

DEPARTMENT OF MICROBIOLOGY



**University of Delhi South Campus
Benito Juarez Road
New Delhi-110021**

(2018 - 23)

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About the Department

YEAR OF ESTABLISHMENT : 1984

DEGREES OFFERED: Post Graduate (M.Sc. Microbiology)
Ph.D. (Microbiology)

INTRODUCTION

The Department of Microbiology offers a full-time two-year program leading to the award of Master of Science (M.Sc.) degree in Microbiology. The program includes four semesters of coursework, including a dissertation, during which students are provided training to conduct research. The students are offered courses in Bacteriology, Microbial Physiology and Metabolism, Virology, Immunology, Enzymology, Environmental Microbiology, Microbial Pathogenicity, Molecular Biology, Microbial Genetics, Recombinant DNA technology, Industrial Microbiology and Food Microbiology. These courses cover both theory classes and rigorous practicals. As a part of their curriculum, students deliver seminars on various scientific topics. The second-year students are attached to different laboratories headed by the faculty members of the department, where they work on projects under the supervision of the faculty members. At the end of their project duration of six months, they submit a thesis and defend their work in an open viva-voce.

The department also enrolls students for PhD degree in Microbiology. The faculty in the department currently includes three Professors, two Associate Professors and two Assistant Professors. Each faculty member manages and runs their laboratory independently, where research is carried out in different areas of basic and applied microbiology. The faculty members have had national as well as international collaborations to develop mutually beneficial scientific interactions. This has also helped our laboratories develop new technologies to diversify our research areas.

The department has two broad areas of research: 'Industrial, Food and Environmental Microbiology' and 'Molecular Biology and Pathogenesis of Microbial Infections'. In the broad area of Industrial, Food and Environmental microbiology, the specific research interests of the department are in the areas

*of production of industrially important microbial enzymes, production of recombinant human proteins, structure-function analysis, and molecular modification of enzymes, extremozymes, gene expression and bioprocess engineering. In the broad area of molecular biology and pathogenesis of microbial infections, the specific areas of research interest include molecular biology of *Helicobacter pylori* pathogenesis and understanding host-pathogen interactions, DNA replication and chromatin biology of the protozoan parasite *Leishmania donovani* which causes Kala Azar, DNA repair systems of *Candida glabrata*, mechanisms of antibiotic resistance, formation of biofilms and their role in antibiotic resistance, virus-host interactions using various tools including cell culture system and mouse model using Epstein Barr Virus (EBV), Kaposi sarcoma associated herpesvirus (KSHV), and Hepatitis C Virus (HCV), and the molecular basis of peste-des-petits ruminants virus (PPRV)- mediated host immune modulation.*

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CURRENT FACULTY MEMBERS

Name	Qualification	Designation	E-mail Address
Prof. Rajeev Kaul	M.Sc., Ph.D.	Professor, Head of the Department 2022-2025	rkaul@south.du.ac.in
Prof. Swati Saha	M.Sc., Ph.D.	Professor Head of the Department 2019-2022	ssaha@south.du.ac.in
Prof. Y.P. Khasa	M.Sc., Ph.D.	Professor	ypkhasa@south.du.ac.in
Dr. Ashwini Chauhan	M.Sc., Ph.D.	Associate Professor	ashwinichauhan@south.du.ac.in
Dr. Ram Karan	M.Sc., Ph.D.	Associate Professor	ramkaran@south.du.ac.in
Dr. Vijay Verma	M.Sc., Ph.D.	Assistant Professor	vijayverma@south.du.ac.in
Dr. Pau Biak Sang	M.Sc., Ph.D.	Assistant Professor	pbsang@microbio.du.ac.in

SUPERANNUATED FACULTY MEMBERS

Prof. J.S. Viridi	M.Sc., Ph.D.	Professor (Superannuated in Sept 2019)	viridi_dusc@rediffmail.com
Prof. R.C. Kuhad	M.Sc., Ph.D.	Professor (Superannuated in Aug 2020)	kuhad85@gmail.com
Prof. Rani Gupta	M.Sc., Ph.D.	Professor Head of the Department 2016-2019 (Superannuated in March 2022)	ranigupta15@yahoo.com

TECHNICAL/OFFICE STAFF

Name	Qualification	Designation	E-mail Address
Mr. Mustafa Husain	Graduation	Sr. Technical Assistant	mustafa.hussain955@gmail.com
Mr. Satish Kanojia	Higher Secondary	Lab. Assistant	satishkanojia_i4u@yahoo.com
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Mrs. Meena Singh	Graduation	Sr. Technical Assistant (Superannuated in 2021)	aneemsingh1@yahoo.com
Mr. Madan Lal	Matric	Lab. Assistant (Superannuated in 2021)	madanlal5561@gmail.com

Prof. SWATI SAHA

AREA OF RESEARCH: DNA replication and chromatin biology



RESEARCH DESCRIPTION:

Our laboratory researches two aspects of DNA biology: DNA replication and chromatin biology. The two model systems being investigated are the protozoan parasite *Leishmania donovani* (causative agent of kala azar) and the euryarchaeon *Picrophilus torridus*.

Eukaryotic DNA replication is a largely conserved process where the synthesis of DNA in the S phase of the cell cycle is preceded by the licensing of origins in the G1 phase. Based on genome sequence annotation it appears that the process in *Leishmania* is broadly conserved with other eukaryotes, with orthologs of several of the pre-RC and pre-IC being identified. However, several of the conserved orthologs are absent, reflecting the early divergence of *Leishmania* from the eukaryotic lineage. Thus, while Orc1 and Orc4 have been identified, Orcs 2,3 5 and 6 are missing. No Cdt1 has been identified either. Our laboratory has characterized four proteins: Orc1, Mcm4, PCNA, and Cdc45.

The second aspect our lab has been investigating is histone modifications. In general, eukaryotic histones are highly conserved in sequence and the post-translational modifications (PTMs) they carry. These include specific acetylation, methylation, phosphorylation, and ubiquitination events to name a few. However, trypanosomatid histones are divergent in sequence from histones of other eukaryotes, and consequently, the modifications they carry are also divergent. Using biochemical assays we have identified three histone H4 acetylation marks in vitro, and using the approach of creating genomic knockouts we have validating two of these in vivo as well. By characterizing the phenotypes of the knockout lines we determined that while histone acetyltransferase HAT3 acetylated histone H4 at the K4 position, and played a role in modulating the cell's response to UV-induced DNA damage, histone acetyltransferase HAT2 acetylated histone H4 at the K10 position and modulated gene expression. In investigating histone methylases we have recently identified two SET proteins that moderate the *Leishmania* response to oxidative stress and fine-tune the balance between the parasite and host to enable the parasite infection to persist while also allowing the host to survive.

Selected Publications:

1. Pal, J, Sharma,V, Khanna, A & **Saha, S.** (2024). The SET7 protein of *Leishmania donovani* moderates the parasite's response to a hostile oxidative environment. *J Biol Chem* 300: 105720.
2. **Saha, S.** (2020). Histone modifications and other facets of epigenetic regulation in trypanosomatids: leaving their mark. *mBio* 11:e01079-20.
3. Yadav, A, Sharma, V, Pal, J, Gulati, P, Goel, M, Chandra, U, Bansal, N, **Saha, S.** (2020). DNA replication protein Cdc45 directly interacts with PCNA via its PIP box in *Leishmania donovani* and the Cdc45 PIP box is essential for cell survival. *PLoS Pathogens*. May 15;16(5):e1008190.
4. Chandra U, Yadav A, Kumar D, **Saha S** (2017).Cell cycle stage-specific transcriptional activation of cyclins mediated by HAT2-dependent H4K10 acetylation of promoters in *Leishmania donovani*. *PLoS Pathog*. Sep 22;13(9):e1006615

Prof. RAJEEV KAUL



AREA OF RESEARCH: Microbial pathogenesis

RESEARCH DESCRIPTION:

Our lab has worked to study biology of **cancers mediated by viruses**, and molecular basis of virus mediated host immuno-suppression. The major focus of our lab is to investigate virus host interactions using various tools including cell culture system and mice models. Primarily, we study three human tumor associated viruses, **Epstein Barr Virus (EBV)**, **Kaposi sarcoma associated herepesvirus (KSHV)**, and **Hepatitis C Virus (HCV)**. In particular, we are using genetic, genomic, proteomic and biochemical approaches to identify viral pathways involved in these cellular events to develop mechanistic models for transformation by viruses.

