Genedata
solutions in silico

Genedata Screener®

for HCS

High Content Screening (HCS) has become instrumental in researching new therapies through screening for phenotypic change, but most software systems cannot handle the required level of data detail, complexity, and scale. Screener for HCS provides instant access to images along all steps of the data processing and permits detailed analysis of cell-level data and populations. The software effortlessly processes and explores any number of plates, wells, and features, covering the complete screening process from cell-level data to final campaign results.

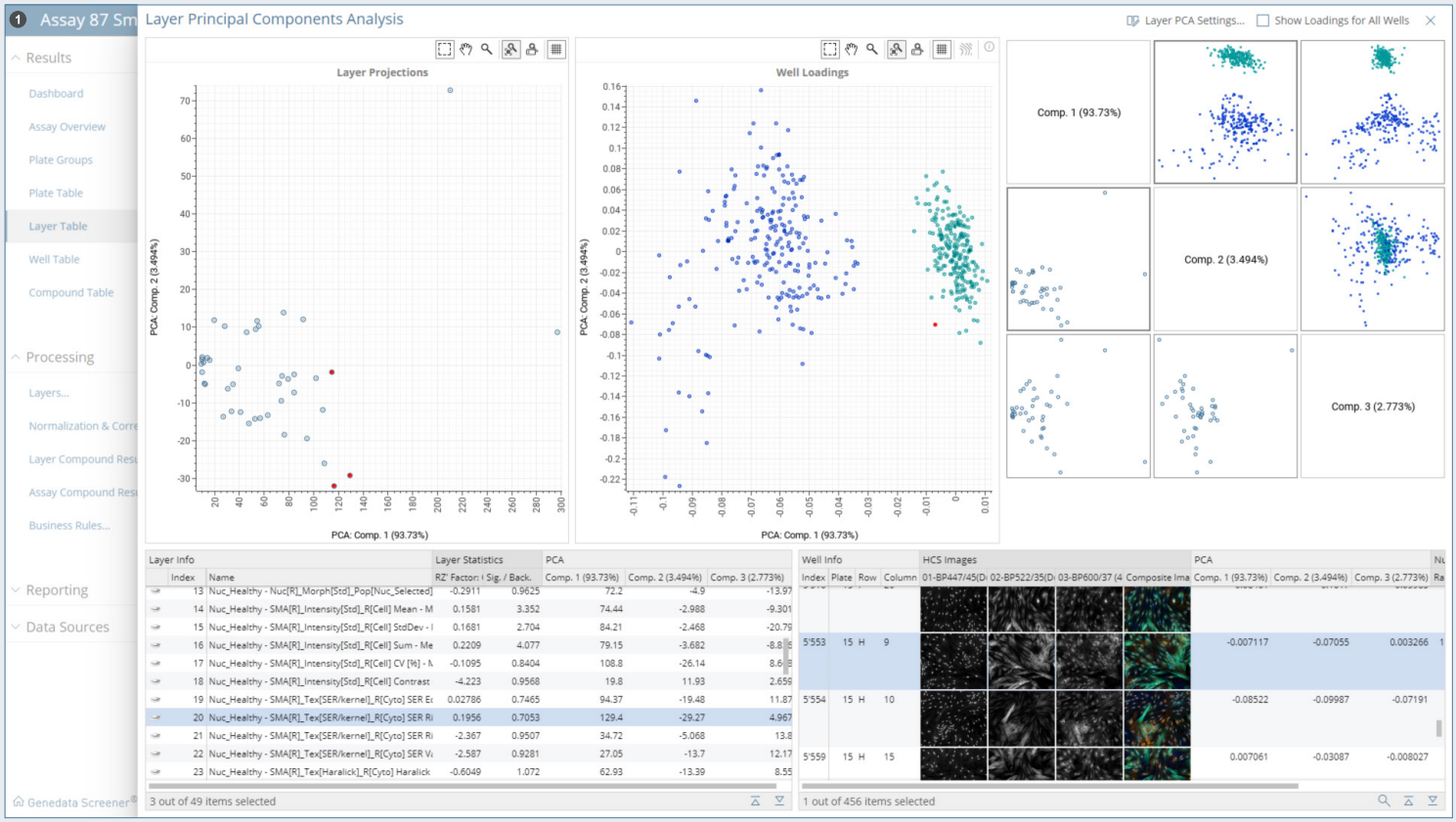
Integrate

Screener for HCS is designed to manage all your high content screening data, easily handling complete assays with hundreds or thousands of plates with 5, 50 or 500 HCS features per well at single-cell resolution. Load image analysis results directly from Genedata Imagence or import data from any major commercial and open-source HCS image and data management systems without the need to export them in first place.

