Dear Colleagues,

Welcome back to the new academic year! Our goal across all of Knowledge Enterprise Development is to help support your aspirations. As an example of our recent success, the Department of Homeland Security selected ASU to lead a new Center of Excellence. Through the five-year, $20 million grant, ASU will spearhead a consortium of academic, industry, government and laboratory partners in developing analytic tools and technologies to improve operational efficiency.

This year, ASU was the top recipient of Department of Energy SunShot Awards for photovoltaics research, receiving six out of 28 grants awarded nationwide. ASU faculty also earned 14 National Science Foundation CAREER awards, ranking second among all university recipients and setting an ASU record.

As we work toward a brighter future for Arizona, the U.S. and the world, it is important to take a look back at history. Next year marks the 200th anniversary of the publication of Frankenstein, Mary Shelley’s novel exploring the societal consequences of scientific endeavors. As ASU prepares a bicentennial celebration of this enduring tale, take a look at a new edition of the novel, edited by three ASU faculty members and annotated for scientists, engineers and creators of all kinds.

Your expertise and the solutions you develop are key drivers of Arizona’s growth and prosperity. For example, Benchmark Electronics, a global engineering, design and integrated electronics manufacturing company, is relocating its headquarters to the Valley of the Sun. The company cites the ability to partner with ASU as a major draw to the greater Phoenix area.

This summer, ASU’s Research Operations team achieved ISO 9001:2015 certification, the world’s most widely recognized quality management standard. It ensures that we provide a consistently high level of service to our researchers and makes ASU more attractive to sponsors and partners.

Learn more about what this certification means, as well as your colleagues’ activities and accomplishments, in this edition of the KED Bulletin. Thank you for your creativity and commitment in helping to advance ASU.

Sincerely,

Sethuraman “Panch” Panchanathan
Executive Vice President and Chief Research and Innovation Officer
Knowledge Enterprise Development
panch@asu.edu
RESEARCH IMPACT
A sampling of recent discovery and innovation

Plant-based Zika vaccine
A team led by Dr. Qiang “Shawn” Chen, a researcher in the Biodesign Institute and the School of Life Sciences, has developed the world’s first plant-based Zika vaccine, which could be more potent, safer and cheaper to produce than any other efforts to date. The new vaccine conferred 100 percent protection against multiple Zika virus strains in mice. The research was published in the online version of Scientific Reports - Nature.
Learn more

Impact of color photos in court
Jurors who viewed color photographs of gruesome crime scenes were 1.5 times more likely to convict than jurors who viewed the same photos in black and white, according to a study led by Dr. Jessica Salerno in the School of Social and Behavioral Sciences. The study, published in the journal Psychology, Public Policy and Law, also showed that jurors who viewed color photographs were 2.5 times more likely to convict than jurors who had only heard about the evidence verbally.
Learn more

The heart of a sun-loving bacteria
A research team led by Dr. Raimund Fromme, in the Biodesign Institute and School of Molecular Sciences, has gained a fundamental understanding of the inner workings of photosynthesis. The team visualized the photosynthetic reaction center (RC) of heliobacteria for the first time at a near-atomic resolution. They found almost perfect symmetry in the RC, which helps it gather every available photon of near infrared light. The findings were published in the journal Science.
Learn more

Solving mysteries in Earth’s mantle
A team of geoscientists from ASU and Michigan State University used computer modeling to explain how pockets of mushy rock accumulate at the boundary between Earth’s core and mantle. The model showed that most of these pockets are different in composition from the surrounding mantle, and they will migrate toward the margins of larger rock structures known as “thermochemical piles.” The study, led by Dr. Mingming Li in the School of Earth and Space Exploration, was published in Nature Communications.
Learn more
**RNA circuits for living computers**

Dr. Alex Green, a researcher in the Biodesign Institute and School of Molecular Sciences, has demonstrated how living cells can be induced to carry out computations in the manner of tiny robots or computers by using circuits composed of RNA. These circuit designs self-assemble in bacterial cells, allowing them to sense incoming messages and respond by producing a computational output (in this case, a protein). The study appeared in the online edition of the journal Nature.

[Learn more](#)

**New brain death pathway in Alzheimer’s**

Researchers from the ASU-Banner Neurodegenerative Disease Research Center and TGen have found evidence that the activation of a biological pathway called necroptosis, which causes neuronal loss, is closely linked with Alzheimer’s severity, cognitive decline, and extreme loss of tissue and brain weight that are all advanced hallmarks of the disease. The study, led by Dr. Salvatore Oddo of ASU’s Biodesign Institute and School of Life Sciences, appeared in the online edition of Nature Neuroscience.

