JANUARY 14-16, 2019 Horseshoe Bay Resort Horseshoe Bay, Texas

TAMEST * 2019 Annual Conference TAMEST * 2019 ANNUAL CONFERENCE & BRAIN HEALTH

INNOVATION · OPIOID CRISIS



AGING • TECHNOLOGY INNOVATION • OPTOID CRISIS • MAPPING THE BRAIN • HEALTHY AGING ING•MENTALHEALTH•HEALTHYAGING•TECHNOLOGYINNOVATION•OPIOIDCRISIS•MAPPINGTHEBRAIN•HEALT AGING•MENTAL HEALTH•TECHNOLOGYINNOVATION•OPIOID CRISIS•MAPPING THE BRAIN•HEALTHY AGING MENTAL HEALTH•TECHNOLOGYINNOVATION•OPIOID CRISIS•MAPPING THE BRAIN•HEALTHY AGING•MENT

The Oskar Fischer Project UTSA The University of Texas at San Antonio

Engaging the world's brightest minds to find Alzheimer's missing piece.

The University of Texas at San Antonio (UTSA) College of Sciences invites the world's brightest minds to engage in a comprehensive literature review with the goal of synthesizing that information into one explanation for the cause of Alzheimer's disease.

A world leader in brain health research, UTSA will incubate the two-year challenge and work closely with an interdisciplinary committee of scientists from Texas to award:

Oskar Fischer Prizes

1 Grand Prize: \$2 Million

2 Second Place Prizes: \$500,000 each

4 Third Place Prizes: \$250,000 each

The Oskar Fischer Project hopes to unravel the mysteries of neurodegeneration by examining multiple pieces of existing research and completing the puzzle of Alzheimer's disease.

The call for proposals will open in February 2019 and will continue through the two-year term of the project.

For more information, please visit: oskarfischerproject.com

TAMEST * 2019 Annual Conference NEUROSCIENCE & BRAIN HEALTH

CONTENTS

Speakers and Sessions	5
2019 Edith and Peter O'Donnell Awards	12
Sponsors	14
New Members	16
Protégés	24
In Remembrance	27
TAMEST Leadership	28
Endowments	30
Venue Map and Wi-Fi	32
Save the Date: 2020 TAMEST Conference	34

ABOUT TAMEST

With more than 300 members, TAMEST is composed of the Texas-based members of the three National Academies (National Academy of Medicine, National Academy of Engineering and National Academy of Sciences) and the state's 10 Nobel Laureates.

Our Vision: To make Texas a premier destination for innovation and world-class research in medicine, engineering, science and technology. We will improve the lives of our citizens and grow the economy.

Our Mission: We bring together the state's brightest minds in medicine, engineering, science and technology to foster collaboration, and to advance research, innovation and business in Texas.



Conference Program Chair Joseph S. Takahashi, Ph.D. (NAM, NAS)

Each year, TAMEST gathers Texas-based members of the National Academies and others in the greater research community to explore in-depth a research area where Texas is advancing the field.

The **TAMEST 2019 Annual Conference: Neuroscience and Brain Health** brings together some of the top minds in Texas and the nation to explore the groundbreaking research that could lead to advances in neuroscience and better brain health. Over the next few days, we'll explore topics such as neurodegeneration, addiction and the opioid crisis, neurological disease prevention, technological advances in mapping the brain, and neuroscience research priorities and challenges that lie ahead.

2019 ANNUAL CONFERENCE PROGRAM COMMITTEE



PROGRAM CHAIR:

Joseph S. Takahashi, Ph.D. (NAM, NAS)

Professor and Chair, Department of Neuroscience; Investigator, Howard Hughes Medical Institute UT Southwestern Medical Center



PROGRAM COMMITTEE:

Daniel Johnston, Ph.D.

Professor, Department of Neuroscience; Karl Folkers Chair in Interdisciplinary Biomedical Research The University of Texas at Austin

Michael D. Rugg, Ph.D.

Professor and Director, Center for Vital Longevity; Distinguished Chair in Behavioral and Brain Sciences The University of Texas at Dallas

Cheryl Lyn Walker, Ph.D. (NAM)

Director, Center for Precision Environmental Health; Professor, Departments of Molecular and Cellular Biology and Medicine Baylor College of Medicine PROGRAM SUBJECT TO CHANGE

Monday, January 14, 2019

Opening Reception | 6:00-8:00 p.m.

TAMEST welcomes new members. Remembrance and celebration of Mary Beth Maddox.

Tuesday, January 15, 2019

Breakfast | 7:30-8:30 a.m.

Opening Remarks | 8:30-8:45 a.m.

TAMEST President Gordon England and Conference Program Chair Joseph Takahashi, Ph.D., welcome attendees to the conference.

Featured Speaker: National Academy of Medicine: Shaping the Future of Health, Science and Medicine | 8:45-9:15 a.m.



Victor J. Dzau, M.D. (NAM)

President, National Academy of Medicine

Since its founding, the National Academy of Medicine (NAM) has played the role of independent, trusted and evidence-based advisor to the nation and globally on issues related to health, science and medicine. The NAM has been described as "the most esteemed and authoritative adviser on issues of health and medicine, and its reports can transform medical thinking around the world."

Our recent five-year strategic plan sets forth goals to identify and address critical issues, diversify and activate our membership and build leadership capacity across disciplines. The time is right for this new strategic plan to map both the *foundational* and the *transformational* activities needed to position the organization for maximum impact in the future.

SESSION: The BRAIN Initiative | 9:15–10:45 a.m.

The National Institutes of Health Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative supports research to better map and understand the brain. In this session, researchers will present their work for the BRAIN Initiative creating an atlas of the brain, constructing brain recording devices and developing new microscopes to better image brain activity.



MODERATOR:

Joseph S. Takahashi, Ph.D. (NAM, NAS)

Professor and Chair, Department of Neuroscience UT Southwestern Medical Center



SPEAKERS:

Ed Lein, Ph.D. Investigator, Allen Institute for Brain Science

Loren M. Frank, Ph.D.

Professor, Howard Hughes Medical Institute/University of California, San Francisco



Mark Schnitzer, Ph.D.

HHMI Investigator, Howard Hughes Medical Institute/Stanford University

Andreas Tolias, Ph.D.

Professor, Department of Neuroscience, Baylor College of Medicine

Break | 10:45-11:00 a.m.

SESSION: Brain Development and Evolution | 11:00 a.m.-12:10 p.m.

How does the brain develop and evolve over time? This session will explore adult neurogenesis, genetic differences in the human brain compared to other species and the development of brain networks and circuitry.



MODERATOR:

Farida Sohrabji, Ph.D.

Joseph Shelton Professor of Neuroscience and Associate Department Chair of Neuroscience and Experimental Therapeutics, Texas A&M University



SPEAKERS:

Jenny Hsieh, Ph.D.

Professor and Seemes Foundation Chair in Cell Biology and Director of the Brain Health Consortium, The University of Texas at San Antonio



Genevieve Konopka, Ph.D.

Associate Professor, UT Southwestern Medical Center



Roy V. Sillitoe, Ph.D.

Associate Professor, Baylor College of Medicine

Lunch | 12:10-1:15p.m.

Featured Speaker: One Brain, Many Genomes: Somatic Mutation in Human Brain from Birth to Old Age



Christopher A. Walsh, M.D., Ph.D. (NAM, NAS)

Bullard Professor of Pediatrics and Neurology, Harvard Medical School

Somatic mutations—that is, mutations present in some but not all cells of the body—are known to drive cancer, but have only more recently been implicated in developmental disorders of the brain such as focal epilepsy and autism spectrum disorders. Whole genome sequencing of single neurons from postmortem human brain reveals a universe of somatic mutations, which occur with each cell division that generates the brain, but also

surprisingly continue to accumulate even in neurons that do not undergo cell division. We are only starting to comprehend how these mutations contribute not only to developmental disorders, but also likely to age-related conditions of the brain.

Break | 1:15-1:30 p.m.

Featured Speaker: Tackling the Opioid Epidemic at the Federal and State Levels | 1:30-2:00 p.m.



The Honorable Admiral Brett P. Giroir, M.D.

