EPFL

BIO-693(8)

State-of-the-Art Topics in Neuroscience VIII: Fear Learning: from neuronal circuits to translation

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Cursus	Sem.	Type
Neuroscience		Obl.

Language of teaching	English
Credits	1
Session	
Exam	Oral presentation
Workload	30h
Hours	**18**
Courses	12
Exercises	6
Number of positions	

Frequency

Every year

Remark

Next time: Fall 2019

Summary

Anxiety disorders are widespread in the human population. At the same time, the behavioral paradigm of fear learning offers researchers a platform to investigate the neuronal circuit basis of emotionally motivated learning behaviors, exploiting state-of-the-art optic- and genetic approaches in mice.

Content

Anxiety disorders are widespread in the human population. At the same time, the behavioral paradigm of fear learning offers researchers a platform to investigate the neuronal circuit basis of emotionally motivated learning behaviors, exploiting state-of-the-art optic- and genetic approaches in mice. Understanding the fundamental molecular, cellular- and circuit mechanisms of fear learning will form the basis for an improved treatment of anxiety in the future.

The PhD students will actively participate in the Symposium with questions and discussion participation. As a control that the students have reached the learning aims of the course, PhD students will **summarize a presentation of their choice during a final 3h block session under the supervision of the course instructors.**

MONDAY 25th NOVEMBER 2019

Session 1   **Mechanisms of fear learning: amygdala circuits**

Chair: Ralf Schneggenburger

09:00 – 09:30   Andreas Lüthi (FMI, Basel, CH)
           Adaptive disinhibitory gating permits associative learning
09:30 – 09:40   Discussion
09:40 – 10:10   Bo Li (Cold Spring Harbor, USA)
           Amygdala circuits in motivated behaviors
10:10 – 10:20   Discussion
10:20 – 10:35   Short Talk 1
10:35 – 10:40   Discussion
11:10 – 11:40   Sheena Josselyn (University of Toronto, CDN, Toronto, Canada)
           Making, Breaking and Linking Memories in Mice
11:40 – 11:50   Discussion
11:50 – 12:20   Wulf Haubensak (IMP, Wien, Austria)
           Assembling affective states by amygdala hierarchical interactions
12:20 – 12:30   Discussion

12:30 – 14:00   Lunch & Poster Session

Session 2   Beyond the amygdala: circuits of fear and pain involved in learning
Chair: Johannes Gräff
14:00 – 14:30   Cyril Herry (Neurocentre Magendie, Bordeaux, France)
                Dynamic prefrontal population coding of value and action during aversive learning
14:30 – 14:40   Discussion
14:40 – 15:10   Nadine Gogolla (MPI für Neurobiologie, Munich,Germany)
                Regulation of fear and anxiety through insular cortical circuits
15:10 – 15:20   Discussion
15:20 – 15:35   Short Talk 2
15:35 – 15:40   Discussion
15:40 – 16.10   Coffee break
16:10 – 16:40   Rohini Kuner (University of Heidelberg, Germany)
                Fear and Pain: two sides of the same coin?
16:40 – 16:50   Discussion
16:50 – 17:20   Herta Flor (ZI Mannheim, Germany)
                The contextual modulation of fear: implications for mental disorders
16:40 – 16:50   Discussion
17:30 – 19:00   Poster Session

TUESDAY 26th NOVEMBER 2019
Session 3   Circuits for fear prediction and extinction
Chair: Carmen Sandi
09:00 – 09:30   Andrew Holmes (NIH, Bethesda, USA)
                Neural circuits mediating ambiguous threat
09:30 – 09:40   Discussion
09:40 – 10:10   Jelena Radulovic (NW University, Chicago, USA)
                Processing valence in episodic memory circuits
10:10 – 10:20   Discussion
10:20 – 10:35   Short Talk 3
10:35 – 10:40   Discussion
10:40 – 11.10   Coffee break
11:10 – 11:40   Valerie Doyère (Paris-Saclay Institute of Neuroscience, France)
                The amygdala and the temporal expectation of an aversive stimulus
11:40 – 11:50   Discussion
11:50 – 12:20   Merel Kindt (University of Amsterdam, Netherlands)
Tba

Keywords

Anxiety disorders, Fear, Neuronal circuits

Learning Prerequisites

Recommended courses

Neuroscience 2, 3 (MS-courses)

Assessment methods

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Resources

Websites

- https://neurosymposiumwinter2019.epfl.ch