

VUMC Reporter

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Summer program gives high schoolers taste of discovery

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by Bill Snyder

This summer, Nayla Ramos Vega, 15, helped advance medical science.

One of 19 participants in the 2023 [Aspirnaut](https://nam12.safelinks.protection.outlook.com/?url=https%3A%2F%2Faspirnaut.org%2F&data=05%7C01%7Cwilliam.snyder%40vumc.org%7Cf1961b446f1d49ac789808db866e4a3d%7Cef57503014244ed8b83c12c533d879ab%7C0%7C0%7C638251580505557421%7CUnknown%7CTWFpbGZsb3d8eyJWIjojMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6I6k1haWwiLCJXVCi6Mn0%3D%7C3000%7C%7C%7C&sdata=nQaKsHgW3IQDh%2B9Bd5jBSPglNJiiEc7afHyFHmx%2BFmU%3D&reserved=0) (https://nam12.safelinks.protection.outlook.com/?

url=https%3A%2F%2Faspirnaut.org%2F&data=05%7C01%7Cwilliam.snyder%40vumc.org%7Cf1961b446f1d49ac789808db866e4a3d%7Cef57503014244ed8b83c12c533d879ab%7C0%7C0%7C638251580505557421%7CUnknown%7CTWFpbGZsb3d8eyJWIjojMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6I6k1haWwiLCJXVCi6Mn0%3D%7C3000%7C%7C%7C&sdata=nQaKsHgW3IQDh%2B9Bd5jBSPglNJiiEc7afHyFHmx%2BFmU%3D&reserved=0) high school summer research internship program at Vanderbilt University Medical Center, Vega spent six weeks in the laboratory of Todd Graham, PhD, professor of Biological Sciences, exploring how aminoglycosides, a class of antibiotics, enter eukaryotic (nucleus-containing) cells.



Aspirnaut student Nayla Ramos Vega, 15, wants to be a neurosurgeon. (photo by Susan Urmy)

Headly stuff for a rising high school junior from Yuma, Colorado, population 3,000. "I love being challenged," said Vega, who wants to be a neurosurgeon one day.

"I'm very proud of you," program co-founder Billy Hudson, PhD, told the students as they prepared to present their research findings during a scientific symposium at Vanderbilt on July 14. "You've generated some original data. This (experience) will enrich your lives and help you make decisions and learn more about yourself."

Since the Aspirnaut high school summer research internship program was launched in 2009 by Hudson and his wife and program co-founder Julie Hudson, MD, 334 students from 34 states have participated. To date, nearly 90 of them have gone to earn MD degrees, PhDs, or both.

The Aspirnaut K-20 STEM pipeline for diversity and wellness offers intellectually challenging experiences and opportunities in science, technology, engineering and mathematics (STEM) to talented youth from rural and diverse backgrounds. Participants receive professional skills development, self-discovery and wellness training as they undertake often-sophisticated scientific inquiries.

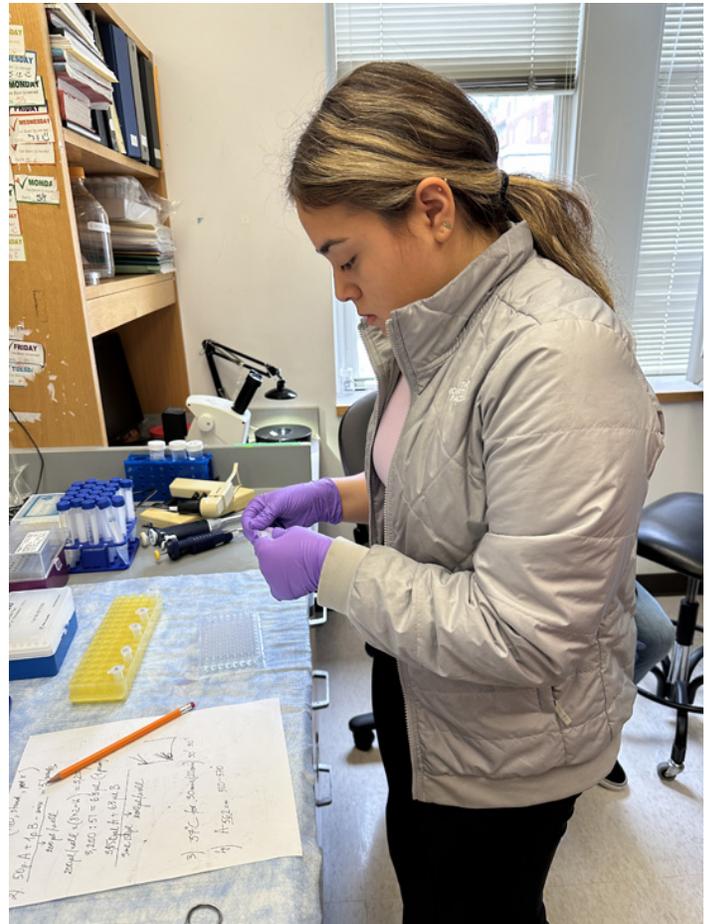
Mentored by postdoctoral fellow Bhawik Kumar Jain, PhD, Vega investigated wild-type budding yeast cells and their resistance to aminoglycosides. She found that the cells become hypersensitive to the drugs if they lack a lipid flippase, an enzyme important for maintaining the distribution of lipids in the cells' outer membrane.

Her research provides a novel mechanism to understand how eukaryotic cells, including yeast cells, absorb antibiotics, and has relevance for the treatment of severe fungal infections.

In addition to Vanderbilt University Medical Center, support for the 2023 summer research internship program was provided by the Springer-Lu Family Foundation of Chestnut Hill, Massachusetts, Green Mountain Antibodies of Burlington, Vermont, the Kenneth and Jeannette Mann Family Foundation and other donors.

Billy Hudson is the Elliott V. Newman Professor of Medicine and director of the Center for Matrix Biology. Julie Hudson is associate professor of Medical Education and Administration, and VUMC Vice President for Medical Center Relations.

For more information, visit <https://aspirnaut.org> (<https://aspirnaut.org>).



Aspirnaut Nayla Ramos Vega, conducts college-level science in VUMC lab.