



Germline Genotyping and Highly Sensitive Mutation Detection on the MassARRAY® System

BIOMARKER VALIDATION
ROUTINE GENETIC TESTING
SOMATIC MUTATION PROFILING

- ✓ Mid-to-high multiplexing
- ✓ Flexible throughput
- ✓ Multiple sample types
- ✓ Rapid assay design
- ✓ Targeted detection

Sensitivity Across the Spectrum

iPLEX and UltraSEEK chemistries are compatible with a broad range of nucleic acid biomarkers, from standard germline genotypes to rare somatic variants. Routine multiplexing with each chemistry ensures a low cost per variant and efficient use of scarce input DNA.

	IPLEX® PRO	IPLEX® HS	ULTRASEEK™
Overview	Reaction contains all four nucleotides in an equimolar concentration	Reaction contains nucleotides in modified ratio favoring mutant alleles	Reaction contains only the rare variant or mutant nucleotide
Ideal for	Genotyping germline variants, carrier screening, biomarker validation, pharmacogenetics, livestock testing, crop strain validation	Detecting somatic and low frequency variants, validating NGS discoveries, GMO screening	Detecting low-level variants such as oncogenic resistance and progression markers, non-invasive testing
Sensitivity	≥5%	≥1%	≥0.1%
Markers per Reaction	≤40	≤15	≤15
Sample Types	Blood, serum, buccal cells, micro-dissected & fresh frozen tumor cells, hair follicles, ear punches, WGA DNA	Heterogeneous solid tumor samples, fine needle aspirates, seed mixtures	Circulating cell free and tumor DNA from plasma
Application Areas	• Pharmacogenetics • Inherited disease • Biomarker validation • Livestock testing • Crop strain validation	• Somatic mutations • Low-frequency variants • NGS discovery validation • GMO screening	• Oncogenic resistance and progression markers
Availability	• Pre-verified panels • Assays by Agena custom design • ADS software allows user-designed custom assays	• Pre-verified panels • Assays by Agena custom design	• Pre-verified panels • Assays by Agena custom design • ADS software allows user-designed custom assays

Overview



The MassARRAY® System is a proven technology for SNP genotyping and somatic mutation detection. Simple PCR-based chemistries, including iPLEX® and UltraSEEK™, are combined with the robust detection of mass spectrometry to rapidly characterize variants with high accuracy and sensitivity.

Agena Bioscience's chemistries efficiently multiplex variants, including SNPs, indels, somatic mutations, and CNV's, in the same reaction, minimizing DNA sample input. Degraded or low quality samples from FFPE, FNA, or plasma can be effectively analyzed on the MassARRAY System. The short amplicon length (80-120bp) makes it an ideal method for these types of challenging samples.

From targeted validation utilizing 10s to 100s of multiplexed assays, to routine testing of select markers against 10s to 1000s of samples, the MassARRAY System provides a high level of flexibility at a low cost.

Workflow - Success from Assay Design to Result

ADAPTIVE PANEL DEVELOPMENT

Assay Design Suite (ADS) software is a streamlined tool for designing genotyping, somatic mutation, gene fusion, and ultrasensitive assays. It designs the PCR and extension primers for each SNP or variant of interest and multiplexes compatible markers into a single well. Depending upon the number and type of mutations, anywhere from one to multiple wells per sample can be designed.

