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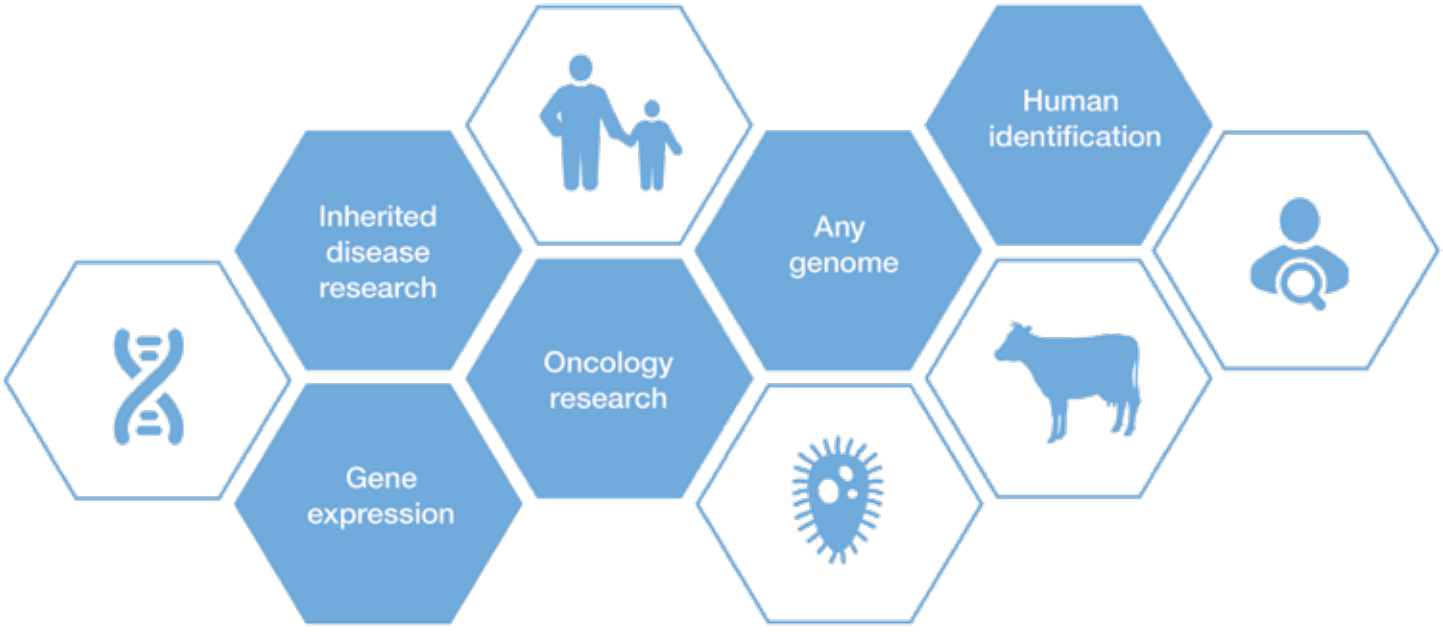
Ion AmpliSeq panels for focused next-generation sequencing

Sequencing success with a simple workflow and low input of DNA or RNA

Since its launch, Ion AmpliSeq™ technology has empowered researchers by enabling a simple, scalable, and fast targeted next-generation sequencing (NGS) workflow for detecting gene targets or hotspots. Based on ultrahigh-multiplex PCR, this unique target-selection technology helps you achieve sequencing success with as little as 1 ng of input DNA, making sequencing of formalin-fixed, paraffin-embedded (FFPE) and fine-needle aspirate (FNA) samples routine on the Ion GeneStudio™ S5 or Ion PGM™ systems.

Benefits of Ion AmpliSeq technology

- **Small sample input**—lowest DNA or RNA input requirement for targeted NGS
- **Scalable**—one to hundreds of gene targets in a single run
- **Fast automated workflow**—from sample to data in as little as 24 hours, with just 45 minutes of hands-on time*



* From DNA to variants, using the Ion Chef™ Instrument with the Ion GeneStudio™ S5 systems.

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Whether you're interested in just a few targets or hundreds of targets, Ion AmpliSeq technology is flexible to suit your needs—use it with any genome across many research applications, from inherited disease to infectious disease to oncology (Figure 1).

