

SCHOOL OF STUDIES IN Neuroscience

Programme offered: M.Sc. Neuroscience (Two years / Four semesters)

(A Department of Biotechnology, Govt. of India sponsored programme)

Available Seats: Open =10

NRI - 02

Studentship: All the 10 students admitted shall be awarded a studentship of Rs. 1200 per month. NRI students are not eligible.

The School of Studies in Neuroscience offers a platform for research and teaching towards understanding the structure and function of the brain. This is the first and only Post-Graduate Department in Indian Universities extending interdisciplinary and inter-Institutional training to students leading to the award of M.Sc. Neuroscience degree. The M.Sc. Neuroscience teaching programme takes care of the basic disciplines such as Cell biology, biochemistry, cell and molecular biology, genetics, laboratory tools and techniques, etc. which provide a broad base during the first semester. This is followed by gradually specialized areas of neuroscience like neuroanatomy, neurochemistry, molecular neurobiology, genetics, neuroimmunology, development of brain, degeneration and regeneration of nervous system, systems neuroscience, learning, memory and cognition, clinical neurochemistry, nanotechnology, bioinformatics, tools, techniques and methods in neurobiology research.

Generous financial support from the Department of Biotechnology, Department of Science & Technology, Council of Scientific and Industrial Research, Indian Council of Medical Research, University Grants Commission and other agencies during past decade and strong academic backup and support from distinguished neuroscientists of national and international stature have allowed us to develop a research centre which one can boast of. We have successfully executed several major research projects, organized training workshops for research scientists and University and college teachers, symposia and conferences of National and International level. The School is well equipped with modern instrumentation as well as a good library. Our neuroscientists have been trained in leading Institutes in India and abroad. We are now looking forward to international collaborations.

In order to inculcate research skills in our students, in addition to their training at our research laboratory they get an exposure by way of project work/ training for about 6 months in an established neuroscience laboratory.

We also make special efforts to promote an excellent general education that would provide the basis for careers in other areas such as teaching, commerce, and administration and management.

For more details please visit: www.jiwaji.edu and www.neuroscienceju.com

Objective of the Course: The M.Sc. programme has been designed to prepare students for: (1) neuroscience research oriented positions in academia and industry, (2) carriers at the interface of the bench and bedside in the academic neuroscience or (3) even in the application oriented biomedical industry.

Course Structure: The students with a M.Sc. degree in Neuroscience would have acquired the basic knowledge in major disciplines of the subject such as neuroanatomy, neurophysiology, neurochemistry, molecular neurobiology, neurogenetics and the working of motor, sensory and regulatory systems. The development and regeneration of the brain as well as the knowledge in basics of clinical neuroscience in terms of diseases and diagnostic tools would also be provided. They would also acquire practical training in the above aspects as well as in research methodology and computational skills.

Teaching Methods: The course is completed in a truly interdisciplinary and inter-Institutional mode. A variety of teaching methods are adopted including interactive lectures and seminars, group work, practical classes, computer based exercises as well as external visits to hospitals, Laboratories, Institutes, etc.

Mode of selection: Merit in entrance test conducted by Jiwaji University Gwalior

Eligibility: Graduation with 50% marks with one or two of the following subjects: Biology, Biotechnology, Biochemistry, Neurobiology and Zoology along with chemistry. In addition veterinary science and MBBS graduates shall also be eligible.

Scope for placement: M.Sc. Neuroscience programme has been designed to train students for neuroscience research oriented positions in Universities/Institutes/
R&D Units of Pharmaceutical Companies engaged in production of neuropharmacological products and diagnostics, in India and abroad.

Placement of our alumni

The alumni of this Department are now working at: All India Institute of Medical Sciences, New Delhi; National Centre for Biological Sciences, TIFR, Bangalore; Central Drug Research Institute, Lucknow; Indian Clinical Research Institute, New Delhi; Banaras Hindu University, Varanasi; MLS University, Udaipur; Reliance Life Science, Mumbai; Tata Consultancy Services, New Delhi; Dr. Reddy's, Hyderabad, Suven Life Sciences, Hyderabad; Virchow Pharma, Hyderabad; HariHar Corp., Agra; Jiwaji University, Gwalior; Innsbruck Medical University, Austria; University of Cambridge, UK; Vienna Medical University, Vienna; Defence Services, Govt. of India. IGIB, New Delhi, School of Medicine, Ajou University, Medical Centre, Suwon, South Korea, Jawaharlal Nehru University, New Delhi, Obesity and Metabolism unit, University of Laval, Quebec, Canada, Ruhr University, Germany, University of Montreal, Quebec, Canada, (IIT), Kanpur, International School for Advanced Studies of Trieste, Neurobiology sector, Italy, NBRC, Manesar, University of Montreal, Quebec, Canada, NIN Hyderabad, Trista Science Pvt. Ltd., Bangalore, Auroprobe Laboratories, Delhi etc.

