



GeneTitan Multi-Channel (MC) Instrument

The first and only fully integrated instrument for automated microarray processing

Transform your lab with an Applied Biosystems™ GeneTitan™ MC Instrument and experience the superior power of streamlined array processing for discovery, exploration, and screening research. The GeneTitan MC Instrument for expression and genotyping seamlessly integrates hybridization, washing, and imaging in a single instrument to provide automated array processing—whether you are performing basic or applied research.

- **Scalable**—meets both medium- and high-throughput needs, enables fast time to data, and requires the least amount of manual intervention of all microarray processing instruments
- **Efficient**—condenses hands-on processing time to as little as 30 minutes, images an array in less than five minutes, and operates unattended overnight
- **Flexible**—supports gene expression and genotyping studies on multiple array plate formats
- **Accurate**—enables high-quality, consistent data by processing multiple samples under identical conditions
- **Adaptable**—creates flexible workflows and sample registration via Applied Biosystems™ GeneChip™ Command Console™ Software

The flexibility you want

Multiple formats and customized solutions for gene expression and genotyping studies

The GeneTitan MC Instrument together with Applied Biosystems™ high-throughput (HT) array plates provide an automated solution for microarray processing. With a broad selection of array plate formats (Figure 1), you can easily transition from discoveries through genome-wide SNP genotyping to comprehensive explorations of gene expression profiles relating to important biological phenotypes, such as disease or drug response (Figure 2).



Figure 1. Multiple array plate formats. Predesigned and customizable array plates, shown in 24-, 96-, mini-96, and 384-array formats, give you the highest productivity with a scalable throughput.

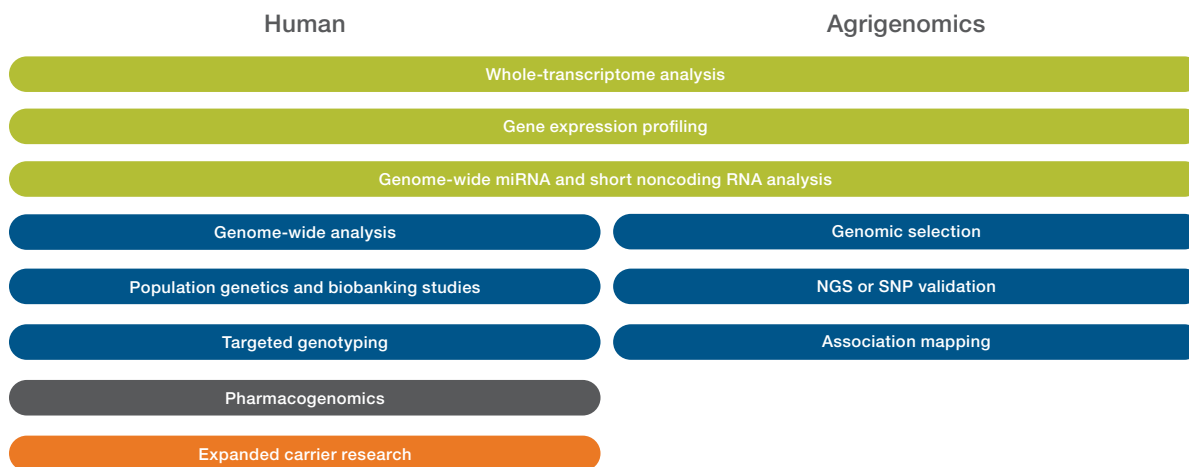


Figure 2. Broad range of applications. The GeneTitan MC Instrument together with Applied Biosystems array plates enable a wide menu of applications in gene expression and genetic variation studies. Green: gene expression, blue: genotyping, gray: pharmacogenomics, and orange: reproductive genomics.

Multiple formats

Applied Biosystems™ expression and miRNA array plates

Ideal for medium- to high-throughput labs; available in 24- and 96-sample formats.

Applied Biosystems™ Axiom™ genotyping array plates

Available in multiple formats, able to process 24–384 samples per plate.

Applied Biosystems™ CarrierScan™ array plates

Available in 96-sample format.

Scalable throughput

Process between 128 and 6,144 samples per week

Lets you scale up throughput without adding manpower or instrumentation.

Achieve high productivity

Array plates condense hand-on processing time, minimize user intervention, and are processed unattended overnight.

Customized solutions

Custom expression array plates

Customized solutions for agriGenomics, human, and model organisms.

Applied Biosystems™ Axiom™ myDesign™ custom genotyping array plates

Genomic coverage tailored for human and agriGenomics genotyping, focusing on the SNPs of interest to you.

