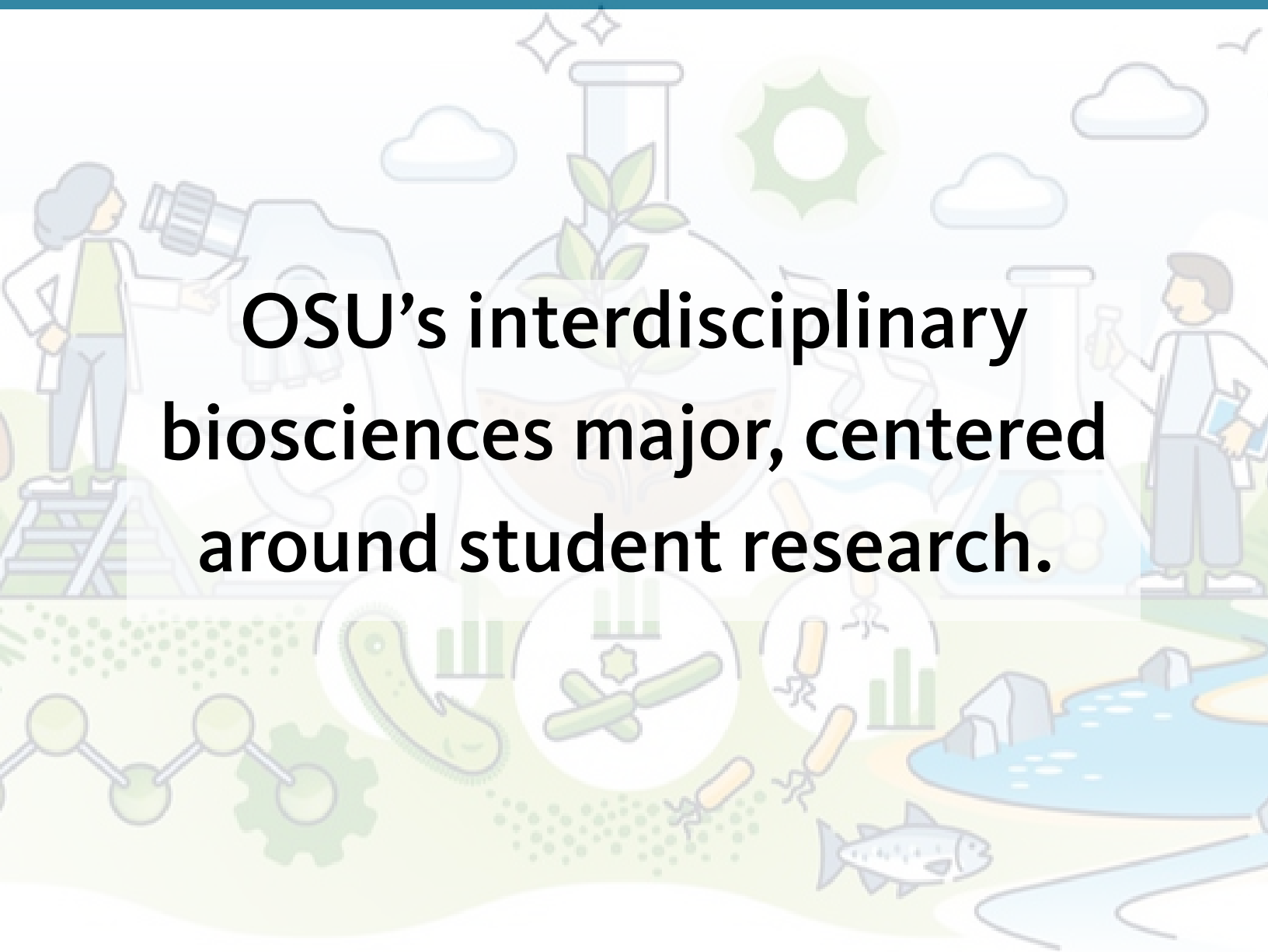
2025 Annual Report

OSU College of Agricultural Sciences |BioResource Research Program



OSU's interdisciplinary biosciences major, centered around student research.

