University of Idaho

2021 RESEARCH REPORT

photo credit: Katy Riendeau

A MESSAGE FROM THE VICE PRESIDENT FOR RESEARCH AND ECONOMIC DEVELOPMENT

My name is Chris Nomura, and as the Vice President for Research and Economic Development, I am pleased to present you with this year's University of Idaho Research Report.

I arrived on October 1, 2020, and since that time have been amazed by the research and creative outputs of the faculty, staff and students at the U of I. 2020 has proved to be a year unlike any other in recent memory. The worldwide pandemic brought on by the spread of the SARS-COV-2 virus brought many tragedies and challenges that have affected all aspects of our lives. Despite these unprecedented challenges, the incredible faculty, staff and students at the U of I have consistently demonstrated their resilience and their ability to positively impact our institution, community, state and nation through research.

The U of I research community met the uncertainty and challenges of the pandemic head on with their expertise and research tools, pivoting to establish a COVID-19 testing lab to help keep both our university and community safe. This is just one of the many examples of how our research expertise generates real-world impacts.

Despite all the challenges of the last year, our faculty have maintained their level of research expenditures and new awards near the historic levels achieved in 2019-20.

To further enhance our research impacts at the U of I, we recently launched the P3-R1 Grant Matching Program through which we are investing $3 million per year in institutional funds to support efforts to increase research productivity and expand the number of doctoral degrees awarded by the university. Funded through a unique public-private partnership centered on the energy infrastructure of the university, the P3-R1 Grant matching program will invest approximately $1 million in support of pre-doctoral fellowships and $2 million in support for postdoctoral scholar fellowships for principal investigators. We anticipate that this investment will enable our faculty to rapidly expand their programs and the positive impacts of their work.

Through this year's research report, I am pleased to provide a snapshot into the myriad of research and creative activities produced by our faculty, staff and students. Our researchers are at the top of their fields, and they are doing work that benefits Idaho and the world.

Sincerely,

Chris Nomura, Ph.D.
Vice President for Research and Economic Development

U of I Joins Elite List of Institutions to Achieve Full Animal Care Accreditation

The University of Idaho joined an elite list of land-grant institutions to earn full accreditation from AAALAC International — a private, international nonprofit that promotes the humane treatment of animals in science through voluntary accreditation and assessment programs.

AAALAC accreditation was achieved through the work of the animal facility staff, U of I's AAALAC Task Force and the Institutional Animal Care and Use Committee along with the support of university leadership. There are 112 land-grant institutions (LGIs) in the U.S., and 43 of those have some form of AAALAC accreditation. U of I is now among just 16 LGIs to have every college within the university that uses animals in research, teaching or testing accredited.

AAALAC sent representatives to view U of I facilities statewide during the accreditation process. Other animal housing locations — including the Nancy M. Cummings Research, Extension and Education Center and Rinker Rock Creek Ranch in central Idaho and Palouse Research, Extension and Education Center and Laboratory Animal Research Facility in Moscow — drew commendations from AAALAC.

Photo Credit: U of I Photo Services

Collaboration in the Face of COVID-19?

Photo Credit: Alexiss Turner

In 2020, the university faced an unprecedented and complex task—keeping students and staff safe during a global pandemic while continuing to offer in-person instruction. Our community has joined together to meet this overwhelming challenge in a truly remarkable way. The University of Idaho COVID-19 testing lab, led by the IBEST Genomics Resources Core (GRC) and housed inside Gritman Medical Center, adds necessary testing capacity to the community to help prevent the spread of the virus. Related to the testing lab is the SARS-CoV-2 wastewater testing project, headed by Drs. Erik Coats, Eva Top, and Thibault Stalder. Their team identifies trends to help inform clinical testing strategies by measuring the virus concentration in campus wastewater samples.

In addition to testing people with coronavirus symptoms, the clinical lab conducts surveillance testing, which is designed to catch cases in asymptomatic people. In comparison, the wastewater testing focuses on locating undetected hotspots. Once those areas are pinpointed, the clinical lab can then target them for surveillance testing to identify positive cases. The two projects work together to maximize efficiency and capability in detecting COVID-19 cases. Their shared goal is identifying and isolating carriers of the virus as early as possible, thus allowing the U of I campus to remain open.

