3. Evaluative Report of the Department

1. Name of the Department - **Department of Microbiology**
2. Year of establishment - **October 1964**
3. Is the Department part of a School/Faculty of the university? Yes

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

   Programme offered UG, PG and Ph.D.
5. Interdisciplinary programmes and departments involved

   B.Sc.(H.S.) of the Departments of Biochemistry and Biophysics
6. Courses in collaboration with other universities, industries, foreign institutions, etc.

   N/A
7. Details of programmes discontinued, if any, with reasons : N/A
8. Examination System: Annual/Semester/Trimester/Choice Based Credit System

   Semester System both at UG level, [B.Sc.(H.S.)] and PG level, [M.Sc.(H.S.)]
9. Participation of the department in the courses offered by other departments:

   Yes the Department participates in the UG courses offered by the Departments of Biochemistry and Biophysics at Panjab University.
10. Number of teaching posts sanctioned, filled and actual (Professors/Associate

    Professors/Asst. Professors/others)

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	02	01	07
Associate Professors	04	-	-
Assistant Professors	07	04	04

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 Ph.D./ M.Phil. students guided for the last 4Yars
Dr. Praveen Rishi	M.Sc., Ph.D	Professor	Medical Molecular Microbiology	25	**03**
Dr. Vijay Prabha	M.Sc., Ph.D	Professor	Medical Microbiology	25	01
Dr. Sanjay Chibber	M.Sc., Ph.D	Professor	Medical Microbiology	35	05
Dr. Prince Sharma	M.Sc., Ph.D	Professor	Molecular Microbiology	25	03
Dr. .S.K.Soni	M.Sc., Ph.D	Professor	Food & Fermentation Technology	25	**04**
Dr. Kusum Harjai	M.Sc., Ph.D	Professor	Applied & Medical Microbiology & Immunology	18	**01**
Dr. Geeta Shukla	M.Sc., Ph.D	Professor	Medical Microbiology	19	**01**
Dr. D.k.Rahi	M.Sc., Ph.D	Asst. Professor	Industrial Microbiology	10	**NIL**
Dr.Naveen Gupta	M.Sc., Ph.D	Asst. Professor	Industrial Microbiology & Molecular Biology	17	**NIL**
Mr. Khem Raj	M.Sc.	Asst. Professor	Medical Microbiology	03	**NIL**
Dr. Seema Kumari	M.Sc., Ph.D	Asst. Professor	Medical Microbiology	03	**NIL**

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

Prof. K.G. Gupta, Emeritus Professor
Prof. J.K. Gupta, Emeritus Professor
Dr. R.P. Tiwari, Re-employed

13. Percentage of classes taken by temporary faculty – programme-wise information
    B.Sc (HS) : Nil
    M.Sc (HS): 10%

14. Programme-wise Student Teacher Ratio
    B.Sc (HS) – 1st Year - 6: 1
    B.Sc (HS)- 2nd Year – 3:1
    B.Sc (HS) – 3rd Year – 4:1
    M.Sc (Hs) – 1st Year – 2:1
    M.Sc (HS) – 2nd Year -2:1

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

	Sanctioned	Filled	Actual
Technical staff	24	16	16
Administrative staff	07	05	05

16. Research thrust areas as recognized by major funding agencies
    Medical Microbiology and Immunology
    Food and Industrial Microbiology
    Fermentation Technology
    Molecular Biology
    Environmental Microbiology

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.	Funding Agency	Project title	Grant Received (Rs in Lakhs)
International			
1.	Copper Development Association, USA (2007-10)	Antimicrobial property of copper in drinking water	5.50
National			
2.	ICMR, New Delhi. (2007-11)	Phage therapy for *Klebsiella pneumoniae* induced experimental pneumonia and septicaemia	11.12
3.	ICMR, New Delhi (2012015)	Induction of compartmentalized Immunity in lungs of BALB/c mice with *Klebsiella pneumoniae* yersiniabactin receptor protein – flagellin conjugate	21.00

