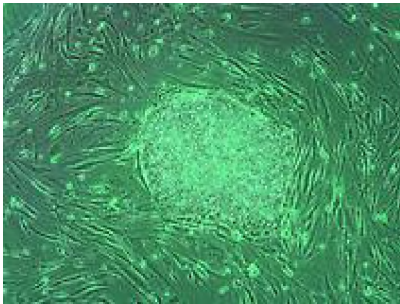




College News

StemCellSymposium

Lead stem cell researchers rally at 3rd Annual Stem Cell Symposium



Research pioneers across the nation are working to unlock the vast hidden potential of stem cells, the body's building blocks with the power to transform into nearly any kind of cell. This year leading investigators from top institutions converged in Ithaca to present their research, exchange ideas, and discuss the wide frontier of stem cell research at Cornell University's Third Annual Stem Cell Symposium.

Speakers from MIT, Harvard, Stanford, Columbia, and the University of British Columbia joined faculty and students from Cornell's College of Veterinary Medicine and other institutions on October 30, 2010 at the Alice Statler Auditorium for an intensive day of presentations, posters, and discussion. The event included three lecture sessions and a poster competition for students and post-docs offering prizes of up to \$1,000 to the three best presentations. Over 180 people attended, including faculty from the College of Veterinary Medicine, members of their labs, researchers from outside institutions, and industry scientists, collectively embodying the symposium's goals to stimulate exchange between researchers inside and outside Cornell, enhance interactions within Cornell, and promote stem cell research and education.

"The symposium represents a great opportunity to foster cross-disciplinary interactions among researchers working on stem-cell-related problems," noted Dr. Nikitin, Professor of Pathology in the College's Department of Biomedical Sciences, and head of the Stem Cell program at Cornell. "This encompasses different scientific areas ranging from basic biology to biomedical engineering to veterinary and human medicine. It is also a great forum to attract new researchers and cross-pollinate ideas in this exciting field."

Samantha Palmaccio, senior undergraduate student in the College of Agriculture and Life Sciences, received the first place award for \$1000 for best poster presentation. "My project revolves around the Cancer Stem Cell Hypothesis, the theory that a very small population of cells with stem cell characteristics exist in cancer tumors," says Palmaccio, who conducted the study in the lab of Dr. Nikitin.

"Cancer Stem Cells can resist traditional cancer therapies, so although tumors might initially regress after treatment, if only a few of these cells survive they can completely regenerate the tumor. My work looks at a pathway to potentially regulate Cancer Stem Cells, which if manipulated can also be used to kill them. We're hoping to find ways to target all cancer cells in a tumor for a longer lasting, more effective treatment.

“I think research that has the potential to actually help individuals in a clinically relevant way is the most rewarding work you can do,” says Palmaccio, who plans to begin medical school next fall. “Working in Dr. Nikitin's lab has been a great opportunity to learn the very latest in cancer research.”

The second award (\$600) went to Ying Zhang (Tudorita Tumber Lab) in the Department of Molecular Biology and Genetics for his presentation on the role of GATA6 in progenitor cell survival, proliferation and differentiation in mouse skin epithelium. The third award (\$400) went to Bo Ri Seo (Claudia Fischbach-Teschl Lab) in the Department of Biomedical Engineering for her work on innate potential of obesity-associated adipose stromal cells in breast tumor stiffness. The prize money will support training activities, purchase of lab reagents, specialty books or computers, and travel to scientific conferences on stem cell research. The three winners also had the opportunity to attend dinner with the symposium speakers.

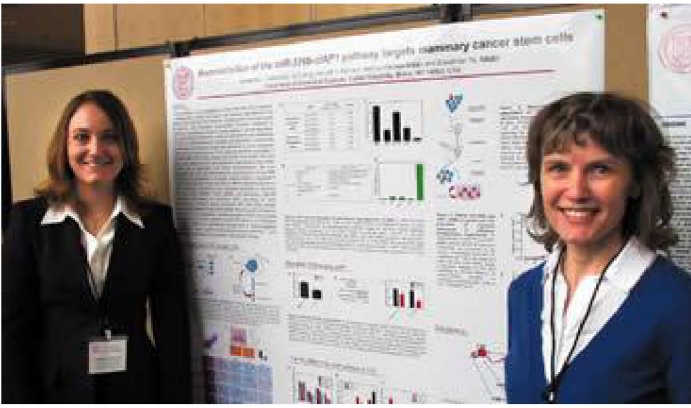
The three lecture sessions each centered on a different area of stem cell research. The first featured embryonic and induced pluripotent stem cells, which have the greatest potential to become any kind of cell. Dr. Rick Young from the Whitehead Institute for Biomedical Research at MIT spoke about his research on the factors influencing how genes program embryonic stem cells differentiation. Dr. Angela Christiano of Columbia University's Center for Human Genetics followed with a talk on using adult stem cells to form keratinocytes: cells that make up the skin, hair, nails, and mucus linings in the esophagus and mouth.

The second session focused on the use of stem cells from adult tissues. Harvard Medical School's Dr. Amy Wagers spoke on the use of skeletal muscle stem cells to repair muscle damage and treat disease. Dr. Peter Lansdorp of the University of British Columbia Cancer Research Centre spoke about non-random segregation of sister chromatids, which may represent a key feature of stem cell division.

The relationship between stem cells and cancer provided the locus of the last session, featuring Cornell's Nikitin and Dr. Julien Sage of Stanford University School of Medicine. In his talk Nikitin overviewed applications of genetically modified mice to address the role of stem cell compartments in cancer formation. He also discussed the promise of microRNAs for developing therapeutics targeting stem cell properties of cancer cells. Sage spoke about role of tumor suppressor genes of retinoblastoma family in adult stem cells and shown how abrogation of cell regulation provided by these genes may lead to cancer.

In just three years the annual symposium has already established a history of garnering a rich diversity of contributors. Past presenters hailed from Harvard, Yale, University of Washington, Baylor College of Medicine, and many of the top medical and cancer research institutes. Topics covered have included the mechanisms by which stem cells regulate and renew themselves, the unique characteristics and uses of adult tissue stem cells derived from hair, skin, lungs, mammary glands, and brains, and the application of stem cells in creating and repairing tissues.

The greatest potential of stem cells lies not only in their latent transformative powers, but in their myriad applications to human and animal medicine. Stem cell research may have a major impact in understanding and preventing cancer and birth defects, treating diseases such as Parkinsons, diabetes, heart problems, and arthritis, and handling injuries to almost any part of the body. Cross-pollination of ideas and discoveries will help the scientific and medical communities move towards these goals. Cornell's Stem Cell Research Program will continue to sponsor activities including symposiums, stem cell seminars, and research progress reports, all of which will help make these valuable exchanges possible.



Samantha Palmaccio '11 (left) and Andrea Flesken-Nikitin (right) near their award-winning poster.