Oregon State University

BioResource Research in 2025

Research Mentors span

7

OSU Colleges

and 1 Federal Agency

84%

6-year graduation rate

in 2024, above OSU's target of 80%

4000+

hours of student research experiences

48 Students

including 13 new students and 18 Double Majors

5

Graduates

24

Awards

11

Global Experiences

7

Thesis Defenses

Greetings!

The 2025 calendar year was a year of growth and change for the BRR Program. Dr. Kate Field, the long-time Director of the BioResource Research Program, retired after 37 years of service to OSU, many of which were spent leading BRR. Dr. Gail Langellotto was hired as BRR Director, in July 2025. Wanda Crannell continues her distinguished career of 31+ years in service to OSU and BRR, providing a much-needed and steady presence during the transition between Directors.

Student enrollment in the major is increasing, following a few years of steady decline. In particular, the COVID-19 pandemic limited student engagement opportunities and undergraduate research opportunities, as OSU laboratory groups shut down or drastically altered normal operations. In 2025, we welcomed 13 new students into the major, and count 48 total BRR majors (including double majors).

As the major continues to grow, one thing that hasn't changed is our commitment to ensuring that students are well prepared for science and technical careers by taking a rigorous coursework series in biology, chemistry, physics, calculus, statistics, organic chemistry and biochemistry, in addition to their upper-division and interdisciplinary options courses. Our standards remain high, and BRR students continue to rise to the challenge. Our 6-year graduation rate exceeds OSU's strategic goal of 80%, and also surpasses current College and University metrics.

In this report, we invite you to learn more about recent accomplishments and highlights in the BRR program. If you are a BRR alumnus, we would love to hear from you! Please reach out, and let us know how you are doing, and if we can be of service to you.

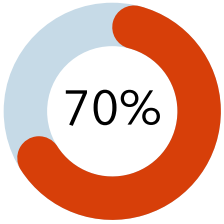
Gail Langellotto
BRR Director

Wanda Crannell
BRR Advisor

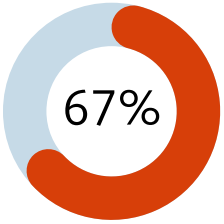
About BioResource Research

Established in 1991, the BioResource Research (BRR) Program is one of OSU's longest-running and most successful undergraduate research pathways. BRR is an interdisciplinary undergraduate major in the College of Agricultural Sciences, open to all students and without additional application or fee requirements, that guides students through experiential learning opportunities centered around 420-700 hours of mentored laboratory and/or field research. Although BRR students work in separate labs across OSU, they take classes in research methods, science communication, and thesis writing as a group. Upper class students mentor incoming BRR freshman and transfer students as near-peers, to further grow and solidify connections among students. Students also have an opportunity enroll in a Spring Break service-learning course in Puerto Rico, where they co-design projects with local hosts, related to sustainability, food security, and public health. In their final year, students write, present, and defend a research thesis as a capstone experience.

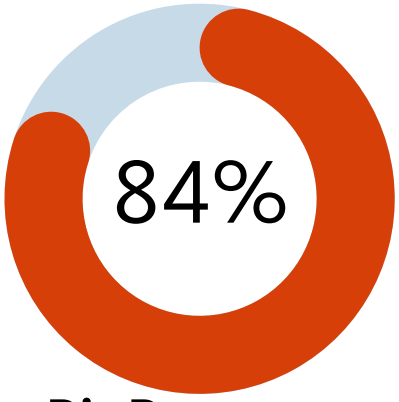
6-Year Graduation Rate



Oregon State University



College of Agricultural Sciences



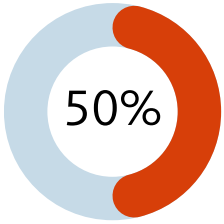
BioResource Research

Data from OSU Core Reports for 2024.

