

KEYNOTE SPEAKER PRESENTATION

Open Access

Exploring cortex in a high-throughput manner by building brain observatories

Christof Koch

From The Twenty Third Annual Computational Neuroscience Meeting: CNS*2014
Québec City, Canada. 26-31 July 2014

The *Allen Institute for Brain Science* has, over the past ten years, produced a series of brain atlases (<http://www.brain-map.org>). These are large (3 TB, >1 million slides) public resources, integrating genome-wide gene expression, and neuroanatomical data across the entire brain for developing and adult humans, non-human primates and mice, complemented by high-resolution, cellular-based anatomical connectivity data in several thousand mice. It is the single largest integrated neuroscience database world-wide. Anybody can freely access this data without any restrictions.

We are embarked on an ambitious 10-year initiative to understand the structure and function of the neocortex and associated satellite structures in humans and mice. We are setting up high through-put pipelines to exhaustively characterize the morphology, electrophysiology and transcriptome of cell types as well as their synaptic interconnections in the human neocortex (via a combination of fetal, neurosurgical and post-mortem tissues & human stem cells differentiated into forebrain neurons) and in the laboratory mouse. We are building brain observatories to image the activities of neurons throughout the cortico-thalamic system in behaving mice, to record their electrical activities, and to analyze their connectivity at the ultra-structural level. We are constructing biophysically detailed as well as simplified computer simulations of these networks and of their information processing capabilities. In keeping with the Allen Institute for Brain Science's core value of open science, all data, knowledge and tools from this initiative will be shared with the broader scientific community.

Published: 21 July 2014

Correspondence: ChristofK@alleninstitute.org
Allen Institute for Brain Science, Seattle, WA 98103, USA

doi:10.1186/1471-2202-15-S1-A2

Cite this article as: Koch: Exploring cortex in a high-throughput manner by building brain observatories. *BMC Neuroscience* 2014 **15**(Suppl 1):A2.

Submit your next manuscript to BioMed Central and take full advantage of:

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at
www.biomedcentral.com/submit

