

## **Masters in Stem Cell & Tissue Engineering**

**Rationale and Scope:** Panjab University is pioneer in running a two years (four semesters) Masters course in Stem Cell & Tissue Engineering under CEAST since 2008. The field is a relatively vey new. Its discovery has been suggested to be one of the most important medical discoveries of past 100 years. It has stirred a great excitement in medical research. Owing to advancement in the cellular and molecular technologies, there has been a remarkable surge on the information on various aspects of stem cell biology. The stem cells play a critical role in normal growth and development by providing new cells for replacing and repairing the damaged tissues. When a sperm to make a human embryo fertilizes an egg, the single fertilized egg cell divides millions of times to form the six billion or more cells that make up our bodies. Most of these cells undergo a process called differentiation, to enable them becoming specialized cells for carrying out different body functions. The studies documenting the feasibility of using stem cells to treat a broad spectrum of human diseases including multiple sclerosis, Alzheimer's disease, cancer, type-1 diabetes, arthritis, burns, and spinal cord injury are therefore on rise beside using them as drug targets and/or the vehicles. The stem cells are also being used in basic research laboratories to help elucidate fundamental concepts in molecular, cellular, and developmental biology.

In spite of the directed efforts in delineating various complexities which these cell types pose, the field is still largely in its infancy. Each passing day is filled with numerous challenges, which beacons the scientists to explore this field of biology with greater impetus. The use and management of stem cells in the laboratory is no doubt difficult and arduous. It hence depends heavily on the trained personnel to understand the intricacies associated with the use and maintenance of these cell types for future therapeutic interventions. The academia and industry both rely upon the trained scientists and technically sound professionals who could take the challenges and provide the ways to use these cells for many of the Human ailments

The Panjab University, therefore, provides an excellent opportunity to the students to make their career in the field of stem cell biology by pursuing M.Sc. degree course in

Stem cell and Tissue Engineering. The course module in this subject have been planned so as to equip the students both with the sound background in the theoretical as well as experimental aspects of the stem cell and tissue engineering. Additionally, the students will also learn the laboratory management programs and various ethical issues that concern the stem cell and tissue engineering research. The students will be encouraged to build up their research acumen by developing individualized projects using different types of stem cells, experimental approaches and human disease models (rodents). It is envisioned that the postgraduates of this program will be able to integrate readily into the scientific workforce in stem cell research to meet the needs of highly qualified technical and managerial personnel in stem cell and tissue engineering. After completion of the course work students can opt their careers as research scientists, professionals in universities, hospitals, industry, or could also opt for their private ventures.

## Course Structure

<b>Name of the Course</b>	M.Sc. Stem Cell & Tissue Engineering
<b>Duration</b>	2 years (4 semesters)
<b>Student's intake</b>	15
<b>Session begins</b>	Month of July
<b>Tentative admission schedule:</b>	May/June
<b>Form submission:</b>	Biotechnology Branch, University Institute of Engineering & Technology, UIET, Sector-25, Panjab University, Chandigarh 160014. Mr. Vipin Mr. Naveen Gupta
<b>Basis of Admission :</b>	Through Merit
<b>Eligibility:</b>	Bachelor's degree in Life Sciences/medical sciences with at least 50% marks
<b>Syllabi:</b>	Basic Cell & Molecular Biology, Immunology and Immunogenetics, Genomics & Proteomics level-I & II., Cell & Cell technologies, Stem cell Biology level-I & II., Biomaterials and Tissue Engineering, Nanobased approaches in Stem Cell & Tissue Engineering, Development Biology, Signal transduction in stem cell and epigenetic mechanisms, Xenoantigenics in Stem cells, GMP Facility, Bioinformatics in stem cell and Tissue engineering, IPR issues and regulatory aspects of Stem cell & Tissue Engineering, Project /Dissertation Work

## Faculty

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1	Prof. R. C. Sobti	Dept. of Biotechnology	vc@ pu.ac.in
2	Dr. Sanjeev Puri	Biotechnology Branch, UIET, PU Chandigarh	spuri_1111@ yahoo.com
3	Invited faculty from PGI, NCCS Pune, Shimla, CCMB Hyderabad and PU Chandigarh		

## Contact US

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