**ACCELERATING PROGRESS
IS IN OUR GENES**

AGILENT'S BIOINFORMATICS ANALYSIS SOFTWARE
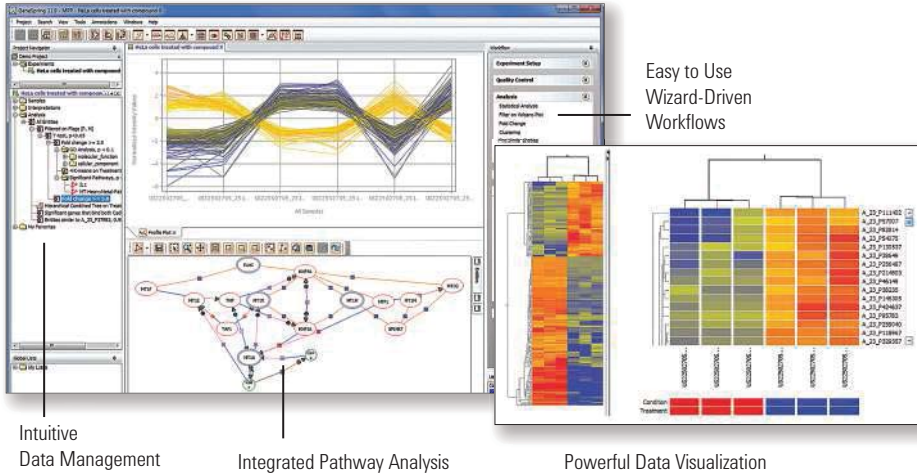
GENESPRING GENE EXPRESSION (GX)
MASS PROFILER PROFESSIONAL (MPP)
PATHWAY ARCHITECT (PA)

See Deeper. Reach Further.

Agilent Technologies

GeneSpring GX

The Gold Standard
For Microarray Analysis

Easy to Use
Wizard-Driven
Workflows

GeneSpring GX has easy to use wizard-driven workflows, as shown on the left. It is intuitive and provides interactive visualization for built-in pathway analysis. GeneSpring provides powerful statistical tools to put your multi-omic data into a biological context.

Intuitive
Data Management

Integrated Pathway Analysis

Powerful Data Visualization

With GeneSpring GX, researchers can quickly and reliably identify statistically significant differentially expressed genes, alternative splicing events, miRNA expression and effects, and genotype variants using GeneSpring's built-in Gene Set Enrichment Analysis, miRNA target prediction databases, sample classifications, and a fully integrated analytical pathway module like the figures shown below..

- Probe-or gene-level expression analysis on all major microarray platforms, including Agilent, Affymetrix, and Illumina
- microRNA analysis and identification of gene targets
- The ability to do correlative analysis on mRNA expression and miRNA data (or splicing, QPCR, CN)
- Exon splicing analysis using t-tests or multivariate splicing ANOVA and filtering for transcripts on splicing index
- NCBI Gene Expression Omnibus Importer tool for expression datasets
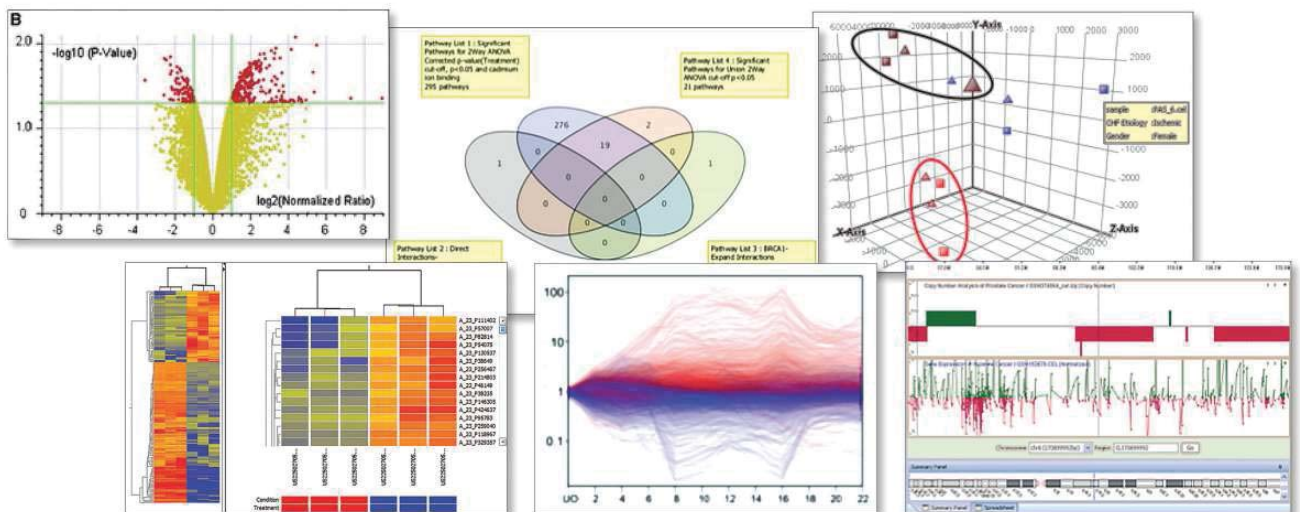
GeneSpring GX