Both teams' success can be attributed in part to their readiness before the pandemic began. The GRC is a genomics hub that has clients and connections all across campus. "When the notion of testing came up, people didn't just answer our questions, they wanted to know how they could help more," says IBEST Director Dr. Barrie Robison. By the summer of 2020, Coats' and Top's labs were pursuing parallel research topics dealing with detecting and processing bacteria in wastewater. So, when ORED connected them to begin testing wastewater for SARS-CoV-2, they already had resources and methods in place. Coats says, "I got the call, and we were collecting samples the next day."

"It wasn't without bumps, but it has been a largely successful endeavor," says Robison. "And without the research infrastructure of this university, none of this would have happened." The combined willingness and effort from individuals across campus has kept the university's doors open and its community healthy. "I'm proud of what this university has done," says Coats. "It's been very rewarding to know that we have made a difference."

What is a NSF CAREER award and why are they important?

The NSF Faculty Early Career Development Program (CAREER) award is the most prestigious NSF award for early career faculty. This differs from a standard 3-year NSF research award in that the intended outcome of the 5-year award is that the funded faculty member will have developed an integrated program of research and education, setting the course to serve as a teacher scholar for the remainder of their career. It is this integration of research and education plans that is unique and also that makes these proposals difficult to conceptualize and effectively develop. Faculty members can submit up to three NSF CAREER proposals prior to being tenured. The U of I Research and Faculty Development team can help with the development of competitive NSF CAREER proposals through working with individual faculty members (it is never too early to brainstorm with us!), our NSF CAREER All Year Seminars featuring U of I CAREER awardees, informal NSF CAREER Conversations with peers, and by providing proposal development resources. Importantly, NSF annually nominates the most meritorious CAREER awardees for the Presidential Early Career Awards for Scientists and Engineers (PECASE) award, the highest honor from the U.S. government for outstanding scientists and engineers. U of I have five active NSF CAREER awards, Michael Strickland, Elizabeth Cassel, Tara Hudiburg, Christine Parent, and Eric Mittelstaedt, and one PECASE awardee, Tara Hudiburg.

RESEARCH FOUND MICROBES Carried in Wildfire Smoke

photo credit: Adam Watts, Desert Research Institute

Microbes are found in all environments and play essential roles in nutrient cycling, gas exchange and through associations with plants and animals. However, the ways microbes are transported from one environment to another are not well understood.

Each year, wildland fires emit millions of tons of smoke particles into the atmosphere. Research at the University of Idaho has shown that these particles carry high numbers of diverse microbes with them. Traditionally, wildfires have been studied in terms of direct impacts to ecosystems and air quality, but the role of smoke as an agent of biological dispersal has yet to be explored.

Researchers from U of I collected microbes from smoke using vacuum pumps attached to filtering devices flown on unmanned aerial vehicles ("drones") above wildland fires. Using an interdisciplinary approach including genetic analyses to identify microbes, they hope to better understand the consequences of smoke to human, plant, and animal health across all environments where wildland fire occurs. The increasing size and severity of global wildfires, leading to increased interaction between biomass burning smoke and human populations, make this research relevant to a wide range of stakeholders including those interested in the potential transport of human pathogens.

Targeted sampling in areas where human and forest pathogens intersect with wildland fire smoke may help answer persistent biological and epidemiological questions.

GLACIER RACES TO THE SEA

U of I geoscientists race to understand why!

photo credit: Tim Bartholomaus

University of Idaho geoscientists are launching a three-year project aimed at addressing one of Earth science's most pressing societal questions: How fast will the oceans rise during the coming decades and centuries?

The global ocean is currently rising at the rate of 1 foot per century. Whether we expect sea level rise to continue at that rate — or speed toward 4 or 5 feet of new coastal flooding per century — depends significantly on how and why glaciers and ice sheets speed up.