Applied Biosystems™ CarrierScan™ custom array plates

Custom 384-sample format for scalable, expanded carrier screening research.

Automated array processing

Less time acquiring data, more time for science

The GeneTitan MC Instrument takes your experiments from prepared samples to primary analysis without user intervention (Figure 3). And unlike any other system currently on the market, the instrument automates all array processing and plate transfers for a fully automated workflow. By processing multiple samples under identical conditions, you can achieve high-quality, consistent data.

Efficient

The instrument condenses 8 hours of hands-on time into as little as 30 minutes and multiplexes samples with minimal operator intervention, which helps reduce labor needs, freeing up lab personnel for other priorities.

Highest productivity

The instrument operates unattended overnight, and the unique degree of automation enables superior reproducibility and increased confidence in your results.

The GeneTitan MC Instrument enables:

- Low labor and array costs
- High data consistency
- More time with biology—not the technology

Load consumables, press “Start”, and view primary analysis

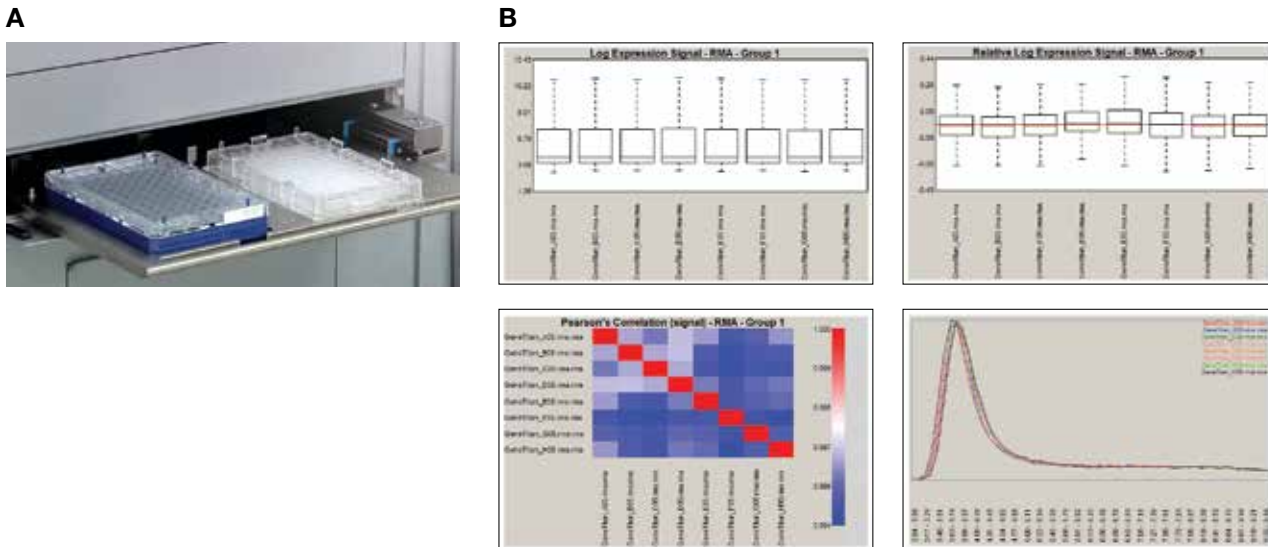


Figure 3. A single operation for automated, unattended array processing. (A) The user simply loads the arrays, prepared samples, and reagents into the instrument. **(B)** Primary analysis can be completed automatically to rapidly assess the quality of each experimental study.

Genotyping solutions

A fast, accurate platform for all stages of research

The Applied Biosystems™ Axiom™ Genotyping solution, Applied Biosystems™ PharmacoScan™ Solution, and Applied Biosystems™ CarrierScan™ Assay full solution include the GeneTitan MC Instrument and offer a fully automated workflow for a broad selection of applications, including genome-wide association studies (GWAS), replication studies, candidate-gene association, expanded carrier research, pharmacogenomics, and targeted genotyping for human disease research and agricultural genomics.

Reduce complexity

The GeneTitan MC Instrument lets you generate robust and reliable genotypes with minimal user intervention, which helps to reduce costs and processing complexity. The Axiom Genotyping Solution and CarrierScan Solution include manual or automated target prep methods and automation-friendly reagent kits for preparing samples to process in the instrument.

Scalable and customized solutions

Choose from a suite of predesigned global and population-specific Axiom Genotyping Array Plates for genetic mapping. Or, design your own Axiom myDesign Custom Array Plate with 1,500 to 900,000 SNPs per array by choosing from our database of 26 million SNPs and indels and your own proprietary target markers from sequencing initiatives.

