14. Centre for Molecular & Human Genetics

1. Name of the Department : Centre for Genomics, Molecular & Human Genetics

2. Year of establishment : 2003

3. Is the Department part of a School/Faculty of the university?: Yes, the Department is a part of faculty of the University

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

5. Interdisciplinary programmes and departments involved: Forensic Sciences (P G Diploma)

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

7. Details of programmes discontinued, if any, with reasons: NO

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

9. Participation of the department in the courses offered by other departments: None

10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others): None

<table>
<thead>
<tr>
<th></th>
<th>Sanctioned</th>
<th>Filled</th>
<th>Actual (including CAS &amp; MPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor</td>
<td>NIL</td>
<td>NIL</td>
<td>NA</td>
</tr>
<tr>
<td>Associate Professors</td>
<td>NIL</td>
<td>NIL</td>
<td>NA</td>
</tr>
<tr>
<td>Asst. Professors</td>
<td>NIL</td>
<td>NIL</td>
<td>NA</td>
</tr>
<tr>
<td>Others</td>
<td>NIL</td>
<td>NIL</td>
<td>NA</td>
</tr>
</tbody>
</table>

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance
<table>
<thead>
<tr>
<th>Qualification</th>
<th>Designation</th>
<th>Specialization</th>
<th>No. of Years of Experience</th>
<th>No. of Ph.D./M.Phil. students guided for the last 4 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. P.K. Tiwari</td>
<td>Professor in Zoology; Coordinator, School of Studies in Neuroscience and PG Diploma in Forensic Science</td>
<td>Cell and Molecular biology, Human Genetics</td>
<td>30</td>
<td>PhD=04 (Awarded); 01 (Submitted); M.Phil=04</td>
</tr>
</tbody>
</table>

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors:

   a. Dr. Rajnikant Mishra, Banaras Hindu University, Varanasi.
   b. Dr. R.K. Tripathi, CDRI, Lucknow.
   c. Dr. Rajiv Goswami, Barakatullah University, Bhopal.
   d. Prof. Suraksha Agrawal, SGPGI, Lucknow
   e. Prof. J.K. Roy, BHU, Varanasi
   f. Dr. Arundhati Sharma, AIIMS, New Delhi
   g. Dr. Reema Dada, AIIMS, New Delhi
   h. Prof. I. K. Patro, Jiwaji University, Gwalior
   i. Dr. B. R. Shrivastava, CHRI, Gwalior
   j. Dr. Veena Agrawal, GRMC, Gwalior
   k. Dr. Rajiv Mishra, Banaras Hindu University, Varanasi.
   l. Dr. Mahmood Ali, FSL, Sagar (Retired Dpty Director)
   m. Dr. M. K. Verma, FSL, Sagar (Rtd. Director)
   n. Dr. Azad Shrivastava, RFSL, Gwalior (Rtd. Dy Director)

13. Percentage of classes taken by temporary faculty – programme-wise information

   M.Sc. Molecular & Human Genetics – 30%
   PG Diploma in Forensic Science – 70%

14. Programme-wise Teacher Student Ratio:

    M.H.G – 1:21
    PGDFS – 1:10

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual:

    1 (Class III) + 2 (Class IV)
16. Research thrust areas as recognized by major funding agencies:

- **Gallbladder Cancer**: Identification of biomarkers, epigenetics study and role of non-coding RNA in disease pathogenesis.
- **Tuberculosis**: Human genome polymorphism in relation to disease susceptibility in tribal populations of central India (M. P. & Chattisgarh).
- **Stress Biology**: Molecular biology of stress (adoptive) responses.
- **Population Genetics of Endangered Reptilians**: Population genetics and conservation genetics, particularly of endangered animal species (e.g., turtles and gharials).

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.

Ongoing projects from(a) National funding agencies= 03;(b) International= NIL

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Title of the project</th>
<th>No. of faculty</th>
<th>Funding agency</th>
<th>Total grant</th>
<th>Duration of the project</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Study on the epigenetic regulation of subtelomeric region and expression of telomere associated proteins in human gallbladder carcinoma.</td>
<td>01</td>
<td>DAE, Govt. of India, Mumbai (National)</td>
<td>Rs. 19.5 lakhs</td>
<td>03 years (2011-2014)</td>
</tr>
<tr>
<td>2.</td>
<td>Methylation profiling of gallbladder cancer and gall stone diseases to identify potential biomarkers for early disease diagnosis.</td>
<td>01</td>
<td>DST, Govt. of India, New Delhi</td>
<td>Rs. 55 lakhs</td>
<td>03 years (2012-2015)</td>
</tr>
<tr>
<td>3.</td>
<td>Functional validation of candidate genes in gallbladder cancer for identification of early diagnostic biomarker.</td>
<td>01</td>
<td>MPCST, Govt. of India, Bhopal</td>
<td>Rs. 15.38 lakhs</td>
<td>02 years (2013-2015)</td>
</tr>
</tbody>
</table>

18. Inter-institutional collaborative projects and associated grants received

**a) National collaboration: NIL**  
**b) International collaboration: NIL**

19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received.

