



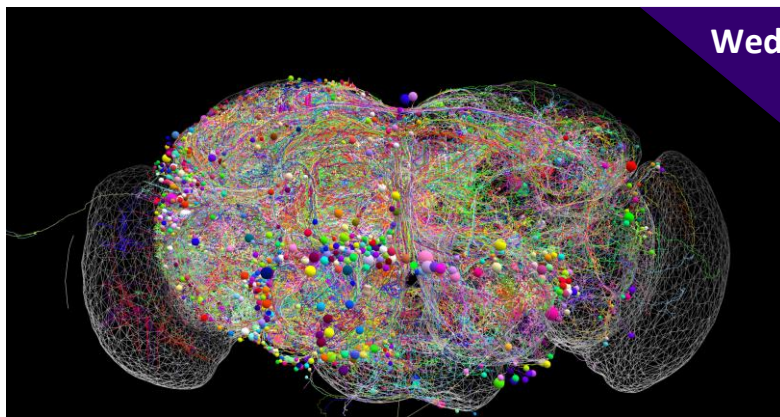
Faculty Search Biology Seminar

Speaker: **Davi Bock**

Janelia Research Campus | Group Leader

<https://www.janelia.org/lab/bock-lab>

Volume electron microscopy of neural circuits



Wednesday, February 21, 2018 | 12:00pm
HCK 132 Refreshments at 11:45am

The Bock Lab built a next-generation transmission electron microscope (EM) camera array (TEMCA2) system for high-throughput imaging of neural tissue, and used it to image the complete brain of a female adult fruit fly *Drosophila melanogaster* at high

resolution (4 x 4 x 45 nm voxels). The resulting large-scale dataset comprises 21 million images and occupies 106 TB on disk. Its resolution and completeness are sufficient to trace brain-spanning neuronal circuit networks at synaptic resolution. Multiple labs, including the Bock Lab, are now mapping circuits of interest in this dataset. Their preliminary data indicate that the center for associative memory formation and recall in the fly brain, the mushroom body (MB), samples its olfactory inputs in a much more structured fashion than previously recognized. Since the MB is similar to that of many other structures for learning and memory (including hippocampus, cerebellum, and octopus vertical lobes), the sensory information sampling strategy we see in the fly brain may be general. Future directions will also be discussed, including the use of correlative light-EM microscopy to explore mechanisms of sensorimotor integration in eukaryotic protozoa.

