

SHIV NADAR

INSTITUTION OF EMINENCE DEEMED TO BE  
UNIVERSITY  
DELHI NCR

DEPARTMENT OF  
**LIFE SCIENCES**



# Why Shiv Nadar University?

Shiv Nadar University is a multidisciplinary research university established in 2011 by Mr. Shiv Nadar, one of Asia's foremost philanthropists and a pioneer of the technological revolution in India. The four Schools at the university offer undergraduate, postgraduate, and doctoral degrees in Engineering, Natural Sciences, Humanities and Social Sciences, and Management an Entrepreneurship. It is the youngest university recognised as an Institution of Eminence by the Government of India, a distinct category of higher education institutions that "strive to become the top hundred Institutions in the world over time". In the Government's National Institutional Ranking Framework (NIRF), the university has been the youngest institution in the 'Top 100' Overall list for the last five years.



**ANALYTICAL THINKING, CREATIVITY, PROBLEM-SOLVING:**  
with research programs, internships, entrepreneurial opportunities, and more, our curriculum teaches key skills

**PHYSICAL AND EMOTIONAL WELL-BEING:**  
a vibrant campus life on our 286-acre green campus is designed just for that

**ACADEMIC EXCELLENCE:**  
our faculty come from top institutions in India and the world

**JOBS, HIGHER STUDIES OR START-UPS:**  
we prepare our students for a variety of aspirations



## Why Study Life Sciences at Shiv Nadar University?

The Department of Life Sciences at Shiv Nadar University imparts teaching and research that expands knowledge of biology and biotechnology. By introducing undergraduate students through the B.Sc. (Research) Biotechnology program to the fundamentals and advances of biology, the Department prepares students with in-depth and wide knowledge related to biology and applications, as well as the next generation of scholars and teachers.

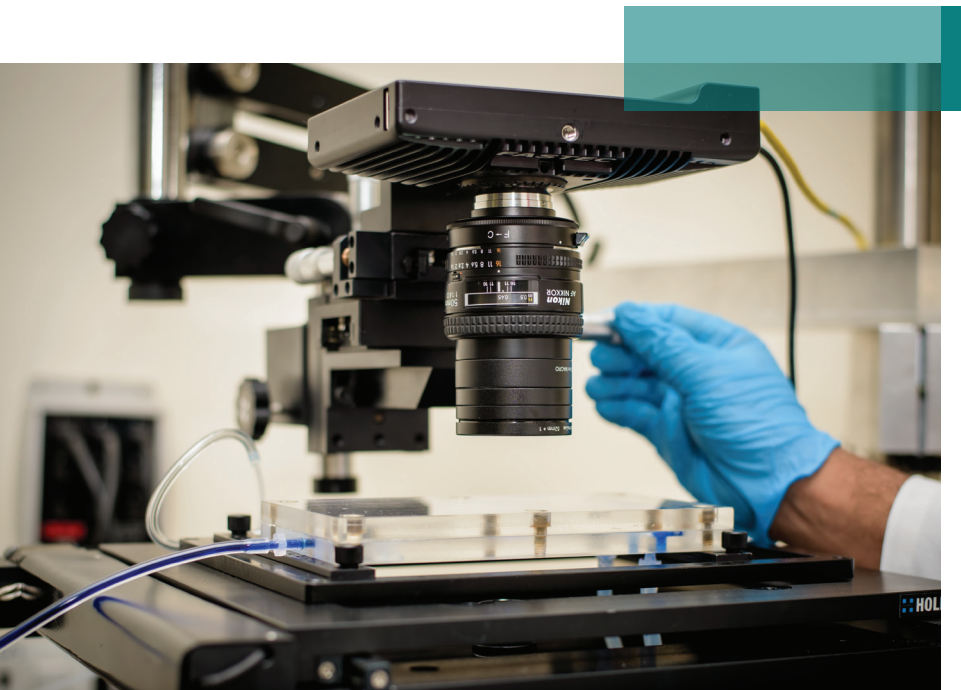
The various teaching and research areas in the Department include Biochemistry, Bacteriology, Cell Biology, Cancer Molecular biology, Genetics, Epigenetics, Neuroscience, Cognition, Parasitology, Plant Science, Virology, Epigenetics, Evolutionary Biology and Bioinformatics. The curriculum includes interdisciplinary courses in Chemistry, Physics and Mathematics. The overall aim of the Biotechnology Major program is to effectively engage students in learning, enhance their problem-solving to get a deeper understanding of the discipline, and to interact positively with others in a global community.



