

## **Workshop on “Behavioural studies on rodents including assessment of pain”**

*Concept:* Behavioral studies in rodents are hampered by the subjective nature of the assessment. This often leads to challenges in the interpretation of the data. For example, presence of anxiety or depression in laboratory animals can affect behaviours like licking or withdrawal, which are commonly used end-points for assessing pain. Even, alterations in signs like EEG, evoked potentials or autonomic changes can be produced by arousal, rough handling or other threatening stimuli during the experimental procedure. Also, behavioral assessment will differ between rats and mice.

*Aim of the workshop:* At the end of the workshop, students should be able to conduct independently various behavioural assays on rodents following administration of test drug. Should be able to analyse the results by statistical analysis. Hands-on approach will be encouraged during the workshop.

### *Course material*

1. Housing, handling and habituation in rodents
2. Methods of administration of drugs – gavage, subcutaneous, intraperitoneal and surgical implantation of osmotic minipumps in the inter-scapular region
3. Which behavioural tests to use ? For example, NSAIDs do not alter thermal escape behaviours like tail-withdrawal test
4. Behavioral tests for anxiety like elevated Plus-maze
5. Assessment of spatial memory like Radial arm maze and Morris’s water maze test
6. Various nociceptive assays will be demonstrated to the students
  - Thermal assays like Hargreaves test for paw withdrawal
  - Mechanical assays like allodynia in neuropathic pain model by von Frey filaments
  - Chemical assays like formalin test and intraperitoneal acetic acid-induced writhing behaviour
  - Randall-Selitto test using electronic digital display
7. Experimental procedures related to surgical interventions in rodents
  - General experimental setup for rodent surgery
  - Technique for Implantation of indwelling catheter in the intrathecal space
  - Brennan’s hind paw incision model for postoperative pain and its assessment
  - Neuropathic pain models like partial L5 nerve ligation model
8. Routine statistical tests like t-test for comparing two independent means and one-way analysis of variance for comparing several means. Intuitive statistical softwares like GraphPad Prism will be discussed

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Faculty Involved: (1) Dr. Pushpa Dhar

(2) Dr. S. Basu Ray

**Number of students per session: 20**

**Duration: 3 hours**