



iontorrent

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 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.

	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		●



Choose from a spectrum of options

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

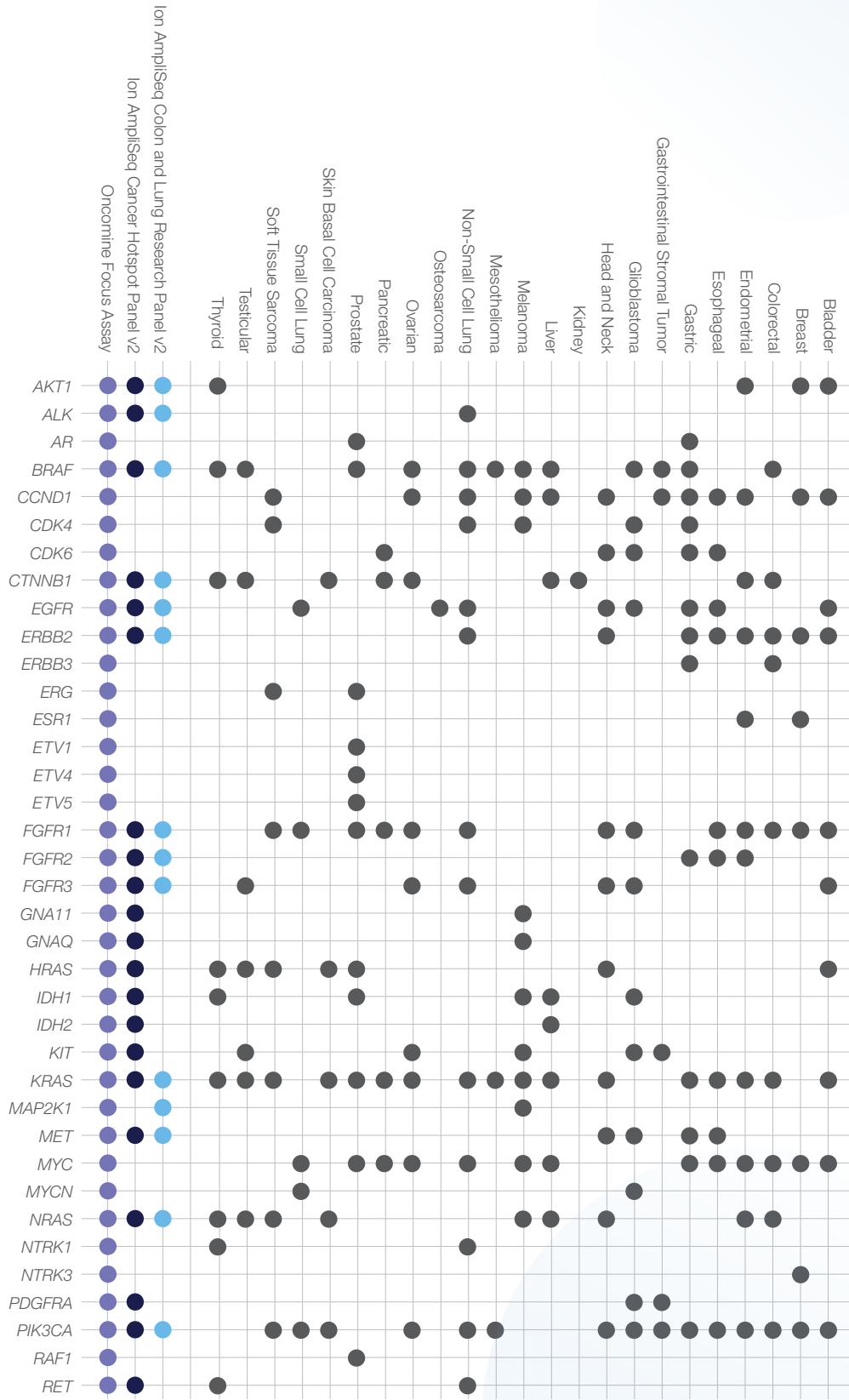
Targeted
NGS for
cancer
research



* OncoPrint™ 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.

The content provided herein may relate to products that have not been officially released and is subject to change without notice. For Research Use Only. Not for use in diagnostic procedures.

