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Awards



its inception, the Academy has promoted the recognition of the impressive scientists
Louis. This tradition continues with the **24th Annual Outstanding St. Louis
Scientists Awards**. Each award-winner represents an extraordinary caliber of expertise.

ish to focus the region's attention upon individuals, institutions and corporations
n worldwide for their scientific contributions to research, industry, and quality of life.
ery category, preference is given to candidates who also have a record of excellence
mmunicating with the public, mentoring colleagues, or leadership in the field of
ce or industry.



Academy of Science – St. Louis 24th Annual Outstanding Scientists Awards

2018 AWARDS DINNER

The Board of Trustees of
The Academy of Science – St. Louis
invites you to the 24th Annual
Outstanding St. Louis Scientists
Awards Dinner

Special tribute to the Fellows of
The Academy of Science – St. Louis

Thursday, April 5, 2018
Missouri Botanical Garden
4344 Shaw Boulevard
St. Louis, MO 63110

Reception: 5:30 P.M.
Dinner: 7:00 P.M.
Followed by awards ceremony
business attire

Salute to Academy Fellows
Next Generation Awards – Students and Mentors

[Click here for table sponsorship and to purchase tickets.](#)

Contact Ashley Newport
anewport (at) academyofsciencestl.org
314-289-1402

2018 Peter H. Raven Lifetime Achievement Award

The **Peter H. Raven Lifetime Achievement Award** recognizes a distinguished career of service in science, engineering, or technology.



Stuart Kornfeld, M.D.

**David C. and Betty Farrell Professor of Medicine and Biochemistry
Washington University School of Medicine**

Dr. Kornfeld is one of the founders of the field of glycobiology. His early work delineated the enzymatic pathway for synthesis of N-linked oligosaccharides on glycoproteins. Later, his research focused on protein trafficking and organelle biogenesis, and the inherited diseases associated with these processes. His group discovered the two-step enzymatic pathway for addition of the Mannose-6-Phosphate tag to newly synthesized lysosomal enzymes, targeting them to lysosomes. He further discovered that deficiency for the first enzyme (the phospho-transferase) is the underlying defect in patients with Mucopolysaccharidosis Types II and III. His laboratory also cloned and characterized the two Mannose-6-Phosphate receptors, which transport newly synthesized lysosomal enzymes to lysosomes, and identified the peptide motifs in these receptors that instruct the transport machinery. He served as the chief of Hematology-Oncology at the Washington University School of Medicine for nearly 40 years, has led the school's Medical Scientist Training Program and the Physician-Scientist Training

Program, and has mentored generations of outstanding physician-scientists. Kornfeld received the Passano Award in 1991, the E. Donnell Haszprunar Prize in 1992, the Karl Meyer Award from the Society of Glycobiology in 1999, and the Kober Medal from the Association of American Physicians in 2010. He has been elected to the National Academy of Sciences, the National Academy of Medicine, the American Academy of Arts and Sciences, and was President of the Association of American Physicians.

Past Award Recipients: Stephen M. Beverley, Ph.D. (2017); Cheryl Asa, Ph.D. (2016); Steven L. Teitelbaum, M.D. (2015); John Edward Heuser, M.D. (2014); John C. Morris, MD (2013); Jeffrey I. Gordon, MD (2012); Marcus E. Raichle, M.D. (2011); Roger N. Beachy, Ph.D. (2010); Carl Frieden, Ph.D. (2009); Eduardo Slatopolsky, M.D. (2009); William S. Knowles, Ph.D. (2008); Philip D. Stahl, Ph.D. and David C. Van Essen, Ph.D. (2007); Lee Nelken Robins, Ph.D. (2006); Teresa J. Vietti, M.D. (2005); Brian J. Mitchell, Ph.D. (2004); Ira J. Hirsh, Ph.D. and Nobuo Suga, Ph.D. (2003); Maurice Green, Ph.D. and Patty Jo Watson, Ph.D. (2002); Jerome R. Cox, Jr., Sc.D. and Robert W. Murray, Ph.D. (2001); Philip Needleman, Ph.D. and Robert H. Waterston, M.D., Ph.D. (2000); Frank E. Moss, Ph.D. and William S. Sly, M.D. (1999); Louis V. Avioli, M.D. and Leonard Berg, M.D. (1998); Paul E. Lacy, M.D., Ph.D. and Robert M. Walker, Ph.D. (1997); John Olney, M.D. (1996); Michel Ter-Pogossian, Ph.D. (1995)

