Comparative Behavioural Neuroscience 376-1428-00L FS 2018

Prof. Christopher Pryce, Preclinical Laboratory, Department of Psychiatry, Psychotherapy & Psychosomatics, University of Zurich. christopher.pryce@bli.uzh.ch

Short summary

Brain function and emotional and cognitive behaviour in rodents, monkeys and humans. Similarities and differences in study methods used between species. Translation of evidence between species. From adaptive functioning to neuropsychiatric disorders.

Objectives

Introduction to the integration of experimental psychology, neuroscience and psychiatry, to gain insight into how the mammalian brain regulates behaviour, and how animal evidence can be meaningfully translated to understand neuropsychiatric disorders and their treatment.

Content

Motivation and Learning; Emotional and Cognitive Processing of the environment; Translational Neuropsychiatry; Psychopharmacology (target to therapy)

Script

Will be available via Moodle during the course

Literature

Required reading will be communicated during the course.
Recommended texts:
Nestler EJ, Hyman SE, Holtzman DM, Malenka RC (2015) Molecular Neuropharmacology: a foundation for clinical neuroscience. 3rd edition. New York: McGraw Hill.
Bouton ME (2007) Learning and Behavior: a contemporary synthesis. Sinauer Associates: Sunderland MA.

Learning and memory:

1.   22.2.2018   Classical/Pavlovian conditioning

Reading: Rescorla RA (1988) Pavlovian conditioning: It's not what you think it is *American Psychologist* 43, 151-160.

2.   01.3.2018   Operant conditioning and Goal-directed behaviour

Reading: de Wit S, Dickinson A (2009) Associative theories of goal-directed behaviour: a case for animal-human translational models *Psychological Research* 73, 463-476.

3.   08.3.2018   Memory

Reading: Dickerson BC, Eichenbaum H (2010) The episodic memory system: neurocircuitry and disorders. *Neuropsychopharmacology* 35, 86-104.

Emotional and cognitive stimulus processing:

4.   15.3.2018   Processing of rewarding stimuli

Reading: Wise RA (2004) Dopamine, learning and motivation *Nature Reviews Neuroscience* 5, 1-12.

5.   22.3.2018   Aversive stimuli, fear and the amygdala

Reading: LeDoux JE, Pine DS (2016) Using neuroscience to help understand fear and anxiety: a two-system framework. *American Journal of Psychiatry* 173, 1083-1093.

6.   29.3.2018   Stress, learning and memory

Reading: de Quervain DJ-F, Aerni A, Schelling G, Roozendaal B (2009) Glucocorticoids and the regulation of memory in health and disease. *Frontiers in Neurendocrinology* 10, 423-433.

Animal models of human affective disorders:

7.   12.4.2018   Translational experimental psychiatry

Reading: Caspi A, Moffitt TE (2006) Gene-environment interactions in psychiatry: joining forces with neuroscience. *Nature Reviews Neuroscience* 7, 583-590.

8.   19.4.2018   Manipulations and readouts

Reading: Nestler EJ, Hyman SE (2010) Animal models of neuropsychiatric disorders. *Nature Neuroscience* 13, 1161--1169.

9.   26.4.2018   Animal models relevant to psychiatric disorders

Reading: Tye KM, et al. (2013) Dopamine neurons modulate neural encoding and expression of depression-related behaviour. *Nature* 493, 537-541.

10.   03.5.2018   Immune system and psychiatric disorders

Reading: Miller AH, Raison CL (2016) The role of inflammation in depression: from evolutionary imperative to modern treatment target. *Nature Reviews Immunology* 16, 22-34.

Pre-clinical psychopharmacology:

11.   17.5.2018   SSRIs and affective disorders

Reading: Sharp T, Cowen P (2011) 5-HT and depression: is the glass half-full? *Current Opinion in Pharmacology* 11, 1-7.

12.   24.5.2018   Anti-depressants: the next generation

Reading: Vollenweider FX, Kometer M (2010) The neurobiology of psychedelic drugs: implications for the treatment of mood disorders. *Nature Reviews Neuroscience* 11, 642-651.

13.   31.5.2018*   Course Overview

* Date can be re-arranged to be closer to the exam date, if so desired