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Presentation Abstract

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Program#/Poster#: 561.11

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Presentation Title: Origin and identity of feedback projecting neurons to the main olfactory bulb revealed through retrograde viral tracing

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Location: N226

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Presentation time: Tuesday, Oct 20, 2015, 3:30 PM - 3:45 PM

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Topic: ++D.01.b. Olfactory coding: Second order regions (olfactory bulb and antennal lobe)

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Abstract: Although feedback projections from higher processing areas can constitute the majority of synaptic inputs to primary sensory regions, and play a role in shaping perception, principles of their anatomical organization remain largely unknown. Using a viral based strategy, we mapped feedback from the whole mouse brain to the granule cell layer (GCL) in the main olfactory bulb. Projections originated from a number of areas including from olfactory regions, neuromodulatory areas, and the ventral arm of CA1 hippocampus. Additionally, we

identified asymmetries in the organization of feedback depending on the area of origin. For instance, spatially clustered feedback from the piriform contrasted with the distributed organization observed in feedforward projections to the piriform. Additionally, we found biases in the input from the ventral arm of the contralateral anterior olfactory nucleus (AON) as compared to the uniform distribution of feedback observed in ipsilateral projections to the bulb. The identity and organization of feedback projecting cells revealed through our viral tracing methods suggests higher olfactory processing centers and areas involved in stress, anxiety, learning and memory can all influence olfactory neuronal responses at the earliest stages, 2 synapses away from the where chemical compounds are first detected.

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Disclosures: **K. Padmanabhan:** None. **F. Osakada:** None. **E. Callaway:** None. **F. Gage:** None. **T.J. Sejnowski:** None.

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Keyword (s): FEEDBACK

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OLFACTORY BULB

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OLFACTION

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NARSAD Young Investigator Award

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Crick-Jacobs Junior Fellowship

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