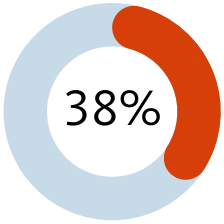
BRR students are diverse. including a high number of underrepresented students and students of color, compared to College and University metrics. BRR students also have stellar year to year retention rates, post-graduation placement, and are frequent recipients of College, University, and national awards. The success of BRR students is due to the creativity and tenacity of each student, coupled with the many high impact practices that are embedded into the major, including: research with faculty, forming a learning community, a culminating senior experience, and for students participating in the Puerto Rico Trip, service learning and study abroad. Together, these high impact educational practices provide students with opportunities to build their professional network, showcase their intellectual creativity, and apply their knowledge to solve real-world problems, inside and outside of the classroom.

A Snapshot of BRR Students

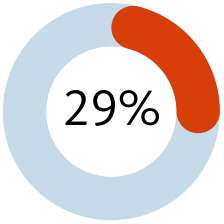
BioResource Research



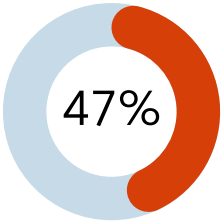
Students of Color



Underrepresented Students

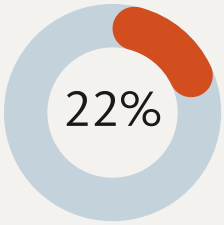


First Generation Students

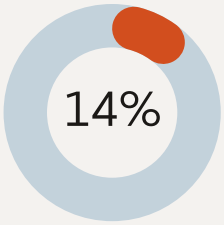


Out of State Students

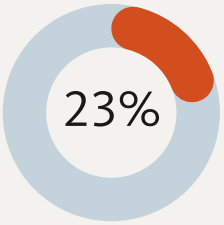
College of Agricultural Sciences



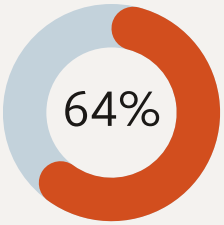
Students of Color



Underrepresented Students

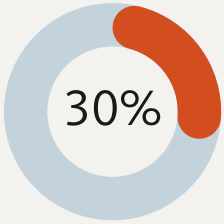


First Generation Students

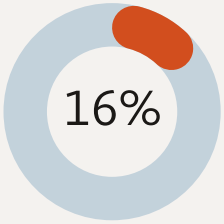


Out of State Students

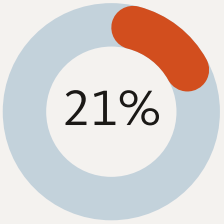
Oregon State University



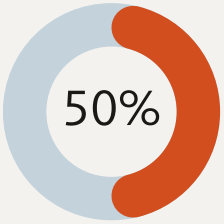
Students of Color



Underrepresented Students



First Generation Students



Out of State Students

Data from OSU Core Reports for 2025. Students of color include Alaskan Native, American Indian, Asian, Black, and/or Hispanic Students. Underrepresented students include specific racial/ethnic groups (Black, Hispanic, Indigenous), low-income and/or disabled students, as well as those from the foster care system. First generation students include those whose parents did not complete a 4-year degree.

BioResource Research is:

