Your research companion for pharmacogenomics

ThermoFisher SCIENTIFIC

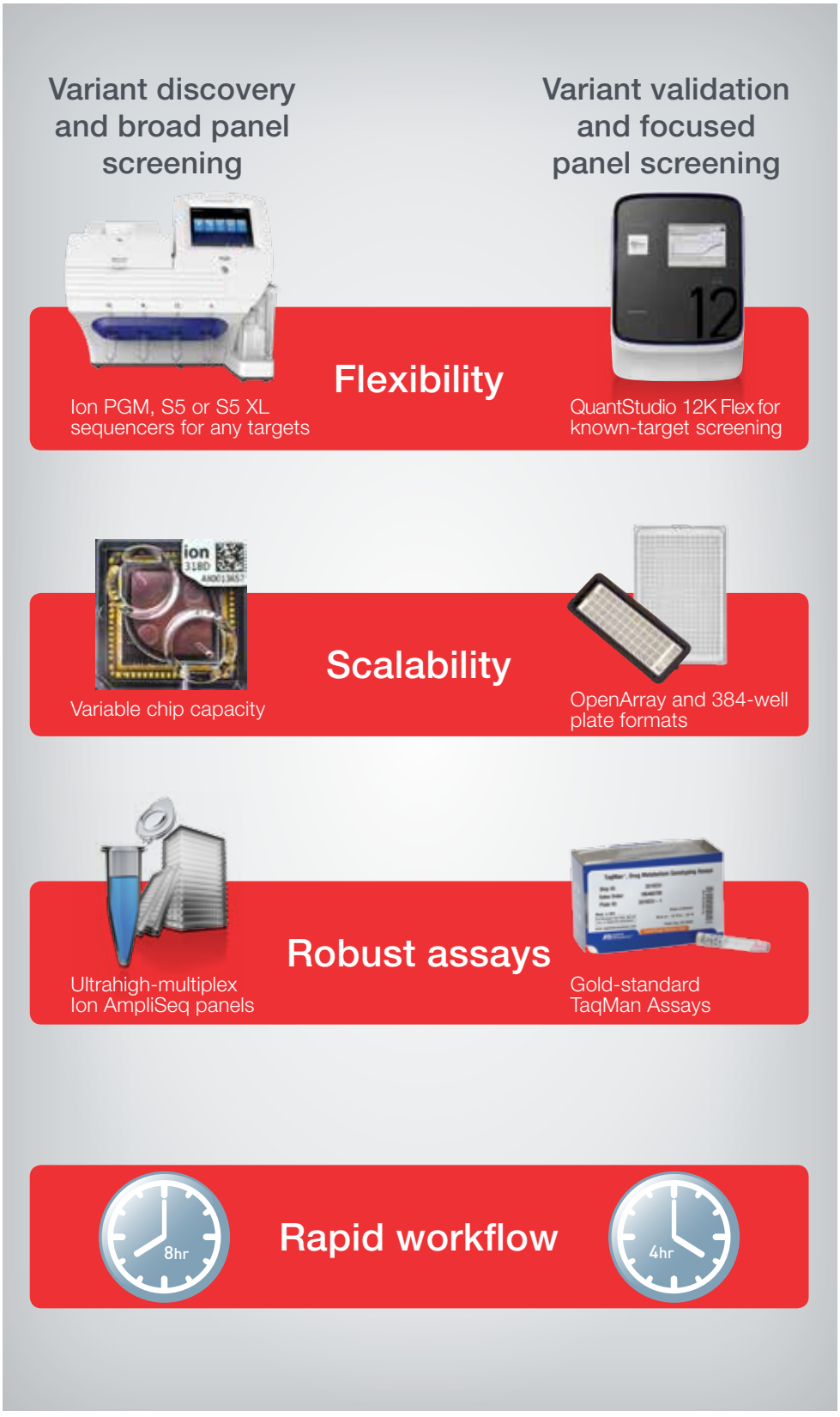
Recent exponential advances in genetic analysis have led to an expansion in our understanding of drug efficacy based on unique individual genomic composition.

Today, screening of known polymorphic drug metabolism enzymes and transporters (DMET) is rapidly becoming routine practice in clinical research. However, current approaches to pharmacogenomics (PGx) analysis, involving technologies such as microarrays, can be expensive and time-consuming. Furthermore, these technologies are static, limited in their ability to discover novel variants, and lack the flexibility to add content as new polymorphisms are discovered.

We provide rapid and cost-effective solutions for both the screening of known polymorphisms and discovery of novel variants. The combination of gold-standard Applied Biosystems™ TaqMan™ Assays with the high-throughput Applied Biosystems™ OpenArray™ or 384-well plate formats enable analysis of common variants, typically in under four hours with the flexibility to modify array content. Ion Torrent™ semiconductor sequencing systems combined with Ion AmpliSeq™ technology provide a complementary approach for large panel screening projects and variant discovery. Combined, the two platforms offer opportunities for cross-validation and reflex testing.

Rapid, cost-effective, and flexible solutions

Varying responses to drugs may be the result of genomic variations in genes that impact the adsorption, distribution, metabolism. and excretion (ADME) of small molecules in the body. To better understand how these genomic variations in the population affect drug efficacy and safety, clinical research studies have been designed ranging from discovery of novel rare variants to screening of known mutations in ADME genes. Service labs engaging in multi-stage clinical drug development must have the right platforms to enable easy transitioning between novel variant discovery and high-throughput screening of known mutations during any stage of the project. To address this need, we offer a complete portfolio of solutions from discovery and research to variant screening.



