

**For Immediate Release**  
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**Contact Bill Taylor, Asst. Director, News Services**  
taylorb@ferris.edu, (231) 591-2065 or 591-5604

### **Hoerter involves Ferris students in research**

BIG RAPIDS -- Professor Jim Hoerter's latest research grant helped him reach a milestone at Ferris State University. He was happier, however, with the grant's purpose.

Dr. Hoerter recently received a \$37,000 grant from the National Institutes of Health (NIH) to support undergraduate student research in his laboratory. That funding pushed his research grant total to more than \$1 million since joining Ferris in 1993. More importantly to Hoerter, it enabled him to continue involving students in research.

"I consider my research lab as an extension of the classroom," he said. "It's an excellent environment to help students learn biology by designing experiments and discovering new knowledge about how cells work.

"Carrying out a research project is one of the most valuable learning experiences that a student can have," stressed Hoerter, biological sciences department head. "I teach them some of the basic techniques of molecular biology and then I give them a small piece of the puzzle to solve and let them take ownership of their own research.

"As professional educators, we should be engaged in advancing our knowledge of our disciplines," said Hoerter. "This is critical. If we can involve students in this process, they can actually be helping us to learn. If you make a conscious effort to do this, you can provide a wonderful way for students to gain knowledge."

Michael Harris, Ferris vice president for academic affairs, is in total agreement. "There is a lot of evidence that undergraduate research is exceptionally enriching for students," said Dr. Harris. "They not only gain knowledge from their research, but they acquire new skills, learn self discipline, develop analytical thinking and can enhance their commitment to the University.

"I can't say enough about the values and benefits of undergraduate research," he added. "I think that Dr. Hoerter is doing an exceptional job in providing and facilitating these opportunities for our students."

One of the initiatives of Matt Klein, newly appointed dean of the College of Arts and Sciences, is to make more opportunities for undergraduate student research. That's also a high priority of the NIH and the National Research Council (NRC). A recent NRC report challenges universities and colleges to merge research and professional development with education to create unique learning environments for students.

"They want to dispel the misconception that education and research are separate," explained Hoerter. "To me, research and education go hand in hand. The classroom is only one place where learning happens. Learning can take place 24 hours a day. Classroom walls are breaking down as new technology for connecting students to learning communities and research labs all over the world is creating a whole new paradigm for learning.

"We broke ground with this concept when I started 'Research Link,' a national program to connect students and researchers all over the world to communicate and share data on areas of common interest in biology," said Hoerter. "I'm now in the process of creating a global learning community via the Internet that will link research scientists and undergraduate students who are interested in the whole area of solar light and how it affects human behavior and health."

Through his most recent grant, he and his students are trying to unravel the complex mechanisms operating in a cell after exposure to sunlight. This leads to the formation of free radicals that play havoc in a cell and damage DNA, defense enzymes and membranes.

The project “Synergistic Effects of Solar and Tanning Bed Irradiation Protein Oxidation,” was initially funded through 2007 by an \$188,000 NIH parent grant. Students assisting with the research are Nate Banner of Roseville, MN, Rachele Graham of Fremont, Admasu Gizachew of Alexandria, VA, Tim Hotchkiss of Muskegon, Mike Sauer of Frankfort, Levi Walsh of Big Rapids, Chris Ward of St. Joseph and Langston Gant of Paris, a Big Rapids High School freshman attending the Ferris Math/Science/Technology Center.

“The cell has evolved some very elaborate ways to cope with stress resulting from increased exposure to solar radiation,” noted Hoerter. “Figuring out these mechanisms is our challenge.”

He and six of his student researchers have had a paper accepted for publication in the *Journal of Photochemistry and Photobiology*. The work reports on their finding of an important regulatory link between genes that control iron transport in a cell and those that control important enzymes that protect a cell against oxidative stress resulting from sunlight.

“This opened a window of opportunity for us to delve into the inner secrets of how cells regulate defense pathways when damaged by normal solar radiation,” said Hoerter. “We’re now turning our attention to using human skin fibroblasts in the lab to investigate how exposure to tanning bed irradiation affects a cell’s normal protective responses when those same cells are then exposed to normal sunlight after 72 hours.

“It was a goal of mine when I arrived here in 1993 that I wanted to bring in \$1 million in 10 years,” he recalled. “I remember making that remark to Sue Hammersmith (then Arts and Sciences dean) when I interviewed. It took a little longer, but I finally made it.”