2023

Chhatrapati Shahu Ji
Maharaj University, Kanpur

# DEPARTMENT OF LIFE SCIENCES

# BACKGROUND

Under the academic and research development programme, the Department of Life Sciences was established in the main residential campus of Chhatrapati Shahu Ji Maharaj University (formerly Kanpur University), Kanpur in year 1983 to impart and promote multi- and interdisciplinary higher education in Life Sciences by utilizing the modern concepts of teaching and research at masters and doctoral level.

Ever since its inception, the department has been actively involved in imparting education at M.Sc., M.Phil. (under SFS and presently discontinued) and doctoral level and has earned a good name and fame by producing promising human resource who have done a commendable job/contribution in India and abroad in most of upcoming branches in Life Sciences. Regular faculty members (3) were appointed in the department  first time in 1990.

# FEES STRUCTURE

## MSc Life Sciences

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|---|---|
| 1st Year | 11700/- |
| 2nd Year | 11843/- |

## FACULTY MEMBERS

| | | |
|---|---|---|
| Prof. Nand Lal | Professor | Plant Molecular Biology & Biotechnology, Stress Physiology/Biochemistry |
| Prof. S. K. Awasthi | Professor | Biochemistry and Immunology |
| Prof. Varsha Gupta | Professor and Director | Immunology and Rheumatology |
| Prof. Rolee Sharma | Professor | Immunobiochemistry, Host-Pathogen Interactions, Targeted Drug Delivery |
| Dr. Rajesh Kumar | Associate Professor | Clinical Biochemistry |
| Dr. Rajeev Mishra | Associate Professor | Cancer and Molecular Biology |
| Dr. Pramod K Yadav | Associate Professor | Molecular Enzymology & Structural Biology |
| Dr. Vinod K Verma | Assistant Professor | Parasitology, Hydrobiology & Hematology of Fish |
| Dr. Gaurav Kumar | Assistant Professor | Neurobiology & Systems Biology |
| Dr. Ajay K Pandey | Assistant Professor | Microbial Technology, Biofuels & Industrial Biotechnology |
| Dr. Soni Gupta | Assistant Professor | Plant Biotechnology, Reverse Genetics, Medicinal & Aromatic Plants |
| Dr. Ranjana Gautam | Assistant Professor | Genetic Crop Improvement & Plant-microbe Interaction |
| Dr. V. Sreeharsha Rachapudi | Assistant Professor | Plant Molecular Biology, Renewable Energy & Biofuels |

# OBJECTIVE

The major objectives of the courses offered in the department are:

### Study living systems

To study the living systems and life processes in greater detail ranging from molecular level to organism level including its interaction with the environment.

### Provide solid foundation

To provide solid foundation for scientific principles and their applications in interdisciplinary areas related with life processes.

### Work for benefit of mankind

To manipulate the molecular processes in biological systems for the benefit of mankind in various fields using integrated biotechnological approach.

...And, most importantly, to inculcate among the students the deep understanding of research in interdisciplinary and emerging areas which meet educational, national and international priorities (as per UGC mandate).