[Learn more](#)

**Is self-fulfillment biologically driven?**

From an evolutionary perspective, achieving “self actualization” might translate into social benefits like status or attention from potential mates. This is the finding from a series of studies led by ASU doctoral student Jaime Arona Krems, Dr. Douglas Kenrick in ASU’s Department of Psychology and Dr. Rebecca Neel at the University of Iowa. The research, which surveyed more than 1,200 people, was published in Personality and Social Psychology Bulletin.

[Learn more](#)

**Gender bias in professional titles**

Researchers from ASU and Mayo Clinic Arizona found that female doctors introduced by men at formal gatherings are less likely to be referred to by their professional title than male doctors introduced by men. The team, which included Dr. Patricia Friedrich in the New College of Interdisciplinary Arts and Sciences, published the study in the Journal of Women’s Health.

[Learn more](#)

**Mom’s happiness rests on what she wants**

A study of more than 2,000 well-educated mothers shows greater well-being when employment status is aligned with personal preference. Women who wanted their employment status — whether it was to work or stay at home — were happier than those who didn’t. The study, led by Dr. Suniya Luthar in the Department of Psychology, was published in the early online edition of the Journal of Family and Economic Issues.

[Learn more](#)

**Tracking the buildup to volcanic eruptions**

ASU researchers working with colleagues around the world developed a new technique to track the heating history of the magma that feeds explosive volcanos. The research, published in the journal Science, suggests that pulses of heat in the magma before a volcanic eruption both begin and end more abruptly than scientists previously thought. Moreover, the heat pulses last a shorter time than expected. Dr. Christy Till in the School of Earth and Space Exploration co-authored the paper.

[Learn more](#)
A better understanding of Earth’s middle mantle

A team led by Dr. Dan Shim in the School of Earth and Space Exploration combined X-ray techniques in the synchrotron radiation facility at the DOE’s National Labs and atomic resolution electron microscopy at ASU to determine what causes unusual flow patterns in rocks that lie more than 600 miles deep within the Earth. Their results were published in the Proceedings of the National Academy of Sciences.

Learn more

Media attention influences humanitarian aid

Research led by Dr. Mahyar Eftekhar, in the W. P. Carey School of Business, found that news coverage of disasters increases not only individual donations to humanitarian organizations, but also government funding. The study, published in the journal Production and Operations Management, suggests that while collaboration might allow organizations to be more efficient, their funding structure (relying on news reports to drive donations) brings in more dollars per organization when they do not cooperate.

Learn more

Study finds source of mutation in Alzheimer’s

Researchers led by ASU and TGen have identified altered expression of a gene called ANK1, which has been associated with memory-robbing Alzheimer’s disease, in specific cells in the brain. They found that altered ANK1 expression originates in microglia, a type of immune cell found in the brain and central nervous system, according to the study published in the scientific journal PLOS ONE. The study was led by Dr. Diego Mastroeni in Biodesign’s ASU-Benner Neurodegenerative Disease Research Center.

Learn more

Working together benefits chimps

A new study led by Dr. Kevin Langergraber, in the School of Human Evolution and Social Change and the Institute of Human Origins, examined 20 years of data on who participated in patrols in a 200-member Ngogo community of chimpanzees in Kibale National Park, Uganda. The study, published in the Proceedings of the National Academy of Sciences, shows how working together benefits the group, regardless of whether individual chimps patrolled or not.

Learn more

Solving a sweet problem for biofuels

By growing bacteria over generations under specially controlled conditions in fermentation tanks, ASU researchers have test-tube-evolved the microbes to better ferment sugars derived from biomass — a rich, potential renewable-energy source for the production of biofuels and chemicals. The research was a collaboration between ASU’s School of Life Sciences and the Biodesign Institute, led by Drs. Reed Cartwright and Xuan Wang. Their results appeared in the online edition of PNAS.