4.	ICMR, New Delhi (2012-15).	Evaluation of different delivery strategies for therapeutic application of *Klebsiella pneumoniae* phages in a burn wound model	52.13
5	UGC (2007-10)	Spermagglutination by bacteria: Receptor specific interactions and development of spermagglutinating contraceptive	9.77
6	ICMR (2009-12)	Characterization of molecular players in sperm-*Escherichia coli* interactions with an aim to develop monoclonally derived receptor clones as a vaginal contraceptive	13.00
7	DBT (2011-2014)	Efficacy and evaluation of new vaginal contraceptive formulation containing sperm immobilization factor isolated from *Staphylococcus aureus*	28.87
8	UGC (2011-14)	Molecular mimicry between bacteria and spermatozoa	10.36
9.	ICMR (2011-14)	Development of Epigallocatechin-gallate probiotic based therapeutic delivery system for alcohol induced liver injuries	20.00
10.	ICMR (2011-12)	Evaluation of receptors to be an effective intervention in the prevention of infertility induced by spermatozoal agglutinating factor isolated from *Staphylococcus aureus*	2.5
11	ICMR (2010-13)	Epidemiological studies of multidrug resistant (MDR) *Salmonella enterica* serovar Typhi strains at molecular level.	22.00.
12	DST (2010-12)	Surface components as specific markers for the development of immunosensor kit for detection of *Salmonella typhi*.	30.00
13	ICMR (2006-09)	Modulation of endotoxin mediated hepatotoxicity by natural antioxidants.	15.00
14	ICMR (2006-09)	Acid induced 55 kDa outer membrane protein of *S. typhi:* gene cloning, purification and biological implications.	20.00
15	ICMR (2008-10)	Potentials of certain polyphenolic phytochemicals to attenuate alcohol-induced endotoxin mediated hepatotoxicity.	5.00
16	ICMR (2006-10)	Interaction of Paneth cell cryptdin with some intestinal pathogens.	13.00
17.	DBT (2013-2016)	Biorefinery for cost effective bioethanol production from biodegradable municipal solid waste: Technology development and its validation at pilot scale	105.42
18	DBT	Screening Production, and characterization of	16.49

	(2008-11)	novel, bioactive fungal exopolysaccharides (EPS) for various industrial applications under submerged fermentation	
19	DBT (2008-11)	Optimizing the production of highly alkali and thermostable xylanase from alkalophilic *Bacillus* Sp. NG-27 and standardizing the conditions for the industrial use	19.54
20	DST (UT) (2012-13)	Harvested rain water as an efficient source of drinking water: effect of different parameters on the microbiological/chemical quality of the water	1.00
21	Department of Environment Chandigarh (2013-14)	To develop a microbiological technology for the reduction of nutrients like nitrate and phosphates in treated sewage water to make it suitable for the management of sukhna lake Chandigarh	4.50
22	DBT (2012-15)	Quorum sensing signal and o-polysaccharide molecules: Potential candidates for vaccine against *Pseudomonas aeruginosa* and *Klebsiella pneumonia* in burn wounds	85.0
23	DBT (2007-10)	Metagenome of extreme thermophiles as a repertoire source for stable, novel restriction endonucleases	30.00
24	UGC (2009-12)	Evaluation of lactonase medited quorum quenching to control virulence and antibiotic reistance in *Pseudomonas aeruginosa*	9.00
25	ICMR (2010-13)	Potentiation of *L.plantarum* by cloning lactonase gene for quenching quorum sensing in virulent strains of *Pseudomonas aeruginosa*	9.20

18. Inter-institutional collaborative projects and associated grants received

a) National collaboration b) International collaboration

Agency	Project Title	Total Grant	Collaborating Institute
DBT, Government of India	Biorefinery for cost effective bioethanol production from biodegradable municipal solid waste: Technology development and its validation at pilot scale	Rs. 1,05,42001/-	DAV College, Chandigarh

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

UGC-SAP : 21 Lakhs

20. Research facility / centre with

- state recognition -
- national recognition -
- international recognition -

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

22. Publications:

* Number of papers published in peer reviewed journals (national / nternational) : 2009-2013 : 12/215 = 227
* Monographs Nil
* Chapters in Books : 16
* Edited Books: One
* 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 2500 (Total cumulative of the faculty)
* SNIP
* SJR
* Impact Factor – range / average 0.9-8.0
* h-index : Average 10 / faculty member; Range 3-19 for various faculty members

23. Details of patents and income generated

Patents Filed : 2

1. **Patent Application No- 3788/DEL/2011**

Title- **Rapid detection of Gram negative bacteremia using novel nano bio-probe**.

