

iontorrent



Ion S5 and Ion S5 XL Systems

Targeted sequencing has never
been simpler

ThermoFisher
SCIENTIFIC

Explore the Ion S5 and Ion S5 XL Systems

Adopting next-generation sequencing (NGS)
in your lab is now simpler than ever

The Ion S5™ and Ion S5™ XL Systems provide the simplest DNA-to-data workflow for targeted sequencing with industry-leading speed and affordability. This allows you to spend less time doing repetitive lab work, and more time answering the critical questions in your research.

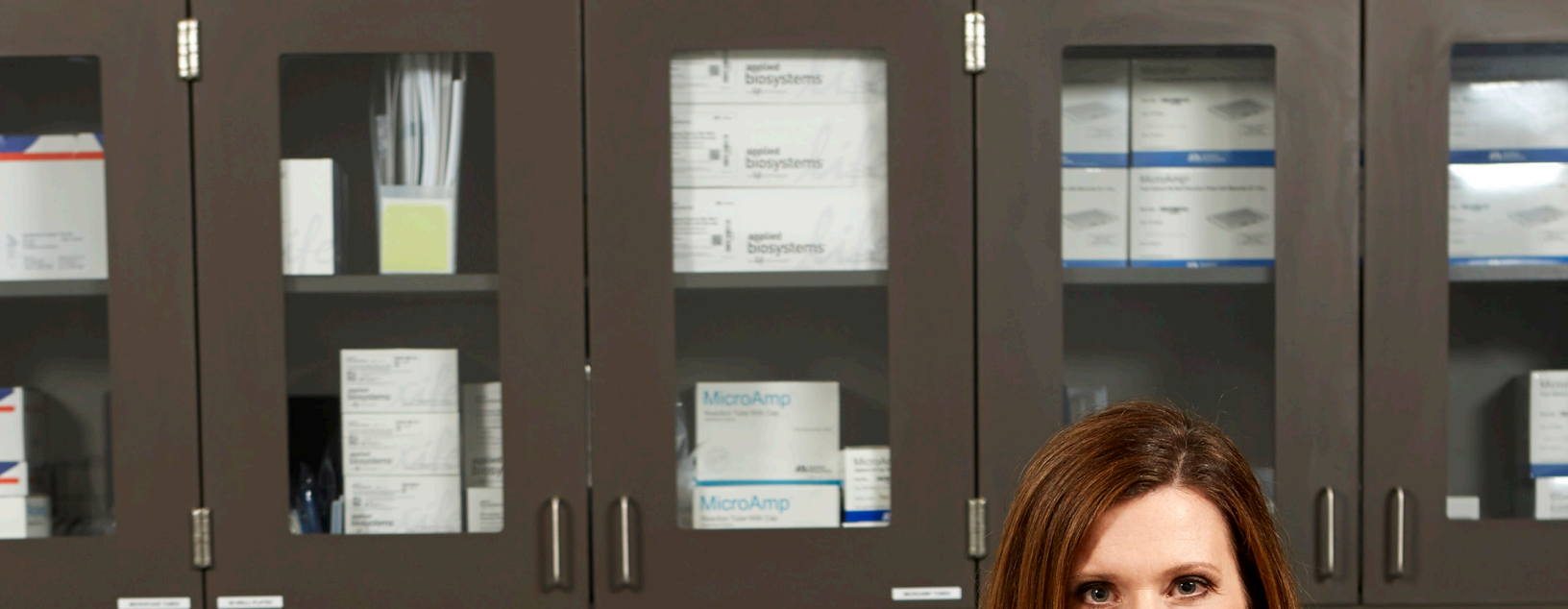
Want to sequence small gene panels or bacterial genomes on Monday, and exomes or transcriptomes on Wednesday? Ion S5 and Ion S5 XL Systems let you leverage a single benchtop instrument that scales to your application and throughput needs.

Ion Torrent™ technology has been referenced in over 3,300 publications to date. Now you can drive your research forward using this highly cited technology with the latest innovation in leading-edge benchtop NGS: the Ion S5 and Ion S5 XL Systems.