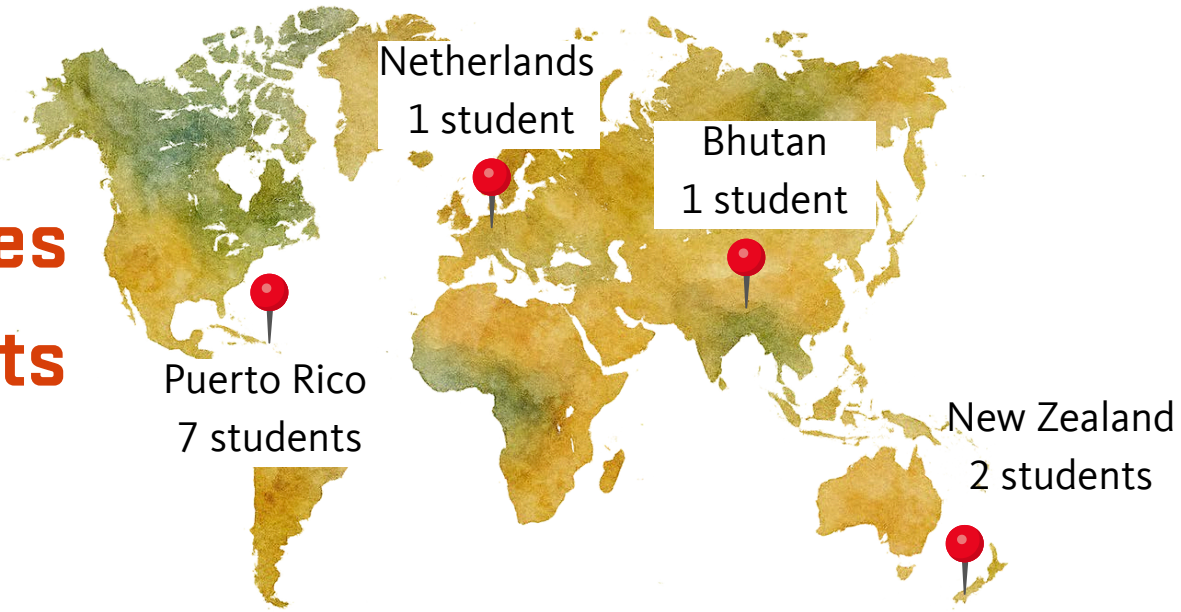
Global Opportunities

> Study abroad is an educationally enriching and potentially life changing experience. Students who study abroad often expand their perspective on world affairs, better comprehend diverse cultures and languages, and grow in self-understanding. Overall, about one in six seniors (17%) responding in 2007 said they studied abroad.
>
> Excerpted from: Matter, E. T. (2017). Enhancing Student Learning and Success, Annual Report 2007. National Survey of Student Engagement.

In 2025, 11 BRR students (23% of all BRR majors) participated in four different study abroad and exchange programs, including a service-learning trip to Puerto Rico over Spring Break (Emily Arras, Estifanos Berhe, David Renteria Bugarin, Matthew Hines, Rubi Juarez Murguia, Belen Mendoza-Amezcua, R. Antonio Romero), study abroad in programs in Bhutan (1 student: Evangeline Jorjorian) and New Zealand (Meredith Sommerset, Brenda Trujillo) and an exchange program at Wageningen University (1 student: Dane Boyta). According to Matter (2017): students who study overseas engage more frequently in educationally purposeful activities upon returning to their home campus, and report gaining more from college compared with their peers who have not had such an experience.

4 Countries

11 Students



BioResource Research is:

Award-Winning

Oregon State University Awards

- Wanda Crannell: Community Engaged Scholarship Award
- Estifanos Berhe was nominated to compete for a 2025 Goldwater Scholar Award

BRR Advisor and Instructor Wanda Crannell (3rd from the right) was honored with the Community Engaged Scholarship Team Award at the 2025 Oregon State University Engagement Conference.

Estifanos Behe was one of only five Oregon State University students nominated to compete for a 2025 Goldwater Scholar Award.

College of Agricultural Sciences Awards

- Zachary Kowash: Outstanding Senior Award
- David Bugarin Renteria: Burlingham Undergraduate Student of Excellence
- Cain Diaz: Undergraduate Research Award

Oregon State University Internships & Fellowships

- Wesley Armendarez: Oregon Wine Research Institute Fellow
- Esha Ahmed: College of Veterinary Medicine Summer Fellow
- Briseyda Quintana Paz: Environmental and Molecular Toxicology Fang Fellow, ER Jackman internship/research support
- Rubi Juarez Murguia: Environmental and Molecular Toxicology Fang Fellow, ER Jackman internship/research support
- Matthew Hines: New Tribal Beginnings Internship, Microbiology Summer Undergraduate Research Experience
- Reeve Trujillo: Branch Experiment Station Research Internship
- Maddox Atagi: Branch Experiment Station Research Internship
- Eileen Hansen: Branch Experiment Station Research Internship

