3. Evaluative Report of the Department

1. Name of the Department: Centre for Stem Cell & Tissue Engineering

2. Year of establishment: 2008

3. Is the Department part of a School/Faculty of the university? Centre for Stem Cell & Tissue Engineering and Excellence in Biomedical Sciences

4. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.)
   PG, Ph.D.

5. Interdisciplinary programmes and departments involved

6. Courses in collaboration with other universities, industries, foreign institutions, etc. Nil

7. Details of programmes discontinued, if any, with reasons: Nil

8. Examination System: Annual/Semester/Trimester/Choice Based Credit System Semester

9. Participation of the department in the courses offered by other departments
   (1) Teaching B.E. Biotechnology in U.I.E.T.
   (2) Teaching Stem Cell Biology in Centre for Human Genomics

10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others)

<table>
<thead>
<tr>
<th>Position</th>
<th>Sanctioned</th>
<th>Filled</th>
<th>Actual (Including CAS/MPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor</td>
<td>01</td>
<td>Nil</td>
<td></td>
</tr>
<tr>
<td>Associate Professors</td>
<td>02</td>
<td>Nil</td>
<td></td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>03</td>
<td>One</td>
<td></td>
</tr>
</tbody>
</table>

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

<table>
<thead>
<tr>
<th>Name</th>
<th>Qualification</th>
<th>Designation</th>
<th>Specialization</th>
<th>No. of Years of Experience</th>
<th>No. Of Ph.D. Student guided</th>
</tr>
</thead>
</table>
12. List of senior Visiting Fellows, adjunct faculty, emeritus professors
   1. Prof. Vivekanand Jha (PGIMER)
   2. Prof Neelam Marwaha (PGIMER)
   3. Prof Shamsher Singh Kanwar (HP University Shimla)
   4. Prof S. K. Sharma (Statistic Depat. P.U., Chandigarh)
   5. Prof V.L Sharma (Zoology Dept. P.U., Chandigarh)
   6. Dr. Abha Seth (Dental College P.U., Chandigarh)
   7. Dr Lolitika Manal (IISER, Mohali)
   8. Dr.Sudip Mandal (IISER, Mohali)
   9. Dr. Anuj Gupta, (Panjab University)
  10. Dr. Nidhi Mahajan (Panjab University)
  11. Dr. Neha Singh (Panjab University)
  12. Dr .Nidhi Anil (PGIMER, Chandigarh)

13. Percentage of classes taken by temporary faculty – programme wise information
    M.Sc. 1st year  40%
    M.Sc. 2nd year  20%

14. Programme-wise Student Teacher Ratio- 15:1

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual : Number of Administrative Staff sanctioned : 02
     Filled : 01
     Actual : 02 ( one part time )

16. Research thrust areas as recognized by major funding agencies : DBT/UGC

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise. :DBT funding BT/PR9150/BRB/10/545/07Regulatory cross talk between Hepatocyte Nuclear Factor-1 family of Transcription Factors and polycystic kidney disease-1 (PKD-1) gene: Understanding Autosomal Dominant Polycystic Kidney Disease. BT/PR/15334/Med.12.505/2011 February 29th 2012.

18. Inter-institutional collaborative projects and associated grants received
    a) National collaboration           b) International collaboration

    Two National Grants In collaboration with Department of Nephrology
19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received: DBT total ~ 54 lakhs

20. Research facility / centre with
   • state recognition
   • \national recognition ---Yes, National recognition
   • international recognition

21. Special research laboratories sponsored by / created by industry or corporate bodies: ---NA---

22. Publications:

**Dr Seemha Rai**

**Dr Prof Sanjeev Puri** (2011 onwards)

Book chapters:

Peer reviewed articles


23. Details of patents and income generated: Applied one/income generated Nil

24. Areas of consultancy and income generated: Animal Cell Culture and Stem cell income generated nil

25. Faculty selected nationally / internationally to visit other laboratories / institutions
   - industries in India and abroad : One Faculty selected for Attending International Training work shop at Marine Biological Laboratory, Woods Hole, Massachusetts, USA

26. Faculty serving in
   - National committees b) International committees c) Editorial Boards d) any other (please specify)

27. Faculty recharging strategies (UGC, ASC, Refresher/orientation programs, workshops, training programs and similar programs). Yes, UGC ASC, Refresher/Orientation programs

28. Student projects
   - percentage of students who have done in-house projects including inter-departmental projects : 100%
   - percentage of students doing projects in collaboration with other universities / industry / institute ~10 %

29. Awards / recognitions received at the national and international level by
• Faculty Fellowship to attend Stem cell training at MBL Woods hole Massachusetts, USA

• Doctoral / post doctoral fellows Four

• Students Two

30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any.