Two platforms: unlimited potential

Empower your pharmacogenomics research with the QuantStudio 12K Flex Real-Time PCR and Ion Next Generation Sequencing Systems

QuantStudio 12K Flex Real-Time PCR System

In pharmacogenomics…	…there's no time to waste. TaqMan Assay products combined with the Applied Biosystems™ QuantStudio™ 12K Flex Real-Time PCR System and OpenArray™ technology enable screening that is highly flexible and offers big cost savings and high throughput—all with a very simple workflow.
Easy implementation	Both platforms offer a complete, integrated solution from sample to results with optimized protocols to get your lab quickly up to speed. Get started right away with an off-the-shelf panel. For focused and fast pharmacogenomics results: Applied Biosystems™ TaqMan™ OpenArray™ PGx Express Panel This product consists of 60 common targets for PGx research applications.
Flexibility	For maximum flexibility, design a custom panel with TaqMan Assays or Ion AmpliSeq™ Designer. Build your own target panel using our collection of redesigned TaqMan Assays—2,700 TaqMan™ DME Assays and millions of TaqMan™ Copy Number Assays.

Ion PGM, S5 or S5 XL Systems

…individualized information is key. Expand your confidence in data results by running larger panels that broaden markers within your current gene set or extend markers to new genes providing a more expansive pharmacogenomics profile with the Ion PGM™, S5 or S5 XL Systems, and Ion AmpliSeq™ Pharmacogenomics Research Panel.

Both platforms offer a complete, integrated solution from sample to results with optimized protocols to get your lab quickly up to speed.

Get started right away with an off-the-shelf panel.

For an expertly designed broad panel:
Ion AmpliSeq Pharmacogenomics Research Panel
This product surveys 138 genetic variants across 40 DME genes including CYP2D6 copy number variations (Cat. No. A29250 or A29251).

For maximum flexibility, design a custom panel with TaqMan Assays or Ion AmpliSeq Designer.

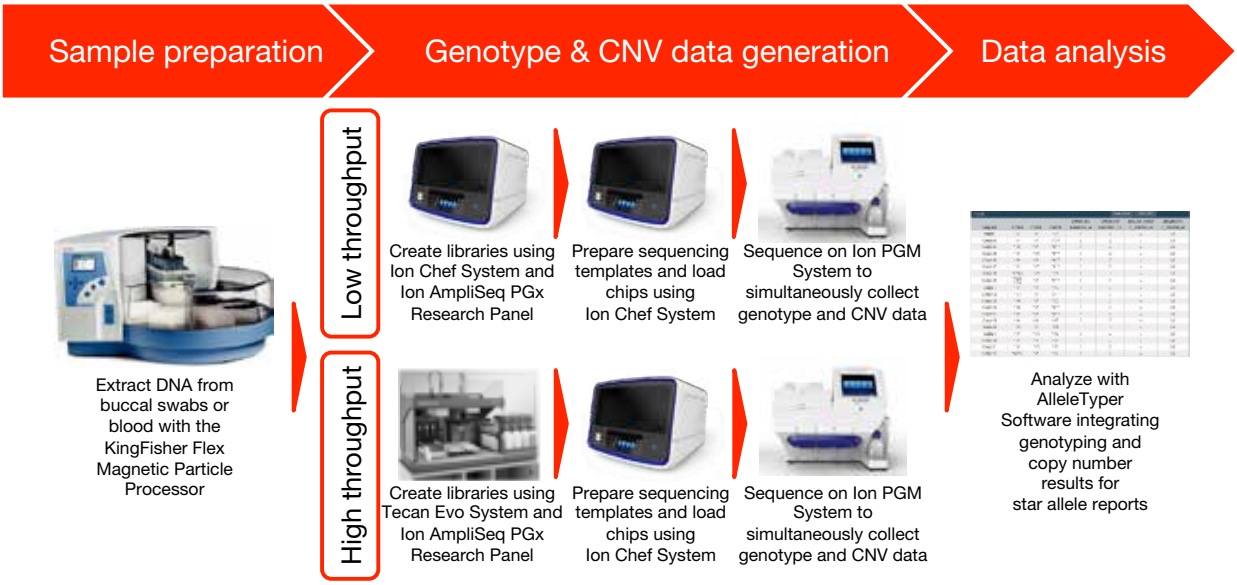
Use Ion AmpliSeq Designer to customize and modify panel coverage to fit your needs.

Complete sample-to-results workflow solution

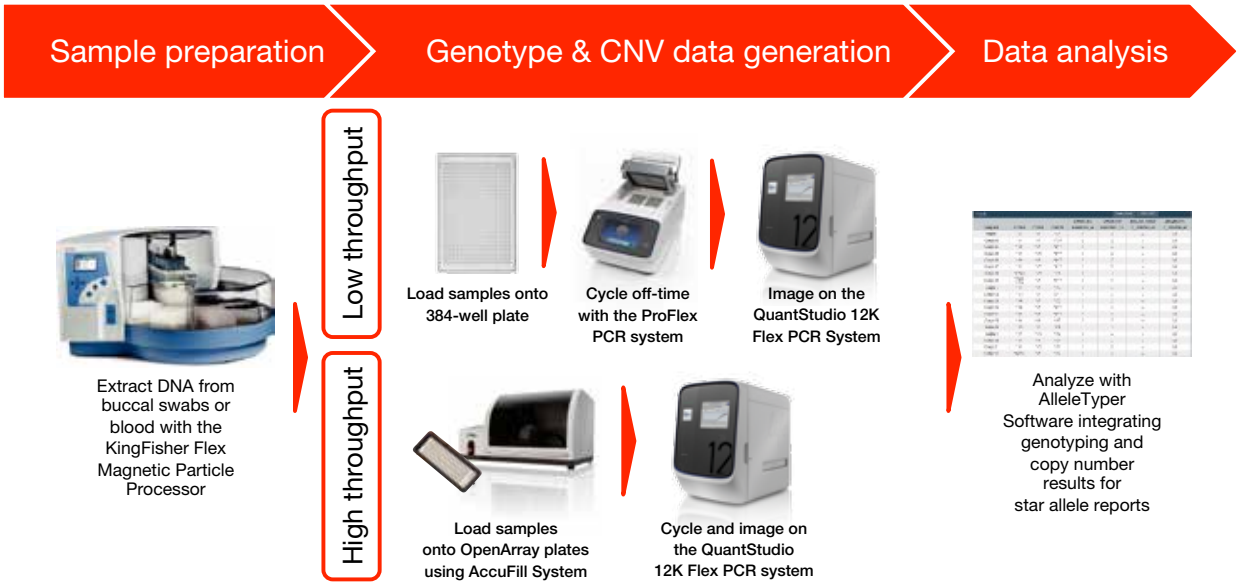
Whether considering real-time PCR or next-generation sequencing (NGS) approaches, we offer complete and accessible workflow solutions for variant discovery and screening. Each step in the workflow requires minimal hands-on time, with automated sample DNA preparation and pharmacogenomics assay workflows.

