

ORAL PRESENTATION**Open Access**

Coding of odor valence and intensity in the *Drosophila* olfactory circuit

Silke Sachse

From 1st International Workshop on Odor Spaces
Hannover, Germany. 4-7 September 2013

To internally reflect the sensory environment, animals create neural maps encoding the raw information of the external stimulus space. From that primary neural code relevant information has to be extracted for accurate navigation. We have characterized an olfactory-processing pathway comprised of inhibitory projection neurons (iPNs) at morphological, functional and behavioral levels. Our results show that iPNs shape innate odor-guided behavior in crucial ways. We demonstrate that the iPN population is split into two subgroups coding positive hedonic valence or intensity information and conveying these features into separate domains in the lateral horn (LH) via feed-forward inhibition. Silencing iPNs severely diminished flies' attraction behavior and odor intensity discrimination. Moreover functional imaging disclosed an independent LH region tuned to repulsive odors comprised exclusively of ventrolateral protocerebral neurons. Our data demonstrate a feature-based spatial and functional arrangement of the LH, and elucidate its role as the center for integrating behaviorally relevant olfactory information.

Published: 16 April 2014

doi:10.1186/2044-7248-3-S1-O18

Cite this article as: Sachse: Coding of odor valence and intensity in the *Drosophila* olfactory circuit. *Flavour* 2014 **3**(Suppl 1):O18.

**Submit your next manuscript to BioMed Central
and take full advantage of:**

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at
www.biomedcentral.com/submit



Max Planck Institute for Chemical Ecology, Department of Evolutionary Neuroethology, Jena, Germany



© 2014 Sachse; licensee BioMed Central Ltd. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/2.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated.