

Towards fine resolution maps of entire bighorns using synchrotron source x-ray microscopy and automated serial electron microscopy.

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The Kasthuri lab is pioneering new techniques for large volume reconstructions of the fine structure of the nervous system – ‘connectomics’. These developments include: large volume automated electron microscopy for mapping neuronal connections, synchrotron source X-ray microscopy to map the cellular composition of entire brains; improving sample preparation for serial electron microscopy in order to increase the efficiency of automated algorithmic tracing of these datasets; and combining electron microscopy with current techniques for interrogating the proteome and the genome. These tools will be applied in the service of answering the question: how do brains learn as they grow up? The lab focuses on the synaptic and cellular development of brains as a basis ultimately for understanding the cellular underpinnings of pathologies such as addiction and mental illness.