

POSTER PRESENTATION

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Topographic embedding of MOR18-2 in the mouse olfactory bulb

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Mice are exceptional in their ability to capture their chemical environment, mapping the olfactory world into a basic sensory representation with over one thousand different types of chemical sensors, that is, olfactory sensory neurons (OSNs). OSNs of each type converge in the olfactory bulb onto exclusive distinct physiological areas called glomeruli. The glomeruli constitute the first relay station of olfactory stimulus representation in the mouse brain. Thus, the stimulus induced glomerular input pattern spatially embodies an important part of the sensory representation in the olfactory bulb. Still, topographic organization principles (chemotopy, tunotopy) are under debate. One reason might be that investigations are, due to experimental limitations, only performed on stimuli sets in the size of one hundred odors. But this represents only a tiny snapshot of the vast amount of molecules in the olfactory world and topographic relationships might be disguised in the incomplete representation of molecular receptive ranges (MRR). Therefore we investigated the problem with the MOR18-2 glomerulus as point of reference: First we determined its MRR. Then, based on a measurement set covering this MRR, we elucidated the topographic embedding. It shows that MOR18-2 is embedded in a hierarchy of patchy tunotopic domains.

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