31. Code of ethics for research followed by the departments : Yes

32. Student profile programme-wise:

<table>
<thead>
<tr>
<th>Name of the Programme(refer to question no. 4)</th>
<th>Applications Received</th>
<th>Selected</th>
<th>Pass percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>M.Sc.</td>
<td>39</td>
<td>05</td>
<td>09</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>PhD.</td>
<td>20</td>
<td>01</td>
<td>03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40%</td>
<td>40%</td>
</tr>
</tbody>
</table>

33. Diversity of students

<table>
<thead>
<tr>
<th>Name of the Programme (refer to Q. no.4)</th>
<th>% of students from the same university</th>
<th>% of students from other universities within the State</th>
<th>% of students From universities outside the State</th>
<th>% of students from other countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.Sc.</td>
<td>75%</td>
<td>15%</td>
<td>%10</td>
<td>Nil</td>
</tr>
<tr>
<td>PhD.</td>
<td>50%</td>
<td>25%</td>
<td>25%</td>
<td>Nil</td>
</tr>
</tbody>
</table>

34. How many students have cleared Civil Services and Defence Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise. : 06 (NET),

35. Student progression

<table>
<thead>
<tr>
<th>Student Progression</th>
<th>Percentage against enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>UG to PG</td>
<td>Nil</td>
</tr>
<tr>
<td>PG to M.Phil.</td>
<td>Nil</td>
</tr>
<tr>
<td>PG to Ph.D.</td>
<td>06</td>
</tr>
</tbody>
</table>
36. Diversity of staff

<table>
<thead>
<tr>
<th>Percentage of faculty who are graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>of the same university</td>
</tr>
<tr>
<td>From other universities within the State</td>
</tr>
<tr>
<td>- from universities from other States</td>
</tr>
<tr>
<td>from universities outside the country</td>
</tr>
</tbody>
</table>

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period: **Nil**

38. Present details of departmental infrastructural facilities with regard to:
   a) Library: **yes**
   b) Internet facilities for staff and students: **yes**
   c) Total number of class rooms: **02**
   d) Class rooms with ICT facility: **Two**
   e) Students’ laboratories: **Two**
   f) Research laboratories: **Two**

39. List of doctoral, post-doctoral students and Research Associates:
   a) from the host institution/university: **03**
   b) from other institutions/universities: **03**

40. Number of post graduate students getting financial assistance from the university: **Nil**

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology: **Yes**

42. Does the department obtain feedback from:
   a) Faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback: **Yes**
   b) Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback: **Yes**
   c) Alumni and employers on the programmes offered and how does the department utilize the feedback: **Not Yet**

43. List the distinguished alumni of the department (maximum 10)
   Students are still pursuing their Research degree, however, some of the outstanding students from this departments are:
   (1) Malika
   (2) Swati
   (3) Ruchika
44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.
   - 12th INDO-US workshop on Applications of flow cytometry in clinical Research and 4th Annual Meeting of The Cytometry Society of India (TCS), held at Panjab University in collaboration with PGIMER, Chandigarh from 8th-12th October, 2011.
   - International Symposium on cancer Research & Translational Initiatives cum workshop on flow cytometry, held at Panjab University, Chandigarh from 14th-16th October 2010
   - 8th Chandigarh Science Congress, (CHASCON-2014) 25-28th February 2014

45. List the teaching methods adopted by the faculty for different programmes:

   Tutorials and virtual class room lectures, group discussions, seminars and journal clubs

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?: Through scoring in the sessional & final exam as well as based on the %age of student clearing national Tests (NET)