Assistant Secretary for Health, U.S. Department of Health and Human Services

The far-reaching devastation caused by the opioid epidemic has necessitated the design and rapid implementation of a strategic plan that incorporates the latest research findings and evidence-based practices. Partnerships and collaborations across public, private, non-profit and academic health systems are critical in defeating the opioid scourge. The Office of Assistant Secretary for Health (OASH) plays a key role in coordinating numerous federal

cross-cutting initiatives related to opioids and pain and has prioritized a five-pronged public health strategy to address this public health emergency. In September 2018, we released a strategic framework to build upon the five-point strategy to combat the opioid crisis using robust, scientific evidence as its foundation to set forth specific, concrete actions. This presentation will review those concrete actions and highlight the role the research community can play to end the worst public health crisis of our time.

PANEL: The Science of Addiction and the Opioid Crisis | 2:00–2:45 p.m.

Drug overdose deaths are on the rise, with over 70,000 deaths nationally in 2017. While overdose deaths per capita in Texas are relatively low compared to other states, thousands are dying and policymakers are exploring a proactive approach to the substance abuse crisis. This panel will explore new approaches in pain management, addiction treatment and community policies and partnerships to combat the opioid crisis.



MODERATOR:

Nancy W. Dickey, M.D. (NAM) President Emeritus, Texas A&M University Health Science Center Executive Director, Texas A&M University Rural and Community Health Institute



PANELISTS:

Carrie L. Byington, M.D. (NAM)

Vice Chancellor for Health Services, The Texas A&M University System

Theodore John Price, Ph.D.

Professor, The University of Texas at Dallas



Umair A. Shah, M.D., M.P.H Executive Director, Harris County Public Health



Break | 2:45-3:00 p.m.

SESSION: Neurodegeneration and Alzheimer's (1st Session) | 3:00-4:10 p.m.

Alzheimer's disease is a growing social and economic burden both for Texas and the country as a whole. By 2050, the number of Americans living with Alzheimer's is projected to triple. In this session, experts on Alzheimer's and other neurodegenerative diseases will present research on detecting these diseases and the obstacles to understanding them that remain.



MODERATOR: Michael D. Rugg, Ph.D.

Professor and Director, Center for Vital Longevity, The University of Texas at Dallas

SPEAKERS:

Clifford R. Jack Jr., M.D. (NAM) Professor of Radiology, Mayo Clinic



Sudha Seshadri, M.D.

Professor of Neurology and Director of the Glenn Biggs Institute for Alzheimer's & Neurodegenerative Diseases, UT Health San Antonio

Marc Diamond, M.D.

Director, Center for Alzheimer's and Neurodegenerative Diseases, UT Southwestern Medical Center

SPEAKERS AND SESSIONS

SESSION: 2019 Edith and Peter O'Donnell Award Presentations | 4:10-5:40 p.m.

SPEAKERS:



Medicine: Ralph DeBerardinis, M.D., Ph.D.

Chief, Division of Pediatric Genetics and Metabolism at UT Southwestern Medical Center

Director, Genetic and Metabolic Disease Program, Children's Medical Center Research Institute at UT Southwestern



Engineering: Hal S. Alper, Ph.D.

Associate Chair and Paul D. & Betty Robertson Meek Centennial Professor in Chemical Engineering, The University of Texas at Austin

Break | 5:40-7:00 p.m.

2019 Edith and Peter O'Donnell Awards Ceremony and Dinner | 7:00–9:00 p.m.



Science: Julie Pfeiffer, Ph.D.

Kern and Marnie Wildenthal President's Research Council Professorship in Medical Science, UT Southwestern Medical Center



Technology Innovation: Terrence F. Alger II, Ph.D.

Director, Powertrain Engineering Division, Southwest Research Institute



TEXAS A&M

Texas A&M opened its doors in 1876 as the state's first public institution of higher learning. Today, we stand as a research-intensive flagship university dedicated to sending Aggie leaders out into the world prepared to take on the challenges of tomorrow.

www.tamu.edu



Wednesday, January 16, 2019

Breakfast Panel: Mental Health Policy in Texas | 8:00-9:00 a.m.

Sponsored by the Meadows Mental Health Policy Institute

Rising rates of suicide are driving down life expectancy in the U.S. Children face trauma from school violence and natural disasters. Public health data shows a need for medical leaders and academic institutions to come together to help address mental health policy and identify research and training needs. This panel will discuss policies, research and training the state will need to respond.



MODERATOR:

Tom Luce, J.D.

CEO, Texas 2036; Consultant and Founding President, Meadows Mental Health Policy Institute

PANELISTS:



President and Chief Executive Officer, Meadows Mental Health Policy Institute

David Lakey, M.D.

Vice Chancellor for Health Affairs and Chief Medical Officer, The University of Texas System

Carol A. Tamminga, M.D. (NAM)

Professor and Chairman, Department of Psychiatry, UT Southwestern Medical Center

Featured Speaker: An Opportunity to Rethink the Pace of Innovation in the Clinical Neurosciences | 9:00-9:25 a.m.



S. Claiborne "Clay" Johnston, M.D., Ph.D.

Dean and Vice President, The University of Texas at Austin Dell Medical School

Care in the clinical neurosciences is highly variable and inefficient, with long cycles of innovation and slow dissemination of proven therapies into practice. In designing a new academic medical center, we are testing a series of novel approaches to accelerate innovation cycles and link finances to improved outcomes, with the goal of learning from every patient.



SESSION: Neurodegeneration and Alzheimer's (2nd Session) | 9:25-10:35 a.m.

In this second session on neurodegeneration, speakers will present on research and therapies aimed at understanding cell biology and genetics with the goals of preventing and treating Alzheimer's.



MODERATOR:

George Perry, Ph.D. Chief Scientist, Brain H

Chief Scientist, Brain Health Consortium, The University of Texas at San Antonio



SPEAKERS:

Bess Frost, Ph.D. Assistant Professor, UT Health San Antonio



Jim Ray, Ph.D.

Director, The Neurodegeneration Consortium (NDC) and Institute Head, Neuroscience, The University of Texas MD Anderson Cancer Center

Joshua M. Shulman, M.D., Ph.D.

Associate Professor, Departments of Neurology, Neuroscience and Molecular and Human Genetics, Baylor College of Medicine

Break | 10:35-10:45 a.m.

SESSION: Environmental Influences on Brain Health | 10:45–11:50 a.m.

This session will explore early life environmental exposures and how they affect behaviors, inheritances of behavioral deficits, research linking neurodegenerative disease to chemical exposure and links between air pollution and autism.



MODERATOR:

Cheryl Lyn Walker, Ph.D. (NAM)

Director, Center for Precision Environmental Health, Baylor College of Medicine

SPEAKERS:



Andrea C. Gore, Ph.D.

Professor and Vacek Chair in Pharmacology, The University of Texas at Austin

Jason R. Richardson, Ph.D.

Professor and Associate Dean for Research, Florida International University

Deborah A. Cory-Slechta, Ph.D.

Professor of Environmental Medicine, Pediatrics and Public Health Sciences, University of Rochester Medical Center

SESSION: Rising Stars of Neuroscience Research in Texas | 11:50 a.m.-12:55 p.m.

Hear from the next generation of neuroscience researchers in the state about brain circuits and how they function, brain rhythms and how new understanding of brain function could lead to better treatments for various neurological disorders.



MODERATOR:

Daniel Johnston, Ph.D.

Professor, Department of Neuroscience, The University of Texas at Austin



SPEAKERS:

Benjamin Arenkiel, Ph.D. Associate Professor, Baylor College of Medicine



Associate Professor, The University of Texas at Austin

Ryan Hibbs, Ph.D.

Assistant Professor of Neuroscience and Biophysics, UT Southwestern Medical Center

Lunch | 12:55–1:45 p.m.

Featured Speaker: Making, Breaking and Linking Memories



Sheena Josselyn, Ph.D.

Senior Scientist, The Hospital for Sick Children

Dr. Josselyn will provide an overview of recent research focusing on how a memory is physically or functionally represented in the brain (the memory trace or "engram"). An engram is thought to be sparsely distributed over a distributed memory network. Dr. Josselyn will describe the studies from her lab investigating how engrams supporting both fearful and rewarding memories are formed, stored and

changed with time or further experience.

Memory impairments are a hallmark of aging, major mental illnesses (e.g. schizophrenia and depression) as well as neurological disorders (e.g. Alzheimer's and Parkinson's diseases). Therefore, understanding how the brain encodes and stores information is highly relevant to both mental health and mental illness.