In addition, we have been working on understanding the molecular basis of *peste-des-petits ruminants virus (PPRV)* mediated host immune modulation for the development of next generation vaccine. Immuno-suppression and innate immunity control by morbilliviruses such as PPRV in small ruminants and measles in human remains a leading cause of death among infected host because it suppresses immune function, facilitating secondary infections. The basic mechanisms underlying PPRV-induced immunosuppression are poorly understood. The extent of viral replication documented in immune cells implies that it can directly cause immunosuppression. The implications of the generated knowledge will extend beyond the morbillivirus field to include immunology, and cell biology. Small genome, simple organization and life cycle of morbilliviruses permits their use as a tool to dissect complex cellular pathways and to determine basic aspects of immune response induction. The research will lead to generation of information which can be used for development of approaches resulting in improvement of animal health and herd immunity.

Selected Publications:

1. Yash Chaudhary, Purnati Khuntia, Rajeev Kaul (2022). Susceptibility to foot and mouth disease virus infection in vaccinated cattle, and host BoLA A and BoLA DRB3 genes polymorphism. *VirusDisease*. 2022 <https://doi.org/10.1007/s13337-021-00754-8>
2. Yashu Sharma, Roman Sarkar, Ayush Jain, Sudhakar Singh, Chander Shekhar, Chandrasekar Shanmugam, Muthuchelvan Dhanavelu, Prabhakar Tembhrne, Rajeev Kaul (Co-corresponding author), Sharvan Sehrawat (2021). A Mouse Model of PPRV Infection for Elucidating Protective and Pathological Roles of Immune Cells. *Front Immunol*. 2021 Apr 12;12:630307
3. Jain J, Gaur S, Chaudhary Y, Kaul R (2020). The molecular biology of intracellular events during Coronavirus infection cycle. *VirusDisease* 2020 May 4 : 1–5. 2020
4. Catherine Paul, Lohit Khera, Rajeev Kaul (2019). Hepatitis C virus core protein interacts with cellular metastasis suppressor Nm23-H1 and promotes cell migration and invasion. *Arch Virol*. 2019 Mar 11. doi: 10.1007/s00705-019-04151-x.
5. Khera L., Paul C., & Kaul R. (2018). Hepatitis C Virus mediated metastasis in hepatocellular carcinoma as a therapeutic target for cancer management. *Current Drug Metabolism* Vol 19

Prof. YOGENDER PAL KHASA

AREA OF RESEARCH: Bioprocess Engineering and Industrial Biotechnology



RESEARCH ACHIEVEMENTS:

Our laboratory is focused on the large scale production of various proteins of therapeutic importance for clinical applications. The genes encoding asparaginase, scFvs, hTNF- α , hG-CSF, hGM-CSF, hIL-2, hIL-3, hIL-6, hIL-7 and streptokinase have been cloned and expressed in two heterologous systems: *E. coli* and *Pichia pastoris*. Expression studies using different signal sequences and fusion partners resulted in the soluble expression of these proteins. Expression in *Pichia* permitted scale- up in the range of 5L to 50L bioreactor under optimized parameters that helped in achieving upto 300 g/L cell biomass (WCW). The large scale recovery of these biomolecules has been established with their subsequent testing for biological activity using cell culture experiments. The indigenous production process of ULP1 protease has been successfully developed to reduce the overall manufacturing cost of recombinant proteins in soluble form. The bioprocess optimization of therapeutically important recombinant proteins such as streptokinase, hIL-3 and hIL-7 was carried out using the 5l bioreactor, where gram level production of these molecules has been obtained. As long-term goal, we are working towards a comprehensive technology development for these proteins for commercial applications.

Selected Publications:

1. Babbal, Mohanty S and **Khasa YP (2024)** Designing Ubiquitin-like protease 1 (Ulp1) based nano biocatalysts: A promising technology for SUMO fusion proteins. **International Journal of Biological Macromolecules**, 255: 128258 (In Press) (IF: 8.2) <https://doi.org/10.1016/j.ijbiomac.2023.128258>
2. Chauhan S, and **Khasa YP (2023)** Challenges and Opportunities in the Process Development of Chimeric Vaccines. **Vaccines**, 11(12):1828 (IF: 7.8) <https://doi.org/10.3390/vaccines11121828>
3. Babbal, Mohanty S, Dabburu GR, Kumar M and **Khasa YP (2022)** Heterologous expression of novel SUMO proteases from *Schizosaccharomyces pombe* in *E. coli*: Catalytic domain identification and optimization of product yields. **International Journal of Biological Macromolecules**. 209: 1001-1019 (IF: 8.2) <https://doi.org/10.1016/j.ijbiomac.2022.04.078>
4. Adivitiya, Babbal, Mohanty S, and **Khasa YP (2021)** Nitrogen supplementation ameliorates product quality and quantity during high cell density bioreactor studies of *Pichia pastoris*: A case study with proteolysis prone streptokinase. **International Journal of Biological Macromolecules**. 180:760-770 (IF: 8.2) <https://doi.org/10.1016/j.ijbiomac.2021.03.021>
5. Adivitiya, Babbal, Mohanty S, Dagar VK and **Khasa YP (2019)** Development of a streptokinase expression platform using the native signal sequence of the protein with internal repeats 1 (PIR1) in *P. pastoris*: gene dosage optimization and cell retention strategies. **Process Biochemistry**, 83:64–76 (IF: 4.4) <https://doi.org/10.1016/j.procbio.2019.05.016>

Dr. Ashwini Chauhan

(Associate Professor)



Area of Research: Biofilms and Anti-biofilm strategies

RESEARCH DESCRIPTION

Biofilms have been recognized as a major cause of nosocomial infections (NIH and WHO) specially when biofilm infections are associated with the medical devices. Although the use of medical devices has immensely improved the patient care, they are prone to unwarranted bacterial contaminations leading to biofilm formation. Biofilm formation on the medical devices results in medico-socio-economic burden due to prolonged stay in the hospital, increased medical bills and patient trauma. Further, biofilms act as reservoir of a persister cells that are highly drug tolerant and can tolerate up-to 100X MIC of a drug. The persister population are responsible for recurrent infections associated with biofilms. Persisters are well studied in Gram-negative bacteria but the mechanisms of persister cell formation in Gram-positive bacteria is still poorly understood.

Our lab's research is focused on understanding the biofilms and associated mechanisms, and unravelling the new anti-biofilm strategies. We take top-down approach to develop antibiofilm strategy and further understand the mechanisms involved in inhibiting the bacterial biofilms. We are currently developing several approaches such as antimicrobial surfaces for medical devices, using bacteriophages to kill biofilm bacteria, repurposing drugs against the clinically challenging biofilms of Multi Drug Resistant (MDR) bacteria. We have recently developed a green synthesized ZnO NP-polymer composite based coating material to inhibit the bacterial biofilm formation on Central Venous Catheters. We have successfully isolated novel Lytic phages against clinical isolates of MDR *K. pneumoniae*. These lytic phages inhibit biofilms of clinical isolates of MDR *K. pneumoniae* by 99.999%, have a host coverage of up to 70-80%. Furthermore, the cocktail of the phages is able to eradicate the biofilms of clinical isolates of MDR *K. pneumoniae*.

Another aspect of biofilms that we are building in the lab is to understand the host-biofilm interactions by studying the immune responses against the bacterial biofilms developed in Central Venous Catheters implanted in Rats. Understanding the biofilm-host immune system interactions will help in developing a holistic approach in dealing with the biofilm associated infections in clinics.

Selected Publications

1. Malhotra A, Chauhan SR, Rahaman M, Tripathi R, Khanuja M, Chauhan A. Phyto-assisted synthesis of zinc oxide nanoparticles for developing antibiofilm surface coatings on central venous catheters. *Front Chem.* 2023 Mar 23;11:1138333. doi: 10.3389/fchem.2023.1138333
2. Ashwini Chauhan, J.M. Ghigo and C. Beloin. Study of in vivo catheter biofilm infections using pediatric central venous catheter implanted in rat. *Nature protocols* 2016 Mar; 11(3): 525- 541 (7)
3. Ashwini Chauhan, Bernardin, A.; Mussard, W.; Kriegel, I.; Esteve, M. Ghigo, J.M.; Beloin, C. and V. Semetey. In vivo inhibition of bacterial biofilm development on totally implantable venous catheters by biomimetic glycocalyx-like polymers. *The Journal of Infectious diseases.* 2014 Nov 1;210(9):1347-56 (21)
4. Chauhan, Ashwini ; D. Lebeaux, J.M. Ghigo, C. Beloin. Full and broad-spectrum eradication of catheter associated biofilms using gentamicin-EDTA antibiotic lock therapy. *Antimicrobial Agents and Chemotherapy* 2012 Dec; 56 (12):6310-8. (63).

