Andrew Bartlow remembers the time a chipmunk attached itself to his finger while he was doing field research with Michael Steele, chair of Wilkes University’s biology department.

“Chipmunks are a pain to handle,” says Bartlow, a senior biology major. “They’re always squirming.”

For Bartlow, who plans to attend veterinary school, learning to handle animals—even chipmunks—has been valuable. He believes Wilkes research opportunities put him ahead of his peers.

“Not many schools have undergraduates doing research the way we have at Wilkes,” Bartlow says.

For nearly two decades Wilkes biology majors have been required to complete senior research projects. Many don’t wait: They seek research experience as early as their freshman year. A $1 million Howard Hughes Medical Institute (HHMI) grant to the biology department in 2008 is increasing research opportunities.

Steele, Hilda Fenner Chair of Research Biology, said research opportunities for undergraduates are a reason Wilkes got the grant. “At your typical research university, your best students might be able to do a little research in their senior year: We have students participating in full-time research opportunities as freshmen,” he says.

Before the Howard Hughes grant, student research was funded by the H. Fenner Endowment, by University mentoring grants and by grants from the National Science Foundation, National Institutes of Health and the U.S. Department of Agriculture. Under the HHMI grant, expanded initiatives include a course culminating in a two-week investigative laboratory experience—dubbed “super lab”—in which students spend eight to 10 hours per day for two weeks acquiring lab research skills. In 2009, four HHMI scholars received $4,000 for 10 weeks of summer research, plus a stipend for presenting research at conferences.

Bartlow, an HHMI scholar in summer 2009, has worked on three projects with Steele involving small mammals and another with assistant professor Jeffrey Stratford. Projects have included a National Science Foundation-funded project assessing the role of squirrels and jays in the movement of oaks and the re-establishment of the American chestnut—wiped out by blight in the early 1900s.

“Animals play a big part in the dispersal of nuts,” Bartlow explains.
At least 10 of the students who worked with me over the years have gone on to work as research technicians and some have gone on to make a career out of it for the long term.

— William Terzaghi

Such opportunities help attract students to Wilkes. During her senior year in high school, freshman Bhumi Patel shadowed assistant professor of biology Linda Gutierrez in the lab. She chose Wilkes over another college. “The hands-on opportunities and the technology here really blew my mind,” Patel says.

Another HHMI scholar, junior pre-med student Derek Nye, became the first Wilkes student working on a collaborative project at The Commonwealth Medical College in Scranton, Pa. As a freshman, he began helping Gutierrez investigate how certain proteins impact inflammatory bowel disease and cancer in mice, a project funded by the National Institutes of Health. It led to working with her collaborator, Jun Ling, assistant professor of biochemistry at the medical school.

“Dr. Gutierrez has been a great mentor. A lot of professors who are under pressure to produce high-quality research might not be willing to take on a freshman,” says Nye. “Being involved early really helps you to sort things out about the direction you might want to take in your career.”

Sometimes it leads to careers in research. William Terzaghi, professor of biology, has worked with more than 100 students doing research—including National Science Foundation funded work studying differential gene regulation in Japonica and Indica rice and their F1 hybrids.

“At least 10 of the students who worked with me over the years have gone on to work as research technicians and some have gone on to make a career out of it for the long term,” Terzaghi says.

Eric Luther ’04 is one of them. He works for the Philadelphia-based PMRS, which does pharmaceutical industry contract research and testing.

“I came into Wilkes as a pre-med major,” Luther recalls. “But I joined the biology club and through that started doing independent research as a sophomore.”

He remembers traveling to conferences with Terzaghi and meeting students from Ivy League schools like Harvard and Yale.

“They would have one person presenting a paper at the conference. Wilkes would have five people,” he says.

Senior pre-med student Neil Kocher of Mountain Top, Pa., traveled with Terzaghi to American Society of Plant Biologists conferences in Mexico and in Hawaii.

“Being able to communicate with the scientific community is at once extremely intimidating, but at the same time enjoyable,” Kocher says.

Faculty agree that research teaches students skills they don’t get in the classroom. Classroom labs focus on achieving specific results. Research seeks answers that are not yet known.

“We are actually forming scientists,” Gutierrez states. “We need to prepare them for thinking as scientists.”

MORE ON THE WEB
Wilkes biology student Rachel Curtis spent fall semester 2009 doing research in Costa Rica. She says, “If I were to only have had traditional classroom study and labs, I doubt I would realize the places one can go with a Wilkes education. The close mentoring environment that Wilkes faculty are able to provide allows for rich conversations not only concerning the subject being researched, but also the subject of the future of the student.”
Visit her blog at http://rccostarica.wordpress.com/.