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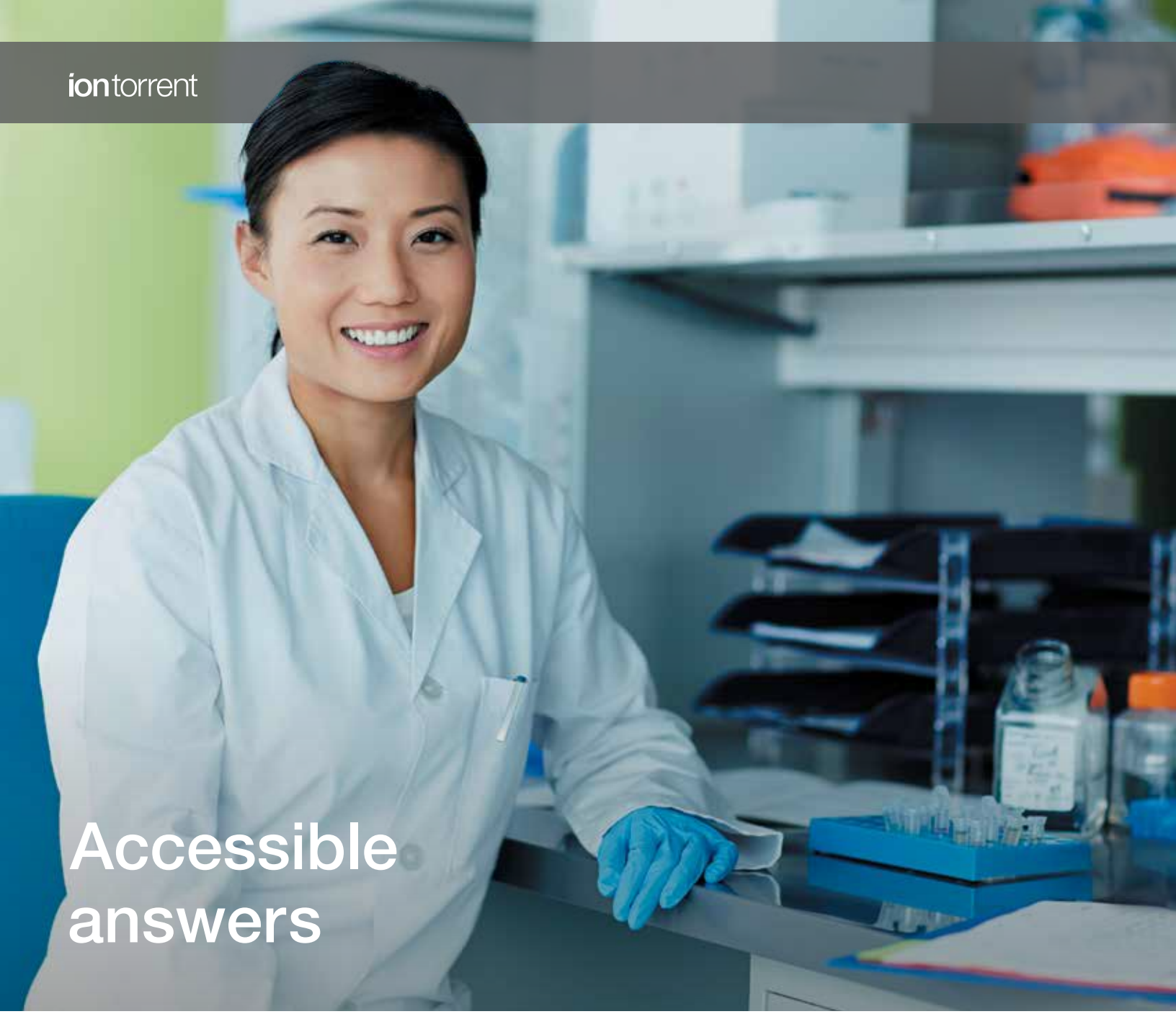


# Accessible answers

Targeted sequencing: accelerating and amplifying answers for oncology research

ThermoFisher SCIENTIFIC

# Help advance precision medicine

Life without cancer. This is our shared goal that inspires us. And targeted next-generation sequencing (NGS) is empowering cancer research laboratories of all sizes to confidently pioneer the next breakthrough.

**Targeted sequencing helps deliver the answers you need with accuracy, high reproducibility, and in less time than other sequencing methods.**

Adding Ion Torrent™ NGS to your cancer research:

- Lets you examine multiple genes in a single run
- Helps you identify biomarkers faster and more efficiently
- Enables high-quality, reproducible data
- Preserves your precious sample, using as little as 1 ng per reaction
- Empowers you to uncover valuable information from even difficult formalin-fixed, paraffin-embedded (FFPE) and fine-needle aspirate (FNA) research samples

**1 ng**

**Examine multiple genes in a single run using as little as 1 ng of sample**

# Accelerate results with Ion Torrent NGS

Targeted NGS for oncology research works best when you have an experienced partner. Someone who can provide everything from carefully designed panels of multiplexed primers, to fully integrated and automated workflows. A true collaborator who anticipates your needs and supports you with comprehensive platforms for precision genomics, including excellence in service and support.