GeneSpring Correlation Analysis

Measures the strength and directionality of pair-wise relationships between any 2 entities or samples

The correlation framework in GeneSpring measures the strength and directionality of entity-entity and sample-sample correlations. The correlation coefficient is calculated between these variables and displayed in the form of a correlation heat map. On the right is an example of a sample-sample correlation was performed with the TCGA glioblastoma gene expression microarray data to display molecular sub-types.
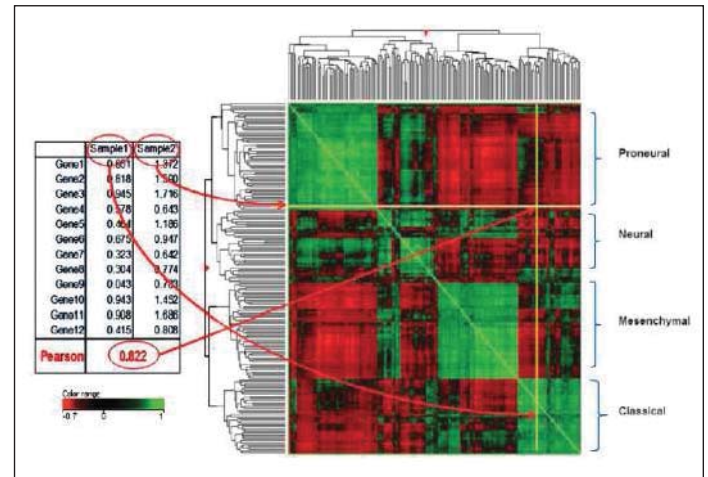
GeneSpring Metadata Framework

Sample attributes such as phenotype, clinical parameters, time points, quality assessment can be visualized, and sorted to match data.

Metadata of 202 TCGA Glioblastoma (GBM) Samples

Cancer Cell. 2010, 17(1): 98

Hierarchical clustering in GeneSpring allows you to align and visualize individual samples with their metadata information. Metadata from the experimental samples can be displayed across a clustered heatmap and sorted using the profile plot, like the image on the left.

GeneSpring GX

GeneSpring MPP

Intuitive and Integrated
Metabolomics and Proteomics

GeneSpring can analyze many different types of mass spectral data through integration with the Mass Profiler Professional (MPP) module, including GC/MS, LC/MS, CE/MS, and ICP MS as seen in the figure to the left.. Recursive analysis —a unique feature of GeneSpring MPP —lets users easily re-mine data sets, based on preliminary data, to improve the quality of statistical analysis results. It's also easy to export an inclusion list for Q-TOF MS/MS analysis and re-import the results into GeneSpring MPP.

Built-in ID browser for automated spectral library searches

Converting entities into actual chemical compounds using Mass Profiler Professional is made easy, using comparative techniques against public or private databases. The software automatically annotates the entity list and projects the compound names onto any of the various visualization and pathway analysis tools. Mass Profiler Professional includes an integrated ID Browser that mirrors MassHunter's qualitative analysis functionality to allow identification using:

- LC/MS Personal Compound Database (METLIN, pesticides, forensics)
- GC/MS libraries (NIST and Fiehn library)
- Empirical Formula Calculation using Agilent's Molecular Formula Generator (MFG) algorithm

Machine learning for your data

With functionality for unsupervised (classification without prior group assignments) or supervised (using pre-classified groups) analysis, the software lets you:

- Quickly and easily discover differences between sample groups
- Plot changing patterns of compound abundances over time
- Develop useful multivariate models for class prediction

Mass Profiler Professional

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Pathway Architect

Turning Measurement *into Discovery*

Software for discovery; solutions for biologists

GeneSpring provides powerful, workflow-driven statistical tools for intuitive visualization and data analysis. From the figure below, KEGG supported pathways in GeneSpring offers an interactive computing environment that promotes investigation and enables understanding of data within a biological context.

Regarded as the gold standard in expression analysis, GeneSpring allows you to quickly and reliably identify targets of interest that are both statistically and biologically meaningful.

