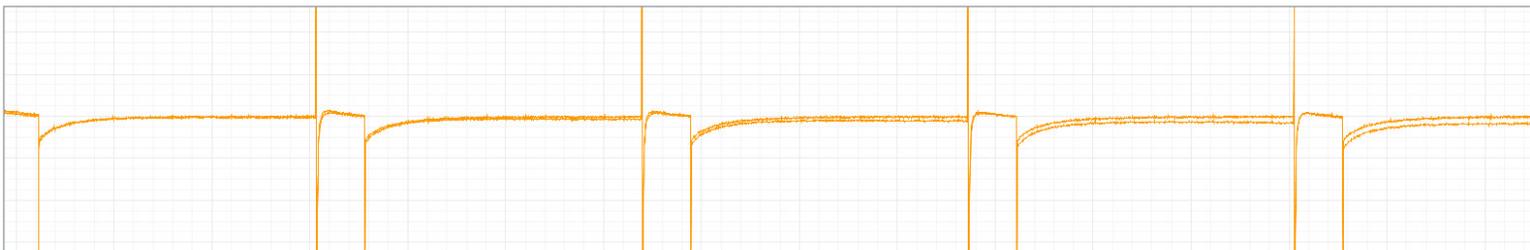# Genedata Screener®

for Ion Channel Screening

Ion Channel research has seen a technology revolution where instrumentation advances have led to dramatic increases in throughput but data analysis procedures have not progressed. Genedata Screener for Ion Channel Screening eliminates these new research bottlenecks by quickly and simultaneously analyzing any number of probes, allowing you to analyze a thousand-sample experiment in minutes.

Genedata

solutions in silico

Reduce Analysis Time

Genedata Screener provides a scalable and automated data analysis framework for multiple plates. A complete experiment can be analyzed in less than 1 hour, typically reducing analysis time in ion channel screening by upwards to 95%.

Quickly load, visualize, and analyze current traces with 100,000s of data points per well and interactively compare results within and across multiple plates.

These efficiency gains and parallel processing benefits pave the way for streamlining the routine application of ion channel screening.

Improve Data Quality

Genedata Screener combines screening-specific business logic and functionality with dedicated ion channel analysis tools, greatly improving the reliability of results.

Capabilities include:

▸ Plate QC: robust quality metrics, trace normalization, trend displays, advanced statistics, masking and correction functionality

▸ Cross-assay comparison

▸ Dose-Response Curve fitting

▸ Hit and result reporting, including plots of original traces

Visualize Traces

As with all time-dependent technologies, procedures for numerical analysis and data reduction are best planned on a visual display of time traces. Moreover, visualization is needed to verify numerical findings or detect new, unexpected responses.

In Genedata Screener, complete traces with up to 1 million measurements per well can be displayed with full interactivity:

