

## Introductory Remarks to Symposium 31

### From olfaction to emotion

Sabine Krabbe and Tobias Ackels, Bonn

Olfaction, the sense of smell, serves as a primal conduit for emotional and behavioural responses. Unlike other senses that are processed through the thalamus before reaching the cortex, olfactory signals have a direct pathway to the brain's limbic system, which is involved in emotion, memory, and motivation. This direct link underpins the ability of odours to elicit immediate and potent emotional responses, often more so than auditory or visual cues. For instance, the detection of a predator scent can trigger an instant fear response, mobilizing the body for a fight-or-flight reaction. Similarly, the detection of conspecific odour cues such as pheromones plays a crucial role in social and reproductive behaviours, and can decrease responses to aversive stimuli within social contexts. However, the pathways transmitting olfactory information to limbic brain areas are still poorly characterised. In this symposium, we will present recent efforts aiming to dissect the neural circuits that link olfaction with emotional functions. We will focus on neural pathways connecting the olfactory bulb to the amygdala, a central hub for emotional processing in the brain.

Tobias Ackels (University of Bonn) will speak about how odour dynamics can be detected and integrated by the olfactory system to guide behaviour. Moritz Nessler (RWTH Aachen University) in his selected talk will then present his PhD work on how odour information of the main and accessory olfactory bulb is integrated in the amygdala. Dan Rokni (Hebrew University, Israel) will address connectivity and functional properties of Nucleus of the Lateral Olfactory Tract (NLOT) neurons in the context of aversive learning. Sabine Krabbe (DZNE Bonn) will present work on the behavioural role of interconnected amygdala circuits for emotional states. Hannah Hochgerner (Technion, Israel) will discuss neuronal cell types in the mouse amygdala and their transcriptional diversity in aversive learning.

## Symposium 31

Saturday, March 29, 2025  
11:30 - 13:30, Lecture Hall 9

Chairs: Sabine Krabbe and Tobias Ackels, Bonn

- |       |  |
|-------|--|
| 11:30 | <b>Opening Remarks</b>   |
| 11:35 | Tobias Ackels, Bonn<br>MICE NAVIGATE THE ODOUR LANDSCAPE USING PLUME TEMPORAL DYNAMICS (S31-1)                                   |
| 12:00 | Moritz Nessler, Aachen<br>POTENTIAL INTEGRATION OF MAIN AND ACCESSORY OLFACTORY SYSTEM INFORMATION IN THE MOUSE AMYGDALA (S31-2) |
| 12:15 | Dan Rokni, Jerusalem, Israel<br>THE NUCLEUS OF THE LATERAL OLFACTORY TRACTS IS A CENTER FOR ODOR-EMOTION INTERACTIONS (S31-3)    |
| 12:40 | Sabine Krabbe, Bonn<br>FUNCTIONAL DIVERSITY OF INHIBITORY AMYGDALA MICROCIRCUITS (S31-4)   |
| 13:05 | Hannah Hochgerner, Haifa, Israel<br>NEURONAL TYPES IN THE MOUSE AMYGDALA AND THEIR TRANSCRIPTIONAL STATES IN FEAR MEMORY (S31-5) |