

Evaluative Report of the Department

1. **Name of the Department** : Biochemistry
2. **Year of establishment** : 1984
3. **Is the Department part of a School/ Faculty of the University?** : Faculty of Interdisciplinary & Applied Sciences (FIAS)
4. **Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.)**

S. No.	Name of Programme	Type
1.	M.Sc. Biochemistry	PG Programme
2.	M.Phil. (Biotechnology); jointly with other Departments of FIAS	PG Programme
3.	Ph.D. (Biochemistry)	Doctoral Programme

5. **Interdisciplinary programmes and departments involved:**

- i) The teachers from the department are involved in teaching the following interdisciplinary courses to M.Sc. students of other departments;

S. No.	Interdisciplinary Paper	Other Department involved
1.	Proteins – Structure, folding and engineering	Department of Plant Molecular Biology & Biotechnology (PMBB)
2.	Enzymes and Techniques in Biochemistry	Department of Microbiology

- ii) The teachers from the department are also involved in teaching courses to Ph.D./M.Phil. students of other departments

S. No.	Name of the Course	Department involved
1.	Ph.D./M.Phil.	Department of Plant Molecular Biology & Biotechnology (PMBB). Department of Genetics. Department of Microbiology. Department of Biophysics.

6. **Courses in collaboration with other Universities, industries, foreign institutions etc.:** None
7. **Details of programmes discontinued, if any, with reasons :** None

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

S. No.	Name of the Course	Type of Examination
1.	M.Sc. Biochemistry	Semester System
2.	M.Phil. (Biotechnology)	Semester System
3.	Ph.D. (Biochemistry)	Course work – Semester system

9. Participation of the department in the courses offered by other departments:-

- i) The M.Sc. students from the Department of Biochemistry take the following interdisciplinary courses offered by the other Departments:

S. No.	Name of the Paper	Name of the Dept. teaching the course
1.	Microbial Pathogenicity	Department of Microbiology
2.	Introduction to Bioinformatics	Department of Plant Molecular Biology & Biotechnology (PMBB).

- ii) The Ph.D./M.Phil. students from the Department of Biochemistry take up courses in other Departments *viz.* PMBB, Microbiology and Biophysics

S. No.	Name of the Paper	Name of the Dept. teaching the course
1.	Microbial Pathogenicity	Department of Microbiology
2.	Virology	Department of Microbiology
3.	Immunology	Department of Microbiology
4.	Introduction to Bioinformatics	Department of Plant Molecular Biology & Biotechnology (PMBB)
5.	Computer Applications in Biology	Department of Biophysics

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

	Sanctioned	Filled	Actual (including CAS & MPS)
Professors	-	-	06*
Associate Professors	-	01	01*
Asst. Professors	-	01	02*
Others	-	-	-

* Two faculties promoted as Professors since Dec 2012 and August 2014.

* Two faculties joined as Associate and Assistant Professors since November 2014.

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 4 years
Anil K. Tyagi	M.Sc., Ph.D.	Professor	Tuberculosis (TB) with special reference to the development of new vaccines and	35Years	Ph.D.– 5 awarded, 1 submitted, 2 continuing

			drug discovery against TB		
Vijay K. Chaudhary	M.Sc., Ph.D.	Professor	Development of novel reagents for diagnostic test for infectious diseases using state-of-the-art protein engineering technologies including human antibodies.	28 Years	Ph.D.– 4 awarded, 1 submitted, 1 continuing
Prahlad C. Ghosh	M.Sc., Ph.D.	Professor	Drug Delivery using Liposomes and Nanoparticles as Carriers.	29 Years	Ph.D.– 3 awarded, 1 submitted, 1 continuing
Debi P. Sarkar	M.Sc., Ph.D.	Professor	Host-Virus Interactions/Molecular Cell Biology/Virology	27 Years	Ph.D.– 3 awarded, 1 continuing
Suman Kundu	M.Sc., Ph.D.	Professor	Structure-Function Relationship and Protein Engineering in Artificial Blood Substitutes; Diagnosis of Hemoglobinopathies; Rational Drug Design (Hypertension, Cancer, Malaria)	11 Years	Ph.D.– 5 awarded, 1 awaiting viva 6 continuing, M.Phil. – 1 awarded
Alo Nag	M.Sc., Ph.D.	Professor	Molecular mechanisms of cellular transformation during oncogenesis and discovery of novel therapeutic targets against Cancer and Malaria.	10 Years	Ph.D.– 4 awarded, 6 continuing
Amita Gupta	M.Sc., Ph.D.	Associate Professor	Deciphering the role of TA loci in <i>M. tuberculosis</i> ; development of expression systems for functional genomics	10 Years	Ph.D.– 1 awarded, 2 continuing M.Phil. – 1 awarded
Suneel Kateriya	M.Sc., Ph.D.	Assistant Professor	Molecular basis of the rhodopsin mediated signaling, Optogenetics, Channelopathy and Ciliopathy	9 Years	Ph.D.– 3 awarded,
Garima Khare	M.Sc., Ph.D.	Assistant Professor	Drug discovery against tuberculosis and understanding the host pathogen	2.5 Years	1 continuing

			interactions in tuberculosis		
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12. List of Senior Visiting Fellows, adjunct faculty, emeritus professors:

None

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

None

14. Programme-wise Student Teacher Ratio:

2012-13

S.No.	Programme	Student Teacher Ratio
1.	M.Sc. Biochemistry	3:1
2.	Ph.D. Biochemistry	6:1

2013-14

S.No.	Programme	Student Teacher Ratio
1.	M.Sc. Biochemistry	3:1
2.	Ph.D. Biochemistry	6:1

2014-15

S.No.	Programme	Student Teacher Ratio
1.	M.Sc. Biochemistry	3:1
2.	Ph.D. Biochemistry	4:1

2015-16

S.No.	Programme	Student Teacher Ratio
1.	M.Sc. Biochemistry	3:1
2.	Ph.D. Biochemistry	4:1

2016-17

S.No.	Programme	Student Teacher Ratio
1.	M.Sc. Biochemistry	3:1
2.	Ph.D. Biochemistry	4:1

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

Category	Sanctioned	Filled	Actual
Administrative*	-	-	01
Technical**	-	-	03

(* - 1 Senior Assistant; ** - 1 Technical Assistant; 1 Technical Assistant (Computer); 1 Lab. Attendant)

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

1. Diagnostics, prophylactics, therapeutics, host-pathogen interactions and mechanistic understanding for infectious diseases with emphasis on Tuberculosis and Malaria.
2. Drug delivery using virosomes, liposomes and nanoparticles as carrier for the treatment of infectious diseases.
3. Basic understanding of the molecular mechanisms of oncogenesis and discovery of novel targets for development of anti-cancer therapeutic strategies.
4. Photosignalling, optogenetics, channelopathies and ciliopathies
5. Mechanistic understanding of structure-function-stability relationship in novel hemoglobins, protein engineering in hemoglobin based artificial blood substitutes, diagnostics for hemoglobinopathies and rational drug design for cardiovascular diseases and cancer.

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.

a) National Funding

Total number of faculties (2012-17) = 09

Total number of projects (2012-17) = 23

2012-13

Faculty	Project Title	Funding Agency	Duration	Grant (in Lacs)
Prof. Anil K. Tyagi	A Virtual Centre of Excellence for Co-ordinated Research on Tuberculosis: Development of Alternate Strategies	DBT	Sept 2011 to Sept 2016	Rs.484.77 lacs
	Development and evaluation of an α -5rystalline based prime boost vaccination strategy against TB by employing MVA	DBT	May 2012 to Nov 2014	Rs.80.89 lacs
Prof. Vijay K. Chaudhary	NMITLI Project "Development and production of a therapeutic monoclonal antibody against eNAMPT, a novel inflammatory target"	CSIR NMITLI	March 2011- 2016	Rs.275 lacs
	Ready-to-use Microfluidic Cartridges for Affordable Point-of-care Diagnostics "ReDia", DBT under Indo-Finland programme.	DBT	Jan 2012- Sept 2014	Rs74.23 lacs
	DNA Sequencing facility at UDSC (Phase IV)	DBT	Oct 2010- March 2014	Rs.173.94lacs

Prof. Debi P. Sarkar	Novel nanoscale materials delivery for antimicrobial and anticancer activities (with Prof. SS Ghosh, IIT, Guwahati, NE/DBT programme).	DBT	April 2011 to March 2014	Rs.75 lacs
Prof. Alo Nag	Role of ADA3 in damaged DNA pathways.	DST-SERC	2010-2013	Rs.17.48 lacs
Dr. Suneel Kateriya	Biochemical and biophysical characterization of small GTPase from <i>C. reinhardtii</i>	DST-SERC	2010-2013	Rs.20 lacs
	Development of pre-treatment strategies and bioprocess for improved production of cellulolytic enzymes and ethanol from crop byproduct for demonstration at pilot plant.	Ministry of New and Renewable Energy	2012-15	Rs.10 lacs