BioResource Research is:

Award Winning Presentations

Awards at Professional Society Meetings

- David Bugarin Renteria: 1st Place, Undergraduate Research Poster Division I (Physical and Life Sciences), National MANRRS Conference
- Daniel Gonzalez: Top 10 Undergraduate Research Poster Division I, National MANRRS Conference
- Venecia Rollins: Top 10 Oral Undergraduate Presentation Division I, National MANRRS Conference
- Rubi Juarez Murguia: Best Undergraduate Poster, Pacific Northwest Association of Toxicologists Conference

Rubi Juarez Murguia (3rd from left) won Best Undergraduate Student Poster Presentation Award from the Pacific Northwest Association of Toxicologists (PANWAT).

Selected Presentations

- Esha Ahmed, Estifanos Berhe, Antonio Romero, Wesley Armendarez were selected to present at the National Diversity in STEM Conference (NDiSTEM)
- Antonio Romero presented at the Annual Biomedical Research Conference for Minority Students (ABRCMS), via the University of Michigan Summer Research Opportunity.

Left to Right: David Bugarin Renteria with his 1st place award in the Undergraduate Research Poster Division (National MANRRS Conference). Daniel Gonzalez placed in the top 10 in the Undergraduate Research Poster Division (National MANRRS Conference). Venecia Rollins placed in the top 10 of the Oral Undergraduate Research contest (National MANRRS Conference). Esha Ahmed was selected to present a poster at the NDiSTEM Conference. Antonio Romero presented at the Annual Biomedical Research Conference for Minority Students via his partcipation in the University of Michigan Summer Research Opportunity.

BioResource Research is:

Leadership

2024-2025 Academic Year

Associated Students of Oregon State University (ASOSU)

- Zachary Kowash: Vice President

College of Agricultural Sciences Ambassadors

- David Bugarin
- Brenda Trujillo

College of Agricultural Sciences Leadership Academy

- Cain Diaz

Society for Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS)

- Matthew Hines: Community Representative
- Emily Arras: Chapter Officer Leadership October Retreat (COLOR) Scholar*
- Wesley Armendarez: Chapter Officer Leadership October Retreat (COLOR) Scholar*

*COLOR scholars are nationally selected Chapter officers invited to attend a leadership retreat with other college student officers from across the U.S., as part of the NDiSTEM/SACNAS National Conference

2025 COLOR Scholars included BRR Students Emily Arras (middle) and Wesley Armendarez (2nd from right).

BioResource Research is:

Leadership & Research

2024-2025 Academic Year

Alliance for Undergraduate Researchers in Academia (AURA)

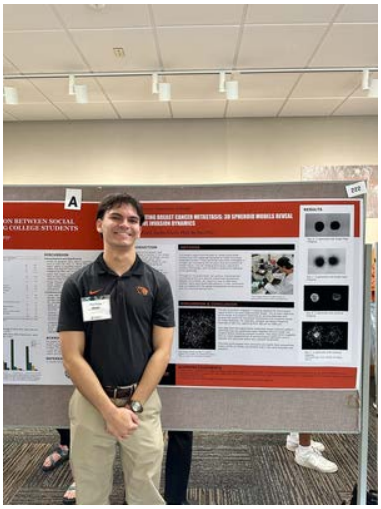
- Estifanos Berhe: Student Club Co-Founder and Co-President
- R. Antonio Romero: Student Club Co-Founder and Co-President

The Alliance for Undergraduate Researchers in Academia (AURA) is a newly-formed (2025) student club at OSU, founded by BRR students Estifanos Berhe and Antonio Romero. AURA isn't your typical science club: members are soccer players, crafters, bakers, hikers, activists, and scientists—students who bring curiosity, creativity, and energy into everything they do. AURA members believe research isn't just for after graduation—it's for now. By getting involved, students have the chance to grow as a researcher, connect with peers who share your drive, and gain the confidence to explore your own ideas.