Inventors-

Prof. Praveen Rishi and Satish Pandey from Panjab University, Chandigarh.
Dr. C. Raman Suri from IMTECH, Chandigarh.
Dr. Manu Chaudhary from Venus Remedies Ltd, Panchkula, Haryana.

The inventors are in the process of transferring technology to the industry.

2. **Patent Application No- 3301/DEL/2013**

Title: Lipoidal Delivery System for Delivery of Bacteriophages

Inventors:

Prof. Sanjay Chhibber

Saloni Singla
Prof. O.P. Katare
Prof. Kusum Harjai
S. Wadhwa

24. Areas of consultancy and income generated : Food Microbiology: Rs. 25000/-

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

26. Faculty serving in

a) National committees b) International committees c) Editorial Boards d) any other (please specify)

Prof. Prince Sharma

Member:

1. Board of Studies, Department of Microbiology, GNDU
2. University Research Board, Department of Biotechnology, Thapar University
3. Board of Studies, Department of Biotechnology, HPU, Shimla
4. PhD Qualifying Examination Committee, IARI, New Delhi

Member, UGC Committees (2012-13)

1. Expert committee for midterm evaluation of major research proposals
2. Expert committee for short listing and grant of new major research proposals
3. Expert committee for evaluation of travel grant applications
4. Expert committee for evaluation and grant of funds to colleges under the Career Oriented Courses program

Memberships

1. Life member of AMI (Association of Microbiologists of India)
2. NANONET, UK
3. ASM, USA

ASSOCIATE EDITOR, Indian Journal of Microbiology

Prof. Praveen Rishi

Member, Review committee on Genetic Manipulation
Member Editorial Board of :
Editor- Indian Journal of Microbiology
ISRN Journal of Infectious diseases
International Journal of Biomedical Sciences
Journal of Emperical Biology
World Journal of Immunology
Associate Editor of Gastrointestinal infection Journal

Prof. S.K. Soni

Member, Editorial Boards of:
Journal of Enzyme Engineering,
International Journal of Food and Fermentation Technology,
International journal of Biotechnology & Allied fields,
International journal of scientific and Research Publications,
International Journal of Waste Management and Technology,
World Open Journal of Waste to Energy,
Research Open Journal of Renewable Energy,
Open research journal of biochemistry and biotechnology,
Open journal of agriculture and food technology,
Global Open Journal of Renewable & Sustainable Energy,
Open Research Journal of Recycling of Organic Waste in Agriculture,
Open Research Journal of Alternative Energy

Prof. Kusum Harjai

Member (Expert Group Committee ICMR) "for development and use of polyvalent *Pseudomonas* vaccine in burns and ICU patients"

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

The Department regularly organizes Refresher courses/ Training programmes in

collaboration with Academic Staff , PU, Chandigarh

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: Nil

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

- Faculty

Prof. Praveen Rishi conferred
- ICMR Dr. Y.S. Narayana Rao oration Award.
- Fellow, Indian Assoociation of Biomedical Scientists (FABMS)
- Fellow, Association of Microbiologists of India (FAMI)

Prof. Sanjay Chhibber conferred
- Fellow, Association of Microbiologists of India

- Doctoral / post doctoral fellows – 6 (Best presentation awards received during various conferences)

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

The Department organized 4 National Symposia (UGC sponsored) and One International Conference during the last four years.

31. Code of ethics for research followed by the departments
The Department follows the code of ethics for animal and human related research work

32. Student profile Programme-wise

Session	Name of the Programme	Application Received	Selected		Pass %age	
			Male	Female	Male	Female
2009-2010	B.Sc(H.S) 1st Year		03	23	55	80
	B.Sc(H.S)2nd		2	25	50	70

	Year					
	B.Sc(H.S) 3rd Year		07	19	50	80
	M.Sc(H.S)1st year		06	15	80	90
	M.Sc(H.S)2nd Year		03	09	100	100
2010-2011	B.Sc(H.S) 1st Year		03	20	25	75
	B.Sc(H.S)2nd Year		02	21	100	90
	B.Sc(H.S) 3rd Year		05	19	75	85
	M.Sc(H.S)1st year		05	17	40	80
	M.Sc(H.S)2nd Year		06	16	100	100
2011-2012	B.Sc(H.S) 1st Year		05	20	15	25
	B.Sc(H.S)2nd Year		03	20	70	75
	B.Sc(H.S) 3rd Year		2	20	100	90
	M.Sc(H.S)1st year		05	16	100	90
	M.Sc(H.S)2nd Year		04	17	100	100
2012-2013	B.Sc(H.S) 1st Year		06	19	31	32
	B.Sc(H.S)2nd Year		05	19	45	60
	B.Sc(H.S) 3rd Year		03	20	20	80
	M.Sc(H.S)1st		02	20	100	90

