Rhythm Society, and the National Academy for the Advancement of Science.

Floyd E. Romesberg | *The Scripps Research Institute*



Floyd E. Romesberg, Ph.D., is Distinguished Fellow at Synthorx, Inc. From 1998 to 2019, Romesberg was a faculty member in the Chemistry Department at Scripps Research, where his group applied organic chemistry, microbiology, nonlinear optical spectroscopy, and genetics, to study different aspects of evolution. Of particular significance is his work to expand the genetic alphabet and code through the development of a third DNA base pair that relies on hydrophobicity as opposed to hydrogen bonding for selective pairing. He is the recipient of the NSF CAREER Award, the Discover Magazine Technology Innovation Award, the ACS Nobel Laureate Signature Award, and RSC 2018 Bioorganic Chemistry Award. He is the founder of Achaogen Inc., RQx, Inc, and Synthorx, Inc. He has published 144 primary reports from his research group and nearly 200 articles and book chapters overall.

Mendel Rosenblum | *Stanford University*



Mendel Rosenblum is a Cheriton Family Professor in the school of engineering in computer science and electrical engineering at Stanford University where his research and teaching have focused on system software and distributed systems since 1992. In 1998, he helped transfer his research to industry by co-founding VMware. Mendel's work has numerous honors include receiving the ACM Software System Award, the ACM/SIGOPS Mark Weiser Award for innovation in operating system research, the IEEE Reynolds B. Johnson Information Storage Award, the IEEE Computer Entrepreneur Award, the ACM Doctoral Dissertation Award, and the inaugural winner of the ACM Charles P. "Chuck" Thacker Breakthrough in Computing Award. He is a member of NAE, the AAA&S, and a fellow of ACM. Mendel has a B.A. from the University of Virginia and M.S. and Ph.D. degrees from the University of California, Berkeley.



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Rob A. Rutenbar is senior vice chancellor for research at the University of Pittsburgh, where he has responsibility for Pitt's research and innovation infrastructure. From 2010 to 2017, he was head of computer science at the University of Illinois at Urbana-Champaign. He received his Ph.D. from the University of Michigan in 1984, and spent the next 25 years at Carnegie Mellon University. He has founded two successful startups based on his academic IP: Neoliner (1998) commercialized the first practical tools for mixed-signal chip design, and was acquired by Cadence in 2004; Voci Technologies (2006) today delivers the world's fastest engines for enterprise voice analytics. He has received numerous awards for his work, including the 2001 Semiconductor Research Corporation Aristotle Award acknowledging the impact of his students on the U.S. semiconductor industry, and the 2007 IEEE-CAS Industrial Pioneer Award. His work has been featured in venues ranging from Slashdot to The Economist.



Daniela Salvemini | *Saint Louis University*

Daniela Salvemini, Ph.D., received her B.Sc. in pharmacology from Kings College, London and her Ph.D. in pharmacology from the University of London. She pursued postdoctoral studies at the William Harvey Research Institute in London and Monsanto in Saint Louis. After 15 years in industry, Salvemini moved to Saint Louis University, where she is a professor and interim chair of the department of pharmacology and physiology and director of the Henry and Amelia Nasrallah Center for Neuroscience. Salvemini's research interest is in understanding the cellular and molecular basis underpinning the transition of acute to chronic pain. Her highly translational approaches led to several seminal discoveries that have resulted in the development of novel therapies that entered clinical trials. Salvemini has been honored with several awards including the 2020 Pharmacia-ASPET Award in Experimental Therapeutics for her basic science research in pain and inflammation. Salvemini is a fellow of the Saint Louis Academy of Science.



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Kamal Sarabandi, Ph.D., is Rufus S. Teesdale Professor of Engineering in the department of electrical and computer engineering at the University of Michigan. He is the recipient of numerous awards including the IEEE Geoscience and Remote Sensing (GRSS) Distinguished Achievement Award, the IEEE GRSS Education Award, Humboldt Research Award for senior scientists from The Alexander von Humboldt Foundation, the IEEE Judith A. Resnik Award, NASA Group Achievement Award for his contributions to NASA SMAP mission, and 30 paper awards together with his students. He holds 19 U.S. patents and one foreign patent that have been licensed to 5 companies. He is a co-founder of four startup companies. He has published 288 refereed journal articles, more than 700 papers in international conference proceedings, and 7 book chapters. He served as a member of the editorial board of the IEEE Proceedings, associate editor for the IEEE Transactions on Antennas and Propagation, IEEE Transactions on Geoscience and Remote Sensing, and the IEEE Sensors Journal. He also served as the president of the IEEE GRSS and as a member of NASA Advisory Council. Sarabandi is a fellow of IEEE and AAAS.



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Holger Schmidt, Ph.D., is a professor of electrical and computer engineering and the Narinder Kapany Chair of Optoelectronics at the University of California, Santa Cruz. Schmidt is an international leader in the field of photonics, who has made important contributions to integrated photonics, optofluidics, quantum optics, and nanomagnetism. He has co-invented hollow-core optofluidic waveguides with numerous applications such as biomedical diagnostics. He is the recipient of an NSF Career Award, a Keck Futures Nanotechnology Award, and the Engineering Achievement Award of the IEEE Photonics Society. He holds over two dozen U.S. patents and three foreign patents that have been licensed to two companies. He is the founder of two startup companies, has over 450 publications, and was associate editor for the IEEE Journal of Quantum Electronics. He is currently serving on the editorial board of Scientific Reports. Schmidt is a fellow of the IEEE and OSA, a member of NASA Advisory Council. Sarabandi is a fellow of IEEE and AAAS.



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Roger R. Schmidt is a Syracuse University Mechanical and Aerospace Engineering Traugott Distinguished Professor. He has over 37 years' experience in engineering and engineering management in the thermal design of IBM's large scale computers. He was IBM's Chief Engineer on Data Center Energy Efficiency and has led development teams in cooling mainframes, client/servers, parallel processors and test equipment utilizing such cooling mediums as air, water, and refrigerants. He has published more than 125 technical papers and has over 140 patents/patents pending in the area of electronic cooling. He is co-founder and past chair of the ASHRAE TC9.9 committee on Mission Critical Facilities and Data Centers. He is a member of ASME's Heat Transfer Division and a member of the K-16 Electronic Cooling Committee. He has been an associate editor of the Journal of Electronic Packaging, ASHRAE Research Journal, and the ASME Journal of Heat Transfer. He has given seminars on electronic cooling and power and cooling trends of IT equipment to a number of organizations around the world. He is a member of NAE, fellow emeritus of IBM, and a fellow of ASME.



