

The Humboldt State University CIRM Scholars Program

The HSU CIRM Scholars Program is funded by a 1.6 million dollar grant from the California Institute of Regenerative Medicine (CIRM) to promote undergraduate training in stem cell biology and regenerative medicine. The HSU CIRM Scholars will spend twelve months working in the laboratory of a host Principle Investigator (PI) at either Stanford University Center for Human Embryonic Stem Cell Research and Education or The University of California, San Francisco Institute for Regenerative Medicine (UCSF).

In addition to the HSU CIRM Scholars Program, the grant will support stem cell training and education opportunities at Humboldt State University, including a seminar series in stem cell biology and regenerative medicine (to begin Spring 2010), laboratory supplies for core courses in cellular and molecular biology including our new stem cell research methods course, journal subscriptions, and the development and delivery of an upper division GE course in stem cell biology and regenerative medicine.

Requirements for the HSU CIRM Scholars Program include Bio410 Cell Biology, BIO440 Genetics Laboratory BIO480/580 Stem Cell Research Methods and at least one semester of BIO499 research in molecular or cellular biology. ZOO476 Principles of Animal Development is strongly encouraged.

We are pleased to announce the 2009-2010 CIRM Scholars and their Host mentors (see below). We will be accepting applications for the 2010-2011 HSU CIRM Scholars program Spring 2010.

For additional information, please contact Dr. Jacob Varkey (JPV1@humboldt.edu) or Dr. Amy Sprowles (AES54@humboldt.edu).

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We are pleased to announce the selection of HSU CIRM Scholars for 2009-2010 and their placements in the laboratories of host research mentors:

Humberto Contreras ('10) ; Host research mentor: Irving Weissman, Stanford University
Research Topic: Characterization and therapeutic antibody treatment of various cancer stem cells.

Sara Louise Downey ('10); Host research mentor: Joseph Costello, UCSF
Research Topic: Genetic and epigenetic alterations in the development of sporadic cancers

Spenser Falor-Ward ('10); Host research mentor: Allan Balmain, UCSF
Research Topic: Molecular mechanisms of multistage carcinogenesis in skin

Elizabeth Gould ('10); Host research mentor: Dr. Theo Palmer, Stanford University
Research Topic: Neuronal precursor cell derived treatment for diminished neurogenesis and neurodegenerative disease

Timothy Laurent ('10); Host research mentor: Robert Blelloch, UCSF
Research Topic: Molecular mechanisms cellular differentiation and de-differentiation in development and cancer; with an emphasis on microRNA .

Logan Linthicum ('10); Host research mentor :Pamela Denbesten, UCSF
Research Topic: Ameloblast differentiation from human embryonic stem cells and whole tooth generation

Robin Martin ('09); Host research mentor : Irving Weissman, Stanford University
Research Topic: Characterization and therapeutic antibody treatment of various cancer stem cells.

HSU CIRM Scholars are paid 2500.00/month to work in a stem cell laboratory at Stanford or UCSF for 12 months. In addition, they receive \$5000.00 towards HSU tuition and fees and will take a CIRM Human Embryonic Stem Cell Training Course. The Scholars return to HSU July 2010 for our Stem Cell Symposium, where they will give 50 minute talks summarizing their research.

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Additional information about the Research Programs of the Host Laboratories

Humberto Contreras ('10) ; Host research mentor: Irving Weissman, Stanford University

Robin Martin ('09): host PI: Irving Weissman, Stanford University

The Weissman lab research encompasses the phylogeny and developmental biology of the cells that make up the blood-forming and immune systems. Among the multiple projects currently in progress is the characterization and targeting of novel cell-surface proteins on cancer stem cells that enable them to evade the host's natural immune system. Successful targeting of these cell-surface proteins with antibodies enable host T cells and macrophages to eliminate cancer stem cells naturally, a difficult feat with the traditional invasive therapies of chemo and radiation treatment. So far, mice have effectively been cured of lymphomas and leukemia using this antibody treatment, and a variety of other cancers are being tested as well with human trials on the horizon.

HSU CIRM Scholar: Sara Louise Downey ('10); Host research mentor: Joseph Costello, UCSF

The Costello lab investigates the role of genetic and epigenetic alterations in the development of sporadic cancers, with a focus on brain cancer - specifically glioblastoma multiform (GBM). Deletion and aberrant methylation are prevalent in tumorigenesis, yet the interaction of these gene inactivation mechanisms on a genome-wide scale is entirely unknown. By integrating the genomic and epigenomic approaches, we assess the interaction of genome copy number changes and aberrant gene methylation in tumors.

HSU CIRM Scholar: Spencer Falor-Ward ('10; Host research mentor: Allan Balmain, UCSF

The Balmain labs' main research interests have been the elucidation of the molecular mechanisms of multistage carcinogenesis, with particular emphasis on mouse models of chemically induced skin tumor development.

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HSU CIRM Scholar: Elizabeth Gould ('10); Host research mentor: Dr. Theo Palmer, Stanford University

Palmer Lab Summary: Neural precursor cells (NPC) possess the ability differentiate into mature neurons. Transplantation of NPCs may help to alleviate conditions of diminished neurogenesis and neurodegenerative disease by providing a source of new neurons. My work is focused on understanding how the immune system reacts to transplanted NPCs in a murine model.

HSU CIRM Scholar: Timothy J. Laurent ('10); Host research mentor: Robert Blelloch, UCSF

Blelloch Lab Summary: The Blelloch Lab is engaged in the investigation of the molecular underpinnings of cellular differentiation and de-differentiation especially as related to normal development and the aberrant development of cancer. Toward this end, the roles of non-coding RNAs, i.e. micro RNAs, are of special interest to the lab because of their ability to cause widespread changes in the cellular environment. Working in this context the lab has made advances in methodology for reprogramming somatic cells to become stem cells in mice and is currently working to translate this to human cell lines.

HSU CIRM Scholar: Logan Linthicum ('10); Host research mentor: Pamela Denbesten, UCSF

The Denbesten lab focuses on whole-tooth regeneration, both for direct clinical application and as a model for organogenesis in general. A major hindrance to the goal of tooth regeneration is that Ameloblasts (the cells responsible for secreting proteins which direct the formation of tooth enamel) are no longer present after teeth have erupted. My lab is currently engaged in efforts to identify the factors capable of promoting Ameloblast differentiation from human embryonic stem cells.