Results can be generated quickly with high-throughput assay formats and integrated analysis software. We provide a complete installation service that includes instrument setup and training for users of any experience level. Support is also available when you need it, from choosing the right assay to assistance with analyzing results.

NGS solution using the Ion AmpliSeq Pharmacogenomics Research Panel and Ion PGM System



Quantitative PCR solution using TaqMan Assays and the QuantStudio 12K Flex system



Complete workflows for pharmacogenomics using the Ion PGM and QuantStudio 12K Flex Real-Time PCR systems. Download this application note at **thermofisher.com/pgx**

Thermo Scientific KingFisher Flex Magnetic Particle Processor

High-quality DNA for easy downstream analysis

The Applied Biosystems™ MagMAX™ sample preparation system is an integrated system designed to simplify, standardize, and accelerate DNA preparation of samples derived from various sources for downstream molecular analysis. Consisting of Applied Biosystems™ MagMAX™ nucleic acid isolation kits and the Thermo Scientific™ KingFisher™ Flex Magnetic Particle Processor, the system offers ease of use, shorter time-to-results, and high-quality nucleic acid extraction.

Applied Biosystems™ MagMAX™ DNA Multi-Sample Ultra Kit:

- Compatibility with various sample types, including blood, blood cards, buccal swabs, urine, saliva, and mouth rinse
- High yields of purified DNA
- High-quality genomic DNA, free from inhibitors that may affect downstream reactions such as PCR
- Purified DNA that can be used for direct SNP genotyping and copy number analysis using either TaqMan or Ion AmpliSeq™ chemistry
- Automated processing using the KingFisher Flex Magnetic Particle Processor

Learn more about MagMAX sample preparation at **thermofisher.com/pgx**

QuantStudio 12K Flex Real-Time PCR System

From single tube to OpenArray plate, one instrument provides a wide range of throughput options

Flexible instrument

The QuantStudio 12K Flex Real-Time PCR System has the capabilities you need to follow your research leads with ease. From lower-throughput experiments with a 96- well or 384-well block to high-throughput target analysis with an OpenArray block, the QuantStudio 12K Flex system provides the flexibility you need to extend your research from SNP genotyping to copy number analysis, miRNA analysis, or gene expression analysis.

Miniaturization at lower cost

Analyzing multiple targets per sample can significantly increase the cost per sample. To provide a cost-effective solution, we developed OpenArray technology for SNP genotyping on the QuantStudio 12K Flex Real-Time PCR System. OpenArray technology is a broadly applicable nanoliter fluidics format for low-volume reactions. OpenArray technology utilizes a microscope slide–sized plate with 3,072 through-holes. Each plate contains 48 subarrays with 64 through-holes. Each through-hole is 300 µm in diameter and 300 µm in depth for individual 33 nL reactions. This technology enables:

- Lower reagent and assay costs
- Better data quality and performance of solution-phase PCR reactions
- Rapid parallel processing OpenArray technology supports SNP genotyping, gene expression, and miRNA analysis

QuantStudio 12K Flex software enablement for validated environments

Sample tracking from start through analysis

The Applied Biosystems™ OpenArray™ Sample Tracker helps you easily track your samples. Enter sample information for the 96-well reaction plate into the software. The OpenArray Sample Tracker Software automatically maps the sample information to the appropriate locations in the Applied Biosystems™ OpenArray™ 384-Well Sample Plate, providing a visual guide for loading your OpenArray plates and a record of the experiment.

LIMS compatibility and 21 CFR Part 11 compliance

Open application program interfaces (API) allow integration with third-party systems such as LIMS (laboratory integration management systems) or custom automated platforms. The optional 21 CFR Part 11 compliance module assists with security, auditing, and e-signature records for data traceability.

TaqMan PreAmp reagents

Stretch your precious sample into many more SNP real-time PCR reactions using the Applied Biosystems™ TaqMan™ PreAmp Master Mix. Mix the sample with the TaqMan PreAmp Master Mix and a pool of primers specially designed for your panel. Preamplification is typically performed in 75 minutes and provides high-quality DNA for SNP analysis. This step is optional and recommended only for low-quality samples.

Confidence in your results

TaqMan Drug Metabolism Genotyping Assays

For analysis of biologically important polymorphisms in drug metabolism, we offer 2,700 unique Applied Biosystems™ TaqMan™ Drug Metabolism Assays (DME Assays) that detect polymorphisms of regulatory elements and coding regions in 221 drug metabolism enzyme (DME) and drug transporter genes. TaqMan DME Assays detect single nucleotide polymorphisms (SNPs), multiple nucleotide polymorphisms (MNPs), and insertions/deletions (indels), with the ease of use and flexibility of choosing the format that best fits your need.

Option 1: Applied Biosystems™ TaqMan™ OpenArray™ PGx Panel

This predesigned pharmacogenomics panel is optimized to provide 158 DME assays per array, enabling analysis of 16 samples per run (Table 1). The panel covers genes grouped into three categories: Phase I and II metabolism enzymes responsible for modification of functional groups and conjugation with endogenous moieties, respectively; and transporters, responsible for the uptake and excretion of drugs into and out of cells. Figure 1 shows an example of typical data obtained using TaqMan DME Assays with the OpenArray technology.

Option 2: TaqMan OpenArray PGx Express Panel

The predesigned express panel contains our most popular pharmacogenomic content (Table 3), with 64 preselected TaqMan DME and SNP Genotyping Assays. Available in 384-well and OpenArray plate formats, the express panel enables low- and high-throughput targeted solutions.