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Christopher A. Schuh, Ph.D., is the Danae and Vasilis Salapatas Professor of Metallurgy at the Massachusetts Institute of Technology. Schuh is known for his approach to metal alloy design in which alloying elements help promote the development and stability of nanostructure, and open the doors to new manufacturing approaches. He holds 38 U.S. patents and dozens of foreign patents that have been licensed to multiple companies. He is the founder of multiple technology companies including Xtalic Corporation and Desktop Metal. He has published more than 275 peer-reviewed articles and serves as coordinating editor for the Acta Materialia family of 4 journals. Schuh is a fellow of ASM International and The Metals Minerals and Materials Society, and an elected member of NAE.



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Steven P. Schwendeman, Ph.D., is the Ara G. Paul Professor and Chair of Pharmaceutical Sciences, and professor of biomedical engineering at the University of Michigan. Schwendeman is a world leader in the development of technologies and basic understanding of controlled release of drugs from biodegradable polymers. He invented aqueous encapsulation of biologics in poly(lactic-co-glycolic acid) microspheres. He is the recipient of Controlled Release Society (CRS) young investigator award and a CRS best paper award, and a past member of the Biomaterials and Biointerfaces NIH study section. He holds six U.S. and two foreign patents that have been optioned or licensed to two companies. He is co-founder of Ektapharm and Nojis Tech. He has published 115 original papers and book chapters and serves as associate editor for the Journal of Controlled Release and Drug Delivery and Translational Research. Schwendeman is a fellow of the CRS and the American Association of Pharmaceutical Scientists.



Thomas A. Sellers | *Moffitt Cancer Center*

Thomas A. Sellers, Ph.D., MPH is the former executive vice president and director of the Moffitt Cancer Center. His research programs have contributed significantly to the understanding of genetic susceptibility to ovarian, lung, breast, and prostate cancer, risk reduction among BRCA mutation carriers, and body fat distribution and cancer risk that have resulted in 4 patents. Sellers has published over 380 peer-reviewed articles and book chapters, and a textbook on epidemiology that is in press for its 6th edition. He has been a principal investigator, co-principal investigator or director on over 50 research grants, with a total financial commitment in excess of 100 million dollars. He is an elected member of the Sigma Xi honor society, the Delta Omega Honorary Society, and has served on the NCI Board of Scientific Counselors, the AACR Board of Directors, and External Advisory Boards for over 25 cancer centers.



Tim J. Senden | *Australian National University*

Tim J. Senden, Ph.D, is the director of the Research School of Physics at the Australian National University. As a physical chemist, Senden has contributed to the development of novel diagnostic nanoparticles and the application of microtomography to oil reservoir evaluation. He currently holds six U.S. patents and 24 foreign patents, all of which have been licensed. He was one of the founders of Lithicon, the largest spin-out company from the ANU to date. He has published over 100 articles, with over 10,000 citations. Senden is active in his support of new inventors and university spin-outs.



Mubarak A. Shah | *Australian National University*

Surendra P. Shah is a Presidential Distinguished Professor at the University of Texas at Arlington and Walter P. Murphy Professor (emeritus) of Civil Engineering at Northwestern University. He has published more than 500 articles and coauthored and coedited more than 20 books. He has received prestigious awards from American Concrete Institute, American Society of Civil Engineers, ASTM and RILEM. He is co-editor in chief of *Frontiers of Structural and Civil Engineering*. He is co-chairing a continuing conference series on nanotechnology applied to construction materials. He is a distinguished professor at Indian Institute of Technology, Madras, Jinan University, Tongji University, Hong Kong Poly University and a member of the Institute of Advanced Studies at the Hong Kong University of Science and Technology. He is a member of NAE and foreign member of Chinese Academy of Engineering, Russian Academy of Engineering, Indian Academy of Engineering, and Athens Academy.



Neil G. Siegel | *Australian National University*

Neil G. Siegel, Ph.D., is the IBM Professor of Engineering Management at the University of Southern California. Before joining the University of Southern California faculty in 2016, he was vice-president of the Northrop Grumman Corporation. Siegel is the inventor of many of the techniques that enable wireless internet communications, which were mostly invented in the context of his development of digitized command-and-control systems for the U.S. military. He holds 20 U.S. and 25 foreign patents, which have influenced the implementation of almost every smartphone and tablet on the planet. He is the recipient of the IEEE Simon Ramo Medal for systems engineering and systems science, the U.S. Army Order of Saint Barbara, and is a fellow of IEEE and member of NAE, among many other awards and honors.



John C. Spence | *Arizona State University*

John C. Spence is Regent's Professor of Physics at Arizona State University. He is currently 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 is 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 holds 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 has published over five hundred peer-reviewed scientific publications, four books, and serves as editor of *IUCrJ*. He has served 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, AAAS, and the American Institute of Physics.



Peter J. Stang | *University of Utah*

Peter J. Stang, Ph.D., is a German American chemist and Distinguished Professor of chemistry at the University of Utah. Stang joined the chemistry faculty at the University of Utah in 1969. He became dean of the College of Science in 1997, during which he established the John E. and Marva M. Warnock Endowed Chair in Mathematics, and oversaw construction and dedication of the new David M. Grant NMR Center in 2006. He stepped down as dean in 2007. He is a member of NASs. He was editor-in-chief of the *Journal of Organic Chemistry* from 2000 to 2001. He has been the editor of the *Journal of ACS* since 2002. In 2013, he was awarded the ACS Priestley Medal. Stang is the author or co-author of 600 scientific publications, including seven monographs and two dozen reviews.



