

Twelve Aggies Recognized in NSF Grad Research Fellow Search

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Aggie scholars Sean Bedingfield, Sara Germain, James Mauch, Rebecca Hansen Palmer, Austin Spence and Nathan Stacey are 2016 National Science Foundation Graduate Research Fellows.

As they have for more than 16 years, Aggie scholars excelled in the 2016 National Science Foundation Graduate Research Fellowship search. USU's 12 honorees were selected from nearly 17,000 applicants.

Utah State University's 2016 NSF Graduate Research Fellows are USU graduating seniors **Sara Germain '16** (Wildland Resources) and **Nathan Stacey '16** (Mechanical and Aerospace Engineering), along with recent USU graduates **Sean Bedingfield '14** (Biological Engineering), **Rebecca Hansen Palmer '14** (Chemistry) and **Austin Spence '15** (Biology,) as well as USU graduate student **James Mauch** (Geology).

Receiving honorable mentions are USU graduating senior **Jordan Jensen '16** (Geology), as well as recent USU graduates **Michael Berry '15** (Geology), **Kyle Isaacson '15** (Biological Engineering) and **Rachel Nydegger Rozum '15** (Physics), along with USU graduate students **Michael Channer** (Geology) and **Rachel Hager** (Watershed Sciences.)

Bedingfield, Rozum, Spence and Stacey are graduates of USU's Honors program.

"NSF Graduate Research Fellowships are the nation's most prestigious graduate awards in science and engineering," said USU President Stan Albrecht. "This

year's honorees are a solid testament to the outstanding quality of our university's academic and research programs, as well as the high caliber of our students and faculty."

NSF GRFP recipients receive a three-year annual stipend of \$32,000, along with a \$12,000 cost-of-education allowance for tuition and fees, and the freedom to conduct their own research at any accredited U.S. or foreign institution of graduate education they choose.

Sean Bedingfield '14 (Fellow), Biomedical Engineering, Vanderbilt University

During his undergrad career, Bedingfield, who earned a bachelor's degree in biological engineering from USU in 2014, conducted research on producing biofuel from algae. The former Undergraduate Research Fellow and USU iGEM team member presented his findings to state legislators during 2010 Undergraduate Research Day on Utah's Capitol Hill. Nowadays, Bedingfield is designing biomaterials using antibodies, peptides and environment-responsive polymers to enable targeted, intracellular drug delivery. These delivery systems are intended to improve use of existing drugs and enable them to reach targets currently considered "undruggable."

Sara Germain '16 (Fellow), Ecology, Utah State University

Germain graduates from USU this spring with a bachelor's degree in conservation and restoration ecology. The Salt Lake City native is starting a doctoral degree in ecology in the Department of Wildland Resources and the USU Ecology Center. With faculty mentor Jim Lutz, Germain will pursue research focusing on factors affecting woody plant species mortality, growth and regeneration in the forest, which will include an examination of the relationship between woody species and water molds.

James Mauch (Fellow), Geology, Utah State University

Mauch earned a bachelor's degree in Earth sciences-geology from Montana State University in 2014. With USU faculty advisor Joel Pederson, the master's student is using deformed geomorphic markers to quantify rates and spatial patterns of active salt tectonism in the Spanish Valley salt graben near Moab, Utah. Mauch will make use of the USU Luminescence Lab to date samples and assess faulting and subsidence hazards in the city of Moab.

Rebecca Hansen Palmer '14 (Fellow), Chemistry, Northwestern University

Palmer earned a bachelor's degree in chemistry, with a minor in physics, from USU in 2014. Named the USU College of Science's *Peak Prize Undergraduate Researcher of the Year* in 2014, she studied development of water oxidation catalysts using Metal-Organic Frameworks or "MOFs." Now a doctoral student at Chicago's Northwestern University, Palmer continues her research in water catalysis.

Austin Spence '15 (Fellow), Ecology, University of Connecticut

A Salt Lake City native, Spence earned a bachelor's degree in biology and German from USU in 2015. He combined his passions with the help of a German Academic Exchange Service scholarship that enabled him to pursue a research internship in Germany, where he studied an endangered species of hamster. A 2014 *Goldwater Honorable Mention* recipient, Spence conducted research on the effects of habitat disturbance on garter snakes with USU faculty mentor Susannah French. Now a doctoral student of ecology and evolutionary biology at the University of Connecticut, Spence is studying the physiological ecology of hummingbirds.