Invitation and Preview: TAMEST 2020 Annual Conference | 1:45–1:50 p.m.

Bob Metcalfe, Ph.D. (NAE)

Professor of Innovation and Entrepreneurship and Murchison Fellow of Free Enterprise, The University of Texas at Austin

TAMEST Leadership Update and Closing Remarks | 1:50–2:00 p.m.

The Honorable Gordon R. England (NAE)

Chairman, PFP Cybersecurity

Amelie G. Ramirez, Dr.P.H., M.P.H. (NAM)

Professor and Interim Chair of Epidemiology and Biostatistics, Director of the Institute for Health Promotion Research and Associate Director of Cancer Prevention at the Mays Cancer Center, UT Health San Antonio

Changing our understanding of cancer. Creating new molecules. Discovering new ways that bacteria in the body can affect whether or not we get sick from viruses. And developing technology that results in lower levels of pollution and better fuel economy for vehicles. These are the discoveries by Texas' rising stars in research being honored with the 2019 Edith and Peter O'Donnell Awards by TAMEST.

The Edith and Peter O'Donnell Awards showcase the best and brightest in Texas research, whose creative work could have a lasting impact on our lives. Their work meets the highest standards of science, and the paths to their discoveries show immense ingenuity and imagination. The awards are named in honor of Edith and Peter O'Donnell, who are among Texas' staunchest advocates for excellence in scientific advancement and STEM education.

TEXAS' RISING STAR RESEARCHERS 2019 O'Donnell Awards Recipients



MEDICINE

Ralph DeBerardinis, M.D., Ph.D.

Chief, Division of Pediatric Genetics and Metabolism at UT Southwestern Medical Center Director, Genetic and Metabolic Disease Program, Children's Medical Center Research Institute at UT Southwestern

MEDICINE NEDICINE

Hal S. Alper, Ph.D.

ENGINEERING

Associate Chair and Paul D. & Betty Robertson Meek Centennial Professor in Chemical Engineering, The University of Texas at Austin

Julie Pfeiffer, Ph.D.

SCIENCE

Kern and Marnie Wildenthal President's Research Council Professorship in Medical Science, UT Southwestern Medical Center

TECHNOLOGY INNOVATION

Terrence F. Alger II, Ph.D.

Director, Powertrain Engineering Division, Southwest Research Institute









MEDICINE: Ralph DeBerardinis, M.D., Ph.D.

Dr. DeBerardinis is a professor at the Children's Medical Center Research Institute at UT Southwestern (CRI) and chief of the Division of Pediatric Genetics and Metabolism at UT Southwestern Medical Center and director of the Genetic and Metabolic Disease Program at CRI.

He is a pioneer in studying how altered metabolism leads to diseases in humans. His work in cancer metabolism has changed our understanding of how tumors reprogram metabolic pathways to maximize energy production and growth. By analyzing tumor metabolism directly in patients, he has identified unexpected fuels and pathways not observed in conventional studies performed in the laboratory. These include unexpected roles for mitochondria and lactic acid in fueling aggressive tumors. Discoveries from Dr. DeBerardinis have opened new avenues of study for therapies and imaging techniques.

ENGINEERING: Hal S. Alper, Ph.D.

Dr. Alper is the associate chair and Paul D. & Betty Robertson Meek Centennial Professor in Chemical Engineering at The University of Texas at Austin.

Dr. Alper's research looks for sustainable ways to create new molecules that can be used for plastics, drugs and other products that typically require petroleum products as a feedstock. His work has the potential to significantly reduce pollution in the chemical industry by reducing and reusing waste. His innovative, paradigm-changing approach could lead to new drugs and sustainable plastics at an industrial scale.

SCIENCE: Julie Pfeiffer, Ph.D.

Dr. Pfeiffer holds the Kern and Marnie Wildenthal President's Research Council Professorship in Medical Science at UT Southwestern Medical Center.

Her groundbreaking work is re-defining how we think about life-threatening viral infections. She has discovered new ways that bacteria in the body can affect whether or not we get sick from viruses. Her research has shown that viruses in the gut rely on intestinal bacteria to infect us, resulting in a new discipline in microbiology. Thanks to her work, we now know that antibiotics can have antiviral effects, which is already driving research into new treatments for viruses.

TECHNOLOGY INNOVATION: Terrence F. Alger II, Ph.D.

Dr. Alger is a director in the Powertrain Engineering Division at Southwest Research Institute.

Dr. Alger is a true innovator whose work on vehicle engines is already resulting in lower levels of pollution and better fuel economy. He developed a technology known as Dedicated Exhaust Gas Recirculation, or D-EGR®, where exhaust gas from the engine is given back to the fresh air being drawn into the engine, cooling the air. This technology improves fuel economy up to 15 percent while also increasing engine performance. Dr. Alger's work will help lead to a more sustainable transportation future and will make a big difference in how clean and efficient everyday cars are on the road.







PLATINUM

The Oskar Fischer Project

DIAMOND



UTSouthwestern & Medical Center



SOUTHWESTERN MEDICAL FOUNDATION



In 2018, TAMEST welcomed 22 new members, bringing our total number of members to 305. Of these new members, 11 were elected to the National Academies in 2018, and 11 became members as a result of their relocation to Texas. In addition, two former members of TAMEST moved back to Texas in 2018.

NATIONAL ACADEMY OF MEDICINE



Karen DeSalvo, M.D., M.P.H.

NATIONAL ACADEMY OF MEDICINE: 2017 Professor, Department of Internal Medicine; Professor, Department of Population Health The University of Texas at Austin Dell Medical School

Dr. DeSalvo joined The University of Texas at Austin Dell Medical School in 2018.

Her work focuses on patient care, education, policy and administrative roles, research and public service dedicated to improving the health of all people, particularly those in vulnerable populations. Her commitment to improving the public's health goes beyond ensuring access to include quality, affordable medical care; strengthening public health infrastructure; and enabling public-private partnerships that can address the social determinants of health.

Prior to coming to Dell Medical School, DeSalvo served as acting assistant secretary for health at the U.S. Department of Health and Human Services (HHS) during the Obama Administration. Following Hurricane Katrina, DeSalvo was a community leader in building an innovative and award-winning model of neighborhood-based community health services for low-income, uninsured and other vulnerable people in the New Orleans area. Immediately before joining HHS, DeSalvo served as New Orleans health commissioner, where she transformed the health department to one that is nationally accredited and recognized for addressing the broad determinants of health.

DeSalvo was previously professor of medicine and vice dean for community affairs and health policy at the Tulane School of Medicine. She is a member of the Medicare Payment Advisory Commission. She also serves on the board of directors for Humana. She received her master's in clinical epidemiology at the Harvard University School of Public Health and her M.D. in medicine at the Tulsa University School of Medicine.



Robert L. Ferrer, M.D., M.P.H.

NATIONAL ACADEMY OF MEDICINE: 2018 Professor and Vice Chair for Research, Department of Family and Community Medicine UT Health San Antonio

Dr. Ferrer is a practicing family physician with research interests at the

interface of primary care and public health, including primary care transformation and quality improvement, social determinants of health and applications of complexity science to health and health care. He has been principal investigator on grants from the Robert Wood Johnson Foundation and the Agency for Healthcare Research and Quality as well as other state and local funders.

Currently, he also serves as Director of Community Engagement for UT Health San Antonio's Clinical Translational Science Award. Since 2009, he has been an associate editor for the *Annals of Family Medicine*. In 2002, he received a Robert Wood Johnson Foundation Generalist Physician Faculty Scholar award. From 2007–09, he served on the AHRQ Innovations Exchange initial expert panel.

Dr. Ferrer is active in community health initiatives, serving as chair of the leadership team for San Antonio's Communities Putting Prevention to Work grant from the CDC and is a member of the Bexar County Health Collaborative, serving as board chair for 2016 and 2017.

Dr. Ferrer received degrees from The John Hopkins University, Hahnemann University of School of Medicine and the University of Washington School of Public Health and Community Medicine.



David N. Herndon, M.D.