Sir Fraser Stoddart | *Northwestern University*

Sir Fraser Stoddart, Ph.D., D.Sc., is a Board of Trustees Professor at Northwestern University. Stoddart has pioneered the development of the use of molecular recognition and self-assembly processes in template-directed protocols for the synthesis of mechanically interlocked molecules, such as catenanes and rotaxanes. During the past five decades, he has mentored 500 undergraduate and graduate students and postdoctoral fellows from 50 different countries. Stoddart has over 1150 publications and has launched two startup companies. He was honored by Her Majesty Queen Elizabeth II as a Knight-Bachelor in her 2007 New Year's Honors List for his services to chemistry and molecular nanotechnology. He is the recipient of the Nobel Prize in Chemistry, the Albert Einstein World Award of Science, the King Faisal International Prize in Science, and the Royal Medal. Stoddart is a fellow of the Royal Society of London, the AAA&S, and NAS.



Howard A. Stone | *Princeton University*

Howard A. Stone, Ph.D., is Donald R. Dixon '69 and Elizabeth W. Dixon Professor in Mechanical and Aerospace Engineering and chair of the department of mechanical and aerospace engineering at Princeton University. Stone is one of the founders of droplet microfluidics, a technology important to many modern companies, and is an international leader in fluid mechanics and soft condensed matter physics. He is the recipient of the 2016 Fluid Dynamics Prize (APS), 2008 G.K. Batchelor Prize in Fluid Mechanics (IUTAM, first recipient, given every four years), and has given named lectures at many universities. He holds 5 U.S. patents and several foreign patents that have been licensed to 8 companies. He has published more than 500 articles in refereed journals, 4 book chapters, co-edited 1 book, and serves as associate editor for *Physical Review Fluids* (APS). Stone is member of NAE, NAS, and AAAS.



James C. Sturm | *Princeton University*

James C. Sturm, Ph.D., is the Stephen Forrest Professor of Electrical Engineering at Princeton University, where he has been a faculty member since 1986. His research program currently focuses on biomedical applications of microstructures, especially related to cancer, and large-area/flexible electronics for interfacing with people and their environment. He has also been a leader in the field of silicon-based heterojunctions for microelectronics, photovoltaics and quantum computing. His inventions in all of these areas are actively used by industry. Sturm has led the Princeton Photonics and Optoelectronic Materials Center (POEM) and then was the founding director of the Princeton Institute for the Science and Technology of Materials (PRISM). He has won over a dozen awards for teaching. He was co-founder of Aegis Lightwave and Spacetouch and was previously employed at Stanford University, Siemens, and Intel (microprocessor design).



Kenneth Swartzel | *North Carolina State University*

Kenneth Swartzel, Ph.D., is the William Neal Reynolds Distinguished Professor Emeritus at North Carolina State University. His lab made discoveries and implemented developments to the field of food engineering, increasing the quality of life for millions. Swartzel discovered that the effect of any thermal treatment on a biochemical material could be defined kinetically with a unique time and temperature parameter. This method provided a tool to characterize the entire range of thermal effects during a process. These developments improved numerous thermal food processing areas, including the liquid egg, a variety of fruit and vegetable and many other bioproduct industries. Eight new North Carolina (NC) companies were founded, leading to four Institute of Food Technologist (IFT) Industrial Achievement Awards. He has been awarded the Nicholas Appert Award, the highest achievement award presented by IFT. Swartzel has been named fellow of both the IFT and the ASAE-The Society for Engineering in Agricultural, Food, and Biological Systems and is a member of NAE.



Francis Szoka | *University of California, San Francisco*

Francis Szoka, Ph.D., is a professor of bioengineering & therapeutic science at the University of California School of Pharmacy in San Francisco where he mentored over 70 graduate students and Fellows. Frank graduated from Glen Burnie High School in 1961 and subsequently received his B.A. from Johns Hopkins University (1965), M.S. in Microbiology from the University of Maryland (1971) and Ph.D. in Biochemistry from the SUNY Buffalo (1976). He was a captain in the US Army from 1969 to 1971. The focus of his research group is to exploit chemical, biophysical and physiological principles to devise drug and nucleic acid delivery systems to treat cancer. With group members Frank has published over 220 manuscripts and received 35 U.S. patents. Frank is a founder of Sequus Pharmaceuticals, Inc. now owned by Johnson & Johnson, GeneMedicine, inc. and ZoneOne Pharma, Inc. Sequus introduced the sterically stabilized liposome (Doxil™) for anti-cancer drug delivery.



Lakshman S. Tamil | *University of Texas at Dallas*

Lakshman S. Tamil is professor in electrical and computer engineering at the University of Texas at Dallas. Tamil is a serial inventor and has contributed to inventions including focused beam antenna now finding application in 5G, an all-optical container switch, an immersive telemedicine platform with cognitive support, an automated cardiac arrhythmia monitor, an automated mammogram analyzer and an automated sleep apnea and sleep quality monitor. He holds 23 U.S. patents that have been licensed to four companies. He is the founder of Yotta Networks, Inc., Htel, LLC and Hygeiatel, Inc. He has published 150 articles and eight book chapters. Tamil is a fellow of OSA and Electromagnetics Academy, an elected member of the International Radio Science Union, Commission B and D, a senior member of IEEE, and a member of AAAS.



Gabor C. Temes | *Oregon State University*

Gabor C. Temes, Ph.D., held academic positions at the Technical University of Budapest, Stanford University, Stanford, CA, and the University of California, Los Angeles. He worked in industry at Northern Electric R&D Laboratories, Ottawa, Canada, as well as at Ampex Corp. He is a Distinguished Professor Emeritus of UCLA, and a Professor at Oregon State University. He received the IEEE Leon K. Kirchmayer Graduate Teaching Award in 1998, and the 2006 IEEE Gustav Robert Kirchhoff Award. He is a Life Fellow of IEEE. He received the 2017 Semiconductor Industry Association - SRC University Researcher Award. He was elected as a member of NAE in 2015.



H. Thomas Temple | *Nova Southeastern University*

H. Thomas Temple, M.D., is senior vice president of translational research and economic development, executive associate dean of research, and professor of orthopedics at Nova Southeastern University. Temple is also professor emeritus for University of Miami and a practicing orthopedic surgeon. His current research efforts focus on creating and expanding tissue and cell libraries that can be used to develop targeted strategies to treat patients with malignant tumors of the skeletal system. He holds seven issued U.S. patents and has authored over 150 scientific articles and book chapters. He is an assistant editor for *Foot and Ankle International*, and a reviewer for *Clinical Orthopaedics and Related Research* and the *Journal of Bone and Joint Surgery*. Temple is a member of the American Academy of Orthopaedic Surgeons and American Orthopaedic Association.