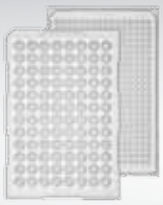
Option 3: Custom OpenArray panel

Build your own TaqMan OpenArray assay panel selecting from 2,700 unique TaqMan DME Assays and 4.5 million predesigned TaqMan SNP Genotyping Assays using our online product configurator tool. Different OpenArray configurations are available to accommodate the number of OpenArray assays to analyze per sample (Table 2).

Option 4: Single tube and custom plating

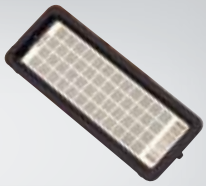
All TaqMan DME Assays are available in single-tube format for a pick-and-choose option. Alternatively, order your TaqMan DME Assays preplated into Fast or standard 96- or 384-well plates, using the Applied Biosystems™ TaqMan™ Custom Plating Service—perfect for analyzing a large number of samples for a few SNPs. Select any of these options to suit your needs.

Single-tube TaqMan Assays



TaqMan Assays in 96- and 384-well plates

384-well TaqMan Array Cards



QuantStudio 12K Flex OpenArray plates

Clear genotyping calls with TaqMan DME Assays

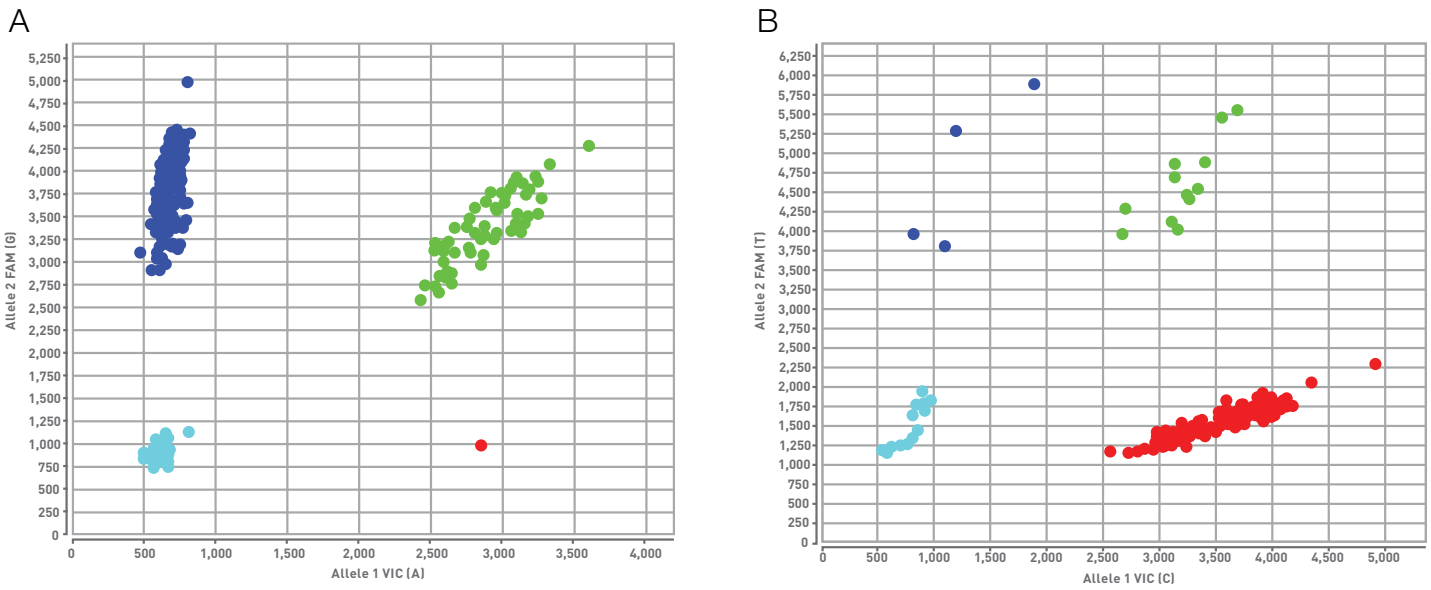


Figure 1. Genotyping cluster plots for CYP2C19*2 and CYP2D6*4, obtained using the QuantStudio 12K Flex System with OpenArray Block. The data are from TaqMan Genotyper Software analysis of TaqMan Genotyping Assays run on a panel of African American and Caucasian Coriell gDNA samples. **(A)** DME CYP2C19*2 g.19154G>A splicing defect (C__25986767_70). **(B)** CYP2D6*4 g.1846G>A (C__27102431_D0). Blue and red dots represent homozygote samples, green dots represent heterozygote samples, light blue dots represent no-template controls.

Table 1. TaqMan OpenArray PGx Panel content.

Group	# of genes	Human gene symbols
Phase I metabolism enzyme	12	*CYP1A1, CYP1A2, CYP2A6, CYP2B6, CYP2C19, CYP2C8, CYP2C9, CYP2D6, CYP2E1, CYP3A4, CYP3A5, DPYD*
Phase II metabolism enzyme	7	*GSTM1, GSTP1, NAT1, NAT2, UGT1A1, UGT2B15, UGT2B7*
Transporters	11	*ABCB1, ABCB2, ABCG2, SLC15A2, SLC22A1, SLC22A2, SLC22A6, SLCO1B1, SLCO1B3, SLCO2B1, TPMT*

Table 2. QuantStudio 12K Flex custom TaqMan OpenArray Genotyping Plate format options.

Plate format	Samples/ plate	Minimum order
26 assays	96	10
60 assays	48	20
120 assays	24	40
180 assays	16	60
240 assays	12	80

Table 3. TaqMan OpenArray PGx Express Panel content.