Assays and panels to target the genes you really need

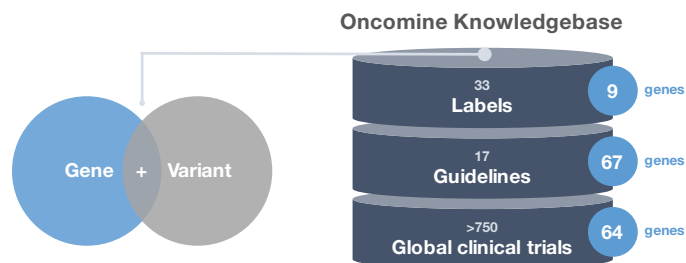


Examples of OncoPrint assays and Ion AmpliSeq panels and a subset of their associated genes and tumor types for research use. The OncoPrint Knowledgebase shows that the specific gene had a variant detected in specific tumor type at a minimum of a 1% frequency. Additional genes are available on these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

Simplifying bioinformatics and data analysis

Achieve highly relevant insights with OncoPrint Knowledgebase Reporter

OncoPrint™ Knowledgebase Reporter, available for many of our OncoPrint 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.



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

example Labs

Sample ID: 123456 Operator ID: G123456 Date: 15 Sep 2016 15:41:32 PM 1 of 46

Variant Summary

Sample Cancer Type: Melanoma

Legend: ☒ In this cancer type ☐ In other cancer type ☒ In this cancer type and other cancer types ☒ Controlled ☒ Both for use and controlled ☒ No evidence

Gene Variant	US FDA	US NCCN	EMA	EBM	Global Clinical Trials
BRAF p.(V600E) c.1799T>A	● (1)	● (1)	● (1)	● (1)	● (34)
CDK4 p.(R124C) c.75C>T	●	●	●	●	● (1)

US FDA: United States Food and Drug Administration; US NCCN: United States National Comprehensive Cancer Network; EMA: European Medicines Agency; EBM: European Society for Medical Oncology. Numbers in parentheses indicate the number of relevant therapies with evidence.

Current US-FDA Information

Legend: ☒ In this cancer type ☐ In other cancer type ☒ In this cancer type and other cancer types ☒ Controlled ☒ Both for use and controlled ☒ No evidence

US FDA information is current as of 2016-04-01. For the most up-to-date information, search www.fda.gov.

BRAF p.(V600E) c.1799T>A

● cobimetinib + vemurafenib

Cancer type: Melanoma Label as of: 2015-11-10 Variant class: BRAF V600E mutation

Indications and usage: COBIMETINIB is a kinase inhibitor indicated for the treatment of patients with unresectable or metastatic melanoma with a BRAF V600E or V600K mutation, in combination with vemurafenib. Limitation of use: COBIMETINIB is not indicated for treatment of patients with wild-type BRAF melanoma.

Reference: http://www.accessdata.fda.gov/drugsatfda_docs/label/2015/205619s000090.pdf

● dabrafenib + trametinib, trametinib

Cancer type: Melanoma Label as of: 2015-11-20 Variant class: BRAF V600E mutation

Indications and usage: MEKINIST™ is a kinase inhibitor indicated, as a single agent or in combination with dabrafenib, for the treatment of patients with unresectable or metastatic melanoma with BRAF V600E or V600K mutations as detected by an FDA-approved test. Limitation of use: MEKINIST is not indicated for treatment of patients who have received prior BRAF-inhibitor therapy.

Reference: http://www.accessdata.fda.gov/drugsatfda_docs/label/2015/205611s000480.pdf

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.

Relevant Therapy Summary

Legend: ☒ In this cancer type ☐ In other cancer type ☒ In this cancer type and other cancer types ☒ Controlled ☒ Both for use and controlled ☒ No evidence

Relevant Therapy	US FDA	US NCCN	EMA	EBM	Global Clinical Trials
vemurafenib	●	●	●	●	● (34)
dabrafenib	●	●	●	●	● (34)
dabrafenib + trametinib	●	●	●	●	● (34)
cobimetinib + vemurafenib	●	●	●	●	● (34)
trametinib	●	●	●	●	● (34)
regorafenib	●	●	●	●	● (34)
ipilimumab	●	●	●	●	● (34)
nivolumab	●	●	●	●	● (34)
ipilimumab + nivolumab	●	●	●	●	● (34)
checkpoint inhibitor	●	●	●	●	● (34)
BRAF inhibitor + MEK inhibitor	●	●	●	●	● (34)
dabrafenib + trametinib, trametinib	●	●	●	●	● (34)
ipilimumab + nivolumab, ipilimumab + nivolumab + checkpoint inhibitor	●	●	●	●	● (34)
ipilimumab + nivolumab + chemotherapy + inhibiting lymphocytes	●	●	●	●	● (34)
ipilimumab + vemurafenib + chemotherapy	●	●	●	●	● (34)
regorafenib	●	●	●	●	● (34)
dabrafenib, dabrafenib + trametinib	●	●	●	●	● (34)

