

Low-affinity GCaMP sensor family (LA-GCaMP)



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Introduction

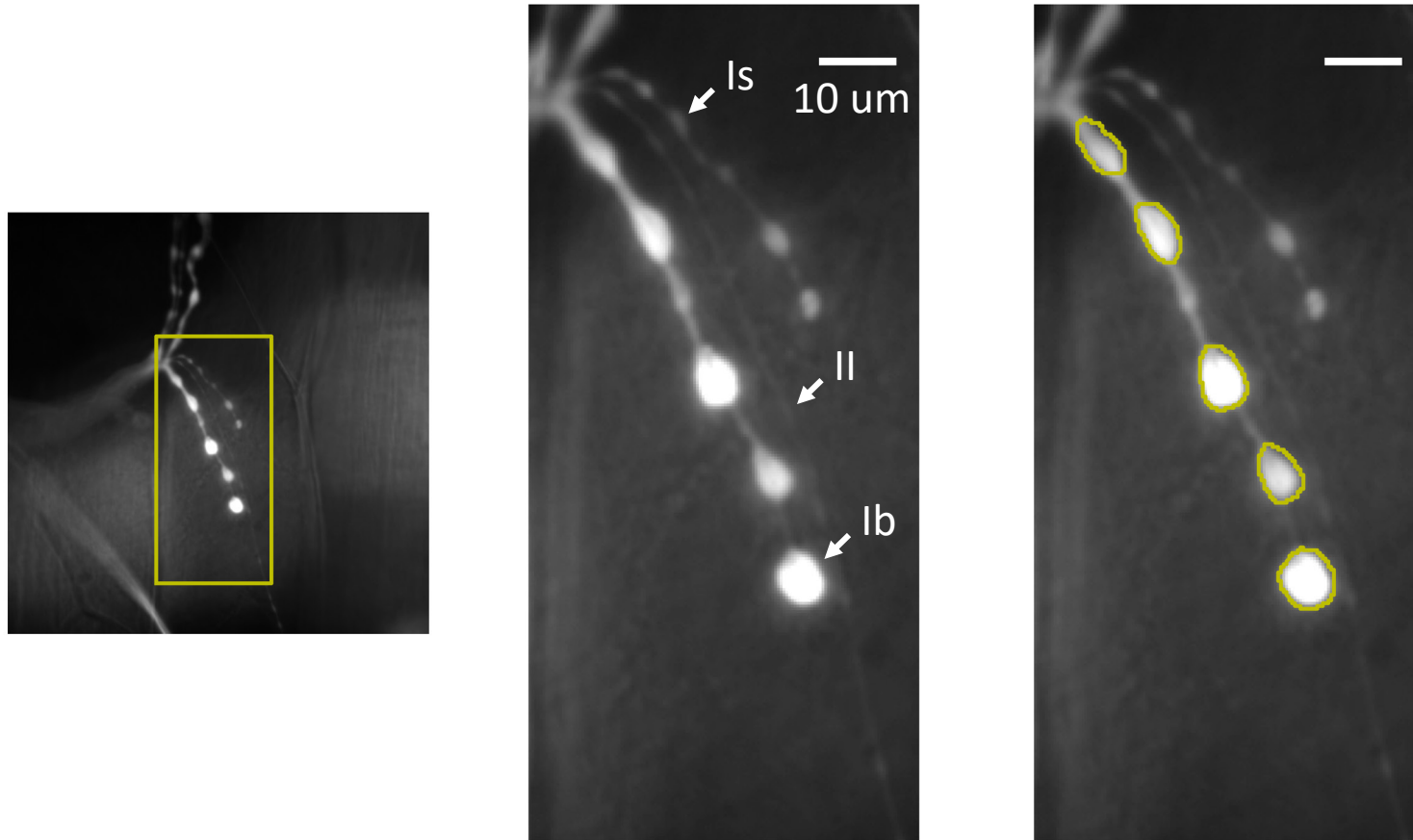
Low-affinity GCaMP sensors are used for separating responses with firing rates >100 sp/sec. This is likely most suited to sensory neuron responses (e.g. ORNs see Hallem & Carlson) although high firing rates are also observed centrally (e.g. Mushroom Body Output Neurons see Hige & Turner).

Hallem, E. A., & Carlson, J. R. (2006). Coding of odors by a receptor repertoire. *Cell*, 125(1), 143–160. <http://doi.org/10.1016/j.cell.2006.01.050>