Genotyping on the GeneTitan MC Instrument enables:

- Fast time to data
- A single scientist can process thousands of samples
- High control over genotyping production



Figure 5. Manual or automated target prep for array processing. The GeneTitan MC Instrument enables one bench scientist to manage a throughput of over 3,000 samples per week for genotyping with minimal hands-on time.

Flexible workflow

With Applied Biosystems™ Axiom™ Analysis Suite software, get complete genotyping analysis of all Axiom arrays. Axiom Analysis Suite software integrates SNP genotyping, indel detection, and off-target variant (OTV) calling of simple and complex genomes in an easy-to-use graphical interface (Figure 4).

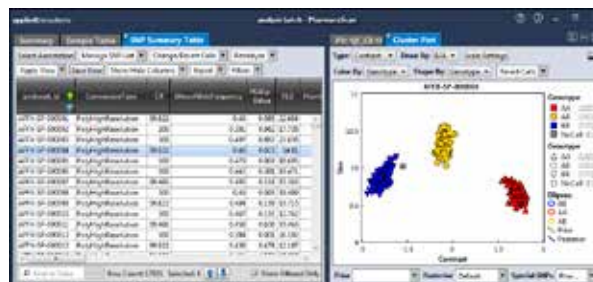


Figure 4. SNP genotyping analysis. The GeneTitan MC Instrument generates robust and reliable genotypes that can be analyzed and visualized quickly and easily using Axiom Analysis Suite software.

Gene expression analysis

Discovery, verification, and screening research—with a single instrument

With the GeneTitan MC Instrument you will be able to streamline array processing for whole-transcriptome, 3' IVT gene expression, and miRNA analysis in human, model, and applied research organisms. Regardless of your throughput requirements, you can rapidly identify and verify gene expression profiles and discover biologically relevant pathways.

Latest content

Choose from the most popular and widely cited whole-transcriptome, classical 3'-based, or miRNA arrays in a convenient medium- to high-throughput format for low-cost expression profiling of the transcriptome. You may also customize your array content for any available annotated genome, focus region, or control sequence using our custom expression array program.

Ease of use

Automation-friendly reagent kits easily integrate with upfront automated target preparation methods. Alternately, reagent kits designed for manual target preparation give you the flexibility of preparing samples for lower throughput.

High reproducibility

The GeneTitan MC Instrument is designed to generate highly reproducible and concordant data, and can detect changes in gene expression at or above the 1.5 pM concentration.

Automatic answers

Use Applied Biosystems™ Transcriptome Analysis Console (TAC) Software for probe set summarization, normalization, data QC, and downstream statistical and pathway analysis (Figure 5). Follow up with Applied Biosystems™ NetAffx analysis to correlate array results with array design and annotation information. Alternately, you may build automated primary analysis pipelines for a streamlined workflow using microarray analysis algorithms provided as command-line tools and data transfer tools offered with the instrument control software.

Gene expression analysis on the GeneTitan MC Instrument offers:

- Consistently reproducible data
- High accuracy in expression analysis
- More confidence in your results

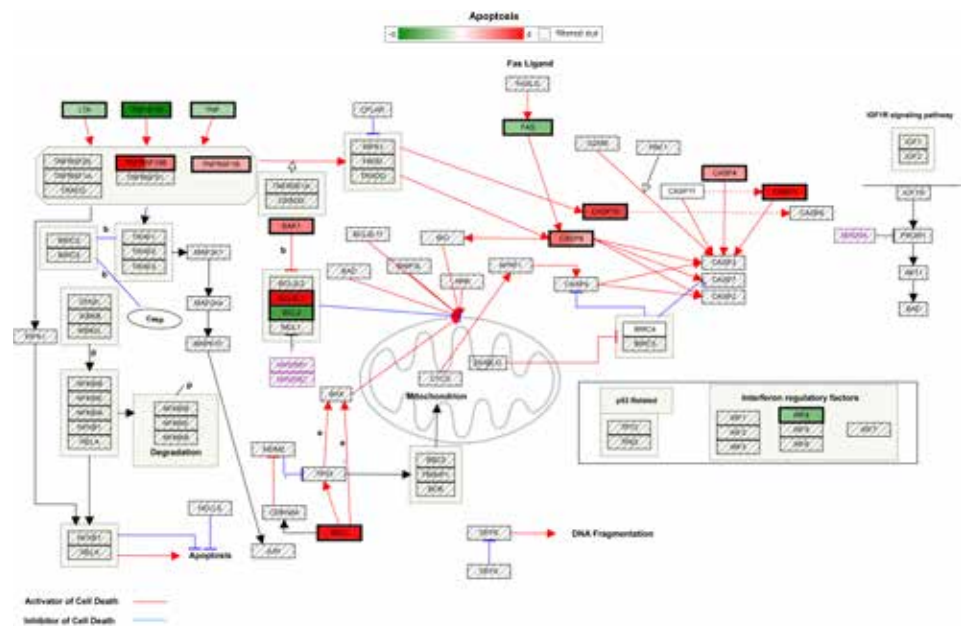


Figure 5. Pathway analysis view in TAC Software.

