Abstract Submitted
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Local structure of subcellular input retinotopy in an identified visual interneuron[1] YING ZHU, Structural and Computational Biology & Molecular Biophysics program, Baylor College of Medicine, Houston, TX, 77030, FABRIZIO GABBIANI, Department of Neuroscience, Baylor College of Medicine, Houston, TX, 77030, FABRIZIO GABBIANI'S LAB TEAM — How does the spatial layout of the projections that a neuron receives impact its synaptic integration and computation? What is the mapping topography of subcellular wiring at the single neuron level? The LGMD (lobula giant movement detector) neuron in the locust is an identified neuron that responds preferentially to objects approaching on a collision course. It receives excitatory inputs from the entire visual hemifield through calcium-permeable nicotinic acetylcholine receptors. Previous work showed that the projection from the locust compound eye to the LGMD preserved retinotopy down to the level of a single ommatidium (facet) by employing in vivo widefield calcium imaging. Because widefield imaging relies on global excitation of the preparation and has a relatively low resolution, previous work could not investigate this retinotopic mapping at the level of individual thin dendritic branches. Our current work employs a custom-built two-photon microscope with sub-micron resolution in conjunction with a single-facet stimulation setup that provides visual stimuli to the single ommatidium of locust adequate to explore the local structure of this retinotopy at a finer level.

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