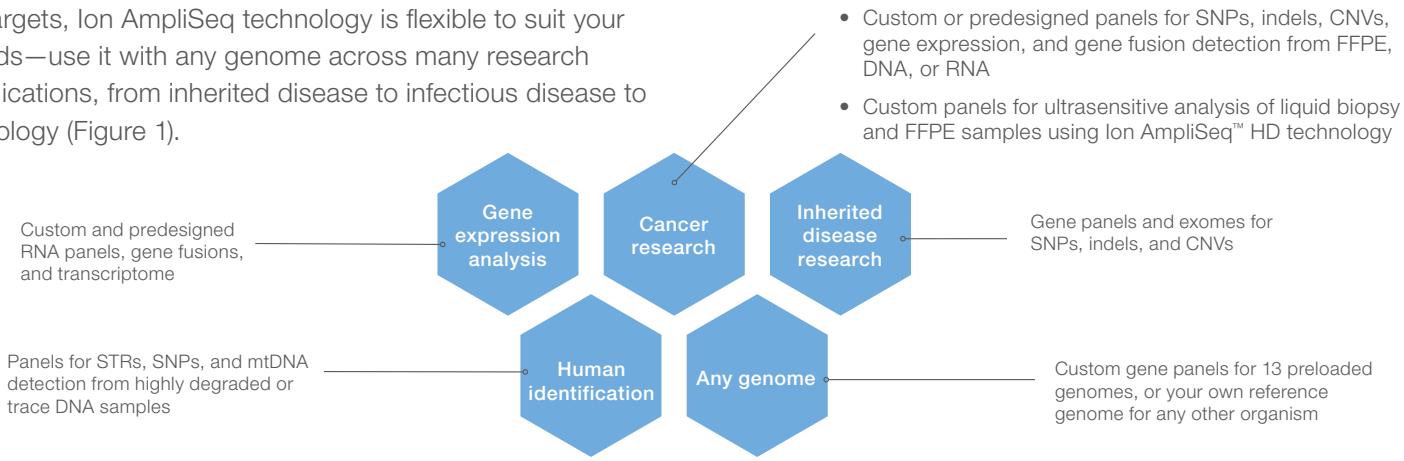

Figure 1. Target multiple mutation types across a variety of research areas.

Ion AmpliSeq panels at a glance	
Sequencing	Ion Torrent semiconductor-based NGS
Sample type	Plasma, whole blood, FFPE tissue, FNA
Input type	DNA, RNA
Input DNA required	As little as 1 ng
Variant types	SNVs, indels, CNVs, fusions, gene expression, STRs, SNPs, mtDNA detection
Maximum amplicon length	140 bp (optimized for cfDNA samples), 175 bp (optimized for FFPE samples), 275 bp or 375 bp (standard samples)
Primer pool size	12 to 6,144 primer pairs per pool
Time-to-results	As little as 24 hours
Sample multiplexing	Up to 384 barcodes available

Ion AmpliSeq Ready-to-Use Panels

- Predesigned DNA or RNA panels for various research areas
- Germline or somatic analysis
- Available in small pack sizes

Ion AmpliSeq On-Demand Panels

- Custom DNA panels for inherited disease research
- Germline analysis
- Available in small pack sizes

Ion AmpliSeq Made-to-Order Panels

- Custom or predesigned DNA or RNA panels
- Germline or somatic analysis
- Available in large pack sizes

Ion AmpliSeq HD Made-to-Order Panels

- Custom DNA or RNA panels for applications that need ultrahigh sensitivity
- Somatic analysis
- Available in large pack sizes

The family of Ion AmpliSeq™ panels

Built on Ion AmpliSeq technology, Ion AmpliSeq panels enable exploration of research possibilities using NGS analysis. Select from Ion AmpliSeq™ Ready-to-Use Panels predesigned for various research areas to get your lab up and running with minimal time and effort. Researchers studying inherited diseases can now configure an Ion AmpliSeq™ On-Demand Panel from our catalog of over 5,000 pretested genes by uploading a gene list or browsing by disease research area. Alternatively, create a fully customizable Ion AmpliSeq™ Made-to-Order Panel for any reference genome and research.

Getting started is easy. Visit Ion AmpliSeq™ Designer at **ampliseq.com** or talk to our representative to help you select the design strategy that best fits your needs.

Gene panels on demand, how and when you want them

Ion AmpliSeq On-Demand Panels give you the power to practically and easily customize panels from a catalog of optimized genes known to be relevant in inherited disease research. For confidence that your panel will perform right from the start, we offer genes that have been pretested and optimized for high performance (Figure 2). The on-demand panels can be ordered in smaller pack sizes to help reduce the up-front cost barrier and risk for researchers who need custom gene panels to fulfill their ever-changing project requirements.

Need even higher sensitivity?

