

Revised Year-wise (Updated to 2017)

**National Assessment & Accreditation Council
(NAAC)**

Evaluative Report

(2012-17)



Department of Microbiology

**University of Delhi South Campus
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1. Year of establishment : 1984

2. Is the Department part of a School/Faculty of the University?

Yes, Faculty of Interdisciplinary & Applied Sciences (FIAS)

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

| Sl. No. | Name of Programme | UG/PG/Doctoral |
|---------|----------------------|--------------------|
| 1. | M.Sc. Microbiology | PG Programme |
| 2. | Ph.D. (Microbiology) | Doctoral Programme |

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

| Designation | Sanctioned | Filled | Actual (including CAS & MPS) |
|----------------------|------------|-------------------------------------|------------------------------|
| Professor | 02 | 01 | 05 |
| Associate Professors | 03 | 02 (Both promoted to Professors) | 00 |
| Asst. Professors | 05 | 02 (Both promoted to Professors) | 02 |
| Others | Nil | Nil | Nil |

5. 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

Name of the funding Agencies:

- Department of Biotechnology (DBT)
- Department of Science and Technology (DST)
- University Grant Commission (UGC)
- Council of Scientific and Industrial Research (CSIR)
- Ministry of Food Processing Industries (MoFPI)
- Indian Council of Medical Research (ICMR)
- Ministry of New and Renewable Energy (MNRE)
- Biotechnology Industry Research Assistance Council (BIRAC)
- Indian Council of Agricultural Research (ICAR)

Prof. R. K. Saxena

| Title of the Research Project | Funding Agency | Ongoing/ Sanctioned | Grant (in Lacs) INR |
|---|----------------|---------------------|---------------------|
| Joint Indo-Finland RFBR - Butanol from sustainable sources | DST | 2012-2014 | 34.12 |
| Joint Indo-Russian enzymatic transformation of Fucodians as a base for drug design, structural and functional investigations from Indian and Russian seaweeds | DST | 2012-14 | 22.00 |

Prof. T. Satyanarayana

| | | | |
|---|-----------|---------|-------|
| Cloning and expression of amylopullulanase of <i>G. thermoleovorans</i> | DST-PURSE | 2012-15 | 24.07 |
| Cloning and expression of cell-bound phytase encoding gene of <i>P. anomala</i> in <i>Pichia pastoris</i> | UGC | 2012-15 | 13.27 |
| Production, characterization and applicability of acidic amylase of <i>Bacillus acidicola</i> TSAS 1 | DST | 2012-15 | 33.31 |
| Production of recombinant..... phytase of <i>Sporotrichum thermophile</i> | DBT | 2013-16 | 23.25 |
| Diversity of carboxidotrophic... ..actinobacteria in Manipur | DBT | 2013-16 | 30.65 |

Prof. R.C. Kuhad

| | | | |
|--|------|---------|--------|
| Development of seaweed biorefinery and pilot demonstration of Bioethanol production | DBT | 2013-16 | 34.47 |
| Development of pretreatment strategies and bioprocess for improved production of cellulolytic enzymes and ethanol from crop byproduct for demonstration at pilot plant | MNRE | 2013-16 | 148.47 |
| Optimization of cellulase production from <i>Thermoascus aurantiacus</i> RCK 2011, a thermophilic fungus and its application in cellulose hydrolysis | UGC | 2013-16 | 10.51 |

Prof Rani Gupta

| | | | |
|---|-----------|---------|-------|
| Genome wide survey of lipases from <i>Yarrowia lipolytica</i> : cloning, expression, biochemical characterization and applications | DBT | 2014-17 | 44.43 |
| Utilization of peptidomimetics to design small molecules from a novel P1 peptide, their interaction with beta amyloid oligomers by <i>in-silico</i> and <i>in-vitro</i> approaches, and its efficiency in clearing beta amyloid load by <i>ex vivo</i> model of Alzheimer's disease | BIRAC-DBT | 2012-16 | 22.00 |
| Enzymatic synthesis of Theanine: A nutraceutical using microbial γ -glutamyl transpeptidase | MoFPI | 2010-13 | 23.00 |
| Keratinase from <i>Bacillus pumilus</i> for degradation of recalcitrant proteins: Process optimization and Biochemical | DBT | 2010-13 | 29.00 |
| Biochemical and molecular characterization of and enantioselective lipase from <i>Trichosporan ashaii</i> MSR-54 | CSIR | 2010-13 | 21.83 |

Prof. J.S. Viridi

| | | | |
|--|-----------|---------|-------|
| Comparative genomics of β -lactamase genes including <i>in-silico</i> analysis to identify sequences for β -lactamase inhibitors | ICMR | 2012-15 | 35.00 |
| Resistance-genes-array based rapid detection of antimicrobial resistance and algorithm driven therapy | BIRAC-DBT | 2017-18 | 12.90 |