# Department of Life Sciences

The Department of Life Sciences believes in laying a strong foundation in Biotechnology, on par with international standards of the medical industry in the fields of Bio-imaging, Cell Biology, and Diagnostics. Equal emphasis is laid on training and research that are the intellectual flavors of the undergraduate program at Shiv Nadar University. The research project in the fourth year and the 'Opportunities for Undergraduate Research' (OUR); during their course work are the major highlights that set our undergraduate program apart from others. Students are equipped to face and meet the challenges of Biotechnology with the help of world-class faculty from Harvard Medical School, Yale University, University of Maryland, Sussex University, Vanderbilt University, ICGEB, NIH, CIMAP and AIIMS. The students are trained in interdisciplinary areas that include Cancer Biology, Vascular Biology, Malaria, Bioinformatics, Medical Virology, Industrial Biotechnology, Drug Design, and Drug Development. Industrial collaboration helps fill the gap between a conventional Ph.D. and industry-ready professionals, leading to more job opportunities in academia, industry, and hospitals. The state-of-the-art laboratories have world-class instruments like FACS Aria, Fluorescent Microscopes, RT and normal PCRs, Animal and Bacterial cell culture laboratories equipped with biosafety hoods and high-end incubators, shakers, circulating water baths, liquid nitrogen cylinders, -70 and -20 freezers for storage.

The B.Sc. students have been placed for M.Sc. and direct Ph.D. programs at Oxford, Glasgow, Michigan, King's College, and John Hopkins University to name a few. The Department's doctoral scholars have won national fellowships and various awards in national and international conferences and workshops, and the faculty members have obtained extramural grants from various government agencies. Department of Life Sciences has recently been awarded the prestigious FIST grant by DST, India for the procurement and establishment of a high-end confocal microscopy system; it also plans to launch integrated programs at the undergraduate and postgraduate levels soon.



## Curriculum

### PROGRAMS OFFERED

Bachelor of Science (Research) in Biotechnology

Ph.D. in Life Sciences

Ph.D. in Bioinformatics

Minor in Biotechnology

### Representative Courses\*

Fundamentals of Computers, Genome Biology, Cell Biology and Genetics, Microbiology, Biophysics, Biochemistry, Bio Analytical Techniques, Fundamentals of Molecular biology, Immunology, Bioinformatics, Animal Biotechnology, Plant Physiology, Plant Biotechnology, Recombinant DNA Technology, Industrial Biotechnology, Genomics, Proteomics & System Biology, Biology of Infectious diseases, Patent laws & Bioethics, Cancer Biology, Cell Signaling and Neurosciences, Genome biology: Next generation genomics data analytics, Neuroscience & Cognition, Epigenetics.



## B.Sc. (Research) Biotechnology

The research-driven B.Sc. (Research) Biotechnology program equips students with research experience in an academic setup. The program requires each student to engage in a research project for six months to one year in their chosen topic as part of their final year thesis. Students learn to formulate hypotheses, design and perform experiments, analyze data, and write scientific reports. Students also have a choice to perform a semester of research in another university or industry. In addition, students can choose to pursue research for a year in any year, as part of the OUR (Opportunity for Undergraduate Research) program. The department also offers a Minor in Biotechnology for students obtaining a major degree in other fields and are interested in exploring the rapidly growing field of biotechnology.