NATIONAL ACADEMY OF MEDICINE: 2018 Jesse H. Jones Distinguished Chair in Burn Surgery Professor of Surgery and Pediatrics Director of the Institute for Translational Sciences at UTMB Director of Research at the Shriners Hospitals for

Children in Galveston The University of Texas Medical Branch at Galveston

Dr. Herndon began his career in research in 1977 during his tenure in the U.S. Army where he developed a model to study the humeral mediators of hypermetabolism due to burns. A second major research area was the development of a model to study smoke inhalation injury.

Currently, Herndon is conducting research in the areas of immune depression that follows major burns, neutrophils and abnormal natural killer cell suppressor function, new drug development and technologies to improve the immune deficiency state after burns. His research has significantly contributed to advancements in resuscitation, control of infection, reduction of hypermetabolism following burn injuries, early wound closure, treatment of inhalation injury, decreased scarring and improved rehabilitation. Additionally, his research has resulted in decreased mortality rate among burned children.

His contributions to research, education and clinical excellence have resulted in increasing the rate of survival after a burn injury and have paved the way to modern medicine in caring for burn survivors.

He sits on the standing Surgery, Anesthesia and Trauma Review Board for the National Institutes of Health and for Veterans Health Services Research Administration Proposals. Dr. Herndon currently serves on editorial boards for *The Journal of Burn Care and Rehabilitation, Shock, Annals of Surgery, Journal of American College of Surgeons,* and *The Journal of Burns*.

Born in Cleveland, Ohio, he attended Case Western Reserve University graduating *magna cum laude* in 1970 and 1974.

In 2014, Herndon was awarded the Medallion for Scientific Achievement by the American Surgical Association and the Tanner-Vandeput-Boswick Burn Prize from the International Society for Burn Injuries.



Mark McClellan, M.D., Ph.D.

NATIONAL ACADEMY OF MEDICINE: 2003 Senior Health Policy Advisor, Dean's Office; Professor, Department of Internal Medicine The University of Texas at Austin Dell Medical School

Mark McClellan, M.D., Ph.D., is the Robert J. Margolis Professor of Business,

Medicine and Policy, and director of the Margolis Center for Health Policy at Duke University. He is a physician economist who focuses on quality and value in health care including payment reform, real-world evidence and more effective drug and device innovation. He is former administrator of the Centers for Medicare & Medicaid Services and former commissioner of the U.S. Food and Drug Administration, where he developed and implemented major reforms in health policy. He was previously senior fellow at the Brookings Institution and a faculty member at Stanford University.

Dr. McClellan is the founding chair and a current board member of the Reagan-Udall Foundation for the FDA, is a member of the National Academy of Medicine. At NAM, he chairs the Leadership Council for Value and Science-Driven Health Care, co-chairs the guiding committee of the Health Care Payment Learning and Action Network and is a research associate at the National Bureau of Economic Research. He is also a senior advisor on the faculty of The University of Texas at Austin Dell Medical School and is an independent director on the board of Johnson & Johnson and on the board of Alignment Healthcare. He was previously an associate professor of economics and medicine with tenure at Stanford University, and has twice received the Kenneth Arrow Award for Outstanding Research in Health Economics.



Sean Morrison, Ph.D.

NATIONAL ACADEMY OF MEDICINE: 2018 Investigator, Howard Hughes Medical Institute Director, Children's Medical Center Research Institute (CRI) UT Southwestern Medical Center

Dr. Morrison and his lab study the cellular and

molecular mechanisms that regulate stem cell function and the role these mechanisms play in cancer. His lab has pioneered methods to purify stem cells from multiple tissues and identified a series of mechanisms that distinguish the self-renewal of stem cells from the proliferation of restricted progenitors. They showed that stem cell self-renewal mechanisms change over time to match the changing growth and regeneration demands of tissues during development and aging. They also identified the locations and cellular compositions of niches that maintain stem cells in adult hematopoietic tissues. The Morrison lab has also studied the mechanisms that regulate

metastasis, discovering that melanoma metastasis is limited by oxidative stress and that rare metastasizing cells survive this stress by undergoing metabolic changes that confer oxidative stress resistance.

Dr. Morrison is a member of the National Academy of Medicine and a Cancer Prevention and Research Institute of Texas Scholar. He earned a bachelor's degree in biology and chemistry from Dalhousie University in Canada and a Ph.D. in immunology at Stanford University. He completed a postdoctoral fellowship in neurobiology at Caltech. From 2015–2016, he served as the president of the International Society for Stem Cell Research and has been active in public policy issues surrounding stem cell research, testifying before Congress and serving as a leader in the successful "Proposal 2" campaign to protect and regulate stem cell research in Michigan's state constitution.



Charles B. Nemeroff, M.D., Ph.D.

NATIONAL ACADEMY OF MEDICINE: 2002 Professor, Department of Psychiatry Director, Institute for Early Life Adversity Research The University of Texas at Austin Dell Medical School

Prior to joining Dell Medical,

Dr. Nemeroff was chair of the Department of Psychiatry and Behavioral Sciences and clinical director of the Center on Aging at the University of Miami Miller School of Medicine in Miami, Florida. He has served as president of the American College of Psychiatrists (ACP) and the American College of Neuropsychopharmacology (ACNP) and sits on the Scientific Advisory Board and board of directors of the American Foundation for Suicide Prevention (AFSP) and the Anxiety and Depression Association of America (ADAA).

He is a member of the APA Council on Research and chairs both the APA Research Colloquium for Young Investigators and the APA Work Group on Biomarkers and Novel Treatments.

His research is focused on the pathophysiology of mood and anxiety disorders with a focus on the role of child abuse and neglect as a major risk factor. He has also conducted research on the role of mood disorders as a risk factor for major medical disorders including heart disease, diabetes and cancer. He has published more than 1,100 research reports and reviews, and his research is currently supported by grants from the National Institutes of Health.

He has also served on the Mental Health Advisory Council of National Institute of Mental Health and the Biomedical Research Council for NASA; is co-editor in chief (with Alan F. Schatzberg, M.D.) of the *Textbook of Psychopharmacology*; co-editor in chief of a new text book on post-traumatic stress disorders; and is the co-editor in chief of a new journal published by Elsevier, *Personalized Medicine in Psychiatry*.

He received his M.D. and Ph.D. (neurobiology) degrees at the University of North Carolina (UNC) School of Medicine. After psychiatry residency training at UNC and Duke University, he held faculty positions at Duke and at Emory University before relocating to the University of Miami in 2009.

NATIONAL ACADEMY OF ENGINEERING



S.M. Farouq Ali, Ph.D.

NATIONAL ACADEMY OF ENGINEERING: 2009 Distinguished Professor University of Houston

Dr. Ali comes to Texas from the University of Calgary where he served as the Encana/ Petroleum Society Chair and professor of chemical and petroleum engineering. He has

over 40 years of experience in industry and academia, having served as a professor at Pennsylvania State University, the University of Alberta and the University of Regina.

Considered one of the world's leading experts in reservoir engineering, oil recovery and simulation, Farouq Ali advises oil companies and various governments on oil policy and production strategies. He has authored more than 500 papers, conducted more than 200 petroleum reservoir studies and designed over 30 major oil fields projects.

Farouq Ali earned his master's and doctoral degrees in petroleum and natural gas engineering from Penn State University. As a graduate student, he conducted pioneering research on micellar-polymer flooding, a process in which a micelle solution is pumped into a reservoir to recover oil. The technique has since become the industry standard for enhanced oil recovery.

He is also credited with some of the earliest experimental work on steam flooding, a method of injecting steam to extract heavy crude oil from an oil reservoir. Today, steam injection is one of the primary enhanced oil recovery techniques in use.

Dr. Ali has been honored with awards from the Society of Petroleum Engineers, the Canadian Institute of Mining and Metallurgy, the Association of Professional Engineers and Geoscientists of Alberta and the Russian Academy of Sciences.



Pedro J.J. Alvarez, Ph.D.

NATIONAL ACADEMY OF ENGINEERING: 2018 George R. Brown Professor of Civil and Environmental Engineering Rice University

Dr. Alvarez is the George R. Brown Professor of Civil and Environmental Engineering at Rice University, where he

also serves as director of the National Science Foundation's (NSF) Engineering Research Center for Nanotechnology Enabled Water Treatment (NEWT).

His research interests include environmental applications and implications of nanotechnology, bioremediation of toxic chemicals, water footprint of biofuels, water treatment and reuse, and antibiotic resistance control.