**Thermo Fisher Scientific is that partner.**
**Ion Torrent targeted NGS is the path forward.**

## What you need, we deliver

- Save time and minimize optimization with predesigned panels
- Design your own custom panel with Ion AmpliSeq™ Designer
- Automate your workflow with powerful integrated sequencing systems
- Simplify complex data analysis with accessible bioinformatics tools
- Create customized, information-rich lab reports
- Rest easy knowing we offer localized service and support to help keep you up and running

# Get the answers you seek from a greater range of samples

It all starts with Ion AmpliSeq™ technology—a PCR-based sequence enrichment library preparation approach for targeted NGS. Whether you're looking at just a few, or hundreds of targets, Ion AmpliSeq™ primer designs help you achieve high uniformity of coverage across fragmented DNA frequently found in FFPE and FNA samples. Uniformity enables high reproducibility and specificity that help you get results for more of your low input samples.

Whether your interest is just a few or many targets, Ion AmpliSeq technology is flexible to suit your needs—use it with any genome across many applications from inherited disease research to microbial analysis to cancer research applications.

| | Ion AmpliSeq Panels | Oncomine Assays |
|---|---|---|
| Predesigned panels | ● | ● |
| Flexible custom panels using Ion AmpliSeq Designer | ● | |
| Curated content and Oncomine Knowledgebase Reporter | | ● |
| Optimized protocols | | ● |
| Internal verification with clinical research samples | | ● |
| Enhanced manufacturing QC and bioinformatics | | ● |
| Dedicated clinical research application support | | ● |

## Ion AmpliSeq panels for exceptional flexibility

Built on Ion AmpliSeq technology, our Ion AmpliSeq panels enable exploration of new cancer research possibilities using NGS analysis.

Starting with input amounts as low as 1 ng, select from Ion AmpliSeq™ ready-to-use panels, or use the AmpliSeq Designer to develop your own custom panel. Whether you choose ready-to-use or custom panel designs, Ion AmpliSeq™ panels leverage the primer design technology that has enabled thousands of real-world designs resulting in more than 600 publications in which Ion AmpliSeq technology was used.

## Oncomine assays for comprehensive solutions

Accelerate your cancer research with a more complete approach to NGS. Oncomine™ assays are multibiomarker targeted NGS assays specifically designed to give you the tools you need for oncology clinical research, including panels, reagents, and informatics software. Each assay is manufactured with enhanced quality control and is tested on clinical research samples to help ensure results are accurate and meaningful.

The primer panels are carefully designed to deliver relevant information, so you can analyze multiple gene aberrations across a variety of sample types. The workflow is integrated and streamlined to help you generate answers in less than two days, starting from minimum material, to help reduce your risk of sample consumption prior to obtaining a meaningful result.

# Choose from a spectrum of options

Whatever your targeted sequencing goals, we are ready to help with a broad array of predesigned Ion AmpliSeq panels, and our specially-designed Oncomine™ research assays.

**Targeted NGS for cancer research**

## 1–25 Genes

- Oncomine™ Lung cfDNA Assay*
- Ion AmpliSeq™ Colon and Lung Research Panel v2**
- Ion AmpliSeq™ RNA Fusion Lung Cancer Research Panel**
- Ion AmpliSeq™ *TP53* Panel**
- Ion AmpliSeq™ AML Panel†
- Oncomine™ *BRCA* Research Assay**