Dr. Swati Saha

| | | | |
|--|------|---------|-------|
| Characterization of the DNA replication proteins Cdc6/ORC1 and MCM in the archaeon <i>Picrophilus torridus</i> | DST | 2011-14 | 39.00 |
| Functional characterization of histone acetyltransferases HAT2 and HAT3 in the protozoan parasite <i>Leishmania donovani</i> | DBT | 2012-15 | 62.00 |
| Functional characterization of histone acetylases HAT4 in <i>Leishmania donovani</i> | CSIR | 2012-15 | 27.00 |
| Investigating DNA replication protein cdc45 in <i>Leishmania</i> | DST | 2015-18 | 49.50 |
| Investigation of the roles of GNAT-family histone acetyltransferases Elp 3a and Elp 3b in the protozoan <i>Leishmania donovani</i> | DBT | 2016-19 | 67.82 |

Dr. Y.P. Khasa

| | | | |
|--|-----|---------|-------|
| Cloning expression and bioprocess optimization of recombinant human interleukin-7 (hIL-7) in methylotrophic yeast <i>Pichia Pastoris</i> | DBT | 2011-15 | 30.50 |
| Bioprocess optimization of human granulocyte macrophage colony Stimulating Factor (hGM-CSF) expression in <i>Escherichia coli</i> | DST | 2012-15 | 25.00 |
| Bioprocess optimization of scFv production against hGM-CSF in methylotrophic yeast, <i>Pichia pastoris</i> | UGC | 2012-15 | 8.45 |
| Bioprocess development of recombinant therapeutics in <i>Pichia pastoris</i> : Human Interleukin-3 (hIL-3) as a model system | DBT | 2013-16 | 51.59 |

Dr. Rajeev Kaul

| | | | |
|---|------|---------|-------|
| Mechanism of EBV latency control by inflammation | DBT | 2012-15 | 40.00 |
| Hepatitis C Virus & expression of cox-2 | DBT | 2012-15 | 55.00 |
| Viral metagenomics | DST | 2012-15 | 40.00 |
| Generations of EBV transformed LCLs of diverse origin | UGC | 2012-15 | 14.00 |
| Understanding the molecular basis of <i>peste-des-petits</i> ruminants virus mediated host immune modulation for development of next generation vaccine | ICAR | 2017-20 | 58.00 |

b) International Funding Agencies: Nil

c) Total Grant Received: 1130.14 Lac (During the 5 year period: 2012-17)

6. Inter-institutional collaborative projects and associated grants received

a) National collaboration b) International collaboration

National collaboration

| Name of the Faculty | Collaborated Agency |
|------------------------------|--|
| Prof. R.K.Saxena | Department of Chemistry, University of Delhi, Delhi |
| Prof. T.Satyanarayana | G.B.Pant University of Agriculture and Technology, Pantnagar |
| | IIT Delhi, Delhi, Osmania University, Hyderabad and Indian |

| | |
|-------------------------|---|
| Prof. R.C. Kuhad | Institute of Chemical Technology Hyderabad |
| | Central Pulp & Paper Research Institute (CPPRI) Saharanpur |
| | Department of Botany, University of Delhi, Delhi |
| Prof. Rani Gupta | National Brain Research Centre (NBRC), Manesar, Gurgaon (Haryana) |
| | M/s Lead invent, Manesar, Gurgaon (Haryana) |
| Prof. J.S.Virdi | Institute of Genomics & Integrative Biology (IGIB), Delhi |
| | Department of Biophysics, University of Delhi South Campus, New Delhi |

International Collaboration

| Name of the Faculty | Collaborated Agency |
|--------------------------|---|
| Prof. R.K. Saxena | Joint Indo-Finland RFBR “Butanol from sustainable sources” (DST) |
| | Joint Indo-Russian Enzymatic Transformation of Fucodians as a base for Drug Design, structural and functional investigations from Indian and Russian seaweeds (DST) |

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

| Sl. No. | Projects Funding Agency | Grant Received |
|---------|-------------------------|----------------|
| 1. | DST-FIST | 40.00 Lacs |
| 2. | UGC-SAP | 66.75 Lacs |

8. Special research laboratories sponsored by / created by industry or corporate Bodies : None

9. Publications:

| | | |
|---|---|------|
| * Number of papers published in peer reviewed journals (national/international) | : | 147 |
| * Monographs | : | None |
| * Chapters in Books | : | 34 |
| * Edited Books | : | 04 |
| * Books with ISBN with details of publishers | : | None |

Details of the Edited Books

1. 2013). *Biotechnology for environmental management and resource recovery*. R. C. Kuhad & A. Singh (Eds.). Germany: Springer Verlag. (ISBN 978-81-322-0876-1).

