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New Biophysics Lab to Yield Nanomedicines Research

CEDARVILLE, OHIO -- Dr. [Mohan Pereira](#), assistant professor of physics at Cedarville University, wanted his students to be able to conduct research that would qualify them for graduate programs. So, he set up a biophysics lab that will eventually yield nanomedicines research.

Nanoscience is the study of matter at the scale of one billionth of a meter, or at a smaller scale than any known bacteria. Using nanoscience research to develop new products is the field of nanotechnology, of which nanomedicines is the medical branch.

The lab is equipped with several research-grade characterization instruments, including a high-precision density meter, refractometer, viscometer, microelectrode pH meters and teaching-level spectrofluorometer.

This is only the beginning phase of the lab. Pereira intends to purchase more instruments to promote nanomedicine research.

Nanomedicine developments have been instrumental in recent years, such as a surgeon's ability to now identify cancerous tumors as they glow in ultraviolet light after being injected with nanoparticles of the salt cadmium selenide.

Pereira is currently using the lab to introduce molecular and macro-biophysics research to his students through a comprehensive study characterizing every type of edible oil, such as olive oil and canola oil. Pereira was dismayed by the lack of research connecting and comparing oils and their impact on health.

"It's a huge research project, and five of my students are enrolled in it," Pereira said.

Pereira is quick to explain the scientific family tree that nanomedicine comes from. At the basic level, it is a subfield of biophysics, which is the field that applies the theories and methods of physics to study biology. This "shared science," as Pereira puts it, also includes contributions from other fields such as chemistry and pharmacy.

"Through this lab, Cedarville students will be able to graduate with good research experience and an internal resume, allowing them to compete with other students for graduate school spots," he said. "Research experience is essential."

The new biophysics lab also offers hands-on opportunities to explore the concepts Pereira teaches in upper-level physics courses, enhancing classroom learning and providing students the opportunity to become well-rounded in interdisciplinary application research topics, such as nanomedicine, that are in high demand.

The research will also allow Pereira to contribute to his field through research: “The Lord has given me a unique set of skills and talents, and I want to be a good steward of them. I’m glad I can make a very small-scale contribution to biophysics and the society through my research.”

For Pereira, all research ultimately points upward. “We do what we do to glorify God, and that’s our ultimate purpose,” he said. “I do research to discover the roots of creation. I can see and help others to see the Lord’s signature at a basic level through biophysics research, and I can show the beauty of creation.”

Located in southwest Ohio, Cedarville University is an accredited, Christ-centered, Baptist institution with an enrollment of 4,715 undergraduate, graduate, and online students in more than 150 areas of study. Founded in 1887, Cedarville is one of the largest private universities in Ohio, recognized nationally for its authentic Christian community, rigorous academic programs, including its [Bachelor of Science in Physics](#), strong graduation and retention rates, accredited professional and health science offerings, and high student engagement ranking. For more information about the University, visit cedarville.edu.

Written by Brendan Rowland