## 26–100 Genes

- Oncomine™ Focus Assay**
- Ion AmpliSeq™ Cancer Hotspot Panel v2**

## >100 Genes

- Oncomine™ Comprehensive Assay**
- Ion AmpliSeq™ Comprehensive Cancer Panel**

## Emerging applications

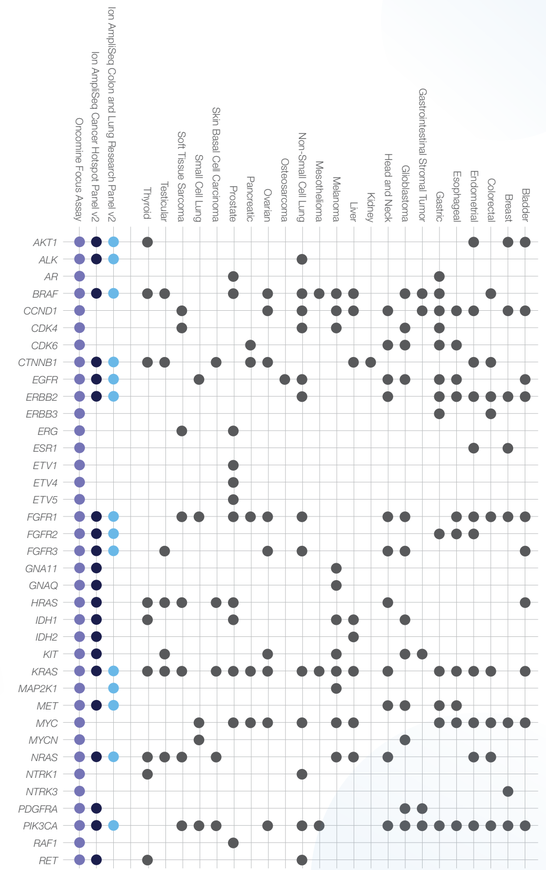
**Liquid biopsy, hematologic, and immuno-oncology research assays**

- Immune response research assay**
- Breast cfDNA assay*
- Colon cfDNA assay*

* Oncomine™ cfDNA Assays are optimized for analysis of DNA derived from blood research samples, using as little as 1 ng starting material.
** Optimized for use with nucleic acid material derived from FFPE research samples, using as little as 1–10 ng starting material.
† Optimized for analysis of nucleic acid material derived from blood research samples, using as little as 1–10 ng starting material.



# Assays and panels to target the genes you really need




Examples of Oncomine assays and Ion AmpliSeq panels and a subset of their associated genes and tumor types for research use. The Oncomine Knowledgebase shows that the specific gene had a variant detected in specific tumor type at a minimum of a 1% frequency. Additional genes are available on these and other Oncomine assays and Ion AmpliSeq panels.

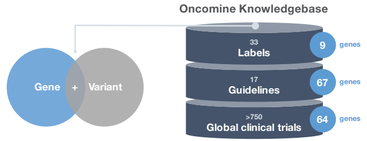
# Simplifying bioinformatics and data analysis

## Achieve highly relevant insights with Oncomine Knowledgebase Reporter

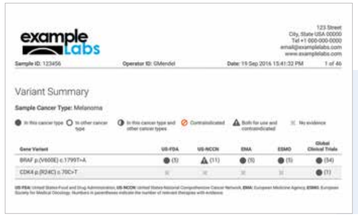
Oncomine™ Knowledgebase Reporter, available for many of our Oncomine assays, greatly simplifies analysis and reporting. By linking gene variants to relevant labels, guidelines, and clinical trials, you have access to information and customized reports to help you quickly understand applicable variants for research activities.

With the Oncomine Knowledgebase Reporter, you can:

- View relevant labels and guidelines for each variant
- Match your sample with local clinical trials
- Customize your report with flexible templates in 9 languages




Oncomine Knowledgebase Reporter is updated quarterly. Contact your Thermo Fisher Scientific Representative for the latest information.


**Variant summary**
The variant summary shows all gene variants with associated evidence for labels, guidelines, and clinical trials in the report.


**Labels and guidelines**
For each gene variant, a summary of each therapy is given and includes cancer type and reference. Other fields include: label date, indication, and usage for labels or recommendation category, and population segment for guidelines.

For Research Use Only. Not for use in diagnostic procedures.

**Relevant therapy summary**
For each gene variant, a summary of relevant therapies is shown with associated evidence for labels, guidelines, and clinical trials.


**Global clinical trials**
For each gene variant, a summary of open global clinical trials is given and includes: trial identifier/title, tissue type, class, population segments, phase, published therapies, countries, US states, and contact information.


**Report template**
Oncomine Knowledgebase Reporter templates are flexible to let you add a logo, location, operator, and other custom fields to quickly create tailored, lab-generated reports.


# Discover next-generation simplicity

## Integrated systems for speed and power

### Ion 5S and Ion Chef Systems: Designed for speed and efficiency

Hands-on time and ease of use are important concerns in every lab. Whether you are using Ion AmpliSeq panels or Oncomine assays, there is no faster or simpler way to harness the power of targeted NGS than with the Ion S5™ Series Systems and their plug-and-play consumables. When coupled with the Ion Chef™ System for library prep and templating, NGS automation is at your fingertips: go from targeted gene panels to answers with as little as 1–10 ng of input material, and just 15 minutes of hands-on time to set up the sequencer for an 8-sample run.

Ion Chef System

Ion S5 System

**Ion 520 Chip** | **Ion 530 Chip** | **Ion 540 Chip**

3–80 million reads at up to 400 bp per read on the Ion S5 System

### Ion PGM™ System

Fast, accurate NGS for targeted gene panels and microbial genomes


### Ion S5™ System

Speed, simplicity, and scalability to maximize flexibility for diverse lab needs

### Ion S5™ XL System

Targeted NGS coupled with the Torrent Server for high-throughput labs

For Research Use Only. Not for use in diagnostic procedures.