Dr. Alvarez was awarded the American Academy of Environmental Engineers and Scientists (AAEES) Grand Prize for Excellence in 2014 and honored as the 2012 Clarke Prize Laureate. Additional honors include the Association of Environmental Engineering and Science Professors (AEESP) Frontier in Research Award, the Water Environment Federation (WEF) McKee Medal for Groundwater Protection and the Strategic Environmental Research and Development Program (SERDP) cleanup project of the year award.

He is a past president of AEESP and currently serves on the advisory board of NSF Engineering Directorate and on the editorial board of Environmental Science and Technology. Dr. Alvarez is also a past member of the EPA's Science Advisory Board and an honorary professor at Nankai and Zheijang universities and the Chinese Academy of Sciences, and at the Universidade Federal de Santa Catarina in Brazil.

He received his B.A. in civil engineering from McGill University and M.S. and Ph.D. degrees in environmental engineering from the University of Michigan.



Mark A. Barteau, Ph.D.

NATIONAL ACADEMY OF ENGINEERING: 2006 Vice President for Research Texas A&M University

Dr. Barteau joined Texas A&M University, where he holds the Halliburton Chair in Engineering, in 2018. He previously served as the director of the University

of Michigan Energy Institute and DTE Energy Professor of Advanced Energy Research. Prior to joining the University of Michigan, he held faculty and leadership positions at the University of Delaware.

His research focuses on chemical reactions at solid surfaces and their applications in heterogeneous catalysis and energy processes. His research has been recognized by awards from the American Institute of Chemical Engineers, the American Chemical Society, and the International Association of Catalysis Societies, among others. In addition to his scientific publications, he is a frequent contributor of perspectives on energy and environment to *The Conversation, Fortune*, and NPR, among other media outlets.

Dr. Barteau was one of 17 members of the National Research Council (NRC) committee that authored the report *Beyond the Molecular Frontier: Challenges for Chemistry and Chemical Engineering.* He chaired the NRC committee that produced the 2013 report *Effects of Diluted Bitumen on Crude Oil Transmission Pipelines.* He serves on two National Academies' studies developing research agendas for carbon dioxide removal and the utilization of carbon waste streams.

He is currently on the National Academy of Sciences' Board on Chemical Sciences and Technology and on the Science Advisory Board for the National Institute of Clean and Low-Carbon Energy (NICE) in China.

He received his bachelor's degree in chemical engineering from Washington University in St. Louis and his master's and doctorate from Stanford University.



James E. Hubbard Jr., Ph.D.

NATIONAL ACADEMY OF ENGINEERING: 2016 TEES Eminent Professor Texas A&M University

Dr. Hubbard and his team are working to design and develop state-of-the-art unmanned vehicles that can perform tasks autonomously. He is known internationally for his

work in aeroacoustics for noise control, adaptive structures, spatially distributed transducers and the extension of modem time domain control methodologies into the spatial domain for the real-time control of distributed systems.

Dr. Hubbard's previous appointments include the Massachusetts Institute of Technology (MIT) faculty, the Charles Stark Draper, Optron Systems Inc. and the Photonics Center at Boston University. Hubbard co-founded PhotoSense Inc. and iProvica Inc.

Hubbard is a member of the National Academy of Engineering, a fellow of the American Society of Mechanical Engineers, a fellow of the American Institute of Aeronautics and Astronautics and a senior member of the International Society for Optical Engineering.

Honors include the Smart Structures Product Innovation Award from the International Society for Optical Engineering (1999); Black Engineer of the Year (2002) from the Career Communications Group; Best Paper in Structures Award from the Adaptive Structures and Material Systems branch, Aerospace Division, the American Society of Mechanical Engineers (2015); and the Lifetime Achievement Award from the Society of Photonics and Instrumentation Engineers (2016).

He has published three books and 96 articles in peerreviewed journals. He has been awarded 24 patents.

Dr. Hubbard received his doctorate in mechanical engineering in 1982 from MIT.



Chun Huh, Ph.D.

NATIONAL ACADEMY OF ENGINEERING: 2018 Research Professor, Hildebrand Department of Petroleum and Geosystems Engineering The University of Texas at Austin

Dr. Huh is a retired research professor. He taught in the

Hildebrand Department of Petroleum and Geosystems Engineering at The University of Texas at Austin (UT Austin) from 2004–2016.

Dr. Huh is one of the world's leading experts on surfactantand polymer-based enhanced oil recovery (EOR) methods.

His "Chun Huh Equation," which predicts ultralow interfacial tension from microemulsion solubilization, is widely used for the design of surfactant-based EOR processes. He is also the formulator of "Huh-Scriven Paradox," whose resolution is still being proposed by fluid mechanics researchers working on the dynamics of wetting.

During his tenure at UT Austin, Dr. Huh started research on the use of nanoparticles for a variety of upstream oil industry applications. Some of the applications being developed are: use of superparamagnetic nanoparticles for efficient removal of "contaminants" from oilfield produced water, for improved oil and gas production flow assurance and for precision conformance control; and use of silica nanoparticles for EOR mobility control.

Dr. Huh is a winner of the 2012 Improved Oil Recovery Pioneer Award and the Distinguished Membership Award in 2015 from the Society of Petroleum Engineers.

He received his B.S. in chemical engineering from Seoul National University and his Ph.D. in chemical engineering from the University of Minnesota.



Antony Jameson, Ph.D.

NATIONAL ACADEMY OF ENGINEERING: 1997 Professor of Aerospace Engineering Texas A&M University

Dr. Jameson has authored or co-authored over 450 scientific papers in a wide range of subject areas, including both control

theory and aerodynamics, and is the principal developer of the well-known series of FLO and SYN codes, which have been used throughout the aerospace industry. He studied engineering at Trinity Hall, Cambridge University. He obtained a Ph.D. in magnetohydrodynamics at Cambridge and was a research fellow of Trinity Hall from 1960–1963.

During the last few decades, Professor Jameson devised a variety of new schemes for solving the Euler and Navier-Stokes equations for inviscid and viscous compressible flows and wrote a series of computer programs which have been widely used in the aircraft industry. He and his co-workers were finally able to realize their goal of calculating the flow past a complete aircraft in 1985, using his new finite element method. Subsequently, he re-focused his research on the problem of shape optimization for aerodynamic design.

In 2015, he received the AIAA Pendray Aerospace Literature Award, the USACM John Von Neumann Medal for "pioneering contributions to potential fluid dynamics," and the AIAA / ASME / AHS / SAE Guggenheim Medal "for exceptional contributions to the algorithmic innovation and the development of computational fluid dynamics codes that have made important contributions to aircraft design." He has also received jointly with Dr. Bob Mills the Royal Aeronautical Society's Silver Team Award for the aerodynamic design of the Gulfstream G650 that has set new standards for a high speed and long-range business jet.



Brian Korgel, Ph.D.

NATIONAL ACADEMY OF ENGINEERING: 2018 Edward S. Hyman Endowed Chair in Engineering The University of Texas at Austin

Dr. Korgel joined The University of Texas at Austin faculty in 1998 and holds the Edward S. Hyman

Endowed Chair in Engineering and the T. Brockett Hudson Professorship in Chemical Engineering.

Dr. Korgel is known for his work on the synthesis and applications of nanocrystals, nanowires and their assemblies. His fundamental breakthroughs in nanomaterials, processing and applications have had significant technical, commercial and societal impact, and his work in nanocrystals and nanowires led to the creation of two companies: Pinon Technologies and InnovaLight, which grew to over 80 employees before it was purchased by DuPont in 2011.

Dr. Korgel is the director of the Center for Next Generation Photovoltaics, a National Science Foundation Industry/ University Cooperative Research Center. He is also a fellow of the American Association for the Advancement of Science.

Dr. Korgel is a past recipient of the National Science Foundation CAREER Award, the Professional Progress Award and the Nanoscale Science and Engineering Forum Award from the American Institute of Chemical Engineers. He was awarded the TAMEST Edith and Peter O'Donnell Award in Engineering in 2009.

Dr. Korgel has been a visiting professor at the Universidad de Alicante, Spain; Université Joseph Fourier, France (now Université Grenoble Alpes); and distinguished visiting professor at the Institute for Process Engineering, Chinese Academy of Sciences in China.