▸ Display selected wells in plate and screen context

▸ Interactively define and adjust events

▸ Display current traces and voltage profiles for multiple wells

▸ Zoom in on time and current/voltage axes

Complete Assay Overview

(FIG. 1) *An example screenshot of final results from an Ion Channel Screen consisting of 10 plates analyzing 3200 compounds.*
A) All plates from the experiment displayed side by side.
B) The experimental design indicates the location of control wells.
C) A selected plate with well results derived from the current traces.
D) Traces from selected wells.
E) Compound results and visualizations of the underlying data. Here the activity of an active (black) and an inactive (yellow) compound with a cutout of their baseline-adjusted current and voltage traces.
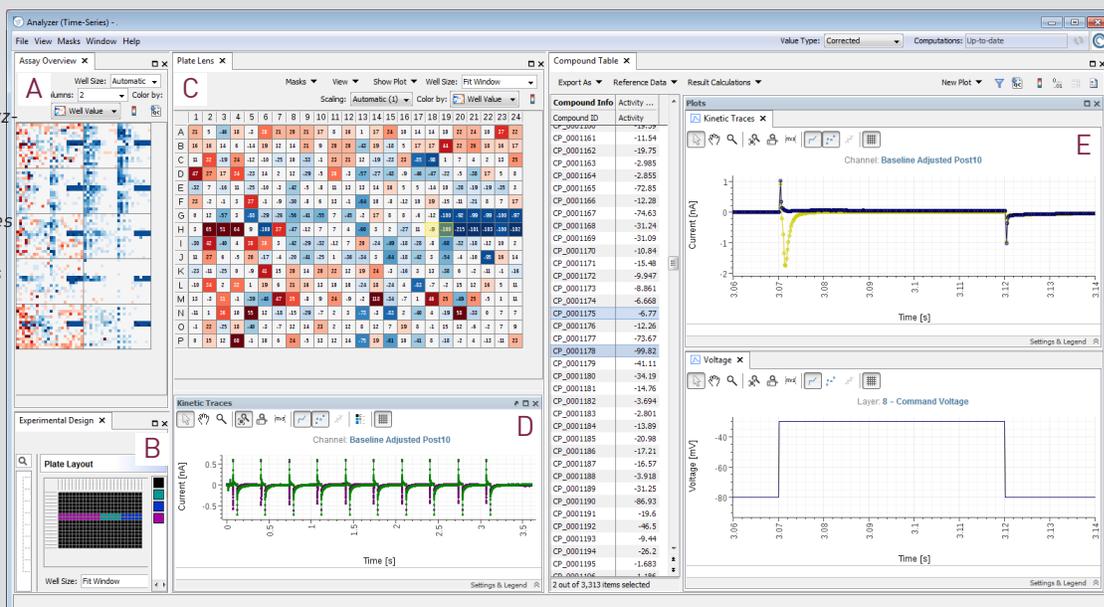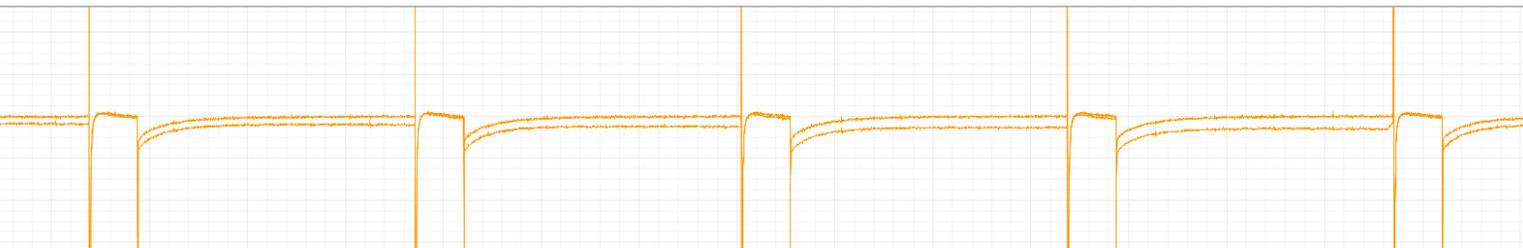
Uncover Responses

Ionic current changes in response to events (e.g. voltage changes or compound additions) are the core of ion channel experiments. In each screening experiment, cells are subjected to multiple such events; the corresponding responses must be combined to create meaningful and comparable results.

Genedata Screener for Ion Channel Screening lets you interactively set up aggregation rules to quantify ion channel events. This is achieved with simple functions (e.g. median or robust standard deviation) or more complex procedures such as fitting time traces to models (e.g. exponential decay).

An open programming interface also enables implementation of your own time aggregations or models.

Optimize Results

One of the challenges in ion channel screening is the high density of events, often reaching 20 or more per experiment. Each event requires individual set-up and analysis optimization.

Genedata Screener does not limit the number of results per well. This means that you can create different aggregation rules for each event and simultaneously calculate and display all results.

Easily creating and combining different aggregation rules as building blocks significantly accelerates set-up of data analysis protocols in assay development. Different analysis methods can run in parallel, and results can be directly compared.

Solution of Choice

Genedata Screener for Ion Channel Screening gives you a rich portfolio of capabilities including high performance and interactivity, built-in screening expertise, and easy integration with corporate environments.

The solution can be dedicated, stand-alone, and fully aligned with your existing screening infrastructure, or added with minimal effort to an existing Genedata Screener installation.

