ICMR-International Travel Support for Non-ICMR Scientists

No. 3/2/TG-50(25)/HRD-2014

- **Name & Designation** : Dr. Indu. S, Research Associate
- **Address** : Molecular Reproduction Unit, Rajiv Centre for Biotechnology, Thycaud P.O, Thiuvananthapuram-695014
- **Name of the International Conference/ Seminar/Symposium/ Workshop** : Stem Cell And Reprogramming-2014
- **Title of the abstract accepted** : Testicular germline stem cells from adult mouse are pluripotent
- **Venue & Date** : Olympic Valley, CA, USA, 6-11th April 2014.
- **Money sanctioned** : ₹ 1,00,000/-
- **Money reimbursed** : ₹ 1,00,000/-

Participation Report

The conference was organised by keystone under the leadership of the scientific organisers Deepak Srivastava and Shinya Yamanaka. There was a joint meeting on engineering cell fate and function and participants had the privilege to choose the scientific sessions of their interest. The conference focused on the mechanisms underlying cellular pluripotency, differentiation, and reprogramming. Scientists and researchers from America, Australia, China, Japan, Thailand, Italy, United Kingdom, Germany etc presented their work. I presented my scientific poster. There were 61 scientific sessions, 22 short talks, 2 workshops and 3 poster sessions. The sessions were interactive and informative.

Academic highlights of the training/workshop

The sessions covered topics like recent progress in iPS cell research, chromatin regulation in naïve pluripotency, factors regulating pluripotency marker gene transcription, results of phase 1 clinical trials etc.

(i) **New development presented at the training workshop**

- Development of an encapsulated stem cell based therapy for Diabetes
- Results of Phase I clinical trials of intraspinal stem cell transplantation in ALS
- Engineering biomaterials for cellular delivery
- Stem cells to improve wound repair and regeneration
- Cardiac lineage commitment of iPSCs and its epigenetics
- Epigenetic and enhancer landscapes in pluripotency and differentiation
- Cell organization into 3D structures
- iPSC based invitro model of familial Dysautonomia
- Engineering T cells for Cancer and infectious diseases
- 3D bioprinting of tissue constructs
- Phototunable hydrogels as dynamic niches

(ii) **New development resulting from the conference**

The conference gave insights into different aspects of stem cell research like signaling, transcriptional, translational and epigenetic events regulating pluripotency and differentiation. This information can be used while designing experiments to unravel the key to maintenance of pluripotency in stem cells. The stem cell based therapies proposed for Diabetes and ALS at the conference are anticipated to complete the clinical trials soon. The use of hydrogels as dynamic cell niches can be extended to multiple organ systems to regenerate the tissue from corresponding stem cells. The knowledge gained can be utilized for disease modeling and regenerative medicine.

(iii)Name of the publication in case your work is recommended for publication. **Nil**

8. Participants contribution to the training /workshop :

I presented the scientific poster "Testicular germline stem cells from adult mouse are pluripotent" on the second day of the conference. In the study, we had shown that the stem cells isolated from mouse testis are pluripotent because they could differentiate into the three germ layers as embryonic stem cells. The presence of pluripotent markers in adult mouse testis as indicated by RT-PCR and Immunofluroscence were highly appreciated. The interactions with the researchers working in stem cells of different origin were enlightening. Suggestions from the experts in the field will be considered while I take this research work forward.