A measure of zinc

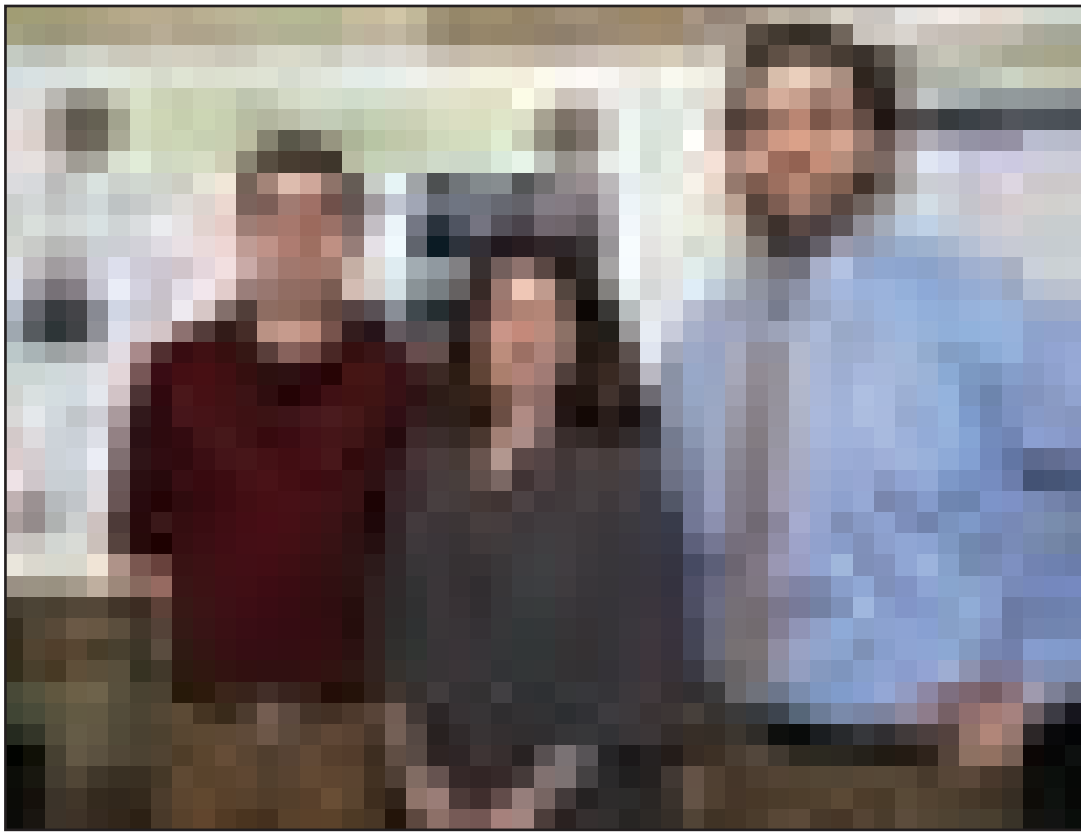
While we have known for a long time that the brain contains a large amount of the trace element zinc, we know far less about the role of this essential metal in the brain and how diets low in zinc may disrupt normal brain function. That may soon change with an ongoing, $1.3 million research project funded by the National Institutes of Health. Cathy Levenson, associate professor of biomedical sciences at the College of Medicine, is part of a team of Florida State University researchers seeking to fill a gaping hole in the scientific literature regarding zinc.

During the five-year study, the team is seeking a way to effectively measure zinc levels in the brain and other organs using an analytical process known as fluorescence microscopy. The research team includes Lei Zhu, assistant professor of chemistry and biochemistry, and Michael W. Davidson, a research associate at the National High Magnetic Field Laboratory and one of the world's foremost experts in the field of optical microscopy.

Zinc levels are known to be concentrated in particular regions of the body, especially in brain regions known to be associated with learning, memory and emotion. Work in the Levenson lab has shown that in one such region, known as the hippocampus, the brain uses zinc for the growth of new adult stem cells. An aim of the program is to design new fluorescent probe molecules that will bind to zinc ions to create a far more accurate method of measuring levels of zinc in brain cells and cells of other organs. "This grant will enable us to determine how much zinc is needed by the stem cells in the brain, where the zinc is localized in these and other cells of the hippocampus and how changes in dietary zinc alter brain zinc," Levenson said.

If successful, the research could lead to new therapies for the diagnosis and treatment of a variety of neurodegenerative and neuropsychiatric diseases related to zinc imbalance within the brain and body.

Cathy Levenson with lab assistant Ali Darkazalli, left, and medical student David Castillo, who assisted in a project on display at the recent Research Fair.



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