2025 USDA Research and Extension Experience for Undergraduates (REEU) Participants

- 8 BRR students were among the 24 OSU students who participated in the 2025 USDA REEU, including: Wesley Armendarez, Emily Arras, Estifanos Berhe, David Bugarin, Matthew Hines (below left), Rubi Juarez Murguia (below center), Belen Mendoza-Amezcua (below right), and R. Antonio Romero.

All 2025 REEU Participants presented their research at the Oregon State University Spring Poster Symposium



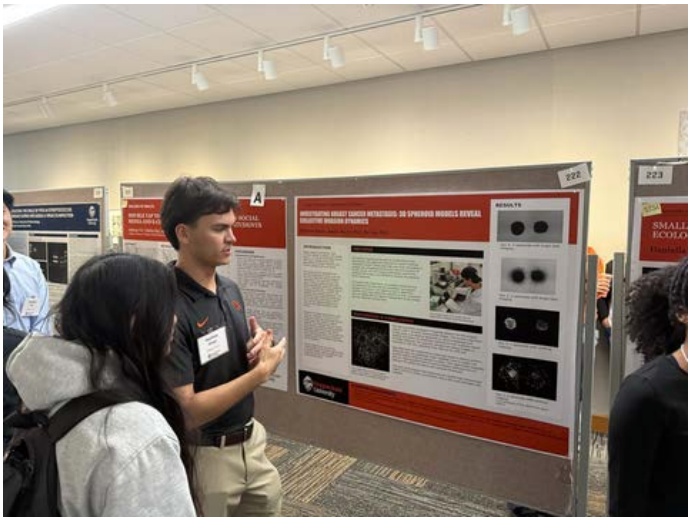
BioResource Research is:

Undergraduate Research

Wesley Armendarez is working in the Smoke, Wine, & Grape (SWAG) Analytical Chemistry Lab at Oregon State University with Dr. Cole Cerrato through OSU's Oregon Wine Research Institute and the Erath Family Foundation Undergraduate Scholars Program. Wesley is conducting Free-Phenol Analysis of Smoke-Impacted Wine using GC-MS to measure compounds that influence wine flavor and quality. This research helps establish baseline concentrations of smoke-related compounds and supports Oregon's wine industry in responding to wildfire smoke challenges.

Students who do a capstone seminar that required a final product or performance gain more in desired areas compared with their peers who did not*. However, only 29% of seniors at public institutions do a culminating senior experience, compared with 42% of their private college and university counterparts, despite the importance of a capstone*. *In BRR 100% of students have a capstone experience, marked by the public presentation and defense of their research thesis.*

*Matter, E. T. (2017). Enhancing Student Learning and Success, Annual Report 2007. National Survey of Student Engagement.



Matthew Hines is working in Dr. Bo Sun's biophysics lab, studying the invasion dynamics and interactions of metastatic breast cancer tumors within their environment. Being a part of this study has strengthened Matthew's interest in biomedical research, and broadened his perspective on the importance of advancing our understanding of complex diseases like cancer.

BioResource Research is:

Undergraduate Research

Eileen Hansen studied the effects of nitrogen fertilization on insect population dynamics in hemp this past summer, under the mentorship of Dr. Stuart Reitz. Nitrogen fertilizers can increase plant growth and yield but may also promote insect outbreaks. Eileen's research is helping to develop more sustainable pest management and hemp production practices.

Leo Ruiz-Torres participated in the highly selective 2025 Summer Health Professions Education Program at Western Oregon University, where he explored team-based patient care. He has since transitioned his research to OSU and the College of Health, where he currently works with Dr. David Dallas on projects focused on nutrition and preventative health.

