

Axis 2.4 SOFTWARE UPDATE

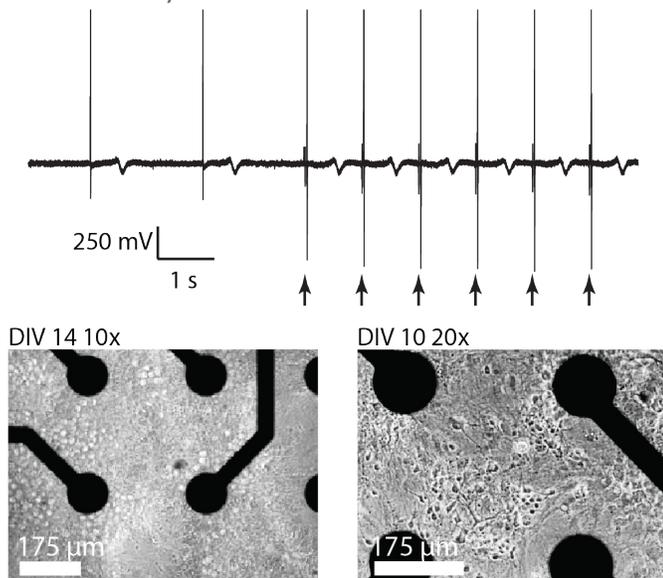
TAKE CONTROL OF CELL ACTIVITY

Electrical stimulation made easy

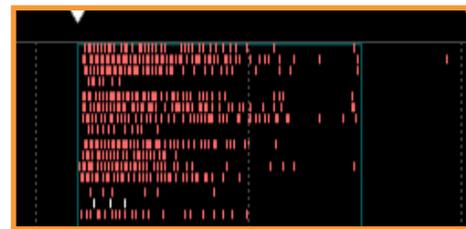
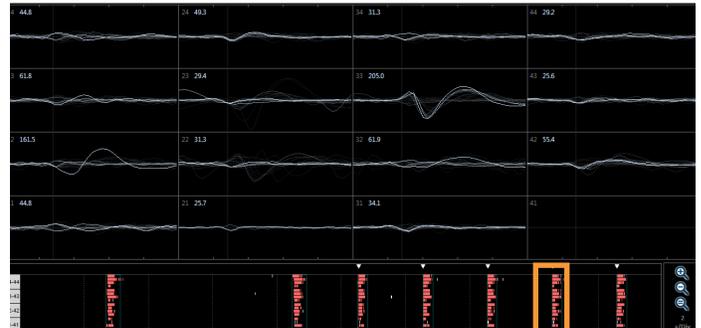
Controlling network activity using electrical stimulation can increase physiological relevance and reduce well-to-well variability, which is particularly useful for neural assays. AxIS 2.4 contains new features designed to improve electrical stimulation. A dedicated neural stimulation block makes stimulation design easy, and the timing of electrical stimulation events is stored in the raw file, allowing improved artifact management and enabling automated analysis of evoked activity using the updated Neural Metric Tool.

New MEA plates

Expand your assays with Axion's new CytoView and E-Stim+ MEA plates, which are supported in AxIS 2.4. CytoView MEA plates have a transparent bottom, allowing assay multiplexing, while E-Stim+ MEA plates provide a large dedicated stimulation electrode in each well, enabling more reliable pacing and control of cellular activity.



Pacing stimuli set hiPSC-cardiomyocyte beat rate at 1Hz (top, arrows) on an E-Stim+ Classic MEA 48 plate (M768-KAP-48S, top). Bright field images of primary rodent cortical neurons on a CytoView MEA 48 – Black plate (M768-tMEA-48B, bottom).



The AxIS 2.4 Spike Plots module displays spikes detected on each electrode and a well-wide raster plot of activity recorded from rat cortical neurons. The network responds reliably to stimulation, as indicated by white triangles above the raster.