Dr. Ram Karan

(Associate Professor)

Areas of Research: Environmental Microbiology

Research Description



Our lab explores extremozymes from extremophiles, robust enzymes functioning under conditions that would denature most others, transforming industrial processes in sectors like pharmaceuticals and biofuels. We employ these enzymes to catalyze reactions in non-traditional media, optimizing efficiency and sustainability for industrial applications. We also focus on environmental biotechnology, developing applications that address pollution in extreme environments like hypersaline waters. Our work includes biodegradation strategies that help not only in environmental cleanup but also in understanding extremophiles' ecological roles, enhancing both environmental management and conservation.

Another area of our research is the production and study of air-filled protein nanoparticles. These particles are designed for a range of applications, including biocatalysis, diagnostics, bioimaging, drug delivery, and vaccine development. By engineering specific properties, such as targeted delivery, these nanoparticles promise to revolutionize fields from medicine to environmental monitoring. In genetic engineering, our lab enhances enzyme properties from extremophiles to enable new-to-nature reactions. This expands their industrial application and deepens our understanding of enzyme mechanisms and evolution, paving the way for synthetic biology and materials science breakthroughs.

Our work is enriched through international collaborations and cross-disciplinary approaches, integrating diverse scientific methodologies. These collaborations not only foster innovation but also create a dynamic research environment that addresses complex biological and environmental challenges effectively. We also align our research with global sustainability efforts, exploring how extremophiles can contribute to eco-friendly technologies. This research supports developing sustainable processes that reduce environmental impact and promote a circular economy, contributing to long-term sustainability goals. Each of these research threads underscores our commitment to advancing the field of extremophile research, with wide-ranging applications from industrial innovation to environmental sustainability.

Selected Publications

1. R. Karan*, D. Renn, S. Nozue, L. Zhao, S. Habuchi, T. Allers, M. Rueping (2023) Bioengineering of air-filled protein nanoparticles by genetic and chemical functionalization. *J. Nanobiotechnology* 21(1):108.
2. M. Sysoev, S.W. Grötzinger, D. Renn, J. Eppinger, M. Rueping, R. Karan* (2021) Bioprospecting of novel extremozymes from prokaryotes -The advent of culture- independent methods. *Front Microbiol* 12: 63001.
3. Hohl ∞ , R. Karan* ∞ , et al. (2019) Engineering a promiscuous pyrrolysyl-tRNA synthetase by a high throughput FACS screen. *Nature Sci. Rep.* 9(1):11971
4. S.W. Grötzinger, R Karan, et al. (2017) Identification and experimental characterization of an extremophilic brine pool alcohol dehydrogenase from single a... *ACS Chem. Biol.* 13(1): 161-170
5. V.J Laye, R Karan, et al. (2017) Key amino acid residues conferring enhanced enzyme activity at cold temperatures in an Antarctic polyextremophilic. *Proc. Natl. Acad. Sci. U.S.A.*, 114(47):12530-12535.
6. A.U. Andar ∞ , R. Karan ∞ et al. (2017) Microneedle-assisted skin permeation by non-toxic bioengineerable gas vesicle nanoparticles. *ACS Mol Pharm* 14 (3), 953958.
7. R. Karan, P. DasSarma, E. Balcer-Kubiczek, R.R. Weng, C. Liao, W.V. Ng, S. DasSarma (2014) Bioengineering radioresistance by overproduction of RPA, a mammalian-type single-stranded DNA-binding protein. *Appl Microbiol Biotechnol.* 98(4), 1737-1747.

Dr. Vijay Verma

(Assistant Professor)



Area of Research: Microbial pathogenesis

Research Description

Our lab work in the area of exploring the molecular mechanism of persistent infection which underlie asymptomatic host pathogen coexistence in human pathogen *Helicobacter pylori*. It is the beginning to understand the bacterial and host factors that are responsible for host- pathogen interactions during persistent infection of *H. pylori*. Currently, my lab is focusing on the different toxins present in *H. pylori* and their cognitive partners and their role in pathogenesis. Recently, our lab has discovered the presence of many putative toxin-antitoxin pairs in *H. pylori* genome. Our research aim of future is to enrich the knowledge of asymptomatic host pathogen coexistence and facilitate the better diagnostic against *H. pylori*.

Selected Publication

1. Gupta, N., Kumar, A., Verma, V.K. (2023) Strategies adopted by gastric pathogen *Helicobacter pylori* for a mature biofilm formation: Antimicrobial peptides as a visionary treatment. *Microbiological Research* 273 (2023) 127417-127431. (IF- 5.07).
2. Pathak, V.M., Verma, V.K., Rawat, B.S., Kaur, B., Babu, N., Sharma, A., Dewali, S., Yadav, M., Kumari, R., Singh, S., Mohapatra, A., Pandey, V., Rana, N. and Cunill, J.M. (2022) Current status of pesticide effects on environment, human health and it's eco-friendly management as bioremediation: A comprehensive review. *Front. Microbiol.* 13:962619. (IF-6.0).
3. Gupta N, Kumar A, Verma VK. (2023) Strategies adopted by gastric pathogen *Helicobacter pylori* for a mature biofilm formation: Antimicrobial peptides as a visionary treatment. *Microbiol Res.* 2023 Aug;273:127417. doi: 10.1016/j.micres.2023.127417.

Dr. Pau Biak Sang

(Assistant Professor)



Areas of Research: DNA repair, Molecular Biology

Research Description

Our lab will work on the DNA repair system in Yeast using *Candida glabrata* as a model. *Candida glabrata* is a commensal fungus that can cause infection in immunocompromised patients. *C. glabrata* is the second most commonly isolated *Candida* spp in clinical samples of Candidiasis after *C. albicans*. *C. glabrata* has been a pathogen of interest due to its high mortality rate and natural resistance to azole antifungals. Macrophages are the first line of defense against candida infection. Unlike *C. albicans*, *C. glabrata* can be easily ingested by the macrophage, where it can survive and even replicate inside the phagosomes. Macrophages are known to generate ROS, which can damage the cellular components of the pathogen, including DNA, and kill the pathogen. We are interested in the DNA glycosylase of *C. glabrata*, which is not yet characterized, and their role in the pathogen is not yet studied. *C. glabrata* is a haploid and less pathogenic compared to *C. albicans*. It is easier to generate knockouts and safer to work on this organism.

Selected Publication

1. **Sang PB**, Jaiswal RK, Lyu X, Chai W. Human CST complex restricts excessive PrimPol repriming upon UV induced replication stress by suppressing p21. *Nucleic Acids Res.* 2024 Apr 24;52(7):3778-3793. doi: 10.1093/nar/gkae078
2. Lyu X, **Sang PB**, Chai W. CST in maintaining genome stability: Beyond telomeres. *DNA Repair (Amst).* 2021 Jun;102:103104. doi: 10.1016/j.dnarep.2021.103104.
3. Lyu X, Lei KH, **Biak Sang P**, Shiva O, Chastain M, Chi P, Chai W Human CST complex protects stalled replication forks by directly blocking MRE11 degradation of nascent-strand DNA **EMBO J.** 2021 Jan 15;40(2):e103654
4. Kurthkoti K, Kumar P, **Sang PB**, Varshney U. Base excision repair pathways of bacteria: new promise for an old problem. **Future Medicinal Chemistry.** 2020 Feb 7 doi: 10.4155/fmc-2019-0267
5. Sang PB, Srinath T, Patil AG, Woo EJ, Varshney U. A unique uracil-DNA binding protein of the uracil DNA glycosylase superfamily. *Nucleic Acids Res.* 2015 Sep 30;43(17):8452-63
6. Sang PB, Varshney U. (2013) Biochemical properties of MutT2 proteins from Mycobacterium tuberculosis and M. smegmatis and their contrasting antimutator roles in Escherichia coli. *J Bacteriol.* 2013 Apr;195(7):1552-60.

