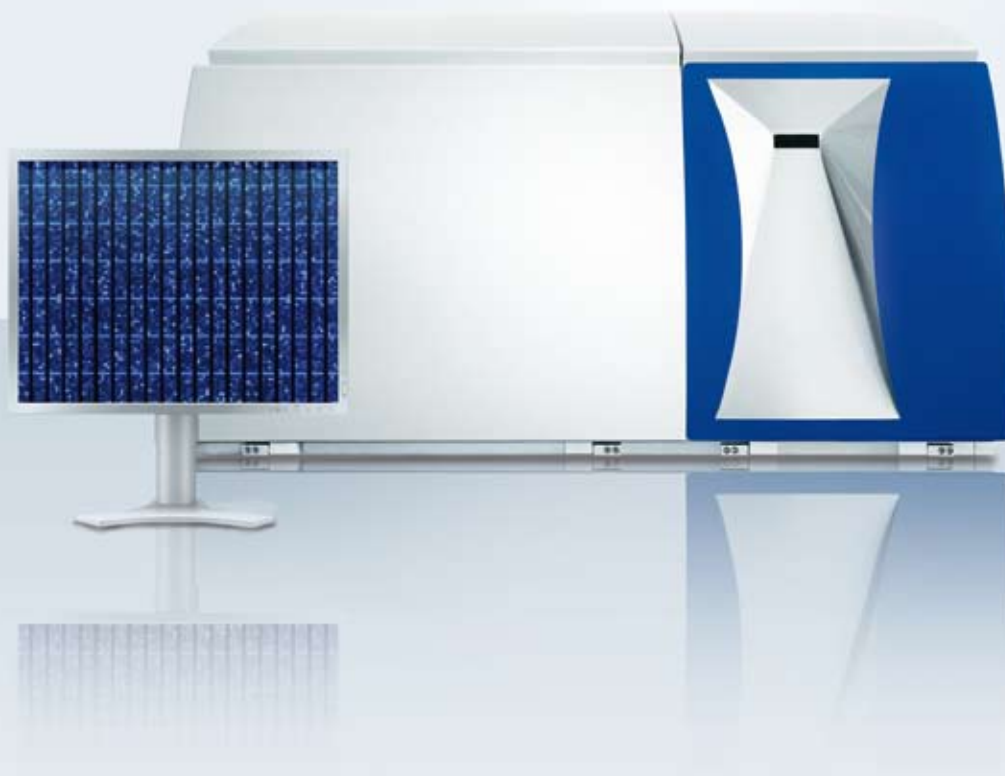


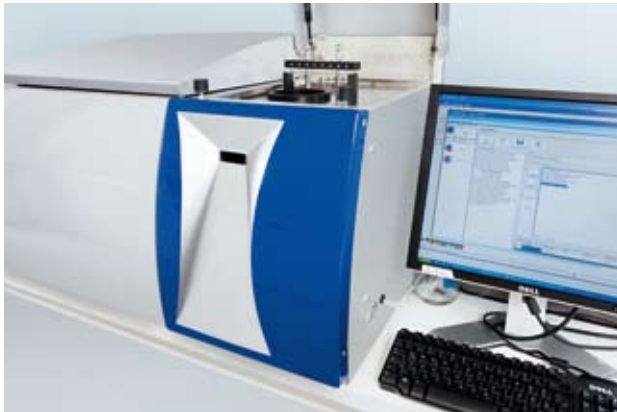


GENOME EXPLORATION. SIMPLIFIED. AUTOMATED.

Geniom[®] RT Analyzer

FULLY AUTOMATED PROCESSING OF MICROARRAYS





A fundamental change in microarray analysis

The Geniom RT Analyzer provides fully automated processing of microarray experiments. Consequently you have less hands-on time in your experiments. The automation is made possible with the microfluidic Geniom Biochip.

■ ALL-IN-ONE INSTRUMENT

– Sample loading, hybridization, washing, staining, and detection of Biochips

■ AUTOMATION

– Easy and streamlined protocols

■ MICROFLUIDICS

– Precise fluid control and flexible probe content enabled

■ REPRODUCIBILITY

– Exact reproducible experiments because of precise fluid control in microchannels, computer controlled timing

■ FLEXIBILITY

– One instrument for a wide range of applications

■ ALL-IN-ONE INSTRUMENT

The Geniom RT Analyzer integrates a hybridization oven, a wash station, a shaker and a detection station in one instrument.

Sample loading, hybridization, washing, precise temperature control, staining and detection are fully automated.

The combination of different experimental workflows in one instrument is time saving and cost effective and simplifies ordinary work processes.

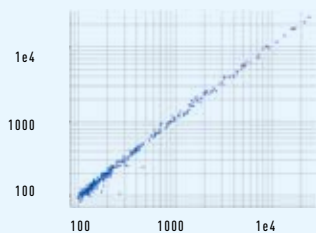
The software for the Geniom RT Analyzer is intuitive to use. You can either perform your analyses with pre-installed programs from febit or write new programs with ease.

The Geniom RT Analyzer works with a precise temperature control for optimal hybridization.