2013-14

Faculty	Project Title	Funding Agency	Duration	Grant (in Lacs)
Prof. Anil K. Tyagi	A Virtual Centre of Excellence for Co-ordinated Research on Tuberculosis: Development of Alternate Strategies	DBT	Sept 2011 to Sept 2016	Rs.484.77 lacs
	Development and evaluation of an α -crystalline based prime boost vaccination strategy against TB by employing MVA	DBT	May 2012 to Nov 2014	Rs.80.89 lacs
Prof. Vijay K. Chaudhary	NMITLI Project "Development and production of a therapeutic monoclonal antibody against eNAMPT, a novel inflammatory target"	CSIR NMITLI	March 2011-2016	Rs.275 lacs
	Ready-to-use Microfluidic Cartridges for Affordable Point-of-care Diagnostics "ReDia", DBT under Indo-Finland programme.	DBT	Jan 2012- Sept 2014	Rs74.23 lacs
	DNA Sequencing facility at UDSC (Phase IV)	DBT	Oct 2010- March 2014	Rs.173.94 lacs
Prof. Debi P. Sarkar	Novel nanoscale materials delivery for antimicrobial and anticancer activities (with Prof. SS Ghosh, IIT, Guwahati, NE/DBT programme).	DBT	April 2011 to March 2014	Rs.75 lacs
	Centre of Excellence for Research on Hepatitis C Virus – Phase II(with Dr. Saumitra Das, Indian Institute of Science, Bangalore)	DBT	Sept2013- Sept 2016	Rs.40.12lacs
Dr. Suneel Kateriya	Development of pre-treatment strategies and bioprocess for improved production of cellulolytic enzymes and ethanol from crop byproduct for demonstration at pilot plant.	Ministry of New and Renewable Energy	2012-15	Rs.10 lacs
	Photo-dynamic, biochemical and optogenetic characterization of the novel bacterial photoactivated Adenylatecyclase.	DST-SERB	2013-2016	Rs.45 lacs
	Engineering of photoactivated adenylatecyclase (PAC) for the development	DBT	2013-2016	Rs.46 lacs

	of optogenetic tools for neuroscience applications.			
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2014-15

Faculty	Project Title	Funding Agency	Duration	Grant (in Lacs)
Prof. Anil K. Tyagi	A Virtual Centre of Excellence for Co-ordinated Research on Tuberculosis: Development of Alternate Strategies	DBT	Sept 2011 to Sept 2016	Rs.484.77 lacs
Prof. Vijay K. Chaudhary	NMITLI Project “Development and production of a therapeutic monoclonal antibody against eNAMPT, a novel inflammatory target”	CSIR NMITLI	March 2011-2016	Rs.275 lacs
	Development for reagents for simple immunochemical tests for the detection of Chikungunya infection	DBT	May, 2014-May 2017	Rs.86.4 lacs
	DNA Sequencing facility at UDSC (Phase V)	DBT	June 2014-June 2017	Rs.114.26 lacs
Prof. Prahlad C. Ghosh	Evaluation of Soya Phosphatidylcholine-Stearylamine Liposome as Anti-Malarial Agent.	ICMR	April 2014 to March 2017	Rs.25 lacs
	Innovative strategies for developing Diagnostics and Therapeutics to combat Infections	DU DST-Purse	Nov 2014 to Oct 2019	Rs.22.50 lacs
Prof. Debi P. Sarkar	Novel nanoscale materials delivery for antimicrobial and anticancer activities (with Prof. SS Ghosh, IIT, Guwahati, NE/DBT programme).	DBT	April 2011 to March 2014	Rs.75 lacs
	Centre of Excellence for Research on Hepatitis C Virus – Phase II(with Dr. Saumitra Das, Indian Institute of Science, Bangalore)	DBT	Sept2013-Sept 2016	Rs.40.12lacs
Dr. Amita Gupta	Identification and characterization of promoters of toxin antitoxin loci in <i>Mycobacterium tuberculosis</i>	CSIR	Oct 2014 – Sept 2017	Rs.35.0 lacs
Dr. Suneel Kateriya	Photo-dynamic, biochemical and optogenetic characterization of the novel bacterial photoactivated Adenylatecyclase.	DST-SERB	2013-2016	Rs.45 lacs
	Engineering of photoactivated adenylatecyclase (PAC) for the development of optogenetic tools for neuroscience applications.	DBT	2013-2016	Rs.46 lacs
	Development of pre-treatment strategies and bioprocess for improved production of cellulolytic enzymes and ethanol from crop byproduct for demonstration at pilot plant.	Ministry of New and Renewable Energy	2012-15	Rs.10 lacs
Dr. Garima Khare	Understanding the VirS mediated acid induced responses of <i>Mycobacterium</i>	DBT	August 2014 – August 2017	Rs.50.0 lacs

	<i>tuberculosis</i> in maintaining the pH homoeostasis <i>in vitro</i> and in host.			
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2015-16

Faculty	Project Title	Funding Agency	Duration	Grant (in Lacs)
Prof. Anil K. Tyagi	A Virtual Centre of Excellence for Co-ordinated Research on Tuberculosis: Development of Alternate Strategies	DBT	Sept 2011 to Sept 2016	Rs.484.77 lacs
Prof. Vijay K. Chaudhary	NMITLI Project “Development and production of a therapeutic monoclonal antibody against eNAMPT, a novel inflammatory target”	CSIR NMITLI	March 2011-2016	Rs.275 lacs
	Development for reagents for simple immunochemical tests for the detection of Chikungunya infection	DBT	May, 2014-May 2017	Rs.86.4 lacs
	DNA Sequencing facility at UDSC (Phase V)	DBT	June 2014-June 2017	Rs.114.26 lacs
Prof. Prahlad C. Ghosh	Evaluation of Soya Phosphatidylcholine-Stearylamine Liposome as Anti-Malarial Agent.	ICMR	April 2014 to March 2017	Rs.25 lacs
	Innovative strategies for developing Diagnostics and Therapeutics to combat Infections	DU DST-Purse	Nov 2014 to Oct 2019	Rs.22.50 lacs
Prof. Debi P. Sarkar	Centre of Excellence for Research on Hepatitis C Virus – Phase II(with Dr. Saumitra Das, Indian Institute of Science, Bangalore)	DBT	Sept2013-Sept 2016	Rs.40.12lacs
Prof. Suman Kundu	Understanding the structure of <i>Leishmania major</i> phosphopantetheinyl transferase (LmjPPTase) and its interaction with cognate ACP	UGC-DAE	April 2015 to March 2018	Rs.7.902 lacs
	Development of potent small molecule inhibitors against dopamine beta-hydroxylase to combat cardiovascular diseases	DBT	June 2015-June 2018	Rs.51,65,500
	Systems biology of complex diseases: From genetic findings to lead molecule development for Rheumatoid arthritis-Centre of Excellence in Genome Sciences and Predictive Medicine (Phase II) (Coordinator: Prof. B.K. Thelma)	DBT	Dec 2015 to Dec 2020	Rs.60.62 lacs
	Screening Lead Molecules Identified by Structure-based Rational Drug Design Methods against Cytochrome b5 Reductase 3 and Dopamine Beta Hydroxylase in Spontaneously Hypertensive Rat Models for Antihypertensive Effects”	DBT	22.06.2017 – 21.06.2020	25,60,400

Dr. Amita Gupta	Identification and characterization of promoters of toxin antitoxin loci in <i>Mycobacterium tuberculosis</i>	CSIR	Oct 2014 – Sept 2017	Rs.35.0 lacs
Dr. Suneel Kateriya	Photo-dynamic, biochemical and optogenetic characterization of the novel bacterial photoactivated Adenylatecyclase.	DST-SERB	2013-2016	Rs.45 lacs
	Engineering of photoactivated adenylatecyclase (PAC) for the development of optogenetic tools for neuroscience applications.	DBT	2013-2016	Rs.46 lacs
Dr. Garima Khare	Understanding the VirS mediated acid induced responses of <i>Mycobacterium tuberculosis</i> in maintaining the pH homeostasis <i>in vitro</i> and in host.	DBT	August 2014 – August 2017	Rs.50.0 lacs

2016-17

Faculty	Project Title	Funding Agency	Duration	Grant (in Lacs)
Prof. Anil K. Tyagi	A Virtual Centre of Excellence for Co-ordinated Research on Tuberculosis: Development of Alternate Strategies	DBT	Sept 2011 to Sept 2016	Rs.484.77 lacs
Prof. Vijay K. Chaudhary	Development for reagents for simple immunochemical tests for the detection of Chikungunya infection	DBT	May, 2014- May 2017	Rs.86.4 lacs
	DNA Sequencing facility at UDSC (Phase V)	DBT	June 2014- June 2017	Rs.114.26 lacs
Prof. Prahlad C. Ghosh	Evaluation of Soya Phosphatidylcholine-Stearylamine Liposome as Anti-Malarial Agent.	ICMR	April 2014 to March 2017	Rs.25 lacs
	Innovative strategies for developing Diagnostics and Therapeutics to combat Infections	DU DST-Purse	Nov 2014 to Oct 2019	Rs.22.50 lacs
Prof. Debi P. Sarkar	JC Bose National Fellowship	DST	April 2016 to March 2020	Rs. 157.6 lacs
Prof. Suman Kundu	Understanding the structure of <i>Leishmania major</i> phosphopantetheinyl transferase (LmjPPTase) and its interaction with cognate ACP	UGC-DAE	April 2015 to March 2018	Rs.7.902 lacs
	Development of potent small molecule inhibitors against dopamine beta-hydroxylase to combat cardiovascular diseases	DBT	June 2015- June 2018	Rs. 51, 65, 500
	Systems biology of complex diseases: From genetic findings to lead molecule development for Rheumatoid arthritis-Centre of Excellence in Genome Sciences and Predictive Medicine (Phase II) (Coordinator: Prof. B.K. Thelma)	DBT	Dec 2015 to Dec 2020	Rs.60.62 lacs
	Screening Lead Molecules Identified by Structure-based Rational Drug Design Methods against Cytochrome b5 Reductase 3 and Dopamine Beta Hydroxylase in	DBT	22.06.2017 – 21.06.2020	25,60,400