* Most advanced phase (IV, III, II, I, I/II, I/III) is shown and multiple clinical trials may be available. See global clinical trials section in the pages to follow.

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.

Current Global Clinical Trials Information

Global Clinical Trials information is current as of 2016-03-01. For the most up-to-date information regarding a particular trial, search www.clinicaltrials.gov by NCT ID or search local clinical trials authority website by local identifier listed in 'Other Identifiers'.

BRAF p.(V600E) c.1799T>A

NCT01739764

A Phase IV, Prospective, Randomized, Open-Label, Extension (Follow-up) Study of Vemurafenib in Patients With BRAF V600E Mutation-Positive Melanoma Previously Enrolled in an Adjuvant Vemurafenib Protocol

Population segments: Line of therapy N/A, Stage IV

Phase: IV

Therapy: vemurafenib

Countries: Belarus, Bosnia and Herzegovina, Brazil, Canada, Croatia, Cyprus, Egypt, Germany, Greece, Hungary, Israel, Italy, Netherlands, New Zealand, Portugal, Republic of Korea, Romania, Russian Federation, Serbia, South Africa, Spain, United Kingdom, United States

US States: AL, CA, IL, MA, NY, PA, TX, WA

US Contact: Hoffmann-La Roche Contact Reference Study ID Number: G030399 [888-642-6728, genetech@hoffmann-la-roche.com]

NCT01990248

A Phase IV, Prospective, Randomized, Open-Label, Extension (Follow-up) Study of Vemurafenib in Patients With BRAF V600E Mutation-Positive Unresectable or Metastatic Melanoma Treated with Vemurafenib (Dabrafenib)

Population segments: First line, Second line or greater/Refractory/Relapsed, Stage II, Stage IV

Phase: IV

Therapy: vemurafenib

Countries: Poland, United Kingdom

Report template

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



Enabling you to create the reports you really want

example Labs

Sample ID: 123456 Operator ID: G123456 Date: 15 Sep 2016 15:41:32 PM 2 of 46

Relevant Therapy Summary

Legend: ☒ In this cancer type ☐ In other cancer type ☒ In this cancer type and other cancer types ☒ Controlled ☒ Both for use and controlled ☒ No evidence

Relevant Therapy	US FDA	US NCCN	EMA	EBM	Global Clinical Trials
vemurafenib	●	●	●	●	● (34)
dabrafenib	●	●	●	●	● (34)
dabrafenib + trametinib	●	●	●	●	● (34)
cobimetinib + vemurafenib	●	●	●	●	● (34)
trametinib	●	●	●	●	● (34)
regorafenib	●	●	●	●	● (34)
ipilimumab	●	●	●	●	● (34)
nivolumab	●	●	●	●	● (34)
ipilimumab + nivolumab	●	●	●	●	● (34)
checkpoint inhibitor	●	●	●	●	● (34)
BRAF inhibitor + MEK inhibitor	●	●	●	●	● (34)
dabrafenib + trametinib, trametinib	●	●	●	●	● (34)
ipilimumab + nivolumab, ipilimumab + nivolumab + checkpoint inhibitor	●	●	●	●	● (34)
ipilimumab + nivolumab + chemotherapy + inhibiting lymphocytes	●	●	●	●	● (34)
ipilimumab + vemurafenib + chemotherapy	●	●	●	●	● (34)
regorafenib	●	●	●	●	● (34)
dabrafenib, dabrafenib + trametinib	●	●	●	●	● (34)

* Most advanced phase (IV, III, II, I, I/II, I/III) is shown and multiple clinical trials may be available. See global clinical trials section in the pages to follow.

Custom lab-generated report

Discover next-generation simplicity

Integrated systems for speed and power

Ion S5 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



iontorrent



What oncology research questions
will you answer today?

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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