Ion S5 Systems

- **Ion S5 System**—simple workflow, fast sequencing, lower weekly throughput
- **Ion S5 XL System**—simple workflow, faster data analysis, higher weekly throughput





“That’s it? That’s all I have to do?
This is really easy to set up.”

Susana Häggqvist

Research Engineer

Uppsala Genome Center, Sweden



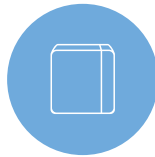
The S is for Simplicity

Ready. Set. Sequence.

The Ion S5 and Ion S5 XL Systems come with load-and-go reagents and a straightforward user interface, so you can set up the sequencer in less than 15 minutes of hands-on time.

You can also track your consumables with ease and accuracy with the automated radio frequency identification (RFID) tracking feature of the systems.

By adding an Ion Chef™ System to your lab, you can benefit from automated library and template preparation, so you can go from DNA to data in less than 45 minutes of total hands-on time.



Cartridge-based reagents

Less than 15 minutes of sequencing setup time



Ion Chef System

30 minutes of hands-on time for library and template prep



Automated tracking of consumables

Easy and accurate RFID tracking

The S is for Scalability

Single sequencer. Multiple applications.

Focus your efforts on applications that have the potential to be impactful.

Each Ion S5 and Ion S5 XL System currently supports four different chip types that scale to various levels of sample throughput, enabling a wide range of research applications. Select from various Ion chips for a throughput range of 2 to 80 million reads per run using just one instrument.

This flexibility also means reduced need for sample batching to achieve optimum cost efficiency. Just select the chip type that matches your specific throughput or application needs.

“I need to be able to vary the number and type of samples I put onto a run in any given week, but not compromise on cost per sample. If we have a lower number of samples we can run them on the smaller throughput chips. The Ion S5 XL (System) offers this flexibility.”

Dr. Jean-François Laes

Chief Technology Officer
OncoDNA, Belgium



Cancer research



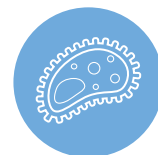
Gene expression



Inherited disease
research







Reproductive
health



Infectious disease
research

Choosing the right chip type for your throughput and application

		Number of samples per run**			
Example of our popular panels and applications	Panel description				
		Ion 510 Chip	Ion 520 Chip	Ion 530 Chip	Ion 540 Chip
Ion AmpliSeq™ Cancer Hotspot Panel v2	Identify cancer hotspot SNVs from 10 ng of FFPE DNA	4	8	26	84
Ion Torrent™ OncoPrint™ Focus Assay	Identify solid tumor-relevant SNVs, indels, CNVs, and gene fusions from 52 genes, with a single workflow using FFPE samples	4	8	26	NA
Ion Torrent™ OncoPrint™ Comprehensive Assay v3	Enable biomarker discovery of SNVs and indels and full gene sequencing from 161 genes, with a single workflow using FFPE samples	NA	NA	NA	8
Ion Torrent™ OncoPrint™ Lung cfDNA Assay	Detect rare somatic mutations down to 0.1% in genes relevant to non-small cell lung cancer, using one tube of blood	NA	NA	6	24
Ion Torrent™ OncoPrint™ Immune Response Research Assay	Interrogate genes involved in immune response pathways, with a targeted gene expression assay	NA	4	8	NA
Ion Total RNA-Seq Kit v2	Analyze the whole transcriptome with strand-specific RNA sequencing	NA	NA	NA	2
Ion AmpliSeq™ Transcriptome Human Gene Expression Kit	Research global gene expression levels from 10 ng of FFPE RNA	NA	NA	2	8
Ion AmpliSeq™ Exome RDY Panel	Discover SNPs, indels, and CNVs for research on rare or unknown disorders, by whole-exome sequencing	NA	NA	NA	2
Ion AmpliSeq™ Pharmacogenomics Research Panel (40 genes)*	Investigate known variants associated with drug metabolism	48	96	384	384
Ion AmpliSeq™ On-Demand Panel (up to 300 genes)	Discover variants in the most relevant genes in inherited disease research	Up to 384 (varies by number of genes in the panel)			
Ion ReproSeq™ PGS on Ion S5™ System	Detect aneuploidy using DNA from single or multiple cells biopsied from preimplantation embryos	16	24	96	NA
Ion AmpliSeq™ TB Research Panel	Assess known variants associated with antibiotic resistance	48	84	272	384
Ion AmpliSeq™ Ebola Research Panel	Identify the presence of Ebola virus quickly, accurately, and cost-effectively	48	84	272	384
Ion 16S™ Metagenomics Kit	Identify bacterial species in mixed samples	24	48	192	NA

* Assuming 400x coverage.