	Spontaneously Hypertensive Rat Models for Antihypertensive Effects”			
Prof. Alo Nag	Deciphering the tumor suppressor function of miRNA in glioblastoma (with Dr. Ravindra Varma Polisetty, Sri Venkateshwara College, New Delhi)	DST	March 2017- March 2020	Rs. 50 lacs
Dr. Amita Gupta	Identification and characterization of promoters of toxin antitoxin loci in <i>Mycobacterium tuberculosis</i>	CSIR	Oct 2014 – Sept 2017	Rs.35.0 lacs
	Understanding the role of Rv1955-Rv1956 Toxin-antitoxin (TA) locus of <i>Mycobacterium tuberculosis</i> (Mtb) in pathogen biology	DBT	July 2016- July 2019	Rs. 52 lacs
Dr. Garima Khare	Understanding the VirS mediated acid induced responses of <i>Mycobacterium tuberculosis</i> in maintaining the pH homeostasis <i>in vitro</i> and in host.	DBT	August 2014 – August 2017	Rs.50.0 lacs

b) International Funding

Total number of faculties (2012-17) = 01

Total number of projects (2012-17) = 01

2014-15

Faculty	Project Title	Funding Agency	Duration	Grant (in Lacs)
Dr. Suneel Kateriya	Functional characterization of new photoreceptor proteins and ion channels in the microalga <i>Chlamydomonas reinhardtii</i> using functional genomics methods.	DBT- RFBR (Indo- Russia)	2014-16	Rs.25 lacs

2015-16

Faculty	Project Title	Funding Agency	Duration	Grant (in Lacs)
Dr. Suneel Kateriya	Functional characterization of new photoreceptor proteins and ion channels in the microalga <i>Chlamydomonas reinhardtii</i> using functional genomics methods.	DBT- RFBR (Indo- Russia)	2014-16	Rs.25 lacs

c) Total Grant Received : 1825.515 lacs

18. Inter-institutional collaborative projects and associated grants received

(a) National collaboration

Name of the Faculty	Collaborating Institute	Title of Project / Year	Grants Received
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Prof. Vijay K. Chaudhary	ICMR Virus Research Unit, Kolkata and IIIT, Noida.	Development of reagents for simple immunochemical tests for the detection of Chikungunya infection; 2014-2017	Rs.141.285 lacs (Rs.86.4 lacs for UDSC)
	M/s SPAN Diagnostics Limited, Surat	Development of rapid test for infectious diseases; 2010-2016	Rs.21.6 lacs
	AIIMS (New Delhi), PGI (Chandigarh), P.D. Hinduja Hospital (Mumbai), Nizam Institute of Medical Sciences (Hyderabad), NJIL&OMD (Agra)	Development and evaluation for the development of rapid test for culture confirmation of <i>M. tuberculosis</i> 2012-2015	Rs.65 lacs (11 lac for UDSC)
Prof. Debi P. Sarkar	Dr. Saumitra Das, Dept. of Microbiology and Cell Biology, Indian Institute of Science, Bangalore	Inhibition of HCV RNA translational and replication using small RNAs (2015-2018)	Rs.40 lacs
	Dr. SS Jana, IACS, Kolkata.	Role of Nonmuscle Myosin II in virus-cell fusion (2012-2015)	Rs.25 lacs
	Prof. SS Ghosh, IIT, Guwahati.	Novel nanoscale materials delivery for antimicrobial and anticancer activities. (2011-2015)	Rs.85 lacs
Prof. Suman Kundu	Prof. N. Ramesh, IIT Delhi, New Delhi; Prof. S. K. Maulik, AIIMS, New Delhi	Development of potent small molecule inhibitors against dopamine beta-hydroxylase to combat cardiovascular diseases (2015-2018)	Rs.78.903 lacs
	Dr. Ravi Makde, RRCAT (Indore) and BARC (Mumbai)	Understanding the structure of <i>Leishmania major</i> phosphopantetheinyl transferase (LmjPPTase) and its interaction with cognate ACP (2015-2018)	Rs.7.902 lacs
	Prof. B.K. Thelma, Department of Genetics, DU South Campus	Systems biology of complex diseases: From genetic findings to lead molecule development for Rheumatoid arthritis- Centre of Excellence in Genome Sciences and Predictive Medicine (Phase II) (Coordinator: Prof. B.K. Thelma) (2015-2020)	718.34 Lakhs
	Prof. C.C. Kartha, RGCB, Trivandrum	Screening Lead Molecules Identified by Structure-based Rational Drug Design Methods against Cytochrome b5 Reductase 3 and Dopamine Beta Hydroxylase in Spontaneously Hypertensive Rat Models for Antihypertensive Effects” (2017-2020)	87,52,800 /-
Prof. Alo Nag	Dr. Mausumi Bharadwaj, Institute of Cytology and Preventive Oncology, Noida, UP.	Host and Viral gene interaction and their regulation during development of Cervical cancer and identification of pre-diagnostic markers of Cervical cancer (2010-2016)	None

	Dr. Kulbhushan Sharma, Institute of Nuclear Medicine and Allied Sciences, DRDO, New Delhi.	Role of immunomodulatory agents in radiation induced inflammation and Damage (2015 till date)	None
	Dr. Chandi Mandal, Dept. of Biochemistry, Central University of Rajasthan, Rajasthan.	Identification of molecular mechanisms for microcalcification in breast cancer (Since 2015)	None
	Dr. Ellora Sen National Brain Research Centre, Manesar	Role of FoxM1 in Glioblastoma (GBM) tumorigenesis (Since 2017).	None
	Dr. Ravindra Varma Polisetty, Sri Venkateshwara College, New Delhi	Deciphering the tumor suppressor function of miRNA in glioblastoma (2017-2020)	Rs.50 lacs
Dr. Amita Gupta	Dr. ramandeep Singh, THSTI Faridabad	Understanding the role of Rv1955-Rv1956 Toxin-antitoxin (TA) locus of Mycobacterium tuberculosis (Mtb) in pathogen biology	Rs. 85 lacs

(b) International Collaboration

Name of the Faculty	Collaborating Institute	Title of Project / Year	Grants Received
Prof. Vijay K. Chaudhary	University of Turku, Finland under Indo-Finland programme supported by DBT	High Performing Lateral Flow type assay concepts for Cardiac and Infectious disease testing-An Indo-Finnish (DBT-TEKAS) collaborative project; 2010-2013	Rs. 89.64 lacs
	Prof. PasiKallio, Tampere University of Technology, University of Turku, BioCity, Finland (supported by TEKES and DBT.	Ready-to-use Microfluidic Cartridges for Affordable Point-of-care Diagnostics "ReDia" by Prof. Vijay. K. Chaudhary, Jan 2012- Sept 2014	Rs.74.23 lacs
Prof. Suman Kundu	Ural State Technical University-UPI, Ekaterinburg, Russia	Mossbauer Spectroscopy of Mammalian and other Novel Hemoglobins. 2012-2015	None
Dr. Suneel Kateriya	Prof. Peter Hegeman, Humboldt University, Berlin, Germany	Development of novel optogenetics tools(2012-2015)	Rs.46 lacs
	Max-Planck Institute, Muelheim, Germany	Engineering and characterization of LOV domain proteins(2013-2017)	Rs.2.5 lacs

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

S. No.	Projects Funding Agency	Grant Received
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1.	UGC-SAP DRS I(Phase I) Completed in 2014	Rs.42.63 lacs
2.	UGC-SAP DRS II(Phase I) Sanctioned in March 2016	Rs.102 lacs

Total Grants = 144.63 Lacs

20. Research facility / centre

S. No.	Recognition	Research Facility/ Centre
1.	State recognition	None
2.	National recognition	DBT supported DNA Sequencing Facility DBT supported Distributed Information Sub-Centre DBT supported BSL3 Facility
3.	International recognition	None

DNA Sequencing Facility –

DNA Sequencing Facility was established by Department of Biotechnology, Government of India and has been operational since 1998. The facility, at present, is successfully serving more than 150 users from all over country. The facility has a 96-Capillary sequencer (Model 3730XL) and a 16-Capillary sequencer. The UDSC DNA Sequencing facility has been known for its quality, for which scientists from different parts of the country send samples. The facility has users from Mizoram, Rajasthan, West Bengal and Mukteshwar besides several institutions from Lucknow, Delhi etc.

DBT has agreed to provide support to add new genomic services such as Microarray and Next Generation Sequencing (NGS). The instrumentation is already in place and the services are expected to be operational from July 2016. Accordingly, the facility will be renamed as “DBT-supported Genomic facility at UDSC”.

Distributed Information Sub-Centre –

The Distributed Information Sub-Centre that is supported by DBT has been functioning since 1992 and has been of great help in terms of providing various facilities such as photocopying, fax and printing services etc. to the scientific community at UDSC in addition to providing facility for various scientific works such as modeling of proteins, crystallography and docking studies etc. It has also developed databases such as 1) Related to Ph.D. theses submitted to the University of Delhi and 2) Related to membrane biology.

BSL3 Facility –

The department has a state-of-the-art **BSL3 facility** located at the campus dedicated to work related to tuberculosis. The facility has P3 level containment to work with *Mycobacterium tuberculosis* and has facilities for animal work and infection of animals with aerosol challenge.

The facility was created by the Department of Biotechnology, Government of India in 2009 and is fully functional. This facility has contributed immensely to the vaccination and drug discovery programme against tuberculosis, as well as in manpower training. It is one among the few of its kind in the country.

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

None

22. Publications

Nature of information	Total
Number of papers published in peer reviewed journals (national/international)	99
Monographs	-
Chapters in Books	03
Books edited	-
Books with ISBN with details of publishers	-
Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, Google Scholar etc.)	90
Citation Index – range / average (AKT – 1581; VKC – 765; PCG – 695; DPS – 401; SK – 850; AN – 462; AG – 180; SKt – 2141; GK – 248)	Range: 180-1581 Average: 813 per faculty
SNIP	-
SJR	-
Impact Factor – range / average	Range: Lowest IF = 0.45 Highest IF = 9.6 Average: 3.5 per publication
h-index (AKT – 22; VKC – 15; PCG – 12; DPS – 12; SK – 17; AN – 12; AG – 07; SKt – 13; GK – 10)	Range: 7-22 Average: 13 per faculty

Details at **Annexure – I**.