2018 Science Leadership Award

The **Science Leadership Award** recognizes a distinguished individual — not necessarily a scientist—or organization that has played an important leadership role in the development of science and scientists in the St. Louis region.

Mallinckrodt Pharmaceuticals



Mallinckrodt is a global specialty pharmaceutical company united around a powerful mission – Managing Complexity. Improving Lives. Fueled by strong leadership and talented employees, Mallinckrodt is focused on developing innovative branded therapies and cutting-edge technologies for patients with severe and critical conditions. Founded in 1867 by three brothers in St. Louis, Mallinckrodt has been a major part of the city's history ever since. With our U.S. corporate shared services headquarters in Hazelwood and operating sites around the world, Mallinckrodt employs more than 3,500 employees globally. A core pillar of the company's corporate

social responsibility is giving back to the communities that have helped us grow for more than 150 years. We partner with organizations that are making a tangible difference and driving positive change within local communities and are keenly focused on supporting STEM initiatives in K-12 schools, community colleges, universities and other nonprofit educational organizations, including programs working to create a diverse pipeline of science professionals. Mallinckrodt was recently named a Best Company for LGBT equality and its Inclusion and Diversity Council ranked number two in the nation by the Association of Employee Resource Groups and Councils.

and



Randall S. Prather, Ph.D.

**Curators' Professor and Distinguished Professor of Reproductive Biotechnology
University of Missouri—Columbia**

Prather's research centers on genetic improvement of livestock and the use of swine as models for biomedical research. He was the first to adapt transcriptional profiling techniques to the study of early pig embryos, and has used this information to improve embryo culture systems. Prather applied these technologies to produce the world's first transgenic pigs by oocyte transduction and nuclear transfer, and first knockout in a pig (GGTA1), thus providing a potential source of organs for xenotransplantation into humans. Prather's group has made over 65 different genetic modifications to pigs and over 1,100 cloned pigs. These genetically engineered pigs have medical and agricultural utility from regenerative medicine and disease modeling to altering the composition of meat and disease resistance. An agricultural example is resistance to disease. Porcine Reproductive and Respiratory Syndrome Virus (PRRSV) results in an estimated \$6 million loss per day in North America and Europe. Prather's group knocked out the CD163 gene and made pigs that are resistant to PRRSV. Introduction of these gene

d animals into the food supply will provide for sustainable agriculture that will provide for food security. One biomedical example is a mutation in both copies of CFTR in humans results in cystic fibrosis (CF), and about 5% of the population are carriers; thus representing the prevalent genetic mutation in adolescents in the U.S. Introduction of the mutation in the pig results in 100% of the pigs having all of the mutations in humans thus helping clinicians to understand approaches for treatment of CF.

Award Recipients: Peter Wyse Jackson, Ph.D. (2017); Henry (Hank) C. Foley, Ph.D. (2016); Cortex Innovation Community (2015) and Ralph S. Quatrano, Ph.D. (2015); Novus International (2014) and Robert Fraley, Ph.D. (2014); Nestle' Purina PetCare (2013) and Karen Seibert, Ph.D. (2013); James S. McDonnell Foundation (2012) and Larry J. Shapiro, M.D. (2012); Emerson (2011) and Timothy Eberlein, M.D. (2011); Missouri Botanical Garden (2010) and M. Carolyn Baum, Ph.D., OTR (2010); The Boeing Company (2009) and William A. Peck, M.D. (2009); Charles Kilo, M.D., F.A.C.P., F.A.C.E. (2008) and The Monsanto Company (2008); William (Bill) Danforth, M.D. and Sigma-Aldrich Corporation (2007)

2018 Trustees Award

The **Trustees Award** recognizes outstanding contributions in keeping with the Academy of Science mission of promoting the understanding and appreciation of science. Through exceptional leadership and communication, their impact crosses geographic boundaries and enriches private, public, and academic sectors.