RESEARCH PROJECTS (2018-2023):

Title	Faculty Name	Year of Sanction	Grant (in Lacs)	Funding Agency
Center of Antibody Engineering: Center for Immuno-Diagnostics/ Therapeutics Veneering technologies (CIVET)	Prof. Rajeev Kaul	2022-2025	187	DST-SERB
Specific single domain antibodies (sdAbs) against antimicrobial resistant Mastitis pathogens for clinical therapeutic use in dairy animals	Prof. Rajeev Kaul	2022-25	59.6	DBT
Modulation of NF- κ B by <i>Peste-des-petits</i> virus coded nonstructural proteins	Prof. Rajeev Kaul	2020	2.5	IoE
Studies on <i>Peste-des-petits</i> ruminants virus coded non-structural C protein interaction with p65 subunit of NF- κ B	Prof. Rajeev Kaul	2021	3	IoE
Studies on <i>Peste-des-petits</i> ruminants virus coded structural N protein interaction with PI3K complex proteins involved in early autophagosome formation	Prof. Rajeev Kaul	2022	5	IoE
Investigating cell cycle dependent gene expression in the protozoan parasite <i>Leishmania donovani</i> : a genome-wide study	Prof. Swati Saha	2019-2023	82.6	DBT
Fostering Innovation and technology development through BioIncubation	Prof. Swati Saha	2020-2025	444.67	BIRAC
Characterization of the SET domain proteins SET2 and SET3 in <i>Leishmania donovani</i>	Prof. Swati Saha	2020-2023	58.1	SERB
Towards identifying parasite-specific proteins involved in DNA replication in the protozoan <i>Leishmania donovani</i>	Prof. Swati Saha	2022-2025	69.0	DBT
Identification of <i>Leishmania</i> - specific proteins involved in the replication of its DNA	Prof. Swati Saha	2022	3	IoE
Identification of <i>Leishmania</i> - specific proteins involved in the replication of its DNA	Prof. Swati Saha	2023	5	IoE
Genome mining of <i>Pichia pastoris</i> for the development of yeast cell surface display technology using its native cell wall anchoring proteins: bioprocess	Prof. Y.P. Khasa	2019-2022	39.59	SERB

optimization and its biotechnological applications				
Development of a scalable expression platform for the overproduction of commercially important novel Ubiquitin-Like proteases (Ulp) from <i>Schizosaccharomyces pombe</i> in <i>Escherichia coli</i>	Prof. Y.P. Khasa	2020-2022	39.15	DBT
Designing and large-scale production of recombinant single chain antibody (scFv) against human Tumor Necrosis Factor alpha (hTNF- α)	Prof. Y.P. Khasa	2019-2022	48.84	MHRD
Production of engineered Streptokinase in <i>Pichia pastoris</i> : Cell retention studies to improve product stability and expression yields at bioreactor level	Prof. Y.P. Khasa	2020	2.5	IoE
Bioprocess development for the production of therapeutically important recombinant human Tumor Necrosis Factor alpha (hTNF- α) in <i>E. coli</i>	Prof. Y.P. Khasa	2021	3	IoE
Designing cell retentostat strategies to improve product quality of therapeutically important recombinant streptokinase in <i>Pichia pastoris</i>	Prof. Y.P. Khasa	2022	5	IoE
Process development for enzymatic synthesis of L-theanine, a nutraceutical using gamma-glutamyl transpeptidase from <i>Bacillus licheniformis</i>	Prof. Rani Gupta	2018	3	DRDO
Unravelling the mystery of bacterial persistent infection: Genome-wide identification and characterization of Toxin-Antitoxin systems of <i>Helicobacter pylori</i>	Dr. Vijay Verma	2021-2024	47	ICMR
Screening of antimicrobial peptides (AMPs) by targeting various important pathways to combat <i>Helicobacter pylori</i> infection	Dr. Vijay Verma	2021	3	IoE
Exploration of therapeutic potential of antimicrobial peptides to treat <i>Helicobacter pylori</i> infection, 2022	Dr. Vijay Verma	2022	5	IoE
A system for epitope tagging of genes in <i>Saccharomyces cerevisiae</i> for protein-protein interaction studies and other applications	Dr. Pau Biak Sang	2022	5	IoE

EXTERNAL FUNDING SOURCES FOR RESEARCH

Name of the funding Agencies:	Total sanctioned (in lacs)
Biotechnology Industry Research Assistance Council (BIRAC)	444.67
Department of Science and Technology (DST)-SERB	342.77
Department of Biotechnology (DBT)	250.34
Ministry of Human Resource Development (MHRD)	48.84
Indian Council of Medical Research (ICMR)	47
Delhi University-Institute of Eminence (IoE)	42
Defence Research and Development Organisation (DRDO)	33.14
Grand Total	1208.76



Science and Engineering Research Board (SERB)
Department of Science and Technology (DST)
Govt. of India



विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF
SCIENCE & TECHNOLOGY



icmr भारतीय आयुर्विज्ञान
INDIAN COUNCIL OF
MEDICAL RESEARCH अनुसंधान परिषद्



दिल्ली विश्वविद्यालय INSTITUTE OF EMINENCE
University of Delhi प्रतिष्ठित संस्थान



जैव प्रौद्योगिकी विभाग
Department of Biotechnology
Ministry of Science & Technology
Government of India



PUBLICATIONS (2018 ONWARD):

2024

Babbal, Mohanty S, Khasa YP (2024) Designing Ubiquitin-like protease 1 (Ulp1) based nano biocatalysts: A promising technology for SUMO fusion proteins. *Int J Biol Macromol.* 2024 Jan;255:128258. doi: 10.1016/j.ijbiomac.2023.128258. Epub 2023 Nov 19.

Bhowmik A, Chakraborty S, Rohit A, Chauhan A. (2024) Transcriptomic responses of extensively drug resistant *Klebsiella pneumoniae* to N-acetyl cysteine reveals suppression of major biogenesis pathways leading to bacterial killing and biofilm eradication. *J Appl Microbiol.* 2024 Jun 3;135(6):lxae136. doi: 10.1093/jambio/lxae136.

Chakraborty S, Rohit A, Prasanthi SJ, Chauhan A. (2024) A New Casjensviridae Bacteriophage Isolated from Hospital Sewage for Inactivation of Biofilms of Carbapenem Resistant *Klebsiella pneumoniae* Clinical Isolates. *Pharmaceutics.* 2024 Jul 5;16(7):904. doi: 10.3390/pharmaceutics16070904.

Gaur SK, Chaudhary Y, Jain J, Singh R, Kaul R (2024). Structural and functional characterization of peste des petits ruminants virus coded hemagglutinin protein using various in-silico approaches. *Front Microbiol.* 2024 Jun 20;15:1427606. doi: 10.3389/fmicb.2024.1427606.

Karan R, Renn D, Allers T, Rueping M (2024) A systematic analysis of affinity tags in the haloarchaeal expression system, *Haloferax volcanii* for protein purification. *Front Microbiol.* 2024 May 30;15:1403623. doi: 10.3389/fmicb.2024.1403623.

Pal J, Sharma V, Khanna A, Saha S. (2024) The SET7 protein of *Leishmania donovani* moderates the parasite's response to a hostile oxidative environment. *J Biol Chem.* 2024 Mar;300(3):105720. doi:10.1016/j.jbc.2024.105720

Sang PB, Jaiswal RK, Lyu X, Chai W. (2024) Human CST complex restricts excessive PrimPol repriming upon UV induced replication stress by suppressing p21. *Nucleic Acids Res.* 2024 Apr 24;52(7):3778-3793. doi: 10.1093/nar/gkae078.

2023

Chaudhary Y, Jain J, Gaur SK, Tembhurne P, Chandrasekar S, Dhanavelu M, Sehrawat S, Kaul R. (2023) Nucleocapsid Protein (N) of Peste des petits ruminants Virus (PPRV) Interacts with Cellular Phosphatidylinositol-3-Kinase (PI3K) Complex-I and Induces Autophagy. *Viruses.* 2023 Aug 24;15(9):1805. doi: 10.3390/v15091805.

Chauhan S, Khasa YP. (2023) Challenges and Opportunities in the Process Development of Chimeric Vaccines. *Vaccines (Basel).* 2023 Dec 8;11(12):1828. doi: 10.3390/vaccines11121828.

