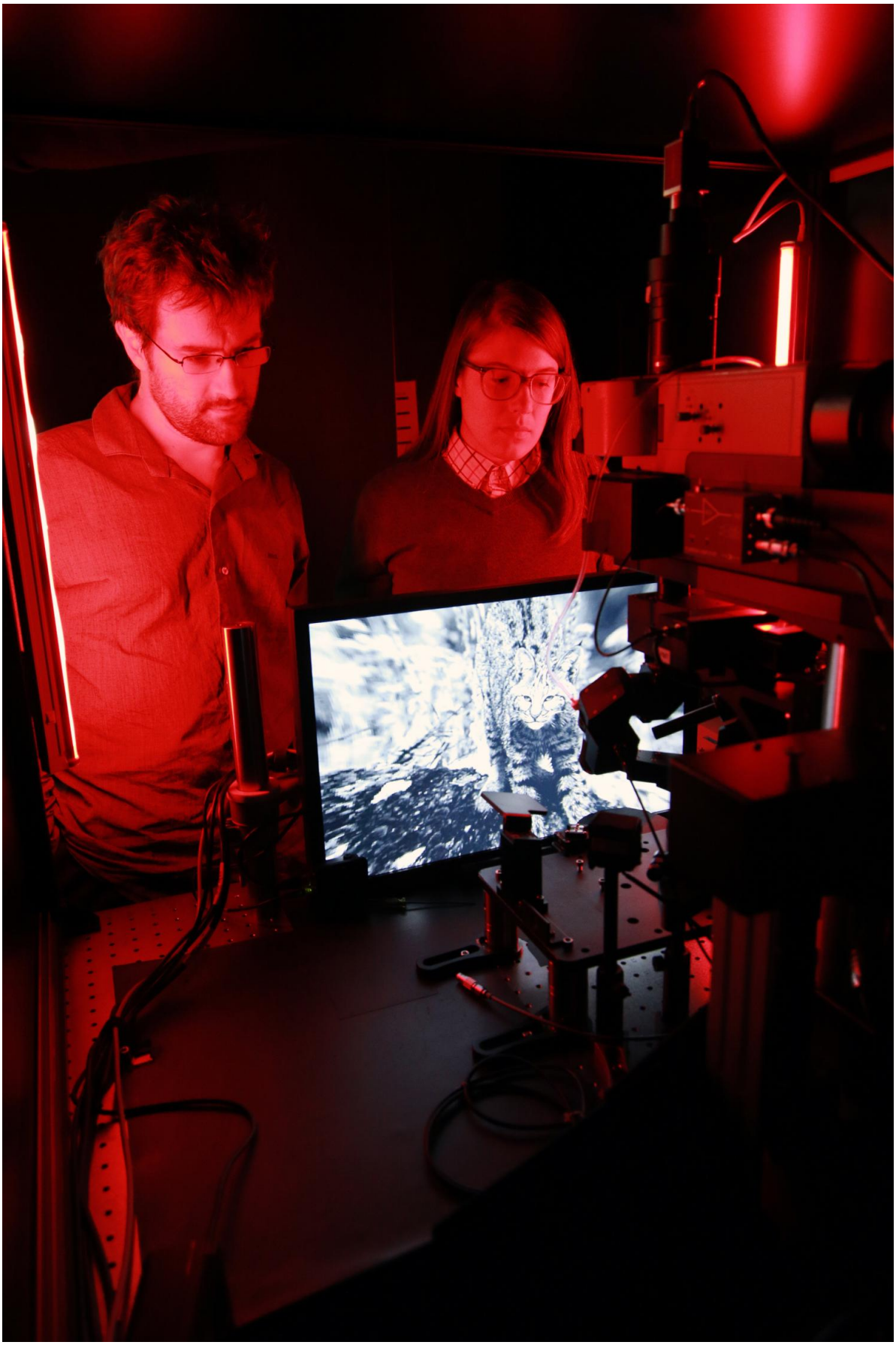
Allen Institute releases new data and visualizations for Allen Brain Observatory

June 21 2017



Optical physiology manager, Jerome Lecoq, Ph.D. and optical physiology research associate, Kate Roll, inspect one of the standardized microscope platforms from the Allen Brain Observatory used to record the real-time cellular activity in the visual cortex of mice as they were shown a variety of stimuli, pictures and movies. Credit: Allen Institute

The Allen Institute for Brain Science today announced the release of new data and analysis tools for the Allen Brain Observatory: a highly standardized survey of cellular-level neuronal activity in the mouse visual system. In addition to bringing the total number of cells surveyed to nearly 40,000, the release includes key improvements to algorithms that decrease noise and match cells across experiments, leading to a more robust and usable resource for researchers around the world to study how visual information is processed in the brain.

