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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.

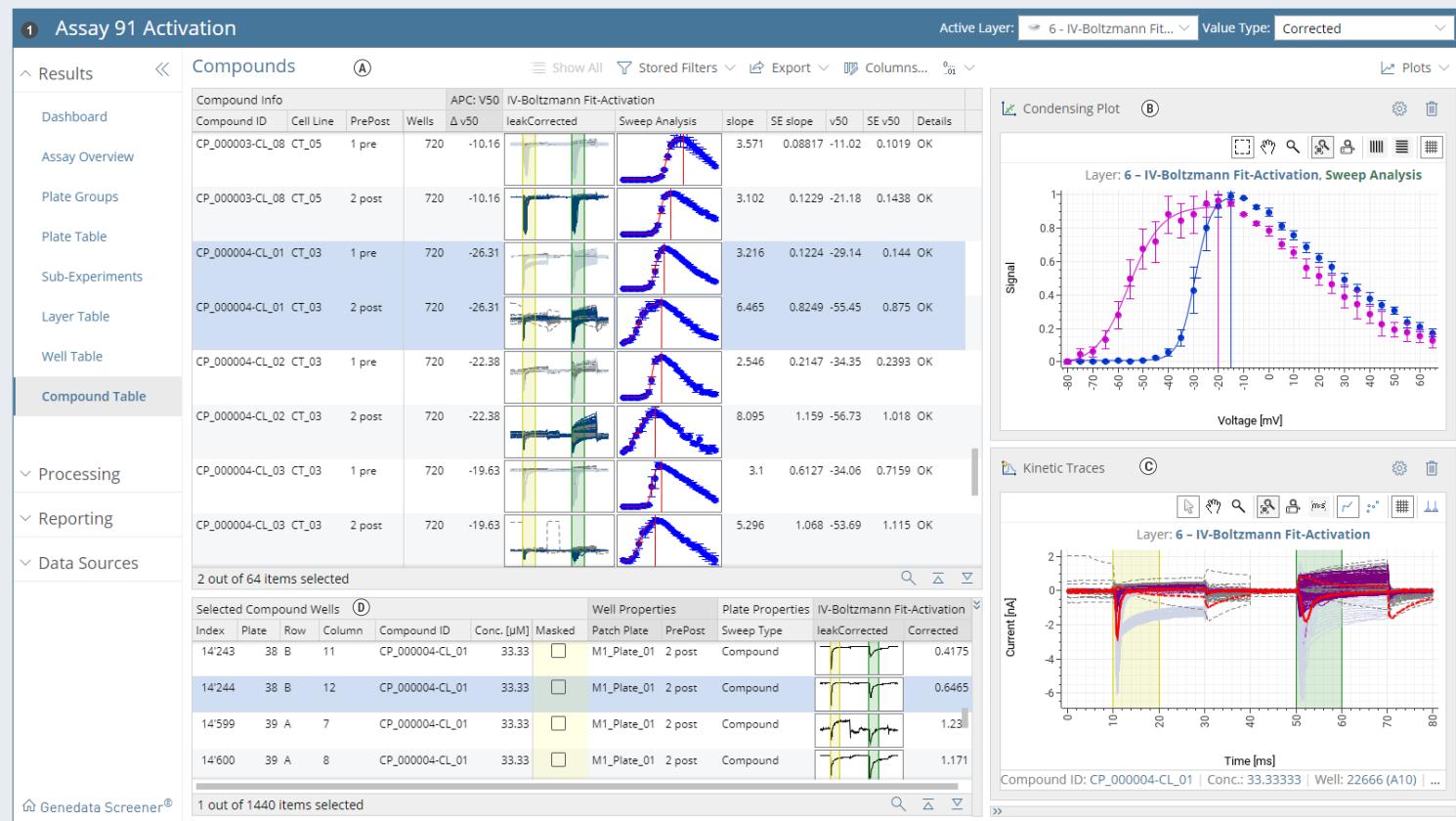
Reduce Analysis Time

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

of 95%. Genedata Screener has also extended its support for automated patch clamp (APC) data analysis in a screening context, integrating molecule and assay property information, and scaling from one to hundreds of plates per batch.

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.



① Compound Table from an Ion Channel Screen

Compound Table view from a high-throughput study of voltage-gated sodium channel kinetics. ② List of results for all compounds pre- and post- compound addition, including thumbnails of recording traces and activation plots as well as numerical results, such as half-maximal activation potential (v_{50}). ③ Overlay of the pre- and post-compound steady-state activation curves, fitted with a Boltzmann equation (blue and magenta, respectively), for the selected compound. ④ All recording sweeps for the selected compound are available in an interactive plot, enabling rapid quality control or more detailed review of the corresponding well details in the Selected Compounds Well Table ⑤.