Human gene symbols							
CYP1A2	*CYP2B6*	*CYP2C9*	*CYP2C19*	*CYP2D6*	*CYP3A4*	*CYP3A5*	*SLCO1B1*
VKORC1	*COMT*	*OPRM1*	*DRD2*	*FII*	*FV*	*MTHFR*	*APOE2*
APOE4							

> “I am truly amazed at the quality of OpenArray genotyping results and the ease of use of the TaqMan Genotyper software.”
>
> **Professor Mikko Niemi,**
> Department of Clinical Pharmacology
> University of Helsinki, Finland

Complement your PGx panel

TaqMan Copy Number Assays

Predesigned assays

Copy number variation (CNV) is an important polymorphism associated with drug metabolism and a number of diseases. Thermo Fisher Scientific offers over 1.6 million individual predesigned Applied Biosystems™ TaqMan™ Copy Number Assays covering the human genome, targeting gene exons and introns, extragenic regions, and CNV sequences from the database of genomic variants (DGV) (Figure 2).

Custom offerings

TaqMan Copy Number Assays are available as individual assays or in 96- and 384-well format with our custom plating option. Applied Biosystems™ Custom and Custom Plus TaqMan Copy Number Assays offer an alternative CNV analysis solution when a predesigned assay for your target is not available.

Easy workflow

Applied Biosystems™ TaqMan™ Copy Number Reference Assays are run in duplex with the predesigned, Custom, or Custom Plus TaqMan Copy Number Assays to detect and measure CNV in the human genome. Data analysis is performed using Applied Biosystems™ CopyCaller™ software. This software is free and easy to use, enabling quick calculations of the copy number calls. Confidence values are returned for copy number calls, and the software features outlier removal functionality.

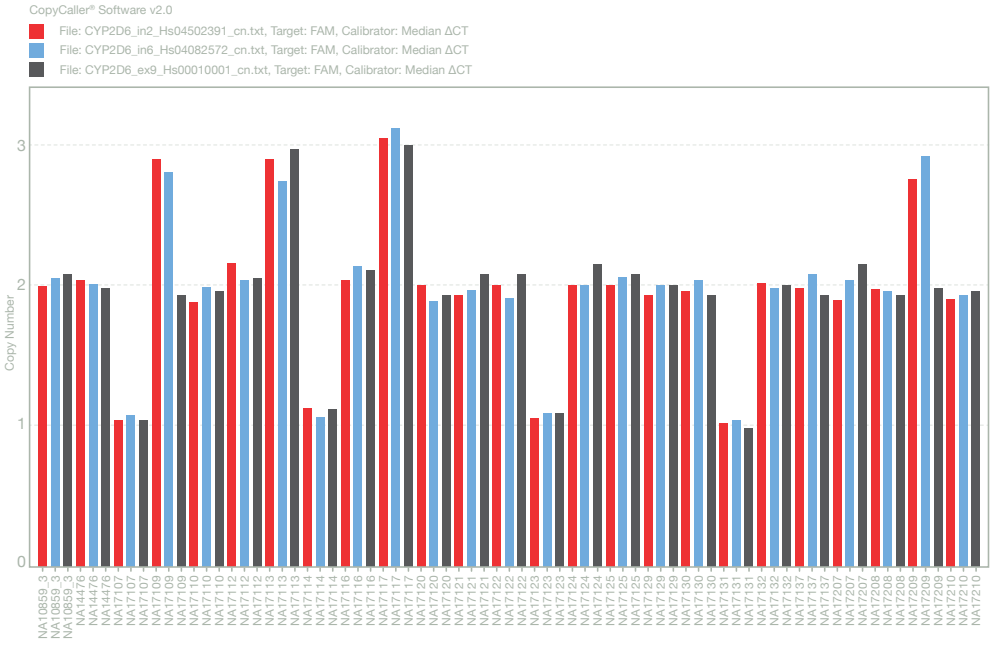


Figure 2. TaqMan Copy Number Assay results for CYP2D6. Data are from CopyCaller Software v2.0 analysis of three TaqMan Copy Number Assays on CYP2D6 sequences, run on a panel of African American and Caucasian Coriell gDNA samples. All three assays detect 2 copies of the CYP2D6 gene in most samples, a CYP2D6 deletion allele (CYP2D6*5) in 4 samples (NA17107, NA17114, NA17123, NA17131), a CYP2D6 duplication allele (e.g., CYP2D6*2XN) in 2 samples (NA17113, NA171117), and an extra CYP2D6 allele that carries a gene conversion to YP2D7 in exon 9 (e.g., CYP2D6*36 allele) in 2 samples (NA17109, NA17209).

Learn more at **thermofisher.com/taqmancnv**

Ion Torrent systems: next-generation solutions for pharmacogenomics research

Next-generation sequencing in a simple, fast, and affordable package

Ion Torrent™ technology directly translates chemically encoded information (A, C, G, T) into digital information (0, 1) on a semiconductor chip. This approach marries simple chemistry to proprietary semiconductor technology. The result is a sequencing technology that is simpler, faster, and more cost-effective than any other benchtop next-generation sequencing (NGS) technology available. Cutting-edge and powerful NGS is now within reach of most pharmacogenomics labs via easy-to-use Ion Torrent semiconductor sequencing solutions. Your lab can harness the power of NGS for discovery, validation, and screening of variants in DME genes.

Choose a next-generation sequencing system that meets your throughput needs

Select the appropriate platform, the Ion PGM or Ion S5 System, depending on your anticipated throughput needs. Each offers a choice of sequencing chips enabling you to easily scale your project size by selecting the chip well density that meets your sample multiplexing and throughput needs.

Targeted sequencing reduces time and costs

By focusing on high-value genes, Ion AmpliSeq technology simplifies sample preparation steps, helping to reduce data complexity, and cuts down on overall project costs—all from as little as 10 ng of input DNA. Ion AmpliSeq chemistry uses a highly multiplexed PCR approach capable of genetic variant detection, including SNPs, insertion or deletions (indels), and gene fusion events, as well as counting applications such as CNV analysis and gene expression studies. Focused content can be selected from our predesigned catalogue addressing research applications spanning oncology, inherited disease, infectious disease, and microbiology research—or custom panels can be quickly and easily assembled using our straightforward but powerful online Ion AmpliSeq Designer tool (**ampliseq.com**).