1. Dr. Sanjeev Kumar Singh, Professor, Deptt. of Bioinformatics, Alagappa University, Karaikudi

2. Dr. Raj Kamal Tripathi, Principal Scientist, Central Drug research Institute, Lucknow

3. Dr. Vinod Singh, Professor, Deptt. of Microbiology, Barakatullah University, Bhopal

4. Dr. Uma S. Dubey, Associate Professor, Department of Biological Sciences, BITS, Pilani

5. Dr. Renu, Principal Scientist, ICAR-NBAIM, Mau

6. Dr. Akanksha Agnihotri, Research Scientist, NIH, USA

7. Dr. Shweta Tripathi, Team Leader, Enzen, USA (also featured in Asia One magazine)

8. Dr. Divya Vats, Institut fur Biomedizinische Technik, Zurich, Switzerland

9. Dr. Sunny Gupta, Albert Einstein College of Medicine, USA

10. Dr. Shuchi Mittal, Senior Scientist, Bristol-Myers Squibb, Boston, Massachusetts, USA

11. Dr. Lalita Gupta, Assoc. Professor, Department of Biological Sciences, BITS, Pilani

12. Dr. Amogh A. Sahastrabudhe, Principal Scientist, Central Drug research Institute, Lucknow

13. Dr. Poonam Singh, Senior Scientist, Central Drug research Institute, Lucknow

14. Dr. Preeti Srivastava, Asstt. Professor, Indian Institute of Technology, New Delhi

15. Dr. Manisha Sachan, Associate Professor, MLN National Institute of Technology, Allahabad

16. Dr. Rajarshi Kumar Gaur, Professor, DDU Gorakhpur University, Gorakhpur

17. Dr. Anurag Gupta, Deptt. of Oncology, University Hospital, Zurich, Switzerland

18. Dr. Pratima Bajpai, Asstt. Professor, Modi Institute of Tech. & Science, Lakshmangarh (Sikar)

19. Dr. Srilekha Mistra, Asstt. Professor, Deptt. of Biotechnology, Banasthali Vidyapith, Rajasthan-22

20. Dr. Navin K. Bajpai, Professor, Deptt, of Biotechnology, Graphic Era University, Dehtadun

21. Dr. Jhuma Datta, Asstt. Professor, Department of Agricultural Biochemistry, BCKV, Kalyani

22. Dr. Ajay K. Yadav, Asstt. Professor, Dr. BRA Centre for Biomedical Research, Delhi University

23. Dr. Anshul Nigam, Asstt. Professor, Amity Institute of Engineering and Technology, Mumbai

24. Dr. Arunima Mishra, Scietist, USA

25. Dr. Aditya Kumar Singh, Scientist, USA and many more
- The department has excellent track record of students qualify ing in CSIR-UGC-NET and IIT-GATE Examinations

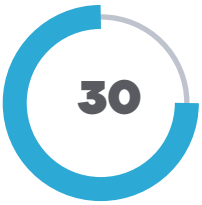
**Faculty Members are actively engaged in Research and co-research activities and it has been published/disseminated in form of:**

Original research papers in National and International Journals:


Text Books


Edited Books


Book Chapters in Reputed National/International edited reference books:




Presentations at various National/International Conferences:

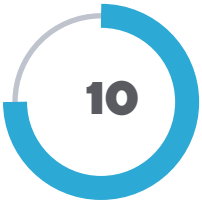

Doctoral degree to students:


M.Sc. and M.Phil. Dissertations:


Popular articles


Completed Research Projects by Faculty Members:


Conferences/Symposia Organized:




MOU Signed:


Awards:


## FELLOWSHIPS

Fellow of Society for Plant Research (India) - Late Prof. L.C. Mishra (retd. 2012)

Fellow of Society for Tropical Ecology

## COLLABORATIONS

Collaborations with other Organizations -Indian Institute of Pulses Research, Kanpur -National Jalma Institute of Leprosy & Mycobacterial Diseases, Agra -All India India Institute of Medical Sciences, New Delhi

# EMPLOYMENT OPPORTUNITIES

*This modern field provides ample employment opportunities especially in the following area:*

Medical, pharmaceutical and biotechnological industries

Doctoral and post-doctoral research in national and international institutes of higher learning in area of Life Sciences

Teaching and research in academic institutions, CSIR, ICAR, ICMR, Universities, National and International laboratories.

Avenues of placement in research & development and production units of Government/-Public/Private sector organizations.

Advanced research in the fields of Biochemistry, Biotechnology, Molecular Biology and Genetic Engineering, Molecular and Cellular Immunology, Applied Microbiology, Cancer Biology, Computational Biology etc.