Dr. Korgel received his B.S. and Ph.D. from the University of California, Los Angeles.



Jayadev Misra, Ph.D.

NATIONAL ACADEMY OF ENGINEERING: 2018 Schlumberger Centennial Chair Emeritus in Computer Science University Distinguished Teaching Professor Emeritus The University of Texas at Austin

Dr. Misra received his Ph.D.

in computer science at Johns Hopkins University in 1972. He worked for IBM from 1973 to 1974 and then joined the computer science department at The University of Texas at Austin (UT Austin). He has spent his entire career there, except as a visiting professor at Stanford University in the

1983–1984 academic year. Dr. Misra retired in 2015 as the Schlumberger Centennial Chair Emeritus and University Distinguished Teaching Professor Emeritus.

Dr. Misra's primary research interest is in applying formal methods in practice, particularly in the specifications and designs of concurrent systems. His current work, called Orc, is a programming theory for structuring massively concurrent computations. With Dr. K. Mani Chandy, he pioneered the area of distributed simulation.

He received the 2017 Harry Goode Memorial Award from the Institute of Electrical and Electronics Engineers (IEEE) (with Dr. Chandy). Other commendations include an honorary doctorate from the École Normale Supérieure Paris–Saclay, France (2010); Strachey Memorial lecturer, Oxford University (1996); Guggenheim Fellow (1989); and was identified as a "highly cited researcher" by Thomson Reuters (2004). His teaching awards include election to the Academy of Distinguished Teachers at UT Austin and the Regents' Outstanding Teaching Award of The University of Texas System. He is a fellow of the Association for Computing Machinery (ACM) and IEEE.



Oliver C. Mullins, Ph.D.

NATIONAL ACADEMY OF ENGINEERING: 2018 Science Advisor and Fellow Schlumberger

Dr. Mullins is a Schlumberger Fellow. He led the inception and development of Downhole Fluid Analysis (DFA) in well logging. Dr. Mullins also leads an active

research group in petroleum science leading to the Yen-Mullins model of asphaltenes and the Flory-Huggins-Zuo Equation of State.

His current interests include utilizing DFA technology and new asphaltene science to perform novel reservoir evaluation. This work is subsumed in the newly codified technical discipline he is leading—"reservoir fluid geodynamics"—that accounts for processes dictating fluid and tar distributions in oilfield reservoirs.

He has won several awards including the Society of Petrophysicists and Well Log Analysts (SPWLA) Gold Medal for Technical Achievement and two Schlumberger Gold Medals. In 2018, he received the George A. Olah Award in Hydrocarbon or Petroleum Chemistry from the American Chemical Society. He has been distinguished lecturer six times for SPWLA and the Society of Petroleum Engineers (SPE).

Dr. Mullins authored the award-winning book *The Physics* of *Reservoir Fluids: Discovery through Downhole Fluid Analysis*, coedited three books and coauthored 14 chapters on asphaltenes and related topics. He has coauthored 270 publications, $\sim 1/2$ on petroleum science, $\sim 1/2$ on applications, and has co-invented 115 allowed U.S. patents. He has accumulated >15,000 citations on Google Scholar to his work.

He is a fellow of two professional societies and is adjunct professor of petroleum engineering at Texas A&M University.



Ronald A. Rohrer, Ph.D.

NATIONAL ACADEMY OF ENGINEERING: 1989 Cecil & Ida Green Chair and Professor of Engineering Southern Methodist University

Prior to joining Southern Methodist University in the Lyle School of Engineering, Dr. Rohrer was professor

emeritus of electrical and computer engineering at Carnegie Mellon University. He was also a founder and chairman of Alto Technologies, Inc. and Agere Pharmaceuticals, Inc.

Considered one of the preeminent researchers on design optimization during the 1960s, Dr. Rohrer's contributions to improving integrated circuit (IC) production have spanned over 50 years.

Among his achievements was introducing a sequence of circuit simulation courses in 1969–70 at the University of California, Berkeley, the result of which ultimately evolved into the SPICE (Simulation Program with Integrated Circuit Emphasis) tool, now considered the industry standard for IC simulation.

During the 1980s at Carnegie Mellon University, Dr. Rohrer introduced the Asymptotic Waveform Evaluation (AWE) algorithm, which enabled highly efficient timing simulation of ICs containing large numbers of parasitic elements.

A member of the National Academy of Engineering and IEEE (Institute of Electrical and Electronics Engineers) Life Fellow, Rohrer is the author and co-author of five textbooks and more than 100 technical papers as well as the holder of six patents. He has received 11 major awards, including the IEEE Education Medal and the NEC C&C Prize.

He has his B.S. from the Massachusetts Institute of Technology and his M.S. and Ph.D. from the University of California, Berkeley, all in electrical engineering.



Mukul M. Sharma, Ph.D.

NATIONAL ACADEMY OF ENGINEERING: 2018 W.A. ("Tex") Moncrief, Jr. Centennial Endowed Chair in Petroleum Engineering The University of Texas at Austin

Dr. Sharma has been at The University of Texas at Austin (UT Austin) for over 32

years, and served as chair of the Hildebrand Department of Petroleum and Geosystems Engineering from 2001–2005.

His current research interests include hydraulic fracturing, oilfield water management, formation damage and improved oil recovery. His innovative work on hydraulic fracture modeling, fracture diagnosis and proppant placement is widely recognized. His work on the use of salt

tolerant polymers and non-aqueous fluids such as carbon dioxide and nitrogen for fracturing, has served to reduce the environmental footprint of hydraulic fracturing by reducing the use of fresh water.

Dr. Sharma has received a number of teaching and research awards throughout his career from both UT Austin and the Society of Petroleum Engineers (SPE). He is the winner of the John Franklin Carll Award and the Anthony F. Lucas Gold Medal, the highest technical awards presented by the SPE. He is also the recipient of the Formation Evaluation award, the Faculty Distinguished Achievement Award and was a distinguished lecturer for the SPE.

He has published over 170 refereed journal articles, and written over 250 conference proceeding papers and has 23 patents issued or pending. In addition to his work at UT Austin, Dr. Sharma has also consulted for over 50 companies and organizations and has co-founded two exploration and production companies and three oil and gas technology companies.

He has his B. Tech in chemical engineering from the Indian Institute of Technology, Kanpur, his M.S. in chemical engineering and his Ph.D. in petroleum engineering from the University of Southern California.



Chanan Singh, Ph.D.

NATIONAL ACADEMY OF ENGINEERING: 2018 Regents Professor, Irma Runyon Chair Professor Department of Electrical and Computer Engineering Texas A&M University

Chanan Singh is a regents professor and Irma Runyon Chair Professor in the

Department of Electrical and Computer Engineering at Texas A&M University in College Station. He served as the department head of electrical and computer engineering at Texas A&M from 1997 to 2005 and then as an interim head from 2012 to 2015. He also served as program director at the National Science Foundation and a guest professor at Tsinghua University in Beijing, China.

His research and consulting interests are in the foundational developments and applications of probabilistic methods for planning and operation of electric power grid. He has authored/co-authored around 400 technical papers and three books and has contributed to several books. He has consulted with many major corporations and given short courses nationally and internationally.

Dr. Singh was elected a fellow of the Institute of Electrical and Electronics Engineers (IEEE) for "contributions to theory and applications of quantitative reliability methods in electric power systems" in 1991. He is the recipient of the 1998 Outstanding Power Engineering Educator Award given by the IEEE Power Engineering Society. For his research contributions, he was awarded a D.Sc. degree by the University of Saskatchewan, Canada, in 1997. In 2008, he was recognized with the Merit Award by the PMAPS International Society for lifelong achievements. In 2010, he was the inaugural recipient of the IEEE PES Roy Billinton Power System Reliability Award. He was elected to the National Academy of Engineering for "advancement of theory, practice, and education in electric power system reliability."

Dr. Singh received his M.S. and Ph.D. in electrical engineering from the University of Saskatchewan, Canada.



Lisa Su, Ph.D.

NATIONAL ACADEMY OF ENGINEERING: 2018 President and Chief Executive Officer Advanced Micro Devices, Inc.

Dr. Lisa Su is president and chief executive officer of Advanced Micro Devices (AMD) and also serves on the company's board of directors.

