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Grant enhances biological research opportunities for students

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NEWS RELEASE

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Contact: Carol Brewer, UM assistant professor of biological sciences, (406) 243-6016.

**GRANT ENHANCES BIOLOGICAL RESEARCH OPPORTUNITIES FOR STUDENTS
MISSOULA –**

Bethany Poulin will spend much of her summer catching trout in western Montana. Many people would consider this an ideal vacation, but Poulin actually is an undergraduate doing research for The University of Montana.

Poulin, a senior biology major in the Division of Biological Sciences, studies migration of bull trout in the Flathead River system, trying to determine whether various populations have been influenced by man-made obstacles such as dams. This is serious research, something most undergraduates never have a chance to do.

In a UM laboratory, Poulin works with centrifuges, enzymes, nucleotides and other scientific material to hunt down the genetic signatures found in trout DNA. Later this summer she will catch trout at various streams, releasing the fish after taking small fin clippings for the genetic secrets they contain. This work will help Poulin determine if the area's trout populations are still viable and whether man-made obstacles are isolating the fish into genetically distinctive groups.

“Here at UM it's not just about cleaning petri dishes – you are actually participating in

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research,” Poulin says. “As an undergraduate I am getting experience that typically only graduate students get. I’m sure this work will increase my chances of getting into the graduate program of my choice.”

Funding for her project was made possible by a prestigious \$1.4 million grant awarded to UM last summer by the Maryland-based Howard Hughes Medical Institute, a nonprofit medical research organization. The purpose of the four-year grant is to involve more undergraduate students in biological research from the freshman to the senior level.

Assistant Professor Carol Brewer says there is a natural connection between teaching and research. She wrote the HHMC grant request and directs the resulting program, Integrated Biological Science Courses Organized Around Research Experience Project – Project IBS-CORE for short.

“I think this grant allows us to better connect our instruction to student learning,” Brewer says. “We are giving more opportunities for students to actually do biology. Science is about doing research – it’s about asking questions and trying to understand something about the world we live in. Also, research is fun, and it’s a great way to get students excited and involved.”

Poulin’s research project was one of 10 funded this year, and Brewer hopes to fund 20 to 30 projects annually in coming years. The grants were awarded in April, and Poulin and her pioneering peers each received a monthly stipend of \$750 for three months, plus a budget of up to \$1,000 for research materials and travel. Since this was the first year awards were presented to undergraduate researchers, only seniors were selected, but Brewer says freshmen, sophomores and juniors also will be eligible to apply in the future. A committee of biology faculty members

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reviewed and ranked all student research proposals when deciding who would receive grants.

All of the 1999 Undergraduate Research Fellowship winners had to find a UM mentor to guide them in their project. They also will be expected to reveal the fruits of their research at various student research symposiums.

“It’s been great – fantastic – so far,” Poulin says. “I really like the people I’ve been working with.”

Other undergraduate researchers are studying topics as wide-ranging as zooplankton distribution in Flathead Lake, the occurrence of mushrooms in alpine tundra ecosystems and the role moss plays with metal-contaminated soils.

Brewer says the mentors seem excited about having the undergraduate researchers with them in their labs. She said Project IBS-CORE staff work closely with students, and they have planned pizza lunches and other summer socials to meet with students and gauge how their research is going, ensuring that students will have a rewarding experience.

Besides making awards available for undergraduate research, the HHMI grant is allowing faculty to redesign the undergraduate biology curriculum with more of a research focus. Starting in the fall, for example, an introductory course will be offered for freshmen through the Davidson Honors College. Incoming students in this class will begin doing research within days of starting school.

In addition, a seminar for freshmen and sophomores titled Introduction to Research and Biology will be offered, allowing students to learn about ongoing research in the division and perhaps spark ideas about areas they would like to study. Brewer says established undergraduate

researchers will be invited to discuss their projects and how they got involved. Students in the seminar also will learn to write grant proposals and discover what research fellowships are available.

Brewer says one outcome of curriculum committee meetings this year was the creation of an undergraduate senior thesis option. This will allow student researchers to use their work in developing a senior thesis, and Brewer says several of their first-year research fellows already are planning to write a thesis.

The HHMI grant has allowed the biology division to upgrade with about \$70,000 in new equipment for teaching and student research. In the fall 26 new computers will be installed in the division's teaching labs. In addition, the division purchased two video microscopes, which will allow instructors to place a microscopic image on a screen for students to see. Faculty also purchased an instrument that measures the strength or toughness of biological materials. For example, a botanist will be able to measure how much force it takes to break a plant stem.

Brewer says several biology faculty members already have plans to use this equipment to enhance their courses. As an example, one professor intends to use new computer software and video imaging systems to study the embryology of a developing plant with time-lapse photography, taping how a seed develops after it is fertilized. Then during classes in the fall, students will be able to see how a plant develops on a video screen during a lecture.

Many faculty members will start asking students to do actual research-based projects during the courses they teach, Brewer says. So instead of doing the same old canned labs, they will start asking questions, thinking about methods and designing their own experiments.

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Brewer says courses are still being designed and equipment purchased for Project IBS-CORE. But after the HHMI grant runs out in four years, faculty members hope to have new opportunities for student research well established at UM.

For more information about Project IBS-CORE, visit the Web site at
<http://ibscore.dbs.umt.edu>.

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