

Institute for Computational Medicine

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Clark Hall 110

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Multi-scale Imaging of the Nervous System: Where's the Dark Matter?

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Abstract:

We are evolving a shared infrastructure that allows for mapping molecular and cellular brain anatomy in the context of a shared multi-scale mouse brain atlas system, the Cell-Centered Database (CCDB). Complementary to these neuroinformatics activities, we have developed new molecular labeling methods compatible with advanced ultra-wide field laser-scanning light microscopy and multi-resolution 3-dimensional electron microscopy. The informatics framework is facilitating cooperative work by teams of scientists engaged in collaborations aimed to deliver new fundamental understanding of structures on the scale of 1 nm³ to 10's of μm³, a dimensional range that encompasses macromolecular complexes, organelles, and multi-component structures like synapses and the cellular interactions responsible for the functional organization of the nervous system.