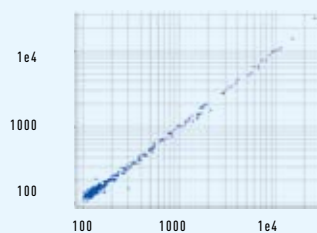
A pressurized system allows the automated sample movement through the microchannels of the Biochips with accurate timing. This automated back and forth moving of the sample during the hybridization (active motion hybridization) increases sensitivity and stringency while reducing hybridization time.

GRAPH 1: TECHNICAL REPLICATES (MOUSE)

Pearson correlation coefficient: 0.993, brain/brain



Pearson correlation coefficient: 0.996, liver/liver



A high Pearson correlation coefficient for technical replicates shows high reproducibility and thus an accurate procedure.



Geniom[®] RT Analyzer key features

■ AUTOMATION

The automation of an entire experiment is assured by a precise fluidic control regulating simultaneously microfluidic and Biochip processing. Only buffer, reagent and sample tubes have to be filled and positioned in the holders. As a result, sample loading, hybridization, washing, shaking, and detection is performed automatically and therefore reduces hands on time.

The Geniom RT Analyzer has programmable steps for loading, hybridization, washing, and shaking. febit provides software profiles for a number of applications. Development of new profiles is as easy as drag and drop of program steps or changes to variables such as time and temperature.

The detection software includes a programmable CCD camera for varying detection parameters. The detection pictures are automatically stored by the software. Each microarray experiment can be analyzed by importing the pictures into a data analysis software tool.

The microarray experiment with the Geniom RT Analyzer requires a short hands on time. This increases your productivity for other research work.

■ MICROFLUIDICS

The Geniom RT Analyzer works with Geniom Biochips. These are nucleic acid microarrays with eight separate microfluidic channels which can be hybridized separately or in parallel. Each microfluidic channel is enclosed, eliminating evaporation and contamination, and is under precise microfluidic control enabling automation and excellent reproducibility.

■ REPRODUCIBILITY

The microarray experiment is very reproducible due to precise microfluidics and automation of the experiment workflow of the Geniom RT Analyzer. The microfluidic Geniom Biochip from febit enables consistency in timing, volumes, temperature in each experiment to obtain reliable and comparable results.

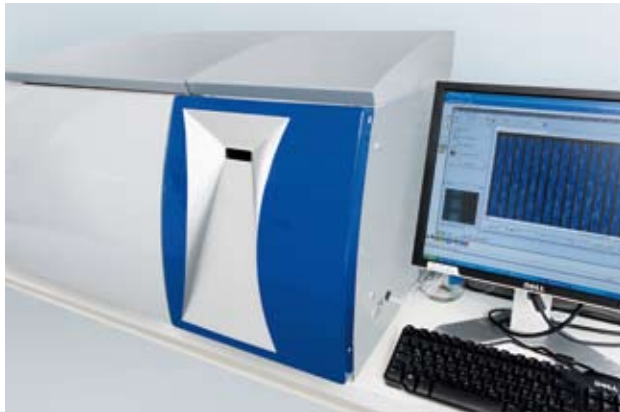
■ FLEXIBILITY

Enabled by a flexible array design of a Geniom Biochip plus adjustable software and hardware of the Geniom RT Analyzer, you are able to run a wide range of applications.

GENIOM BIOCHIP FACTS



- Microfluidic Biochip with precise fluid control for reproducible hybridization and washing conditions
- Closed compartment eliminates evaporation and enables high temperature hybridization conditions
- 8 separate microchannels each with up to 15,624 features
- 124,992 features per Biochip
- Enables parallel hybridization of 8 different samples

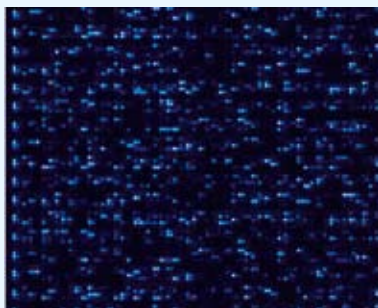


RNA Biomarker Profiling on the Geniom[®] RT Analyzer

The value of biomarkers for diagnostic and prognostic assessments has become increasingly well established in medicine. Technological advances especially in genomics and transcriptomics enable researchers to capture molecular fingerprints of human diseases such as cancer, and fine-tune patient classification according to the detected molecular changes. The role of miRNAs in pathogenesis and the power to associate expression changes with disease states underscores their value as molecular biomarkers.

miRNA BIOMARKER PROFILING ON THE GENIOM RT ANALYZER

- miRNA profiling workflow provides an optimized protocol for the processing of Geniom miRNA Biochips on the Geniom RT Analyzer
- Multiplex testing and automated solution
- Highly sensitive analysis from limited clinical sample material, such as blood or other body fluids
- Development of predictive biomarker signatures for diagnosis, monitoring or prognosis of diseases
- Established protocol and Biochips for routine sample testing
- Automation yields consistency in miRNA Biochip processing conditions which translate into highly reproducible biomarker test results



Example of Geniom Biochip hybridized with RNA from human brain and heart. Samples were hybridized at 42 °C for 16 h. Labeling was done with the Ambion mirVana miRNA labeling Kit. After hybridization, the biotin was labeled with SAPE (streptavidin-phycoerythrin conjugate), followed by a consecutive signal enhancement (CSE) step using biotinylated anti-streptavidin antibody and a second addition of SAPE.