(Annexures/Appendices do not form part of this document as per NAAC guidelines. It will be presented before the Peer Team on their visit to the University)

23. Details of patents and income generated

Sr. No.	Title of the patent	Authors	Patent No.	National/ International	Applied/ Granted	Year Applied/ Granted	If commercialized, name of industry partner;
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							Value; Year
1	Mutants of mycobacteria and process thereof	Anil K. Tyagi, Ramandeep Singh, Vivek Rao, Vadakkuppattu Devasenapathi Ramanathan, Chinnambedu Nainarappan Paramasivan, Paranji Ramaiyengar Narayanan, Yogendra Singh	Patent No.259594	National	Granted	Applied 9 th July, 2003 Granted on 19 th March, 2014	Not yet, efforts are in progress.
2	A process of producing orf-enriched phage display library and uses thereof	Amita Gupta, Vijay K. Chaudhary and Nimisha Shrivastave	Awaited	National	Applied	Indian Patent 2346/DEL/2013 dated 06.08.2013	Not yet.
3	Novel therapeutic agents useful for Human Papilloma Virus induced cervical cancer therapy	Alo Nag, Suman Kundu, Vaibhav Chand and Abhijeet Kapoor	Awaited	National	Applied	No. 201611003939 dated 04.02.2016	Provisional patent.

24. Areas of consultancy and income generated

Sr. No.	Services rendered to (Organization)	Services rendered by (Name of Faculty)	Year / Duration	Nature of services	National / International	Honorary/ Remunerative	Resource Generated
1.	M/s Yashraj Biotechnology Ltd., Mumbai (YBL)	Prof. Vijay K Chaudhary	April 2016-17	Consultancy	National	Remunerative	Rs.10 lac/year

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

Name of Faculty	Selected Nationally / Internationally by	Laboratory / Institution Visited; Year	National / International	Name of Country Visited
Suneel Kateriya	DST, Government of India; Indo-German	Max-Planck Institute of Chemical Energy Conversion, Muelheim (2013)	International	Germany
	DBT, Government of India	Institute of Biology, Humboldt University, Berlin (2012-2016)	International	Germany

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

Name of Faculty	a) Serving in National committees; Duration
Prof. Anil K. Tyagi	Member, Academic Committee, Translational Health Science and Technology Institute, Gurgaon from August 2013 to 2015
	Member, Academic Committee, National Institute of Immunology, New Delhi from 2013 to 2015
	Member, APEX Committee, Vaccine Grant Challenge Programme, Department of Biotechnology, Government of India, New Delhi from 2011 to 2014
Prof. Vijay K. Chaudhary	Member, Expert Committee (DBT-ICMR) on HIV, AIDS and Microbicides, Department of Biotechnology, Government of India, New Delhi, from 2010 to 2015.
	Member, Task Force on DBT-Boost to University Interdisciplinary Life Sciences for Education and Research (DBT-BUILDER) Department of Biotechnology, Government of India, New Delhi, from 2009 till date. Co-Chairman since 2015.
	Member, Committee for Innovative Young Biotechnologists Award, Department of Biotechnology, Government of India, New Delhi, from 2005 to 2014.
Prof. P.C. Ghosh	Member, UGC Expert Committee Meeting for finalizing Under Graduate Courses Syllabi under Choice based credit System (CBCS), June 22, 2015 at South Campus, Delhi University, New Delhi.
	Member, Research Review Committee (RRC), National Dope Testing Laboratory from 2014 to till date
	Invited by Global Innovation & Technology Alliance (GITA) under DST funded India-UK Collaborative Industrial R & D Programme as Technical Expert in project mentoring Group for funding research project and quarterly review of the project. September 24, 2014.
	Member, Doctoral Committee, Indira Gandhi National Open University (IGNOU), New Delhi, from 2013 to till date.
	Member of ICMR Expert Group Meeting to discuss communication on “Unqualified inclusion of Liposomal Amphotericin B Monograph in Indian Pharmacopoeia (IP) and grant of indiscriminate licenses wrongly as generic”, 2013.

	Member, Doctoral Committee, Department of Biotechnology, JNU, New Delhi, from 2012 to till date.
Prof. D.P. Sarkar	Co-Convenor CSIR/UGC NET Examination Board, 2012-till date
	Member of the expert committee of CSIR Eng-42 RA/SRF selection, 2012-2015
	Member Task Force of DBT, Bio-Care, 2012-2015
	Member, Selection Committee no X (Cell and Biomolecular Sciences) for selection of INSA fellow, 2015-2018
	Member, Selection Committee, Indian Academy of Sciences (Bangalore) Fellows in General Biology, 2016-2019
Prof. Suman Kundu	Special Academic Committee Member, Special Center of Molecular Medicine, JNU, 2013-2016
	Executive Council Member, Proteomics Society, India, 2014-2017
	National Organizing Committee Member, 6 th World Congress on Biotechnology, October 5-7, 2015, Crowne Plaza, Rohini, New Delhi
	Nominated as member of the Academic Committee of Institute of Microbial Technology, Chandigarh (IMTECH) (recognized by JNU) from 18/03/2017 to 17/03/2019.
	Member, Board of Management of the Interdisciplinary Biotechnology Unit, Aligarh Muslim University, Aligarh (June 2016 – June 2021)
Name of Faculty	b) Serving in International committees; Duration
	NONE
Name of Faculty	c) Serving in Editorial Boards; Duration
Prof Anil K. Tyagi	Academic Editor, PLoS ONE, published by Public Library of Science; from 2009 till date
	Member of Editorial Advisory Board for the journal Tuberculosis published by Elsevier Press; from 2012 to 2015
	Member of the Editorial Board for the Journal “Indian Journal of Medical Research” published by ICMR, New Delhi; from 2003 till date.
Prof. D.P. Sarkar	Member, Editorial Board of “Human Gene Therapy”, MaryAnn Liebert Inc. Publishers, A Journal of European Society for Gene and Cell Therapy, August 2009 to 2012
Prof. Suman Kundu	Editor-in-Chief, Journal of Proteins and Proteomics, A journal of the Proteomics Society, India, Serials Publications; from 2010 till date
Prof. Alo Nag	Member of the Editorial Board for the Journal “Current Trends in Biotechnological and Chemical Research”, India; 2012 till date.
	Member of the Editorial Board, Journal of Proteins and Proteomics, A journal of the Proteomics Society, India, Serials Publications; from 2015 till date
Name of Faculty	d) Serving in Any Other Capacity; Duration (2012-2016)
Prof. Anil K. Tyagi	Reviewer of research grant proposals for Wellcome Trust, CSIR, DBT and DST, Govt. of India.
	Regular reviewer for papers from the journals such as PLoS ONE, Indian Journal of Medical Research, Vaccine.
Prof. Debi P Sarkar	Reviewer of research grant proposals for CSIR, DBT and DST, Govt. of India.
	Reviewer of research papers from FEBS Letters, Molecular Pharmaceutics (USA), Molecular Membrane Biology (USA), BioTechniques (USA), Antiviral Research (Belgium), Archaea (Canada), PDA Journal of Pharmaceutical Science and Technology (USA), International Medical Journal for Experimental and Clinical Research, Poland

	(USA), BBA-Biomembrane, Journal of Infectious Diseases, Nanotechnology and Langmuir.
Prof. Suman Kundu	Reviewer of research grant proposals for CSIR, DBT and DST, Govt. of India.
	Reviewer of research papers for PLoS One, FEBS Letters, Indian Journal of Biotechnology, Cell and Developmental Biology, Journal of Agriculture and Food Chemistry, Applied Biochemistry and Biotechnology; Letters in Drug Design and Discovery, F1000 Research, Journal of Proteomics, Scientific Reports, Protein Science
	Member, Course Committee, Department of Biophysics, University of Delhi, 2017
	University representative on the Governing Body of Lady Hardinge Medical College (22.01.2017 to 21.01.2018)
	Chaired a session in the International Conference on “Functional & Interaction Proteomics: Application in Food and Health”, in New Delhi, December 14-17, 2016, at the 8 th Annual Meeting of the Proteomics Society, India and 3 rd Meeting of Asia Oceania Agricultural Proteomic Organization (AOAPO), The Grand Hotel, New Delhi, Organized by NIPGR (Chaired on Dec 17 th).
	Committee member, Examination Disciplinary Committee (for unfair means), University of Delhi, 2016-2017
	Member, Observer team to Jadavpur University, Kolkata to conduct DUET-2016 (DU entrance examination, National Level), June 20-24, 2016
	Expert/reviewer for the Innovation Projects from the Life Sciences category for undergraduates, University of Delhi, April 8, 2016, Centre for Science Education and Communication, 2nd Floor, ARC Building, Opposite Khalsa College, University of Delhi, Delhi 110007
Prof. Alo Nag	Reviewer of research grant proposals for CSIR, DBT and DST, Govt. of India. Reviewer of Swiss Cancer League Grant proposals.
	Reviewer of research papers from Molecular Cancer (USA), eCancer (UK), PLoS One, PLASMID (USA), Current Cancer Drug Targets (USA), Genetics Research International (USA), BMC Genomics, Current Drug Targets, Current Medicinal Chemistry, Current Pharmaceutical Biotechnology and Molecular Cancer Biology (USA) and Tumor Biology (USA).
	Organizing Secretary, 3rd International Conference of Carcinogenesis Foundation – “Frontiers in Carcinogenesis and Preventive Oncology: Molecular Mechanisms to Therapeutics”, RML Hospital, New Delhi India, 19-21 November, 2012.
	Expert, DBT sponsored Biotech Industrial Training Programme (BITP) for evaluation of participating companies.
	Invited as Chairperson of a session in the Symposium on Innovations in Product Design, 11-13 May, 2015, Indian Institute of Information Technology, Design and Manufacturing, Jabalpur.
	Invited judge for posters in IACR-ACOS International Conference, April 8-10, 2016, New Delhi.
	Invited as Chairperson of a session in the International Conference - 43rd ISOBM Annual Congress, from September 1 to 6, 2016 at Chicago, U.S.A. Invited as Guest of Honor in the BIOSPARK Symposium of Department of Biochemistry, Deshbandhu College, on March 27, 2017.
Dr. Amita Gupta	Reviewer of research grant proposals for DBT and DST, Govt. of India
	Reviewer of research papers for PLoS ONE, Indian Journal of Microbiology, Microbiology, BMC Microbiology, Scientific Reports.
Dr. Suneel Kateriya	Reviewer of research papers from New Phytologist, PLoS One, Indian Journal of Microbiology, Journal of Applied Phycology, International Journal of Photoenergy.
Dr. Garima Khare	Reviewer of research papers for PLoS ONE, Journal of Antimicrobial Chemotherapy and Molecular Biosystems.

