Kelly’s $1 M gift to MCB reflects devotion to students’ education

For former MCB Department Head Judy Kelly, retirement has been anything but long days spent at the beach. Sure, there have been vacations and leisure, but Prof. Kelly is as committed to science and education as ever. As part of that commitment, Judy and her husband, David, have graciously established a one million dollar scholarship fund at the University of Connecticut Foundation to support undergraduate and graduate students in MCB.

The Profs. Kelly recognize the importance of graduate and undergraduate education to the advancement of science. “That’s what our lifeblood depends on,” Judy said. “Doing good undergraduate teaching that prepares students to go on and become great grad students, trained to make a contribution to science. That’s an essential role of science in the University setting.”

The Kellys’ gift to MCB is but one manifestation of Judy’s dedication to Science, Technology, Engineering, and Mathematics (STEM) education and the scientific profession. Since retiring from UConn in 2003, she was

Heart grant probes basis of cell movement

Chest pain associated with coronary heart disease signals that heart muscles are starving for oxygen-rich blood. If cardiac blood vessels are completely blocked, there are limited non-surgical options for restoring blood vessels to the damaged muscles. If blood vessels could be stimulated to grow into the oxygen-starved areas, perhaps a healthy heart could be restored. The American Heart Association recently awarded Prof. Kenneth Campellone $308,000 for a 4-year study that might point to a path to such treatments. He will study how cells move, a process central to the growth of blood vessels into tissues damaged by coronary heart disease.

MCB Factoid

MCB is set to add three new faculty members this year.

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♦ Cell PhD student Avijeet Chopra wins oral presentation award at regional toxicology meeting
♦ Kathryn Pietrosimone, Cell PhD student judges at CT Science and Engineering Fair
Like all cells, blood vessel cells move by assembling filaments made of the protein actin on the inner face of the membrane that surrounds the cell. When these actin filaments assemble in the cell, they “push” the membrane out like a circus tent does when tent poles are pushed up under the canvas. By doing this repeatedly on one side of the cell while releasing attachments on its back side, a cell moves forward. This movement is critical to the growth of blood vessels, a process called angiogenesis. Campellone plans to examine how proteins called actin nucleators “know” where to assemble actin on the membranes in cells.

Campellone AHA grant  
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Actin protein filaments group into distinct bundles and networks inside cells forming an internal skeleton called the cytoskeleton. The cytoskeleton is organized into both the filaments that extend forward to move the cell and also into structures that move or “traffic” materials around inside the cell. “The actin cytoskeleton is key for the membrane trafficking and cell shape events that are involved in processes like angiogenesis,” Campellone said.

Actin nucleators belong to the WASP protein family and guide actin to the membranes they assemble on and also assist in filament assembly. Campellone will study how several WASP-type proteins called WAVE, WHAMM, WASH, and WHIMP perform this task. He will do so, in part, by observing living

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Defects in WASP family proteins are likely important in human diseases. Indeed, WASP stands for Wiskott-Aldrich Syndrome Protein. “These WASP family proteins were discovered in the late ‘90s and there are still only mutations known to be associated with one disease,” Campellone explained. “Those mutations are in WASP that causes Wiskott-Aldrich Syndrome.” Wiskott-Aldrich Syndrome is a rare disease that causes immune deficiencies and bleeding disorders and is found mostly in males. As for the other WASP factors, Campellone said, “No one has yet found any other human conditions that result from mutations in these factors.”

Better knowledge of the functions of WASP proteins may allow researchers to identify other conditions caused by mutated versions of these proteins. Campellone noted that, “With the advent of sequencing technologies and sequencing multiple (human) populations, we are more likely to find mutations in these WASP family proteins being implicated in human disease.”

In addition to blood disorders, WASP proteins may play roles in neurological diseases. “Our neuronal cells rely on the actin cytoskeleton for a number of functions even more than the rest of our cells,” Campellone said. “So it would not surprise me if some of these proteins are involved in neurological or neurodevelopmental diseases.”

WASP protein research may provide insights into many areas of human health and perhaps lead to treatments allowing new cells to grow and restore healthy tissues. Campellone’s just-launched program promises to provide new experimental evidence to guide the development of such treatments.

MORE NOTES

Grad student Chopra awarded for best NESOT talk. Avijeet Chopra, a PhD student in Cell Biology, was recently awarded a $1,000 prize for best oral presentation at the Fall Annual Meeting of the Northeast Society of Toxicology. Chopra presented a talk entitled “Accentuating the anti-cancer effects of inflammation: a chemical biology approach,” based on his PhD thesis project in Prof. Charles Giardina’s laboratory. Chopra’s talk was one of 13 submitted applications and the best of the 4 that were selected for presentation.

PhD student Pietrosimone judges at CT science fair. 5th year Cell Biology PhD student Kathryn Pietrosimone traveled to Quinnipiac University in March to serve as a judge of Life Sciences projects at the 65th Annual Connecticut Science & Engineering Fair for 7th to 12th grade school students. Pietrosimone judged for the first time to encourage students to pursue their interest in science. She works in Prof. Michael Lynes’ lab studying a bacterial metallothionein that may contribute to the bacterium’s virulence.

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