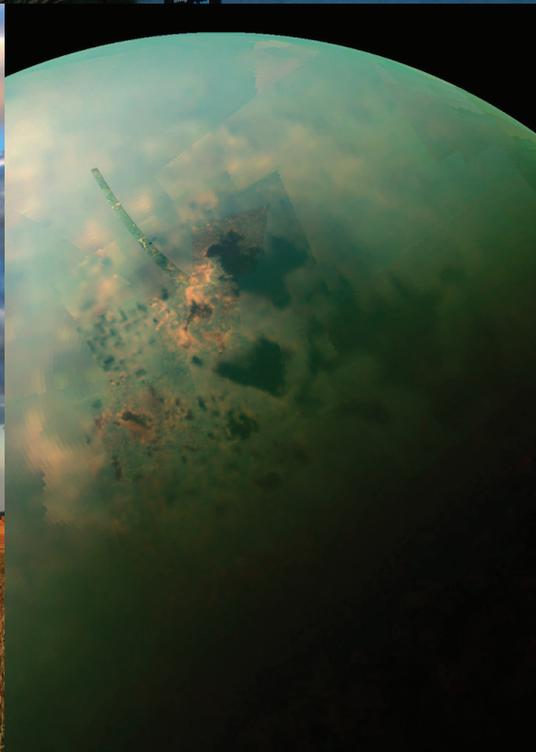
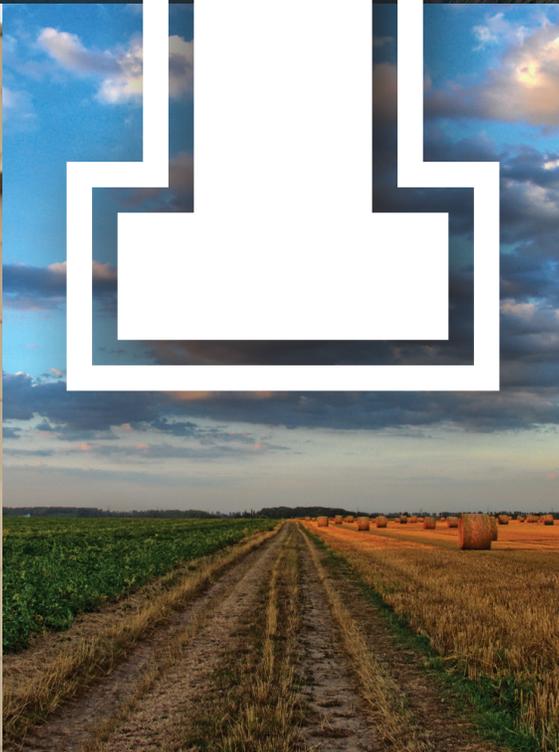


INSPIRED DISCOVERIES



RESEARCH REPORT
2019



University of Idaho

THE IMPACT WE MAKE

A MESSAGE FROM THE VICE PRESIDENT

At the University of Idaho, a public, land-grant university, we are tackling complex challenges and working to expand research efforts. The results have been rapid and dramatic. I am so proud to lead our research enterprise and to serve the students, faculty, staff and community members that make our institution so successful.

Growth continues on a positive trajectory for the third straight year, with awards and recognitions, record-breaking expenditures and innovative contributions. Our research expenditures as reported to the National Science Foundation's Higher Education Research and Development (HERD) Survey hit nearly \$112 million for 2018 – and indicators show even more growth is ahead.

One of this year's most exciting accomplishments was the launch of our statewide five-year, \$24 million cooperative research project with the National Science Foundation to help uncover the "rules of life" and allow us to manage Idaho's natural resources in unprecedented ways.

The year also marked notable achievements in University of Idaho faculty recognition, including elected fellows to the American Association for the Advancement of Science

and the National Academy of Inventors, as well as early career awards from the National Science Foundation.

Our Integrated Research and Innovation Center (IRIC) continues to be a catalyst for innovation, providing an amazing environment to foster interdisciplinary discovery and connect faculty and students across diverse disciplines.

I invite you to read our 2019 Research Report: Inspired Discoveries and explore the remarkable research ongoing across the campus and the communities we touch. Please join me in celebrating our accomplishments and imagining the possibilities for the future.

Go Vandals!