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

None

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 : None

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

Sr. No.	Name of Award / Honor/ Citation/ Distinction/ Special Mention/ Fellowship	Name of Awardee (faculty)	Name of co-awardee (shared with)	Year / Month	Award Given by /Honor Conferred by/ Citation and Fellowship from	National / International	Award / Honor / Citation / Distinction/ Fellowship for (why given)
1.	Suresh C. Tyagi Oration Award	Prof. Suman Kundu	-	Jan 2017	International Academy of Cardiovascular Sciences (Indian Section)	National	For Accomplishments in Research and Oration in the area of cardiovascular diseases
2.	Visitor's Award for Innovation 2014 in Central Universities	Prof. Vijay K Chaudhary	Dr. Amita Gupta	Feb, 2015	Hon'ble President of India	National	Innovation and Developing a Rapid Test for Tuberculosis
3.	Prof. M.L. Khorana Memorial Prize 2013	Prof. P.C. Ghosh	Dr. Shailendra Singh Rathore, Dr. Nikhil Tyagi	June 5, 2015	Indian Pharmaceutical Association (IPA)	National	Publishing best paper in the field of Pharmacology & Clinical Pharmacy in Indian Journal of Pharmaceutical Science for the year 2013.
4.	Platinum Jubilee Lecture in the Section of New Biology (including Biochemistry, Biophysics & Molecular	Prof. D. P. Sarkar	-	Jan, 2015	102 nd Indian Science Congress held at University of Mumbai, Mumbai	National	Excellence in biological research

	Biology and Biotechnology)						
5.	Biotech Product and Process Development and Commercialization Award 2014	Prof. Vijay K Chaudhary	-	2014	Department of Biotechnology, Govt of India, conferred on 11 th May 2015 by Hon'ble Minister of Science & Technology	National	Excellence in Biotech product & process development & commercialization
6.	Max Planck India Fellowship	Dr. Suneel Kateriya	-	2012-2016	Department of Science and Technology, India and Max Planck Group-Germany	International	For short term research based on competitive grant writing
7.	Indian Young Biotechnologist Award 2013	Dr. Garima Khare	-	2013	Department of Biotechnology, Government of India	National	Innovative research by young scientists through competitive grant writing
8.	Appreciation Award 2012	Prof. Alo Nag	-	Nov, 2012	Carcinogenesis Foundation, USA	International	Organizing Carcinogenesis international conference in New Delhi, India, Nov, 2012

Doctoral / Post-Doctoral Fellows (Award recipient names are in BOLD letters)

Sr. No	Name of Doctoral/ Post-Doctoral Fellows	Year	National / International	Award / Recognition
1.	Pradeep Singh Cheema	2017	Local / University	Third Best Oral Presentation Award. Identification of novel small molecule inhibitors against FoxM1 with implications in cancer therapy. 7 th National Science Day Symposium, 28 th February 2017, University of Delhi South Campus, New Delhi.
2.	Sanjay Kumar Dey	2017	National	Poster Presentation Award for Sanjay Kumar Dey, in Indian Biophysical Society Annual Meeting, at IISER Mohali, March 23-25, 2017.
3.	Sanjay Kumar Dey	2017	National	Travel award for attending Indian Biophysical Society Annual Meeting, at IISER Mohali, March 23-25, 2017.
4.	Richa Arya	2017	National	Travel award for attending Indian Biophysical Society Annual Meeting, at IISER Mohali, March 23-25, 2017.
5.	Md. Asim Khan	2017	National	Travel award for attending Indian Biophysical Society Annual Meeting, at IISER Mohali, March 23-25, 2017.
6.	Richa Arya	2017	International	Oral Presentation Award (2 nd) in Indo-US conference on "Advances in Enzymology: Implications in Health, Disease and Therapeutics", ACTREC, Mumbai, Jan 17-19, 2017.

7.	Manendra Pachauri and P.C. Ghosh	2016	International	Prof. A. R. Rao Researcher Award for the best oral presentation at International Symposium on "Role of Herbals in Cancer Prevention and Treatment" at School of Life Sciences, Jawaharlal Nehru University, New Delhi, India, dated 9 th -10 th February 2016.
8.	Vinoth Rajendran, Mohsin Raza and P.C. Ghosh	2016	Local / University	Second Oral Presentation Award. Liposome mediated delivery of anti-malarial drugs for the treatment of malaria 6 th National Science Day Symposium, 29 th February 2016, University of Delhi South Campus, New Delhi.
9.	Yama Atri	2016	International	Best Essay Award, on 'Cancer Genomics: An Approach to Personalized Therapy' in IACR-ACOS International Conference, 8-10 April, 2016, New Delhi.
10.	Sanjay Kumar Dey	2015	International	Boehringer Ingelheim Fonds (BIF) Travel Grant Award for Short Term Research Work in Germany.
11.	Swati Singh, Garima Khare and Anil K. Tyagi	2015	Local / University	Best Poster Award. Identification of biotin biosynthesis inhibitors for inhibition of <i>Mycobacterium tuberculosis</i> . 5 th National Science Day Symposium, 27 th -28 th February, 2015, University of Delhi South Campus, New Delhi.
12.	Sanjay Kumar Dey	2015	National	Travel Grant from ICMR, DST and Immunology Foundation to attend Conference on Hypertension by Council of Hypertension and American Heart Association, USA, 2015.
13.	Sanjay Kumar Dey	2015	International	Young Scientist Fellow, American Heart Association.
14.	Neha Jaiswal, Pradeep Singh Cheema, Rince John, Vaibhav Chand and Alo Nag	2015	National	Best Poster Award. Viral onco protein HPV16E7 perturbs SUMOylation of FoxM1 to induce oncogenesis, International Symposium on Current Advances in Radiobiology, Stem Cells and Cancer Research, 19 th -21 st Feb, 2015, JNU, New Delhi.
15.	Sanjay Kumar Dey, Toyanji Joseph, Santosh Kumar, A. Kamaladevi, Nabanita Sarkar, Surajit Sarkar, K. Balamurugan, B.K. Thelma and Suman Kundu	2015	National	Best Poster Award. Experimental validation of new inhibitors identified through rational structure based design against Dopamine- β -hydroxylase to combat cardiovascular diseases, Cardiovascular Research Convergence 2, 17 th January, 2015, All India Institute of Medical Sciences, New Delhi, India.
16.	Richa Arya	2015	Local / University	Third Best Oral Presentation Award. Insight into ACP-PPTase interaction essential for Fatty acid synthesis in <i>Leishmania major</i> with application in drug design. 5 th National Science Day Symposium, 27 th -28 th February, 2015, University of Delhi South Campus, New Delhi.
17.	Sanjay Kumar Dey, Himanshu Meghwani, Pankaj Prabhakar, Subir Kumar Maulik and Suman Kundu	2015	International	Selected among the best five posters and for Oral presentation. Dopamine- β -hydroxylase inhibitor UDSC171 can prevent isoproterenol induced cardiac hypertrophy in rats. 12 th Annual Conference of International Society for Heart Research (Indian Section), 14 th -15 th March, 2015, Jawaharlal Nehru University, New Delhi, India
18.	Garima Khare, Prachi Nangpal, Anil K. Tyagi	2014	National	Best Poster Award. Mycobacterium tuberculosis bacterioferritins-Structural and biochemical characterization to facilitate rational drug design. Presented at National Symposium on "Innovation in TB Diagnostics, Drug Targets and Biomarkers",

				held at Mahatma Gandhi Institute of Medical Sciences, Sevagram, 27-29 th Jan 2014.
19.	Vinoth Rajendran, Mohsin Raza, Shilpa Rohra and Prahlad C. Ghosh	2014	International	Best Poster Award. Evaluation of liposomal monensin in combination with artemisinin on growth inhibition of blood stages of <i>Plasmodium falciparum</i> (3D7) <i>in vitro</i> . International conference on “Emerging trends of Nanotechnology in drug discovery”, held at University of Delhi South Campus. 26-27 May.
20.	Vinoth Rajendran, Manendra Pachauri, Mohsin Raza	2014	National	Travel fellowship award to the team. Selected for Biotechnology Entrepreneurship student team at “ABLE-BEST INDIA 2014”, held at Fortune Select Trinity Hotel, Bangalore. 13-17 October.
21.	Neha Jaiswal	2014	International	Young Scientist Travel Award by DST and ICMR, Govt. of India for 4th World Congress on Cancer Science and Therapy, Chicago, USA, 20-22 October, 2014.
22.	Neha Jaiswal	2014	International	Selected for Oral Presentation in Young Scientist Forum. Modulation of FoxM1b SUMOylation by High-Risk HPV and its significance in cervical cancer. 4th World Congress on Cancer Science and Therapy, Chicago, USA, 20-22 October, 2014.
23.	Amit Kumar, Suneel Kateriya, Suman Kundu	2014	International	Selected for Oral presentation. Hemoglobins from extremophilic and mesophilic algae: a comparative study, XVIII International Conference on Oxygen-binding and sensing proteins, 6 th -10 th July, 2014, University of Sheffield, Sheffield, United Kingdom.
24.	Akshay Rohilla	2014	International	Best Poster Award. Disruption of mycobactin biosynthesis leads to attenuation of <i>Mycobacterium tuberculosis</i> for growth and virulence, International Conference on Recent advances in Structural Biology and Drug discovery, IIT Roorkee, 9 th -11 th October, 2014
25.	Peeyush Ranjan, Mayanka Awasthi and Suneel Kateriya	2013	Local / University	Third Best Poster Award Microalga: mimicking the mammalian like IFT mediated trafficking of rhodopsin, National Science Day Symposium, University of Delhi South Campus, 28th February 2013, New Delhi
26.	Priyanka Chauhan	2013	Local / University	Best Oral Presentation Award. Mycobactin biosynthesis is essential for the growth and virulence of <i>Mycobacterium tuberculosis</i> : An attractive target for therapeutic interventions. National Science Day Symposium, 28th February 2013, held at University of Delhi South Campus.
27.	Ritika Kar, Priyanka Chauhan, Garima Khare, Prachi Nangpal, Anil K. Tyagi	2013	Local / University	Best Poster Award. rBCG85C – A Superior Vaccine than BCG: Modifications for Human Clinical Trials. National Science Day Symposium, 28th February 2013, held at University of Delhi South Campus.
28.	Sanjay Kumar Dey, B.K. Thelma and Suman Kundu	2013	National	Third Best Poster award. Dopamine- β -hydroxylase as a novel drug target for cardiovascular diseases: <i>In silico</i> identification and <i>in vitro</i> validation of novel inhibitors. Conference on Recent Advances in Computational Drug Design, Indian Institute of Science, Bangalore, 16-17 September, 2013.
29.	Peeyush Ranjan, Mayanka Awasthi,	2013	International	Junior Scientist Award. Cellular trafficking of phototropin and novel modular rhodopsin is mediated by animal like IFT machinery in <i>Chlamydomonas reinhardtii</i> , 7th Annual