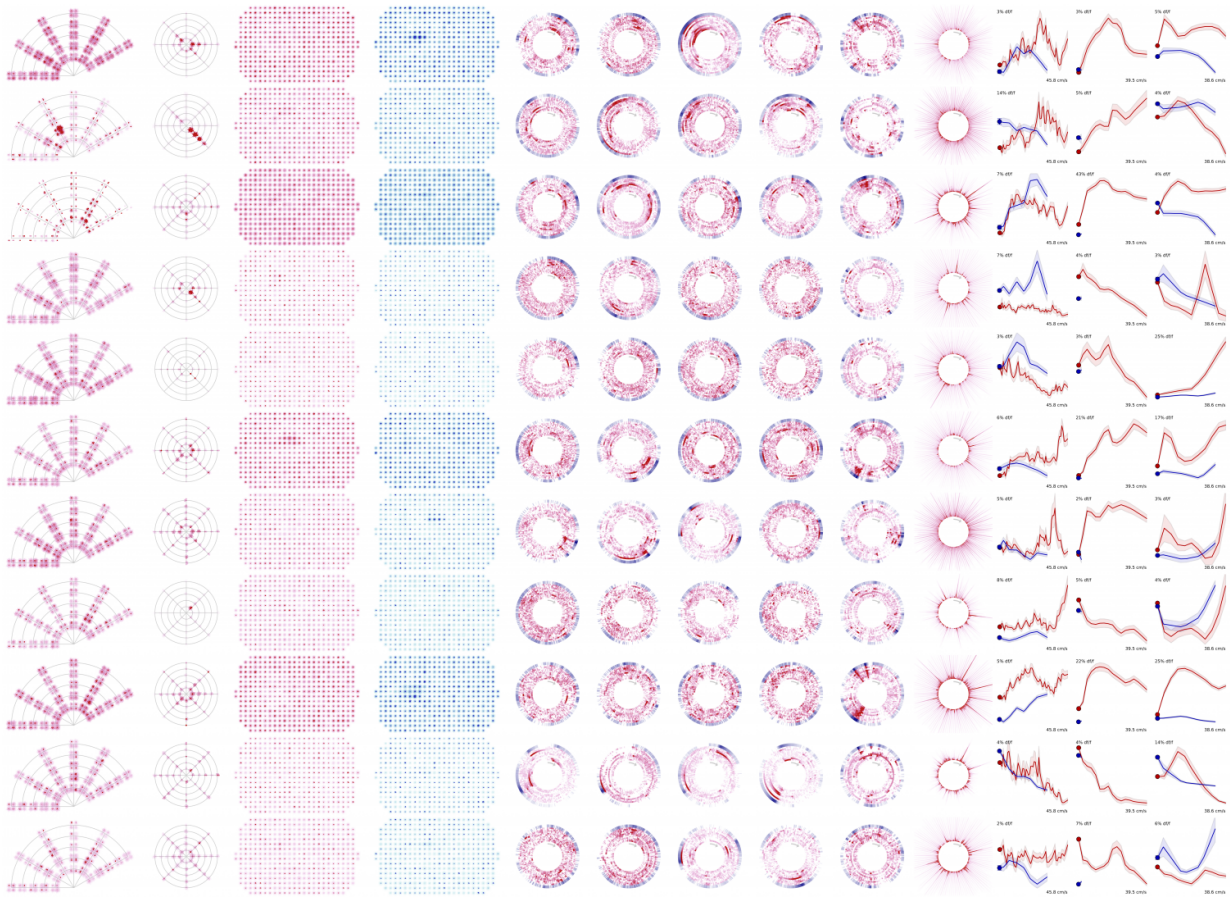
"The data contained in the Allen Brain Observatory is vast and rich, and as we produce and share the data we are always thinking of ways to make it as usable as possible while retaining its complexity and multidimensionality," says Lydia Ng, Ph.D., Senior Director of Technology at the Allen Institute for Brain Science. "These updates to the Allen Brain Observatory—the new data and refreshed analysis—will be of great utility to our users, since they provide critical improvements to how the data are presented."

As part of the release, activity from more than 13,000 new cells have been added to the dataset, and data from all previous cells has been reprocessed to incorporate additional features, including tracking the position of the mouse's gaze during experiments. Allen Institute scientists also improved how individual cells are aligned across different

experiments, and how signals from overlapping cells can be separated.

The Allen Brain Observatory also added new visualizations, including tools for receptive fields that show how neurons respond to visual information in space. All the new analysis tools are also available as part of the Allen Software Development Kit (SDK), which can be used to analyze the data in depth.

This release marks the final update to the Allen Brain Observatory dataset for 2017, with updates to other Allen Brain Atlas resources planned for the fall.



A small sample of the novel data visualizations for each of the nearly 40,000

neurons contained in the Allen Brain Observatory. Mice were presented with a large variety of visual stimuli to determine the "tuning," or preference, of each individual cell to visual features. Credit: Allen Institute

Provided by Allen Institute for Brain Science