For information on supported instruments, see the Compatibility section on our webpage.

Easily Adjustable Calculations

(FIG. 2) An example screenshot of QC steps and results review.
A) Multiple interactive parameters are defined for QC and hit triage: Computing on user defined report points as well as higher level results (e.g. ratio of pre- and post compound measurements).
B) Filter dialog with a simple filter for percent activity values (computed in A). Multiple parameters can be filtered within one filter session.
C) Traces showing baseline shifts from the experiment. The numerical computation is defined in A, and the rows are sorted based on the results.
D) Scatterplot showing active compounds (% inhibition < -50%) vs. computed baseline shifts, pointing to compound measurements requiring further quality control and lowering the false positive rate of this screen.
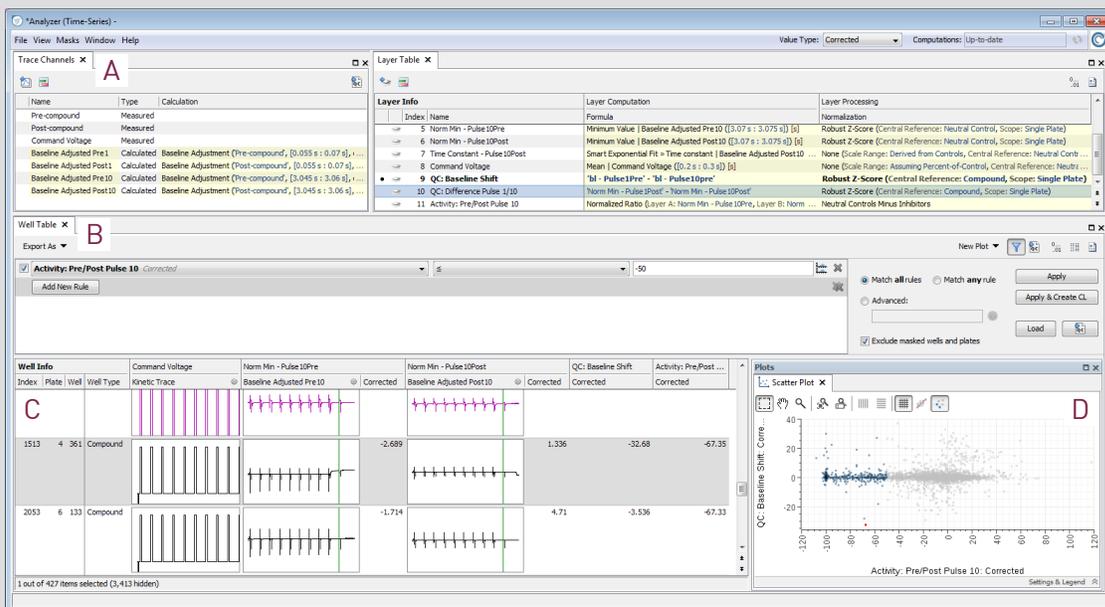
Genedata Screener

Genedata Screener® analyzes, visualizes, and manages screening data from in-vitro screening assay technologies across the enterprise, including very complex as well as ultra-high throughput experiments. Its screening-oriented business logic enables rapid processing and comprehensive analysis of complete campaigns.

Services and Support

Genedata offers a range of services and support, from installation and customization of Screener to global roll-out support, training, data analysis, application consulting and IT consulting services, all tailored to the specific needs of your organization. Our services team consists of highly skilled professionals with extensive domain knowledge in screening and software technology, bringing specialized know-how and experience to your organization.

Experienced Partner

With more than a decade of experience in industrial screening data analysis and global enterprise deployments of Genedata Screener, Genedata is an ideal collaboration partner for companies wanting to advance their screening operations. In addition to the steadily evolving Screener platform, Genedata offers extensive opportunities for custom or co-development of specific new functionalities, procedures, or methodologies to support your current and future needs.

Next Steps

To find out more about Genedata Screener, please visit www.genedata.com/screener.

For a conversation about your screening analysis needs or to schedule a live demonstration, please contact us at screener@genedata.com.

Genedata
solutions in silico