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Title: Towards a circuit diagram of the brain.

Abstract: Neural computation relies of the exchange information between cells. Such an exchange is mediated by synaptic connections, which vary in speed, sign, and nonlinearity. A nerve cell's computational role is almost entirely determined by which other cells it is listing (receives synaptic input from) and talking (sends synaptic input to). The connections between cells are, therefore, program and memory of the nervous system. To read those one has to know the pattern of synaptic connections. Creating a record of all connections in a brain requires imaging it at a resolution that is sufficient to follow all neuronal wires and identify all synaptic connections, which is currently only provided by the electron microscope. Volume data require the serial acquisition of cross-sectional images for which we use a serial block-face approach, which we are currently trying to scale up to the entire mouse brain.