Gulati P, Singh A, Goel M, Saha S. (2023) The extremophile *Picrophilus torridus* carries a DNA adenine methylase M.PtoI that is part of a Type I restriction-modification system. *Front Microbiol.* 2023 Mar 15;14:1126750. doi: 10.3389/fmicb.2023.1126750.

Gupta N, Kumar A, Verma VK. (2023) Strategies adopted by gastric pathogen *Helicobacter pylori* for a mature biofilm formation: Antimicrobial peptides as a visionary treatment. *Microbiol Res.* 2023 Aug;273:127417. doi: 10.1016/j.micres.2023.127417.

Jain J, Chaudhary Y, Gaur SK, Tembhurne P, Sekar SC, Dhanavelu M, Sehrawat S, Kaul R. (2023) Peste des petits ruminants virus non-structural V and C proteins interact with the NF- κ B p65 subunit and modulate pro-inflammatory cytokine gene induction. *J Gen Virol.* 2023 Oct;104(10). doi: 10.1099/jgv.0.001907.

Kashyap A, Saini K, Saini M, Khasa YP, Gupta R. (2023) Development of a novel *Pichia pastoris* expression platform via genomic integration of lipase gene for sustained release of methanol from methyloleate. *Prep Biochem Biotechnol.* 2023;53(1):64-75. doi: 10.1080/10826068.2022.2039941.

Kumar, A, Mohammad Sarwar Alam, Hinna Hamid, Vaishali Chugh, Tanvi Tikla, Rajeev Kaul, Abhijeet Dhulap, Sunil K. Sharma (2023). Design and synthesis of anti-inflammatory 1,2,3-triazolylypyrrolobenzodiazepinone derivatives and impact of molecular structure on COX-2 selective targeting. *Journal of Molecular Structure.* 2023 Jan, Vol 1272 <https://www.sciencedirect.com/science/article/abs/pii/S0022286022018026>

2022

Babbal, Mohanty S, Dabburu GR, Kumar M, Khasa YP. (2022) Heterologous expression of novel SUMO proteases from *Schizosaccharomyces pombe* in *E. coli*: Catalytic domain identification and optimization of product yields. *Int J Biol Macromol.* 2022 Jun 1;209(Pt A):1001-1019. doi: 10.1016/j.ijbiomac.2022.04.078.

Chaudhary, Y., Khuntia, P., Kaul, R (2022). Susceptibility to foot and mouth disease virus infection in vaccinated cattle, and host BoLA A and BoLA DRB3 genes polymorphism. *VirusDisease* 33(1):65-75.

Dagar VK, Babbal, Mohanty S, Khasa YP. (2022) Effect of N-glycosylation on secretion, stability, and biological activity of recombinant human interleukin-3 (hIL-3) in *Pichia pastoris*. *3 Biotech.* 2022 Sep;12(9):221. doi: 10.1007/s13205-022-03293-1.

Singh NS, Singhal N, Kumar M, Viridi JS. (2022) Public health implications of plasmid-mediated quinolone and aminoglycoside resistance genes in *Escherichia coli* inhabiting a major anthropogenic river of India. *Epidemiol Infect.* 2022 Mar 28;150:1-21. doi: 10.1017/S095026882200053X.

2021

Adhikary A, Bansal T, Gupta P, Jain D, Anand P, Gupta R, Viridi JS, Marwah RG. (2021) Draft Genome Sequence of a Poly- γ -Glutamic Acid-Producing Isolate, *Bacillus paralicheniformis* Strain bcasdu2018/01. *Microbiol Resour Announc.* 2021 Nov 18;10(46):e0101321. doi: 10.1128/MRA.01013-21.

Adivitiya, Babbal, Mohanty S, and Khasa YP (2021) Nitrogen supplementation ameliorates product quality and quantity during high cell density bioreactor studies of *Pichia pastoris*: A case study with proteolysis prone streptokinase. *International Journal of Biological Macromolecules.* 180:760-770.

Kashyap, A., & Gupta, R. (2021). Disrupting putative N-glycosylation site N17 in lipase Lip11 of *Yarrowia lipolytica* yielded a catalytically efficient and thermostable variant accompanying conformational changes. *Enzyme and Microbial Technology*, 151, 109922.

Khasa YP and Mohanty S (2021) "Growth Physiology and Kinetics" in *Fundamentals of Bacterial Physiology and Metabolism* Editors: Prof. Rani Gupta and Dr. Namita Gupta by Springer Singapore, Chapter 5: Pages 137 - 179. ISBN 978-981-16-0723-3.

Saini, M., Kashyap, A., Bindal, S., Saini, K., & Gupta, R. (2021). Bacterial Gamma-Glutamyl Transpeptidase, an Emerging Biocatalyst: Insights Into Structure-Function Relationship and Its Biotechnological Applications. *Frontiers in microbiology*, 12, 441.

Saini, M., Kalra, S., Kaushik, J. K., & Gupta, R. (2021). Functional characterization of the extra sequence in the large subunit of γ -glutamyl transpeptidase from *Bacillus atrophaeus*: Role in autoprocessing and activity. *Process Biochemistry*, 106, 199-212.

Singh NS, Singhal N, Kumar M, Viridi JS. (2021) Exploring the genetic mechanisms underlying amoxicillin-clavulanate resistance in waterborne *Escherichia coli*. *Infect Genet Evol.* 2021 Jun;90:104767. doi: 10.1016/j.meegid.2021.104767.

Singh NS, Singhal N, Kumar M, Viridi JS. (2021) High Prevalence of Drug Resistance and Class 1 Integrons in *Escherichia coli* Isolated From River Yamuna, India: A Serious Public Health Risk. *Front Microbiol.* 2021 Feb 9;12:621564. doi: 10.3389/fmicb.2021.621564. eCollection 2021.

Singhal N, Singh NS, Mohanty S, Kumar M, Viridi JS. (2021) Rhizospheric *Lactobacillus plantarum* (*Lactiplantibacillus plantarum*) strains exhibit bile salt hydrolysis, hypocholesterolemic and probiotic capabilities in vitro. *Sci Rep.* 2021 Jul 27;11(1):15288. doi: 10.1038/s41598-021-94776-3.

2020

Ahlawat S, Singh D, Yadav A, Singh AK, Viridi JS, Sharma KK. (2020) Proteomic analysis reveals the damaging role of low redox laccase from *Yersinia enterocolitica* strain 8081 in the midgut of *Helicoverpa armigera*. *Biotechnol Lett.* 2020 Nov;42(11):2189-2210. doi: 10.1007/s10529-020-02925-x. Epub 2020 May 29.

Bhadrecha P, Bala M, Khasa YP, Arshi A, Singh J, Kumar M (2020) *Hippophae rhamnoides* L. rhizobacteria exhibit diversified cellulase and pectinase activities. *Physiol Mol Biol Plants.* 26(5):1075-1085

Saha, S. (2020). Histone modifications and other facets of epigenetic regulation in trypanosomatids: leaving their mark. *mBio* 11:e01079-20.

Singhal N, Sharma D, Kumar M, Bisht D, Singh NS, Singhal N, Kumar M, Viridi JS. (2020) Comparative Proteomics of Commensal and Pathogenic Strains of *Escherichia coli*. *Protein Pept Lett.* 2020;27(11):1171-1177. doi: 10.2174/0929866527666200517104154.

Singhal N, Pandey D, Singh NS, Kumar M, Viridi JS. (2020) Exploring the genetic determinants underlying the differential production of an inducible chromosomal cephalosporinase - BlaB in *Yersinia enterocolitica* biotypes 1A, 1B, 2 and 4. *Sci Rep.* 2020 Jun 23;10(1):10167. doi: 10.1038/s41598-020-67174-4.

Yadav, A, Sharma, V, Pal, J, Gulati, P, Goel, M, Chandra, U, Bansal, N, **Saha, S.** (2020). DNA replication protein Cdc45 directly interacts with PCNA via its PIP box in *Leishmania donovani* and the Cdc45 PIP box is essential for cell survival. *PLoS Pathog.* May 15;16(5):e1008190.

2019

Adivitiya, Babbal, Mohanty, S., & Khasa, Y. P. (2018). Engineering of deglycosylated and plasmin resistant variants of recombinant streptokinase in *Pichia pastoris*. *Applied microbiology and biotechnology*, 102(24), 10561-10577.