** The number of samples per run/chip serves as a guide, and the actual number of samples loaded will depend on your needs for number of reads and depth of coverage. It is important to note that as the number of libraries per chip increases, it becomes more difficult to balance the reads between libraries. In addition, libraries from FFPE tissue tend to produce more variable results. We suggest combining fewer libraries initially and determining real limits empirically.

The S is for Speed

Because every hour counts.

A few hours could make all the difference in your quest for the right answer.

Unlike light-based sequencers, there are no cumbersome optics or labeled nucleotides with semiconductor sequencing technology. The Ion S5 Systems are the only benchtop NGS platforms with run times as short as 2.5 hours, and rapid DNA-to-data workflows that can be completed in as little as 24 hours.



Sequencing run times of 2.5–4 hours

DNA to data in as little as
24 hours



The S is for

Small sample input

Because every sample matters.

Explore complex pathways with your low-input or degraded samples with Ion AmpliSeq™ technology, which enables you to prepare libraries from just a few nanograms of low-quality DNA or RNA.

Cited by hundreds of publications in just four years—you can count on this highly referenced technology for consistent and robust library preparation.



**As little as 1 ng of
DNA or RNA**

For low-quality,
low-input samples



The S is for

Simple data analysis and storage

Go from data to variants in a few clicks.

Whether you are new to NGS or an experienced user, Torrent Suite™ Software and Ion Reporter™ Software make it easy for you to get started with NGS.



Primary analysis: Torrent Suite Software

- Easily plan, monitor, track, and analyze your runs using the web-based interface
- Conduct raw data analysis, alignment, and variant calling with optimized plug-ins

Secondary analysis: Ion Reporter Software

- Integrate, annotate, and interpret variants
- Cloud or on-site options available to meet your needs

Data storage

- Securely store and retrieve sequencing runs and data using Torrent Storage™ NAS Devices and/or Ion Torrent™ DataSafe™ Solutions

The S is for Ion S5 Systems



Simple, scalable, and rapid workflow for panels, microbes, exomes, and transcriptomes

		Ion S5 System				Ion S5 XL System			
		Ion 510 Chip [†]	Ion 520 Chip	Ion 530 Chip	Ion 540 Chip	Ion 510 Chip [†]	Ion 520 Chip	Ion 530 Chip	Ion 540 Chip
Reads		2–3 million	4–6 million	15–20 million	60–80 million	2–3 million	4–6 million	15–20 million	60–80 million
Output*	200 bp	0.3–0.5 Gb	0.6–1 Gb	3–4 Gb	10–15 Gb	0.3–0.5 Gb	0.6–1 Gb	3–4 Gb	10–15 Gb
	400 bp	0.6–1 Gb	1.2–2 Gb	6–8 Gb	—	0.6–1 Gb	1.2–2 Gb	6–8 Gb	—
Run time	200 bp	2.5 hr	2.5 hr	2.5 hr	2.5 hr	2.5 hr	2.5 hr	2.5 hr	2.5 hr
	400 bp	4 hr	4 hr	4 hr	—	4 hr	4 hr	4 hr	—
Analysis time**	200 bp	2 hr	5 hr	8 hr	16.5 hr	0.5 hr	1 hr	2.5 hr	5 hr
	400 bp	6.5 hr	8 hr	17.5 hr	—	0.5 hr	2 hr	4 hr	—

Long-read sequencing for research applications such as human leukocyte antigen (HLA) typing or metagenomic analysis