For sequencing applications where ultrahigh sensitivity is required, such as when detecting low-frequency alleles in circulating tumor DNA, Ion AmpliSeq HD technology enables you to design your own custom gene panels and find variants with a very low limit of detection—down to 0.1% for cell-free DNA (cfDNA). Leveraging unique molecular tags (UMTs) and the made-to-order design pipeline in Ion AmpliSeq Designer, this technology helps you detect SNVs, hotspots, indels, CNVs, and fusions with greater than 99% specificity in the gene targets of your interest.

Streamline your targeted sequencing workflow

Free up your time for higher-value activities with the automation of your Ion AmpliSeq targeted sequencing workflow with the Ion Chef Instrument and the Ion AmpliSeq™ Kit for Chef DL8.

Paired with any Ion Torrent™ NGS system, the Ion Chef Instrument automates Ion AmpliSeq library preparation, template generation, and chip loading with push-button simplicity—enabling DNA to data in as little as 45 minutes of hands-on time (Figure 3). The automated workflow supports Ion AmpliSeq designs for one or two pools.

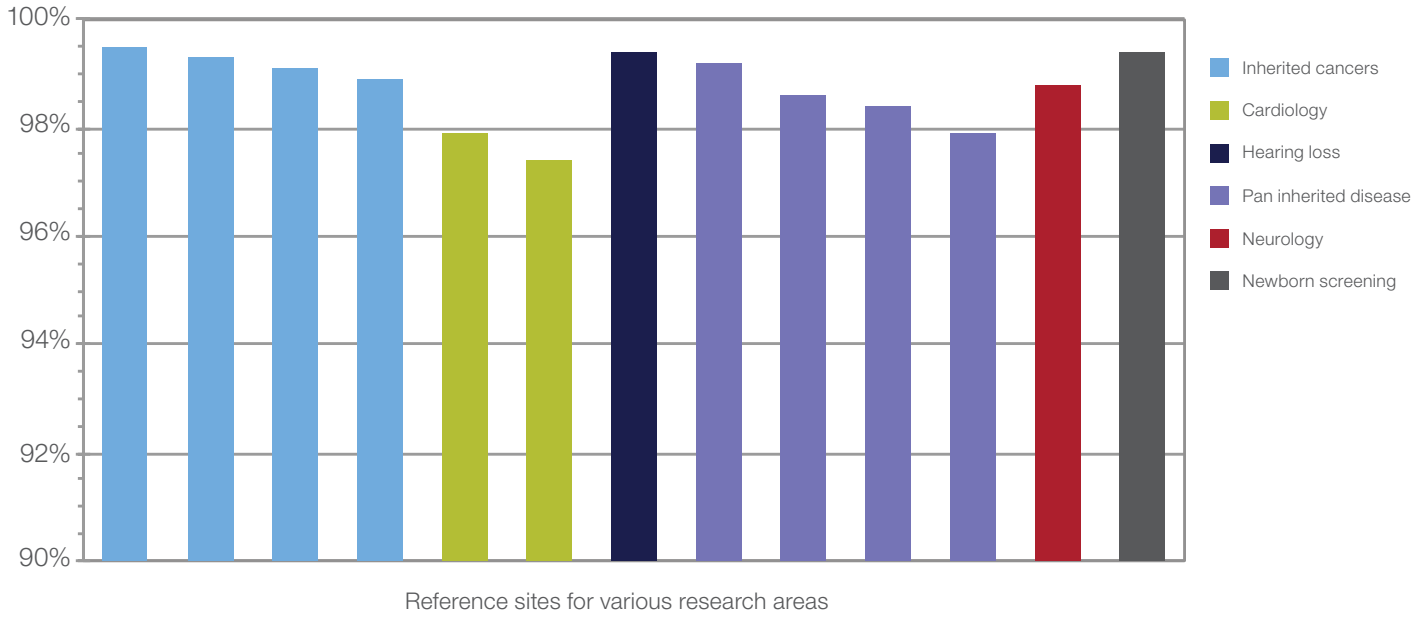

Figure 2. High base uniformity observed in Ion AmpliSeq on-demand research panels built by 13 different reference sites in various sectors, including clinical, translational, and discovery research.

