

# Partners Across the Beltway: University of Maryland and CCR

*Graduate students bring energy and focus to collaborations between UMD physicists and CCR biologists.*

Now in its fourth year, the Partnership for Cancer Technology was established between NCI and the University of Maryland (UMD) to bring UMD's expertise in the physical sciences to bear on the problems of cancer biology (See "Teaming Up to Fight Cancer," *CCR connections* Vol. 4, No. 2). The program has thus far enrolled 15 UMD graduate students to conduct research under the joint supervision of a CCR investigator and a university faculty member. Sixteen NCI investigators and 21 university faculty members have participated in the program.

"Formalization made a huge difference," said Carole Parent, Ph.D., Deputy Chief of CCR's Laboratory of Cellular and Molecular Biology, who co-directs the partnership with Dan Larson, Ph.D., Investigator in CCR's Laboratory of Receptor Biology and Gene Expression, and UMD's Wolfgang Losert, Ph.D. "Collaborations work best when you involve students and postdocs to go in between labs and be part of the research. The program has made it a lot easier to recruit students and allow them to move freely between the laboratories." In addition to logistical support, the Partnership has also allocated competitive funding for joint projects.

Setting the stage for an official agreement between their institutions, Parent and Losert first

began collaborating in 2003. "My lab is interested in understanding, at the molecular and signal transduction level, how cells communicate with each other and migrate through the body," said Parent. "We like to see how things move." Her laboratory works with three models: the single-celled social amoebae, *Dictyostelium discoideum*, neutrophils, and human breast cancer cell lines. Using time-lapse imaging, Parent could observe patterns of movement that changed depending on the substrate or the cell-cell interactions involved, but she lacked the means to quantify those changes. Quantification became particularly challenging in the study of aggregate cellular behavior, which occurs, for example, when epithelial cells form sheets. Losert was able to help her analyze the changes she was observing.

"Over the years, we've shared many graduate students and postdocs who have moved on," said Parent. "Currently, we have two graduate students who split their time roughly 50-50, trying to apply their physics backgrounds to biological questions."

Chenglu Wang is a fifth-year Ph.D. student at UMD, working with Parent and Losert. She is interested in both the chemical signals and mechanical forces that guide cell migration. "At UMD, our lab has both physicists and biophysicists. When I work in Carole's lab at NCI,

I can talk to students and postdocs that have a biology background and they have different ways of thinking; even for the same scientific question, they have different approaches to solve problems. I get to know what they really care about in cancer biology," said Wang. She also enjoys the opportunity to attend cancer research seminars and lab meetings.

The Partnership hosts symposia twice a year, during which students and young investigators present their work. It is also an opportunity to introduce new researchers and students to the possibilities for collaboration.

"Now other institutes are becoming interested in this endeavor. They are working with UMD to add grad students from different departments within UMD. We now have six different NIH institutes participating in this program," said Parent. "I think it is very important to employ a multi-disciplinary approach to help solve complex biological questions. The partnership with UMD is a great mechanism to help NIH investigators attract motivated students that bring unique complementary skills to the study of specific biological problems."

*To learn more about the UMD-NCI Partnership for Cancer Technology, please visit <http://cancertechnology.umd.edu>.*