47. Highlight the participation of students and faculty in extension activities.

   Student participation
   - Under the new initiative of Panjab University, students of stem cell and tissue engineering organized ‘Stem Cell Awareness Day’ on 23rd September, 2009 and this is now a regular activity and held each year. This is an initiative of California Institute of Regenerative Medicine (CIRM) due to which this day is being celebrated throughout world. The students of M.Sc. Stem Cell and Tissue Engineering, Panjab University took initiative to spread awareness of stem cell biology and cord blood banking. Under this programme various competitions like poster making, collage making and student-student interaction on stem cell therapy and cord blood banking took place at student centre, Panjab University.
   - The Organizers, Students of stem cell and tissue engineering opened up the chapter of “Student Society for Stem Cell Research at Panjab University called “SSSSCR-PU” with Panjab University being the 1st Indian University to have the chapter of this society.
   - Two student researchers from the department namely Hemant Verma and Geetika Mehta were honoured by the Council of Scientific and Industrial Research (CSIR) for their contribution to the Central government’s Open Source Drug Discovery (OSDD) initiative, a path-breaking project to comprehensively map the genome of mycobacterium tuberculosis (Mtba). Panjab University students was among the 114 'best annotators' honoured by the CSIR. Through their contribution the CSIR released results of the 'Connect 2 Decode' (C2D) project, aimed at re-annotating the biological and genetic information of Mtba.
Faculty Participation

Extension lectures (2012 onwards)

- Popular Lecture on “Stem Cells what do we need to know” organized by Society for Promotion of Science & Technology in India (SPSTI) in Botany department auditorium on 19th April 2014
- **Key note Address** at IEEE student chapter at Golden Jubilee hall, Panjab University, Chandigarh on 2nd October 2013 Title “Research, need of the hour” by IEEE.
- One Invited Lecture orientation course (Panjab University, Chandigarh) 14th September 2013
- Two Invited Lecture orientation course (GNDU), 27th August 2013
- Two Invited Lecture, Refresher course in Science (GNDU)
- **Key note Address**, Entitled “Stem Cell A Multifaceted structure: Where are we heading?” during a conference organized by Association of Biology Teacher, India, held at DAV college, Sector-10, Chandigarh on 12th May 2013.
- **DBT sponsored workshop on hands on “Molecular and Cytogenetic techniques”** at GMCH-32, Chandigarh. “Stem cell biology”. From 3rd to 15th December; 2012. Title of talk “Stem Cell Biology”
- **National Seminar on Cosmetology, Health and Disease**, Department of cosmetology, Dev Smaj College Ferozepur, 14-16 November 2012.

48. Give details of “beyond syllabus scholarly activities” of the department.:
   - Competitions on Stem Cell Day, Stem cell awareness programme, Ethics awareness programmes, Students presentations, quiz etc.

49. State whether the programme/department is accredited/ graded by other agencies? If yes, give details. : UGC

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied. : **This is the first ever 2 yrs degree course on stem Cell & Tissue Engineering which is providing training and research in the field of stem cell. Students are imparted training on different aspects of the stem cell biology together with research projects in the field. The Centre has provided sufficiently trained workforce in the form of postgraduates to work in the academia and industry. Currently six students are pursuing Ph.D in the departments while 15 others are pursuing their higher degrees in different reputed National institutes like NCCS Pune, PGIMER, IMTECH, Serum institute etc. While ~7 in industry, Panacea, Quantum world, Cell care etc. Five students have gone abroad for higher studies. So the centre has contributed sufficiently in such a short duration ever since the first batch of students passed out in 2010.**

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.
   1) **Strengths**
      - Providing stem cell teaching and training to the students
      - Providing trained workforce for the academia and industry
Research initiatives in the cutting edge of stem cell and tissue engineering
Collaborative research on stem cell
Outreach activity by organizing focussed training in the field of stem cell

2) Weakness
- Faculty crunch
- Trained technical support
- Additional Dedicated laboratories

3) Opportunities
- For cutting edge training in the field of stem cells
- Multidisciplinary collaboration
- Industry innovation and interaction
- Renal tissue engineering
- Inter and intra institutional collaborations

4) Challenges
- National /Internationally acclaimed centre
- Industry involvements for focussed projects
- National /international collaborations

52. Future plans of the department. In future we intend to develop this facility as a national/international facility for developing the novel stem cell lines from different organisms including human beings along with developing bio-scaffolds for tissue regeneration. We hope to see that this centre also cater to the industry demand for setting up in vitro testing facility employing stem cells. We also plan to develop this centre as a technology spinoff centre.