Maddox Atagi worked with Dr. Stuart Reitz this past summer, to study the potential of novel biopesticides to control thrips in onion crops. Conventional pesticides are failing to manage this problematic pest, due to the development of insecticide resistance. From building a drip-line injection system and designing insect traps, to collecting insects in the field and running lab trials, Maddox has been fully immersed in the research. He says the experience has been both exciting and rewarding, giving him new technical skills and a deeper appreciation for sustainable pest management.

BioResource Research is:

Undergraduate Research

Madison Crump participated in the NSF-funded Genes, Ecosystems, Organisms (GEO) Summer Harvard Research Experience for Undergraduates (REU) where she analyzed an anatomical image dataset of wood tissue to extract parenchyma and G-fiber fraction using ImageJ. She helped collect and analyze branches for vessel length and cavitation measurements in the field assessing tree vulnerability to drought. Madison prepared and presented research at the Leadership Alliance National Symposium.

Antonio Romero participated in the University of Michigan Summer Research Opportunity Program (SROP), where he worked in Dr. Mohammed Akaaboune's neurobiology lab. There, he studied the relationship of α-Kap and α-Dystrobrevin proteins at the Neuromuscular Junction in a Mouse model, in an effort to advance the in vivo study of Duchenne muscular dystrophy (DMD). Antonio learned many new lab techniques and gained a deeper understanding of what opportunities in the field of neuroscience.

Tori Fite is working with Dr. Ling Jin in the College of Veterinary Medicine at Oregon State University. Tori, who is passionate about bats, will be developing methods to detect canine distempter virus in bats that are submitted for rabies testing to the Oregon Veterinary Diagnostic Lab. Although bats likely carry disease pathogens than rabies, we don't know the prevalence of diseases such as canine distemper virus, because they aren't tested for other diseases. Tori's research will help us understand baseline levels of canine distemper in the wild, among local bat populations.

BioResource Research is:

Undergraduate Research

Reeve Trujillo worked with Dr. Jeremiah Dung, a plant pathologist with OSU Extension, to study Verticillium wilt resistance in a breeding population of peppermint. Reeve's work provided valuable insights into the performance of different peppermint cultivars, and laid the groundwork for future experiments. Reflecting on his experience, Reeve shared: "My laboratory skills have greatly improved, and I have developed great relationships with both Dr. Jeremiah Dung and Dr. Jeness Scott. My experience here in Madras has been nothing short of fulfilling and authentic."

Estifanos Berhe works in Nathan Mortimer's Biochemistry and Biophysics lab at OSU, using fruit flies as a model for autoimmune diseases. Specifically, Estifanos explores how immune cell communication malfunctions. Signal transduction pathways are tightly regulated, with cells employing both positive and negative regulators which act to fine tune the duration and strength of the signaling event. Deregulated cell signaling is linked to defects in cell function and ultimately contributes to the pathogenesis of many diseases.

New BRR Students in 2025

Aspen Albert

Anuradha Dongre

Maximo Detlefsen

Ekansh Gupta

Damian Stonequist

Aubree Cobos

Monserrat Pacheco

Maya Frost

Madison Crump

Parkash Kaur

Rafferty Holmes

Meredith Somerset

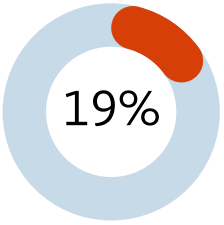
Yoshigei Diaz Hernadez

BioResource Research is:

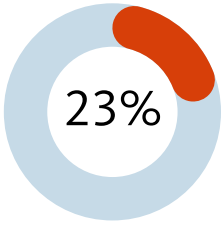
First Gen

First generation (or first-gen) college students are commonly defined as those whose parent(s) did not complete a four-year college or university degree. On a national level, first-generation students are less likely to take part in enriching educational experiences such as study abroad, an internship, or research with a faculty member (Matter 2017**). However, these high-impact educational experiences are already built into the BRR major.