Peter Hoch, Ph.D.

**Curator, Director of Graduate Studies
Missouri Botanical Garden**

Hoch is Director of Graduate Studies and Curator in the Science and Conservation Division of the Missouri Botanical Garden. Hoch studied with Dr. Peter Raven, working on the systematics of North American *Epilobium*, a large genus in the Evening Primrose family. He has continued his work on Onagraceae and is one of the world's authorities on this group of plants. He holds adjunct faculty positions at and serves as liaison with Washington University, Saint Louis University, and University of Missouri-St. Louis, advising and mentoring graduate students, and serving on committees. Hoch has been active with the Graduate Program for several decades, assisting many students to secure funding and to complete dissertation research projects in plant systematics, pollination biology, plant anatomy, cytology, and phenology and climate change, encouraging best practices using herbarium, laboratory, greenhouse, and field techniques. He has mentored undergraduate and high school

students in summer internship programs, most recently as co-PI of the National Science Foundation Research Experiences for Undergraduates (REU) program at the Garden. He serves on several fellowship committees, including at the American Philosophical Society. Hoch has been a judge at the Missouri Region Junior Science, Engineering and Humanities Symposium and at St. Louis Science Fair, as well as a team leader studying the biodiversity in St. Louis Urban parks at the Academy of Science – St. Louis BioBlitz for over ten years.

and



Ty T. Vaughn, Ph.D.

**Vice President, Global Regulatory
Monsanto Distinguished Science Fellow
Monsanto Company**

Growing up in rural America and working on various farming operations inspired Vaughn's passion for agriculture and his deep interest in science. Over the course of his education and career, that interest manifested itself into an inquisitiveness to find solutions for complex challenges across multiple disciplines and perspectives in agriculture. Vaughn has a unique combination of superior technical skills, business acumen and strategic leadership that has resulted in numerous technologies being brought to the agriculture community to address important needs of farmers. His contributions to innovation in agriculture began with roles in R&D discovery where his leadership resulted in identifying several novel genes that are now commercialized and led to oversight and championing the growth of several key crops in new emerging markets around the world. Success in these roles opened doors to pivotal leadership opportunities in the global

mercial business. Currently, as Vice President of Global Regulatory, he ensures sound science is used to secure new product launches and the world.

hn has become an influential leader in industry associations, such as Croplife America and is often sought out by colleagues as well as tific and community leaders for his perspective on various topics. Vaughn mentors and coaches individuals within Monsanto and shares his skills and experience in the academic arena, encouraging the next generation of leaders in science and technology. This aspect of his career further demonstrates his unique broad achievements in advancing innovation.

Past Award Recipients: Philip O. Alderson, M.D. (2017) and Sharon L. Deem, D.V.M., Ph.D., Dipl. ACZM (2017); Sherri M. Brown, Ph.D. (2016); Jennifer K. Lodge, Ph.D. and Robert Magill, Ph.D. (2015); George Yatskievych, Ph.D. and Michael Cosmopoulos, Ph.D. (2014); Pana Charumilind, PhD (2013); Mabel L. Purkerson, M.D. (2012); Janey S. Symington, Ph.D. (2011) and Linda Cottler, Ph.D. (2011); Pfizer-St. Louis (2010); Heidi R. Hope, Ph.D. (2010); Lincoln I. Diuguid, Ph.D.(2009); Paul Markovits, Ph.D. and Paul A. Young, Ph.D. (2008); Patricia E. Simmons, Ph.D. (2007); Thomas A. Woolsey, M.D. (2006); Charles R. Granger, Ph.D. (2005); Luther S. Williams, Ph.D. (2004); Will D. Carpenter, Ph.D. (2003); Jessie L. Ternberg, M.D., Ph.D. (2002); Ernest G. Jaworski, Ph.D. (2001); Willis V. Hauser (1999)

