Delhi-NCR Chapter of Indian Academy of Neurosciences

Pre-Conference Workshop on

Neurostereology and Stereotaxic techniques in Animal Models

Department of Anatomy and Physiology,
All India Institute of Medical Sciences, New Delhi
5th October 2026

Aim Half day workshop will provide hands on training to young investigators and students in neurostereology, technique that can extract three dimensional quantitative information from two dimensional samples and working knowledge of the stereotaxic procedures that can be used to create lesion or intracerebral injections.

Introduction to workshops

Morphometry is the science of measuring various morphological parameters of an object. The main objective of morphometry is counting the number of objects and measuring its spatial dimensions; diameter of cells, the length of axons, dendrites, etc., for quantitative assessment of the features of a tissue. These data are generally interpreted by using terms such as “small”, “large”, “few”, “many”. Such terms are neither precise nor comparable. Hence, these are not sufficient for providing a distinct statistical difference between a physiological and pathological condition. We can count and measure elements on light microscopy images that are not the true histological elements but actually profiles of them. The number and size of profiles of an object do not correspond to the object number and size and thus significant mistakes can be made in the interpretation of the quantitative data obtained from profiles. Stereology is a set of methods applied on two-dimensional sections that provide a three-dimensional interpretation of structures under study. Currently, design-based stereology uses methods (probes) for generation of data regarding absolute or relative volume, size, and number, length of a structure in the whole or defined portion of a series of histological sections. The aim of the workshop is to familiarize the young investigator with the stereological methods used in neuroscience. During the half-day program, you will be exposed to theory and practice of recent and advanced methods of neuromorphology like physical or optical dissector.

Stereotaxic surgery is a highly precise, minimally invasive, neurosurgical technique used to locate and manipulate specific regions within the brain or spinal cord precisely using a three-dimensional coordinate system. It was proposed by Sir Victor Alexander Haden Horsley & Robert Henry Clarke in 1908. It is widely employed in neurosciences, pharmacology and behavioral sciences for stimulating or lesioning specific brain areas, microinjections, drug delivery, neuronal activity recordings, developing various animal models of neurological disorders, implantation of electrodes or cannulae, radiosurgery, biopsy, etc. The technique is based on the concept that every point within the brain can be identified using spatial coordinates along three axes: Anterior–Posterior (AP) — front to back; Medial–Lateral (ML) — middle to side; Dorsal–Ventral (DV) — top to bottom, using bregma or lambda as the skull landmarks. These coordinates can be obtained

from standardized brain atlases, specific for each species and developmental age. In the Nanomedicine and Neurophysiology laboratory at AIIMS Delhi, various animal models and electrophysiological methods using stereotaxy device have been standardized. The proposed workshop will enable the participants to gain insight into the details of the procedure used for fixing the animal in the stereotaxy, reading the atlas and targeting/ injecting into the specific brain area in an anesthetized rat.

Program at a glance: The two workshops will run parallel in various laboratories. The delegates will be divided into two groups and made to rotate in the labs after a prefixed interval. A brief overveiw of the events in each workshop are as follows:

Stereotaxic techniques: Total duration 1.5 hrs

Venue
Nanomedicine and Neurophysiology laboratory (room no. 2018), department of Physiology, All India Institute of Medical Sciences, New Delhi
Faculty Coordinator: Prof Suman Jain, Professor, Department of Physiology, AIIMS Delhi

Neurostereology: Total duration 1.5 hrs

Venue
Anatomy laboratory (room no. 1012) and Anatomy Demonstration Room, department of Anatomy, All India Institute of Medical Sciences, New Delhi

Faculty Coordinator: Prof. Tony George Jacob, Professor, Department of Anatomy, AIIMS Delhi

Date and Time: 5th October 2026; 9:30am- 1:00 pm

Who can apply? The workshop is open to all the faculty, doctoral or postgraduate students working in the field of neurosciences. A maximum number of 20 delegates will be selected on first come first serve basis.

Email your application (stating your affiliation and the purpose of attending the workshop): iandelhincrchapter@gmail.com

Registration fees: Rs 500/- (to be paid by selected delegates only)

Bank details for payment of registration fees:

Name of Bank: State Bank of India

Branch Name: Ansari Nagar, Delhi

Account holder name: IAN DELHI NCR CHAPTER

Account number: 39737532791

IFSC code: SBIN0001536