Streamlined software

Easy-to-interpret results

The GeneTitan MC Instrument comes installed with the popular, file-based GeneChip Command Console Software for instrument control. Primary and secondary analysis can be completed using Transcriptome Analysis Console Software for gene expression and miRNA profiling, Axiom Analysis Suite software for genotyping and pharmacogenomics analysis, and CarrierScan Reporter Software for expanded carrier research.

GeneChip Command Console (GCC) Software

- Enhances automated processing with wizard interfaces and workflow monitoring
- Easy data sharing and scalable data management with a convenient file-based format
- Includes remote notification of instrument status for walk-away automation
- Enables seamless integration with other applications for further quality control, statistical, pattern recognition, and biological pathway analysis

Axiom Analysis Suite

- Generate genotyping calls and quality control metrics, and filter SNPs into defined classifications
- Visualize data as heat maps, box plots, scatter plots, and individual SNP cluster plots
- Further analyze data with companion tools such as Applied Biosystems™ Axiom™ CNV Summary Tools Software and Axiom™ HLA Analysis Software
- Convert data to long format for seamless integration with current bioinformatics pipelines using the Applied Biosystems™ Axiom™ Long Format Export (AxLE) Tool
- Star allele and translation tables for the PharmacoScan Solution

TAC Software

- Perform array QC, data normalization, and statistical tests for differential expression
- Focus on genes or pathways of interest
- Explore interactions between coding and noncoding RNA

CarrierScan Reporter Software

- Annotate variants with our curated, wide range of public or custom annotations
- Customize data by selecting only those variants relevant to the sample or paired samples
- Export variants and annotations easily to create a report suited to your specific needs

NetAffx Analysis Center

- Securely access information about probe sets of interest from multiple public domain databases
- Partner with us to quickly configure an Axiom myDesign Custom Array for your genotyping studies

Genotyping and expression solutions

Broad applications for the GeneTitan MC Instrument

Application	Product	Analysis software
GWAS and longitudinal cohort studies	<ul style="list-style-type: none"> Axiom Biobanking Arrays Axiom Genotyping Catalog Arrays for human research Axiom myDesign Custom Arrays 	<ul style="list-style-type: none"> Axiom Analysis Suite software Additional application-specific companion software modules Command-line tools
Fine mapping and candidate genes	<ul style="list-style-type: none"> Axiom myDesign Custom Targeted Genotyping Arrays 	
Haplotype structure	<ul style="list-style-type: none"> Axiom Genomic Screening Service 	
Agricultural genomics	<ul style="list-style-type: none"> Axiom Genotyping Catalog Arrays for plants and animals Axiom myDesign Custom Arrays 	
Pharmacogenomics	<ul style="list-style-type: none"> PharmacoScan Solution 	
Expanded carrier screening research	<ul style="list-style-type: none"> CarrierScan Assay 	<ul style="list-style-type: none"> CarrierScan Reporter Software
3' IVT expression	<ul style="list-style-type: none"> HT HG-U133+ PM Array Plate HT MG-430 PM Array Plate HT RG-230 PM Array Plate PrimeView Human Gene Expression Array Model and applied research organism array plates Custom expression arrays 	
	<ul style="list-style-type: none"> Clariom S Array plate, human Clariom S Array plate, mouse Clariom S Array plate, rat Human Gene 1.1 ST Array Plate Mouse Gene 1.1 ST Array Plate Rat Gene 1.1 ST Array Plate Model and applied research organism array plates Custom expression arrays 	<ul style="list-style-type: none"> TAC Software
Gene-level whole-transcriptome expression	<ul style="list-style-type: none"> miRNA 4.1 Array plates 	<ul style="list-style-type: none"> TAC Software

Comprehensive service and support for when you need an expert

Our factory-trained and certified field service engineers (FSEs) are focused on delivering the highest quality of workmanship.

We provide comprehensive post-warranty support to help you maintain productivity, maximize the value of your investment, and optimize performance with professional consulting services.

To find your local support or technical support team, go to thermofisher.com/contactus. For product FAQs, protocols, training courses, and webinars, go to thermofisher.com/technicalresources

Find out more at thermofisher.com/microarrays