2018 Fellows Award

The **Fellows Award** recognizes a distinguished individual for outstanding achievement in science.



Daniel F. Hoft, M.D., Ph.D.

**Professor of Internal Medicine, Director of the Division of Infectious Diseases, Allergy and Immunology
Saint Louis University School of Medicine**

Hoft focuses on developing vaccines against mucosally transmitted, intracellular pathogens in both animal models and humans. His lab was first to report that CD4+ Th1 and not Th2 cells provide mucosal and systemic protection, indicating that coordinated mucosal/systemic immunity is achievable. His lab reported the first evidence that CD4+ Th17 cells provide potent helper effects for induction of protective CD8+ T cells, implicating Th17 cells as important targets for vaccines against intracellular pathogens and cancer. His group pioneered use of immunoinformatics to develop T cell-targeting,



“universal” vaccines to protect all human populations against future influenza pandemics. In addition to contributions in pre-clinical vaccinology, Hoft has conducted human trials with the goal of improving tuberculosis (TB) vaccines. Although BCG vaccines are available, protection is limited and better

vaccines are urgently needed. Hoft’s clinical trials have tested whether mucosal, booster and/or novel recombinant vaccinations can enhance TB immunity. His lab was first to demonstrate that human $\gamma\delta$ T cells can provide TB protective memory responses, a paradigm shift providing new approaches for TB vaccination. Furthermore, Hoft’s lab has identified new TB antigens that induce protective $\gamma\delta$ T cells, now being studied in nonhuman primates. Hoft serves as Director of the Saint Louis University Center for Vaccine Development, which has received millions in NIH funding through contracts and awards, including a Vaccine & Treatment Evaluation Unit contract placing SLU among an elite group of top academic centers conducting phase I through III trials of novel vaccines for global protection against future pandemic challenges.

and



Gary Stacey, Ph.D.
Curators’ Distinguished Professor of Plant Sciences
University of Missouri—Columbia

Dr. Stacey has consistently been among the world leaders in the study of biological nitrogen fixation, which is of global agricultural importance. He has been instrumental in the development of genomic resources for the study of soybean. He has 13 patents, two of which support the Novozymes product Optimize™. He was elected a Fellow in the American Academy of Microbiology and Fellow of the American Society for Plant Biology. Stacey’s main research interest lies in the mutually beneficial interaction between nitrogen-fixing bacteria and legumes, particularly soybeans. Soybean with its high protein content and nutritious oils is a crop of paramount importance to Missouri, the US and the world. Soybean plants are able to harbor bacteria in their roots that take gaseous nitrogen from the air and convert it into nitrogen-containing compounds the host plants can utilize. This natural fertilization translates into lower fertilizer requirements, with direct economical and ecological benefits in agriculture. In addition, Stacey’s research program creatively combines research with soybean and the

model plant *Arabidopsis*, which is not able to accommodate bacterial nitrogen fixation, to tease apart the perception of microbes as friends or foes. This combination and the vast array of genetic, molecular, and biochemical approaches and their current -omics versions that Dr. Stacey employs to investigate fundamental questions in plant biology creates an outstanding research environment for young and ambitious scientists.

