

TaqMan® OpenArray Genotyping System

High-Throughput, Low-Cost Genotyping Using TaqMan® Genotyping Assays

- More samples for more genetic power—process 24 TaqMan® OpenArray® Genotyping Plates per day with minimal hands-on time
- Simple workflow—each TaqMan® OpenArray® Plate comes preloaded with the TaqMan® Genotyping Assays of your choice—just add sample and master mix, cycle, and image
- Best experimental flexibility—choose any combination of pre-designed and custom TaqMan® SNP Genotyping and DME Assays and the sample/SNP format that best meets your project needs
- Reliable—uses TaqMan® Genotyping Assay chemistry
- Easy-to-understand pricing—no oligo setup fee or hidden costs



The TaqMan® OpenArray® Genotyping System provides PCR-based SNP analysis of thousands of samples. One person can use this high-throughput system to generate data for >70,000 genotypes in a single day.

A Complete System

The TaqMan® OpenArray® Genotyping System consists of two world-class technologies: TaqMan® Genotyping Assays and OpenArray® technology. TaqMan® Genotyping Assays use two allele-specific MGB probes and two PCR primers to enable you to obtain highly robust and accurate genotyping calls. OpenArray® technology uses nanoliter fluidics for higher sample throughput and lower costs per data point [see OpenArray® Technology sidebar]. The main components of the TaqMan® OpenArray® Genotyping System are the TaqMan® OpenArray® Genotyping Plates (preloaded with TaqMan® SNP Genotyping or Drug Metabolism [DME] Assays) and the TaqMan® OpenArray® Genotyping Instrument Platform. All products are available from, and supported by, Applied Biosystems.

Simple Workflow

TaqMan® OpenArray® Genotyping Plates can be formatted with pre-designed SNP assays and ordered online using the TaqMan® OpenArray® Genotyping Plate Configurator link on the product page. Alternatively, custom SNP assays can be created and added to a TaqMan® OpenArray® Plate using the Custom TaqMan® Assay Design Tool (www.appliedbiosystems.com/cadt). TaqMan® OpenArray® Genotyping Plates are shipped and delivered containing your selected TaqMan® Assays preloaded and dried down in the through-holes you specify. Simply mix your sample and TaqMan® OpenArray® Master Mix, load onto the Genotyping Plate, seal, cycle, and image. The TaqMan® OpenArray® Genotyping System's simple workflow enables one person to process 24 TaqMan® OpenArray® Genotyping Plates in one day without the use of robotics. One person can therefore generate data for over 70,000 genotypes per day. For more details, see Figure 1.

