

3. Evaluative Report of the Department

1. Name of the Department: **BIOCHEMISTRY**
2. Year of establishment: **Year 1962**
3. Is the Department part of a School/Faculty of the university?
Yes, Faculty of Science
4. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.)
B.Sc (Hons) Biochemistry M.Sc (Hons) Biochemistry Ph.D.
5. Interdisciplinary programmes and departments involved: The department is involved in **subsidiary teaching of Biochemistry at the UG programmes of departments like Anthropology, Zoology, Biophysics, Botany, Microbiology, etc. In addition, our students are provided subsidiary teaching in Chemistry, Physics, Mathematics, Microbiology, Biophysics, etc by the respective departments at the UG level.**
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 System is being followed
9. Participation of the department in the courses offered by other departments- **The department provides practical and theoretical training of Biochemistry to the students from departments like Anthropology, Botany, Zoology, Biophysics, Microbiology, etc. In addition, some faculty members act as Guest Faculty to Human genomics & UIPS.**
10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others)

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	1	-	3
Associate Professors	6	0	
Asst. Professors	9	5	
Others (Re-employed)		2	

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

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of PhD/ M.Phil students guided for last 4 years
Prof. Rajat Sandhir	Ph.D	Chairperson	Neurochemistry	20 yrs	4
Prof. S. C. Sharma	Ph.D	Professor	Stress Biochemistry	25 yrs	2
Prof. Archana Bhatnagar	Ph.D	Professor	Immunological Disorders	20 yrs	6
Dr. Navneet Agnihotri	Ph.D	Asstt. Professor	Cancer Biology	18.5 yrs	4
Dr. Dipti Sareen	Ph.D	Asstt. Professor	Microbial Biochemistry	14 yrs	2
Dr. Nirmal Prabhakar	Ph.D	Asstt. Professor	Analytical Biochemistry	3 yrs	—
Dr. Amarjit S. Naura	Ph.D	Asstt. Professor	Cellular and molecular Immunology	8 yrs	—
Dr. Kuldip Singh	Ph.D	Asstt. Professor	Biochemical Toxicology	15 yrs	—

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

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

- i. **UG – 25%**
- ii. **PG – 25%**

14. Programme-wise Student Teacher Ratio

- i. **UG – 15:1**
- ii. **PG – 15:1**

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

Category	Sanctioned	Filled	Actual	Number of positions filled temporarily
Administrative Staff	6	6	6	3
Technical Staff	20	13	13	Nil

16. Research thrust areas as recognized by major funding agencies.

- **Molecular basis of disease,**
- **Environmental Biochemistry**
- **Membrane Biochemistry.**

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.

Sr. no.	Title	Agency	Amount (Rs.)
1.	<i>Studies on the role of hydrogen sulphide in neurovascular remodeling.</i>	<i>DBT</i>	<i>84.06 lac</i>
2.	<i>Understanding the molecular dynamics of microglial movements under normal and stress conditions</i>	<i>Dr. D.S. Kothari fellowship</i>	<i>15.0 lac</i>
3.	<i>Studies on the role of matrix metalloproteinase in increased blood brain barrier permeability in experimental diabetes</i>	<i>CSIR</i>	<i>29.0 lac</i>
4.	<i>Investigation on the involvement of alterations in calcium homeostasis in hyperglycemia induced cognitive decline in experimental diabetes</i>	<i>ICMR</i>	<i>32.0 lac</i>
5.	<i>Studies on the biochemical mechanisms in colchicine induced dementia: neuroprotective potential of Bacopa monnieri</i>	<i>DST (WOS)</i>	<i>16.08 lac</i>
6.	<i>To study the effect of iron nanoparticles on cancer cells</i>	<i>DST-UT</i>	<i>1.0 lac</i>
7.	<i>Effect of fish oil on chemotherapeutic efficacy of 5-</i>	<i>DST</i>	<i>51.0 lac</i>

	<i>Fluorouracil in experimental colon carcinogenesis</i>		
8.	<i>Mitochondria mediated apoptosis in the chemoprevention by fish oil in experimental colon carcinogenesis</i>	<i>UGC</i>	<i>11.80 lac</i>
9.	<i>Purification, characterization & validation of most potent antilithiatic metabolite of <i>Bergenia ligulata</i> and its mechanism of action.</i>	<i>DST</i>	<i>35.0 lac</i>
10.	<i>Biotransformation on epoxides by recombinant epoxide hydrolases</i>	<i>DBT</i>	<i>81.93 lac</i>
11.	<i>Development of electrochemical sensor for pesticide detection</i>	<i>UGC</i>	<i>6.0 lac</i>
12.	<i>Studies on Electrochemical aptamer based biosensor for <i>Mycobacterium tuberculosis</i> detection</i>	<i>DBT</i>	<i>38.09 lac</i>

18. Inter-institutional collaborative projects and associated grants received

a) National collaboration

NIPER, PGIMER, NABI, Indian Institute of Integrative Medicine (IIIM) Jammu, AIIMS, New Delhi.

b) International collaboration

Medical University of South Carolina USA & Kansas University Medical Centre USA (Prof. Rajat Sandhir).

