

School of Life Sciences

Department of Biotechnology

Preamble:

The Department of Biotechnology came in existence under the School of Life Sciences at Central University of Rajasthan in July 2011. The Master's program in Biotechnology was started as the department's flagship program with immediate effect and subsequently Ph.D. program was started from the academic year 2012-13. Department has well equipped laboratory for both Ph.D. and Master's students.. With a total number of seven highly qualified and enthusiastic faculties already on board, the department aims to become one of the shining beacons of the University and Centre of National Importance in the near future.

Objectives of the Master's program

The postgraduate course curriculum is designed with following objectives in mind:

- Building of core concepts in biochemical, genetic, molecular and cellular basis of biological phenomena and their applications in biotechnology along with an appropriate exposure to mathematical, physical, chemical and computational (bioinformatics) approaches.
- To provide strong hands-on laboratory training.
- To develop human resources for biotechnology research and industry.

Nature & Scope of the Master's program

Duration: 4 Semesters (2 years)

Eligibility: A candidate possessing Bachelor's degree in Botany/ Zoology/ Biochemistry/ Microbiology/ Genetics/ Medicine/ Pharmacy/ Agriculture/ Life Sciences/ Biotechnology/ Chemistry/ Physics/ Mathematics (with Biological sciences) as main subject with minimum 55% marks (with 5% rebate for SC/ST categories).

Admission: Through Central Universities Common Entrance Test (CUCET) conducted on an all-India basis every year during April-May.

About Program: The science of Biotechnology has tremendous potential for application in agriculture, medicine and environment. The breakthroughs in modern biotechnology mainly include our ability to produce useful organisms through genetic engineering and cell fusion techniques and improved bioprocess technology to purify novel molecules generated by such processes. It also involves areas focusing on drug targeting, development of delivery systems, development of vaccines and genetically modified products for the benefit of society. Considering this background, the program is designed in such a way that it covers diverse areas of biological and biomedical sciences such as, Cell Biology, Biochemistry, Immunology and Genetics.

Ph. D. Program:

Eligibility: Master's degree in the disciplines indicated in the column of eligibility for master's program with minimum 55% marks (with 5% rebate for reserved categories).

Selection: Through CUCET entrance test followed by personal interview.

About Program: Based on the expertise of faculty members, department is offering Ph. D.in upfront areas of research, which include functional genomics of abiotic stress and root development; cell signalling and human disease; Microbial physiology, genetics and ecology; Biophysics, protein chemistry and structure biology of amyloid; Vaccine development, antibody engineering and structure biology; Biophysics and infection biology; Nanotechnology for targeted drug, gene and siRNA delivery etc.

A stipend of Rs. 8000/- is provided to all the candidates who make to the program.

Departmental Facilities

Department has established a well equipped laboratory to carry out research in the area of biochemistry, molecular biology and also making efforts to strengthen state of art facilities for the plant as well as animal cell culture.

Guest/Invited Lectures:

Eminent personalities from India as well from abroad have graced the department and interacted with faculties and students

- Prof. A. Gnanam, former VC of Bharathidasan, Madras and Pondicherry Universities;
- Prof. S. Chand, School of Life Science, Devi Ahilya Univ. Indore;

- Dr. Yogesh Dayma, Korea Research Institute of Bioscience & Biotechnology, Korea;
- Dr. Daniela Brunnert, Clinic and Polyclinic Obstetrics & Gynecological, University Hospital, Greifswald, Germany;
- Dr. Sistla Srinivas and Mr. Raghawan Raghunathan from GE Life Sciences Bangalore are among the distinguish guests who delivered lectures and seminars to the PG and Ph. D. students during the academic year 2013-14.

In addition School of Life Science organises weekly seminars on popular and scientific topics delivered by the faculty members.

MoUs / Collaborations:

An international cooperation agreement (MoU) between the University of Castilla La Mancha, Spain and our Central University of Rajasthan has been signed on 17th Oct, 2013 for a period of two years. This MoU will allow exchange of students, research and teaching staff from both the sides for achieving academic and research goals.

Achievements:

First batch of M. Sc. rolled out in 2013. Most of the students have got placements in leading research laboratories of the country (e.g., National Institute of Immunology, New Delhi, Central University of Bihar, Central University of Rajasthan), and many are employed in various industries and public sector enterprises (e.g. Food Corporation of India).

The faculty members of the department are able to attract funding from various government agencies to support their research.