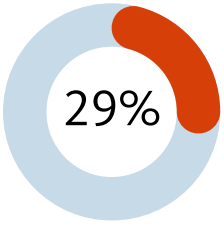
First-gen students are carving a new path for themselves and their family, and thus need a strong work ethic, grit, determination, courage, and a dream for the future in order to persist and succeed. These are the same characteristics are required to succeed as a scientist. It's thus no surprise that many BRR students and mentors are first-gen. In honor of National First-Gen Week, celebrated every November, Oregon State University highlighted three BRR students and the BRR Director.



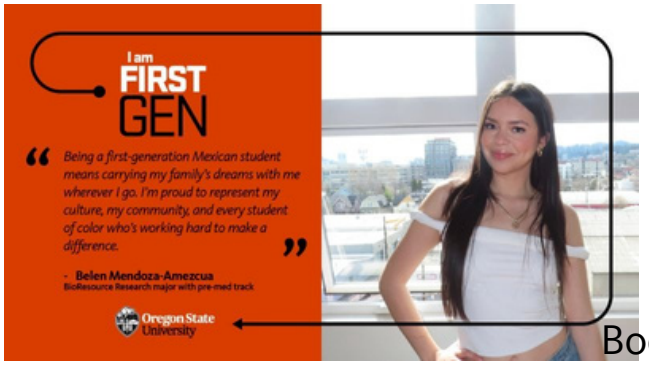
OSU 1st Gen Students



College of Ag Science 1st Gen Students



BRR 1st Gen Students



Body

**Matter, E. T. (2017). Enhancing Student Learning and Success, Annual Report 2007. National Survey of Student Engagement.

BioResource Research is:

Multicultural Scholars

The BioResource Research major hosts the longest running United States Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA) Multicultural Scholars Program (MFP) in the country, training highly competitive students for graduate school and high demand careers in the Food, Agriculture, Natural resources and Human sciences. Starting in 2009, BRR has received a total of 7 grants, with the final grant awarded in 2024, and ending in 2028 with the termination of the MSP Program at the federal level. Each award includes annual scholarship support, leadership development, and student experiential learning funding for 6 or more students for up-to four years.

Current and Continuing MSP Scholars

- Rubi Juarez Murguia
- Belen Mendoza-Amezcua
- Emily Arras
- Daniel G. Giron
- Esha Ahmed
- Estifanos Berhe
- Cain Diaz
- Wesley Armendarez
- R. Antonio Romero
- Demetrius “DJ” Payton-Rivas
- Briseyda Quintana Paz
- Brenda Trujillo

BioResource Research is:

STEM Leaders

The 2024 - 2025 STEM Leaders Cohort included: Leo Ruiz-Torres (top left), Matthew Hines (top middle), Rubi Juarez Murguia (top right), Yoshigei Hernandez (bottom left), Gabrielle Chand (bottom middle), and Emily Arras (left hand side of bottom right photo).

The STEM Leaders Program is an undergraduate research program housed in the OSU Division of Academic Affairs that serves diverse first-year, second year, and first-year transfer students in the Colleges of: Agricultural Sciences, Earth, Ocean, and Atmospheric Sciences, Engineering, Forestry, Health, and Science. STEM Leaders is dedicated to increasing the number of students qualified for and participating in undergraduate research and eventual graduate-level studies.

BioResource Research

BioResource Research (BRR) is an interdisciplinary biosciences major centered around student research. Students take biosciences core courses, complete an option (bioscience/agriculture/natural resource specialization) and do a research project of their choice with a faculty mentor. This research opportunity is unmatched in any other program at OSU.

BRR students are looking for more than the usual OSU education. They like to see the relevancy of their education, make a difference and gain work experience while reaching their educational goals.

Join us on April 29. 2026 to support this amazing program on Dam Proud Day.

> **I really appreciated the freedom provided to create a research project & that you need to rely on personal self determination to complete the project.**
>
> BRR student feedback on 2025 exit interview