Nathan Stacey '16 (Fellow), Aeronautics and Astronautics, Stanford University

President of USU's chapter of Engineers Without Borders, Stacey led a team of Aggies to Mexico in 2015 to build bio-sand water filters for the community of La Salitrera. During his undergrad career, the Honors student also completed an internship with the Bureau of Reclamation. Following graduation from Utah State this spring with a bachelor's degree in mechanical engineering, Stacey enters a master's program at Stanford University, where he'll pursue research in distributed space systems. The aim of this work, he says, is to develop a group of spacecraft that work together to complete a mission.

Michael Berry '15 (Honorable Mention), Geophysics, New Mexico Institute of Mining and Technology

Berry earned a bachelor's degree in applied physics, emphasizing geophysics, from USU in 2015. As an undergraduate researcher, he worked closely with USU Geology faculty member Tony Lowry and Jim Evans. He's currently pursuing a doctorate in geophysics from New Mexico Tech, where he's working on geodynamic and tectonic modeling of rift basin. He's studying their effect on earth surface processes, such as the development of rivers and lakes.

Michael Channer (Honorable Mention), Geology, Utah State University

Channer earned a bachelor's degree in geology from the University of New Mexico in 2014. An Honors student and undergraduate researcher, he received a Goldwater *Honorable Mention* in 2013. During one of his summer breaks, he taught English for six weeks to elementary school students in Honduras. With USU faculty advisor Alexis Ault, Channer is pursuing research that will allow geologists to more accurately date the timing of geologic events occurring on or near Earth's surface, such as fluid flow, faulting and mineralization.

Rachel Hager (Honorable Mention), Ecology, Utah State University

A doctoral student of ecology in Watershed Sciences and the USU Ecology Center, Hager is conducting research on phragmites, an invasive, wetlands plant species, with USU faculty advisor Karin Kettenring. A Houston native, Hager earned a bachelor's degree in biology from Pennsylvania's Bryn Mawr College in 2015. During her undergrad career, she conducted summer research on phragmites, and the plant's influence on carbon dioxide and methane emissions, at Maryland's Smithsonian Environmental Research Center.

Kyle Isaacson '15 (Honorable Mention), Bioengineering, University of Utah

Isaacson graduated from USU with a bachelor's degree in biological engineering in 2015. Named 'Outstanding Junior' the Department of Biological Engineering in 2014, he was active in undergraduate research, where he studied biocompatibility of zinc-oxide nanoparticles for biomedical applications. Isaacson is currently pursuing a doctorate in bioengineering at the University of Utah, where he is studying potential applications of silk-elastin-like polymers in head and neck squamous cell carcinoma.

Jordan Jensen '16 (Honorable Mention), Geology, Utah State University

Named the USU College of Science's 2016 '*Scholar of the Year*,' Jensen graduates this spring with a bachelor's degree in geology. The Redmond, Utah, native has been active in undergraduate research, which includes field studies in the high peaks of Alaska's Kluane Range. Jensen was recently earned the top student paper award at an American Geophysical Union meeting for his work in stable isotope analysis of Great Salt Lake stromatolites. He enters a master's program in geology at the University of Arizona this fall, where he'll pursue research in low-temperature thermochronology.

Rachel Nydegger Rozum '15 (Honorable Mention), Ecology, The Pennsylvania State University

A Cache Valley, Utah, native, Rozum earned a bachelor's degree in physics with departmental honors from USU in 2015. Named a 2014 *Goldwater Scholar*, the Honors student pursued research on light pollution. Rozum enters a doctoral program in ecology at Penn State this August, where she's already working with faculty to create computational models pertaining to ecology. Among her projects is modeling pests in organic agriculture and modeling phosphorus pathways in lakes and streams.

This year's USU honorees join 48 Aggies who have received fellowships and 48 USU students or alumni who have received honorable mentions since 1999.

Related link:

[NSF Graduate Research Fellowship Program](#)

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