Gregory J. Thompson | *West Virginia University*

Gregory J. Thompson, Ph.D., is an associate professor in mechanical engineering at West Virginia University. Thompson has led research in the areas of heavy-duty diesel engine emissions, mechanical design, and thermal system design. He has integrated patents into his senior level machine design course to broaden the students' learning and understanding of mechanisms. He has assisted students starting their intellectual property development through mentoring and assisting in the patenting process. He is the recipient of the CNET Automotive Disruptors of the Year Award, SAE Forest R. McFarland Service Award, SAE Ralph R. Teetor Educational Award, along with six West Virginia University awards. He holds nine U.S. patents and seven foreign patents that have been licensed to three companies. He has published 40 journal articles, 77 conference proceedings and one book and serves as reviewer for peer-reviewed journals conference proceedings. Thompson is a member of ASEE, ASME, SAE, and Sigma Xi.



Natalia A. Trayanova | *Johns Hopkins University*

Natalia A. Trayanova, Ph.D., is the Murray B. Sachs Professor of biomedical engineering and a professor of medicine at Johns Hopkins University. She directs the Alliance for Cardiovascular Diagnostic and Treatment Innovation. Trayanova uses computational approaches in cardiac arrhythmia research and in the diagnosis and treatment of patients with heart rhythm disorders. Through her first-of-its-kind personalized virtual hearts, she has pioneered major advances in personalized medicine for patients with cardiovascular disease. Trayanova has published over 380 scientific papers and is an inventor on 41 patents and patent applications. For her groundbreaking work in computational cardiology, in 2013, she received the NIH Pioneer Award, the most prestigious recognition of innovation in NIH research. In 2019, she was recognized with the Distinguished Scientist Award from the Heart Rhythm Society, and was inducted in the Women of Technology International Hall of Fame, an honor conferred only on 5 women each year from around the world.



Hai H. Trieu | *University of Memphis*

Hai H. Trieu, Ph.D., is director of technology commercialization and an adjunct faculty member in the departments of biomedical engineering, mechanical engineering, physics and materials science, and chemistry at the University of Memphis. Trieu helped double the number of issued patents during his first three years of tenure in technology transfer at the university. Trieu himself currently holds 130 U.S. patents and 79 foreign patents in various areas including medical devices, biomaterials, spinal surgery, and obstetrics. His inventions in surgical devices aimed to reduce pain, restore motion, correct deformity, and minimize surgical complications. His inventions also helped launch three startups, two of which he co-founded. Trieu is the two-time recipient of the Medtronic Inventorship Award and one of the few individuals named the prestigious title Distinguished Scientist as well as inducted Medtronic Technical Fellow. He has published and presented his research work in the area of biomaterials at the Society for Biomaterials and the Orthopedic Research Society Conferences.



Li-Huei Tsai | *Massachusetts Institute of Technology*

Li-Huei Tsai, Ph.D., is the director of the Picower Institute for Learning and Memory at the Massachusetts Institute of Technology, a Picower Professor of Neuroscience, and an Associate Member of the Broad Institute. Tsai is a fellow of AAAS, a member of NAM, and an academican of the Academia Sinica in Taiwan. Tsai is interested in elucidating the pathogenic mechanisms underlying neurological disorders that impact learning and memory. She is a recipient of the Mika Salpeter Lifetime Achievement Award, and the 2018 Hans Wigzell Research Foundation Science Prize for her research on Alzheimer's disease.



Aykut Üren | *Georgetown University*

Aykut Üren, M.D., is a professor at Georgetown University School of Medicine in Washington DC. Üren is investigating molecular mechanisms of cancer development and metastasis. His research focuses on discovery and development of small molecules to target specific protein-protein interaction in pediatric sarcomas. He discovered first in class inhibitors for key proteins in Ewing sarcoma and osteosarcoma. He holds 14 U.S. patents and that have been licensed to two companies. He has published more than 110 peer-reviewed research papers and book chapters and serves in editorial board for 3 peer-reviewed journals.



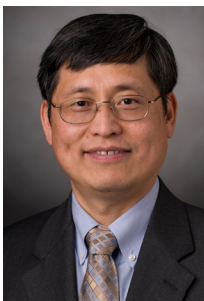
Carl-Wilhelm Vogel | *University of Hawaii Cancer Center*

Carl-Wilhelm Vogel, M.D., Ph.D. is professor and former director of the NCI-designated University of Hawaii Cancer Center, and Clinical Professor of Pathology at the John A. Burns of Medicine, University of Hawaii. He is a board-certified clinical pathologist in the U.S. and Germany. Previous appointments include Scripps Clinic and Research Foundation in La Jolla, Georgetown University, and the University of Hamburg. He is a member of the American Society of Clinical Investigation, and holds fellowships in the College of American Pathologists, the American Society for Clinical Pathology, and the Royal Society of Medicine, London. He is president of the North American Society of Toxinology. His work has been continuously supported by peer-reviewed grants since 1983, mainly from the U.S. NIH. He is the author of well over 100 publications and approximately 30 U.S. and international patents. He was co-founder of two biotech companies (Incode Corporation and iC3 LLC).



Lawrence L. Wald | *Massachusetts General Hospital Research Institute & Harvard Medical School*

Lawrence L. Wald, Ph.D., is a professor of radiology at the Massachusetts General Hospital Research Institute and Harvard Medical School and affiliated faculty at the Harvard-MIT Division of Health Sciences and Technology. He is known for developing diagnostic imaging methods and instrumentation for Magnetic Resonance Imaging and Magnetic Particle Imaging. His work has included new scanner architectures, receiver arrays, acquisition strategies and image reconstruction methods. He is the recipient of the MGH Research Scholar award and was elected President of the International Society of Magnetic Resonance in Medicine (ISMRM). He holds 43 U.S. patents and two foreign patents, the majority of which have been licensed (among seven companies.) He has published 275 journal articles and book chapters and has served on the editorial board for 3 peer-reviewed journals. Wald is a fellow of the International Society of Magnetic Resonance in Medicine (ISMRM) and AIMBE.