As a biological analysis tool, more than 400 technology types —from microarray annotation to NGS genomes —are prepackaged for use, along with Gene Ontologies, variant databases, and curated pathways. GeneSpring receives over 100 references per month in Google Scholar, and has enabled thousands of researchers to turn biological measurement into biological insight.
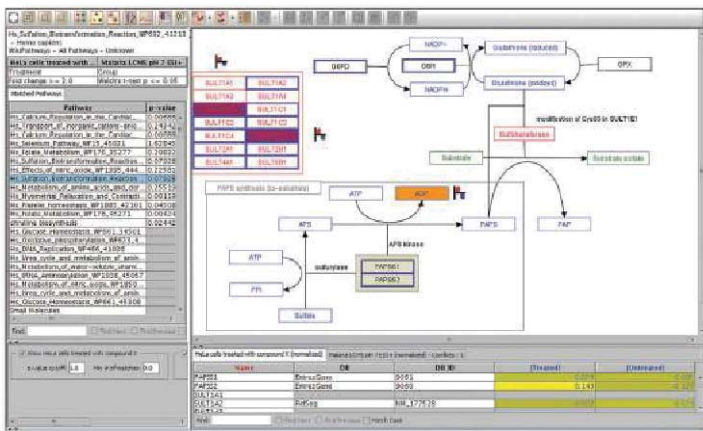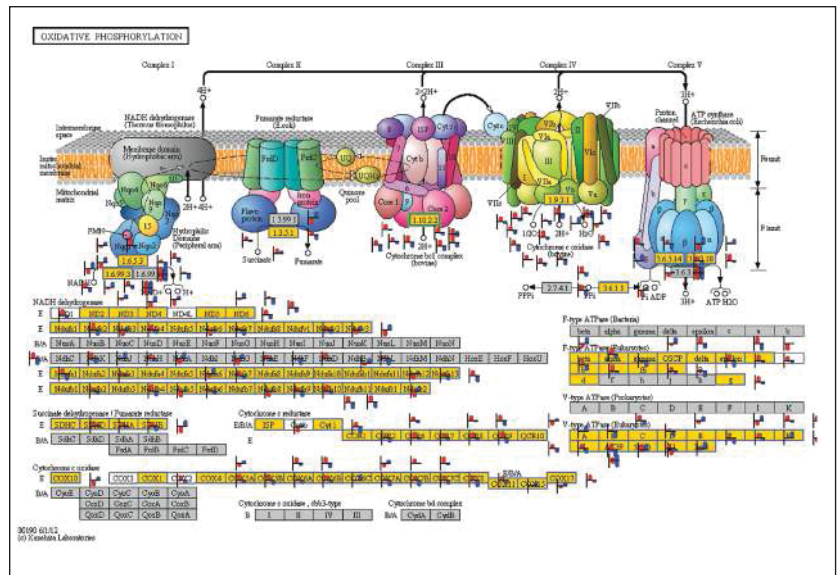
Integrated analysis with GeneSpring's Pathway Architect

By integrating multiple comprehensive analyses from genomics, transcriptomics, proteomics, and metabolomics studies, researchers can generate a better depiction of the biological system, leading to a more accurate and detailed understanding of the molecular pathways that underlie their system's emergent properties.

GeneSpring includes curated, canonical, and machine-generated pathways for intuitive biological contextualization as well as network capabilities to allow researchers to quickly generate and dynamically explore phenotypic networks.

Pathway Architect

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GeneSpring Multi-omic Workflow

Introducing the multi-omic integrated biology solution that includes the new NGS workflow between GeneSpring 13.0 and Strand NGS 2.1. You will be able to merge gene lists obtained from NGS experiments with gene lists obtained from microarray or pathway experiments to identify pathways via multi-omic analysis.

Import of Strand NGS data into GeneSpring for experiment creation, grouping and interpretations

GeneSpring

Easily Analyze NGS Data

Optimized for Target Enrichment

GeneSpring-Strand NGS workflow is specifically engineered for the large scale data analysis that is typical of NGS experiments including data management, interactive data exploration, and intuitive data visualizations. Strand NGS enables alignment for import of Agilent's SureSelect target enrichment kits. This allows for data visualizations of various quality control plots in whole genome experiments using the QC Manager.

Best-in-class analysis for NGS

GeneSpring continues to build upon its industry gold-standard platform for bioanalytical analysis, bringing the same rich visualizations and biological contextualizations to your NGS data.

1 Application

10 Over ten years of Experience

100 Hundreds of technology types

1000 Thousands of users

10000 More than ten thousand references

GeneSpring Product Summary

GeneSpring offers best-in-class analysis for any type of research. Available in four fully compatible versions, GeneSpring allows endless data comparisons and validations.

- GeneSpring GX for microarray gene expression, exon, miRNA, CNV and GWAS
- GeneSpring MPP for mass-spec based protein profiling and metabolite abundance
- GeneSpring PA for canonical pathway analysis and machine-generated network modeling

The same powerful statistics, rich visualizations and biological contextualizations are all available in every version, including normalizations, data quality control, built-in gene ontology and gene set analysis, sample classifications, and a fully integrated analytical pathway module. Most importantly, GeneSpring delivers a full suite of applications built and designed especially for biologists allowing you to directly interact with your data.

For more information, please visit us at
genespring-support.com

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