COMBINED ANALYSIS miRNA AND TARGET mRNA

Since each miRNA can regulate one to several messenger RNA transcripts, and conversely one mRNA can be regulated by one to several miRNAs, it is of greatest interest to researchers to identify those connecting networks. Geniom Biochips for gene expression profiling and the Geniom RT Analyzer instrument are routinely applied to analyse newly identified gene sequences and predicted target genes of regulatory, non-coding RNAs.

mRNA EXPRESSION PROFILING

- Whole genome expression profiling
- miRNA follow-up: profiling of predicted target genes
- Analysis of newly identified gene sequences
- Established catalog Geniom Biochips
- Customized Geniom Biochips for gene selections and proprietary sequences



Bioinformatics and applications support

GENIOM DATA BIOINFORMATICS SERVICE

Analyze your raw data generated with the Geniom RT Analyzer or take advantage of our experienced Geniom Data Bioinformatics Service.

Simply forward the data generated with the Geniom RT Analyzer to febit and our bioinformatics department will take care of the data analysis. You will receive a comprehensive and clear bioinformatics report summarizing your microarray project.

febit provides a first class application support tailored to your specific questions and needs. We offer on site training. Our Field Application Scientists can support you and find a solution for your molecular biological needs.

SOFTWARE: EASE OF PROGRAMMING AND ANALYZING

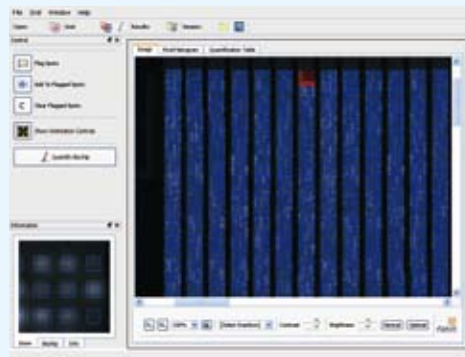
You don't have to be an instrumentation expert to start a microarray experiment or to program protocols for the Geniom RT Analyzer. febit offers you validated protocols for many experiments.

After the experiment, load the detection picture into the Geniom Wizard software. The software automatically aligns the features to the grids and measures the intensity.

BIOINFORMATICS CONSULTING

febit offers consulting and processing of customer specific projects covering a wide range of requests, from the development of customized tiling arrays to the development of arrays with combined genomes, next generation sequencing projects etc.

Contact us and our bioinformatics department will evaluate the project and indicate the feasibility, the costs and the time frame.



Feature intensity analysis of a Geniom Biochip with the Geniom Wizard Software

Specifications

GENIOM RT ANALYZER			
1. Sample Handling		3. Software	
Volume per sample	min. 20 µl	Instrument Software	Geniom Software for instrument control
Sample throughput	Typically 8 –16 samples per day depending on application	Raw Data Export	Tab delimited format ensures compatibility to major bioinformatic software packages for high level data analysis
Sample injection	automated	Data Analysis	Software Package for easy data analysis
Processing times	Hybridization 1–24 hours depending on application		
2. Detection		4. Physical Specifications	
Detection	Phycocerythrin & Cy3 fluorescence detection, other dyes please inquire	Light source	UHP Mercury lamp, 150 W
CCD camera	8 megapixel CCD camera	Power	240 V / 110 V, 50 – 60Hz, 400 W
CCD camera resolution	6 micrometer	Size dimensions	55.7 cm × 90.7 cm × 66.5 cm
Dynamic range	3–4 orders of magnitude	Weight	110 kg
Excitation Wavelength (E _{max})	545 nm	Network connection	Ethernet / USB
Time for picture acquisition	0.2–5 sec.	Maintenance	Remote Access Option
Feature extraction	automated feature extraction with Geniom Wizard software package		

Catalog Order Numbers

GENIOM® RT ANALYZER – Instrument, software package, PC, screen, installation, training, service package	P0001
CUSTOM GENIOM® BIOCHIP DESIGN SERVICE – Design Service (From RNA sequences to Geniom® Biochip design; up to 5 MBases) – Please inquire for genomes or target sequences exceeding 5 MBases	S0050
CUSTOM GENIOM® BIOCHIP SYNTHESIS SERVICE – Synthesis Service 30nt (30nt-Probe design and Geniom® Biochip-Synthesis) – Synthesis Service 60nt (Probe synthesis 30–60 nt according to your specifications)	S0060 S0061
GENIOM® DATA BIOINFORMATICS SERVICE – Bioinformatics Service Geniom® Data (From raw data to analysis and bioinformatics report within 2–4 weeks)	S0070

For research use only.

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*Note: This number is only toll-free for callers inside of the US and Canada.