To better understand glacier speed-up, Professor Timothy Bartholomaus is mentoring University of Idaho students and collaborating with scientists at other Idaho universities. A new, $1.4 million project, supported by the U.S. National Science Foundation, will allow Bartholomaus and others to learn what controls abrupt accelerations of glacier flow known as glacier surges.

In August 2020, the team visited their target surging glacier in the heart of North America's iciest mountain range and set up a comprehensive set of geophysical instruments to track glacier motion and water flow at the bottom of the glacier. The team found the glacier had sped up 20-fold in a matter of months.

Measurements will continue as the surge begins to wane. The researchers will synthesize observations with theory to better understand how much — and under what circumstances — Greenland and Antarctic ice can race to the sea.

REVIVING THE MYTH
of Nonverbal Communication and Deception Detection

Reliably detecting deception is a difficult task and one that plays a critical role for law enforcement professionals. This task is so challenging that a well-known meta-analysis has shown that people are no better than chance at discriminating truth from lies. Over the past several decades, deception research has used theoretical frameworks associated with anxiety, emotion and self-presentation to investigate a wide array of nonverbal behaviors such as hand and finger movements, foot and leg movements, self-touch and postural shifts. However, we know the difficulty of discriminating truths from lies is mitigated by paying attention to speech content and using cognitive-based interviewing strategies that induce cognitive load or enhance one's recall of details. Isolating nonverbal behaviors from speech and cognition has failed to identify systematic and reliable behavioral cues associated with deception because approaches such as these have neglected to consider the communicative utility and cognitive aspects of nonverbal communication.

In a three-year project funded by the Federal Bureau of Investigation/High Value Detainee Group for more than $660,000, Dawn Sweet in the Department of Psychology and Communication and her colleagues are re-examining the utility of nonverbal behavior in deception detection and whether or not there are in fact nonverbal behaviors that can help law enforcement discriminate truth from lies. Given the communicative nature of gestures and their connection to speech and memory, we are considering not only this communicative nature of gestures but also the underlying cognitive processes, subsequent implications for memory retrieval, and the connection between language and action. By using strategic cognitive based interviewing techniques that enhance the reporting of information and enhance gesture production, we have evidence to show that, when established paradigms from human communication and cognitive psychology are combined, nonverbal behaviors might be indicative of veracity when cognitive-based interview techniques are used. Our research represents a paradigm shift in the study of deception detection, and early results suggest that our approach could be directly applied to training and practice in the interrogation context.

Idaho Geological Survey Responds to **STANLEY EARTHQUAKE**

On March 31, 2020, a magnitude (M) 6.5 earthquake occurred approximately 30 kilometers (18.64 miles) north-northwest of Stanley, Idaho. This was the second largest earthquake to occur within Idaho in recorded history.

The mainshock was followed by an aftershock sequence that continues to produce M3 and M4 earthquakes. Immediately after the mainshock, the Idaho Geological Survey secured and deployed seismic instrumentation – obtained via an instrumentation grant through the Incorporated Research Institutions for Seismology Portable Array Seismic Studies of the Continental Lithosphere (IRIS PASSCAL).

Shaking from the M6.5 Stanley earthquake was felt widely across the western U.S. and triggered numerous snow avalanches. Shaking also caused rockfall and toppled several rock formations in the Sawtooth Mountains that hosted popular climbing routes. Liquefaction and lateral spreading caused by the mainshock or early aftershocks was observed at Stanley Lake, where the inlet delta collapsed and disappeared into the lake.

Data collected have been shared with the international community and are contributing to defining the location and geometry of previously unknown tectonic structures and to a deeper understanding of the regional stress field as a tool for better hazard mitigation.

photo credit: Idaho Geological Survey

STUDENT RESEARCH HIGHLIGHTS

photo credit: UI Photo Services

NEW APPROACH TO INMATE PRE-RELEASE

Criminology Student Helps Design Reentry Program to Increase Inmate Release Success in Idaho

photo credit: Skylar Martin

During a student research project, third-year sociology and criminology student Kelsie Rumsey found that the current reentry program for Idaho prisoners requires individuals to read booklets and take quizzes. It's something Rumsey said is not providing the inmates the skills necessary for them to function outside of prison. Working with U of I Extension, Rumsey is helping to facilitate the launch of a new two-part reentry program.