	year					
	M.Sc(H.S)2nd Year		05	15	100	100

33.Diversity of Students

Session	Name of the programme	% of students from the same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
2009-2010	B.Sc(H.S) 1st Year		_	49%	_
	B.Sc(H.S)2nd Year		_		_
	B.Sc(H.S) 3rd Year		_		_
	M.Sc(H.S)1st year	100	_		_
	M.Sc(H.S)2nd Year		_		_
2010-2011	B.Sc(H.S) 1st Year		_	50%	_
	B.Sc(H.S)2nd Year		_		_
	B.Sc(H.S) 3rd Year		_		_
	M.Sc(H.S)1st year	100	_		_
	M.Sc(H.S)2nd Year		_		_
2011-2012	B.Sc(H.S) 1st Year		_	55%	_

	B.Sc(H.S)2nd Year		_		_
	B.Sc(H.S) 3rd Year		_		_
	M.Sc(H.S)1st year	100	_		_
	M.Sc(H.S)2nd Year		_		_
2012-2013	B.Sc(H.S) 1st Year		_	45%	_
	B.Sc(H.S)2nd Year		_		_
	B.Sc(H.S) 3rd Year		_		_
	M.Sc(H.S)1st year	100	__		_
	M.Sc(H.S)2nd Year		__		_

34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.
Civil Services: 01
Defence Services Examination: 01
NET: 16
GATE: 08

35. Student progression

Student progression	Percentage against enrolled
UG to PG	85
PG to M.Phil.	-
PG to Ph.D.	60
Ph.D. to Post-Doctoral	50

Employed		
□	Campus selection	30
□	Other than campus recruitment	10
Entrepreneurs		Nil

36. Diversity of staff

Percentage of faculty who are graduates	
of the same university	55
from other universities within the State	36
from universities from other States	9
from universities outside the country	Nil

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 : The Department is also equipped with a separate library in addition to a Central Library.

b) Internet facilities for staff and students The Department is equipped with a central computer laboratory with LAN facility. Moreover the while Department is having a Wi-Fi facility and all the students and the teachers have been provided with individual user ID and Passwords

c) Total number of class rooms : 4

d) Class rooms with ICT facility :02

e) Students' laboratories : 03

f) Research laboratories **: 06**

39. List of doctoral, post-doctoral students and Research Associates :

a) List of doctoral students from the host institution/university

Sr.No	Name of the Research Scholars / Fellows
1.	Kiranjeet Kaur
2.	Monika
3	Sonia Gupta
4.	Harpreet Vander
5.	Deepali Thaper
6.	Praveen Bhandari
7.	Gaurav kumar
8.	Chetna Janveja
9.	Shubhangi Rastogi
10.	Nitika Trivedi
11.	Nisha Garg
12.	Deepika Malika
13.	Vishal Tiwari
14.	Kanchan Lata Yadav
15.	Suneha Arora
16.	Arashdeep Kaur
17.	Usha Negi
18.	Heena
19.	Parul gupta
20.	Neha Sabharwal
21.	Sonica
25.	Salony
26.	Shruti Bansal
27.	Anju Bala
28.	Shivani

29.	Sandeep Kaur
30.	Parul Chadha
31.	Deepika Chandel
32.	Shahnawaz Khan
33.	Sai Kriti Arora
34.	Kshitiz Gupta

b) from other institutions/universities

Sr.No	Name of the Research Scholars / Fellows
1	Neeraj Chandra Pant
2	Amrinder kaur
3.	Jaspreet kaur
4.	Nipun Sharma
5.	Shushil Singh Rana
6.	Urvashi Swami
7.	Priya
8.	Nisha Dhull
9.	Vijaya
10.	Ravinder Singh
11.	Rinu
12	Deepak kumar
13	Archita Saini
14	Rajdeep jaswal
15.	Mohinder Pal
16.	Shilpa Saini
17.	Sajal Sarabhai