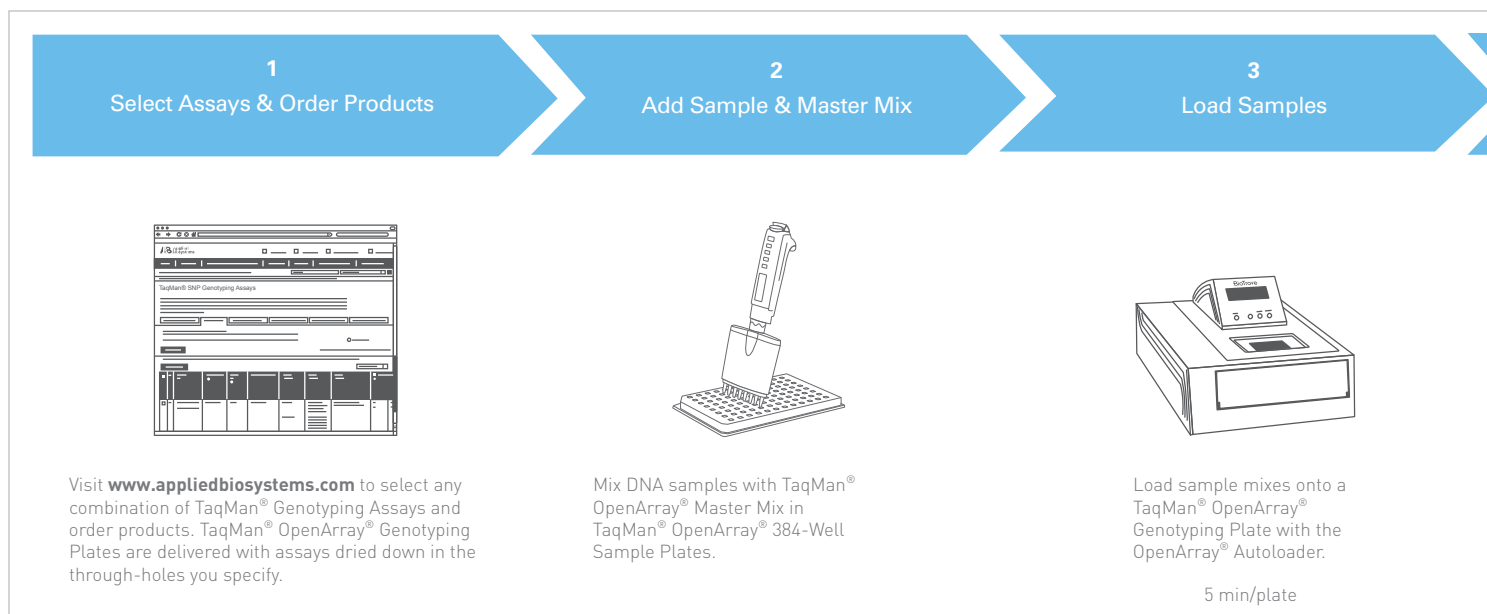


Figure 1. The TaqMan® OpenArray® Genotyping System workflow.

Flexible Formats

Each TaqMan® OpenArray® Genotyping Plate contains 3,072 through-holes arranged in 48 subarrays of 64 through-holes each (Figure 2). The OpenArray® Autoloader can precisely load one, two, or three samples onto each subarray. This results in a choice of six plate format options as described in Table 1.

High Throughput and High Performance

The TaqMan® OpenArray® Genotyping System enables you to achieve the highest sample throughput for mid-density genotyping. In a single day, 24 TaqMan® OpenArray® Genotyping Plates providing 73,728 genotyping reactions can be run, screening up to 3,456 DNA samples without the use of robotics. This system is ideal for validating complex disease associations, marker-assisted breeding, or other studies requiring large sample sizes, and provides high performance and reproducibility (Tables 2 and 3, Figures 3 and 4).

A Genotyping Solution with No Hidden Costs

The TaqMan® OpenArray® Genotyping System is an affordable, whole-system solution for high-throughput genotyping applications. The decrease in reagent use afforded by this unique combination of technologies greatly decreases the price per genotype, allowing more samples to be run on the same budget. Additionally, the products are priced in a straightforward manner; there are no setup charges or other hidden fees.

TaqMan® OpenArray® Genotyping Plate Format	Number of Samples/Plate	Minimum Order	Total Number of Samples/Minimum Order
16 assays	144 samples	10	1,440
32 assays	96 samples	10	960
64 assays	48 samples	20	960
128 assays	24 samples	40	960
192 assays	16 samples	60	960
256 assays	12 samples	80	960

Table 1. TaqMan® OpenArray® Genotyping Plate format options.

Assays with >95% call rate	>95%
Concordance with assays run on an Applied Biosystems® 7900HT System	99.7%

Table 2. Observed performance of the TaqMan® OpenArray® Genotyping System using human cell line DNA and 896 TaqMan® SNP Genotyping Assays.

Genomic DNA input amount per subarray	125 ng
TaqMan® OpenArray® Plate capacity per day by a single person	24
Time from purified DNA to genotyping data	~8 hr
Oligonucleotide synthesis setup fee	\$0

Table 3. TaqMan® OpenArray® Genotyping System specifications.

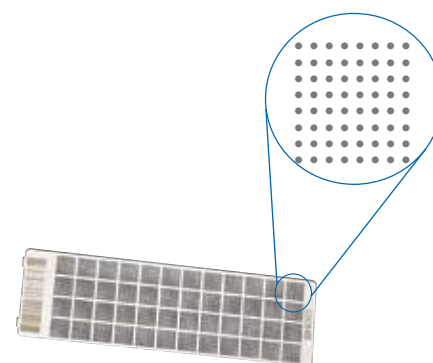
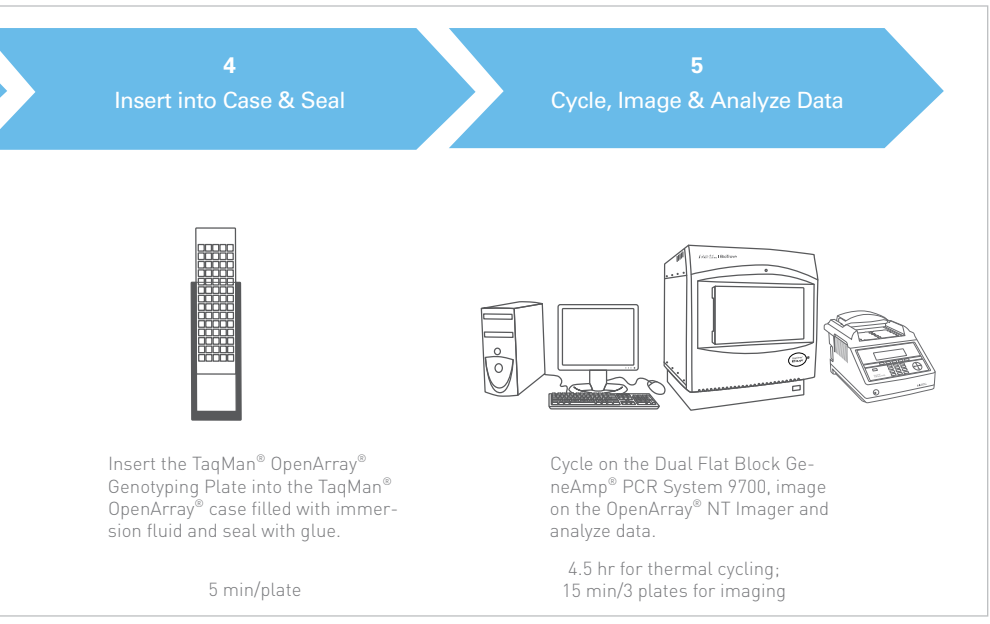


