

RESEARCH TRACKS

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USDA grant supports research aimed at improving nutrition in corn

Dr. Bryan Gibbon, assistant professor of biology, studies the fundamental mechanisms by which plants store protein and starch in seeds. A \$348,000 grant from the U.S. Department of Agriculture’s Plant Biology program is helping Dr. Gibbon study metabolism and starch accumulation in maize, with the ultimate goal of helping farmers produce crops that provide more complete nutrition.

Corn and other grains are staples in the diets of many people living in developing countries. Unfortunately, the corn often grown in these areas does not provide adequate nutrition because the proteins inside it are not complete.

Dr. Gibbon works with Quality Protein Maize (QPM), a hybrid plant made by crossing a soft kernel but high-protein-quality corn mutant with another modifier strain to restore the kernel hardness that the high-protein-quality strain lacks. Several QPM lines have been developed by international breeding programs, but the molecular mechanisms underlying the action of the modifier genes is not well understood.

“With this grant, we’re studying how these modifier genes work and the alterations they’re causing,” he

said. “We want to know what enzymes are being altered and how that influences the formation of starch granules.”

Dr. Gibbon and his team are about halfway through the three-year period of the grant, and more work remains to be done.

“We’re finding starches with really large channels that allow large protein molecules in,” he said. “The rest of the work will be looking at the enzymes responsible for synthesizing starch in more detail to get an idea of how those enzymes work and whether these large channels influence kernel hardness.”

Understanding these functions would help to improve QPM strains and promote their widespread use, both in the U.S. and among poor subsistence farmers in developing countries.

Alongside his own research, Dr. Gibbon directs an active research program for undergraduate students, as well. With support from the Undergraduate Research and Scholarly Achievement program, he mentored students who cloned starch synthesis genes to characterize the difference between normal and QPM maize. The students’ efforts produced data that became part of Dr. Gibbon’s proposal to the USDA.

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Grant helps Baylor faculty member collect oral histories of Holocaust liberators from Texas

Dr. Stephen Sloan, assistant professor of history and director of Baylor's Institute for Oral History, has received a grant from the Texas Holocaust and Genocide Commission to record and transcribe interviews with individuals from Texas who participated in the liberation of concentration camps during World War II.

Participants will be asked to recall their experiences in a life history format, beginning with childhood and continuing through their military career, with special attention paid to their experiences in the war and their roles as liberators.

The interviews will be recorded and transcribed, then made available in bound volumes and digital files. The finished project will provide a valuable record of the service of Texans during this pivotal point in world history.

Undergraduate Research Highlights

URSA grant provides research and publication opportunities

A grant from Baylor's Undergraduate Research and Scholarly Achievement (URSA) program helped Charles Baylis, assistant professor in electrical and computer engineering, advance his research agenda while providing research and publication opportunities to his undergraduate students.

Dr. Baylis studies wireless and microwave communication. His URSA-supported research involved non-linear measurement systems with the goal of creating more intelligent radar transmitters that can use available spectrum more efficiently.

"We're trying to optimize circuits and waveforms to prevent radar signals from bleeding into neighboring spectrum," he said, noting that because of extensive regulation on spectrum use, the problem has political and economic impacts as well as scientific ones.

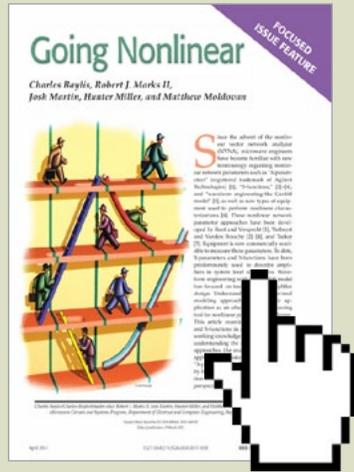
"We need circuits that can respond to real-time changes in frequencies," he explained, "so the students set up non-linear measurement systems and build test beds to optimize radar systems. The students can really see how this work impacts the real world, and that's more exciting to them than just working on equipment in a lab."

The project also gave Dr. Baylis' students the opportunity to present and publish the results of their work. In addition to presenting their research at URSA Scholars Week, Dr. Baylis and his students published an article in a major international publication of the Institute for Electrical and Electronics Engineers (IEEE).

"It's great for our students to have this kind of oppourtunity. [The IEEE publication] goes to engineers all over the world, so it's great exposure for our students and our program to have their work featured there."

The URSA grant supported a total of four students, three of whom went on to graduate school, including two at Baylor.

Dr. Baylis said the URSA program has helped his department to build its graduate program by identifying top undergraduate students and encouraging them to build mentoring relationships with graduate students and faculty.



IACUC News

Reminder: IACUC review required for all work involving animals

Baylor's Institutional Animal Care and Use Committee (IACUC) oversees the use of non-human vertebrate animals in all research, teaching, research training and testing activities.

Rick Duhrkopf, IACUC chair, would like to remind faculty that due to university policy and federal regulation, any activity involving animals requires review by the committee.

"There are some cases that people wouldn't think of," he said, "but even something as simple as taking a class to the zoo to look at animals needs to be approved ahead of time."

Dr. Duhrkopf urges faculty to err on the side of contacting him before beginning any work with animals to avoid future problems.

IACUC electronic protocol submission

As a reminder, the IACUC now requires electronic submission of all protocols through IRBNet.

[Click here](#) to access the IRBNet system. If you have questions or encounter difficulty using the system, contact [Jill Combs](#) at 710-3708.