2. (2013). *Thermophilic Microbes in Environmental and Industrial Biotechnology*. T. Satyanarayana, J. Littlechild & Y. J. Kwarabayasi (Eds.). Netherland: Springer. (ISBN 978-94-007-5899-5).

2012

3. (2012). *Microorganisms in Environmental Management*. T. Satyanarayana, B. N. Johri & A. Prakash (Eds.). Netherlands: Springer. (ISBN 978-94-007-2229-3).
4. (2012). *Microorganisms in Sustainable Agriculture and Biotechnology*. T. Satyanarayana. B. N. Johri & A. Prakash (Eds.). Netherlands: Springer. (ISBN 978-94-007-2214-9).

| | | | | |
|---|---|---------|---|------------------------|
| * Number listed in International Database (In SCOPUS) | : | | : | 145 (5 years, 2102-17) |
| * Citation Index – range / average | : | Range | : | 0 – 752 |
| | | Average | : | 26.8 |
| * SNIP (Total / Average) | : | | : | 191.108 / 1.067 |
| * SJR (Total / Average) | : | | : | 180.968 / 1.011 |
| *Impact Factor – range / average | : | Range | : | 0.5 - 10.01 / 2.63 |
| | | Average | : | 2.63 |
| * h-index | : | Maximum | : | 37 |
| | | Average | : | 22.3 |

List of the publications (2012-17) : Annexure - I

10. Details of patents and income generated

Patents Granted:

Patent 1: Title: Novel yeast strains having accession No. DRF-UDS/WF and a method for propagation thereof (No. 244100); **Granted an Indian patent to N.B Brindavanam, Y. Vekateswara Rao, D.B.A. Narayana, T. Satyanarayana, Ashima Vohra and Sanjeev Kumar; Date of Grant 18-11-2010**

Patent 2: Title: A method for detection of chemical adulterants in synthetic milk and ready to use kit for the detection of synthetic milk. **Indian Patent number: 218177, granted to Prof. Rani Gupta, Department of Microbiology, University of Delhi South Campus; Date of Grant 31-3-2008**

Patent 3: Title: A poultry animal feed composition, and process for producing the same (No. 197593). **Granted an Indian patent to Prof. T. Satyanarayana and Ashima Vohra; Date of Grant 6-10-2006**

Patent 4: Title: A process for the preparation of low temperature alkaline lipase from the fungus *Fusarium globulosum* complex (No. 194616); **Granted an Indian Patent to Prof. R.K. Saxena, to Department of Microbiology, University of Delhi South Campus; Date of Grant 7-4-2006**

Income generated from the patents : None

Patents Filed:

Patent 1: Title: A Bioconversion method to improve nutritional properties of lignocellulosic residues Inventors: Ramesh Chander Kuhad, Bhuvnesh Shrivastava & Anup Kalra IN 4039DEL2012 dated 28/12/2012 (Patent Filed)

Patent 2: Title: A process for production of fermentation sugars from lignocellulosic substrates. Inventors: Ramesh Chander Kuhad & Rishi Gupta IN 1348DEL2011 dated 09/05/2011 (Patent Filed)

Patent 3: Title: A novel process for bioleaching of kraft pulps employing laccase and xylanase enzymes and oxygen as mediator. Inventors: R. K. Jain, Vasanta Vadde Thakur, R. C. Kuhad and R. M. Mathur IN 2644/DEL/2013 (Patent Filed)

Patent 4: Title: A novel isolated bacterial strain of *Gluconacetobacter obediens* and an optimized economics process for microbial cellulose production there from (PCT Application no.: PCT/IB2012/050679) (Patent Filed)

11. Areas of consultancy and income generated : None

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

• Faculty

Prof. R.K. Saxena

1. **Best Presentation Award (2013)**, European Biotechnology Congress 2013 held at Bratislava, Slovakia (Nov 2013)

Prof. T Satyanarayana

1. Conferred with Malaviya Memorial award by Biotech Research Society, 2014.
2. Elected Fellow, Indian Academy of Microbiological Sciences (FAMSc), 2014
3. Elected, Andhra Pradesh Academy of Sciences, 2014
4. Elected as President of the Mycological Society of India for the year 2014-2015.
5. Elected as President of the Association of Microbiologists of India, 2015-16.