Figure 2. Each TaqMan® OpenArray® Plate contains 48 subarrays with 64 through-holes each.

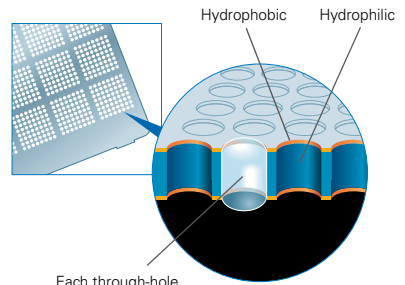


OpenArray® Technology

The OpenArray® System is a broadly applicable nanoliter fluidics technology platform for low-volume solution-phase reactions. Researchers using this technology benefit from the parallelism of microarrays and the data quality of solution-phase reactions such as PCR.

This technology utilizes a microscope slide-sized plate with 3,072 through-holes. Each through-hole is 300 µm in diameter with a depth of 300 µm. The plates are arranged in 48 subarrays of 64 through-holes. TaqMan® Genotyping Assays (for up to 256 SNPs) are preloaded and dried down in the plate, and are delivered ready for processing.

Proprietary processes are used to coat the surfaces of the plates so that they are hydrophobic, while rendering the interiors hydrophilic and biocompatible. When processed, each of the 3,072 through-holes contains 33 nL of fluid held in place by means of surface tension.



OpenArray® Plate anatomy: Cross-section of several through-holes in a TaqMan® OpenArray® Genotyping Plate. Each through-hole is coated with hydrophilic and hydrophobic coatings. Reagents are retained in through-holes via capillary action.

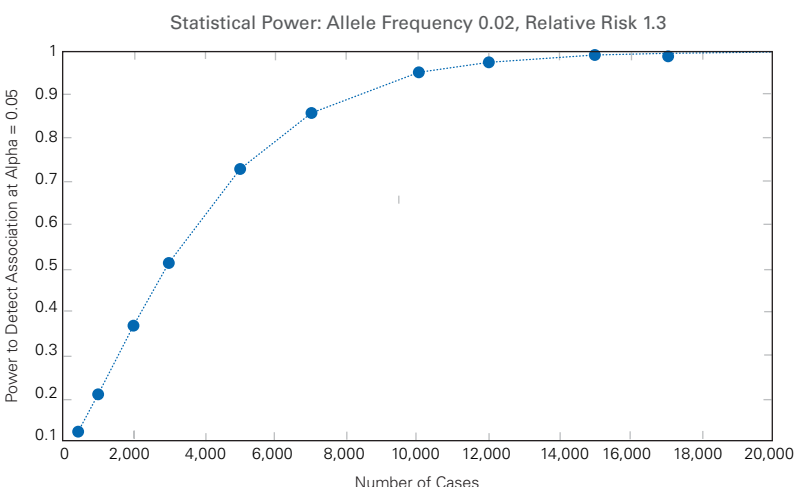


Figure 3. More samples means more statistical power: the larger the sample size, the more confidence you have in detecting a real effect. The TaqMan® OpenArray® Genotyping System provides the high throughput and low costs needed for highly powered validation or screening studies.