Chao-Yang Wang | *The Pennsylvania State University*

Chao-Yang Wang, Ph.D., is William E. Diefenderfer Chair Professor of Mechanical Engineering and Professor of Chemical and Materials Engineering at The Pennsylvania State University. Wang is specialized in battery/fuel cell science and technology, and among his breakthrough inventions, the all climate battery is officially recognized and adopted by 2022 Winter Olympics. He is the recipient of NSF CAREER Award, Penn State Engineering Society Premier Research Award and Thomson Reuters' Highly Cited Researcher in Engineering. He holds 21 U.S. patents and 40 foreign patents that have been licensed to 8 companies. He is the founder of 3 startups and successfully exited one. He has published 220 journal articles and 3 books and served at the editorial board of 4 journals. The impact of his scholarly work is reflected by over 30,000 citations and H-index of 98. Wang is a fellow of ASME.



Ge Wang | *Rensselaer Polytechnic Institute*

Ge Wang, Ph.D., is Clark & Crossan Chair Professor and Director of Biomedical Imaging Center at Rensselaer Polytechnic Institute in New York. Wang is a leading biomedical imaging researcher and inventor, and credited for the 1st spiral/helical cone-beam/multi-slice CT method and over a hundred relevant papers in this area of research, with a major and lasting clinical impact. He is the recipient of Herbert M. Stauffer Award for Outstanding Basic Science Paper (Association of University Radiologists), Giovanni DiChiro Award for Outstanding Scientific Research (Journal of Computer Assisted Tomography), and other awards. He holds 36 U.S. patents, some of which have been licensed to companies. He has published over 480 journal papers and the first book on machine learning for tomographic imaging. He serves as senior editor/associate editor for several major journals in the imaging field. Wang is a fellow of IEEE, SPIE, OSA, AAPM, AIMBE, AAAS, and NAI.



Hongjun Wang | *Stevens Institute of Technology*

Hongjun Wang, Ph.D., is professor and Founding Chair of Biomedical Engineering and affiliated professor of chemistry and chemical biology at the Stevens Institute of Technology, U.S.A. His research mainly focuses on biomimetic materials design, 3D tissue reconstruction, tissue-on-a-chip and nanomedicine. He is the recipient of many awards including Provost's Award for Academic Entrepreneurship & Enterprise Development, New Jersey Innovators Award, Jess N. Davis Award for Excellent Research, etc. He holds three U.S. patents and five pending patents. He is also the founder of a startup company. He has published 90 peer-reviewed articles, one edited book, 11 book chapters, two invited editorial reviews, and over 100 invited talks and seminars. He also serves on the editorial board for four peer-reviewed journals.



Eric D. Wetzel | *U.S. Army Research Laboratory*

Eric D. Wetzel, Ph.D., is the team leader for Emerging Composites and Research Area Leader for Soldier Materials at the U.S. Army Research Laboratory. Wetzel is an innovator in composites, textiles, and shear thickening fluids with an emphasis on body armor materials and technologies for prevention of biomechanical injuries. Wetzel has co-authored over 75 peer-reviewed journal publications and book chapters, and holds 19 patents with 5 additional patents pending. His work on rate activated tethers (RATs), for which he is lead inventor, resulted in receiving a 2018 Federal Lab Consortium, Excellence in Tech Transfer Award, as well as both Initial and Final Awards in 2014 and 2015 from the NFL / Under Armour / GE Head Health Challenge. His RAT technology has been licensed by 5 companies; other STF patents led to the creation of a small business with product licenses including the Reebok PureMove sports bra, released in 2018.



Margaret Wheatley | *Drexel University*

Margaret A. Wheatley, Ph.D., is the John M. Reid Professor of Biomedical Engineering at Drexel University. Wheatley is among the first developers of gas-filled micro and nano bubbles for diagnostic ultrasound, multimodal imaging and drug delivery to cancer. She also investigates polymeric structures for spinal cord repair. Recent applications include delivery of oxygen to hypoxic areas of tumors prior to radiation therapy. At Drexel she has received the Outstanding Research Achievement Award and the Inspired Leadership Award. She holds 30 U.S. patents and five foreign patents, and her patents have been licensed to 3 companies. She has published 100 articles and 3 book chapters. Wheatley is a fellow of AIMBE.



Ryan Wicker | *University of Texas at El Paso*

Ryan Wicker, Ph.D., P.E., is the endowed Mr. and Mrs. MacIntosh Murchison Chair I professor of mechanical engineering at the University of Texas at El Paso (UTEP), and director and founder of the UTEP W.M. Keck Center for 3D Innovation (Keck Center). He is also editor-in-chief and founding editor of *Additive Manufacturing*, an Elsevier journal. He has co-founded two university spin-out companies, holds 16 U.S. patents (including associated foreign patents) with numerous patents pending, published hundreds of peer-reviewed articles, and has employed hundreds of student researchers in UTEP's Keck Center with many of them becoming leaders in the additive manufacturing industry. The Keck Center represents a world-class facility that focuses on the use and development of additive manufacturing technologies for fabricating 3D objects that are plastic, metal, ceramic, of biocompatible materials, composite materials, or that contain electronics. His research, through his outstanding students, is driving a new economy in the El Paso region enabled through additive manufacturing.



Samuel A. Wickline | *University of South Florida*

Samuel A. Wickline, M.D., director of the University of South Florida Health Heart Institute, is the TGH Endowed Chair in Cardiovascular Medicine, professor of cardiovascular sciences, molecular physiology and pharmacology, and biomedical engineering. He is an established investigator of AHA, a fellow of the AHA and the American College of Cardiology, a member of the American Society for Clinical Investigation, and a fellow of the American Institute For Medical and Biological Engineering. He is the recipient of numerous awards for teaching, entrepreneurship, and academics at Washington University. He has been funded continuously for 35+ years by NIH by numerous grants totaling more than \$30 million. Wickline also is a founder of 3 biotech startup companies in nanomedicine and diagnostic imaging. He has authored more than 350 research papers and holds more than 30 issued or filed U.S. and foreign patents.