Screener for HCS serves as the single point of reference for downstream applications, providing complete access to HCS data, images, and results regardless of instrument, image store, image analysis software, or geographical location.

Condense

Particularly for complex HCS assays, it is critical to quantify the response of different cellular subpopulations to account for their heterogeneity. Screener for HCS summarizes individual cell populations as results per well. Its versatile calculation framework enables scientists to interactively



❶ *Principal Component Analysis (PCA)*
The PCA allows identification of the most relevant features in your data set. Using machine learning these can be combined into a single feature with the click of a mouse. Additionally, PCA enables interactive review of all wells for phenotypes beyond the control treatments. Images allow for immediate visual confirmation.

tailor such summaries with any changes triggering immediate re-calculation of results. Flexible annotation and filter rules ensure that hits are easy to find and confirm.

A limitless number of features can be processed and compared in parallel through automatic generation of statistically significant feature combinations, helping you navigate complex high content screens.

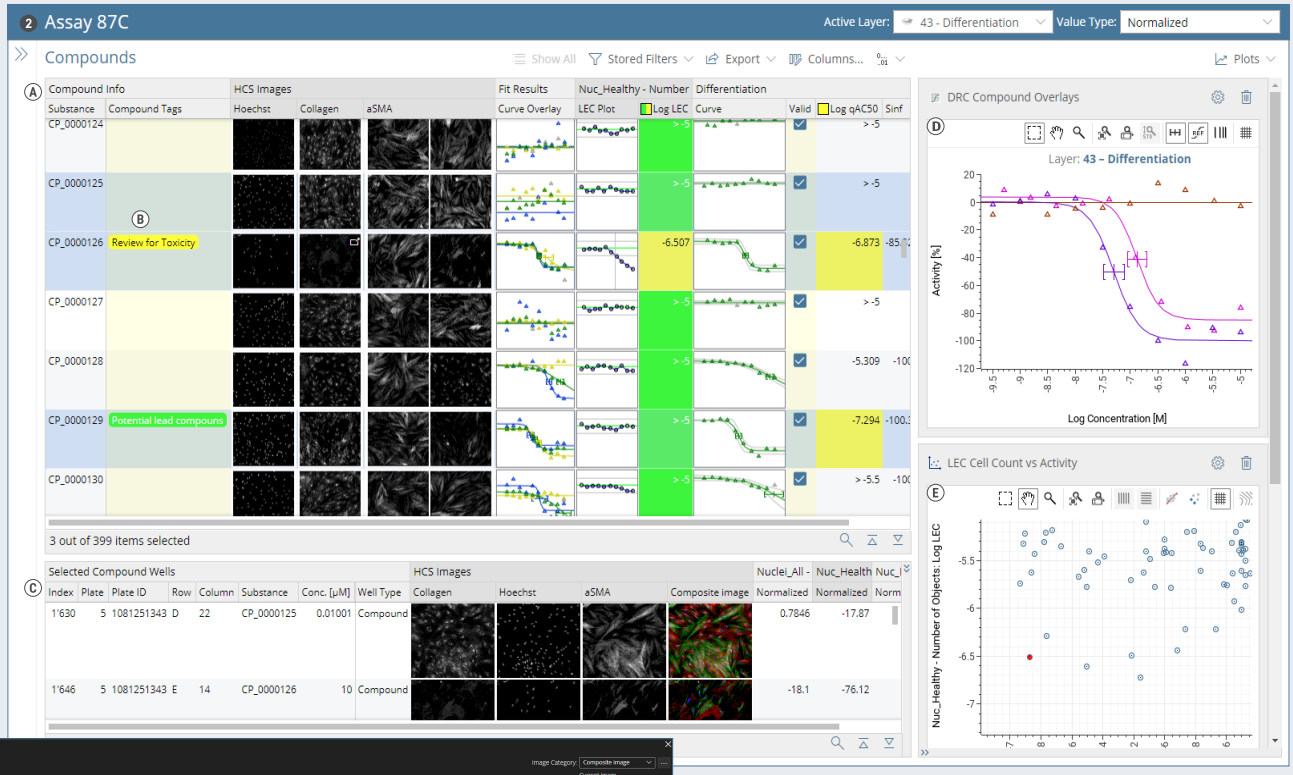
Principal Component Analysis (PCA) helps you better understand which features best reflect phenotypic differences (Figure ❶). In addition, it allows identification of outlier wells, whose phenotype can be more closely inspected.