Dr. Su joined AMD in 2012 as senior vice president and general manager, global business units, responsible for driving end-to-end business execution of AMD's products and solutions. In 2014, she was named chief operating officer, responsible for AMD's business units, sales and global operations teams.

Before joining AMD, Dr. Su served as senior vice president and general manager, networking and multimedia at Freescale Semiconductor, Inc., responsible for global strategy, marketing and engineering for the company's embedded communications and applications processor business. Dr. Su joined Freescale as senior vice president and chief technology officer in 2007. Prior to Freescale, Dr. Su held various engineering and management positions at IBM, including vice president of the Semiconductor Research and Development Center, responsible for the strategic direction of IBM's silicon technologies, joint development alliances and semiconductor R&D operations.

Dr. Su has bachelor's, master's and doctorate degrees in electrical engineering from the Massachusetts Institute of Technology (MIT) and has published more than 40 technical articles. She was honored in MIT Technology Review's Top 100 Young Innovators in 2002, and named a fellow of the Institute of Electronics and Electrical Engineers (IEEE) in 2009. In 2017, Dr. Su was named as one of the World's 50 Greatest Leaders in *Fortune* magazine.

Dr. Su serves on the board of directors for AMD, Analog Devices, the Global Semiconductor Alliance (GSA) and the U.S. Semiconductor Industry Association (SIA).

NATIONAL ACADEMY OF SCIENCES



Luis Rafael Herrera-Estrella, Ph.D.

NATIONAL ACADEMY OF SCIENCES: 2003 President's Distinguished Professor of Plant Genomics and Director for the Center for Functional Genomics of Abiotic Stress Texas Tech University

Dr. Herrera-Estrella joined Texas Tech University in 2018. He is widely regarded as one of the world's top researchers in the field of plant molecular biology. He is known and respected worldwide for his work in the development of gene transfer systems in plants, having earned the distinction in 2015 as one of the 100 most influential people in biotechnology by *Scientific American* magazine. A holder of 15 patents, he has published more than 180 research papers and 47 book chapters and other reviews and has delivered more than 200 presentations on his work.

As a plant biologist, he has studied the molecular mechanisms that allow plants, as sessile organisms, to cope with a continuously changing environment. The molecular responses to light, as a source of energy and a developmental signal, and nutrient availability are two fundamental processes that he has studied. His group also works on plant genomics native or domesticated in Mesoamerica.

A native of Mexico, Herrera-Estrella has also served as the president of the International Society of Plant Molecular Biology (2001–2003), and in 2000, earned the gold medal from the World Intellectual Property Organization as one of the most distinguished inventors in Mexico, one of only three Mexican citizens to receive this honor.

Herrera-Estrella earned his doctoral and postdoctoral degrees in genetics from the State University of Ghent, Belgium. He received his master's degree in genetics and molecular biology from the Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, and his bachelor's degree from Escuela Nacional de Ciencias Biológicas del Instituto Politécnico Nacional.



Patrick Stover, Ph.D.

NATIONAL ACADEMY OF SCIENCES: 2016 Vice Chancellor and Dean for Agriculture and Life Sciences The Texas A&M University System

Dr. Stover joined The Texas A&M University System from Cornell University where he served as professor and

director of the division of nutritional sciences.

While at Cornell, Dr. Stover led a research group that investigated the mechanisms underlying the relationships among nutrition, metabolism and risk for birth defects, cancer and neurodegenerative diseases.

In 2014, he was elected as a fellow of the American Association for the Advancement of Science. He received the SUNY Chancellor's Award for Excellence in Scholarship and Creative Activities and the Osborne and Mendel Award for outstanding recent basic research accomplishments in nutrition from the American Society for Nutrition, and a MERIT award from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK-NIH).

In 1996, he received the Presidential Early Career Award for Scientists and Engineers from President Clinton, the highest honor bestowed by the U.S. government on outstanding scientists and engineers beginning their independent careers. He received the ERL Stokstad Award in Nutritional Biochemistry from the American Society for Nutritional Sciences and has been selected as an outstanding educator four times by Cornell Merrill Presidential Scholars. He is editor of the Annual Reviews of Nutrition.

Dr. Stover received his Ph.D. in biochemistry and molecular biophysics from the Medical College of Virginia and performed his postdoctoral studies in nutritional sciences at the University of California, Berkeley.

TAMEST also welcomes **Ganesh Kailasam, Ph.D.**, of OGCI Climate Investments LLP and **Harold Vinegar, Ph.D.**, of Vinegar Technologies, LLC back to Texas. Dr. Kailasam was elected to the National Academy of Engineering in 2013, and Dr. Vinegar was elected to the National Academy of Engineering in 2003.

PROTÉGÉS

2019 PROTÉGÉS

Protégés are invited to attend the conference as special guests of TAMEST members.



Caleb Bashor, Ph.D. Assistant Professor Rice University *Antonios G. Mikos, Ph.D. (NAE, NAM)*



Kapil N. Bhalla, M.D. Professor The University of Texas MD Anderson Cancer Center *Neal G. Copeland, Ph.D. (NAS)*



Eric Boerwinkle, Ph.D. Dean; M. David Low Chair in Public Health; Kozmetsky Family Chair in Human Genetics; Professor, Human Genetics Center and Dept. of Epidemiology, UTHealth Associate Director, Human Genome Sequencing Center Baylor College of Medicine *Richard A. Gibbs, Ph.D. (NAM)*



Bret L. Bostwick, M.D. Assistant Professor Baylor College of Medicine *Arthur L. Beaudet, M.D. (NAM, NAS)*



Radek Bukowski, M.D., Ph.D. Associate Chair for Investigation and Discovery, Department of Women's Health, Dell Medical School The University of Texas at Austin J. Tinsley Oden, Ph.D. (NAE)



Theodora Chaspari, Ph.D. Assistant Professor, Department of Computer Science and Engineering Texas A&M University *James E. Hubbard Jr., Ph.D. (NAE)*



Jingyi "Ann" Chen, Ph.D. Assistant Professor The University of Texas at Austin *Byron D. Tapley, Ph.D. (NAE)*



Ondine Cleaver, Ph.D. Professor UT Southwestern Medical Center *Melanie H. Cobb, Ph.D. (NAS)*



Florent Elefteriou, Ph.D. Associate Professor Baylor College of Medicine Brendan Lee, M.D., Ph.D. (NAM)



Richard H. Finnell, Ph.D. Professor Baylor College of Medicine *Cheryl Walker, Ph.D. (NAM)*



Isabel Greiner, B.A. Clinical Social Work Study Smith College Amos A. Avidan, Ph.D. (NAE)



Nick V. Grishin, Ph.D. Professor and HHMI Investigator UT Southwestern Medical Center Johann Deisenhofer, Ph.D. (Nobel Laureate, NAS)



Melissa A. Grunlan, Ph.D. Professor Texas A&M University *M. Cynthia Hipwell, Ph.D. (NAE)*

PROTÉGÉS



Teja Guda, Ph.D. Assistant Professor of Biomedical Engineering The University of Texas at San Antonio *Rena Bizios, Ph.D. (NAM)*



Illya V. Hicks, Ph.D. Professor Rice University Richard A. Tapia, Ph.D. (NAE)



Shaolie Hossain, Ph.D. Associate Research Professor The University of Texas at Austin Thomas J.R. Hughes, Ph.D. (NAE, NAS)



Roy Jacoby, Ph.D. Assistant Professor Baylor College of Medicine *Robert J. Patton (NAE)*



Benjamin James Poyner Jones, Ph.D. Assistant Professor The University of Texas at Arlington *David R. Nygren, Ph.D. (NAS)*



MinJun Kim, Ph.D. Robert C. Womack Endowed Chair Professor Southern Methodist University *Ronald A. Rohrer, Ph.D. (NAE)*



Dimitris C. Lagoudas, Ph.D. Associate Vice Chancellor for Engineering Research, Texas A&M University System; Deputy Director, Texas A&M Engineering Experiment Station; Senior Associate Dean for Research, College of Engineering Texas A&M University Alan Needleman, Ph.D. (NAE)



Daan Liang, Ph.D. Professor Texas Tech University Kishor C. Mehta, Ph.D. (NAE)



Alexander R. Lippert, Ph.D. Associate Professor Southern Methodist University Frederick R. Chang, Ph.D. (NAE)



Jennifer Maynard, Ph.D. Professor The University of Texas at Austin Bob Metcalfe, Ph.D. (NAE)