Past Award Recipients: Ebenezer Satyaraj, Ph.D. (2017) and Jeremy Taylor, Ph.D. (2017); James A. Birchler, Ph.D. (2016); Thomas P. Burris, Ph.D. (2016); Lilianna Solnica-Krezel, Ph.D. (2016); Samuel Achilefu, Ph.D. (2015) and Enrico Di Cera, M.D. (2015); David Holtzman, M.D. (2014) and Daniela Salvemini, Ph.D. (2014); Dale Dorsett, Ph.D. (2013) and Samuel Klein, M.D. (2013); Govindaswamy Chinnadurai, Ph.D. (2012) and Scott J. Hultgren, Ph.D. (2012); Duane Grandgenett, Ph.D. (2011) and Toni Kutchan, Ph.D. (2011); Alan L. Schwartz, Ph.D. (2010); Cheryl S. Asa, Ph.D. (2009) and Gerald Medoff, M.D. (2009); Martin H. Israel, Ph.D. (2008), Kattesh V. Katti, Ph.D. and Robert M. Senior, M.D. (2007); Barbara Schaal, Ph.D. and Raymond E. Arvidson, Ph.D. (2006); G. Alexander Patterson, M.D. and Robert T. Fraley, Ph.D. (2005); Patricia G. Parker, Ph.D. and Clifford M. Will, Ph.D. (2004); Susan Mackinnon, M.D. and Raymond G. Slavin, M.D. (2003); Carl M. Bender, Ph.D. and Robert E. Ricklefs, Ph.D. (2002); Christopher I. Byrnes, Ph.D. and Dennis W. Choi, M.D., Ph.D. (2001); Allen R. Atkins, Ph.D. and Sarah C. R. Elgin, Ph.D. (2000); Robert B. Belshe, M.D. and Ananthachari Srinivasan, Ph.D. (1999)

2018 James B. Eads Award

The **James B. Eads Award** recognizes a distinguished individual for outstanding achievement in engineering or technology.



Elizabeth Bryda, Ph.D.
Professor of Veterinary Pathobiology
Director of the Rat Resource and Research Center
University of Missouri—Columbia

Animal models play a pivotal role in advancing research important for human health and the availability of well-characterized models is critical for ensuring robust and reproducible scientific results. As



Director of the NIH-funded Rat Resource and Research Center (RRRC), the only centralized US repository for rat models and one of only two such repositories in the world, Dr. Bryda is responsible for providing ready access to quality-controlled animals, rat related-reagents and services that facilitate biomedical research world-wide. Leveraging her expertise in molecular genetics, she has been active in the generation/characterization of animal models to study human disease and has developed molecular methods for ensuring genetic quality control of animal strains and cell lines. She has been involved in isolation of new rat embryonic cell lines, development of a new cell ablation method,

refinement of existing rodent strains to make them better disease models and generation of new “reporter” rats that can be used broadly by investigators in many fields. Through the RRRC and as the MU Animal Modeling Core Director, she has incorporated genome editing using CRISPR/Cas9 technology to help generate new animal models benefiting investigators both locally and nationally, including new rat models to study susceptibility to inflammatory bowel disease and mice carrying rare, unique human variants in a paradigm that allows ready assessment of putative disease-causing genetic changes from individual patients.

and



Raj Jain, Ph.D.

**Barbara J. and Jerome R. Cox, Jr. Professor of Computer Science and Engineering
Washington University in St. Louis**

Dr. Jain has made several fundamental research contributions to the field of computer networks during the design of Ethernet, ATM, Optical, and Wireless networks and the traffic management on the Internet. In 1978, Dr. Jain was part of the team at Digital Equipment Corporation that designed and productized the first version of Ethernet – the wired network that connects all desktops and datacenter computers. Jain noticed that speed mismatch would cause severe traffic congestion similar to those seen at the exits from high-speed highways to slow city roads. He developed several fundamental principles for traffic management and resource allocation that are used throughout the Internet today. All packets on the Internet have two bits in the header that are based on his “DECbit” work on congestion avoidance. The Additive Increase Multiplicative Decrease (AIMD) principle developed by his group is the basis of distributed resource allocation. Jain Fairness Index is a commonly used metric to measure fairness of resource allocation among competing users. Dr. Jain was a co-founder and CTO of “Nayna Networks, Inc.”

