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Community College Students Spending Summer as Paid Scientists at Cal Poly

SAN LUIS OBISPO – Thanks to an $848,000 grant from the National Institutes of Health, 14 students from Allan Hancock College in Santa Maria are spending their summer as paid research interns at Cal Poly.

This is the third summer Cal Poly has hosted Hancock students through the NIH's Bridges to the Baccalaureate program. The students are paid $10 an hour for up to 30 hours a week working under the supervision of Cal Poly faculty. The grant also pays for up to $500 in research supplies for the students' projects. They can also apply for funding to attend national or state conferences with their professors to make presentations on their research findings.

The aim of the grant is to increase the number of underrepresented students who earn degrees in biomedical or behavioral science and go on to successful careers in science-related fields.

"We're hoping they all go on to careers in science once they see how cool research is," said Emily Taylor, a Cal Poly Biological Sciences professor who coordinates the summer program.

The program has grown from two interns in 2009 to this year's crop of 14. Before they come to Cal Poly, the interns attend workshops at Hancock College on core science topics and can take part in an advanced anatomy lab course. After their internship, students who want to apply to Cal Poly receive assistance transferring.

While at Cal Poly, the students work in labs and in the field along with undergraduate and graduate students. This summer's interns are working on research projects including:

- Extracting DNA samples from plants to identify genetic mutations that govern characteristics such as leaf size.
- Fabricating, damaging and testing carbon fiber samples to determine ways to better discover safety flaws in items ranging from bicycles to airplane hulls made with that material.
- Extracting E. coli bacteria samples from cattle manure to help catalog different strains of the bacteria and identify contamination sources in the field.
- Testing the effects of alcohol on post-exercise muscle development and regrowth in rats.
- Studying the cells of sea squirts, small invertebrate organisms able to regenerate lost body parts, to learn more about the cells that enable regeneration. The findings could shed light on how human stem cells function.
- Helping to launch a study on whether an Internet-based program can help low-income mothers lose weight after pregnancy.

- Studying men and women during and after exercise to determine whether exercise increases appetite-boosting hormones – and food consumption – in women but not men.
- Studying the ability of the brain to grow or adapt in response to environmental factors by studying whether a bigger habitat territory for Western fence lizards increases the size of the part of the brain responsible for storing memories of that territory.
- Studying and cataloging video clips of human faces to study suppression of emotions in social interactions.
- Studying ways to use electric current to affect the organs that give humans a sense of balance.
- Building and testing a low-cost human foot prosthetic for a clinic in Honduras.

The research projects give the interns hands-on experience in specimen surgery skills and the use of high-tech equipment to extract and compare DNA or section biological materials (like lizard brains) into ultra-thin layers and transfer them to microscope slides for study.

It also gives the interns experience participating in scientific studies and trials and describing and presenting their findings.

Julian Garcia and Oscar Tinoco are working with Cal Poly genetics Professor Ed Himelblau studying plant DNA. They're growing specimen plants in Himelblau's lab, using high-tech equipment to extract DNA samples from the plant cells and then analyzing which genes have a mutation and which don't. Both want careers in the field of genetics.

Anthony Gallegos is working on the lizard brain study with Biology Professor Christy Strand. He extracts specimen brains, uses lab equipment that sections them into tissue-thin slices and then transfers them to microscope slides for further study.

"I like it," he said. "I know I want to be a surgeon, and it's definitely developing my surgery skills."

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