### Outcomes

- To nurture an ability to apply knowledge of biology fundamentals and biotechnology specialisation to the solution of complex biology questions.
- To gain skills to design and conduct appropriate experimentation, analyse and interpret data, and use rational judgment to draw conclusions.
- To apply biotechnology knowledge and skills to produce solutions for public health and welfare.

### Doctoral Program

The Department of Life Sciences has an excellent Ph.D. program, providing its graduate scholars with a discovery-driven intellectual environment to develop them as independent researchers. Graduate scholars are also trained in academic and research publishing processes in addition to honing their teaching abilities through 'Teaching Assistantships' so they can be prepared for leadership positions in academic and research-focused organisations. They get the unique experience of mentoring undergraduate students who pursue OUR and thesis projects in their respective laboratories.



## Life Sciences Faculty

The Department of Life Sciences has a strong faculty, with many having distinguished academic and research backgrounds. Many of the faculty members have earned their Ph.D. degrees and postdoctoral research experiences from top universities around the world and have conducted research at renowned research institutions. They have also published their research in high-impact journals and have received numerous awards and grants for their work. The faculty members at the university have a wide range of research interests, which include but are not limited to molecular biology, genetics, cell and developmental biology, microbiology, plant sciences, bioinformatics, cancer biology, evolutionary biology, and neuroscience.





## Faculty

**Sanjeev Galande**

Dean, School of Natural Sciences, Professor and Head, Department of Life Sciences, Ph.D., Indian Institute of Science, India

**Research Interests:** Chromosome Biology and Epigenetic Regulation

**Colin Jamora**

Professor, Ph.D., University of California San Diego, USA

**Research Interests:** Tissue regeneration and repair.

**Prasun Kumar Roy**

Distinguished Professor

**Research Interests:** Neurobiology, Computational Neuroscience, Normal & Impaired Brain, Neurodegenerative disease, Neuro-oncology, Bioinformatics.

**Deepak Sehgal**

Professor, Ph.D., Indian Agricultural Research Institute, India

**Research Interests:** Virology & Protein Biochemistry, Drug Development (HEV): Protein Expression Systems

**Ashish Gupta**

Associate Professor, Ph.D., Jawaharlal Nehru University, India

**Research Interests:** Epigenetics and human diseases, Anti-malarial chemotherapy

**Ashutosh Singh**

Associate Professor, Ph.D., Banasthali University, India

**Research Interests:** Bioinformatics, Genomics and structure-based drug designing

**Richa Priyadarshini**

Associate Professor, Ph.D., University of North Dakota, USA

**Research Interests:** Bacterial Cell Biology, Environmental Microbiology

**Koyeli Mapa**

Associate Professor, Ph.D., Ludwig Maximilian University, Germany

**Research Interests:** Protein Folding, Cell and Molecular Stress

**Anindita Chakrabarty**

Associate Professor, Ph.D., University of Missouri-Columbia, Missouri, USA

**Research Interests:** Cancer Biology & cell signaling

**Naga Suresh Veerapu**

Associate Professor, Ph.D., All India Institute of Medical Sciences, India

**Research Interests:** Virology, Virus-Host Interactions, Biology of HEV & HCV

**Rohini Garg**

Associate Professor, Ph.D., National Institute of Immunology, India

**Research Interests:** Epigenomics of Abiotic Stress Responses In Plants, Plant epigenomics

**Sri Krishna Jayadev M.**

Associate Professor, Ph.D., University of Delhi, India

**Research Interests:** Cancer Biology & cell signaling

**Sachin Deshmukh**

Associate Professor, Ph.D., National Center for Biological Sciences, Bengaluru

**Research Interests:** Hippocampus, Spatial Navigation, Entorhinal Cortex, Electrophysiology, Sensory Systems, Behavioural and Systems Neuroscience.