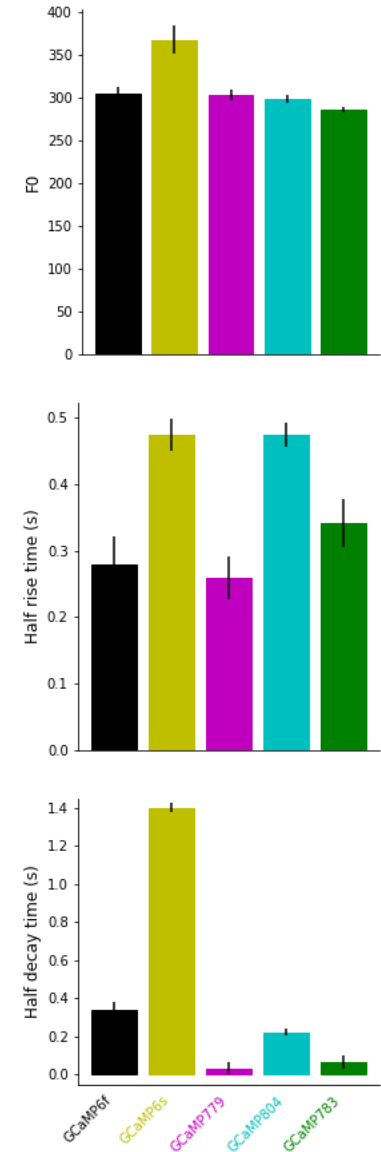
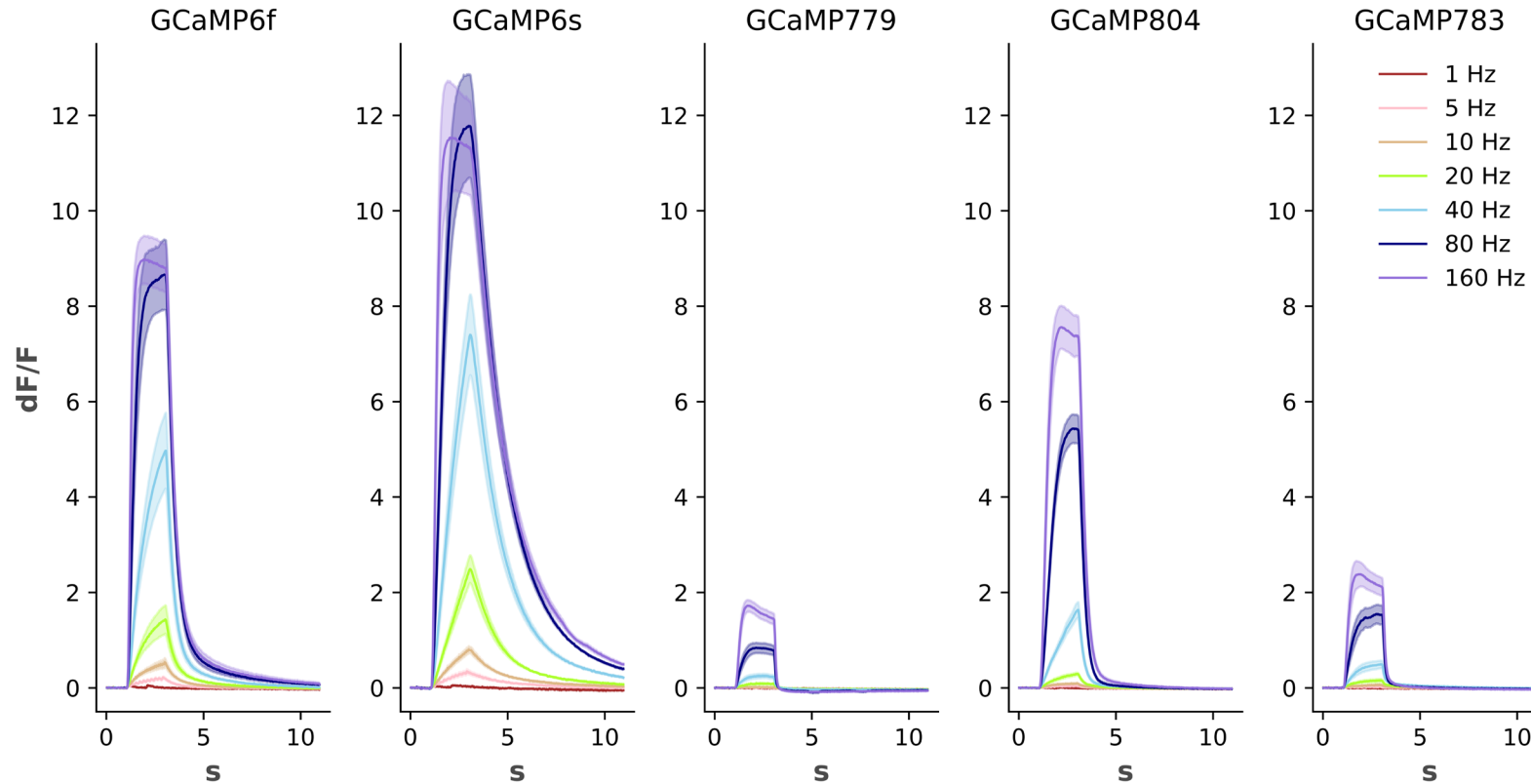
We see that some of the Mushroom Body Output Neurons respond with firing rates around 100sp/sec, so it applies to some central neurons too.
Hige, T., Aso, Y., Modi, M. N., Rubin, G. M., & Turner, G. C. (2015). Heterosynaptic Plasticity Underlies Aversive Olfactory Learning in *Drosophila*. *Neuron*, 88(5), 985–998. <http://doi.org/10.1016/j.neuron.2015.11.003>

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Fly larval neuromuscular junction preparation



Performance of low-affinity GCaMPs (Statistics on no. of larvae)



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