Adivitiya, Babbal, Mohanty S, Dagar VK and Khasa YP (2019) Development of a streptokinase expression platform using the native signal sequence of the protein with internal repeats 1 (PIR1) in *P. pastoris*: gene dosage optimization and cell retention strategies. *Process Biochemistry*, 83:64–76

Ahlawat S, Singh D, Viridi JS, Sharma KK. (2019) Molecular modeling and MD-simulation studies: Fast and reliable tool to study the role of low-redox bacterial laccases in the decolorization of various commercial dyes. *Environ Pollut.* 2019 Oct;253:1056-1065. doi: 10.1016/j.envpol.2019.07.083.

Babbal, Adivitiya, Mohanty, S., & Khasa, Y. P. (2019). Bioprocess optimization for the overproduction of catalytic domain of ubiquitin-like protease 1 (Ulp1) from *S. cerevisiae* in *E. coli* fed-batch culture. *Enzyme and microbial technology*, 120, 98-109.

Babbal, Adivitiya, Mohanty S and Khasa YP (2019) "Enzymes as Therapeutic Agents in Human Disease Management" in A handbook on high-value fermentation products Editors: Saurabh Saran, Vikash Babu, Asha Chaubey by Scrivener Publishing LLC, USA. Volume 1, Chapter 10, Page 225-264.

Gaur, N., Tikla, T., & Kaul, R. (2019). Kaposi sarcoma-associated herpes virus (KSHV) latent protein LANA modulates cellular genes associated with epithelial-to-mesenchymal transition. *Archives of virology*, 164(1), 91-104.

Kaul, R., Purushothaman, P., Uppal, T., & Verma, S. C. (2019). KSHV lytic proteins K-RTA and K8 bind to cellular and viral chromatin to modulate gene expression. *PloS one*, 14(4), e0215394.

Paul, C., Khera, L., & Kaul, R. (2019). Hepatitis C virus core protein interacts with cellular metastasis suppressor Nm23-H1 and promotes cell migration and invasion. *Archives of virology*, 1-15.

Singhal, N., Maurya, A.K., Viridi, J.S. (2019) Bacterial whole cell protein profiling: Methodology, applications and constraints *Current Proteomics*, 2019, 16(2), pp. 102–109

Singhal N, Pandey D, Singh NS, Kumar M, Viridi JS. (2019) ampD homologs in biotypes of *Yersinia enterocolitica*: Implications in regulation of chromosomal AmpC-type cephalosporinases. *Infect Genet Evol.* 2019 Apr;69:211-215. doi: 10.1016/j.meegid.2019.01.033.

Singhal N, Singh NS, Mohanty S, Singh P, Viridi JS. (2019) Evaluation of Probiotic Characteristics of Lactic Acid Bacteria Isolated from Two Commercial Preparations Available in Indian Market. *Indian J Microbiol.* 2019 Mar;59(1):112-115. doi: 10.1007/s12088-018-0762-9. Epub 2018 Sep 26.

Singhal N, Pandey D, Somendro Singh N, Kumar M, Viridi JS. (2019) Molecular Characteristics of "BlaB-Like" Chromosomal Inducible Cephalosporinase of *Yersinia enterocolitica* Biotype 1A Strains. *Microb Drug Resist.* 2019 Jul/Aug;25(6):824-829. doi: 10.1089/mdr.2018.0282.

Singhal N, Pandey D, Kumar M, Viridi JS. (2019) Molecular analysis of ampR and ampD to understand variability in inducible expression of "BlaB-like" cephalosporinase in *Yersinia enterocolitica* biotype 1A. *Gene.* 2019 Jul 1;704:25-30. doi: 10.1016/j.gene.2019.04.031. Epub 2019 Apr 11.

Singhal N, Singh NS, Maurya AK, Viridi JS. (2019) Virulence-associated traits and in vitro biofilm-forming ability of *Escherichia coli* isolated from a major river traversing Northern India. *Environ Sci Pollut Res Int.* 2019 Jul;26(21):21304-21311. doi: 10.1007/s11356-019-05389-3.

Singhal N, Maurya AK, Singh NS, Kumar M, Viridi JS. (2019) Antimicrobial resistance and its relationship with biofilm production and virulence-related factors in *Yersinia enterocolitica* biotype 1A. *Heliyon.* 2019 May 22;5(5):e01777. doi: 10.1016/j.heliyon.2019.e01777. eCollection 2019 May.

Singhal N, Maurya AK, Mohanty S, Kumar M, Viridi JS. (2019) Evaluation of Bile Salt Hydrolases, Cholesterol-Lowering Capabilities, and Probiotic Potential of *Enterococcus faecium* Isolated From Rhizosphere. *Front Microbiol.* 2019 Jul 16;10:1567. doi: 10.3389/fmicb.2019.01567. eCollection 2019.

2018

Dagar VK, Adivitiya, and Khasa YP (2018) “Combined effect of gene dosage and process optimization strategies on high-level production of recombinant human Interleukin-3 (hIL-3) in *Pichia pastoris* fed-batch culture” *International Journal of Biological Macromolecules*, 108:999-1009.

Khera L., Paul C., & Kaul R. (2018). Hepatitis C Virus mediated metastasis in hepatocellular carcinoma as a therapeutic target for cancer management. *Current Drug Metabolism* Vol 19

Singh, N.S., Singhal, N., and Viridi, J.S. (2018). Genetic environment of *bla*_{TEM-1}, *bla*_{CTX-M-15}, *bla*_{CMY-42} and characterization of integrons of *Escherichia coli* isolated from an Indian urban aquatic environment. *Frontiers in Microbiology*, 9, 382.

Edited Books:

Fundamentals of Bacterial Physiology and Metabolism. Rani Gupta and Namita Gupta (Eds.). Springer Nature Singapore. (ISBN 9789811607233).

Book chapters:

Babbal, Adivitiya, Mohanty S, Khasa YP. (2019). Enzymes as Therapeutic Agents in Human Disease Management, *High value fermentation products: Human Health* Chapter 10 (pp. 225-263). Scrivener Publishing LLC.

Sinha, K, Pau B. Sang, Priyanka Sharma, Rishi K. Jaiswal (2023) DNA replication stress and genome stability in breast cancer. *Drug and therapeutic development for triple negative breast cancer*. Chapter 2 (pp.35-64) Wiley

Khasa, Y.P. & Mohanti S. (2021). Growth physiology and Kinetics , *Fundamentals of Bacterial physiology and Metabolism* (pp.137-179). Singapore: Springer.

AWARDS AND RECOGNITION:

Prof. R.C. Kuhad

Appointed Vice-Chancellor, Central University of Haryana (2015-2022)

Prof. Swati Saha

Fellow of The National Academy of Sciences India (FNASc) (2021)