Janet E. Nelson, Ph.D.

Vice President for Research and Economic Development



SHORT AND SWEET: VALIDATING OUR RESEARCH AND SPONSORING A COMMUNITY



Credit: Jeremy Tamsen

Six minutes and 40 seconds. That's exactly how much time presenters have to explain tiger DNA tracking studies in Nepal, forgotten figures of the Viennese musical scene or attitudes on decisions to vaccinate during the **University of Idaho's SAS (Short and Sweet)** Research Talks event.

Twice a year, the Office of Research and Economic Development (ORED) hosts the SAS Talks and draws together faculty, students, staff and community members to hear offerings from multiple scholars in fields ranging from civil engineering to applied linguistics. Each presenter crafts a vibrant, insightful, and most of all, succinct introduction to her or his research. The result – 20 slides timed at 20 seconds each – creates a fast and entertaining presentation that is understandable to academics and community members from all backgrounds.

Through SAS, we are fostering a culture of research at the university, producing tangible new research collaborations, developing a vibrant community of fellow researchers, and energizing and exciting the community.

IDAHO LAUNCHES \$24 MILLION PROJECT TO PREDICT HOW PLANTS AND ANIMALS ADAPT TO CHANGE



The University of Idaho is leading an award from the **National Science Foundation (NSF)** to support research aimed at uncovering and predicting how rainbow trout and sagebrush adapt to changing

environments. Led by principal investigator and interim Idaho EPSCoR Project Director Janet E. Nelson, this is one of the largest statewide, multi-institutional research and education projects in Idaho's history.

The five-year, \$24 million project, **Genes to Environment: Modeling, Mechanisms and Mapping (GEM3)**, is funded by the **National Science Foundation's (NSF) Established Program to Stimulate Competitive Research (EPSCoR) Research Infrastructure Improvement (RII)** program, which is designed to fulfill NSF's mandate to promote scientific progress nationwide. In addition to the \$20 million in funding from NSF, \$4 million in matching funds were provided by Idaho's Higher Education Research Council. **GEM3** will look into the genetic, environmental and social systems connected to rainbow trout and sagebrush populations while helping researchers better understand a broad range of organisms in the Gem State.

The project will foster a deeper integration of research expertise from many of Idaho's top academic research centers and strengthen Idaho's research capabilities to address some of the greatest challenges in understanding the natural world. The award is shared with collaborating Idaho EPSCoR partners at Boise State University and Idaho State University and will help inform natural resource policies and management decisions throughout the American West.

This is the eighth such EPSCoR RII award Idaho has received and a notable example of what Idaho's universities can achieve by working together.



Credit: Debbie Courson Smith



Credit: Michael Visintainer



Credit: Jeremy Tamsen

NEW OFFICE PROVIDES RESEARCH DEVELOPMENT SUPPORT

ORED has created a new unit, **Research and Faculty Development (RFD)**, to increase the University of Idaho's competitiveness for grant funding and awards.

The services provided by the RFD team aim to enhance faculty success as they apply for grants to support their research, scholarly and creative efforts. The RFD team provides proposal support services to individual faculty members and to interdisciplinary teams seeking funding from external sources.

Additionally, RFD delivers workshops and seminars that lend knowledge to grant-seeking faculty and stimulate interest in applying for prestigious awards, such as the NSF Faculty Early Career Development (CAREER) Award and the Fulbright Faculty Scholar Fellowship.



CASTING RELATIONSHIPS, ONE COMPANY AT A TIME

The University of Idaho's Department of Nuclear Engineering expanded its global reach when Assistant Professor Robert Borrelli teamed up with Japan-based company Sakae Casting to design a safer cooling system for superheated used nuclear fuel rods. Borrelli was awarded a \$237,898 **Idaho Global Entrepreneurial Mission (IGEM)** grant from the Idaho Department of Commerce to work with Sakae Casting and Premier Technologies of Idaho Falls. Leveraging resources and facilities at the Center for Advanced Energy Studies and the University of Idaho in Idaho Falls, the project capitalizes on U of I's lasting expertise in designing nuclear systems and Sakae Casting's expertise in prototyping and cooling.