<table>
<thead>
<tr>
<th>Funding agency</th>
<th>Total grant</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAE, Govt. of India, Mumbai</td>
<td>Rs. 19.5 lakhs</td>
</tr>
<tr>
<td>DST, Govt. of India, New Delhi</td>
<td>Rs. 55 lakhs</td>
</tr>
<tr>
<td>MPCST, Govt. of India, Bhopal</td>
<td>Rs. 15.38 lakhs</td>
</tr>
</tbody>
</table>
20. Research facility / centre with

- state recognition
- national recognition
- international recognition

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

22. Publications: (during last 5 years)

- Number of papers published in peer reviewed journals (national / international)


the assessment of *Mycobacterium tuberculosis* induced pathology in TB patients of Sahariya tribe. *Ind J Clin Biochem* 25: 57-63.


- Monographs: NIL
- Chapters in Books: 02
- Edited Books: NIL
- Books with ISBN with details of publishers: NIL
- Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.):
  - Citation Index-range/average: 02 and 1.5 (average)
  - SNIP: 
  - SJR: 
  - Impact factor-range/average: 02 and 1.5 (average)
  - h-index: 8

23. Details of patents and income generated: NIL

24. Areas of consultancy and income generated: NIL

25. Faculty selected nationally / internationally to visit other laboratories / institutions
   a. *industries in India and abroad*: NIL

26. Faculty serving in
   p) National committees
   b) International committees
   c) Editorial Boards
   d) any other (please specify): NA
27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops training programs and similar programs). NIL

28. Student projects (batches from 2009-2014)
   - percentage of students who have done in-house projects including inter-departmental projects: 58.33%
   - percentage of students doing projects in collaboration with other universities
     1. industry/institute = 41.67%

29. Awards/recognitions received at the national and international level by
   - Faculty: DBT Overseas Associateship
   - Doctoral/post doctoral fellows: Young Scientist Award, MPCST-04
     INSPIRE fellowship, DST-01
     JSPS HOPE fellow -01
   - Students: NIL

30. Seminars/Conferences/Workshops organized and the source of funding (national/international) with details of outstanding participants, if any. (during last 5 years)
   - 5th Hands on training Workshop on “Methods in Molecular Analysis of Complex Diseases” from 20th February to 10th March 2012, at Centre for Genomics, School of Studies in Zoology, Jiwaji University, Gwalior, M.P.
     Funded by: Department of Biotechnology, Government of India, New Delhi.
   - National Seminar on “Tribal Health and Genomics” from 19th March to 21st March 2012 at Centre for Genomics, School of Studies in Zoology, Jiwaji University, Gwalior, M.P.
     Funded by: ICMR & CSIR, New Delhi and MPCST, Bhopal.

31. Code of ethics for research followed by the departments:
    All the research programs are been carried after clearance from institutional human ethical committee (as per ICMR guidelines)

32. Student profile programme-wise:

<table>
<thead>
<tr>
<th>Name of the program</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>2009-2011</td>
<td>10</td>
<td>01</td>
<td>08</td>
</tr>
<tr>
<td>2010-2012</td>
<td>16</td>
<td>05</td>
<td>01</td>
</tr>
<tr>
<td>2011-2013</td>
<td>19</td>
<td>03</td>
<td>03</td>
</tr>
<tr>
<td>2012-2014</td>
<td>37</td>
<td>09</td>
<td>01</td>
</tr>
<tr>
<td>2013-2015</td>
<td>31</td>
<td>05</td>
<td>07</td>
</tr>
</tbody>
</table>
33. Diversity of students:

<table>
<thead>
<tr>
<th>Name of the Programme (refer to question 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>PG (2009-2011)</td>
<td>35%</td>
<td>35%</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>2010-2012</td>
<td>30%</td>
<td>10%</td>
<td>60%</td>
<td>NIL</td>
</tr>
<tr>
<td>2011-2013</td>
<td>40%</td>
<td>40%</td>
<td>20%</td>
<td>NIL</td>
</tr>
<tr>
<td>2012-2014</td>
<td>40%</td>
<td>NIL</td>
<td>60%</td>
<td>NIL</td>
</tr>
<tr>
<td>2013-2015</td>
<td>20%</td>
<td>NIL</td>
<td>80%</td>
<td>NIL</td>
</tr>
<tr>
<td>Ph.D. (pursuing)</td>
<td>90%</td>
<td>10%</td>
<td>NIL</td>
<td>NIL</td>
</tr>
</tbody>
</table>