	Sindhu Kandoth Veetil and Suneel Kateriya			Convention of ABAP & International Conference on Plant Biotechnology, Molecular Medicine & Human Health, New Delhi, India, October 18th-20th, 2013.
30.	Sanjay Kumar Dey	2013	National	Ratna Phadke Young Scientist Award (Oral). Identification of Novel Inhibitors against Human Dopamine- β -Hydroxylase, a Drug Target for Cardiovascular Diseases. National Symposium on Frontiers of Biophysics, Biotechnology and Bioinformatics and 37 th Annual Meeting of Indian Biophysical Society (IBS), University of Mumbai, Kalina Campus, Mumbai, India, 13-16 January, 2013.
31.	Sanjay Kumar Dey, Abhishika Srivastava, Rachana Muley, B.K. Thelma and Suman Kundu	2013	National	Best Poster Award. <i>In silico</i> identification and <i>in vitro</i> validation of novel inhibitors to combat cardiovascular diseases exploiting dopamine- β -hydroxylase as the drug target. SYSCON-2013 on Interfacing Basic and Translational Research, All India Institute of Medical Sciences, New Delhi, India, 23 August, 2013.
32.	Manish Shandilya, Ridhima Gomkale, Suneel Kateriya and Suman Kundu	2013	National	Selected for Oral presentation. An insight into function of novel globins: Characterization of hemoglobins and their reductase partners from <i>Chlamydomonas reinhardtii</i> , National Conference on Recent Trends in Structural Biology, 16th-18th December 2013, Jamia Millia Islamia, New Delhi, India.
33.	Amit Kumar	2013	National	Oral Presentation Award. Novel hemoglobins from plant and algae: Discovery to application, Biospark, School of Lifesciences, Jawaharlal Nehru University, February 16 th , 2013.
34.	Amit Kumar, Manish Shandilya, Rudra Kashyap, Usha Yadav, V.A. Semionkin, M. I. Oshtrakh, Suneel Kateriya, Suman Kundu	2013	International	Poster Travel Award. Discovery to applications: Snapshots of a globin journey. International Conference on Biomolecular Forms and Functions, A Celebration of 50 Years of the Ramchandran Map, Indian Institute of Sciences, Bangalore, January 8 th -11 th , 2013.
35.	Garima Khare	2012	National	Best Oral Presentation Award. Determination of the structure of Thiamin Phosphate Synthase (MtTPS) of <i>Mycobacterium tuberculosis</i> by homology modeling and identification of inhibitors by using virtual screening. Young Scientist Oral presentation at Symposium on "Microbes in Health and Agriculture", 2012, held at Jawaharlal Nehru University, Delhi.
36.	Manendra Pachauri and Prahlad C. Ghosh	2012	International	Award of Excellence. Combination of Curcumin and Monensin Loaded Poly(lactic-co-glycolic acid) Nanoparticles for Cancer Therapy. 3rd International Conference of Carcinogenesis Foundation-Frontiers in Carcinogenesis and Preventive Oncology Molecular Mechanisms to Therapeutics, New Delhi, India, 19-21 November, 2012.
37.	Vaibhav Chand, Rince John, Neha Jaiswal, Vandana and Alo Nag	2012	International	Oral presentation and Excellence Award. Downregulation of hADA3 Promotes Epithelial to Mesenchymal Transition in Cervical Cancer, 3rd International Conference of Carcinogenesis Foundation- Frontiers in Carcinogenesis and Preventive Oncology Molecular Mechanisms to Therapeutics, RML Hospital, New Delhi India, 19-21 November, 2012

38.	Neha Jaiswal, Rince John, Vaibhav Chand and Alo Nag	2012	International	Oral presentation and Excellence Award. FoxM1: A Key Player in HPV-Mediated Oncogenesis, 3rd International Conference of the Carcinogenesis Foundation - Frontiers in Carcinogenesis and Preventive Oncology : Molecular Mechanisms to Therapeutics, RML hospital, New-Delhi, India, 19-21 November, 2012.
39.	Amit Kumar	2012	International	Boehringer Ingelheim Fonds Travel Fellowship for visit to Ural Federal State University, Russia for 3 months (Oct-Dec) for research work.
40.	Pooja Tiwari and P.C. Ghosh	2012	International	Awarded International travel grant by ICMR, Government of India for poster presentation entitled "Stearylamine loaded PLGA nanoparticle for treatment of malaria" at International conference "Colloids and Nanomedicine 2012" in July 2012 at Amsterdam, Netherlands.

Post-Graduate Students

Sr. No	Name of Students (M.Sc./M.Phil.)	Year	National / International	Award / Recognition
1	Juhi Arora	2016	National	Indian Academy of Sciences Summer Fellowship for short term research
2	Gagandeep Kaur,	2015	Local / University	Poster Prize. Targeting Cytochrome b5 reductase3 to combat cardiovascular diseases, 5 th National Science Day Symposium, 27 th -28 th February, 2015, University of Delhi South Campus, New Delhi
3	Priyanka Chowdhury	2012	National	Indian Academy of Sciences Summer Fellowship for short term research
4	Pragya Sidhwani	2012	International	Khorana Summer Program for Scholars, Indo-US Science and Technology Forum for short term research in Wisconsin, USA

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

Sr No	Name of Seminars / Conferences/ Workshops Organized; Venue	Year / Date	Source of Funding	National / International	Outstanding Participants
1.	Advances in Disease Biology and Disease Management	March 18, 2017	UGC-SAP Symposium, Department of Biochemistry, University of Delhi South Campus	National	Prof. Ravinder Goswami , AIIMS, New Delhi Dr. Ellora Sen , NBRC, Gurugram Dr. Suwendra Nath Bhattacharyya , IICB, Kolkata Dr. Anil Koul , IMTECH, Chandigarh Prof. Seyed E. Hasnain , Jamia Hamdard University, New Delhi
2.	Genome Biology and Big Data Bioinformatics, Biotech Centre Auditorium, University of Delhi South Campus	March 29, 2016	DBT, Govt. of India	National	Vinod Scaria , IGIB, New Delhi; Amit Dutt , (ACTREC), Mumbai

					Nisheeth Agarwal , (THSTI), Faridabad Radhika Nair , (RGCB), Thiruvananthapuram
3.	Frontiers in Proteomics Research, S.P. Jain Auditorium, University of Delhi South Campus	March 18, 2016	Proteomics Society, India and R&D Grant, DU	National	Dr. Niranjana Chakraborty, NIPGR, New Delhi; Dr. Debasish Mukhopadhyay , SINP, Kolkata
4.	National Workshop on Genome Informatics, Microarray Facility, University of Delhi South Campus	July 15-18, 2015	Trainee Fees and Facility Support	National	-
5.	Chemical Diversity in Biology, S.P. Jain Auditorium, University of Delhi South Campus	September 18, 2013	DU-DST PURSE Grant	University level	Prof. P. Balaram , Director, IISc. Bangalore
6.	Ramachandran Manifestation: Peptide to Proteome, Commemorating 50 years of Ramachandran Map, S.P. Jain Auditorium, University of Delhi South Campus and Auditorium, Sri Venkateswara College	March 14-15, 2013	UGC-SAP, DBT Distributed Information Sub-Centre, South Campus and, Sri Venkateswara College	National	Prof. D. Balasubramanian , Research Director, L.V. Prasad Eye Institute and Prof. A.G. Rao , Chair, Department of Biochemistry, Biophysics and Molecular Biology, Iowa State University, USA

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

1. The students and faculty members observe very high standards in respect of ethics for publication, use of animals for research, biosafety etc. Any project involving radioactivity is monitored by departmental radiation safety officer. Every departmental member is regularly exposed to procedures to safeguard any type of malpractices.
2. All the laboratory supervisors ensure that the research work undertaken under their guidance and supervision is original. They also ensure that the work is carried out by the student(s) themselves. For writing the thesis/reports/scientific manuscripts the supervisors ensure that these are original writings. Plagiarism is avoided at all costs using appropriate softwares and alertness by supervisors.
3. It is also ensured that all research projects are routed through appropriate committees like Institutional Bio-safety Committee (IBSC) & Animal ethics committee and Institutional Ethics Committee.
4. The supervisors ensure that Good Microbiological Practices (GMP) and Good Laboratory Practices (GLP) are followed during research including the P3 level containment practices as and when appropriate.
5. The department follows proper protocols for bio-waste management, which are collected in appropriate containers marked for their containers and safely disposed through government approved agency.