Drawn to the unique combination of state funding, engineering expertise and support for economic development, Sakae Casting has now opened its first American office location in Idaho Falls. This partnership is a great demonstration of the fruitful industry collaborations that attract companies to Idaho and bring our innovations to markets around the globe.



MCCALL OUTDOOR SCIENCE SCHOOL WINS PRESTIGIOUS UEDA AWARD OF EXCELLENCE

The University of Idaho was one of only six universities nationwide to win the acclaimed **Award of Excellence from the University Economic Development Association**. The McCall Outdoor Science School (MOSS) was selected in the Talent and Place category for its outstanding work in connecting university talent with communities in ways that promote civic participation and enrich our future workforce.



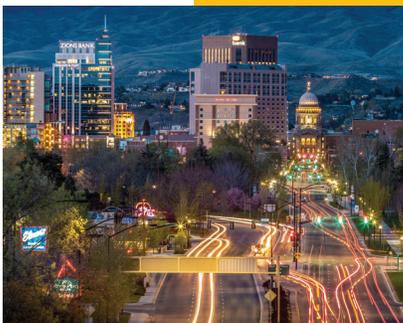
First opening in 2001, MOSS is part of U of I's College of Natural Resources. Each year, more than 2,000 K-12 students visit the scenic lakeside school, engaging in activities that build scientific literacy and positive attitudes toward science through STEM-focused activities. MOSS inspires Idaho students and educators to look outside the classroom and experience science firsthand.



RESEARCH HELPS COMMUNITIES BETTER UNDERSTAND INVESTMENT IN INFRASTRUCTURE

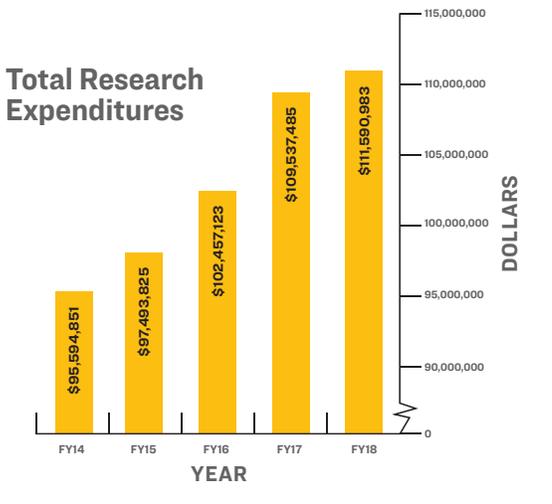
Community Development Block Grants (CDBGs) from the **U.S. Department of Housing and Urban Development (HUD)** address issues like urban decay, economic inequality and economic immobility for people of low to moderate income. But CDBGs often generate secondary benefits beyond their specifically intended purpose, like increased neighborhood property values.

Michael Overton, assistant professor of political science in the College of Letters, Arts and Social Sciences, and his colleagues received a two-year, \$243,763 grant from HUD to uncover some of these secondary impacts by examining the impact of CDBGs on communities' property values within neighborhoods supported by these grants and their adjacent communities. This research will help municipal leaders, in Idaho and elsewhere, better strategize their community and economic development efforts and develop more beneficial policies for their citizenry.



RESEARCH ACTIVITY AND EXPENDITURES

Expenditures as reported to the National Science Foundation's Higher Education Research and Development (HERD) Survey



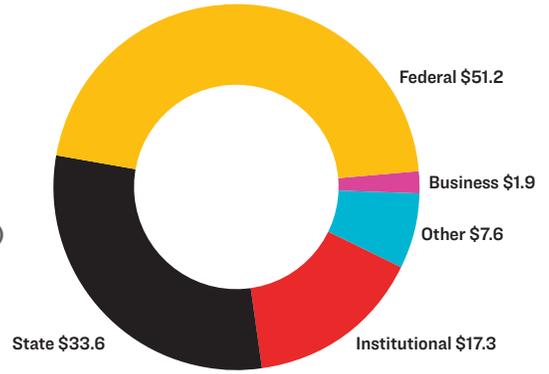
Summary of Sponsored Project Activity

SPONSORED PROJECTS	NUMBER	AMOUNT
Proposals Submitted	935	\$282,859,830

AWARDS RECEIVED	NUMBER	AMOUNT
New Awards	415	\$50,257,119
Other Actions	266	\$31,475,657
TOTAL AWARDS	681	\$81,732,776