Louise McCullough, M.D., Ph.D. Chair of Neurology, McGovern Medical School UTHealth Barbara J. Stoll, M.D. (NAM)



Rebecca McMahon, Ph.D. Wound Therapeutics Director Rochal Industries *Ann Beal Salamone (NAE)*



Ethan Meltzer, M.D. Physician The University of Texas at Austin *David J. Meltzer, Ph.D. (NAS)*



Dan Nicolella Institute Engineer Southwest Research Institute H. Norman Abramson, Ph.D. (NAE)



Zachariah "Zak" Page, Ph.D. Assistant Professor The University of Texas at Austin *C. Grant Willson, Ph.D. (NAE*)



Alicia Salamone Parker, M.D. Assistant Professor of Cognitive and Behavioral Neurology UT Health San Antonio Joseph C. Salamone, Ph.D. (NAE)



Davut Pehlivan, M.D. Instructor Baylor College of Medicine James R. Lupski, M.D., Ph.D. (NAM)

PROTÉGÉS



Lara Pferdehirt, M.Sc. Graduate Research Assistant Washington University in St. Louis Selda Gunsel, Ph.D. (NAE)



Andreas A. Polycarpou, Ph.D. Professor and Department Head Texas A&M University Herbert H. Richardson, Sc.D. (NAE)



Samba Reddy, Ph.D. Professor and NIH CounterACT Investigator, College of Medicine Texas A&M University Akhil Datta-Gupta, Ph.D. (NAE)



Todd Roberts, Ph.D. Assistant Professor UT Southwestern Medical Center Joseph Takahashi, Ph.D. (NAM, NAS)



Justin F. Rousseau, M.D. Assistant Professor, Departments of Neurology and Population Health The University of Texas at Austin William Tierney, M.D. (NAM)



Shelly Sakiyama-Elbert, Ph.D. Professor and Department Chair The University of Texas at Austin Sharon L. Wood, Ph.D. (NAE)



Salvatore Salamone, Ph.D. Associate Professor The University of Texas at Austin James O. Jirsa, Ph.D. (NAE)



Ashok K. Shetty, Ph.D. Professor and Associate Director, Institute for Regenerative Medicine, College of Medicine Texas A&M University Carrie L. Byington, M.D. (NAM)



Anshumali Shrivastava, Ph.D. Assistant Professor Rice University Lydia E. Kavraki, Ph.D. (NAM)



A. Campbell Sullivan, PsyD, ABPP-CN Assistant Professor of Neurology UT Health San Antonio *Ann Beal Salamone (NAE)*



Marisa Toups, M.D. Assistant Professor, Dell Medical School The University of Texas at Austin *Charles B. Nemeroff, M.D., Ph.D. (NAM)*



Tom Wilkie, Ph.D. Assistant Professor of Pharmacology UT Southwestern Medical Center David J. Mangelsdorf, Ph.D. (NAS)



Michael S. Wong, Ph.D. Professor and Department Chair Rice University *George J. Hirasaki, Ph.D. (NAE)*



Anvar Zakhidov, Ph.D. Physics Professor and Deputy Director of Nanotech Institute The University of Texas at Dallas *Ray H. Baughman, Ph.D. (NAE)*



Janet Zoldan, Ph.D. Assistant Professor The University of Texas at Austin Nicholas A. Peppas, Sc.D. (NAE, NAM)

IN REMEMBRANCE



On August 24, 2018, after a tough and valiant battle with pancreatic cancer, TAMEST Executive Director Mary Beth Maddox passed away.

Mary Beth was an energetic and compassionate leader who was committed to TAMEST's mission. We will remember her enthusiasm, optimism and infectious laugh. She was an inspiration to the staff, both professionally and personally.

Mary Beth was a highly effective and engaging leader. Her knowledge, commitment, approachable manner and positive attitude were instrumental in moving TAMEST forward to better serve the research community, industry and the citizens of the state of Texas. TAMEST will miss her profoundly.

TAMEST also remembers the following members who passed away in 2018:



Bobby R. Alford, M.D. Baylor College of Medicine National Academy of Medicine



Baruch A. Brody, Ph.D. Rice University National Academy of Medicine

Daniel W. Foster, M.D. UT Southwestern Medical Center National Academy of Medicine





Robert Schafrik, Ph.D. The University of Texas at Arlington National Academy of Engineering

Donald W. Seldin, M.D. UT Southwestern Medical Center National Academy of Medicine

TAMEST LEADERSHIP

2019 BOARD OF DIRECTORS



Amelie G. Ramirez, Dr.P.H, M.P.H., President Professor and Interim Chair of Epidemiology and Biostatistics Director of the Institute for Health Promotion Research Associate Director of Cancer Prevention at the Mays Cancer Center UT Health San Antonio NAM (2007)

David E. Daniel, Ph.D., Vice President President Emeritus The University of Texas at Dallas NAE (2000)

The Honorable Gordon R. England, Past President Chairman of the Board PFP Cybersecurity NAE (2012)

Brendan Lee, M.D., Ph.D., Treasurer Professor and Chairman, Department of Molecular and Human Genetics Baylor College of Medicine NAM (2013)

Melanie H. Cobb, Ph.D., Secretary Jane and Bill Browning, Jr. Chair of Biomedical Sciences UT Southwestern Medical Center NAS (2006)

Richard W. Aldrich, Ph.D. Karl Folkers Chair in Interdisciplinary Biomedical Research II The University of Texas at Austin NAS (2008)

Bonnie J. Dunbar, Ph.D. Director, Texas A&M Engineering Experiment Station Institute for Engineering Education and Innovation NAE (2002)

Peter J. Hotez, M.D., Ph.D. Professor of Pediatrics and Molecular Virology and Microbiology; Dean, National School of Tropical Medicine Baylor College of Medicine NAM (2008) **David J. Mangelsdorf, Ph.D.** Professor and Chair, Department of Pharmacology UT Southwestern Medical Center NAS (2008)

David J. Meltzer, Ph.D. Executive Director, QUEST Archaeological Research Program Southern Methodist University NAS (2009)

Bob Metcalfe, Ph.D. Professor of Innovation and Entrepreneurship Murchison Fellow of Free Enterprise The University of Texas at Austin NAE (1997)

Antonios G. Mikos, Ph.D. Director, Center for Excellence in Tissue Engineering Rice University NAE (2012), NAM (2012)

Helen Piwnica-Worms, Ph.D. Professor, Department of Experimental Oncology The University of Texas MD Anderson Cancer Center NAM (2013)

Peter J. Rossky, Ph.D. Dean, Natural Sciences and Professor of Chemistry and Chemical Engineering Rice University NAS (2011)

Ganesh C. Thakur, Ph.D. Distinguished Professor of Petroleum Engineering and Director of UH Energy Industrial Partnerships University of Houston President, Thakur Services, Inc. NAE (2016)

TAMEST LEADERSHIP

NOBEL LAUREATES

James P. Allison, Ph.D. (NAM, NAS) Nobel Prize in Physiology or Medicine, 2018 The University of Texas MD Anderson Cancer Center

Bruce A. Beutler, M.D. (NAM, NAS) Nobel Prize in Physiology or Medicine, 2011 UT Southwestern Medical Center

Michael S. Brown, M.D. (NAM, NAS) Nobel Prize in Physiology or Medicine, 1985 UT Southwestern Medical Center

Robert F. Curl, Ph.D. (NAS) Nobel Prize in Chemistry, 1996 Rice University

Johann Deisenhofer, Ph.D. (NAS) Nobel Prize in Chemistry, 1988 UT Southwestern Medical Center

Joseph L. Goldstein, M.D. (NAM, NAS) Nobel Prize in Physiology or Medicine, 1985 UT Southwestern Medical Center

Dudley R. Herschbach, Ph.D. (NAS) Nobel Prize in Chemistry, 1986 Texas A&M University

Russell A. Hulse, Ph.D. Nobel Prize in Physics, 1993 The University of Texas at Dallas

David M. Lee, Ph.D. (NAS) Nobel Prize in Physics, 1996 Texas A&M University

Steven Weinberg, Ph.D. (NAS) Nobel Prize in Physics, 1979 The University of Texas at Austin

INDUSTRY AND COMMUNITY AFFILIATES COMMITTEE

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