

FENS 2008 Satellite Symposium

**Psychiatric disorders and their modelling in animals:  
in search of symptoms or syndromes?**

**Dates:** Fri 11<sup>th</sup> Sat 12<sup>th</sup> July, 2008

**Location:** Center for Psychiatric Neuroscience; Cery Psychiatric Hospital, Lausanne-Prilly

**Preliminary programme:**

**Room “Ch. Muller”**

**Fri, 12:20**

**P. Magistretti** – Welcome and opening remarks

**12:30 – 14:30**

**P. Bovet:** A clinical sight on psychiatric research (20’)

**F. Schenk:** Modelling a syndrome in the laboratory animal (20’)

**F. Magara** – The quest for endophenotypes of personality disorders (20’)

**Th. Steimer:** How to define « temperamental traits » in rodent models of psychopathology using composite behavioural variables (20’)

**14:30-14:45**

**Coffee Break**

**14:45-16:45**

**Alternative approaches and new vistas in behavioural neuroscience**

**B. Boutrel:** The conditioned place preference: a paradigm for investigating both natural and non-natural reward seeking behaviours

**R. Stoop:** In vivo and in vitro effects of neuropeptides in the central amygdala

**G. Di Scala :** Multisensory integration in the perspective of animal models of schizophrenia

**J.H. Cabungcal:** Oxidative stress during critical phases of development: an animal model of schizophrenia

**16:45-17:30**

**Poster display and coffee**

**17:30-18:15**

**F. Holsboer** –Personalized therapies for mood disorders: a challenge for basic neuroscience

**18:15-19:00**

**M. LeMoal** – Paths towards an experimental psychopathology

**19:00-19:15**

**P. Magistretti:** concluding remarks

**19:15-21:00**

**Poster display and Buffet**

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**Sat 09:00-12:00**

**Venue:** Centre Etudes du Comportement (behavioural testing facility of the CNP, Cery Hospital, ACACIAS Building)

## **Presentation, Demonstration and Discussion of protocols :**

### **Conditioned Place Preference**

### **Self-administration**

### **Spatial learning**

### **Measuring anxiety and exploration**

The technical workshop of Saturday will be attended by a maximum number of 24 delegates

Participants will form four groups of six persons, taking part in turn to 4 workshops focused on (1) **Conditioned Place Preference**, (2) **Self-administration**, (3) **Spatial learning**, (4) **Spontaneous exploration and anxiety**. Each workshop lasts 1 hour and consists in the visit of the experimental setup, explanation of the protocol, exercise of evaluation on video material, questions and discussion

Protocols of the workshops:

#### **1. Conditioned Place Preference:**

This experimental procedure is considered to evaluate the appetitive properties of drugs of abuse. The animal is first given the possibility to explore a 2-compartment box with distinct visual and tactile cues. Next step, the animal is injected with a drug and its exploration is restricted to only one chamber. Drug injection is repeatedly paired with the same compartment, while saline injections are repeatedly paired with the other compartment. During these conditioning trials the animal develops an association between the positive affective state produced by drug administration (comparable to mood elevation and euphoria in humans) and the environmental cues present in the chamber. On the test day, the animal is given again the possibility to freely explore both compartments, and it usually spends significantly more time in the compartment previously associated with drug administration. Many laboratories are now using this technique to study the subjective properties of drugs because CPP studies are much easier to conduct than self-administration studies. Although the CPP method does not directly measure drug reinforcement, the concordance between CPP and self-administration studies is fairly good in measuring drug-seeking behaviors.

#### **2. Self-administration**

Laboratory animals can be trained to self-administer food pellets or liquids (such as alcohol or sweetened solutions). They can be trained to self-administer drugs of abuse as well. In this latter case, laboratory animals need to be surgically prepared with intravenous catheters inserted into the external jugular vein that allows, after a period of post-surgical recovery, direct delivery of drugs of abuse dissolved in saline. Hence, animals are trained to press a lever to self-inject various drugs of abuse, such as cocaine or heroin. Most of the drugs that are abused by human beings are self-administered (and even abused) by laboratory animals. Intravenous self-administration (IVSA) provides an animal model of human drug-taking and drug-seeking behaviors. It offers an experimental procedure for studying the reinforcing properties of drugs as well. Thus, the amount of work a laboratory animal is willing to do is easily measurable with this experimental paradigm. It is often used to investigate the biological basis of drug addiction, and it is also used, as a preclinical phase, to develop new medications for the treatment of addiction. Finally,

IVSA is quite appropriate to screen new psychoactive medications for possible abuse liability, which helps pharmaceutical industries minimizing the risk of developing new medications that may later be abused by humans.

### **3. Spatial learning**

Memory of “what “ and “where” in humans appears to be under the control of the same neural circuits that allow to build up a “mental map” of a place in the laboratory rodent. A number of experimental paradigms have been developed to assess spatial learning abilities in rats and mice. Among these, food retrievals in a 8-arm radial maze, and navigation to a hidden escape platform in a water tank (Morris water maze). Because these spatial learning and memory abilities can be assessed under a variety of conditions, each challenging different abilities and related neural systems, we will present and discuss some different protocols for rats and mice.

### **4. Spontaneous exploration and anxiety**

Behaviour of any animal can virtually be considered as the output of two opposite motivational drives: protection and conservation of the actual homeostatic state, and exploration of new useful vital resources. Extreme unbalance of these two drives results in aberrant behaviour that models human pathological anxiety on one side, and impulsivity / mania in the other. We will present a number of paradigms meant to assess anxiety and impulsivity in the lab animal, while discussing advantages and limitations for each of them.