## Start off right

### Lab essentials to simplify your workflow

We're committed to being with you from start to finish. Our pre-sequencing kits include tools for extracting DNA and RNA from FFPE and FNA research samples, isolating nucleic acids, and performing molecular analysis on circulating tumor cells and cell-free DNA from whole blood. What's more, each solution is designed to make your journey from sample to answers as efficient and productive as possible.

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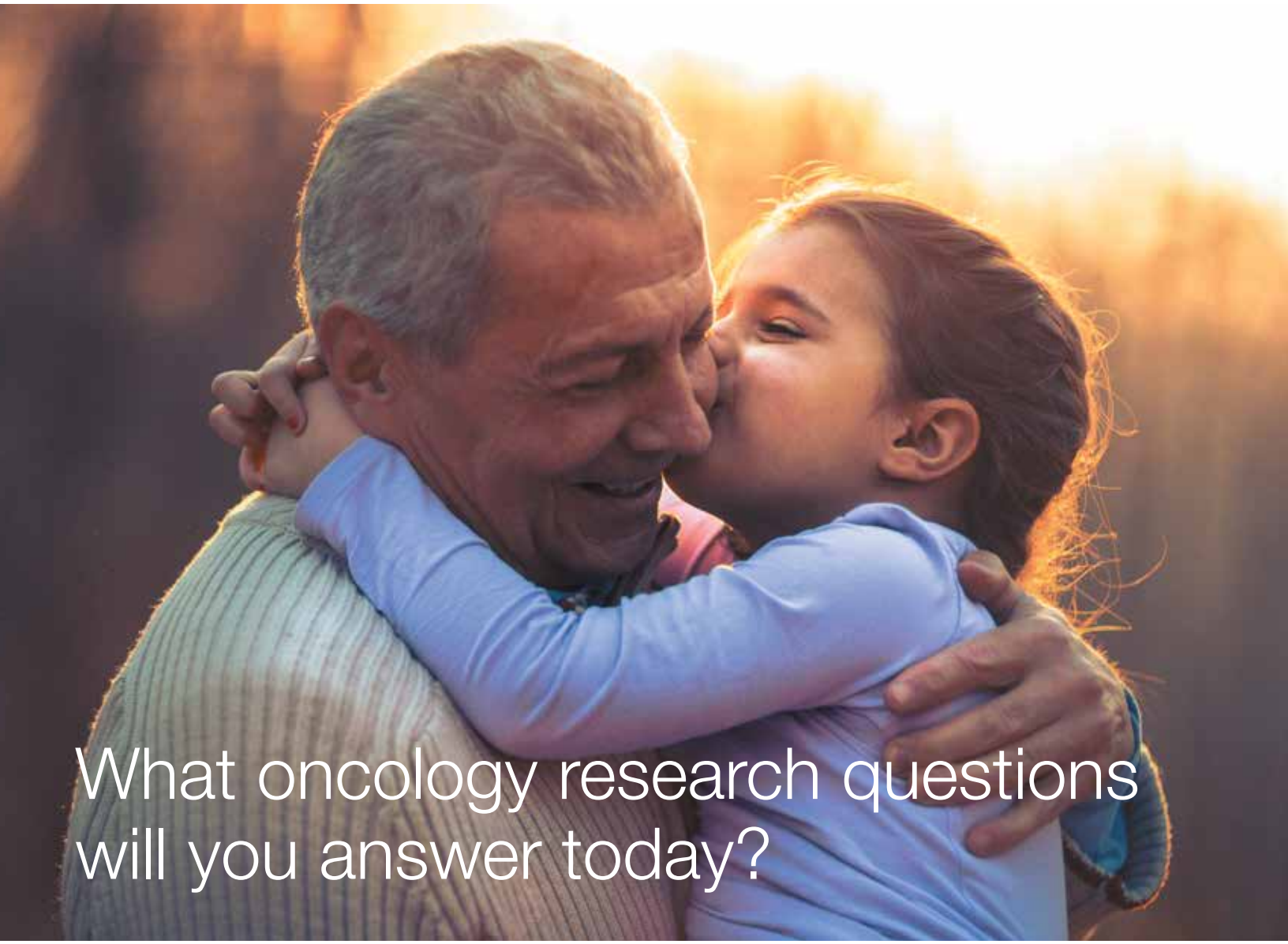


Put the power of Ion Torrent targeted NGS to work for you.

Contact your Thermo Fisher Scientific Representative or go to
**thermofisher.com/cancer**

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