Ongoing/ sanctioned projects with the faculty:

Faculty	Project status	Funding Agency	Funds sanctioned (Rs. In Lacs)	Broad research area
Dr. T. K. Bhatt	Ongoing	DST	16.7	Molecular Modelling of malaria parasite 'secretome'
Dr. S. Nimesh	Ongoing	DST	25.0	Nanotechnology Based Gene Silencing
Dr. J. K. Yadav	Ongoing	DST	19.0	Amyloidogenic propensities of HIV

				infection enhancing peptide PAP(248-286) under relevant physiological conditions
Prof. A. K. Gupta	Sanctioned	DBT	60.0	Functional characterization of a HSP90, AAT and NAP genes
Dr. J. Pandey	Sanctioned	DST	26.5	Soil microbial diversity across textile wastewater

The department has initiated Solid Waste Management Facility using Vermicompost technology at CURAJ Campus was on 30th March, 2012. The facility utilizes the solid waste from the kitchen of hostels and canteen to produce manure..

Details of Current Faculties:

1) **Prof. Aditya K. Gupta**

Designation: Professor and Head, Dean School of Life Sciences

Qualification: PhD(Jawaharlal Nehru University, New Delhi)

Area of Interest : Plant molecular Biology and Genetic Engineering, Functional Genomics(Abiotic stress and Root Development)

Email : hod.biotech@curaj.ac.in, akg54@curaj.ac.in

2) **Dr. Pankaj Goyal**

Designation: Associate Professor

Qualification: M.Sc. Biotechnology; M.Tech. Biotechnology; Ph.D. (Human Biology; University of Munich (LMU), Munich, Germany),CSIR- UGC NET JRF; ASRB-NET; GATE

Area of Interest : Cell signaling and Human Diseases; Target Genome Editing, Pregnancy disorder

Email : pankajgoyal76@gmail.com, pankaj_bio@curaj.ac.in

3) **Dr. J. Pandey**

Designation: Assistant Professor,

Qualification: M.Sc. (Biotechnology), Ph.D. (Life Sciences; IMTECH - CSIR, Chandigarh), CSIR- UGC NET- JRF; ICMR- JRF; GATE; Postdoc: 2009- 2010:

University of Chicago, IL, USA; 2010- 2012: Georgia Health Sciences University, USA;

Area of Research Interest: Microbial Physiology, Microbial Genetics, Molecular Microbial Ecology

E-mail: janmejay@curaj.ac.in

4) **Dr. Jay Kant Yadav**

Designation: Assistant Professor

Qualification: M.Sc., Ph.D. CFTRI Mysore, University of Mysore, GATE, CSIR NET JRF; Postdoctoral Fellow: 2010-2012: Max-Planck Institute, Halle, Germany; 2012-13: Institute of Pharmaceutical Biotechnology, University of Ulm, Germany

Area of Research Interest: Biophysics, Protein Chemistry, Structural Biology of Amyloid

Email_id: jaykant Yadav@curaj.ac.in

5) **Dr. Suman Tapryal**

Designation: Assistant Professor

Qualification: M.Sc. Biotechnology: JNU, New Delhi; (NET-JRF); Ph.D. scFv libraries (Biotechnology): JNU, New Delhi; Postdoctoral Research: X-ray crystal structures of antibodies: National Institute of Immunology, New Delhi.

Area of Research Interest : Antibody engineering and Structural Biology; Vaccine development and applied Biotechnology

Email : suman_tapryal@curaj.ac.in

6) **Dr. Tarun Kumar Bhatt**

Designation : Assistant Professor

Qualification : M.Sc. Biotechnology: MKU, Madurai (NET-JRF), Ph.D. Malaria Biology: ICGEB, New Delhi, PostDoc. Structural Biology: The Scripps Research Institute, San Diego, USA

Area of Research Interest : Biophysics and Infection biology

Email_id : tarun@curaj.ac.in

7) **Dr. Surendra Nimesh**

Designation : UGC Assistant Professor

Qualification : M.Sc. Biomedical Science, Dr. B.R. Ambedkar Center for Biomedical Research(ACBR), University of Delhi, Delhi; NET-JRF(Dec. 2000); PhD (Nanotechnology), ACBR, DU(2007); Postdoctoral Research: Ecole Polytechnique of Montreal, Montreal, Canada(2007-2009); Clinical research Institute of Montreal, Montreal, Canada(2009-2011); Health Canada, Government of Canada, Ottawa, Canada(2012-13)

Area_of_interest : Nanotechnology for targeted drug, gene and siRNA delivery, Cardiovascular diseases

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