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<tr>
<td>COURSES OFFERED</td>
<td>M.Sc. LIFE SCIECES COURSE WAS STARTED IN 1983<br>ELIGIBILITY: ANY SCIENCE STREAM WITH POST GRADUATE DEGREE WITH MINIMUM 50 % MARKS (45 % FOR SC/ST/PwD)<br><br>B.Sc. LIFE SCIENCES WAS STARTED FROM 2022<br>ELIGIBILITY: 10+2 WITH ANY SCIENCE STREAM WITH WITH MINIMUM 50 % MARKS (45 % FOR SC/ST/PwD)<br><br>
<table>
<tr><td>MSc Life Sciences</td><td></td></tr>
<tr><td>1st Year</td><td>11643/-</td></tr>
<tr><td>2nd Year</td><td>11843/-</td></tr>
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</td>
<td>FACULTY MEMBERS<br><br>PROF. NAND LAL<br>PROF. SUDHIR K. AWASTHI<br>PROF. VARSHA GUPTA<br>PROF. ROLEE SHARMA<br>DR. RAJESH KUMAR<br>DR. RAJEEV MISHRA<br>DR. PRAMOD K. YADAV<br>DR. VINOD K. VERMA<br>DR. R V SREEHARSHA<br>DR. RANJANA GAUTAM<br>DR. AJAY KUMAR PANDEY<br>DR. SONI GUPTA<br>DR. GAURAV KUMAR</td>
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<tr>
<td>RESEARCH STUDENT’S FELLOWSHIP DETAILS</td>
<td>STUDENT’S PUBLICATION DETAILS</td>
<td>MOUS WITH CENTRAL INSTITUTION</td>
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<tr>
<td>SAVITRIBAI JYOTIRAO PHULE FELLOWSHIP FROM UGC<br><br>Ms. Sonali Awasthi<br>Ms. Maulishree<br><br>NET LIFE SCIENCES<br><br>Mr. Kunwar Vishal<br>Ms. Nalini Dwivedi<br><br>GATE 2023<br>Mr. Anuj Kumar<br>Ms. Satakshi Chaturvedi<br>Ms. Swati Verma<br>Ms. Sambhavi Pandey<br>Mr. Afjal Ansari</td>
<td>Surabhi Suchanti , Sonali Awasthi, Gyanendra Singh , Pramod K. Yadav, Abhijeet Singh, Rajeev Mishra (2022) In silico prediction of COVID-19 cytokine storm in lung cancer types. Biochemistry and Biophysics Reports, 32.<br><br>Surabhi Suchanti, Bjorn J Stephen, Sonali Awasthi, Sudhir K Awasthi, Gyanendra Singh, Abhijeet Singh, Rajeev Mishra (2022) Harnessing the role of epigenetic histone modification in targeting head and neck squamous cell carcinoma, Epigenomics, 14 (5), 279-293.<br><br>MANY BOOK CHAPTERS & PUBLICATIONS OF M.Sc. STUDENTS</td>
<td rowspan="2">
<ul>
<li>MOU between C.S.J.M. University, Kanpur and Agri Meet Foundation, Uttar Pradesh</li>
<li>MOU between C.S.J.M. University, Kanpur and Centre of Biomedical Research, Lucknow</li>
<li>MOU between C.S.J.M. University, Kanpur and ICAR – I.I.P.R., Kanpur</li>
<li>MOU between C.S.J.M. University, Kanpur and Zoological Survey of India.</li>
<li>MOU between C.S.J.M.</li>
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<td>MEDALS RECEIPIENTS<br><br>Ms. Shiwangi Tiwari<br>Mr. Parth Tiwari<br>Mr. Ashutosh Rai</td>
<td>Recent Publications in the department<br><br>Author Title of the paper Journal Name Year Impact Factor</td>
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| **STUDENTS PLACED IN 2022-23**<br><br>MS. SHIWANGI TIWARI<br>MS. EKTA AGNIHOTRI | Priya K, **AK Pandey** and N A Gaur | Tailored designing of a diploid *S. cerevisiae* natural isolate for increased production of fatty acid ethyl ester | Chemical Engineering J. | 2022 | 16.7 |
| | RV Sreeharsha **et al.,** | Dual-stage biorefinery to convert spentwash hydrolysate into oleochemicals using *Trichosporon cutaneum* and *Yarrowia lipolytica* | Bioresource Technology | 2022 | 11.9 |
| | Kalani A, Awasthi SK, Verma VK, Nand Lal **et al.,** | Mitochondrial Mechanism in Alzheimer's disease: Quest for therapeutics. | Drug Discovery Today | 2023 | 8.4 |
| | RV Sreeharsha **et al.,** | Genome sequencing and analysis uncover the regulatory elements involved in the development and oil biosynthesis of *Pongamia pinnata* (L.) – a potential biodiesel feedstock | Frontiers in Plant Science | 2022 | 6.6 |
| | Gupta Varsha **et al.,** | Heavy metal contamination in river water, sediment, groundwater and human blood, from Kanpur, Uttar Pradesh, India | Environmental Geochemistry & Health | 2022 | 4.609 |

- University, Kanpur and National Sugar Institute, Kanpur.
- MOU between C.S.J.M. University, Kanpur and Dr. Hari Singh Gaur University, Sagar.