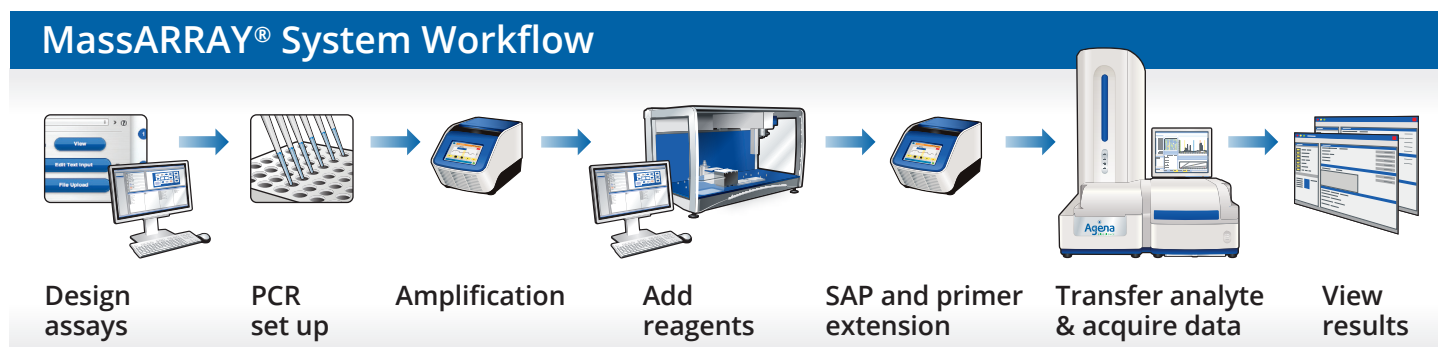
The software is hosted online and provides a user-friendly interface for designing and modifying panels, enabling easy addition of newly discovered markers to laboratory tests.

IPLEX AND ULTRASEEK REACTIONS

After DNA or RNA extraction/cDNA synthesis, the desired region of interest is amplified using gene-specific primers. An iPLEX single base extension is performed to identify the locus-specific allele(s). The primer is extended, dependent upon the template sequence, resulting in an allele-specific difference in mass between the extension products. The reaction products are dispensed onto a SpectroCHIP® Array (a silicon chip with pre-dispensed matrix crystal) and analyzed by the mass spectrometer. The analysis software automatically differentiates this mass difference between variant alleles.

WORKFLOW

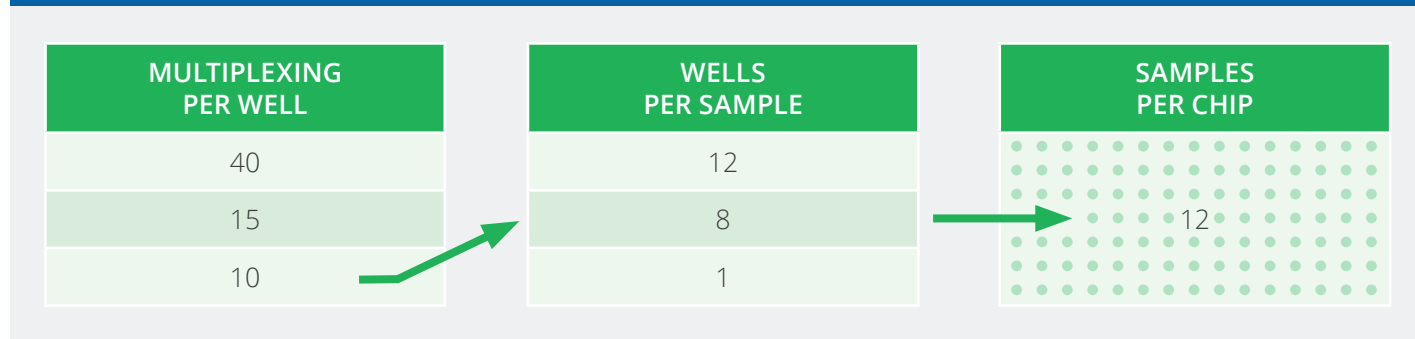
iPLEX and UltraSEEK chemistries utilize a simple workflow with convenient, universal reaction conditions, generating results from DNA in as quickly as 8 hours.



FLEXIBLE THROUGHPUT

The MassARRAY System enables flexible and scalable sample and assay formats. The different chemistries can be run in 24-, 96-, or 384-well configurations. Multiplexing can be done with as few as five and up to 40 targets per well. Panels can be designed to accommodate 10s to 100s of mutations resulting in multiple wells per sample. The number of samples per SpectroCHIP Array depends upon the size of the final panel and format.