"This new program is built on more of a hands-on learning experience, where the inmates will be guided through every step," Rumsey said. She added that previous research has shown that the more hands-on the lesson is the more likely the inmate will succeed.

Rumsey will be evaluating whether the new program is an improvement over the current re-entry education program. Rumsey has built five surveys to evaluate how prepared inmates feel to reenter society. The surveys will be given to inmates who've been released through the current process, inmates helping form the new program and, eventually, inmates who will take part in the finished program. After implementing the new design, Rumsey and her collaborators will conduct follow-up interviews on the program's effectiveness and track whether recidivism rates — the tendency of criminals to reoffend — have decreased.

VANDALS DELIVER A LIFE-SAVING GIFT

Meagan Boll, a medical student in the Idaho WWAMI Medical Education Program, has limited motion in her arms, performs fine motor skills with a bionic glove and uses a wheelchair. A spinal cord injury that caused impairment in all four quadrants of her body got her interested in pursuing a career in medicine.

To assess patients, Boll, from Cambridge, uses a Bluetooth stethoscope with headphones and an ultrasound wand for abdomen inspections. But she cannot perform the traditional components of CPR, including chest compressions.

photo credit: Joe Pallen

To help Boll, University of Idaho College of Engineering students developed an assistive CPR device custom for her, with application across a spectrum of users with limited arm strength or other disabilities.

Jeff Seegmiller, director of WWAMI at U of I and professor in the Department of Movement Science, proposed the project as part of the College of Engineering's nationally recognized Senior Capstone Design Program, during which students work on industry-sponsored projects to design thoughtfully engineered, tested and validated prototypes.

The final design for Boll's CPR device relies on a lever-action which augments her force to achieve chest compressions. Using a training mannequin connected to a mobile app to record CPR performance, the team verified their results and Boll's successful use of the custom device.

In addition to its healthcare application, the College of Engineering is looking into ways the assistive CPR device could be manufactured for use in nursing homes and hospitals to help those who may not have the arm strength or stamina needed to complete CPR.

EPSCOR GEM3 PROJECT TARGETS SAGEBRUSH

Big sagebrush (Artemisia tridentata) is a landscape dominating plant species in the intermountain region in the western U.S. linking genetic information with chemistry, physiology and biotic communities allows for the understanding of how genetic differences in sagebrush influence the entire ecosystem. Together, as part of the EPSCoR GEM3 effort, researchers, Molly Garrett and Lukas Grossfurthner, at the University of Idaho are among the first to be exploring these types of processes and functions in the sagebrush system. Their research will fill large gaps in our understanding of these processes in distinct and intermediate sagebrush plant-types, identify how they influence their environment and predict potential variation under changing environmental conditions. Ultimately, they hope to advance ecological and evolutionary theory, improve understanding of a unique ecosystem and inform restoration efforts.

The intermountain west has vastly differing environmental types, ranging from dry, hot deserts, to moist, cold mountains. Big sagebrush has developed various strategies to survive these different environmental conditions, which has led to the formation of diverse and distinct plant-types that occupy specific regions. When one environment transitions into another, distinct plant-types can co-occur, exchange genetic information (inter-breed) and give rise to intermediate plant-types. However, little is known about the function and possible unique characteristics of these intermediate plant-types and how they interact with their environment.

photo credit: Luke Grossfurthner

As a dominating plant species, big sagebrush provides food and habitat for more than 350 associated species, including some endangered and threatened species such as the greater sage-grouse and the pygmy rabbit. Inconspicuous organisms such as insects, fungi and bacteria – which are crucial members of the ecosystem – also rely on big sagebrush.

Researchers are utilizing cutting-edge genomic tools to quantify the amount of genetic exchange between plant-types and identify microbial communities occupying sagebrush leaves and soil. They are also collecting chemicals emitted by sagebrush, insects that feed and live on sagebrush and co-occurring plant communities.