32. Student profile programme-wise:

Name of the Programme (refer to question no. 4)	Year	Applications received	Selected		Pass percentage	
			Male	Female	Male	Female
M.Sc. Biochemistry	2012-2013	89	01	09	100%	100%
	2013-2014	166	01	11	100%	100%
	2014-2015	168	01	10	100%	100%
	2015-2016	255	00	12	-	Result awaited
	2016-2017	781	03	9	Result awaited	Result awaited
	Total	1459	06	51	100%	100%
M.Phil. Biotechnology*	2012-2013	37	-	06	-	100%
	2013-2014	149	-	06	-	100%
	2014-2015	41	01	05	100%	100%
	2015-2016	27	01	04(1 dropped)	Result awaited	Result awaited
	Total	254	02	21	100%	100%
Ph.D. Biochemistry ^{&}	2012-2013	N/A ^{&}	05	08	Ongoing	Ongoing
	2013-2014	N/A ^{&}	04	13	Ongoing	Ongoing
	2014-2015	N/A ^{&}	01	06	Ongoing	Ongoing
	2015-2016	172	03	03	Ongoing	Ongoing
	2016-2017	237	02	08	Ongoing	Ongoing
	Total	N/A^{&}	15	38	Ongoing	Ongoing

*In collaboration with other departments of FIAS. [&]Till 2015 there was no annual or biannual system. As per the existing ordinance VIB, students with fellowship were enrolled directly, and those with fellowship in the project were interviewed before enrollment. Since July 2015, Ph.D. entrance is through written examination followed by interview.

33. Diversity of students:

Name of the Programme (refer to question no. 4)	Year	% of students from the same university (no/	% of students from other universities within the State (no/	% of students from	% of students from other countries
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		Total no)	Total no)	universities outside the State (no/ Total no)	(no/ Total no)
M.Sc. Biochemistry	2012-2013	100%	0%	0%	0%
	2013-2014	100%	0%	0%	0%
	2014-2015	95%	0%	5%	0%
	2015-2016	100%	0%	0%	0%
	2016-2017	100%	0%	0%	0%
	Average	98%	0%	2%	0%
M.Phil. Biotechnology*	Average	60%	0%	40%	0%
Ph.D. Biochemistry	2012-2013	43%	0%	57%	0%
	2013-2014	25%	15%	60%	0%
	2014-2015	14%	0%	86%	0%
	2015-2016	33%	0%	67%	0%
	2016-2017	50%	0%	50%	0%
	Average	30%	4%	66%	0%

*In collaboration with other departments of FIAS

- 34. How many students have cleared Civil Services and Defence Services examinations, NET, SLET, GATE and other competitive examinations? Give details category-wise.**

	2012-13	2013-14	2014-15	2015-16	2016-17
NET (CSIR+UGC)	05	08 (1 OBC)	06	07 (1 OBC, 1 SC)	02
SLET	0	0	0	0	0
ICMR	01 (1 OBC)	0	0	0	0
DBT	0	0	0	0	0
DST	0	0	0	0	0
GATE	06	09	08	07	0

35. Student progression:

2012-13	Student progression	Percentage against enrolled
	UG to PG	10% join DU; remaining go to other Universities
	PG to M.Phil.	0%
	PG to Ph.D.	20% join DU; remaining go to other National & International Institutions
	Ph.D. to Post-Doctoral	25% join DU; remaining go to other National & International Institutions
	Employed • Campus selection • Other than campus recruitment.	Not Applicable 100%
	Entrepreneurs	2%
2013-14	UG to PG	7% join DU; remaining go to other Universities
	PG to M.Phil.	0%
	PG to Ph.D.	20% join DU; remaining go to other National & International Institutions
	Ph.D. to Post-Doctoral	20% join DU; remaining go to other National & International Institutions
	Employed • Campus selection • Other than campus recruitment.	Not Applicable 100%
	Entrepreneurs	4%
2014-15	UG to PG	8% join DU; remaining go to other Universities
	PG to M.Phil.	0%
	PG to Ph.D.	20% join DU; remaining go to other National & International Institutions
	Ph.D. to Post-Doctoral	20% join DU; remaining go to other National & International Institutions
	Employed • Campus selection • Other than campus recruitment.	Not Applicable 100%
	Entrepreneurs	5%
2015-16	UG to PG	10% join DU; remaining go to other Universities
	PG to M.Phil.	0%
	PG to Ph.D.	20% join DU; remaining go to other National & International Institutions
	Ph.D. to Post-Doctoral	15% join DU; remaining go to other National & International Institutions
	Employed • Campus selection • Other than campus recruitment.	Not Applicable 100%
	Entrepreneurs	2%
2016-17	UG to PG	10% join DU; remaining go to other Universities
	PG to M.Phil.	0%
	PG to Ph.D.	20% join DU; remaining go to other National & International Institutions
	Ph.D. to Post-Doctoral	10% join DU; remaining go to other National & International Institutions
	Employed • Campus selection • Other than campus recruitment.	Not Applicable 100%

	Entrepreneurs	1%

36. Diversity of staff*:

2012-13	Percentage of faculty who are graduates	
	of the same university	43%
	from other universities within the State	Nil
	from universities from other States	43%
2013-14	Percentage of faculty who are graduates	
	of the same university	43%
	from other universities within the State	Nil
	from universities from other States	43%
2014-15	Percentage of faculty who are graduates	
	of the same university	55%
	from other universities within the State	Nil
	from universities from other States	31%
2015-16	Percentage of faculty who are graduates	
	of the same university	55%
	from other universities within the State	Nil
	from universities from other States	31%
2016-17	Percentage of faculty who are graduates	
	of the same university	55%
	from other universities within the State	Nil
	from universities from other States	31%
	from universities outside the country	14%

*Ph.D. degrees of faculties taken into consideration for calculating the % values.

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment Period

Not applicable

38. Present details of departmental infrastructural facilities with regard to

a) Library : Departmental library receives 10 journals and has a collection about 200 books which are primarily used by M.Sc. students.

b) Internet facilities for staff and students: All research laboratories, M.Sc. laboratories and classrooms and office are equipped with Internet Facilities

- c) **Total number of class rooms** : Two
- d) **Class rooms with ICT facility:** The classrooms are equipped with Desktop Computers, Internet Facilities and LCD Projectors
- e) **Students' laboratories** : M.Sc. laboratories are equipped with modern instruments, Desktop Computer, overhead Projectors and Internet Facilities and have work benches to carry out experiments
- f) **Research laboratories** : Research laboratories are equipped with various instruments related to specialization of the laboratories. All laboratories have state-of-art research facilities

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

- a) **from the host institution/university:** 24
- b) **from other institutions/universities :** 46

Doctoral students

From Host Institution / University				
2012-13	2013-14	2014-15	2015-16	2016-17
Sheetal Uppal	Mohsin Raza	Yama Atri	Sanjeev Kumar Yadav	Simran Kaur
Richa Arya	Swati Singh	Simran Kaur		Chetna Dhembla
Enna Dogra	Vaishali Verma			Aakriti
Vandana				
Prachi Nangpal				
Ritika Kar				
Total = 06	Total = 03	Total = 01	Total = 02	
From Other Institutions / Universities				
2012-13	2013-14	2014-15	2015-16	2016-17
Amit Kumar	Pushpanjali Dasauni	Pradeep Singh Cheema	Mohd. Asim Khan	Varsha Verma
Manish Shandilya	Deepa Jha		Manisha Saini	Ankit Pal
Deepak Jangir	Vinoth Rajendran	Komal Sharma	Gaurav Kumar	Prasidhi Tyagi
Sanjay Kumar Dey	Charanpreet Kaur	Shivani Sharma	Hina Bharti	
Vaibhav Chand	Payal Grover	Shubhita Mathur	Deeptashree Nandi	

Rince John	Kapil Mathur	Nidhi Gupta		
Neha Jaiswal	Shingar Sharma			
Pallavi Singhal	Akshay Rohilla			
Peeyush Ranjan				
Mayanka Awasthi				
Meenakshi				
Manendra Pachauri				
Pooja Tiwari				
Sunandini Chandra				
Nirmalya Ganguli				
Mumtaz Khan				
Ajay Singh				
Nimisha Srivastava				
Rupangi Verma				
Priyanka Chauhan				
Total = 20	Total = 08	Total = 06	Total = 04	Total = 06

Post-doctoral students and Research Associates

From Host Institution / University				
2012-13	2013-14	2014-15	2015-16	2016-17
Garima Khare	Rupangi Verma	P. Vineel Reddy	Charanpreet Kaur	Prachi Nangpal
	Priyanka Chauhan		Payal Grover	Ritika Kar
	Ajay Singh			
	Nimisha Srivastava			
Total = 01	Total = 04	Total = 01	Total = 02	Total = 02
From Other Institutions / Universities				
2012-13	2013-14	2014-15	2015-16	
-	-	Alisha Dhiman	Pankaj Prabhakar	
-	-	Kalpana Sagar		
		Total = 02	Total = 01	

40. Number of postgraduate students getting financial assistance from the university (*M.Sc. / M.Phil.*): 15
41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology
- None required.
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?

The feedback of the faculty on curriculum is sought during the departmental meetings which are held almost every month. This is taken into account while the course revision is undertaken.

b. students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?

The feedback of the students on curriculum is undertaken at the end of the semester in terms of discussions. During the project presentation by the final year students, who are more mature and ready to give good advice based on their experience, discussion is carried out about the ways to improve the programme and teaching methodology. Teachers implement such suggestions in their individual capacity. The final year students at the end of their course provide written anonymous feedback in proforma provided to them. This is taken into consideration during the curriculum revision or re-organization.

c. alumni and employers on the programmes offered and how does the department utilize the feedback?

The alumni who are employed to teach Biochemistry course at undergraduate level in the Delhi University colleges regularly give feedback for improvement/revision of the curriculum.