18.	Ujjwal Jit Kaur
19.	Satish Kumar Pandey
20.	Aditi Rathee
21.	Leila Kaeid
22.	Lokender Kumar
23.	Shruti Khare
24.	Anitha V
25.	Prakram Singh Chauhan
26.	Deepak kumar
27.	Aditya Kumar
28.	Vivek Kumar
29.	Nancy George
30.	Ashutosh kumar
31.	Mohinder Pal
32.	Parul Chadha
33.	Angela Verma
34.	Shakshi Sharma
35.	Vivek Sharma
36	Kapil Mukesh
37.	Amanpreet Singh
38.	Vijay singh
39.	Mridul sharma
40.	Deepika Chandel
41.	Rajdeep jaswal
42.	Kalpana Rana

40. Number of post graduate students getting financial assistance from the university.
02

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

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, the feedback is used to improve upon course curricula and student evaluation

b. students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?
Yes, the feedback is used to improve upon the methods of teaching as well as evaluation.

c. alumni and employers on the programmes offered and how does the department utilize the feedback?
d. Yes, the feedback is used to incorporate the new developments taking place in the subject.

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

Dr. Naresh Chandan
Internal Medicine Residency Program Director
Practicing at Riverside Medical Center, USA.

Dr. Parjit Kaur, Professor
Department of Biology
Georgia State University, USA.

Dr. P. Gunasekaran, Vice-Chancellor
Thiruvalluvar University
Serkkadu, Vellore (India).

Dr. Girish Sahni, Director
IMTECH, Chandigarh.

Dr. Manoj Saxena
Head, Market Access and Government Affairs
Bayer Inc. Toronto, Canada

43. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.
The department regularly organises special lectures, workshops involving

external experts for the enrichment of the students knowledge with new developments in Biotechnology

44. List the teaching methods adopted by the faculty for different programmes. The faculty makes use of various audio-visual tools in teaching and also involves the visits to various industries and institutes for on the spot instructions and training. In addition, the students are also sent to other institutes/ industries for undergoing 4-6 weeks summer training for improving upon their practical skills.

45. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored? The Department takes regular feedback from the students and teachers to ensure that the objectives of various course objectives are constantly met.

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

The faculty is actively involved in delivering extension lectures in various colleges and institutes.

47. Give details of "beyond syllabus scholarly activities" of the department.
The Department organises Lecture series from eminant scientists of National and International recognition for sharing their experience with the students and to make them aware about recent developments in various areas of Biotechnology. In addition, the students are also asked to deliver seminars on various recent developments in the related areas.

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

49. Briefly highlight the contributions of the department in generating new knowledge, basic or applied. The Departments contributes significantly in generating new knowledge by giving more importance to pracaticals, inhouse research as well as visits to other institutes and industries.

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

Strengths of the Department

- Diverse specialization in teaching and research
- Well equipped laboratories
- Well trained faculty
- Recognition of the Department by various National agencies like UGC and DST
- Substantial extramural research funding by UGC, CSIR, DST, DBT, ICMR

Weaknesses of the Department

- Maintenance cost of the equipments

Opportunities in the Department

- The Department offers research opportunities in diverse areas of Medical Microbiology and Industrial Microbiology which are otherwise the components of Hospitals and Industry
- Immense Biodiversity for various applications
- Excellent environmental conditions for Teaching & Research

Challenges of the Department

- Meaningful utilization of microbial diversity
- Entrepreneurship development
- Procurement and maintenance of expensive equipments
- To cope with the upcoming developments in various areas of Biotechnology
- In view of the diverse expertise available, attempts are to be made for recognition of this department as a Centre for Advanced study (CAS).

51. Future plans of the department.

The department has always upheld a vision to explore new vistas of science; scientific approach, the attitude which is evident from the research activities carried out in the department. The department is specifically concerned with undertaking research of high caliber in basic and applied areas of microbiology aimed at welfare of the society. The Department also plans to promote effective linkages with various scientific research institutes, industries and other organizations in the country and abroad on emerging areas of microbiology and Biotechnology. The Department also plans to utilize molecular techniques along with other biotechnological approaches for the development of newer potential microbial strains, improvement of existing strains for better potential, exploration, conservation and preservation of germ plasma of diverse microbial groups that could be utilized for sustainable development of mankind. The Department is already known for imparting quality teaching and practical training with an aim to develop the scientific temperament among the students to make them competent in the fast evolving scientific inventions and developments across the globe. The Department would also consider imparting advanced practical training at different levels in form of summer training in different fields of microbiology and related areas.