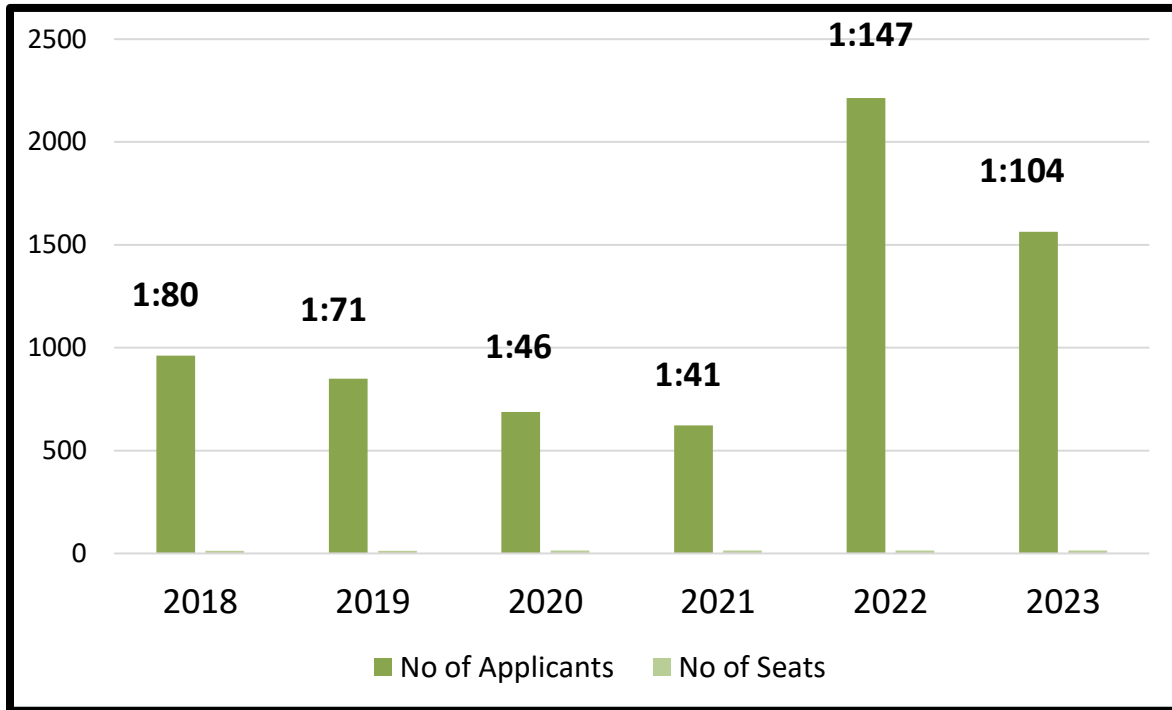
Prof. Rajeev Kaul

Fellow, IVS Fellow Award, India 2022

Fellowship of IVS 2022

DEMAND RATIO

Demand ratio for M.Sc. in Microbiology



Average

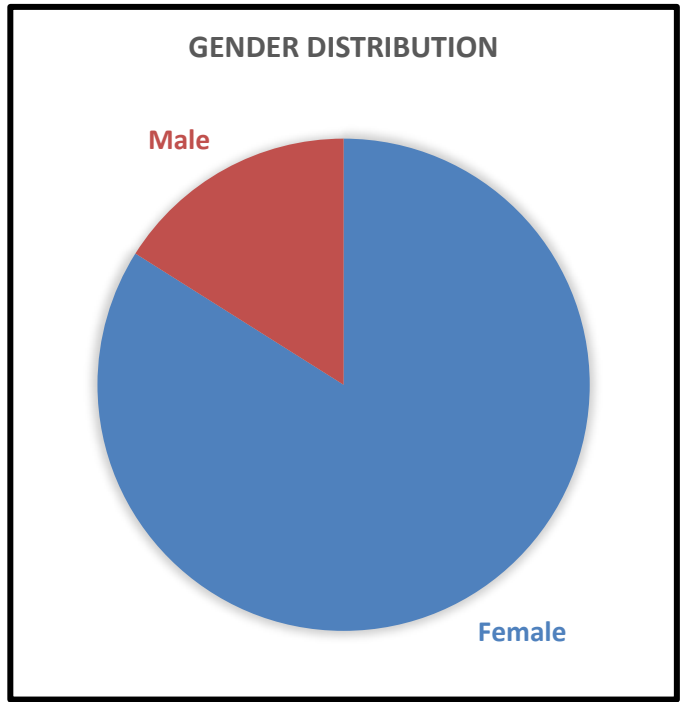
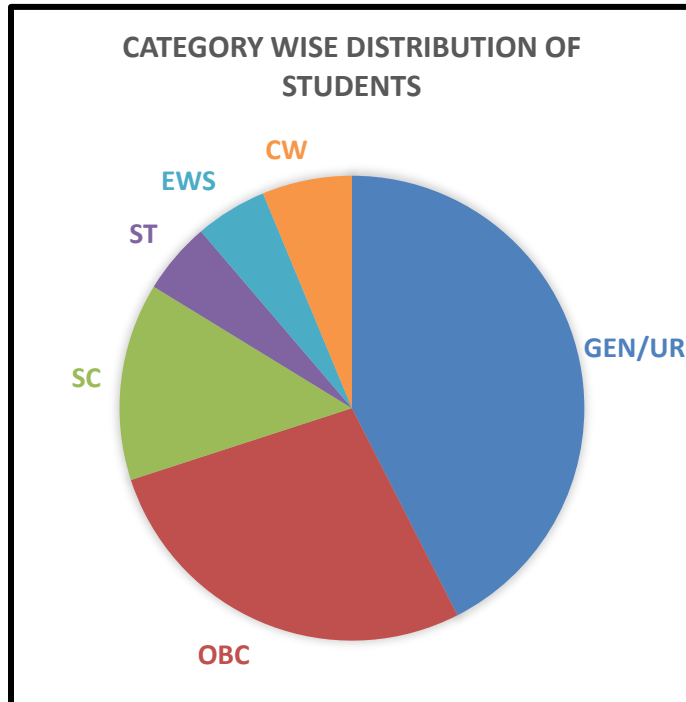
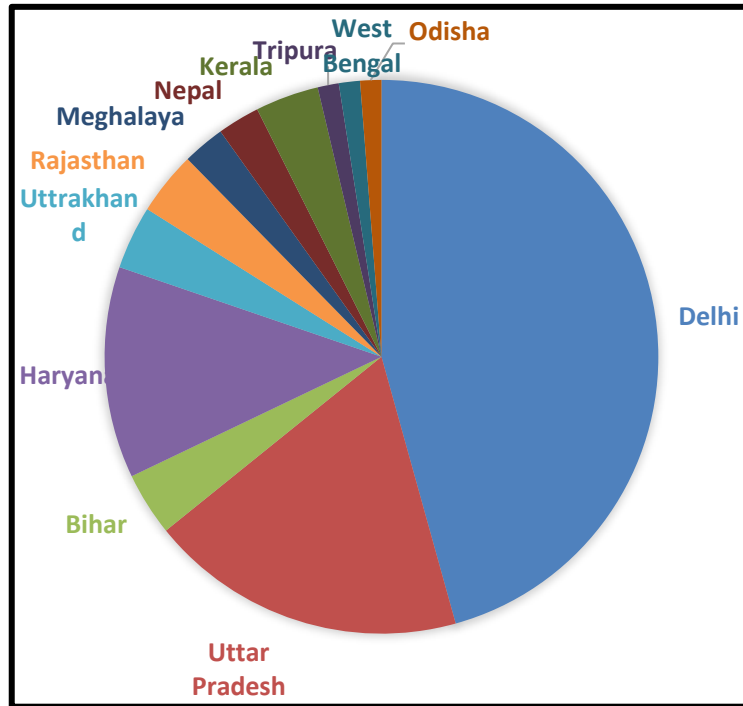
Demand ratio: 1:85

Applicants: 1150

Seats: 14

STUDENTS DIVERSITY

STATEWISE DISTRIBUTION OF STUDENTS



Ph.D. DEGREE AWARDED:

Sl no	Year	Name	Thesis titled
1.	2018	Shruti Bindal	“Biochemical characterization and protein engineering of γ -glutamyl transpeptidase from <i>Bacillus licheniformis</i> ER15: Application in L-theanine synthesis”
2.	2019	Catherine S Paul	“Role of Hepatitis C Virus (HCV) Core protein in virus mediated tumorigenesis by modulation of cellular metastasis suppressor Nm23-H1”
3.	2019	Nivedita Gaur	“The Role of Human Tumor Associated Herpesvirus Latent Antigens in Epithelial to Mesenchymal Transition of Cancer Cells”
4.	2019	Somendro Nambram Singh	“Detection and analysis of genes conferring resistance to β -lactam and quinolone antibiotics, and their genetic environment in <i>Escherichia coli</i> strains isolated from an urban aquatic environment”
5.	2019	Udita	“The functional role of histone acetyltransferase HAT2 in <i>Leishmania donovani</i> ”
6.	2020	Amandeep Kaur	“Deconstruction of rice straw for bioethanol production”
7.	2020	Adivitiya	“High level production of therapeutically important recombinant Streptokinase in <i>Pichia pastoris</i> : Process optimization and biophysical characterization”
8.	2020	Subhojit Chakroborty	“Production and formulation of cellulase(s) for saccharification of cellulose to fermentable sugars”
9.	2021	Meenu Saini	“Characterization of Gamma-Glutamyl Transpeptidase from <i>Bacillus atrophaeus</i> GS-16: Application in Synthesis of γ -D-glutamyl-L-tryptophan An Immunomodulatory Peptide”
10.	2021	Aarti Yadav	“Functional Characterization of <i>Leishmania donovani</i> Cdc45: Role of PIP box”
11.	2021	Gaurav Kumar	“Development of recombinant yeast for co-fermentation of Pentose and Hexose sugars”
12.	2022	Amuliya Kashyap	“Biochemical and Molecular Characterization of Lipase Lip11 from <i>Yarrowia lipolytica</i> MSR80”
13.	2022	Kuldeep Saini	“Expression, Characterization and Application of γ -Cyclodextrin Glycosyltransferase from <i>Evansella caseinilytica</i> ”
14.	2023	Pallavi Gulati	“Characterization of <i>Picrophilus torridus</i> Type I modification methylase M.PtoI”