NSF SUPPORTS INDIGENOUS STEM DOCTORAL STUDENTS AT IDAHO

The University of Idaho College of Graduate Studies welcomed a first-of-its-kind cohort of Native American graduate students into STEM (Science, Technology, Engineering and Math) doctoral programs this year by way of the National Science Foundation's (NSF's) LSAMP Bridge to Doctorate program. The program funds 12 students on fellowships over two years.

photo credit: Kate Strum

U of I was awarded the first Bridge to Doctorate specifically for the enrollment of Native American and Alaska Native students. The nine new fellows and their mentors are working across the Colleges of Science, Natural Resources and Engineering. The students are: Nicholas Brubaker (Shasta) in mechanical engineering with Michael Maughan; Hannah Funke (Kootenai) in natural resources with Alistair Smith; Zane Ketchen (Yakama, Wanapum) in water resources with Christopher Caudill; McKayla Meier (Cherokee) in geology with Erika Radar; Kameron Richardson (Lumbee) in water resources with Michael Strickland; Karina Silvestre (Nahua, La Mesa) in entomology with Chris Hamilton; Kimberly Stewart (Yakama) in natural resources with Sophie Gilbert; Kassandra Townsend (Acoma Pueblo) in natural resources with Kerri Vierling; and Christine Whitehorse (Navajo) in environmental science with Laurel Lynch. Three additional students will join the cohort for Fall 2021.

The group aims to blend Indigenous research methodologies and Western science to enhance their own learning and help bring awareness to the advantages of this multi-faceted and multi-cultural approach to learning.

In addition to their degree programs, fellows and mentors participate in cohort activities including the Indigenous Knowledge Field Camp, a cultural immersion experience which recognizes the intersections of Native traditional knowledge and Western science through an immersive four-day experience on Nez Perce land, the tribe on whose land the university sits. They also participate in the Indigenous Mentoring Program, a model to train and support STEM faculty through a sequence of modules with information related to mentoring, student resources, student socialization, cultural humility and culturally attuned practices for research.

ADELE BERKLUND UNDERGRADUATE RESEARCH AWARD

The Adele Berklund Undergraduate Research Scholar Award recognizes and fosters undergraduate research in an applied field of natural resources. Berklund awards are used to fund a variety of faculty-supervised research activities for four students.

Jose Ortiz, who is earning a degree in fishery resources with a minor in aquaculture, used the award this year to support his work at the Aquaculture Research Institute (ARI) in Hagerman studying burbot.

"It is an awesome experience being able to work with such a unique species, especially considering less than 20 years ago there were an estimated 50 left in the Kootenai River," said Ortiz.

In a collaborative project led by Ken Cain of the University of Idaho, burbot numbers have recovered.

U of I is exploring the use of burbot for commercial aquaculture.

"Aquaculture is relatively new compared to other meat-producing industries, so there is much to explore and learn," said Ortiz. "I hope to take my passion for aquaculture into graduate school and focus on fish physiology."

Ortiz is a first-generation college student and is very close with his family in Mountain Home.

"I am grateful to work full-time for the university in the summers close to my family at the Hagerman Fish Culture Experiment Station," said Ortiz.

photo credit: UI Photo Services

VANDAL EXPLORER SERIES:

Weather Under an Eclipse

STUDENTS RECORD GRAVITY WAVES USING WEATHER BALLOONS

photo credit: Lauren Perla

On Dec. 14, 2020, an eight-student team from the NASA Idaho Space Grant Consortium in the College of Engineering were in Chile recording gravity waves produced by the complete solar eclipse. Gravity waves are large disturbances moving through an otherwise stable layer of the atmosphere, and they can influence smaller weather events and air turbulence. Junior Lauren Perla joined the team as a mechanical engineer from Sammamish and explains that understanding gravity waves will help atmospheric scientists improve current weather prediction models. The team practiced measuring the waves throughout Summer 2020. In Moscow, the students launched weather balloons into the atmosphere weekly, and each balloon carries a radiosonde — an instrument designed to radio data on weather phenomena like temperature, wind speed and humidity back to earth. When they traveled to South America, the students spend roughly 18 hours launching one balloon every hour in teams of four. Associate Professor Matthew Bernards in the Department of Chemical and Biological Engineering is the director of the NASA Idaho Space Grant Consortium and oversees the project.