Improve lab efficiencies through automation

Add automation capabilities for users of any expertise level to your Ion PGM System for Ion AmpliSeq library construction, library templating, and Ion chip loading with the Ion Chef™ System. Process eight samples in parallel using any one- or two-pool Ion AmpliSeq Panel with only 15 minutes setup time with full walk-away freedom. Increase your confidence on every run through minimizing sources of user-introduced variability and full onboard reagent and sample tracking.

	Ion PGM System			Ion S5 and S5 XL Systems		
Ion Torrent next generation sequencing System						
Ion Chip	Ion 314 Chip 	Ion 316 Chip 	Ion 318 Chip 	Ion 520 Chip 	Ion 530 Chip 	Ion 540 Chip 
Reads	400-550 thousand	2-3 million	4.5-5 million	3-5 million	15-20 million	60-80 million
Number of PGx panel samples per run	1-8*	16-48	49-96	49-96	97-384	97-384†
Run time (200 bp)	2 hrs	3 hrs	4 hrs	2.5 hrs	2.5 hrs	2.5 hrs

* Genotyping only; not recommended for CNV
† Limited by available barcodes

Generate more relevant data

Ion AmpliSeq targeted sequencing panels

With Ion AmpliSeq technology, zeroing in on critical genomic regions is easy. Opt for a gene design approach to achieve the most extensive coverage across genes of interest, ideal for variant discovery, or a hotspot design approach, focusing on known mutation hotspots, to help minimize panel size and project costs, which could be best for sample screening applications. From predesigned panels across pharmacogenomics, oncology, inherited disease, or microbiology to custom options, whatever your research needs, there will be a solution for you.

Option 1: Ion AmpliSeq™ Pharmacogenomics Research Panel

The Ion AmpliSeq Pharmacogenomics Research Panel enables screening of 136 well-documented SNVs and indels across 40 high-value DME genes in a single assay. In addition, copy number variation of the CYP2D6 gene locus is measured and reported at the gene and exon 9 (*36 allele) levels. This single panel combining SNVs, indels, and CNV offers comprehensive coverage of high-value pharmacogenomics markers and has been extensively wet-lab validated to enable optimal performance with a variety of sample sources including buccal swab DNA.

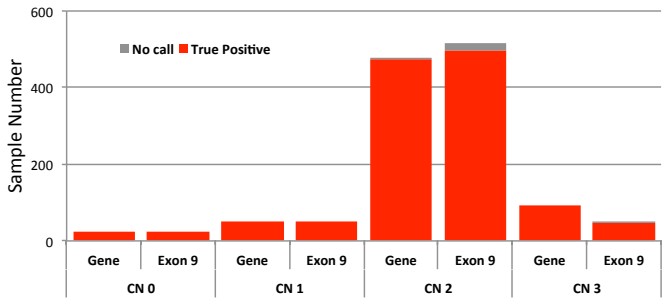
Option 2: Ion AmpliSeq™ Custom Panel

If our predesigned collection is missing what you need, build your own content by modifying the Ion AmpliSeq Pharmacogenomics Research Panel through the addition or removal of targets to expand coverage or help reduce cost, respectively, or by working with our experienced design team to create a *de novo* design specifically tailored to your needs. For more information, please contact your sales representative.

Panel A

Cell line sample number	304
Buccal swab sample number	336
Total sample number	640
Total Calls Made	86,540
Total No Calls	25
Total False Calls	3
Target Call Rate	> 99.97%
Genotype Accuracy	> 99.99%

Panel B



Panel C

ABCB1	CYP2C9	GABRA6	OPRM1
ABCG2	CYP2D6	GABRP	SLCO1B1
ADRA2A	CYP3A4	GRIK4	TPMT
ANKK1	CYP3A5	HTR2A	UGT1A1
APOE	DBH	HTR2C	UGT2B15
COMT	DPYD	ITGB3	UGT2B7
CYP1A2	DRD1	KIF6	VKORC1
CYP2B6	DRD4	MTHFR	HLA-A*3101
CYP2C19	F2	OPRD1	HLA-B*1502
CYP2C8	F5	OPRK1	HLA-B*5701

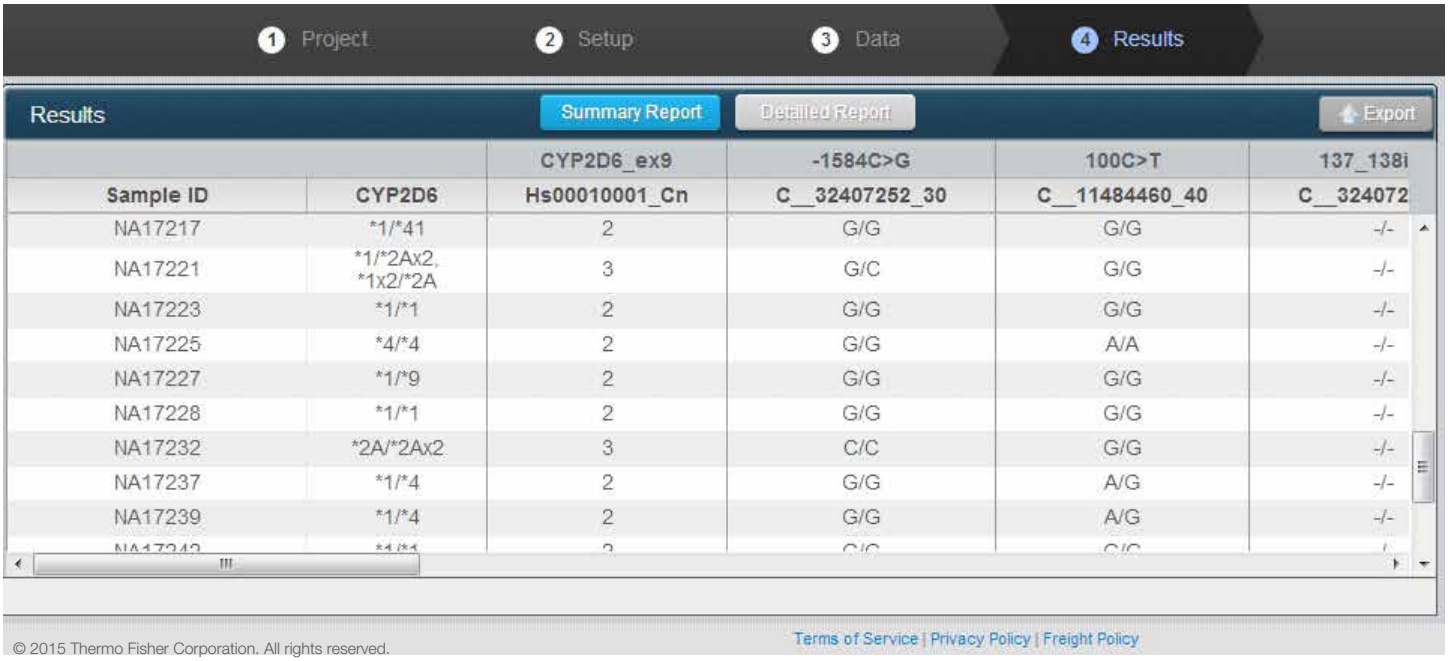
Figure 3. 640 total samples, 304 cell line and 336 buccal swab, were interrogated using the Ion AmpliSeq™ Pharmacogenomics Research Panel. Panel A. Across the 136 SNVs or indels surveyed, a call rate >99.97% and accuracy >99.99% was observed. Of a total of 86,540 single nucleotide and insertion/deletion variants, 25 were not called and only three were determined to be falsely called. **Panel B.** CYP2D6 gene and exon 9 level copy number analysis demonstrated 100% accuracy with 99.8% and 96.4% call rates, respectively. **Panel C.** Genes covered by the Ion AmpliSeq Pharmacogenomics Research Panel.

