



Introductory Remarks to Symposium 6

Novel insights into the regulation of hypothalamic neurocircuits and functions

Henning Fenselau and Sophie Steculorum, Cologne

The hypothalamus is the master regulator of core behavioural and physiological functions such as feeding, locomotor activity, glucose and temperature regulation. Over the last decade, research investigating the hypothalamic neurocircuitry underlying these behavioural and physiological processes has progressed due to the emergence of novel neuroscience technologies allowing to map, manipulate and monitor molecularly defined cell types (i.e. Cre-driver mice in combination with Cre-enabled optogenetics, *in vivo* electrophysiology and calcium imaging, and chemogenetics). Through the use of these advances, our understanding of the exact functions and regulatory principles of defined hypothalamic neurons and the underlying neurocircuitry has grown considerably.

The symposium will cover novel insights into the regulation of hypothalamic neurocircuits and functions including recent data on (1) downstream (Rüdiger Klein) and (2) upstream pathways (Alexey Ponomarenko) of key hypothalamic neuronal populations involved in feeding behaviour. Furthermore, the speakers will share recent insight into (3) molecular diversity of distinct hypothalamic populations (Jan Siemens) and (4) the emerging role of hypothalamic astrocytes in controlling energy and glucose homeostasis (Cristina García Cáceres). Altogether, thanks to the participation of internationally recognized scientists with diverse and complementary expertise, the symposium will cover key discoveries on hypothalamic functions that expand our fundamental knowledge of the central control of energy, glucose and temperature homeostasis. This symposium will, furthermore, provide detailed insights into novel technological advances to study the regulation of hypothalamic neurocircuits and their function. Finally, given that dysfunctions of the hypothalamic neurocircuitry can lead to eating disorders and endocrine dysfunction, the presented findings will open the discussion on putative novel therapeutic approaches.

Symposium 6

Wednesday, March 20, 2019
14:30 - 16:30, Lecture Hall 102

Chairs: Henning Fenselau and Sophie Steculorum,
Cologne

- 14:30 **Opening Remarks**
- 14:35 Rüdiger Klein, Martinsried
CENTRAL AMYGDALA CIRCUITS CONTROL-
LING APPETITIVE BEHAVIOUR (S6-1)
- 14:55 Alexey Ponomarenko, Berlin
TEMPORAL SEPARATION OF NEURONAL
ENSEMBLES IN HYPOTHALAMUS REGULATES
INNATE BEHAVIOURS (S6-2)
- 15:15 Jan Siemens, Heidelberg
TRP ION CHANNELS – INTERNAL/HYPOTHA-
LAMIC TEMPERATURE SENSORS AND GUAR-
DIANS OF HOMEOSTASIS? (S6-3)
- 15:35 Cristina García Cáceres, Garching
UCP2 IN ASTROCYTES REGULATES THE
ACTIVATION OF NPY NEURONS TO
CONTROL FEEDING BEHAVIOUR (S6-4)
- 16:00 Tim Gruber, Garching
REMODELING OF THE HYPOTHALAMIC VAS-
CULATURE UPON HYPERCALORIC FEEDING
DEPENDS ON ASTROGLIAL HIF1 α AND VEGF
(S6-5)
- 16:10 Hanna E. van den Munkhof, Cologne
APPLYING UNSUPERVISED MACHINE LEAR-
NING TO STUDY THE LATERAL HYPOTHA-
LAMIC CIRCUITRY UNDERLYING MOTIVATED
BEHAVIOUR IN FREELY MOVING MICE (S6-6)
- 16:20 **Concluding Remarks**