Besides Perla, the team included junior Malachi Mooney-Rivkin in mechanical engineering, junior Alex Chambers in mechanical engineering, senior Leah Davidson in biological engineering, senior Carlos Muñoz in physics, senior Roslyn McCormack in chemical engineering, senior Sebastian Garcia in mechanical engineering and master's student Jackie Martinez-Alvarez in chemical engineering.

FACULTY AND STUDENT HIGHLIGHTS

Goldwater Scholarship


Elizabeth Hoots


Isabell Strawn

Elizabeth Hoots, a dual major in Ecology and Conservation Biology and Spanish, and Isabell Strawn, a major in Biological Engineering, were 2020 recipients of this most prestigious scholarship for undergraduate students majoring in natural sciences, engineering or mathematics, for their research studying the health of Lake Coeur d'Alene and developing a polymer hydrogel biobead to protect bacteria from the environment, respectively. They each received up to $7,500 for the 2020-21 academic year. This scholarship is made possible by the Barry Goldwater Scholarship and Excellence in Education Program.

DARPA Young Faculty Award


Ting-Yen Shih

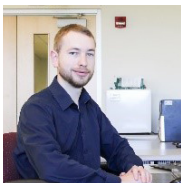
Ting-Yen Shih, assistant professor in the Department of Electrical and Computer Engineering, received the DARPA Young Faculty Award, which identifies faculty in junior research positions who are rising stars and have had previous DARPA funding.

National Endowment for the Humanities Summer Stipend Award


Sarah Nelson

Sarah Nelson, associate professor of French, was awarded $6,000 for the National Endowment for the Humanities (NEH) Summer Stipend for her literary project on Italian French noblewoman Marie Mancini.

Murdock Commercialization Initiation Program Award


Damon Woods

Damon Woods, research assistant professor of architecture in the University of Idaho's Design Lab, was awarded the M.J. Murdock Trust's Commercialization Initiation Award. This award supports the bench discoveries in the natural sciences, medicine and engineering. His project, "Infrared Thermostat Commercialization," was chosen for a two-year grant of up to $75,000 with a university match.

Mountain West Clinical Translational Research Infrastructure Network


Yimin Chen


Shiyi Chen


Cate Loiacono

Yimin Chen and Shiyi Chen, both assistant professors in the department of family and consumer sciences, and Cate Loiacono, assistant professor in the department of physical education, have all been awarded Mountain West Clinical Translational Research Infrastructure Network (MW CTR-IN) pilot grants. These grants are to help obtain preliminary data that will support an R-level grant application to National Institutes of Health (NIH) or other funding agencies.

Fulbright Scholars


Casey Johnson

Casey Johnson, assistant professor of philosophy, has received a Fulbright U.S. Scholar Program award to the University of Calgary, Canada. She will be conducting a project on philosophy of education and social epistemology.


Kristopher Waynant

Kristopher Waynant, professor of chemistry, was a recipient of a Fulbright U.S. Scholar Program award to conduct research at the University of Exeter in Great Britain. His research will focus on building chemical sensing systems that will be used this fall in biochemistry teaching labs.

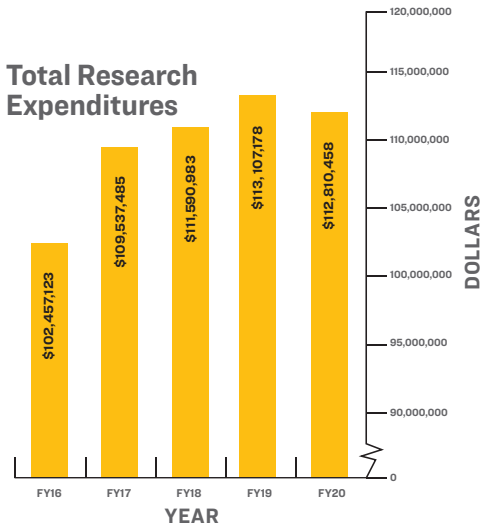

Jocelyn Aycrigg

Jocelyn Aycrigg, assistant research professor in the department of fish and wildlife, was a recipient of the Fulbright U.S. Scholar Program award to Ilia State University in Tbilisi, Georgia. Her research will expand the existing knowledge of wildlife species in Georgia and implement strategies for species survival and reduce their risk of extinction.

