Measuring behaviour: Design and analysis of behavioural experiments
Organizers: Fulvio Magara

1 ECTS

SUMMARY

While many texts deal in depth with the neural bases of behaviour, comparatively less literature is devoted to practical matters that need to be carefully considered before undertaking observations or experiments with living animals, form the genetic definition of the animal of choice, to the impact of environmental factors on the behavioral profiles, to the expected effect size and the estimation of a sufficient number of replicas to draw conclusions.

In the attempt to make this course attractive also for junior researchers working with animals yet not on behavior, the accent will be set on methodological issues, such as model validity, experimental design, data analysis and presentation.

The course, conceived for the graduate students of the Lemanic Neuroscience Doctoral School, is open to master students and post-docs in psychology, biology and medicine.
It is recognized by the Swiss Federal Veterinary Office as one day of continuing education in animal experimentation.

DATES
March 28 (Friday) and April 7 (Monday), from 13:30 to 18:30

PROGRAM 2014

March 28th - Cery Psychiatric Hospital, Salle « Forel »
Research Methods in Behavioral Science
13:30- 15:00
F. Magara (DP-CHUV): Introduction to experimental design: One or more group studies, experimental unit, effect size, sample size. Blocking and factorial designs.
This lesson focuses on the planning of animal experiments, with focus on conceptual issues of data sampling, assessment and presentation.

15:15 – 16:45
F. Schutz (CIG, UniL): Two ways to fail (or succeed): Multiple comparisons, False positive, False negative, Power calculations.
This lesson focuses on the planning of animal experiments, with focus on statistical issues.
17:00- 18:30
D. Preissmann (CNP-CHUV & SSP, UniL): Introduction to methodology in experimental psychology and behavioural sciences.
This lesson focuses on the choice of strategies and their advantages and drawbacks when studying behavior, with examples from the history of experimental psychology.

April 7th - Cery Psychiatric Hospital, Salle « Hirondelle »
**What do you need to make a model: the right animal, the right paradigm**

13:30-15:00
F. Magara: Choice of the animal model, focus on genetics.
*This lesson focuses on the choice of the species, the strain and the type of genetic manipulation when establishing an animal model of function or dysfunction.*

F. Magara: Are my controls OK? Pre-assessing animals and tuning test conditions.
*This lesson focuses on the behavioral differences brought about by sex, rearing and housing conditions, as well as on what is a normal behavioral repertoire for lab rodents.*

15:15 – 16:45
H. Richter (ZISG, Mannheim): Same but different - Standardization and reproducibility in animal experiments.
*Contrary to common opinions, standardized and impoverished housing conditions do not necessarily reduce variability in behavioral responses, while certainly affecting inter-lab reproducibility of results and leading often to false positive findings.*

*Animals respond to environmental challenges with biological adaptations. Ecologically appropriate housing conditions help to reduce adaptive variability.*

17:00- 18:30
F. Magara: Confounding factors in the assessment of learning and memory.
*While we think of testing cognition in animals, we just observe movements resulting from the sum of many stimuli. The control of motivational and attentional aspects is of paramount importance when testing cognitive abilities in mice.*

D. Preissmann: Simpler tests are not simple: impact of information availability on cognitive performance.
*While several tests are supposed to measure the same type of competence, results may vary greatly depending on little details that may orient an animal towards different or even opposite strategies to solve a problem.*

**CREDIT REQUIREMENTS**

Graduate students of the Lemanic Neuroscience Program will obtain 1 credit upon passing a final evaluation, which will take place during the last week of April (dates to be established in accordance with the students).

Course Evaluation (for graduate students only): Students will be divided in groups that will have to address three tasks:
1. Sketch a study plan based on a given question (choice of the animal model, choice of the test, sample size, analysis), much like it is done for the request of a licence to the cantonal veterinary authority;
2. Revise a fictive study plan
3. Present and comment an article from the scientific literature.
The exam lasts 60 to 90 minutes for each group.
REGISTRATION

Please register by sending an e-mail (with the course name as header and your supervisor in copy) to Indscourses@gmail.com (until February 28) or directly to Fulvio.Magara@chuv.ch