

SUCCESS OF CR&T GRANT SERVES AS TEMPLATE FOR NEW MAJOR TRAINING GRANT

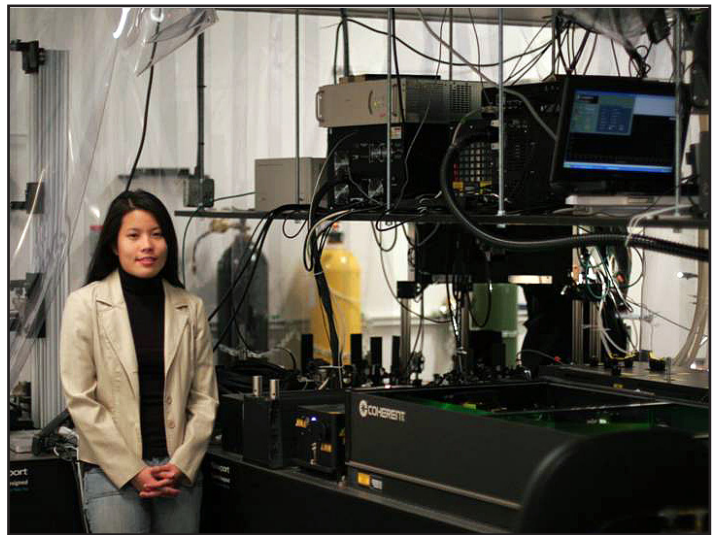
As a third-year Ph.D. student in biomedical engineering (BME) at Cornell University, Ms. Puifai Santisakultarm has had significant exposure to clinical medicine that helps to focus her CR&T funded research on questions that have direct impact on patient care. Now, Ms. Santisakultarm s training experience has served as an exemplary model of the Ph.D. experience that has helped the BME department obtain a major training grant from the Howard Hughes Medical Institute (HHMI).

As a first-year graduate student, Puifai joined the research group headed by Prof. Chris B. Schaffer, who uses advanced optical techniques to study in vivo biological processes in normal and diseased states, with a focus on neurological disease. Prof. Schaffer and Ms. Santisakultarm are working to understand how diseases that elevate blood cell counts, such as polycythemia vera, impact blood flow in the brain. CR&T has supported this work for the past two years, first with a grant to Prof. Schaffer s laboratory and now with a graduate fellowship to Ms. Santisakultarm.

Puifai s exposure to clinical research began with her participation in the BME department s summer immersion term at the end of her first year of graduate school. In this program, BME Ph.D. students spend eight weeks at Weill Cornell Medical College (WCMC). While at WCMC, Puifai worked under Dr. Richard Silver, the Medical Director and Vice President of CR&T, studying the genetic and physiological basis of myeloproliferative disorders as well as witnessing the diagnosis and treatment of patients in the hematology department. Puifai returned to Ithaca with a significantly deepened clinical insight on myeloproliferative disorders, and new ideas about research questions that could be addressed in Prof. Schaffer s laboratory.

Working in collaboration with Dr. Silver as well as Dr. Andy Schafer, a hematologist at WCMC, and Prof. Bill Olbricht, an expert in blood rheology in BME, Puifai began studies of cerebral blood flow in mouse models of polycythemia vera using the high resolution optical imaging methods available in Prof. Schaffer s laboratory. The collaborative efforts among this group have served to focus the research on questions of relevance to patients and has facilitated

CR&T support of Ms. Santisakultarm s training helped the BME department develop a prototype of the student training experience that will be implemented over the next four years under the newly-funded HHMI program titled Bringing Clinical Medicine into Biomedical Engineering. The training grant is part of HHMI s 2010 Med-Into-Grad Initiative, which encourages graduate schools to integrate medical knowledge and an appreciation for clinical practice into Ph.D. training. The



Puifai Santisakultarm

uniquely well-rounded graduate training for Puifai. Recently at the 5th International Congress on Myeloproliferative Diseases and Myelodysplastic Syndromes, Prof. Schaffer presented a talk on some of Puifai s remarkable findings. Puifai has found there is a significant decrease in cerebral blood flow in polycythemic mice along with a dramatic increase in microvascular occlusions, or small strokes. These microstrokes could impact cognitive function. Preliminary evidence points to white blood cell activation and adhesion to the inside of blood vessels playing an important role in producing these microblockages, suggesting possible therapeutic opportunities.

grant to BME will provide support for doctoral students to participate in collaborative research between BME in Ithaca and key departments at WCMC, including medicine, surgery, neurosurgery, radiology, pediatrics and urology. Modeled off of Puifai s experience, the research students supported by the new grant will be co-mentored by clinical faculty from WCMC and faculty from BME. The Howard Hughes Medical Institute grant also provides support for students in the biomedical engineering-Weill Cornell Medical College immersion term, where Puifai s exposure to clinical medicine began. We thank CR&T for providing the necessary funding to begin this critical research.