Research Activity and Expenditures

Pending Higher Education Research And Development (HERD) approval.

Total Research Expenditures



Summary of Sponsored Project Activity

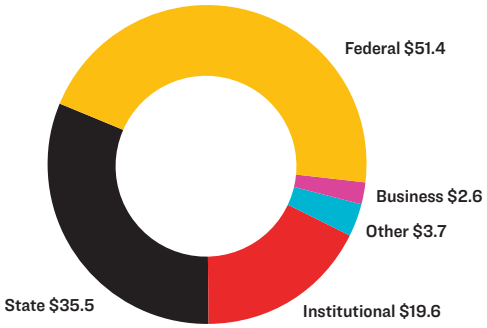
SPONSORED PROJECTS	NUMBER	AMOUNT
Proposals Submitted	1015	$290,235,931

AWARDS RECEIVED	NUMBER	AMOUNT
New Awards	456	$51,306,960
Other Actions	221	$41,476,388
TOTAL AWARDS	**677**	**$92,783,348**

Total Research Expenditures by Funding Source

(Dollars in Millions)

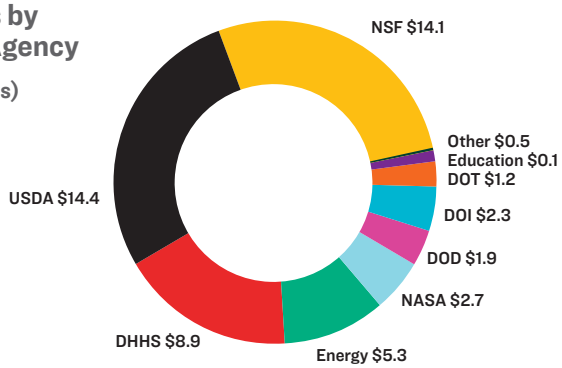
TOTAL $112.8



Federal Research Expenditures by Sponsoring Agency

(Dollars in Millions)

TOTAL $51.4



Technology Commercialization

ACTIVITY	NUMBER
Invention Disclosures	36
Licenses	6
Patent Applications	13
Issued Patents	4

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

SPONSORED PROJECTS	# OF AWARDS	AWARDED AMOUNT	EXPENDITURES	# OF PROPOSALS	PROPOSED AMOUNT
College of Agricultural and Life Sciences	251	$17,005	$16,987	395	$90,315
College of Letters, Arts and Social Sciences	15	$984	$495	20	$714
College of Art and Architecture	18	$1,927	$1,360	28	10,452
College of Business and Economics	4	$8	$11	6	$12
College of Education, Health and Human Sciences	41	$13,384	$12,647	37	$12,239
College of Engineering	76	$8,365	$10,069	179	$53,204
College of Graduate Studies	2	$1,305	$368		$0
College of Law	3	$183	$150	4	$155
College of Natural Resources	106	$9,958	$10,902	104	$27,498
College of Science	46	$9,308	$8,515	70	$17,648
General Library	3	$200	$138	4	$338
Academic/Student Affairs/Facilities/President	30	$2,307	$1,361	23	$14,821
Finance	2	$4,397	$2,325	2	$4,398
University Outreach	29	$3,960	$3,955	50	$19,598
Office of Research and Economic Development	1	$45	$5	1	$106
Research Centers and Institutes	42	$18,428	$13,143	78	$45,709
WWAMI Med Educ/WI Reg Vet Medicine	8	$1,019	$737	14	$3,029
TOTALS	**677**	**$92,783**	**$83,168**	**1,015**	**$290,236**