

UW Science Institute Established

The Research and Economic Development Division (REDD) has established the Science Institute, which oversees the development of interdisciplinary research centers that address specific areas of relevance to Wyoming and UW, awarding seed grants to launch these centers, and awarding fellowships to PhD students to support research in these centers. The Science Institute also manages the Science Initiative and its programs, instrumentation, and plant and animal facilities.

Following an open call for proposals and an ideation event this past year, funds from the Science Institute and REDD have been disbursed to fund 10 different research centers and projects. 8 of these 10 were funded directly by the Science Institute, and 2 additional projects will be funded by a special appropriation of REDD funds. Funding for centers is \$300,000, spread over 3 fiscal years. Funding for other projects is \$100,000 spread over 2 fiscal years. Funding for projects funded directly by REDD vary. These funds have helped launch the following centers: The Center for Wildlife, Technology & Computing (WyldTech); The Center for Energy Materials; The Center for Quantum Information Science & Engineering; and The Center for Controlled Environment Agriculture. The funds have also helped launch the following projects: Innovations in Ranching, Advanced Carbon Valorization, Living Materials, and Earth Bench - Large-scale Perturbation Experiments in the Earth System. Other projects funded by REDD include

the following: Community Oriented Research & Policy, and Rural Community Resilience & Innovation. More information about these centers and projects will be shared in future newsletters and reports.

We are excited to have Jay Gatlin as the inaugural Executive Director of the Science Institute. Jay is a Professor in the department of Molecular Biology (and former department head) as well as the former director of the Center for Advanced Scientific Instrumentation (CASI). To learn more, see the <u>press release</u>.

IMPORTANT DATES

- Applications for the LAMP Summer Institute and Yearlong Training will open Oct 1! Applications will be found on our LAMP Fellows Website. The soft deadline is Dec 16th, 2024; All applications must be submitted by Jan 17th.
- Wyoming Undergraduate Research Coalition student club monthly meetings – first Monday of each month. Next meeting is Oct 7 from 4:00-5:00 PM in CR 147. Please contact Dr. Jamie Crait for membership information.
- The WRSP Poster Symposium will take place Thursday, Dec 5 from 5-7 PM in the Classroom building.

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PhD Fellowships

The Science Institute has begun to award PhD fellowships to current UW graduate students. These fellowships will attract high-quality graduate students to UW, increase the number and quality of PhD students graduating from UW, train the next generation of leading scientists, and help stimulate an increase in successful research grant proposals from UW's researchers (with a special emphasis on Science Institutefunded centers). This year, 8 fellowships were awarded to students for a duration of 3 years. These students will receive training in and assist with research in Science Institutefunded centers. In the future, a total of 19 graduate students at a time will benefit from ongoing funding of these fellowships, and fellowships will be awarded to incoming students. These fellows will also support research in future Science Institutefunded centers. Their fellowships will also be enriched by participation in Science Initiative programming, giving them access to invaluable training in teaching, research mentorship, and outreach.

Core Facility Update

The Science Initiative Building currently houses two core facilities: The Plant Growth & Phenotyping Facility (PGPF, which includes the rooftop greenhouses and other facilities on the 5th floor) and the Center for Advanced Scientific Instrumentation (CASI, spread throughout the building). In early 2025, a third core facility, MORF (Model Organism Research Facility) will be finished, as well. These core facilities are centralized, shared research resources that provide access to instruments, technologies, services, and expert consultation and training to researchers.

The Plant Growth and Phenotyping Facility includes research spaces equipped with state-of-the-art technologies to provide tight environmental controls for plant growth and additional phenotyping applications. This academic year, Carmela Rosaria Guadagno was appointed as the Director of PGPF, as well as being the Associate Director of the Controlled Environment Agriculture (CEA) Center. Michael Baldwin was also hired as the Facility Manager for the PGPF, as well as a Specialist for the CEA.

CASI continues to grow as more instruments are added to its array. Jay Gatlin has been serving as the Interim Director of CASI, but as of his hiring as the Science Institute Director, we will be searching for a full-time director for CASI. Qian Yang is serving as Assistant Research Scientist for CASI, overseeing technician work for electron microscopes. Tim Deibert is serving as a Research Technician for light microscopes on an hourly basis temporarily. After hiring a permanent director, CASI will strategize hiring needs for another permanent technician, as well.

Science Initiative Program Updates

Throughout the summer months, professors, graduate students and two undergraduate learning assistants in the LAMP Educator Learning Community (ELC) designed research studies to enable them to better understand or improve students' experiences in active learning settings. These studies vary from math professor Cedar Wiseman's development of a Calculus Concept Inventory to anatomy professor Jacob Layer's creation of a scalable theoretical framework to support graduate student instructors and near peer mentors. Every member of the ELC was accepted, in a competitive review process, to present their research at the 2024 Original Lily Conference for College Teaching in Oxford, OH at Miami University in November.