Robert O. Williams III | *The University of Texas at Austin*

Robert O. Williams III, Ph.D., is the Johnson & Johnson Centennial Chair, Professor and Division Head of Molecular Pharmaceutics and Drug Delivery at The University of Texas at Austin College of Pharmacy. Williams' contributions to the pharmaceutical sciences includes training 52 doctoral students and 20 research scholars. He is co-inventor on over 65 patents issued world-wide and over 140 patent applications, which have been licensed to companies, including TFF Pharmaceuticals (NASDAQ: TFFP) and DisperSol Technologies. Williams has co-founded three companies. He received the William Sheffield Outstanding Alumnus Award from The University of Texas at Austin College of Pharmacy. He is editor-in-chief of *AAPS PharmSciTech* and was editor-in-chief of *Drug Development and Industrial Pharmacy*. He serves on several journal editorial boards. Williams is a fellow of the American Association of Pharmaceutical Scientists and fellow of AIMBE.



Blake S. Wilson | *Duke University*

Blake S. Wilson, Ph.D., D.Sc., D.Eng., is the director of the Duke Hearing Center and is an adjunct or consulting professor in the departments of surgery, biomedical engineering, and electrical and computer engineering at Duke. He also is an adjunct or honorary professor at the University of Warwick and the University of Texas at Dallas. He is a principal developer of the cochlear implant. One of his papers, in the journal *Nature*, is the most cited publication in the field. He or he and his teams or colleagues have been recognized with a high number of awards and honors, most notably the 2015 Russ Prize, “for engineering cochlear implants that allow the deaf to hear,” and the 2013 Lasker-DeBakey Award, “for the development of the modern cochlear implant.” Wilson is a member of the NAE and is a fellow of IEEE and the Acoustical Society of America.



Chee Wei Wong | *University of California, Los Angeles*

Chee Wei Wong, Sc.D., examines ultrafast, precision, and quantum measurements in mesoscopic systems. He serves as the Tannas Professor of Engineering at the University of California and, prior to that, a tenured faculty member at Columbia University. He completed his Sc.D. (2003) and M.Sc. (2001) from MIT and his B.Sc. (highest distinction) and B.A. (highest distinction) from the University of California, Berkeley (1999). His work has appeared in more than 330 journals and conferences, including *Nature*, *Science* and *Phys. Rev. series*. He delivered 110+ plenary and invited talks, published 4 book chapters, and has been awarded 26 patents and 7 provisional patents. He has supervised 38 Ph.D. scientists, about half are now in their own professorships including full professors. He is a recipient of the NIH Early Scientist Trailblazer Award, DARPA Young Faculty Award, NSF CAREER Award, Google Faculty Award and 3M Faculty Award, and elected a fellow of APS, IEEE, OSA, ASME and SPIE.



Stanislaus S. Wong | *Stony Brook University*

Stanislaus S. Wong, Ph.D., is Distinguished Professor of Chemistry at Stony Brook University, and has earned recognition for his work, investigating not only the covalent surface chemistry of carbon nanotubes but also the synthesis, characterization, and applications of metal-containing nanostructures. He and his group are interested in developing viable sustainable strategies for producing novel nanomaterials of relevance not only for batteries, fuel cells, and solar cells, but also for nanomedicine and theranostics. A fellow of AAAS and RSC, Wong has received the ACS Inorganic Nanoscience Award, an Alfred P. Sloan Fellowship, the ACS Buck-Whitney Award, a NSF CAREER Award, in addition to the SUNY Chancellor’s Award for Excellence in Scholarship and Creative Activities. Wong has served as a section editor for *Nanotechnology* and is currently an executive editor for *ACS Applied Materials and Interfaces*.



Karen L. Wooley | *Texas A&M University*

Karen L. Wooley, Ph.D., is a University Distinguished Professor and the W. T. Doherty-Welch Chair in Chemistry at Texas A&M University. Wooley has made significant innovations to the composition, structure and properties of polymer materials designed for several technologies, including bottlebrush polymers for microelectronics devices, nanoparticle drug delivery systems, amphiphilic anti-biofouling coatings, brush polymers for hair care products, and sustainably-sourced degradable polymers to address global plastic pollution. She is the recipient of ACS Award in Polymer Chemistry, RSC Centenary Prize, and a fellow of the AAA&S. She holds 15 U.S. patents and 6 foreign patents that have been licensed to 5 companies. Wooley is co-founder and President of Sugar Plastics, LLC and Chief Technology Officer of Teysha Technologies, LTD. She has published 344 articles and serves on several international advisory boards and as associate editor of *JACS*.



Min Wu | *University of Maryland*

Min Wu, Ph.D., is associate dean of the A. James Clark School of Engineering, and professor of electrical and computer engineering and Distinguished Scholar-Teacher at University of Maryland, College Park. Wu has made profound contributions to the field of multimedia security and forensics, playing a seminal role in influencing global technology development in digital watermarking and copyright protection. She received about 30 awards and recognitions for her innovation, research, and education. She holds 13 U.S. patents and five international patents, with technologies having been licensed to or commercialized by the industries on digital rights management and wireless sensing and incorporated into technology solutions by government research laboratories. Wu has published over 200 articles and three books. She served as editor-in-chief of the IEEE Signal Processing Magazine, leading a redesign and bringing its citation impact to an all-time high. She was elected chair of the IEEE Technical Committee on Information Forensics and Security, and vice president and member of the Board of Governors of the IEEE Signal Processing Society. Wu is a fellow of AAAS and IEEE.



Jenny Jie Yang | *Georgia State University*

Jenny Jie Yang, Ph.D., is Regents' University Professor, director of Advanced Translational Imaging Facility, associate director of the Center for Diagnostics and Therapeutics at Georgia State University, and a founder of InLighta Biosciences. Yang is a pioneer in establishing Calciomics, to enable visualization of the roles of calcium in extracellular/intracellular Ca²⁺ signaling, and cell-cell communication through the development of responsive calcium sensors and computational prediction methods. Her work in protein coordination chemistry, metal selectivity, and molecular toxicity in biological systems, has revealed key determinants for understanding metal binding, selectivity, conformational changes and dynamics. This research led to the development of novel protein-based MRI contrast agents (ProCA) with improved relaxivity (sensitivity), dose efficiency and selectivity, to enable biomarker-targeted MRI molecular imaging for preclinical drug discovery and clinical diagnosis, prognosis, and patient selection. During her career, she has been granted 35 patents, published over 140 papers and trained over 150 student researchers.