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

DST-FIST (2002-07: 2012-2017); UGC-SAP DRS-I (2009-14); DBT (3), CSIR (1), UGC (3), DST (2)

20. Research facility / centre with

- state recognition
- national recognition **None**
- international recognition

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

bodies : **Nil**

22. Publications:

- Number of papers published in peer reviewed journals (national / international) **109**(National 20; International 89)
- Monographs **03**
- 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: **Range 0 to 100**
 - SNIP -
 - SJR -
 - Impact Factor – range / average :**Range 0.5 to 6.0**
 - h-index

23. Details of patents and income generated : **Patents filed- 02**

24. Areas of consultancy and income generated : **Nil**

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

Dr. S.C. Sharma:Universidad Politecnica Valencia Spain

Dr. Navneet Agnihotri: MD Anderson Cancer Centre, Houston, Texas, USA

26. Faculty serving in

a) National committees

Faculty is reviewer for many funding agencies

b) International committees **Nil**

c) Editorial Boards

World Journal of Diabetes (Prof. Rajat Sandhir)

Toxicology International (Prof. Rajat Sandhir)

PU Research Journal (Science) (Prof. Rajat Sandhir)

d) any other (please specify)

Prof. Rajat Sandhir is an Executive member of Indian Academy of Neurosciences

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

Organised Refresher Course on Research Methodology in Sciences (Interdisciplinary) from November 23rd to December 13, 2012.

Student projects

- Percentage of students who have done in-house projects including inter-departmental projects:
All the M.Sc. 4th semester students have to work on a project/problem to complete his/her dissertation work. Some of the UG & PG Students undertake summer training at other universities.
- percentage of students doing projects in collaboration with other universities / industry / institute: 5%

29. Awards / recognitions received at the national and international level by

- Faculty : Fellow, Association of Biomedical Sciences (FABMS).
- Doctoral / post doctoral fellows
- Students- **Many Faculty members/Research Scholars and students presented posters at national and international level and received awards.**

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

- **Golden Jubilee Symposium 10-11 February 2012 (UGC, PU).**
- **Recent Techniques in Biochemistry 23 March 2013 (UGC)**

31. Code of ethics for research followed by The Departments

Yes, University code of ethics and other ethical polices with regards to animal, human experimentation and publishing.

32. Student profile programme-wise:

Name of the Programme (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female

UG	Through CET	13	73	99	100
PG		8	42	100	
Ph.D		15	27	100	100

33. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

Sr. No.	Category	No.
1.	Civil Services	-
2.	Defence Services	-
3.	NET	10
4.	SET	-
5.	GATE	9

34. Student progression

Student progression	Percentage against enrolled
UG to PG	95
PG to M.Phil.	NA
PG to Ph.D.	50%
Ph.D. to Post-Doctoral	5%
Employed	
Campus selection Other than campus recruitment	
Entrepreneurs	

36. Diversity of staff

Percentage of faculty who are graduates	
of the same university	38
from other universities within the State	25
from universities from other States from	37
universities outside the country	-

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
- Library – No. of Books : **2538**
 - Internet facilities for staff and students – **Yes**
 - Total number of class rooms – **Three**
 - Class rooms with ICT facility - **Nil**
 - Students’ laboratories – **2**
 - Research laboratories- **8**
39. List of Ph.D, post-doctoral students and Research Associates
- from the host institution/university -**47**
 - from other institutions/universities – **One (Dr. Aditya Sunkaria)**
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. **NA**
42. Does the department obtain feedback from Yes, Informal
- faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback? **Yes, syllabus update**
 - students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback? **Modifications of curriculum, introduction of practicals.**

- c. alumni and employers on the programmes offered and how does the department utilize the feedback? **Yes, Curriculum improvement.**
43. List the distinguished alumni of the department (maximum 10) Alumni of the department are Directors/Professors/Scientists in various National and International Institutes.
44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.

Special Lecture	Delivered by
The versatile biocatalyst- <i>Candida parapsilosis</i> ATCC 7330: From whole cells to enzyme crystal structure	Prof. Anju Chadha, IITM, Chennai
Molecular mechanisms of human neurodegenerative diseases: Lessons from animal models	Prof. Udai Pandey, Pittsburgh, PA
Of Mice, Women, Placenta and You	Prof. Rashmi Sood, Medical college of Wisconsin, US
Series of 9 lectures on various topics	Prof. Seema Khurana, Dept, of Biochemistry & Biology, University of Houston, USA
Challenges in Transfer of Technology	Dr. Girish Sahni, Director, IMTECH, Chandigarh.
Inflammation in health and disease	Dr. Kapil Mehta, Univ. of Texas MD Anderson Cancer Center Houston, USA.
Metabolomics in diet and disease	Dr. Smiti Vaid Gupta, Associate Professor. Dept. of Nutrition and food Science, Wayne State University, USA.
Characterization of cerebral Targets for Pharmacological Management of Hepatic Encephalopathy	Prof. S.K. Trigun, Dept. of Zoology, B.H.U., Varanasi.
Retinoid-mediated secretion of FGFf by osteoblasts couples granulocytic differentiation of hematopoietic precursors	Dr. Parvesh Chaudhary, Dept. of chemistry-biology, Canada.
Usefulness of patients and four point search for researchers	Dr. Prikshit bansal, NIPER, Mohali.

45. List the teaching methods adopted by the faculty for different programmes: **Oral, Power Point & visual Presentation**
46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?
Feedback from the passouts.
47. Highlight the participation of students and faculty in extension activities.
NIL
48. Give details of “beyond syllabus scholarly activities” of the department.
PU Biochemical Society that is involved in literary and extra curricular activities.
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 department is involved in generating new knowledge in the areas of
- **Molecular basis of diseases.**
 - **Developing therapeutics/technologies**
 - **Environmental Biochemistry**
51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.
Strength- Strong theoretical and practical training and reasonably good quality research.
Weakness- Space and Teaching load/workload.
Opportunities-Biochemistry is a subject which has opportunities in many fields like Medicine/Academic /Industrial
Challenges- Meeting the financial requirements and state of the art facilities for research
52. Future plans of the department.
Improving teaching and research facilities for students. Research in areas that are relevant for our societal needs