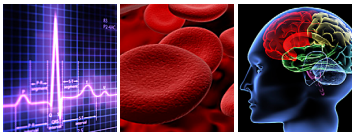


Chairman's Corner

From the President of Stanford University, … "there is no work of the University more worthy or more needed than medical instruction and medical research, the training of men who shall help their fellows in all their bodily ills, on the basis of the best and fullest knowledge, while themselves adding day by day to the world's stock of wisdom. In these days, medical research stands on the firing line of the advance of science. There is no branch of knowledge which is moving more rapidly and there is none, which contributes equally to the aggregate of human welfare."

These remarks by President David Starr Jordan were made at the dedication of the Lane Library on November 3, 1912. On November 2, 2009, we celebrated the opening of the facility at 1070 Arastradero Road to serve as the home for patient and population health sciences research. Except to acknowledge more fully the efforts of men and women, nothing needs to be changed in the exhortation by this Stanford President.

I am confident that the work of our department in population health sciences will continue to expand in quantity, and deepen in its focus on the intersection between biology and the social determinants of disease. I am grateful to faculty and staff who have embraced our development of this expanded research initiative. Our work at Arastradero and throughout the department brings credit to the larger work of this great University, and does so for the benefit of men and women throughout the world.

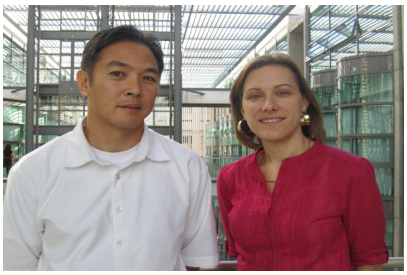
Ralph Horwitz

Engineering Tissue Regeneration

Calvin Kuo, MD, PhD, will use the $4 million grant he received from the National Institute of Health, to grow human intestinal cells in culture. It is a process no group has ever successfully done before. To accomplish this, Kuo, associate professor of medicine (hematology) and Sarah Helishorn, PhD, in materials engineering will take on the enormous challenges in both biology and materials design to expand their current findings from mouse to humans.

"A talented post doctoral fellow in the lab Akifumi Ootani, MD, PhD, developed a method to grow the intestine for hundreds of days. It uses pieces of the intestine that have an underlying support structure, which nourish the stem cells, called an 'intestinal stem cell niche.' This pre-established intestine expands to encourage the stem cells to multiply and generate all the differentiated cell types found in a normal intestine," explained Kuo.

Essential to the process, are materials made from engineered proteins that are compatible to the cells, which is where Helishorn comes in. "Since we engineer these proteins ourselves, we can control the properties of the material to make it more or less rigid, more or less cell-adhesive, and faster or slower degrading, and to include more or fewer biochemical signals for the cells. It is very important when trying to grow a tissue outside of the body that we can control and manipulate these properties to identify the best type of material to grow a certain type of tissue."



Calvin Kuo MD, PhD & Sarah Helishorn PhD

Speaking of the collaboration, Helishorn said, "When both sides are enthusiastic and patient, the final research project is often much greater than the two parts. We think this type of collaboration will be critical to solving the problem of growing human intestinal tissue in the lab and make a great training ground for our lab members."

Looking Ahead

With so many infectious diseases affecting the intestine, Kuo would like to partner with gastroenterologists and immunologists who model host pathogens interactions in the gut and study these processes in vitro with primary tissue. Thus far, Harry Greenberg, MD, professor of medicine (gastroenterology), Anson Lowe, MD, associate professor (gastroenterology), and Eric Sibley, MD, PhD, in the department of pediatrics have explored using the team's research techniques.

"Eventually our goal is to make long tubes of artificial intestine that simulate disease processes," said Kuo. "With that we can evaluate candidate therapeutics in this culture, and hopefully create artificial intestine, since there are cases, in which people will require intestinal transplantation."