Seek

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Undergraduate Scholars: STEM stars

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See *Undergraduate Scholars*

STEM stars

Three Goldwater scholars pursue research careers

By Taylor Provine

Gabrielle Phillips, Erianna Basgall, Mackenzie Thornton

When it comes to producing scholars in undergraduate research, Kansas State University goes for the gold.

The trio of K-State 2019 Barry M. Goldwater scholarship recipients reflects the commitment that the university is making to provide an inclusive environment that welcomes and encourages outstanding diverse students in STEM, which stands for science, technology, engineering and math.

"Preparing these scholars through research involved working on teams," said Peter Dorhout, vice president for research. "Diverse teams will almost always develop the most creative and successful solutions to critical problems that confront them during their research."

The Goldwater scholarship is a prestigious national undergraduate scholarship for students interested in research careers in engineering, mathematics or the natural sciences. Awardees receive up to $7,500 annually for college-related expenses.

Read more about the K-State scholars from the College of Arts and Sciences and the Carl. R. Ice College of Engineering.

Gabrielle Phillips, *senior in chemical engineering*

Research focus: *Plant genetics and biochemistry*

Mentor: *Ruth Welti, university distinguished professor of biology*

Phillips is conducting research at the Kansas Lipidomics Research Center at K-State. She is studying a specific plant gene to understand how it responds to various environmental stresses and what that means for the plant's health and life cycle. The plant gene is similar to a human gene and Phillips said the research could shed light on rare genetic disorders, such as Barth syndrome, and provide better treatment options.

"Winning a Goldwater scholarship is a huge testament to all of the mentorship and support that I have received throughout my research career," Phillips said. "I am honored to be chosen for the award and grateful to all of the people who made it possible."

Erianna Basgall, *senior in biochemistry*

Research focus: *CRISPR gene editing*

Mentor: *Gregory Finnigan, assistant professor of biochemistry and molecular biophysics*

Basgall is using yeast as a model organism to study CRISPR systems and to develop applications for the gene-editing technology. Scientists could potentially use these applications in other fields, such as the medical industry, agriculture and engineering, Basgall said. She has co-authored two peer-reviewed publications about CRISPR.

"It feels really good to have validation that you are doing good research," Basgall said. "It means a lot that the Goldwater Foundation continues to support undergraduate researchers through the scholarship so we can spend more time in the lab."

Mackenzie Thornton, *senior in microbiology and pre-medicine*

Research focus: *Regulation of translation in cancer cells*

Mentor: *Katsura Asano, professor of biology*

Thornton is researching non-AUG translation and how it contributes to cancer progression. AUG is the start codon that allows for the initiation of translation, which is the process of creating protein from mRNA. Many non-AUG start codons can be used at higher frequencies, Thornton said, and the misregulation of these non-AUG start codons can lead to diseases like cancer.

"I am truly humbled to win such a prestigious award," Thornton said. "Fundamental research like this will always be crucial to understanding living systems, and without basic science and understanding mechanisms, we cannot further develop therapeutic targets to combat diseases like cancer or neurodegeneration."