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.

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

2 Assay 67

Selected Compound Wells (B)

Compound Info		C1_All		Well Info		Plate Properties		C1_All							
Compound ID	Patch Plate	Sweep Analysis All Points	Curve	Valid	qAC50 [M]	Index	Plate	Row	Column	Compound ID	Conc. [uM]	Masked	Assay Barcode	Protocol	Corrected
CP_0000029	M2_1283952110_2			<input checked="" type="checkbox"/>	> 1.977E-5	9'870	26	L	6	CP_0000030	0.05265	<input checked="" type="checkbox"/>	1077661873	hERGpharmAB	-237.7
CP_0000030	M2_1283952110_2			<input checked="" type="checkbox"/>	1.757E-6	9'894	26	M	6	CP_0000030	0.05265	<input checked="" type="checkbox"/>	1077661873	hERGpharmAB	30.48
CP_0000031	M2_1283952110_2			<input checked="" type="checkbox"/>	> 1.977E-5	9'918	26	N	6	CP_0000030	0.05265	<input type="checkbox"/>	1077661873	hERGpharmAB	-7.814
CP_0000034	M2_1283952110_2			<input checked="" type="checkbox"/>	1.053E-6	10'254	27	L	6	CP_0000030	0.05265	<input checked="" type="checkbox"/>	1077661873	hERGpharmAB	-273.5
						10'278	27	M	6	CP_0000030	0.05265	<input checked="" type="checkbox"/>	1077661873	hERGpharmAB	3.496
						10'302	27	N	6	CP_0000030	0.05265	<input type="checkbox"/>	1077661873	hERGpharmAB	-9.041
						10'638	28	L	6	CP_0000030	0.05265	<input type="checkbox"/>	1077661873	hERGpharmAB	-201.5
						10'662	28	M	6	CP_0000030	0.05265	<input checked="" type="checkbox"/>	1077661873	hERGpharmAB	-0.2109
						10'686	28	N	6	CP_0000030	0.05265	<input type="checkbox"/>	1077661873	hERGpharmAB	-10.51
						11'022	29	L	6	CP_0000030	0.05265	<input checked="" type="checkbox"/>	1077661873	hERGpharmAB	-261.7
						11'046	29	M	6	CP_0000030	0.05265	<input checked="" type="checkbox"/>	1077661873	hERGpharmAB	-26.98
						11'070	29	N	6	CP_0000030	0.05265	<input type="checkbox"/>	1077661873	hERGpharmAB	-8.626
						11'406	30	L	6	CP_0000030	0.05265	<input checked="" type="checkbox"/>	1077661873	hERGpharmAB	-196.9
						11'430	30	M	6	CP_0000030	0.05265	<input checked="" type="checkbox"/>	1077661873	hERGpharmAB	-11.09
						11'454	30	N	6	CP_0000030	0.05265	<input type="checkbox"/>	1077661873	hERGpharmAB	-7.571
						11'700	31	L	6	CP_0000030	0.05265	<input type="checkbox"/>	1077661873	hERGpharmAB	-25.2

183 items

C

Kinetic Traces

Active Layer: 6 - C1_All

Condensing Plot

Layer: 6 - C1_All, Sweep Analysis

DRC Plot

Layer: 7 - C1_Fit

Plate Lens

② Drill Down To Learn More

Example screenshots from a hERG assay with more than 100 compounds. **A** Summary of compound results. **B** Drill-down to well information of selected compounds. **C** Detail view of current traces, sweep analysis, fit results and wells in plate context.

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) and activation/inactivation curves.

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

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.

Genedata Screener covers large-scale modern ion channel pharma research and is integrated with both Nanion and Sophion instruments. This combination of state-of-the-art APC instrumentation with best-in-class screening data analysis, improves the overview within and across experiments.

For additional information on supported instruments, visit our [webpage](#) to learn more.



Genedata Screener® captures data from all assays, regardless of therapeutic modality or area. It automates analysis of even the most complex assays, on a single platform and in a harmonized manner, to ensure high result quality and better decision-making. © 2021 Genedata AG. All rights reserved. Genedata Screener is a registered trademark of Genedata AG. All other product and service names mentioned are the trademarks of their respective companies. OSS21

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GENEDATA

Genedata transforms data into intelligence with innovative software solutions incorporating extensive domain knowledge. Leading biopharmaceutical organizations rely on Genedata to digitalize and automate R&D processes. From discovery to clinic, Genedata solutions help maximize the ROI in R&D. Founded in 1997, Genedata is headquartered in Switzerland with offices around the world.

EXPERIENCED PARTNER

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

SERVICES AND SUPPORT

Genedata offers a range of services and support, from installation and customization to global rollout 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.

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.