Qizhi Cathy Yao | *Baylor College of Medicine*

Qizhi Cathy Yao, M.D., Ph.D., is a professor at Baylor College of Medicine and Michael E. DeBakey VA Medical Center. Yao has made significant contributions to invention and innovation in the field of virus-like particle-based vaccines for HIV and Cancers, Nanoparticle targeted microRNA therapy for pancreatic and ovarian cancers, and small molecules of xanthine oxidase inhibitors for gout and hyperuricemia patients. She is the recipient of many awards including Molecular Surgeon Research Achievement Award, Barry Stephen Smith Memorial Pancreatic Cancer Research Award, Norton Rose Fulbright Faculty Excellence Award, and Academy of Distinguished Educators. She holds 16 U.S. patents and 3 pending foreign patents that have been licensed to four companies. She is the founder of NanoIn startup company. She has published 220 articles and four book chapters and serves as associate editor-in-chief for Patient Preference and Adherence, editorial board member for ImmunoTargets and Therapy and The Open Cancer Immunology Journal.



Samuel Yen-Liang Yin | *National Taiwan University*

Samuel Yen-Liang Yin, Ph.D., is the founder of Tang Prize foundation and a distinguished Lecturer for Outstanding Entrepreneurship, National Taiwan University. Yin revolutionized construction methods and developed comprehensive construction technologies encompassing manufacture, material, design, and management. His construction technologies have been applied widely to fast construction of high-rise buildings and high-tech factories, dramatically improving seismic resistance of reinforced concrete structures. His honors include Honorary Doctorates from SBRAS, Distinguished Lifetime Achievement Award from CAAPS, Henry L. Michel Award for Industry Advancement of Research from ASCE; Honorary Doctorates from NTU, NTHU, NCTU, PolyU and Beijing University. He holds 7 U.S. patents and 574 international patents that have been licensed to 7 companies. He is the founder of Ruentex Construction Group and RT-MART. He has published 150 papers and 9 books. Yin is a foreign academician of RAE and academician of IAE.



Gleb Yushin | *Georgia Institute of Technology*

Gleb Yushin is a professor of materials science and engineering at the Georgia Institute of Technology. He has pioneered transformative developments of advanced materials for next generation rechargeable lithium-ion batteries for portable electronic devices, battery-powered transportation and clean energy applications. He has received numerous awards and recognitions, has given over 120 invited and keynote presentations, has published over 150 peer-reviewed papers and has co-authored 109 U.S. and international patents and patent applications, all licensed to companies. Since 2011 he has been serving as a co-founder, board member and chief technology officer of Sila Nanotechnologies, Inc., advanced battery materials company. Sila currently employs over 170 people and is valued at over \$1B. Since 2016 he has also been serving as an editor-in-chief for Materials Today, the flagship journal of the Materials Today family dedicated to covering the most innovative, cutting edge and influential work of broad interest to the materials science community.



Xin Zhang | *Boston University*

Xin Zhang, Ph.D., is a professor at Boston University. Zhang is an internationally recognized scientist and pioneer in microelectromechanical systems and metamaterials. In 2019, she, along with her team, developed acoustic metamaterials that enable high-performance sound silencing and magnetic metamaterials that boost MRI signal-to-noise ratio. Both breakthroughs have drawn significant worldwide interests from the scientific community and industry and the story has been picked up by 200+ media outlets. Zhang is the inaugural Distinguished Faculty Fellow at Boston University College of Engineering and recipient of Boston University Charles DeLisi Award and Distinguished Lecture, Boston University Innovator of the Year Award, IEEE Sensors Council Technical Achievement Award, and Institution of Engineering and Technology (IET) Innovation Award. She holds ~8 U.S./PCT patents, is the founder of Primetaz, and has published 163 journal papers. Zhang is a fellow of AAAS, AIMBE, APS, ASME, IEEE and OSA, and associate fellow of AIAA.



Chuan-Jian Zhong | *The State University of New York at Binghamton*

Chuan-Jian Zhong, Ph.D., is professor of chemistry and materials science and engineering of State University of New York at Binghamton. Zhong is a leading scientist in interfacial materials, and has developed functional metal and alloy nanomaterials and nanostructured sensors, biosensors and catalysts for sustainable energy production, storage and conversion, clean environment and health care applications. He is recipient of ACS Binghamton Distinguished Research Award, Japan Society for Promotion of Science Invitation Fellow, 3M Faculty Research Award, NSF CAREER Award, SUNY Chancellor's Award for Excellence in Scholarship and Creative Activities, and Innovation-Creation-Discovery award. He holds more than 20 patents with some being licensed to companies. He is co-founder of two start-up companies. He has published about 300 articles and serves as editorial board for Sensors. He was selected to The Most Cited Researchers in Global Ranking by Elsevier. Zhong is Board Committee Member of International Academy of Electrochemical Energy Science.

IN MEMORIAM

Robert J. Genco | *University at Buffalo*

Lauded by the Journal of Dental Research as the “father of oral science,” Robert J. Genco was arguably the world’s leading periodontal researcher and a pioneer in advancing the study of how oral health impacts overall health. A native of Silver Creek, New York, he joined the University at Buffalo as a faculty member in 1968. During his 51 years at the university, he published more than 400 scientific articles, published or edited nearly 30 books and book chapters, served in editorial positions for nearly a dozen scientific journals, held nearly a dozen patents, and received numerous multimillion-dollar grants as the principal investigator on research projects. A member of the NAM, he was also a tireless advocate for interdisciplinary research and entrepreneurship at the University at Buffalo. He died unexpectedly March 6, 2019. He was 80.

2019 FELLOWS SELECTION COMMITTEE

Norman R. Augustine | *Lockheed Martin Corporation*

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 U.S. 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, NAS, the American Academy of Arts & Sciences, the Explorers Club, Tau Beta Pi, Phi Beta Kappa and Sigma Xi.