Learn more
HONORS & RECOGNITION

ASU earned 14 National Science Foundation early career faculty (CAREER) awards, ranking second among all university recipients for 2017 and setting an ASU record. This year’s winners include:

Dr. Adam Doupé
assistant professor
School of Computing, Informatics, and Decision Systems Engineering

Dr. Gary Moore
assistant professor
School of Molecular Sciences

Dr. Mehdi Nikkhah
assistant professor
School of Biological and Health Systems Engineering

Dr. Umit Ogras
assistant professor
School of Electrical, Computer and Energy Engineering

Dr. Jay Oswald
assistant professor
School for Engineering of Matter, Transport and Energy

Dr. Steve Presse
associate professor
School of Molecular Sciences

Dr. Yueming (Lucy) Qiu
assistant professor
The Polytechnic School

Dr. Fengbo Ren
assistant professor
School of Computing, Informatics, and Decision Systems Engineering

Dr. Jae-sun Seo
assistant professor
School of Electrical, Computer and Energy Engineering

Dr. Christy Till
assistant professor
School of Earth and Space Exploration

Dr. Hanghang Tong
assistant professor
School of Computing, Informatics, and Decision Systems Engineering

Dr. Ryan Trovitch
assistant professor
School of Molecular Sciences

Dr. Robert Wang
assistant professor
School for Engineering of Matter, Transport and Energy

Dr. Carole-Jean Wu
assistant professor
School of Computing, Informatics, and Decision Systems Engineering

Learn more
HONORS & RECOGNITION

Dr. Nancy Grimm, a professor in the School of Life Sciences, has been named a Fellow of the American Geophysical Union. The AGU Fellows program recognizes members who have made exceptional contributions to earth and space sciences.

Learn more

Dr. Matthew Delmont, director of the School of Historical, Philosophical and Religious Studies, was awarded a Guggenheim Fellowship from the John Simon Guggenheim Memorial Foundation to study the daily lives of African-Americans during World War II.

Learn more

Dr. Samuel Ariaratnam, professor in the School of Sustainable Engineering and the Built Environment and construction engineering program chair, was recently appointed to serve a 16-month term on a National Academies of Science, Engineering and Medicine committee studying the safety of the nation’s propane pipeline systems.

Learn more

Dr. Peter Schmelz, associate professor in the School of Music, has been named a recipient of the prestigious Berlin Prize, a semester-long fellowship in Berlin awarded annually to top-tier scholars, writers and artists from the U.S.

Learn more

Dr. David Grau, assistant professor in the School of Sustainable Engineering and the Built Environment, has been named the Construction Industry Institute’s 2017 Outstanding Instructor and Outstanding Researcher.

Learn more
ENTREPRENEURSHIP & INNOVATION

Is your research ready for commercialization?

The National Science Foundation (NSF) I-Corps program prepares researchers to move their projects toward commercialization. ASU’s I-Corps Site provides training, coaching and financial support to faculty and student efforts to transition university research into the marketplace and to become successful I-Corps Teams.

Faculty who complete the I-Corps training may be eligible to receive $2,000 for customer discovery efforts. They may also qualify for the National I-Corps program, which provides $50,000+ grants for continued customer discovery.

Join our I-Corps Next Stage Lean Launch Training, held every Thursday from Oct. 19 through Nov. 16, 2017 from 9 – 11 a.m. There are also two 30-minute mandatory office hours on select Fridays during the program. Prior to registration, prospective I-Corps teams are encouraged to complete the I-Corps application.

Learn more and register

Get your share of over $1.3 million in funding

The ASU Venture Devils program supports student, faculty and community entrepreneurs who are turning their ideas into reality. Venture Devils provides access to funding opportunities, mentoring from experienced entrepreneurs and venture development workspaces.

Who can apply?

- ASU student founders—new or existing startup teams that have at least one current ASU student as a key founder
- ASU faculty founders
- Community-based founders

We welcome all local and remotely based founders, including online students.

Upcoming application deadlines:

- Monday, Jan. 1 (Spring A)
- Monday, March 5 (Spring B)

Learn more and apply
PARTNERSHIPS

Mayo Clinic and ASU Team Science Grants
In January, the Mayo Clinic and Arizona State University Alliance for Health Care awarded three Team Science Grants to strategically capitalize on the clinical and technological strengths of Mayo Clinic and the broad range of engineering expertise at ASU. This collaboration aims to foster multidisciplinary teams jointly led by faculty from both institutions to develop high-impact, transformative solutions to address unmet clinical needs of patients on the topics of biomedical sensing, functional restoration and biomedical imaging/informatics. Our inaugural cohort includes three teams:

- Dr. Kristin Zhao of Mayo Clinic and Dr. Marco Santello of ASU
- Dr. Gregory Worrell of Mayo Clinic and Dr. Gregory Raupp of ASU
- Dr. Cynthia McCoullough of Mayo Clinic and Dr. Bill Graves of ASU

RESEARCH TOOLS & TRAINING

Proposal editing
Would you like assistance in making your grant proposals clear, concise and correct? Knowledge Enterprise Development now offers free proposal editing services to all ASU researchers. Learn more about what we offer, as well as how to request editing services, on asu.edu/proposalediting, or contact proposalediting@asu.edu.