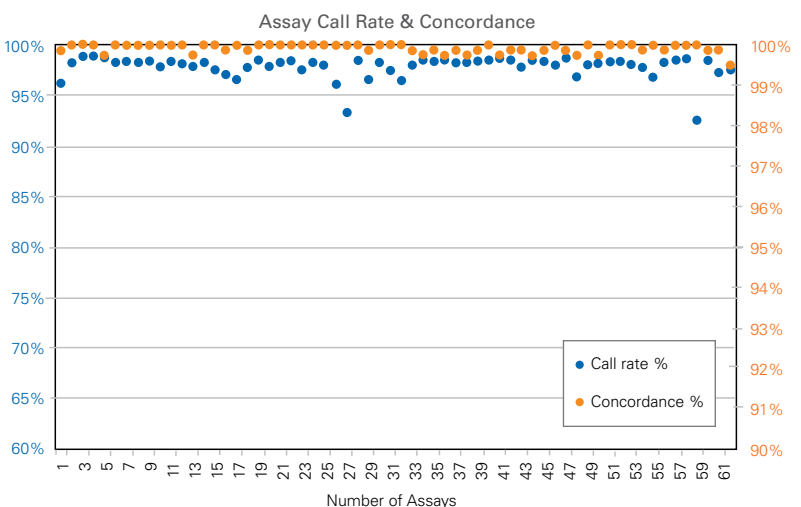


Figure 4. In this experiment, greater than 95% of TaqMan® SNP Assays on the TaqMan® OpenArray® Plate have a call rate of >95%. All assays have a concordance of >99% with data generated on an Applied Biosystems® 7900HT Fast Real-Time PCR System. The data were generated by three operators running six TaqMan® OpenArray® Plates each (62 SNPs, 2 no-assay controls, 44 different DNAs, and 4 NTCs).

TaqMan® OpenArray® Plates are provided in packs of 10 and include the necessary accessories to seal the plates after your samples are loaded. The TaqMan® OpenArray® Genotyping Instrument Platform includes the OpenArray® NT Imager, OpenArray® Autoloader, OpenArray® Case Sealing Station, computer, monitor, and software needed to perform imaging and data analysis.

Applied Biosystems® Flat Block Thermal Cycler

Developed for use with the TaqMan® OpenArray® Genotyping System, the Dual Flat Block GeneAmp® PCR System 9700 can thermal-cycle up to eight TaqMan® OpenArray® Genotyping Plates simultaneously. Based on the GeneAmp® PCR System 9700, this new system offers

interchangeable blocks to switch to standard PCR formats as well. The Dual Flat Block GeneAmp® PCR System 9700 is sold separately from the TaqMan® OpenArray® Genotyping Instrument Platform.

Comprehensive Coverage With TaqMan® Genotyping Assays

The Applied Biosystems® TaqMan® SNP Genotyping Assay collection includes over 4.5 million genotyping assays. Of these, there are 3.5 million HapMap SNPs and 2,700 drug metabolizing enzyme (DME) genotyping assays. Additionally, researchers can create Custom TaqMan® SNP Genotyping Assays for any genome by submitting their target SNP sequences.

ORDERING INFORMATION

Description	Size	P/N
TaqMan® OpenArray® GT Kit, Custom Format 16	10 TaqMan® OpenArray® Plates + 1 TaqMan® OpenArray® Accessories Kit	4413546
TaqMan® OpenArray® GT Kit, Custom Format 32	10 TaqMan® OpenArray® Plates + 1 TaqMan® OpenArray® Accessories Kit	4413548
TaqMan® OpenArray® GT Kit, Custom Format 64	10 TaqMan® OpenArray® Plates + 1 TaqMan® OpenArray® Accessories Kit	4413550
TaqMan® OpenArray® GT Kit, Custom Format 128	10 TaqMan® OpenArray® Plates + 1 TaqMan® OpenArray® Accessories Kit	4413551
TaqMan® OpenArray® GT Kit, Custom Format 192	10 TaqMan® OpenArray® Plates + 1 TaqMan® OpenArray® Accessories Kit	4413553
TaqMan® OpenArray® GT Kit, Custom Format 256	10 TaqMan® OpenArray® Plates + 1 TaqMan® OpenArray® Accessories Kit	4413554
TaqMan® OpenArray® Master Mix	1 x 5.0 mL	4404846
TaqMan® OpenArray® Accessories Reorder Kit	For 10 plates	4410731
TaqMan® OpenArray® Loader Tips	1 box	4404571
TaqMan® OpenArray® 384-Well Sample Plates	10 plates	4406947
TaqMan® OpenArray® Genotyping Instrument Platform <i>(includes the OpenArray® NT Imager, Autoloader, Case Sealing Station, computer, and additional components to run the system)</i>		4408510
Dual Flat Block GeneAmp® PCR System 9700	1 system	4428234
Dual Flat Block GeneAmp® PCR System 9700, Sample Module Only	1 module	4425757
TaqMan® OpenArray® 9700 Adaptor	1 adaptor	4426824
TaqMan® OpenArray® 9700 Compression Pad	1 compression pad	4426825

To learn more, visit www.appliedbiosystems.com/taqmanopenarray.

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Printed in the USA 01/2010. Publication 135PB06-05 **CO11046 0110**



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