**Geetanjali Chawla**

Associate Professor, Ph.D., Indian Institute of Science, Bengaluru

**Research Interests:** Age-related Diseases, RNA Biology, model organism genetics, RNA therapeutics development

**Rajan Vyas**

Assistant Professor, Ph.D., Panjab University, Chandigarh

**Research Interests:** Structure-Based Drug designing using Protein X-ray Crystallography

**Neelesh Naresh Dahanukar**

Assistant Professor, Ph.D., University of Pune

**Research Interests:** Molecular ecology, Molecular phylogeny, biogeography and evolution, Evolutionary game theory and mathematical biology

**Puli Chandramouli Reddy**

Assistant Professor, Ph.D., University of Pune

**Research Interests:** Evolutionary Developmental Biology, Regeneration Biology, Epigenetics and Genomics

**Rudra Nayan Das**

Assistant Professor, Ph.D., National Center for Biological Sciences, Bengaluru

**Research Interests:** Regeneration biology, Vascular development, Lymphatic transdifferentiation

**Anil Kumar Challa**

Senior Scientist, Ph.D., The Ohio State University

**Research Interests:** Molecular Genetics, Cell & Developmental Biology, Neurobiology

**Tanvi Deora**

Fellow, Ph.D., National Centre for Biological Sciences, Bengaluru

**Research Interests:** Neurobiology and Biomechanics of Insect Pollination, Tactile sensing, Multisensory integration, Flight control, Sensory ecology

**Jugal Kishore Das**

Ramalingaswami Fellow, Ph.D., Kalinga Institute of Industrial Technology, Bhubaneswar

**Research Interests:** Immunology, Immunotherapy, Metabolic disorders.

# OUR Program

The Opportunities for Undergraduate Research (OUR) is one of the pioneering and flagship programs at Shiv Nadar Institution University, which has paved the way for undergraduate students to gain hands-on experience in conducting independent research under the guidance and supervision of the faculty.

Undergraduate students are provided an unprecedented, well-rounded education by synthesising a broad, and strong interdisciplinary foundation with solid training in their selected discipline - exemplifying the importance of research as part of the core values of the University. The OUR program aims to give students hands-on experience in conducting research and doing independent work under faculty supervision. This program paved the way for students to learn by discovery; have greater student-faculty interaction; and expand the level of research activity on campus besides helping to identify and train potential candidates for the University's graduate programs. Through the program, students are expected to develop a foundational understanding of how research is conducted in their disciplines, develop a greater understanding of the information resources available and the way to utilize them as well as how to interpret research outcomes.



## Pathway to Progress

The discipline of life sciences and biotechnology enables students to meet the technological and biological challenges of today and tomorrow. A graduate student of life sciences from the university will be well-trained in the theoretical and practical aspects of the subject, making them ready for both industrial and academic careers. Life sciences form the basis of a variety of careers, ranging from academia and research to meeting industrial needs in domains such as medicine and pharmaceuticals.

Students graduating with a B.Sc. (Research) in Biotechnology are equipped to join Biopharmaceutical Industries, Medical Labs, Medical Transcription, Funding agencies, and IPR sector. Many students have gone on to pursue higher education and training in biomedical sciences. Others have become research assistants in R&D organizations. The degree creates prospects for joining M.Sc., M.Tech, and Ph.D. programs in India and abroad.





## Student Outcomes



## Academic Collaborations







# Admissions Eligibility

## Bachelor of Sciences (Research) in Biotechnology

Program	Selection Criteria	Class 12 <sup>th</sup> Eligibility
Biotechnology	SNUSAT Score + Interview	Aggregate of best 4 academic subjects in the marksheet must be $\geq 65\%$ (must include English & Biology)
	NEET Score 2024 or 2023 + Interview	
	CUET 2024 Score + Interview	
	Valid SAT (College Board) Score + Interview	
	Valid ACT Score + Interview	

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# Contact Details

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