34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise. (Last 5 years)

- **CSIR-NET** : 02
- **GATE** : 01

<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>

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>NA</td>
</tr>
<tr>
<td>PG to M.Phil.</td>
<td>NA</td>
</tr>
<tr>
<td>PG to Ph. D.</td>
<td>43%</td>
</tr>
<tr>
<td>Ph.D. to Post-Doctoral</td>
<td>80%</td>
</tr>
<tr>
<td>Employed</td>
<td></td>
</tr>
<tr>
<td>- Campus Selection</td>
<td>NIL</td>
</tr>
<tr>
<td>- Other than campus selection</td>
<td>20%</td>
</tr>
<tr>
<td>Entrepreneurs</td>
<td>10%</td>
</tr>
</tbody>
</table>

36. Diversity of staff

37. D.Sc. and D.Litt. during the assessment period: NA

38. Present details of departmental infrastructural facilities with regard to

- **Library**: Yes, with more than 300 books and research journals
- **Internet facilities for staff and students**: Available
- **Total number of class rooms**: 03

/ from the host institution/university:

1. Doctoral students : 02 (awarded)+ 01(submitted) +05(registered)+03(unregistered)
2. Post-doctoral student : NIL
3. Research Associate : NIL

/ from other institutions/universities

1. Doctoral students : NIL
2. Post-doctoral student : NIL
3. Research Associate : NIL

40. Number of post graduate students getting financial assistance from the university ((from 2009-2014)): NIL

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

42. Does the department obtain feedback from
   i. Faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?
      The subject curriculum is evaluated and recommended by the board of studies duly constituted by the university and time to time open house discussion with the students on teaching and training program being conducted in the department. The problems expressed by the students are solved accordingly by the concerned faculty.
   ii. Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?
      One of the members of the board of studies of the subject is a M.Sc. student representing the ongoing batch, who provides feedback on the content of the syllabus and teaching methods for further improvement.
   iii. Alumni and employers on the programmes offered and how does the department utilize the feedback?
      In view of the competitiveness of the subject and the course and placement/job opportunities the suggestions provided by the alumni are utilized for further improvement of the curriculum.

43. List the distinguished alumni of the department (maximum 10):

Most of the students are currently, either working as research fellows or post doctoral, in reputed institutions in India and abroad. A few of them are employed on managerial or technical positions in R & D divisions of biotechnology and pharmaceutical industries in India and abroad.

44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving
external experts.

We organize lectures, seminars, talks etc. by inviting external faculties from various renowned Universities and research institutes, who encourage the students to pursue their successful career in the field of research and job prospects.

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

The teaching methods include, apart from blackboard and whiteboard teaching, PowerPoint presentations and online subject materials (e.g. bioinformatics).

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

Assessment of the performance of students is done by taking their internal exams, seminars and assignments on topics related to the curriculum as well as the upcoming areas of research in the subject.

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

48. Give details of “beyond syllabus scholarly activities” of the department.

The students participate and present posters in popular science exhibitions and science fair organized by the Government scientific agencies.

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

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.

The major research programs of the department include,

- Epidemiology and genetics of tuberculosis in tribal populations from central India (including M.P., Rajasthan & U.P.), highly endemic for the disease as well as the non tribal neighbouring population, with a view to develop diagnostic and therapeutic markers.
- In view of the high incidence gallbladder cancer in the central Indian region the department has undertaken detailed investigation on the epidemiology, molecular genetics and biomarker evaluation in order to develop diagnostic, prognostic and therapeutic markers using novel genomic technologies.
- The department has initiated molecular diagnosis of genetic disorders with a lieu to establish a regional facility for genetic diagnosis and counselling.

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

a. **Strengths**: Well-equipped research laboratory

Well trained research students
Well furnished infrastructure
Good library
Internet facility
b. **Weakness**: Inadequate faculty
   No proper staff for administrative work

c. **Opportunities**: Well trained students in advance genomic technologies that makes them competitive from any other reputed lab.
   Department has got research funding from various Government funding agencies which has facilitated advanced research in the field of genomics.
   The availability of advanced research facilities and expertise has made the teaching program highly competitive.
   The training of students has led to their placement, not only in highly reputed Universities and Research Institutes, but also in biotechnology, pharmaceuticals and diagnostic companies.

d. **Challenges**: Being a self supporting department, it does not receive any financial support from the University, which could provide an impetus to the department for faster growth. In addition, lack of regular faculty remains a major challenge with regard to teaching and research. Hence, requires an early action on the appointment of regular faculty to strengthen the academic and research base of the department.

52. **Future plans of the department.**
   Up-gradation of research and teaching facilities, newer areas of research to be introduced, efforts will be made for the appointment of more regular / full-time teachers, etc.