

nVision™ System

Synchronize Inscopix data acquisition with one click

Key benefits

- Enable one-step synchronization to investigate precise time correlations between brain and behavior activities
- Track the behavior of freely moving animals online in various experimental settings
- Perform behavior-based, closed-loop experiments paired with Inscopix miniscopes



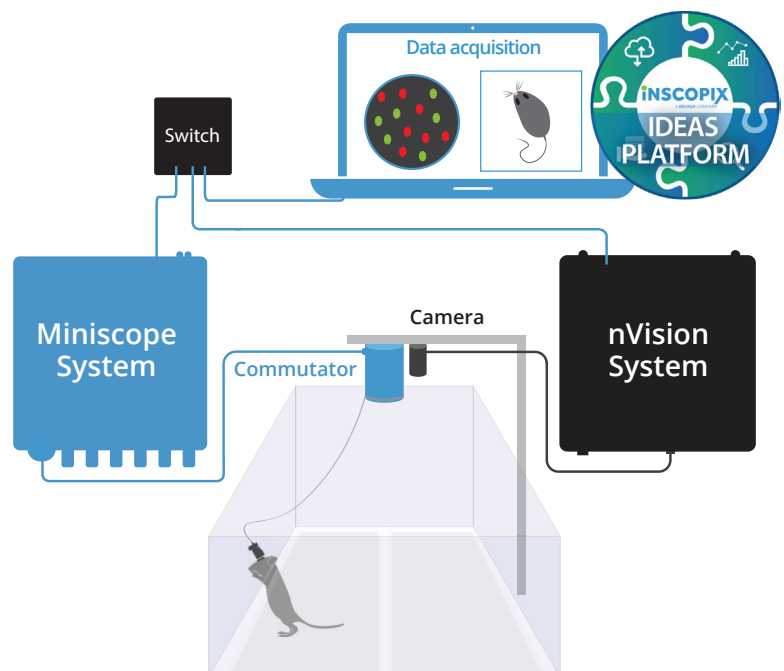
The nVision system instantly synchronizes Inscopix miniscope data streams with free animal behavior enabling multimodal insights

The nVision system pairs directly with your Inscopix miniscope system and shares the same timing reference. Together, these systems are uniquely capable of achieving simultaneous acquisition from multiple data streams for the duration of your experiment. This replaces the need to align signals such as Ca^{2+} activity, optogenetic stimulation timestamps and other general purpose input and output (GPIO) signals with your behavioral data in post-processing.

Using Inscopix's end-to-end solution, you can precisely correlate behavior and neuronal activity in real time, eliminating tedious post-hoc video analysis and manual data alignment. Combined with Inscopix miniscopes, it also enables behavior-based closed-loop experiments for real-time circuit manipulation.

How it works:

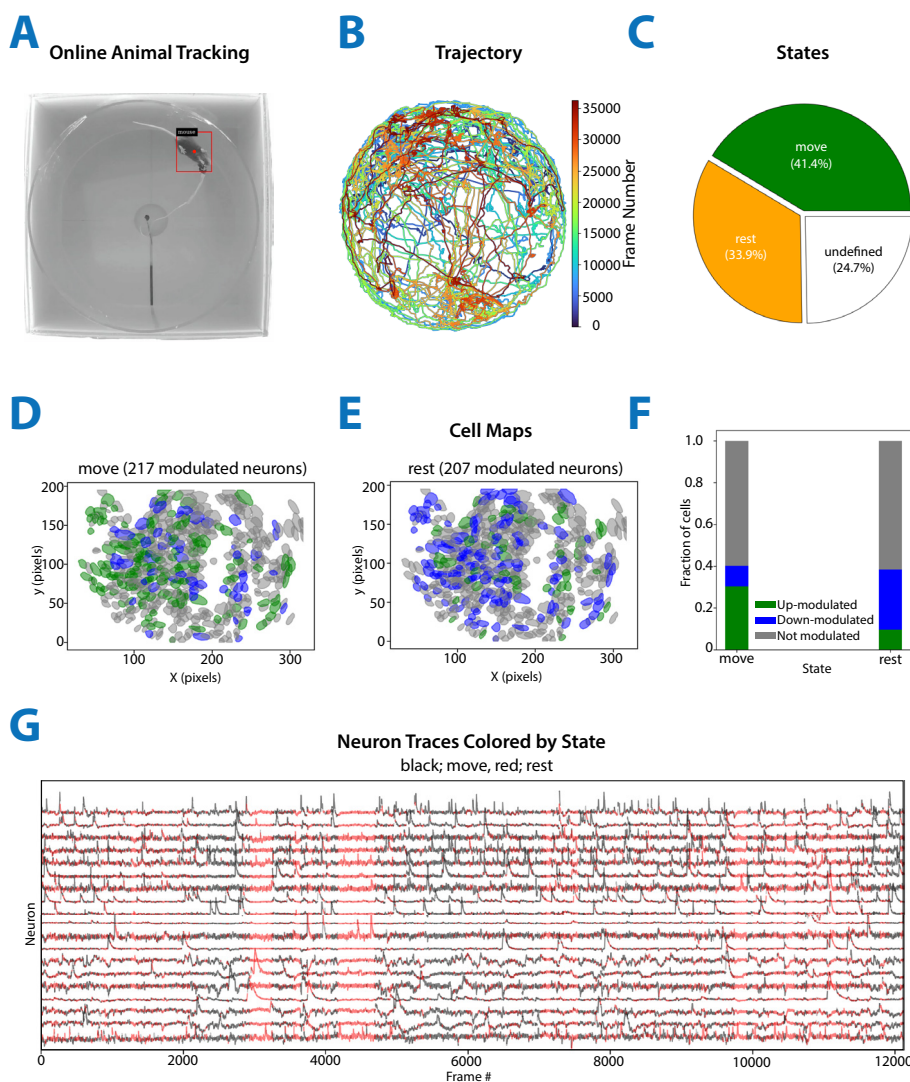
1. Connect Inscopix miniscope and nVision DAQ boxes via a switch.
2. Collect paired and synchronized recordings using Inscopix Data Acquisition Software (IDAS).
3. Store, organize and analyze your nVision behavior data on IDEAS.



Synchronize neuronal activity and behavior in the Inscopix environment with the nVision system

Medium spiny neurons in the mouse dorsal striatum were labeled with GCaMP6m and imaged using a ProView™ Integrated Lens. Calcium activity and synchronized behavior were recorded using Inscopix nVista™ and nVision™ systems while the animal explored an open field. Cell traces were extracted with the End-to-End CNMF-E Workflow in the Inscopix Data Exploration, Analysis, and Storage (IDEAS™) platform. The nVision Animal Tracking Model generated tracking results, which were used to compute locomotion metrics, including instantaneous speed and states of rest and movement. Using the 'Map Annotations' tool, we synchronized miniscope and nVision data to analyze neural-behavioral correlations and explore calcium activity changes.

Inscopix nVision System



A. Input movie viewed with an nVision camera annotated with tracking results. **B.** Animal position over time. Cooler colors show early positions, warmer colors show later, tracing the animal's trajectory throughout the recording. **C.** Pie chart show percentage of frames by state where the distribution of frames are labeled as rest, move, or undefined, showing the most frequent states during the recording. **D, E,** and **F.** Cell footprints from the cell set highlight footprints of up- or down-regulated cells during each state. **G.** Cell traces of all neurons (gray). The two states are shown in black (move) and red (rest).

Our Complete Solution

- Biological reagents & accessories
- Cutting-edge instrumentation
- Powerful data processing
- Expert scientific support