The Roadshow continued its success over the summer, reaching 346 individuals, bringing our total Roadshow numbers to 15,109 since we started in 2017. One of our projects this summer involved collaborating with the School of Energy Resources in which one of our outreach assistants, Charlie Nuncio, built high school energy curriculum related to uranium and carbon capture in Wyoming. Future goals are to implement this curriculum across the state to increase interest and awareness regarding energy in Wyoming. Our second summer initiative was bringing hands-on STEM to older individuals across Wyoming. The Roadshow visited 12 senior centers across 8 counties in the state and have more to come. The majority of visits involved graduate student Sabrina White leading an activity about bees, pollination, and weather. This expansion of the Roadshow was made possible by a grant through the Wyoming Department of Health's Aging Division.

The Wyoming Research Scholars Program (WRSP) kicks off the fall semester with its largest group ever – nearly 70 students. With generous support from the state, almost ten years after its inception, our program has grown remarkably from its initial cohort of four students in 2015. The WRSP supports students performing cutting-edge research with UW's world class research faculty in a myriad of disciplines. This fall, many WRSP students will travel throughout Wyoming to engage in STEM outreach via programs such as the Science Initiative Roadshow, helping to spread excitement about research at UW among our communities.

SI Building Construction Updates

SCROLL (the Student Collaborative Research, Outreach, and Learning Laboratory) will be completed in early spring 2025 and the SI will run pilot CURE (Course-based Undergraduate Research Experiences) in the laboratory as well as other educational programming in the spring. MORF will also be completed in spring of 2025, as well as additional laboratory spaces on the ground floor of the SI building.

People in SI



WRSP Scholar

Alexa Mejia Hometown: Cheyenne, WY Major: Physiology Faculty Mentor: William Todd

Alexa is working in Dr. William "Trey" Todd's lab to understand the circuitry of circadian dysfunction. Specifically, she is working with graduate student Quiana Jeffs to observe the interactions between olfactory and circadian systems in Alzheimer's disease. Her work involves performing olfactory stimulation experiments at various times of day to identify activated brain regions and observe if they developed Alzheimer's pathology. Alexa will present her research at the Society for Neuroscience conference in Chicago this October.

Roadshow Outreach Assistant

Sabrina White Hometown: Orlando, FL PhD student in Zoology & Physiology

"I am a PhD student in Dr. Michael Dillon's lab and am broadly interested in insect adaptations to living in extreme environments. My current focus is on examining the effects of heat stress on bumblebee workers and its impact on overall colony success. Alongside my research, I am passionate about teaching and outreach. I love inspiring curiosity in learners of all ages, from preschoolers to older adults. There's nothing more rewarding than witnessing that spark of excitement when someone discovers something new and fascinating! I'm especially enthusiastic about raising awareness of the crucial role pollinators and insects play in our ecosystems."



LAMP Learning Assistant

Dawson Poteet Hometown: Laramie, WY Major: Kinesiology & Health Promotion

Dawson is an LA for Anatomy and Organic Chemistry. Additionally, Dawson spent his summer working as an LA for LAMP itself, assisting Rachel with everything from curriculum development for undergraduate courses to facilitation of faculty development retreats. Dawson is also a member of the LAMP Educator Learning Community and submitted a proposal to present at the Lilly Conference on College Teaching, entitled *Instructor Control and Student Resistance: Exploring Autonomy in a STEM Course*, which was accepted as a poster. In August, Dawson served as an LA for place-based and experiential learning at the Teton Summit, partnering with a team of educators, students and scientists from diverse Chinese and American institutions. Dawson helped the learners (many of whom had never left highly urban environments) to become Bear Aware and recognize what it means to Leave No Trace in the wilderness. On the post-session reflection, one of Dawson's mentees said, "[Dawson taught me to] be more offensive and be more determined and willing to try new experiences." Congratulations Dawson; your facilitation of learning across levels is second to none!



LAMP Fellow

Kui Chen

Associate Lecturer, Chemistry, UW

Amongst his LAMP cohort (graduating class of 2024), Dr. Kui Chen was a role model, setting the standard on every learning outcome. He applied his LAMP knowledge to design and implement Teambased Learning in his Quantitative Chemical Analysis class. Moreover, Kui became an expert in applying the neuroscience of the affective domain, understanding that affect (emotion) launches cognition and integrating this knowledge into his course design. Kui also utilized Universal Design for Learning. He writes, "To accommodate different ways of perception and comprehension among students, I ... offer multiple means of representation of course material. Posting partial lecture notes (visual information) and lecture videos (visual and auditory information) can help reduce some barriers to learning. Supplementing textual information with diagrams, animations, simulations, and videos provides some additional clarity and comprehensibility for different learners." Finally, Kui assessed his learners' growth using a pre-/post-knowledge survey. This assessment has already enabled Kui to recognize areas of the curriculum that were highly successful and areas that he would like to improve. One of Kui's students stated, "I found myself understanding the content in a much deeper way with the components of active learning." Congratulations Dr. Chen. Thank you for all you do for the students, the department of Chemistry, the College of Engineering and Physical Sciences and UW!