Help on-demand in Research Academy
Did you know that researchers can access a series of online modules under My Trainings? In addition to finding all upcoming professional development workshops, Research Academy also includes the Kick Off Your Research series. The modules are designed to guide you through the hard work of finding funding, gathering the information you need for a grant proposal, and writing and revising key sections of your proposal. Learn more.

And if making your proposal writing work easier isn’t enough, faculty who enroll in our incentives program and complete the modules are also eligible for rewards.

Funding Success Skills Series
Join us for free lunchtime seminars that bring successful professors and experienced senior staff together with early career tenured and tenure-track faculty to discuss critical points along the funding lifecycle in order to create a culture of proposal success. All workshops are recorded and available for viewing at funding.asu.edu. Lunch is provided. The next session is:

Big ideas: How does a single idea become a movement?
Nov. 28, 2017
11:30 a.m. – 1 p.m.
Ensuring Faculty Success in Limited Submissions workshop

Often federal and philanthropic sponsors limit the number of proposals submitted by an organization, or by a school or college, etc. This discussion will assist you in understanding why limited submissions exist, ASU’s internal limited submissions process, how to improve the competitive nature of your limited submission and how to secure additional proposal development resources. Faculty members will learn about the ins and outs of the process, the benefits of becoming a reviewer, and the resources available to support proposal development.

Oct. 20, 2017
1:30 – 4:30 p.m.
Learn more and RSVP

NSF Regional Grants Conference

The NSF Regional Grants Conference will be held in Phoenix Nov. 13 – 15. These semi-annual conferences are essential learning opportunities for new faculty, researchers and administrators who want to gain key insights into a wide range of current issues at NSF.

Learn more

ASU Research Development will be hosting a pre-conference reception on Nov. 12 for a limited number of attendees to mingle with colleagues. For more information and to be added to the notification list, email ResearchDevelopment@asu.edu.

ISO certification

ASU Research Operations is the first organization within a U.S. university to achieve ISO 9001:2015 certification, the world’s most widely recognized quality management standard. It outlines ways to achieve, as well as benchmark, consistent performance and service.

Research Operations includes all service and support functions of the Office of Knowledge Enterprise Development. This includes the departments that provide administration, services and support functions of proposal development, submission and negotiations, as well as award setup, management and closeout.

Certification to ISO 9001:2015:

- ensures that we provide the highest-quality service to our researchers, with an emphasis on consistency and efficiency
- facilitates opportunities to enhance customer satisfaction
- makes ASU more attractive to sponsors, industry, funders and partners
- helps us save time and resources through more efficient ways of working
- improves decision-making and risk management
- creates a culture of continual improvement
**RECENT GRANTS & CONTRACTS**

A sampling of recent research grants

**Dr. Glen Nelson**, in the College of Nursing and Health Innovation, was awarded $11 million from the Dignity Health St. Joseph's Hospital Medical Center for Mission Support.

**Dr. Phil Christensen**, in the School of Earth and Space Exploration, was awarded $9.5 million from NASA for phase B of the Thermal Emission Imaging System camera on Mars Odyssey.

**Dr. Flavio Marsiglia**, in the School of Social Work, was awarded $7 million from the National Institute on Minority Health and Health Disparities to establish ASU's Southwest Interdisciplinary Research Center as a U54 Specialized Center.

**Dr. Stephen Helms Tillery**, in the School of Biological and Health Systems Engineering, was awarded $4 million from the Defense Advanced Research Projects Agency for transdermal neuromodulation.

**Evelyn Cruz, JD**, in the Sandra Day O'Connor College of Law, was awarded $2.8 million for Making the System Work: Using victim advocacy clinics and institutionalized training.

**Dr. Tony Hu**, in the Biodesign Institute, was awarded $2.5 million from the National Institute of Child Health and Human Development and $1.7 million from the National Institute of Allergy and Infectious Diseases for research on pediatric tuberculosis diagnosis, treatment monitoring and management.