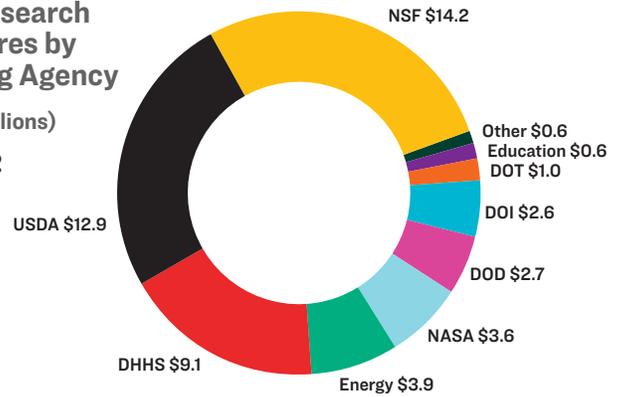
Total Research Expenditures by Funding Source

(Dollars in Millions)
TOTAL \$111.6



Federal Research Expenditures by Sponsoring Agency

(Dollars in Millions)
TOTAL \$51.2



Technology Commercialization

ACTIVITY	NUMBER
Invention Disclosures	24
Licenses	6
Patent Applications	3
Issued Patents	1

Sponsored Project Activity by College and Unit (Dollars in Thousands)

SPONSORED PROJECTS	# OF AWARDS	AWARDED AMOUNT	# OF PROPOSALS	PROPOSED AMOUNT	EXPENDITURES
College of Agricultural and Life Sciences	239	\$17,346	320	\$60,703	\$15,624
College of Letters, Arts and Social Sciences	10	\$439	24	\$3,606	\$130
College of Art and Architecture	18	\$1,137	24	\$2,353	\$1,422
College of Business and Economics	15	\$35	16	\$35	\$984
College of Education, Health and Human Sciences	48	\$12,040	51	\$17,941	\$14,103
College of Engineering	77	\$9,534	146	\$47,610	\$9,839
College of Graduate Studies	2	\$282	1	\$90	\$229
College of Law	3	\$163	2	\$157	\$147
College of Natural Resources	114	\$10,680	118	\$24,188	\$10,348
College of Science	57	\$15,135	90	\$60,908	\$11,524
General Library	1	\$97	1	\$1	\$98
Academic and Student Affairs	22	\$992	10	\$1,379	\$1,023
Facilities Management	0	\$0	0	\$0	\$41
University Outreach	26	\$4,428	75	\$24,557	\$3,828
Office of Research and Economic Development	1	\$10	1	\$105	\$0
Research Centers and Institutes	42	\$8,965	52	\$38,671	\$10,170
WWAMI Med Educ/WI Reg Vet Medicine	6	\$450	4	\$556	\$108
TOTAL AWARDS	681	\$81,733	935	\$282,860	\$79,618



University of Idaho

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FACULTY HIGHLIGHTS



American Association for the Advancement of Science Fellow

Lisette Waits, distinguished professor of wildlife resources and head of the Department of Fish and Wildlife Sciences, was recognized for research in conservation biology and molecular ecology that led to major impacts in these fields and to new, non-invasive DNA sampling techniques.



National Academy of Inventors Fellow

Greg Moller, professor of environmental chemistry and toxicology, was elected as a fellow for his innovative work developing wastewater cleansing technologies that soften the environmental footprints of communities worldwide.



Fulbright Specialist Award

Lee Ostrom, associate dean of engineering and director of academic programs, Idaho Falls, applied his expertise at Aalto University in Finland on risk assessment, human factors ergonomics and industrial safety to make university physics and chemistry labs safer.



FACULTY EARLY CAREER AWARDS

This year, two University of Idaho assistant professors in the College of Science received funding awards from the **National Science Foundation Faculty Early Career Development (CAREER)** program. CAREER awards, highly coveted, are offered on the basis of excellence in teaching and the integration of scholarship and education.



Christine Parent

received **\$1,093,880** to study the evolutionary processes that shape the diverse characteristics of *Naesiotus* land snails in the Galapagos.



Eric Mittelstaedt

received **\$600,000** to investigate shifts in the locations of Earth's diverging oceanic plate boundaries.