a next generation telecommunications systems company in San Jose. He is a life fellow of IEEE, Fellow of ACM, and a Fellow of American Association for Advancement of Science.

and



Jeffrey Roach
Chief Program Engineer
Platform Subsystems
The Boeing Company

Jeffrey Roach is Boeing Technical Fellow and Chief Engineer of the Integrated Vehicle Energy Technology Program where he directed the development of innovative system architectures and technologies to remove thermal restrictions, increase the aircraft’s range, and better accommodate mission growth. Under his leadership, a subsystem model-based design capability was developed and implemented to reduce development program cost and schedule risk. Mr. Roach has led diverse technology teams that include engineers and scientists from many different companies in the United States and abroad. He has made significant contributions that have impacted the design of hydraulic systems, hydraulic actuation, and electric actuation on multiple aerospace products from front line, manned fighter aircraft, unmanned attack aircraft, spacecraft, and commercial aircraft. Mr. Roach’s past contributions include, implementing all-electric actuation systems for X-45A and X-45C aircraft, hydraulic system design

training for international partners, demonstration of a fluidic control system integrated into an aircraft hydraulic system with acceptable noise levels experts said could not be achieved, and proposing a digital flap controller architecture for the AV-8B which eliminated flap system related aircraft mishaps. He has been awarded seven patents and filed for six related to flight control actuation, efficient energy management, and thermal management. Jeff is currently engaged in and pursuing projects related to hybrid electric propulsion of small cargo and passenger air vehicles.

Past Award Recipients: Tom H. Adams, Ph.D. (2017) and Robert Standley, Ph.D. (2017); Rob Mitra, Ph.D. (2016); Babu Chalamala, Ph.D. (2015) and Charles M. Hohenberg, Ph.D. (2015); Lihong Wang, Ph.D. (2014) and Charles L. Armstrong, Ph.D. (2014); George Gokel, Ph.D. (2013) and Gregory Yablonsky, Ph.D. (2013); Kevin Depperman (2012) and Stuart A. Solin, Ph.D. (2012); Ettigounder (Samy) Ponnusamy, Ph.D. (2011) and Alexander Rubin, Ph.D. (2011); David A. Fischhoff, Ph.D. (2010) and Stephen R. Padgett, Ph.D. (2010); Ramesh K. Agarwal, Ph.D. (2009); Sherman J. Silber, M.D., F.A.C.S. (2008); Robert B. Horsch, Ph.D. (2006); Krishnan K. Sankaran, Ph.D. (2005); Rudolph N. Yurkovich (2004); Donald P. Ames, Ph.D. (2003); Richard E. Pinckert, Ph.D. and Jonathan S. Turner, Ph.D. (2002); Richard D. Bucholz, M.D. (2001)

2018 George Engelmann Interdisciplinary Award

The **George Engelmann Interdisciplinary Award** recognizes outstanding achievement in science, engineering, or technology that results from collaboration among two or more (up to three) individuals across disciplinary or institutional boundaries.



Xuemin (Sam) Wang, Ph.D.

E. Desmond Lee Professor of Plant Sciences

University of Missouri—St. Louis and Donald Danforth Plant Science Center

Dr. Wang has made seminal contributions to the field of plant lipid metabolism, signaling, and analysis: 1) His first cloning of phospholipase D (PLD) was a major breakthrough, which led to the cloning of PLDs in yeast and animals, providing the catalyst for rapid advances in PLD research. His systematic analyses of PLD and other phospholipase families have advanced biochemical and functional understanding of membrane lipid hydrolysis. 2) Sam has been a driving force in plant lipid signaling. His work has led to the discovery of phosphatidic acid (PA) as an important class of lipid mediators in plants and the elucidation of PA action. 3) His vision and role in developing lipidomic analysis has broadly benefited the research community. As founding director, he led the establishment of the Kansas Lipidomic Research Center and pioneered the application of lipidomics to address biological questions, including characterization of lipolytic enzymes, identification of bioactive lipids, and lipid-protein interactions.