STUDENTS RECEIVING JRF/SRF/RA: 16 Students

Name of Research fellow	Year of Award	Duration of fellowship	Type of the fellowship	Granting agency
Babbal Rehal	2016	5 years	JRF	CSIR
Varshni Sharma	2016	5 years	INSPIRE	DST
Juhi Jain	2018	5 years	JRF	UGC
Shilpa Mohanty	2018	5 years	JRF	ICMR
Yash Chaudhary	2018	5 years	JRF	ICMR
Ashish Singh	2018	3 years	JRF	ICMR
Kuldeep Saini	2018	3 years	JRF	CSIR
Amuliya Kashyap	2018	5 years	JRF	CSIR
Shivani Chauhan	2021	5 years	JRF	DBT
Mohini Talwar	2021	5 years	JRF	DBT
Prerna Yadav	2022	5 years	JRF	DBT
Rashmi Singh	2022	5 years	NFSC	UGC
Madhu Yadav	2022	5 years	JRF	DBT
Priya Sinha	2023	5 years	JRF	DBT
Vijay Singh Pal	2023	5 years	JRF	UGC
Ankush	2023	5 years	JRF	CSIR

ACHIEVEMENTS AND AWARDS RECEIVED BY STUDENTS:

- **Monsanto Post Graduate Scholarship recipients:**
2018-2019: Aparajit Sen, Shivani Chauhan, Jatin Chadha, Lavanya Kullar
2019-2020: Nupur Tyagi, Subhi Khare, Aparajit Sen, Shivani Chauhan
2020-2021: Tanushree Singh, Pragya Kumar, Anjali Yadav, Nupur Tyagi
2021-2022: Simran Preet Kaur, Shreya, Tanushree Singh, Sreyashi Nath
2022-2023: Afreen, Khushi Khera, Simran Preet Kaur, Shreya
- **South Campus Endowment Scholarship recipients:**
2018-2019: Sonakshi Gupta, Vaishali, Deepak Kochar, Jyoti
2019-2020: Mansi Yadav, Prerna Garg
- **All India Post Graduate Scholarship**
2019-2020: Ritu Mann
2020-2021: Ritu Mann
2021-2022: Ishani Sharma, Shubham Sharma
2022-2023: Ishani Sharma, Shubham Sharma
- **University Post Graduate Scholarship**
2019-2020: Shrabani Snigdha
2020-2021: Shrabani Snigdha
2021-2022: Ankita Saini
2022-2023: Ankita Saini
- **V.N Bakshi Postdoctoral Fellowship:** Dr. Vinay Mohan Pathak (2019-2022)
- **Poster Awards**
Miss Pallavi Gulati : Best poster award during NSD Symposium (2022)
Miss Pallavi Gulati: Third Prize in poster presentation during International conference on Advances in Bioscience and Biotechnology (2020)
Miss Babbal: Best Poster Award during Biosangam (2020)

ALUMNI:

Name	Current position
Dr. Rekha Gupta	Professor, Gargi College, Delhi University
Dr. Kavita Vasdev	Professor, Gargi College Delhi University
Dr. Prerna Diwan	Professor in RLA College Delhi University
Dr. Kusum R. Gupta	Associate Professor, RLA College Delhi University
Dr. Vandana Gupta	Professor, RLA College Delhi University
Dr. A. Archana	Professor, SSN College Delhi University
Dr. Sunita Aggarwal	Professor, IHE College Delhi University
Dr. Nitika Nagpal	Assistant Professor, IHE College Delhi University
Dr. Ashima Vohra	Professor, IHE College Delhi University
Dr. Arti Nigam	Professor, IHE College Delhi University
Dr. Purnima Anand	Associate Professor, BCAS College Delhi University
Dr. Ruchi Gulati	Associate Professor, BCAS College Delhi University
Dr. Sapna Das Bradoo	Associate Professor, University of Oklahoma, USA
Dr. Indrajit Sinha	Scientist, Acenzia Inc., Ontario, Canada
Dr. Itender Singh	Assistant Professor, Washington University, USA
Dr. Pooja Phogat	Vice President, Kinapse, Gurgaon, Haryana
Dr. Paresh Gigras	Scientist, Novartis, Singapore
Dr. Mukesh Kapoor	Scientist E, CFTRI, Mysore, India
Dr. Sachin Sharma	Welcome Trust-DBT India Alliance Delhi
Dr. Deepak Nihalini	Research Assistant Professor, Univ. of Penn, USA
Dr. Rajeev Kumar Kapoor	Assistant Professor, Department of Microbiology, MDU, Rohtak, Haryana
Dr. K. K. Sharma	Assistant Professor, Department of Microbiology, MDU, Rohtak, Haryana
Dr. Bijender Singh	Assistant Professor, Department of Microbiology, MDU, Rohtak, Haryana
Dr. Pooja Gulati	Assistant Professor, Department of Microbiology, MDU, Rohtak, Haryana
Dr. Parwinder Kaur	Assistant Professor, SSN College Delhi University
Dr. Namita Gupta	Scientist, Technology Board, DST, Delhi

Dr. Vikash Kumar	Postdoc Fellow, Univ. of Umea, Sweden
Dr. Diwakar Kumar	Associate Professor, Central Univ. of Assam, Silchar
Dr. Neha Minocha	Scientist D, Department of Biotechnology
Dr. Bhuvnesh Srivastava	Panacea Biotech. Delhi
Dr. Richa Sharma	Assistant Professor, SRGCASW College Delhi University
Dr. Devanand Kumar	Co-founder, Inte-Labs, Haryana
Dr. Jasmine Arora	Apac Biotech, Gurgaon, Haryana
Dr. Digvijay Verma	Assistant Professor, BBAU, Lucknow, UP
Dr. Kasturi Goswami	Smart Analyst, Gurgaon, Haryana
Dr. Priyanka Bajaj	Postdoc fellow, SCMM, JNU, New Delhi
Dr. Mahesh S. Dhar	Sunny Corporation, Delhi
Dr. Sarita Mallik	Assistant Professor, K. S. Vishvavidalya, Gujarat
Dr. Swati Joshi	Assistant Professor, Central Univ. Of Gujarat, Gandhinagar
Dr. SwetaYadav	Assistant Professor, SSN College Delhi University
Dr. Vikas Kumar	Premas Biotech, Manesar, Haryana
Dr. Lohit Khera	Postdoc. Fellow, Weizmann Institute, Israel
Dr. Deepa Deswal	Assistant Professor, GGSIPU, Delhi
Dr. Adarsh Kumar Puri	Researcher and Senior Research Technician
Dr. Priyanka Tripathi	Scientist III, Group Leader
Dr. Balaji Venkataraman	Principal Research Associate, CCMB, Hyderabad
Dr. Vinod Kumar	Scientist
Dr Pawan Kumar Kanaujia	Assistant Professor
Dr. Preeti Nandal	Assistant Professor
Nambram Somendro Singh	Research Associate, Dept of Biophysics, UDSC
Dr. Subhojit Chakraborty	Senior Research Scientist
Dr. Aarti Yadav	Assistant Professor, Lady Irwin College, DU

M.Sc. ALUMNI

Batch Year	Name	Phone No.	E-mail
2018-20	Annu Nagar	886000352	annunagar24@gmail.com
2018-20	Aparajita Sen	7042758772	appysweet_132@hotmail.com
2018-20	Mohini Talwar	8630412067	mohiniwork25@gmail.com
2018-20	Mona Kriti	8986930295	mkriti2858@gmail.com
2018-20	Pooja Budhwar	8295283306	poojabudhwar12.pb56@gmail.com
2018-20	Prerna Garg	9811080423	garg.prerna1997@gmail.com
2018-20	Priti Tomer	9643224721	priti.tomer7210@gmail.com
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