

California Institute for Regenerative Medicine (CIRM)
Program for Innovation in Human Embryonic Stem Cell Research

PURPOSE OF THIS PROGRAM

The goal of CIRM is to apply stem cell and related research to develop new tools and materials for the diagnosis, prevention and treatment of disease. Because the field of stem cell research, in particular human embryonic stem cell research, is so new, the precise paths of discovery needed to develop and apply techniques to treating human disease are not yet known. To jump-start work that has been stalled because of lack of funding, in particular of federal funds, the Institute proposes an innovative program that will fund RFAs targeting human embryonic stem cell research and practice. The specific aims of the program are:

- To stimulate new research and to support on-going research on human embryonic stem cells in California
- To encourage the exploration of new ideas on the biology and use of human embryonic stem cells and their derivatives by both young and established investigators
- To fund preliminary research using human embryonic stem cells that is currently ineligible for or unlikely to be conducted with federal funds
- To attract new investigators into the field
- To provide shared laboratory space equipped for human embryonic stem cell research that is outside the Federal guidelines
- To provide hands-on training in techniques used to culture and/or derive human embryonic stem cells

The research objectives in human embryonic stem cell (hESC) research include, but are not limited to:

- Development of new technology and conditions to optimize the derivation, self-renewal, maintenance, stability, cryopreservation of hESCs.
- Derivation of disease-specific hESC lines
- Characterization and comparison of different hESC lines.
- Understanding the regulation of self-renewal and fate decisions
- Targeting lineage-specific differentiation of stem cells
- Assessing hESCs and their derivatives in animal models of disease
- Assessing the tumorigenicity of hESCs and their derivatives.
- Reprogramming of adult human somatic cell nuclei or other new techniques to generate hESCs.

STRUCTURE OF THE PROGRAM

To accomplish the aims detailed above, the program will consist of several interlocking components.

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- Seed Grants will emphasize innovative and new investigations, either by scientists who are beginning their careers or are new to the field of hESC research, or exploration of new directions by investigators who are well-established in other fields.
- Comprehensive Research Grants will allow investigators with a record of accomplishment in hESC research or closely-related fields to conduct or expand promising on-going research.
- CIRM Shared Laboratory Grants will support institutions with a demonstrated need, both in the number of investigators conducting stem cell research and in available laboratory space, for a dedicated shared laboratory equipped for the culture of hESCs that are outside the Federal guidelines. Support will be provided for the purchase and installation of common equipment such as incubators, hoods, freezers and microscopes, for supplies and for trained personnel to oversee the laboratory. Grantees will be expected to make these laboratories and services available not only to members of their own institution, but also to provide them to scientists from neighboring institutions.
- Additional funding for CIRM Stem Cell Culture Techniques Courses will be provided to supplement the CIRM Shared Laboratory Grants with the goal of offering much-needed hands-on training in the culture and derivation of hESC lines. Preference should be given to training CIRM Scholars and other investigators and technical staff from California.

In summary, all of these components are aimed at supporting, both directly and indirectly, the rapid expansion of research on hESCs in California.