**Dr. Joshua LaBaer**, in the Biodesign Institute, was awarded $2.3 million from the National Cancer Institute to study novel approaches to immune responses to post translational modifications for cancer detection. He was also awarded $1.6 million from the Department of Health and Human Services for clinical validation and biodosimetry high-throughput diagnostic tests.

**Dr. John Sabo**, in the School of Life Sciences, was awarded $2.3 million from the NSF for research linking current and future hydrologic change to hydropower human nutrition and livelihoods in the lower Mekong basin.

**Dr. Hongyu Yu**, in the School of Earth and Space Exploration and the School of Electrical, Computer and Energy Engineering, was awarded $2.3 million from NASA to study seismometers for exploring the subsurface of Europa.

**Dr. Adam Cohen**, in the Department of Psychology, was awarded $1.7 million from the U.S. Army for “Broadening our view of culture.”

**Dr. David Brafman**, in the School of Biological and Health Systems Engineering, was awarded $1.5 million from the National Institute of Allergy and Infectious Diseases to investigate the mechanisms of a multi-state model of Wnt signaling.

**Dr. Julie Liss**, in the Department of Speech and Hearing Science, was awarded $1.5 million from the National Institute of Deafness and Other Communication Disorders to study dysarthric speech.

**Dr. James Middleton**, in the School for Engineering of Matter, Transport and Energy, was awarded $1.4 million from the NSF for a secondary mathematics in-the-moment longitudinal engagement study.

**Dr. Xu Wang**, in the School of Molecular Sciences, was awarded $1.4 million from the National Institute of General Medical Sciences for “interactions of pleiotrophin with receptor type protein tyrosine phosphatase.”
Dr. Spring Berman, in the School for the Engineering of Matter, Transport and Energy, was awarded $1.3 million from the U.S. Navy for “Octopus-inspired autonomous arms for soft robots with adaptive motions.”

Dr. Sidney Hecht, in the Biodesign Institute, was awarded $1.1 million from the NIH for “ribosomally synthesized proteins incorporating modified dipeptides.”

Dr. Douglas McFadden, in the Biodesign Institute, was awarded $1.1 million from the National Institute of Allergy and Infectious Disease for studies in poxvirus host range genes and tropism.

Dr. Nongjian Tao, in the Biodesign Institute, was awarded $1.1 million from the NIH for research focused on measuring small molecule interactions with membrane proteins.

Dr. Panagiotis Artemiadis, in the School for the Engineering of Matter, Transport and Energy, was awarded $1 million for research on smart ankle prosthesis supporting increased mobility.

Dr. Hugh Barnaby, in the School of Electrical, Computer and Energy Engineering, was awarded $1 million from the Defense Threat Reduction Agency for “Characterizing and Modeling Radiation Effects in Neuromorphic Computing Paradigm.”

Dr. Sara Brownell, in the School of Life Sciences, was awarded $1 million from the National Science Foundation for “Making the LEAP from transfer student to research scientist.”

Dr. Carlos Castillo-Chavez, in the School of Life Sciences, was awarded $1 million from the NSF for the Bridge to Doctorate program focused on multidisciplinary STEM solutions.

Dr. Danielle McNamara, in the Institute for the Science of Teaching and Learning, was awarded $960,000 from the Office of Naval Research for improving adults’ writing using adaptive reading and writing instruction.

Dr. Thomas Dishion, in the Department of Psychology, was awarded $900,000 from the Department of Health and Human Services for the Center for Resilient Families.

Dr. Eric Welch, in the School of Public Affairs, was awarded $900,000 from the NSF for “Connecting nuances of foreign status professional networks and higher education outcomes in STEM disciplines over time.”

Dr. Charles Katz, in the Center for Violence Prevention and Community Service, was awarded $640,000 from USAID for Honduras Justice Human Rights and Security Strengthening.

Dr. Kevin Wright, in the School of Criminology and Criminal Justice, was awarded $630,000 to study “altering administrative segregation for inmates and staff: a mixed-methods analysis of the effects of living and working in restrictive housing.”

Dr. Hugh Barnaby, in the School of Electrical, Computer and Energy Engineering, was awarded $1 million from the Defense Threat Reduction Agency for “Characterizing and Modeling Radiation Effects in Neuromorphic Computing Paradigm.”