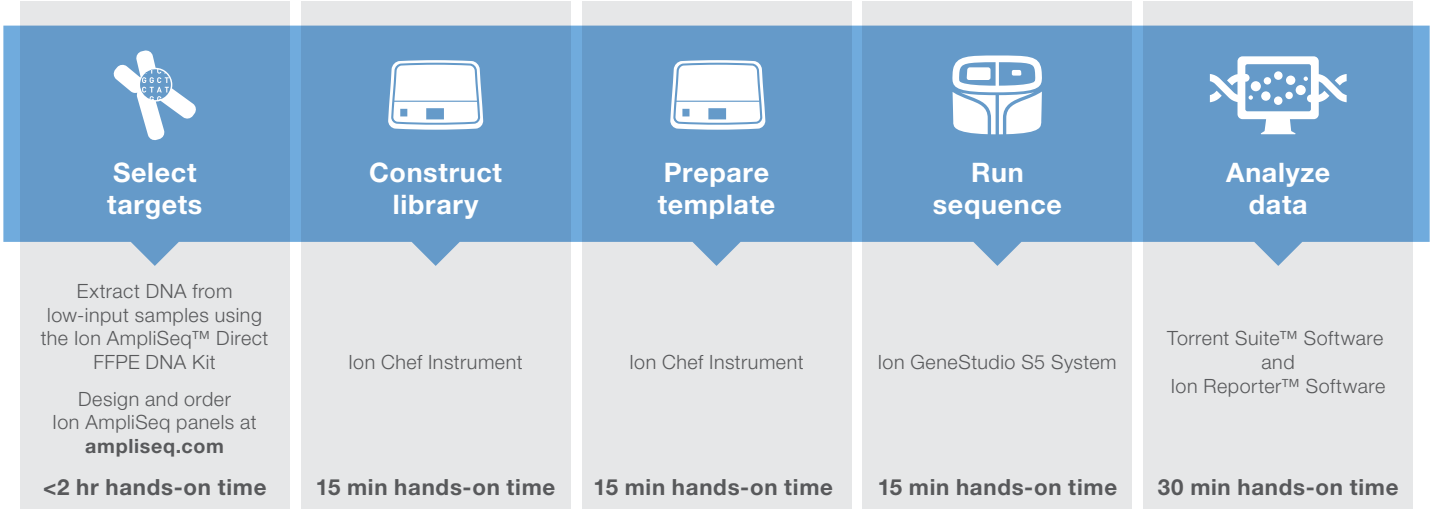

Figure 3. Automated and rapid targeted sequencing workflow using Ion Chef and Ion GeneStudio S5 systems. A manual library and template prep workflow using the Ion OneTouch™ 2 System is also available. Ion AmpliSeq panels are compatible with all Ion Torrent NGS systems.

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Ordering information

Product	Description	Cat. No.
Nucleic acid purification		
Ion AmpliSeq Direct FFPE DNA Kit	For extraction of DNA from FFPE tissues for subsequent	A31133
	Ion AmpliSeq library preparation	A31136
Target selection		
Ion AmpliSeq and Ion AmpliSeq HD panels	Browse or design panels for various research areas on **ampliseq.com**	
Library preparation		
Ion AmpliSeq Library Kit 2.0	Reagents for manual library preparation	4475345
Ion AmpliSeq Kit for Chef DL8	Reagents for automated library preparation	A29024
Ion AmpliSeq Library Kit Plus	Reagents for manual library preparation using Ion AmpliSeq On-Demand Panels	4488990
Ion AmpliSeq HD Library Kit	Reagents for library preparation using Ion AmpliSeq HD panels	A37694
Ion AmpliSeq HD Dual Barcode Kit 1-24	Set of 24 unique barcode adapters, enabling multiplexing of amplicon library samples	A37695
Template preparation		
Ion Chef Instrument	Automates template preparation and Ion AmpliSeq library preparation	4484177
Ion 550 Kit-Chef	Prepackaged template and sequencing reagent cartridges with integrated sample tracking; for use with Ion 550 Chip Kit	A34541
Ion 540 Kit-Chef	Prepackaged template and sequencing reagent cartridges with integrated sample tracking; for use with Ion 540 Chip Kit	A30011
Ion 510 & Ion 520 & Ion 530 Kit-Chef	Prepackaged template and sequencing reagent cartridges with integrated sample tracking; for use with Ion 530 Chip Kit	A34461
Next-generation sequencing		
Ion GeneStudio S5 System	NGS instrument	A38196
Ion GeneStudio S5 Plus System		A38195
Ion GeneStudio S5 Prime System		A38194
Ion 550 Chip Kit	8 barcoded chips for sample tracking and sequencing, generating 100–130 million reads	A34538
Ion 540 Chip Kit	8 barcoded chips for sample tracking and sequencing, generating 60–80 million reads	A27766
Ion 530 Chip Kit	8 barcoded chips for sample tracking and sequencing, generating 15–20 million reads	A27764
Variant caller and data analytics		
Oncomine Knowledgebase Reporter Software	Genomic analysis software tool that enables customizable reports for oncology clinical research	A34298
Ion Reporter Software	NGS informatics tool with predefined workflows to automate variant analysis and annotation	4487118

Learn more about Ion AmpliSeq HD solutions for ultrahigh sensitivity at **thermofisher.com/ampliseqhd**

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