Prof. R.C. Kuhad

1. Fellow, National Academy of Agricultural Sciences (FNAAS), 2014
2. Fellow, Biotech Research Society of India (FBRIS), 2014
3. AMI Platinum Jubilee Life Time Achievement Felicitation Award, 2014
4. Elected, Fellow, Indian National Science Academy (FNASc), 2016

Prof. J.S. Virdi

1. DBT-BIRAC Ideathon Award in the area of Antimicrobial Resistance diagnostics (Mar 2016)
2. BIRAC (DBT)-Nesta (UK) Discovery Award for developing a point of care test (POCT) for rapid detection of Antimicrobial Resistance (Nov 2016)
3. Invitrogen Science Hero Best Lab Mentor (University Level) Award (Dec 2016)

Dr. Rajeev Kaul

1. Indo-US Raman Research Fellowship Awarded by UGC, 2013

Dr. Y.P. Khasa

1. Dr. Rana Memorial Best Poster Award during 57th annual conference of Association of Microbiologists of India, Guwahati University, Guwahati, (Assam) (Nov, 2016)
2. First prize in Poster Presentation under “Indigenous Science and Technology”, Young Scientists’ Conclave as part of the India International Science Festival (2016)

• Doctoral / Post-doctoral fellows

• Students

1. Ms. Catherine Paul ; Best poster Award at National Science Day, University of Delhi South Campus, Feb 2017
2. Ms. Nivedita Gaur: Best oral paper presentation at Molecular Virology Meeting at Translational Health Sciences and Technology Institute (THSTI), 2017
3. Lohit Khera and Catherine Paul :Poster Award at VIROCON-2016, the 25th annual conference of Indian Virological Society, organized by IIHR Bengaluru from 8-10 Dec, 2016
4. Catherine Paul & Lohit Khera. Poster Award presented at 57th Annual conference of Association of Microbiologists in India, organized by Department of Botany, Guwahati University, Assam, India on Nov 24-27, 2016
5. Ms. Meenu Saini: Best Poster Presentation Award, OMICS International, 7TH Indo-global Summit and Expo on Food and Beverages (Oct 2015), New Delhi
6. Ms. Shruti Bindal: Best Oral Presentation Award, OMICS International, 7th International Summit and Expo on Food and Beverages (Oct 2015), New Delhi
7. Ms. Arti Kumari: Bursary Award, BIOTRANS (Jul 2013), Manchester, England

8. Ms. Jaya Gandhi, PhD Scholar won PGIMER Young Scientist Award in Medical Virology in VIROCON-2012 organized by Indian Virological Society at IVRI Mukteswar from 8-10 Nov, 2012

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

| Name of the competitive exam | Year | | | | |
|------------------------------|-------------------|--------------------|-------------------|---------|-------------------|
| | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 |
| NET | 1 (Gen) 1 (SC) | 2 (Gen) 1 (OBC) | Nil | Nil | 1 (Gen) 1(OBC) |
| NET (LS) | Nil | 1 (OBC) | 2 (OBC) 1 (SC) | 1 (Gen) | 0 |
| GATE | Nil | Nil | Nil | Nil | Nil |
| SLET | Nil | Nil | Nil | Nil | Nil |
| ICMR (JRF) | Nil | Nil | Nil | Nil | Nil |
| INSPIRE (DST) | 1 (Gen) | Nil | Nil | Nil | 1 (Gen) |
| Civil services | Nil | Nil | Nil | Nil | Nil |

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

a) From the host institution/university:

| Year | | | | |
|------------------------------|----------------|------------------|-----------------|--------------|
| 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 |
| Ms. Adivitya | Ms. Arti Yadav | Ms. Shilpa Rohra | Ms. Meenu Saini | Ms. Babbal |
| Ms. Catherine Skyonggin Paul | Ms. Poonam | - | - | Ms. Varshini |
| Ms. Tanvi Kalra | - | - | - | - |

b) From the other institution/universities:

| Year | | | | |
|----------------------------|---------------------------|---------------------|---------|---------|
| 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 |
| Ms. Uditia | Ms. Shruti Bindal | Ms. Nivedita Gaur | Nil | Nil |
| Mr. Nambram Somendro Singh | Mr. Himadri Bose | Mr. Yogesh Singh | - | - |
| Dr. Neelja Singhal* | Ms. L. Shiv lata | Mr. Devanand Kumar | - | - |
| Mr. Deepak Parashar | Ms. Shazia Faridi | Mr. Gaurav Kumar | - | - |
| Mr. K. Karthikeya | Mr. Subhojeet Chakraborty | Dr. Jyotsana Dalal* | - | - |
| Mr. Richi Mahajan | - | - | - | - |

| | | | | |
|-------------------|---|---|---|---|
| Mr. Sandeep Kumar | - | - | - | - |
| Mr. Amandeep Kaur | - | - | - | - |

***PDF – Post-Doctoral Fellows**

15. Number of post graduate students getting financial assistance from the university: 3