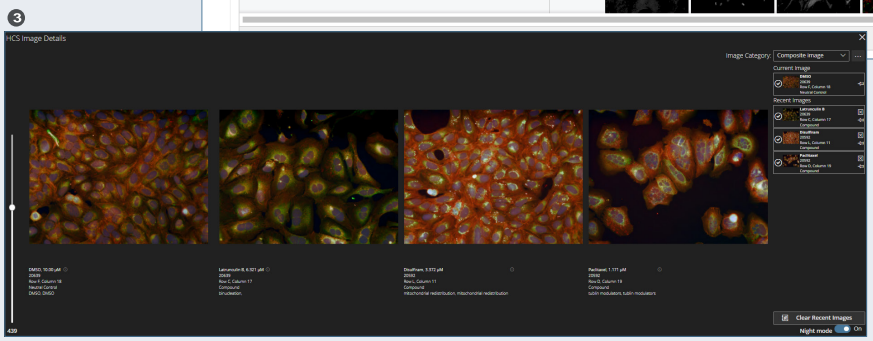
Analyze

Screener for HCS uses the full depth of single-cell data to generate more biologically significant results from high content screens. Screener for HCS supports:

- Quality control on cell-, well-, plate- and assay-summary data
- Population definition and aggregation
- Exploration of the phenotypic space
- Calculation and correlation of potency and phenotypic change
- Multi-feature compound ranking and hit list generation

Review phenotypic changes in the raw images throughout the analysis, look for biological events, and optimize the sensitivity of the analysis, all to make sure that the numbers reflect biological reality.





❷ *Images Next to Results*
Ⓐ *HCS images can be viewed next to results, here e.g. fit results with curve overlays.* Ⓑ *Stored filters enable conditional formatting and automated tags to consolidate results across any number of features.* Ⓒ *Well-level results for selected compounds can easily be displayed and compared.* Ⓓ *Interactive plots can be used to quickly drill down further.* Ⓔ *Scatterplots and other relevant plots can be used to compare any two features and visually find hits or outliers - here a comparison between the qAC50s for two separate phenotypes.*
❸ *HCS Image Viewer*
All images can be selected and compared side by side with a high level of detail.

Visualize

Images are the cornerstone of HCS quality control and data interpretation. With Screener for HCS, high-resolution images can be instantly displayed next to your results (Figures ❷ and ❸). Having images so close at hand enables immediate relation of numerical findings to their underlying images and helps differentiate between biological effects and technical artifacts.

Cell density plots and scatterplots aid in the definition, optimization, and validation of the processing, and by filtering and annotating the results of interest, only relevant data is submitted to downstream analysis.

Overlay and compare plots from different wells, and easily export any results, numerical or visual, into standardized and customizable reports.

Store

As the size of HCS campaigns continues to grow, scalability increasingly depends on properly managing the resulting data volumes. With Screener for HCS you can:

- Establish a central image store and connect to image analysis software
- Browse and query for images using metadata from different experiments and HCS platforms
- Maintain full access control via authorization and authentication
- Set up routine maintenance tasks with a low maintenance overhead

Screener supports campaigns starting from the moment data originates, through analysis and interpretation, to reporting results to their final destination. All this while controlling data integrity and access throughout the entire workflow.

Solution of Choice

The world's top pharma and contract research organizations rely on Screener for HCS for a streamlined high content analysis. Screener manages massive, multi-featured HCS data, and uncovers relevant features with powerful analysis methods.

With a small footprint and easy setup, Screener for HCS complements existing R&D data analysis pipelines, addresses specific HCS challenges and feeds HCS results back into the main discovery data stream. Furthermore, Screener for HCS makes high content analysis accessible beyond the screening laboratory.

Supporting all plate-based screening, Genedata Screener improves screening productivity, eliminates redundancies, and drives innovative research.

GENEDATA SOLUTION

SCREENER

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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.