Star allele analysis in a few clicks

AlleleTyper Software

Determine the haplotypes of your samples quickly and easily with Applied Biosystems™ AlleleTyper™ Software. Once a translation table is set up for a study of interest, such as for CYP2D6, AlleleTyper Software will analyze your genotype and CNV data in just a few quick steps. AlleleTyper Software interprets your real-time PCR analysis data and determines the star-allele results for your study based on your specifications. AlleleTyper Software features:

- User-friendly four-step analysis
- Easy accessibility via Web login
- Simultaneous interpretation of copy number and SNP information
- Customizable reports



		CYP2D6_ex9	-1584C>G	100C>T	137_138i
Sample ID	CYP2D6	Hs00010001_Cn	C__32407252_30	C__11484460_40	C__324072
NA17217	*1/*41	2	G/G	G/G	-/-
NA17221	*1/*2Ax2, *1x2/*2A	3	G/C	G/G	-/-
NA17223	*1/*1	2	G/G	G/G	-/-
NA17225	*4/*4	2	G/G	A/A	-/-
NA17227	*1/*9	2	G/G	G/G	-/-
NA17228	*1/*1	2	G/G	G/G	-/-
NA17232	*2A/*2Ax2	3	C/C	G/G	-/-
NA17237	*1/*4	2	G/G	A/G	-/-
NA17239	*1/*4	2	G/G	A/G	-/-

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Join our PGx community

Learn: Access to technical documents, tips and troubleshooting, and unpublished data from our R&D scientists

Connect: Updates on the latest events, conferences, workshops, webinars, and new product releases

Discuss: Peer-to-peer exchange and direct connection with Thermo Fisher Scientific Technical Support groups

thermofisher.com/pgxcommunity

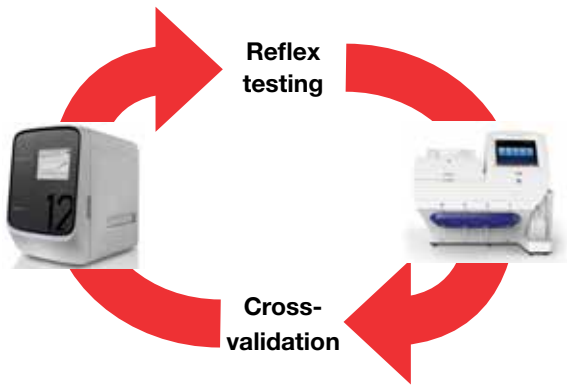
Platform selection considerations

Platform selection is not always simple, as you will need to consider a broad set of criteria, dependent on your lab's needs and the scope of your research. Some questions to consider include the following:

Question	Recommendation
What instrumentation do I have access to today?	Assay setup time can be very fast should you already have access to either of the two platforms.
How many pharmacogenomic markers do I need in a single assay?	Generally speaking, <120 markers favors qPCR while >120 markers favors NGS.
What is the minimal sample quantity that I need to run?	Ion AmpliSeq technology supports as low as 10 ng of input regardless of the number of markers. Sample input with qPCR will be dependent on the number of markers run.
Are there other application areas that I need to use the platform for?	A broad variety of predesigned content panels are available for both platforms. Go to **thermofisher.com** or speak with your sales representative to find out what is available.
What data turnaround time do I require?	From sample to results, qPCR has the benefit that it can usually be completed in four hours. The NGS workflow usually requires less than two days; however, both genotyping and CNV data are captured simultaneously.
What is my technical level of expertise?	In general, NGS has a more complex workflow and is better suited to labs experienced in molecular biology.
Do I need multiple platforms to validate or reflex dependent on my initial results?	NGS and qPCR are highly complementary technologies. Many labs find the need to feature both platforms in their instrumentation fleet.

Whether you are a service lab engaging in multi-stage drug development or an independent lab with a pharmacogenomic research focus, Thermo Fisher Scientific has the appropriate solution to empower discovery from research to variant screening.

The power of the combination of two platforms enables a broader spectrum of projects than could be supported on any one platform alone, and offers opportunities for cross-validation and reflex testing.



Training, compliance, and validation services—get started quickly and with peace of mind

Instrument IQ/OQ/PQ

Performed by a certified field service engineer (FSE), these services help ensure your instrument is working to manufacturer specifications, and include comprehensive document verification.

