

No. BT/MED/SCB/02/2007
Government of India
Ministry of Science & Technology
Department of Biotechnology
Block No. 2 (6–8th Floors), CGO Complex
Lodi Road, New Delhi 110 003

SUBJECT: Call for Research Proposals on ‘Stem Cell Biology’

The Department of Biotechnology (DBT) invites proposals in the area of stem cell research on basic research, pre-clinical studies employing stem cells in animal models of various diseases and Phase-I clinical trials where proof of concept has been established through animal studies. The purpose of the announcement/advertisement is to promote basic and clinical stem cell research in the country and to create close collaborative network of basic researchers, clinicians and industry. Multi-centric and multi-investigator proposals will be encouraged with proper milestones, time schedule and defined role of individual institutes/centres based on their expertise. Several rounds of meetings, specific brainstorming sessions and workshops were organized by the Department to identify the priority areas in the field of stem cell. Some of the identified areas of interest are:

Basic Research

- (a) Basic stem cell biology on all types of stem cells including embryonic, adult, tissues; generation of human embryonic stem cell lines; study the factors that generate stem cells and to maintain stem cells in undifferentiated cells; regulation of ES cells differentiation, i.e. identification of pathways regulate early stage of germ layer differentiation; trafficking of stem cells, etc.
- (b) Study of gene transduction, gene regulation and plasticity of stem cells.
- (c) Human embryonic stem cells as a tool to study cellular and molecular mechanisms of disease.
- (d) Tissue-derived stem cells.
- (e) Manipulation of epigenetic state of stem cells (epigenetic re-programming).
- (f) Nuclear cloning to create ‘customized’ ES cells.
- (g) Use of pure population of embryonic stem cells for drug screening/testing.
- (h) Stem cells and 3-D biopolymers.
- (i) Large scale production of stem cells with high yield.
- (j) Optimization of the existing reagents and media for long term expansion.
- (k) Development of indigenous reagents and consumables required for stem cell research and therapy.

Pre-Clinical Studies

- To develop animal model(s) of diseases such as cerebrovascular stroke, myocardial infarction, diabetes, renal ischaemia, spinal cord injury, CNS degenerative diseases, etc.
- To define the potential applications of mesenchymal stem cells in animal models of various diseases such as spinal cord injury, retina pigmentosa, Type-I diabetes and also for formation of bone, cartilage, etc.

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- *In-vivo* differentiation of ES cells in different lineages such as β -cells, cardiomyocytes, etc. in animal models; tissue repair with MSCs in animal models.
- Derivation/isolation of stem cells from amniotic fluid and its *in-vitro* differentiation. Further *in-vivo* studies in animal models.

Facility

- Repository for all types of stem cells and cell lines.
- Production of stem cells such as mesenchymal stem cells by the industry under cGMP conditions and supply to the institutes/hospitals as per the requirement for the pre-clinical studies in animal models.

Centre of Excellence

- The proposal may be submitted for Centre of Excellence (CoE), Departmental remodelling and expansion. The details of 'Centre of Excellence' are available on DBT's websites.

Development of products

- Manufacture and commercialization of products such as 'Preservation bag', etc.

Training

- DBT is willing to consider the short-term and long-term overseas training applications or one year fellowship programme for stem cell research. The applicants must be holding a permanent position in the institute/hospital in India. The details of specialized training of young scientists are available on DBT's websites.

Public–Private partnership would be strongly encouraged. Private companies can also apply under SBIRI Scheme of DBT. The details of SBIRI are available on DBT websites. Applications for SBIRI can be submitted in the year.

The scientists/clinicians with necessary expertise in stem cell research may submit project proposals with specific aims and objectives on DBT's format available at DBT's websites www.dbtindia.gov.in OR www.dbtindia.nic.in. Multi-centric/multi-investigator projects could be preferred with proper milestones and time schedules. The project proposals may be sent to **Dr Alka Sharma, Joint Director, Department of Biotechnology (Room No. 713), Ministry of Science and Technology, Block No. 2, CGO Complex, Lodi Road, New Delhi 110 003**. Any additional enquiry may be addressed at **Phone: 011-24363699, Fax: 011-24362884, e-mail: alka@dbt.nic.in**