Training abroad

Some of our students with grants from the International Brain Organization have been trained at the IBRO Schools at Singapore, Tehran, Japan and AIAn

Contact Person: Prof. Ishan Patro, Co-ordinator

email: Ishanpatro@rediffmail.com

The faculty consists of well experienced teachers and scientists from Jiwaji University and premier Universities/ Institutes such as All India Institute of Medical Sciences, Jawaharlal Nehru University, Banaras Hindu University, University of Hyderabad, Jamia Hamdard, Indian Institute of Toxicology Research, Central Drug Research Institute and others.

Course Structure:

| I-Semester | II-Semester | III-Semester | IV-Semester |
|---|--|---|---|
| Cell biology and neuron organization Biochemistry | Neuroanatomy Immunology | Neurochemistry Sensory and motor systems | Clinical Neurochemistry Nanotechnology and bioinformatics for neuroscience |
| Genetics and Molecular Biology | Developmental Neurobiology | Regulatory system | Lab Course VII: Research methods, biostatistics and computer applications Dissertation |
| Laboratory tools and techniques | Cellular Neurophysiology and biophysics | Behavioral and cognitive neuroscience | Viva-voce related to the dissertation |
| Lab. Course I (LAB.): Cell Biology Lab Course II: Genetics biochemistry and molecular biology | Lab Course III: Neuroanatomy Lab Course IV: Neurophysiology | Lab Course V: Neuropathology Lab Course VI: Behavior biology | |

Ph.D. PROGRAMME

The Centre intends to educate future scientists who will become leading researchers and educators in the brain sciences. Candidates with a M.Sc. degree in any branch of biology and have qualified the DBT-BET JRF, UGC-CSIR JRF NET, ICMR JRF or similar tests may apply. Others may also be considered on the basis of their academic records.

Key areas of study:

| | | |
|---|----------------------------------|---|
| Adult Neurogenesis Neuroinflammation Cognitive Neurobiology | Developmental Neurotoxicology | Involvement of glia in brain development, aging, injury and disease |
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Available Facilities at the Centre:

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|--|--------------------------------------|----------------------------------|
| Leica Fluorescence Microscope DM 6000 | Leica Automatic Vibratome | Olympus Drawing Microscope |
| Leica Laborlux Fluorescence Microscope | Leica Microtome | Laminar flow bench |
| Leica Image Analysis System | Eppendorf Thermalcycler (PCR) | Columbus Animal activity monitor |
| Leica Stereozoom microscope | Eppendorf Minispin plus | |
| Leica Cryostat CM 1900 | Heraeus Ultra Low Temp. Deep Freezer | |

Columbus Grip strength meter
Columbus Rota-rod treadmills
Columbus Analgesia tail flick instrument
Biopac Electrophysiological setup
Lab Standard stereotaxic apparatus
Stoelting Motorized Nano-injector
Shimadzu UV-Vis Spectrophotometer
Electrophoresis setup
Stoelting Any Maze Monitoring Software

Remi High speed Centrifuge
Olympus Research Microscope
Spectrophotometer
Tissue Homogenizer
Orbital Shaker
INCO Stereotaxic Apparatus
Spencer Sliding Microtome
Laboratory microscopes

Incubator cum Orbital Shaker
pH Meter
Incubators
Laminar flow bench
Incubator-cum-orbital shaker
Bio Safety Cabinet

Fees for the course :

Open Seat

| Course | I Semester | II Semester | III Semester | IV Semester |
|--------------------|-------------------|--------------------|---------------------|--------------------|
| M.Sc. Neuroscience | Rs. 25615.00 | Rs.21725.00 | Rs. 23075.00 | Rs. 21725.00 |