Furthermore, Sam has made significant progress in translating his lab discoveries to improve crops in production, drought tolerance, and N/P use efficiency. Sam has published over 160 papers, edited two books, and holds several U.S. patents. Wang enthusiastically promotes scientific research by organizing conferences and serving on editorial boards and federal review panels.

Past Award Recipients: Edward Spitznagel, Ph.D. (2017); Yuanlong Pan, BVM, Ph.D. (2016); Gary D. Stormo, Ph.D. (2016); Gregory R. Heck, Ph.D. and Technical Community of Monsanto Leadership Team (2015) Timothy J. Ley, M.D. (2012) Elaine R. Mardis, Ph.D. (2012) Richard Wilson, Ph.D. (2012)

2018 Innovation Award

The **Innovation Award** recognizes a scientist or engineer – age 40 or under (for 2018 award, age 40 or under by December 31, 2017) – who has demonstrated exceptional potential for future accomplishments in science, engineering or technology.



Carla Reynolds, Ph.D.

Next Generation Composite Materials Scientist

Boeing Research and Technology

The Boeing Company

Dr. Reynolds joined Boeing Research and Technology's Next Generation Composite Materials group in and within six months, she earned the role of Principal Investigator and lead of the computational composite materials research team due to clear demonstrations of expertise in polymer physics and molecular scale modeling. In her current role, she is developing robust molecular dynamics simulation tools that allow engineers to predict the impact of process pathway on the structure and performance of thermoset materials in addition to developing the internal strategy for computational tool development. Her efforts in the field have already led to two novel modeling methodologies that allow an in depth

understanding of the driving forces that govern thermoset materials behavior at the nano and micro scale. Dr. Reynolds has authored numerous publications on molecular modeling of polymeric materials and champions collaborations across industry, government, and academic research teams. Based on these efforts, she has been invited to develop a reoccurring workshop centered around the development, standardization, and validation of process models for composite materials to take place at SAMPE 2018. In addition to her internal technical work, Reynolds is leading collaborative efforts with the Air Force, NIST, and several Universities to drive the field of molecular level computation and increase the impact these tools have in an industrial setting. Dr. Reynolds strives to improve our fundamental understanding of polymeric materials and develop novel computation tools that have the potential to revolutionize composite materials R&D by targeting industrially relevant problems.

Past Award Recipients: Liviu Mirica, Ph.D. (2017) and Kater Murch, Ph.D. (2017); Tiffani D. Eisenhauer, Ph.D. (2016); Gary J. Patti, Ph.D. (2016); Gautam Dantas, Ph.D. (2015) and Yiyu Shi, Ph.D. (2015); Caitlin Kelleher, Ph.D. (2014); Angel Baldan, Ph.D. (2013) and Katherine A. Henzler-Wildman, Ph.D. (2013); Audrey R. Odom, M.D., Ph.D. (2012); Randall J. Bateman, M.D. (2010); Ganesh K. Venayagamoorthy, Ph.D. (2010); Jonathan M. Chase, Ph.D. (2009); Timothy E. Holy, Ph.D. (2009); Sonya Bahar, Ph.D. (2008); Eric C. Leuthardt, M.D. and Ali Shilatifard, Ph.D. (2007); Shelley D. Minter, Ph.D. (2005); James H. Buckley, Ph.D. (2004); Phyllis I. Hanson, M.D., Ph.D. and James P. McCarter, M.D., (2003); Karen L. Wooley, Ph.D. (2002); Jonathan B. Losos, Ph.D. (2001); Steven F. Dowdy, Ph.D. and Michael E. Wyssession, Ph.D. (2000); L. Dugan, M.D. (1999); Scott Hultgren, Ph.D. (1998); James M. Bornholdt, Ph.D. (1997); Alison Goate, Ph.D. and Robert D. Davinroy (1995); Jacob C. Langer, M.D. (1995)



