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The largest instrumentation grant in Lawrence University's history — $552,666 from the National Science Foundation — will fund the purchase of a confocal microscope system to support biological research and strengthen hands-on research training.

Confocal microscopy is a cutting edge technique that provides the best available resolution of microscopic images and allows the reconstruction of three-dimensional structures from images obtained through the microscope. Seven teams of faculty mentors and student researchers — six from Lawrence and one from the University of Wisconsin-Fox Valley — will use the microscope to advance understanding in developmental biology, cell biology, physiology and biochemistry.

Current research projects the microscope will aid include age-related synaptic decline found in Alzheimer's disease and other

forms of dementia, the role a particular protein may play in ALS and some kinds oftumors and how protein signals in a developing embryo help properly position various parts of the body.

The instrument also will provide Lawrence students opportunities to gain valuable experience through summer research with faculty members as well as upper-level lab courses and *Senior Experience* projects. As many as 32 students a year are expected to assist with research involving the confocal microscope.

"It's incredibly exciting to have a sophisticated instrument like this. We have recognized for several years the critical need for this particular type of microscope if we want to continue providing our students and ourselves with the tools needed for modern biological research," said Nancy Wall, associate professor of biology. "We'll finally be able to undertake research projects we have wanted and needed to undertake but couldn't without a confocal microscope. This is a major boost for faculty research programs and an essential tool for undergraduate training. Professor Beth De Stasio's hard work and leadership were instrumental in securing the grant funding for this microscope."

In recommending the grant, NSF reviewers said Lawrence should be considered "a leader and model for undergraduate engagement in research. They have invested significant efforts to move toward inquiry-based learning approaches in their curriculum, with early experiences that feed different but similarly intensive and research based experiences in the summers or during senior years."

Another reviewer praised the Lawrence faculty for "an impressive track record in successful research collaborations with undergraduate students" while a third mentioned "a culture of "engaging undergraduates in meaningful ways with active research."

Lawrence faculty researchers incorporating the confocal microscope into their research include Wall; Beth De Stasio, professor of biology and Raymond H. Herzog Professor of Science; Kimberly Dickson, assistant professor of biology; Judith Humphries, assistant professor of biology; Nicholas Maravolo, professor of biology; and Brian Piasecki, postdoctoral fellow in biology.

Strengthening an existing partnership with UW-Fox Valley, the microscope also will be used for research training by Dubear Kroenig, associate professor of biological sciences at the two-year college.