**PROJECTS RECEIVED IN THE DEPARTMENT (2021-2022)**

| **Name of the Faculty** | **Project Name** | **Funding Agency** | **Budget (in INR)** |
|---|---|---|---|
| Dr. Pramod Kumar Yadav | Isolation, Characterization and Application of Natural Products relevant in Human health from Agro-wastes | UP-HEC | 350000 |
| | Crosstalk of human hydrogen sulphide producing enzymes and copper relevant in pathophysiology | DBT, GOI | 1,13,60,000 |
| Dr. V Sreeharsha Rachapudi | Agri-biomass Valorisation with Novel Yeast Strains towards bio energy and biofuels | UP-HEC | 385000 |
| | Engineering *Yarrowia lipolytica* genome for high throughput oleochemicals production using elite plant lipogenesis genes | DST-SERB | 3500000 |
| Dr. Ajay Kumar Pandey | Integrated Process development for high yield Ethanol production through efficient saccharification and co- fermentation | UP-HEC | 450000 |
| | Process development for lignocellulosic ethanol production through efficient saccharification and co-fermentation | CV Raman - CSJMU | 100000 |
| Prof. Sudhir K. Awasthi | Centre for Excellence for Life Sciences | UP-HEC (COE) | 715000 |
| Dr. Rajeev Mishra | Identifying Role of RasGAP genes in triple negative breast cancer (TNBCs): A potential target for therapeutic resistance in breast cancer. | UP-HEC (COE) | 445000 |
| | Rapid RT-PCR based method to determine transmissibility, disease severity and therapeutic effectiveness for COVID-19 | UP – HEC (R & D) | 231000 |
| | Impact of Tobacco Extract Exposure on Oral Cancer Cell in Generating Cancer Stem Cells (CSCs). | CV Raman – CSJMU | 100000 |
| Dr. Soni Gupta | Morpho-genetic variability in Indian Senna (*Senna alexandrina* Mill.) from different agro-climatic zones | UP-HEC | 296000 |

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| | Identification and spatio-temporal expression profiling of UDP transferase involved in sennoside biosynthesis in *Senna alexandrina* Mill | CV Raman – CSJMU | 100000 |
| Dr. Gaurav Kumar | Understanding and evaluating temporal neuroimmunological andneurogenesis response post Traumatic brain injury | UP-HEC | 400000 |
| Dr. Rolee Sharma | Transcriptional Analysis innate immune responsesinduced by Anti-TB drugloaded biodegradable Glucan particles within Mycobacteria infected Macrophage | UP-HEC | 1110000 |
| | Natural Products as Potential Anti-biofilm agents to improve TB Drug treatment | UP-HEC (R & D) | 274000 |
| Dr. Ranjana Gautam | Investigating the role of Artemisia ALDHs genes in artemisin biosynthesis and Bitrytis resistance | UP-HEC | 354000 |
| Dr. Varsha Gupta | Gamete Associated Gene Expression and reproductive indices as measures of the effects of heavy metal pollution in the fishes of river Ganga | UP-HEC (CoE) | 372000 |
| | Determination of Heavy metal pollutants on food chain. | UP-HEC (R & D) | 267500 |
| Dr. Rajesh Kumar | Biochemical effects of heavy metals present in water and sediment of rivers Ganga on Indian major fishes (at Kanpur U.P) | UP-HEC (R & D) | 222500 |
| Dr. Vinod Verma | Assessment of hydrobiological parameters of river Ganga and hematology of fishes in Kanpur region | UP-HEC (R & D) | 266000 |
| | Center of Excellence for Life Sciences | UP-HEC (COE) | 495000 |
| | Heavy metals and their implications on histology and chromosomal aberrations in the fishes of river Ganga in Kanpur district U.P. | CV Raman – CSJMU | 100000 |