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

	Name	Designation	Address
1	Dr. Murali D. Bashyam	Scientist	CDFD, Hyderabad
2	Dr. Ashima Kushwaha	Assistant Professor	Indian Institute of Scientific Research, Gandhinagar
3	Dr. Deepak Kaushal	Professor	Professor of Microbiology & Immunology, Tulane National Primate Research Center, 18703 Three Rivers Rd, Covington LA 70433
4	Dr. Sanjay Gupta	Professor	Department of Biotechnology, Jaypee Institute of Information Technology, Noida, UP
5	Dr. Sandeep Saxena	Scientist	NII, New Delhi
6	Dr. Seemha Rai	Assistant Professor	Panjab University
7	Dr. Vivek Rao	Scientist	Institute of Genomics and Integrative Biology, Mall Road, Delhi
8	Dr. Siddhartha Jana	Associate Professor	Dept. of Biological Sciences, Indian Association of Cultivation of Science, Kolkata
9	Dr. Ramandeep Singh	Assistant Professor	THSTI, Gurgaon
10	Dr. Amit Singh	Assistant Professor	IISC, Bangalore

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

Year	Name of External Experts	Designation& Address	Subject of Special Lectures / Seminars
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2012-13	Dr. G. Balakrish Nair	Executive Director, THSTI, Gurgaon	From Genomes to Public Health : The cholera example
	Dr. Purnananda Guptasharma	Professor, IISER Mohali	Protein Engineering
2013-14	Dr. M. Brunori	Professor and Distinguished Scientist, University of Rome, Italy	Morphogenesis of Proteins
	Dr. Suresh Kumar Verma	Research Assistant Professor, Northwestern University, USA	Anti-inflammatory approach for treatment of heart failure
2014-15	Dr. Sanjay Gupta	Assoc. Professor, Jaypee Institute of Information Technology, Noida, UP	Protein-interaction technologies
	Dr. Satyajit Rath	Senior Scientist, NII, New Delhi	Cellular immunology
	Dr. Anna George	Senior Scientist, NII, New Delhi	Cellular immunology
	Dr. Vinita Bal	Senior Scientist, NII, New Delhi	Molecular immunology
	Prof. Gobardhan Das	Professor, SCMM, JNU, New Delhi	Cellular Immunology
2015-16	Dr. Ruchi Anand	Associate Professor, Indian Institute of Technology Bombay, Mumbai	Structural basis of transcriptional regulation
	Dr. Chandi C. Mandal	Associate Professor, Dept. of Biochemistry, Central Univ. of Rajasthan.	A novel link between Cholesterol and Cancer

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

Teaching is carried out by a combination of the following:

1. PowerPoint and Chalk and Board lectures by teachers
2. Interactive discussion with students during the lectures
3. Periodic question-answer sessions during the classroom teaching
4. Writing assignments given to students
5. Seminars (research papers, case studies, reviews) by the students during classroom teaching
6. Lecture videos by Nobel Laureates and experts
7. Quiz, Puzzles, Analytical problem solving
8. Presentations by students on current science topics and new discoveries
9. Hands on training in different aspects of the subject in laboratories
10. Short projects on topics of biochemistry assigned to students
11. After class one-on-one discussion with teachers to clarify doubts
12. Allowing students to present new papers in Journal Club seminars where the entire department participates

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

That the programme objectives are met is ensured by:

1. Taking feedback from the students, teachers and alumni
2. Discussions in departmental meetings
3. With revisions and re-organization in courses from time to time
4. Periodic evaluation of the students
5. Monitoring the performance of the students during examinations
6. Through monitoring performance of students in National level tests
7. By allowing students to interact with external experts and taking their feedback about the students

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

Faculties act as mentors for DST Inspire programme, as judges and motivators in scientific and academic events (like science model making, innovation) in colleges as well as schools. Faculties organize visits of school and college students to campus and research labs. Faculties train students for free in the labs during summer through Summer Research Programme organized by the science academies of India or even otherwise. Senior students enrolled in post-graduate programme of University department visit their respective colleges to interact with their juniors.

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

1. The faculty members regularly visit colleges of the University for interacting with undergraduate students, deliver lectures and seminars and teach specialized courses.
2. The faculty members also deliver lectures in different institutions across the country to spread the knowledge they have gained in science and to motivate, inspire and attract bright students to science.
3. Faculties also participate in workshops and conferences to share their research findings and build networks for collaborative and translational research.
4. Participation of the students in lectures/ seminars delivered by external experts in the department as well as in other departments.
2. Mandatory participation of the students in all Pre-Ph.D. seminars and Ph.D. *viva-voce* examinations in the department.
3. Participation of the students in activities like poster presentations, quiz, collage etc. during the annual science day event on campus.
4. Participation of the students in seminars/workshops conferences being organized in the department. The students of the department also present posters and oral presentations in various national and international conferences

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

No

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

One of the commendable contributions of the department has been the creation and sustenance of a rigorous, dynamic and vibrant master’s programme in biochemistry that

imparts conventional and new knowledge in an innovative way, which ensures that fresh, young minds are trained and oriented to create newer knowledge in turn. The two-year full time programme is considered one of the best in the country as evidenced by the quality of students who complete this course and their achievements. They qualify national level examinations with ease and get absorbed into Ph.D. programmes in the best institutions worldwide.

The department has a rich tradition of an equally vibrant research programme in both basic and innovative applied research. While basic research has resulted in large number of publications in high impact journals, applied research has resulted in patents (both national and international) and also successful transfer of developed technologies to Indian industry, which converted the leads from the department into commercialized products. Notable examples of technologies transferred and commercialized are:

- (1) Liposomal Amphotericin B - commercialized by Life Care Innovations, Gurgaon.
- (2) Monoclonal antibodies to M13 phage protein - commercialized by M/s GE HealthCare (multinational).
- (3) Rapid test for HIV (AIDS) - commercialized by M/s Cadilla Pharmaceuticals Limited, Ahmedabad
- (4) Detection of *M. tuberculosis* in culture - transferred to M/s SPAN Diagnostics Limited, Surat and is likely to be available in the market shortly as the product has received approval from Drug Controller General of India.
- (5) Virosome Technology for targeted delivery – transferred to Pancea Biotech. India, New Delhi.

Additionally, there are many leads in the area of vaccine and drug development, gene and drug delivery and diagnostics especially in relation to diseases like tuberculosis, malaria and jaundice/hepatitis, some of which are in clinical trials as well. Many of the faculty members are working in close collaboration with industry or institutions, which are responsible for taking leads to the next level in the process of products development.

The department is equally at ease in basic research for newer knowledge creation with potential for translation. Several research initiatives in mechanistic understanding of pathogenesis, host virus membrane fusion, liposomal and nanomaterial formulation, oncogenesis, photosignalling, amyloidosis, stability and structure-function relationship of proteins and others are ongoing. The department has also taken lead in whole genome sequencing of indigenous pathogens like *Mycobacterium indicus pranii*, which has opened up new horizon in understanding the evolution of pathogenesis in mycobacterial species and leprosy. It represented the first completed genome of a new species of bacteria published from India. More recently, a new strategy was developed to stabilize hemoglobins that could be used to engineer heme stability in hemoglobin based oxygen carriers with potential as artificial blood substitute. The “proof of concept” experiments saw unprecedented success and efforts are on to take it to the next level. In addition, novel peptides were also designed to combat cervical cancer, a deadly women health problem in India, and a provisional patent has been filed.

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

Strength:

- Highly active research in the areas of frontiers of modern biology with special emphasis on human diseases. The emphasis is also laid on the translational aspect of the research work through interaction and participation of industry.
- The M.Sc. programme in addition to theoretical knowledge provides considerable emphasis on the hand on experience in the fore-front areas of biochemistry through a dissertation based on research work and thesis writing.
- Special emphasis on critical review of literature and presentation by way of training in seminars.
- Very well equipped international standard laboratories
- Financial support from UGC-SAP programme. Also, high level funding for research from funding agencies such as DBT, DST, UGC, ICMR and CSIR.

Weaknesses:

- Space constraints to further expansion.
- Shortage of grant for post-graduate teaching and departmental infrastructures.

Opportunities:

1. Emerging areas of translational biotechnology such as diagnostics strategies and development of kits for commercialization. Development of TB vaccines to channel into clinical trials, Gene delivery strategies for humans through virosomes and liposomes, development of new analogs of hemoglobins, novel anti-cancer and anti-malarial agents, Industrial interaction
2. Attracting industry for R&D collaborations.

Challenges:

Streamlining of commercialization of processes and products.

52. Future plans of the department.

1. Future plans of the department include elevation of its teaching and research performance to an even higher stratum that suits the dynamics of the changing times and caters to the emerging needs of the country.
2. The department envisions the need to convert the classical knowledge of biochemistry into more meaningful deliverables required to alleviate human suffering in general. With the tremendous progress both academically as well as technically, the need to translate conventional knowledge into innovations for management as well as amelioration of human diseases will be emphasized. Hence, the department will expand its ongoing programme in the areas of diagnostics, prophylactics and therapeutics for diverse human diseases.
3. While the existing tuberculosis, malaria and hepatitis research will continue, the department will venture into several other areas like cardiovascular diseases, cervical and breast and liver cancers, hemoglobinopathies, artificial blood substitutes, leishmaniasis and neurodegenerative diseases with research programme on innovations in mechanistic understanding, target identification and validation, small molecule and peptide screening and newer tools for diagnostics and prophylactics.

4. The department will be committed to creation of manpower for both basic mechanistic investigations as well as applied translational aspects of human diseases. It will expand its scope through initiation of research projects in relevant areas, like systems biology, genetics and computational biology via newly appointed faculties to complement the existing strengths.
5. The teaching curriculum will witness constant innovations and further hands-on knowledge. We plan yet another re-organization of the courses based on recent feedback from both teachers and students. Emphasis will be more on research based learning.