		Ion S5 System				Ion S5 XL System			
		Ion 510 Chip ^{††}	Ion 520 Chip	Ion 530 Chip	Ion 540 Chip ^{††}	Ion 510 Chip ^{††}	Ion 520 Chip	Ion 530 Chip	Ion 540 Chip ^{††}
Reads		—	3–4 million	9–12 million	—	—	3–4 million	9–12 million	—
Output*	600 bp	—	0.5–1.5 Gb	1.5–4.5 Gb	—	—	0.5–1.5 Gb	1.5–4.5 Gb	—
Run time	600 bp	—	4 hr	4 hr	—	—	4 hr	4 hr	—
Analysis time**	600 bp	—	8 hr	17 hr	—	—	2.5 hr	4.5 hr	—

* Expected output with >99% aligned or measured accuracy. Output dependent on read length and application.

** Analysis time to aligned BAM files.

† Ion 510 Chip is only compatible with the Ion Chef System workflow for template preparation. The Ion 510 Chip is not enabled for the Ion OneTouch™ 2 System template preparation workflow.

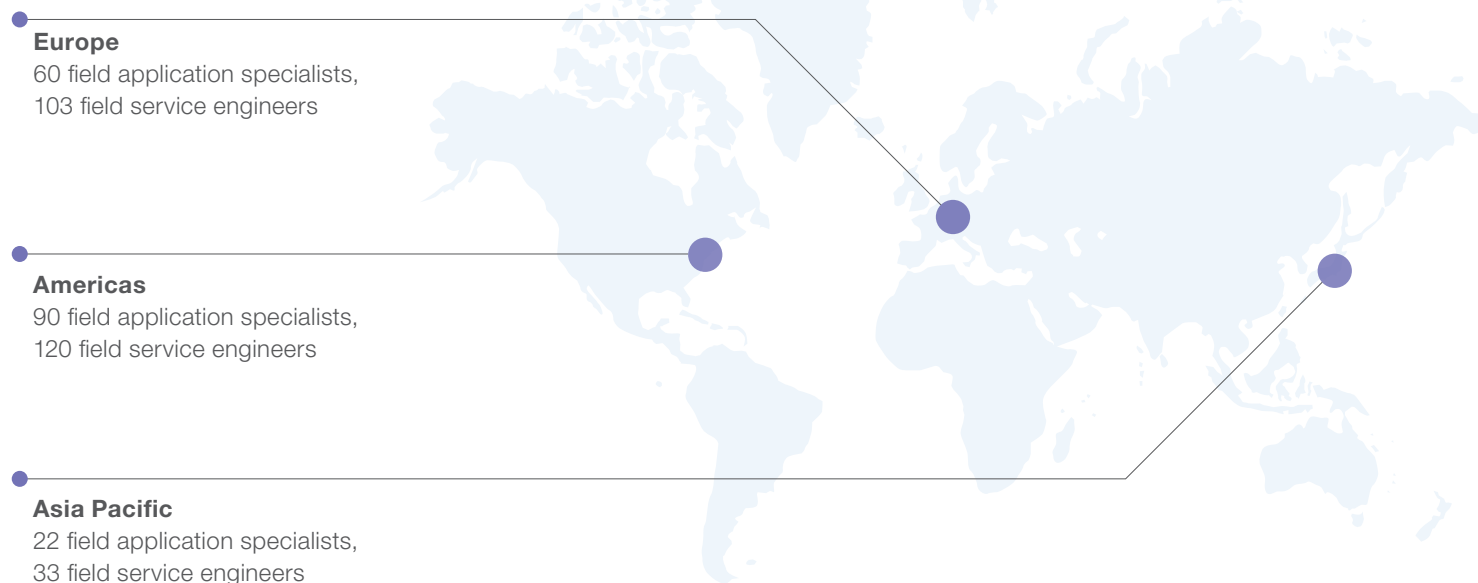
†† 600 bp sequencing is not enabled for Ion 510 Chip and Ion 540 Chip.

Service and support

We are here to help.

With more than 3,700 global sales, service, and technical support specialists available to assist you in person, by phone, or online, you can be confident that we will be there when and where you need us most.

We invite you to start sequencing with the Ion S5 and Ion S5 XL Systems, based on technology adopted by your peers and supported by our scientists.



Start your sequencing journey at thermofisher.com/ions5

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