8 Science Educator Award

Science Educator Award recognizes a distinguished individual on the basis of outstanding contributions to science education or to the public understanding of science, engineering, or technology. As each category of award now includes a strong education and outreach component, and we have another mechanism for awarding K-12 Teacher Awards, the Educator category is primarily for those in higher education or the corporate sector. This is not a reflection on the excellent work in education, but rather is a verification of the high value of educational endeavors (including mentoring, citizen outreach, STEM advocacy and interdisciplinary efforts) performed by the Award recipients in all categories.



David Kirk, Ph.D.
Professor of Biology Emeritus
Washington University in St. Louis

Dr. Kirk has spent a lifetime teaching developmental biology and doing research on the evolutionary origins of multicellular organisms. He is internationally known for his research on *Volvox carteri* development and evolution, and has co-authored numerous scientific publications on these topics and has authored a book on *Volvox* for Cambridge University Press. Kirk has a great passion for educating and supporting teachers. In particular, he works to advance K-12 science education by improving the way evolution education is taught in schools. Dr. Kirk devotes his time to making sure evolution is a key part of a sound K-12 science curriculum. Dr. Kirk's interest in advancing K-12 science education is not limited to evolution. He led the revision of the Science Outreach "hands-on" Modern Genetics program that is now used in many local high schools, and he also served as principal investigator for an NIH grant that funded development of middle-school inquiry-based learning materials in collaboration with the Saint Louis Zoo, the Saint Louis Science Center and the Missouri Botanical

Garden.

and



Johannes Strobel, Ph.D.
Full Professor and Director, I.C.E. Lab (Makerspace)
University of Missouri—Columbia

Strobel is Full Professor, Information Science & Learning Technologies at the University of Missouri where he leads the I.C.E. Lab, a maker space initiative and conducts research in STEM education, particularly the integration of science and engineering. His research focuses on engineering as an innovation in education; learning through hands-on activities; and empathy and care in engineering. Dr. Strobel was PI, Co-PI and key personnel of research and development grants totaling over \$12M in the US and Canada. He published



more than 140 papers in proceedings and journals (many published with graduate and undergraduate students). Dr. Strobel has led an award-winning research center at Purdue University and has been serving as an Invited Member on the National Academy of Engineering Committee for Implementing Engineering in K-12. Bringing his expertise to the classroom, Dr. Strobel was lead designer of Hands-on Standards STEM in Action™—an internationally available set of learning modules for preK-5th grades published by ETA hand2mind®. The national version is used in 200,000 classrooms reaching 6,000,000 students. The international version is now in use in 35 countries, and was selected as a finalist for two international education awards. Dr. Strobel is keynote and featured speaker and continues to be personally active in mentorship, teaching his modules to elementary school classes, mentoring students, and reaching teachers and administrators through professional development workshops.

Past Award Recipients: David Westenberg, Ph.D. (2017); Kyra N. Krakos, Ph.D. (2016); Robert Marquis, Ph.D. (2014); James Wilson, Ph.D. (2013); Pamela Gay, Ph.D. (2012) and Michael W. Friedlander, Ph.D. (2012); Young Scientist Program, Washington University in St. Louis (2011); Harold H. Harris, Ph.D. (2010); Victoria Lynn May (2009); Harold R. Messler, B.S. (2008) and John Rigden, Ph.D. (2008); Patrick L. Osborne, Ph.D. (2007); Kenneth Mares, Ph.D. (2006); Robert A. Williams, Ph.D. (2005); Paul H. Young, M.D. and William L. McConnell (2004)



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Science Matters | Episode 113 | The 21st Annual Outstanding St. Louis Scientists Awards



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