- Computer system validation—are you storing electronic records? Manage compliance risk, and let us help validate your software systems more quickly.
- Risk assessment—are you ready for inspection? Let our experienced professionals identify opportunities for improvement in your procedures, training, and validation processes.
- Pure dye calibration—a must-have to enable accurate, high-quality results on your Applied Biosystems real-time PCR system.
- On-site temperature verification—helps ensure quality results by verifying your thermal cycler's temperatures.

Content IQ/QC

Performed by a field application specialist (FAS) and a compliance service specialist (CSS), this service helps ensure that the workflow, from DNA extraction to data analysis, is working according to manufacturer specifications. This customized service includes:

- Experimental design in collaboration with a CSS
- Protocol execution, workflow optimization, and data analysis with control sample, to help meet product specifications
- Technical review and final report
- Sourcing of reference samples and positive controls

Comprehensive training offered

Performed by your FAS, these services help ensure that you'll be able to quickly run your experiment. You don't need to be an expert—we provide training to address your needs.

Training and validation are critical to your pharmacogenomics research, but they don't have to be a burden. With our services for training and validation, you can experience peace of mind knowing these important aspects are handled by highly trained and competent engineers.

Comprehensive worldwide service and support

AB Priority Select

AB™ Priority Select provides priority access for your laboratory to our Technical Assistance Center Monday through Friday from 8:00 a.m. to 8:00 p.m. in all continental US time zones. And if we can't solve your problem over the telephone, our field service engineers (FSE) can be dispatched to your site as soon as the next business day.*

Technical support

If you have questions about how to use TaqMan Assays or how to analyze results, call or email our technical support specialists. They're skilled in experimental planning and design, are experienced troubleshooters, and are familiar with a wide variety of applications that use TaqMan Assays.

Sales support

Your local sales representative can help you find Web and print resources to help you choose the right TaqMan Assay products for your genetic variation research. For more demanding projects, they can also involve our technical sales specialists, who have more in-depth knowledge of TaqMan Assay technology and our relevant supporting reagents and instruments.

Whether you need help finding a TaqMan Assay for your target, deciding which format best suits your needs, placing your order through our online ordering system, or setting up your reactions, our sales and technical support staff are here to help.

* Availability limited in some geographic areas. Contact your service sales representative for details.

The AB Priority Select service plan includes:

Service	Details
FSE guaranteed on-site response time Technical Assistance Center Dedicated telephone support staffed by a pharmacogenomics expert Dedicated email	Next business day* Monday through Friday 8:00 a.m. to 8:00 p.m. (Across the continental US)
FSE instrument training	System familiarization for your laboratory personnel
OQ/IPV	Included after every repair and with annual planned maintenance
Annual planned maintenance Remote monitoring and diagnostics	Automatically scheduled for you Included
Parts, labor, and travel	Included

Other service plans

	AB Complete	AB Assurance	AB Maintenence
Repair response time (business days)	Guaranteed next-day* on-site repairs	Guaranteed two-day on-site repairs	Target two-day remedial repairs
Remote instrument monitoring and diagnostics	•	•	
Priority phone and email access to instrument support	•	•	
Priority phone and email access to application technical support	•	•	•

> “The team is fantastic. Their analytical validation services helped us reach our goal of providing accurate and precise results from the TaqMan OpenArray [System] to our clients. Their services allowed us to be fully operational months ahead of schedule.”
>
> Service provider for drug testing

* Availability limited in some geographic areas. Contact your service sales representative for details.

Ordering information

DNA extraction products	Cat. No.
KingFisher Flex Magnetic Particle Processor with 96 Deep-Well Head	5400630
MagMAX DNA Multi-Sample Ultra Kit	A25597

Real-time PCR products	Cat. No.
QuantStudio 12K Flex Real-Time PCR System	Go to **thermofisher.com/quantstudio**
TaqMan OpenArray PGx Panel for QuantStudio 12K Flex Real-Time PCR System	4475395
TaqMan OpenArray PGx Express Panel for QuantStudio 12K Flex Real-Time PCR System	4488847
TaqMan OpenArray Genotyping Accessories Kit (enough for 10 plates)	4404572
QuantStudio 12K Flex OpenArray Accessories Kit (enough for 10 plates)	4469576
TaqMan Copy Number Assays	4400291
TaqMan DME Assays	4362691
TaqMan 384-Well PGx Express Panel	Inquire with your local sales representative
Custom plating and custom TaqMan Array Card	Inquire with your local sales representative

Preamplification products	Cat. No.
TaqMan PreAmp Master Mix	4391128
Custom TaqMan PreAmp Pools	4441856

* Availability limited in some geographic areas. Contact your service sales representative for details.

Sequencing products	Cat. No.
Ion PGM System	Go to **thermofisher.com/pgm**
Ion S5 System	Go to **thermofisher.com/IonS5**
Ion S5 XL System	Go to **thermofisher.com/IonS5**
Ion Chef System	Go to **thermofisher.com/ionchef**
Ion AmpliSeq Targeted Sequencing Technology	Go to **thermofisher.com/ampliseq**
Ion AmpliSeq Pharmacogenomics Research Panel, 16 reactions	A29250
Ion AmpliSeq Pharmacogenomics Research Panel, 96 reactions	A29251
Ion AmpliSeq Pharmacogenomics Research Chef Ready Kit, 32 reactions	A29998
Ion AmpliSeq Library Kit 2.0, 8 reactions	4475345
Ion AmpliSeq Library Kit 2.0, 96 reactions	4480441
Ion AmpliSeq Library Kit 2.0, 384 reactions	4480442
Ion AmpliSeq Library Kit for Chef DL8, 32 reactions	A29024
Ion Xpress Barcode Adapters 1-96 Kit	4474517
Ion 316 Chip Kit v2 BC, 8 chips	4488149
Ion 318 Chip Kit v2 BC, 8 chips	4488150
Ion PGM Hi-Q Chef Kit, 8 reactions	A25948
Ion PGM Hi-Q OT2 Kit, 8 reactions	A27739

Training products	Cat. No.
Complete PGx workflow training, 3 days on customer site	A26745

Find out more at **thermofisher.com/pgx**

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