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

Karen J.L. Burg, Ph.D. is Professor and Harbor Lights Endowed Chair in the College of Veterinary Medicine at the University of Georgia (UGA). 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 AAAS-Lemelson Invention Ambassador, an AAAS Fellow, an American Council on Education Fellow, an AIMBE Fellow, a BMES 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 U.S. 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 Chasser | *USPTO*

Anne H. Chasser is an Author and Intellectual Property Strategist and Expert. From 1999-2004 Anne served as the Commissioner for Trademarks at the USPTO. Appointed by the President Clinton Administration and confirmed by the U.S. Senate. She served in both the Clinton and Bush administrations, where she oversaw the trademark operations at the U.S.PTO. During her term at the U.S.PTO, 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



Stephanie Couch | *Lemelson-MIT Program*

Stephanie Couch, Ph.D., is executive director of the Lemelson-MIT Program, a nonprofit with a mission to inspire young people to pursue creative lives and careers through invention. She has more than a decade of experience in science, technology, engineering and math (STEM) education policy, research, development and strategic fundraising. She leads the program's research efforts, partnership development, and guides the Lemelson-MIT Program's national awards and grants initiatives. Couch previously served as the interim Associate Vice President for Research, Bayer Executive Director at the Institute for STEM Education, and Director of the Gateways East Bay STEM Network at California State University at East Bay. Couch also helped design and launch the statewide California STEM Learning Network (CSLNet). She has won numerous awards for her leadership role in advancing STEM education in California. She was selected as one of San Francisco Business Times' Most Influential Women in Bay Area Business in 2016 and inducted into Alameda County Women's Hall of Fame in the education category. In 2015, she received the Biotechnology Educator of the Year Award from California Life Sciences Association.

Richard Chylla | *Michigan State University*

Dr. Chylla is the Executive Director of MSU Technologies, the technology transfer office at Michigan State University, the nation's pioneer land grant university, leading an office of 20 professionals who manage the university's diverse intellectual property portfolio. He has been in university technology transfer since 2008. Prior to joining MSU, Chylla served as the Director of Technology Transfer for the College of Engineering at the University of Michigan. Dr. Chylla spent the first two decades of his career in the specialty chemicals industry working in a variety of technology management, engineering, and product development roles for BASF and Johnson Polymer, including assignments in Europe as the European Technical Director, and Asia as the Global Product Development Manager. He won his company's highest inventor award three times, developing polymer technology that achieved more than \$1 billion in sales over the life of



Elizabeth Lea Dougherty | *United States Patent and Trademark Office*

Elizabeth Dougherty is Atlantic Outreach Liaison in the Office the Undersecretary and Director at the USPTO. In this capacity, she develops, implements, and supervises programs that support the independent inventor community, small businesses, entrepreneurs, and the intellectual property interests of colleges and universities. 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. She oversees a portfolio of ongoing and future initiatives designed to assist independent inventors, entrepreneurs, and underserved communities. She is currently on a special assignment to the USPTO's Office of the Under Secretary and Director where she serves as a Senior Advisor. Directly prior to this special assignment, Dougherty was detailed to the USPTO's Office of Government Affairs where she was and continues to assist in coordinating outreach to the Congressional Caucuses of the 115th Congress. Prior to her current assignment at the USPTO, she served in various executive service roles, most recently as Acting Deputy Director in the Office of Patent Legal Administration. In this capacity, she was responsible for the oversight and direction of a team of senior legal advisors and staff assisting the Patent Examining Corps in matters of legal policy. Having begun her career at the USPTO as a patent examiner, Dougherty examined patent applications filed in the area of Class 73, Electric Devices used for Measuring or Testing. Dougherty sits on the NAI Board of Directors.



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

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



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Robert S. Langer | *Massachusetts Institute of Technology*

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



Cato T. Laurencin | *University of Connecticut*

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

Sheila Martin | *Association of Public and Land Grant Universities*

Sheila Martin is Vice President for Economic Development and Community Engagement at the Association of Public and Land Grant Universities. She engages with senior university leaders and policy stakeholders on issues relating to talent and workforce development, innovation and entrepreneurship, and social, cultural and community engagement including directing APLU's Commission on Economic and Community Engagement. Prior to arriving at APLU, Dr. Martin served as Director of the Institute of Portland Metropolitan Studies and the Population Research Center at Portland State University. She also served as Washington State Governor Gary Locke's economic development advisor, and worked as a Senior Economist at the Research Triangle Institute. While at RTI, Sheila built a research program in technology economics and policy and researched the value of innovation and the impact of technology in industry. Sheila earned a B. A. in Economics and Political Science from Southern Illinois University, M.A. in International Studies from the Patterson School of Diplomacy and International Commerce at the University of Kentucky and a Ph.D. in Economics from Iowa State University.



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

Arthur 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 is co-sponsor of the International Eco-City Initiative. He has published and lectured widely on the history of science, invention, technology and modern technological culture. His recent books include "Invented Edens: Techno-Cities of the 20th Century" (MIT, 2008), Places of Invention (Smithsonian, 2015), and World's Fairs on the Eve of War (Pittsburgh, 2015). He has published many articles and reviews. He is on the board of the NIHF and FIHF.



Rini Paiva | *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 NIHF and 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 NIHF since 1995, Paiva is an authority on the topic of U.S. invention.



Jessica A. Sebeok | *Association of American Universities*

Jessica A. Sebeok J.D., has served at Association of American Universities (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 Councils 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. She received her J.D. from Yale Law School and her master's degree from the University of Oxford, where she was a Marshall Scholar. She earned her B.A. in History from the University of Chicago.



Phillip Singerman | *National Institute of Standards and Technology*

Phillip Singerman, Ph.D., is Associate Director for Innovation and Industry Services at the National Institute of Standards and Technology (NIST). In this capacity he is 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 35 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 | *Association of Public and Land-grant Universities*

James K. 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.

Denise Zannino | *National Science Foundation*

Denise Zannino, Ph.D. is a Science Policy and Communications Analyst at NSF 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 BS 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

AAA&S.....	American Academy of Arts and Sciences
AAAS.....	American Association for the Advancement of Science
ACerS	American Ceramic Society
ACS	American Chemical Society
AHA	American Heart Association
AIChE	American Institute of Chemical Engineers
AIMBE	American Institute for Medical and Biological Engineering
APS	American Physical Society
ASME	American Society of Mechanical Engineers
BMES	Biomedical Engineering Society
DOE	Department of Energy
MRS	Materials Research Society
NAE	National Academy of Engineering
NAM	National Academy of Medicine
NAS	National Academy of Science
NIH	National Institutes of Health
NIST	National Institute of Standards and Technology
NSF	National Science Foundation
RSC	Royal Society of Chemistry
SBIR	Small Business Innovation Research
USPTO	United States Patent and Trademark Office



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