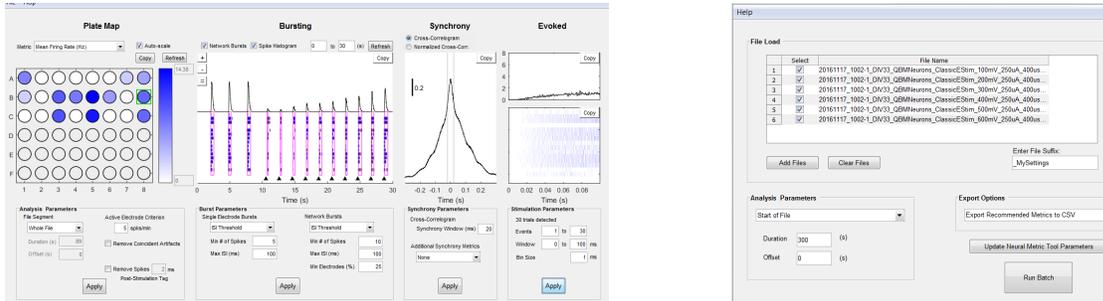
THE AXIS 2.4 ADVANTAGE

- Dedicated neural stimulation block contains optimized stimulation parameters and built-in artifact management
- Electrical stimulation time tags stored in the files enable automated analysis of evoked activity
- Full support for Axion's new CytoView and E-Stim+ MEA plates
- Usability improvements keep AxIS intuitive and easy to use
- Updated standalone tools provide enhanced data analysis options



NEURAL METRIC TOOL 2.2: NEURAL ANALYSIS & EVOKED

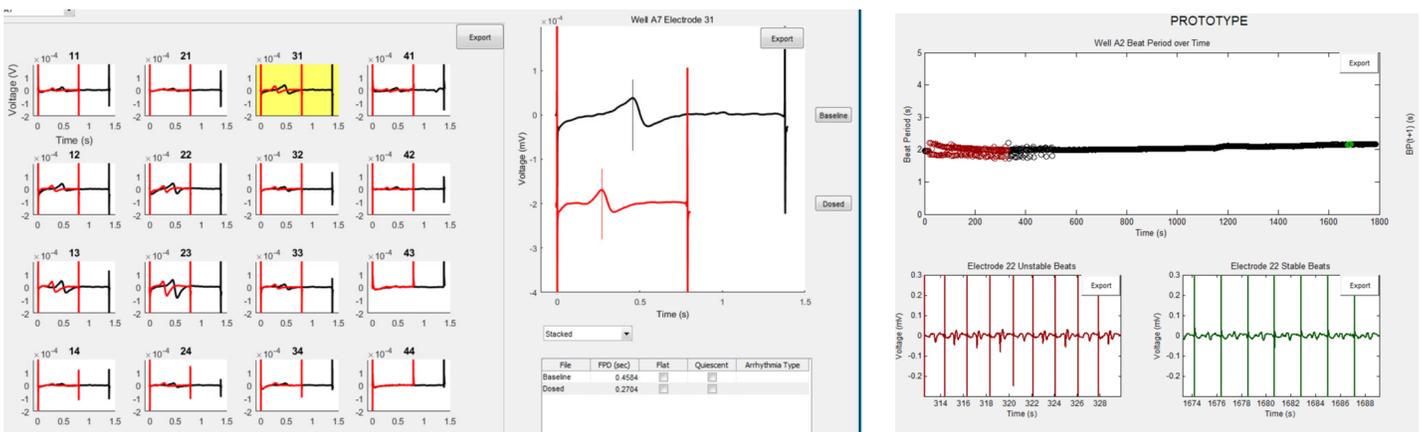
The Neural Metric Tool (NMT) offers advanced algorithms for computing burst and synchrony metrics, as well as plate map visualizations, raster plots, and synchrony cross-correlograms not available in AxIS. Released alongside AxIS 2.4, the NMT 2.2 contains new features designed to improve electrical stimulation and make analysis easy. The NMT now provides automated analysis of evoked activity for electrical stimulation experiments, batch processing, a newly designed Envelope algorithm for network burst detection, and a number of other usability improvements.



Neural Metric Tool 2.2 displaying activity from rat cortical neurons (QBM). (Left) In the main window, the top half of the plate was stimulated electrically, evoking regular network bursting and reducing well-to-well variability. Each stimuli is indicated by a black triangle at the bottom of the raster. (Right) Batch processing allows the user to quickly apply the same analysis and export parameters across multiple files.

CIPA ANALYSIS TOOL 1.2: CARDIAC ANALYSIS

The CiPA Analysis Tool is a comprehensive cardiac analysis tool suitable for any cardiac analysis application requiring precise assessment of field potential duration (FPD) and arrhythmia. The CiPA Analysis Tool provides a quick and easy comparison of beat waveforms between recordings and doses in a user-friendly visual display. Semi-automated algorithms facilitate inspection and verification of FPD measurements and classification of arrhythmic events. A variety of key endpoints can also be compiled into summary figures and data tables for study reports.



CiPA Analysis Tool 1.2 displaying activity from a dosing experiment using hiPSC-derived cardiomyocytes (CD1 iCell²). The main window (left) allows selection of a “Golden Channel” and FPD adjudication, while a secondary window (right) is used for automated arrhythmia detection and user inspection and classification.