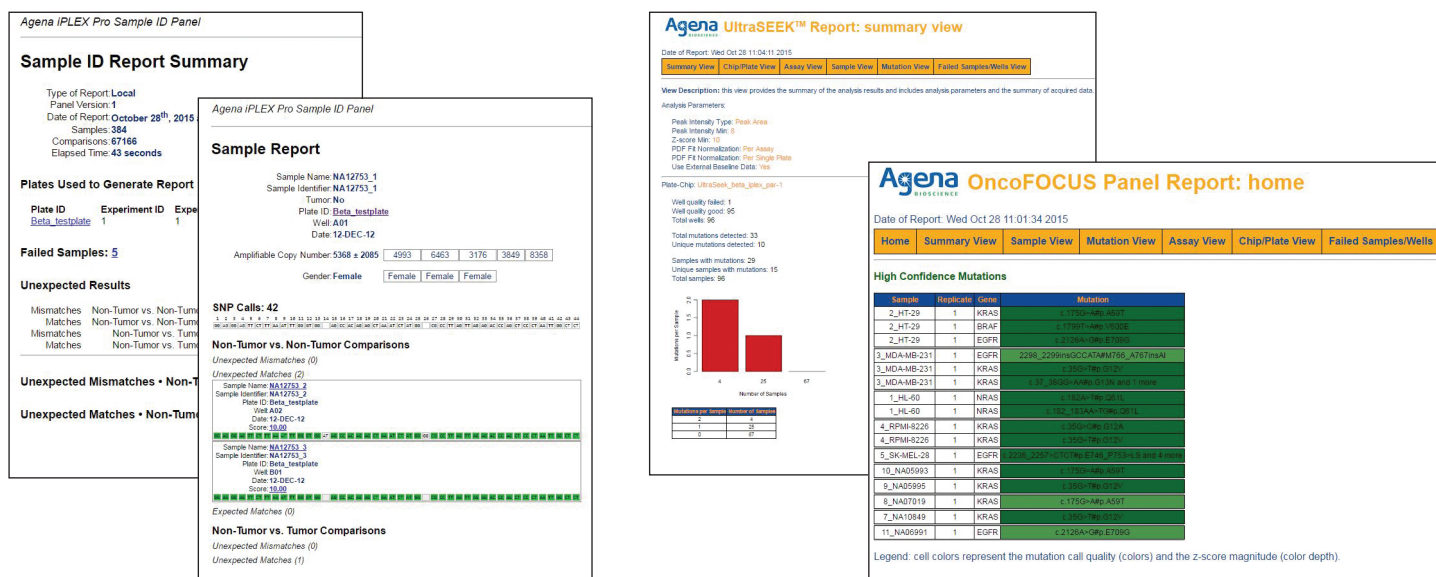
Scalable Capacity on the MassARRAY® 96 System



96-well format shown for iPLEX and UltraSEEK Assay

Results Reporting

The results from the MassARRAY System are automatically loaded into the database for convenient data analysis and report generation. MassARRAY analysis software has modular reports enabling you to readily evaluate and manage results.



References



View our online database of over 2500 user publications using the MassARRAY System.

To learn more about Agena Bioscience, the MassARRAY System, or our other products and services, visit www.agenabioscience.com

Agena Bioscience, Inc.
4755 Eastgate Mall
San Diego, CA 92121
Phone: +1.858.882.2800

Order Desk: +1.858.202.9301
Order Desk Fax: +1.858.202.9220
orderdesk@AgenaBio.com
Web: agenabioscience.com

US +1.877.4.GENOME
EU +49.40.899676.0
AP +61.7.3088.1600
JP +81.3.6231.0727
CN +86.21.6427.0566

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