ion torrent

Ion S5 and Ion S5 XL Systems

Targeted sequencing has never been simpler

ThermoFisher SCIENTIFIC

Explore the Ion S5 and Ion S5 XL Systems

Now, adopting next-generation sequencing (NGS) in your lab is 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 2,500 publications in the first four years since its introduction. 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


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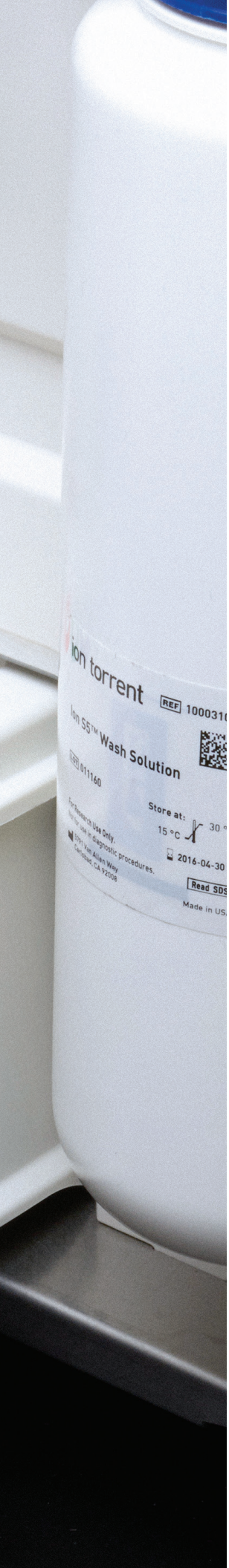
Semiconductor Sequencer
iontorrent
by Thermo Fisher Scientific

“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 with 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 with 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 consumable tracking

Easy and accurate RFID tracking

The S is for

Scalability

Single sequencer. Multiple applications.

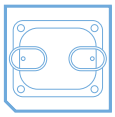
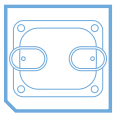
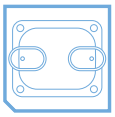
Focus your efforts on applications that have the potential to be impactful.

Each Ion S5 and Ion S5 XL System currently supports three different chip types, so you can run multiple applications on a single sequencer. This flexibility also means no more batching of samples to achieve the 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

Research area
Cancer research
Inherited disease research
Screening for aneuploidy detection
Infectious disease research

Application	Examples of popular panels	Number of samples per run		
		 Ion 520™ Chip	 Ion 530™ Chip	 Ion 540™ Chip
Identify tumor-specific genomic alterations from 10 ng FFPE DNA	Ion AmpliSeq™ Cancer Hotspot Panel v2 (50 genes)*	16	48	96
Detect hotspots, SNVs, indels, CNVs, and gene fusions in a single run	Ion Torrent™ Oncomine™ Focus Assay (52 genes)	6	12	48
Detect hotspots, SNVs, indels, CNVs, and gene fusions in a single run	Ion Torrent™ Oncomine™ Comprehensive Assay (143 genes)	1	4	8
Research global gene expression levels from 10 ng of FFPE RNA	Ion AmpliSeq™ Transcriptome Human Gene Expression Kit	–	2	8
Investigate known variants associated with drug metabolism	Ion AmpliSeq™ Pharmacogenomics Research Panel (40 genes)**	96	384	More than 384†
Examine causal variants for research of specific disease pathways	Ion AmpliSeq™ Cardiovascular Research Panel (424 genes)‡	2	8	32
Discover SNPs, indels, and CNVs for research of rare or unknown disorders by whole-exome sequencing	Ion AmpliSeq™ Exome RDY Panel	–	–	2
High-throughput copy number and aneuploidy assessment	NA	24	96	384
Identify and type microbes through genome sequencing§	NA	12	48	96
Assess known variants associated with antibiotic resistance	Ion AmpliSeq™ TB Research Panel	36	144	384
Identify bacterial species in mixed samples	Ion 16S™ Metagenomics Kit	48	192	384

* Assuming 1,000x coverage.
** Assuming 400x coverage.
† Assuming availability of >384 barcodes.
‡ Assuming 175x coverage.
§ Assuming 5 Mb bacterial genome at 30x coverage. Assuming 400 bp for Ion 520/530 Chip and 200 bp for Ion 540 Chip.

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 other 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 little 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

"Speed is important for our service. But so is processing of 8–12 exomes a day without batching. Ion S5 XL (System) offers us both."

Dr. Sara Alvarez
Medical Director,
NIMGenetics, Spain

The S is for

Small sample input

Because every sample matters.

Explore complex pathways from 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 performance.

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:

- Plan, monitor, track, and analyze your runs in Torrent Suite Software

Secondary analysis:

- Integrate, annotate, and interpret variants in Ion Reporter Software
- Cloud or on-site options available based on your needs

Data storage:

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

The S is for

Ion S5 Systems

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

		Ion S5 System			Ion S5 XL System		
		Ion 520 Chip	**Ion 530 Chip**	**Ion 540 Chip**	**Ion 520 Chip**	**Ion 530 Chip**	**Ion 540 Chip**
Reads		3–5 million	15–20 million	60–80 million	3–5 million	15–20 million	60–80 million
Output*	**200 bp**	0.6–1 Gb	3–4 Gb	10–15 Gb	0.6–1 Gb	3–4 Gb	10–15 Gb
	400 bp	1.2–2 Gb	6-8 Gb	—	1.2–2 Gb	6-8 Gb	—
Run times	**200 bp**	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	—
Analysis time**	**200 bp**	5 hr	8 hr	16.5 hr	1 hr	2.5 hr	5 hr
	400 bp	8 hr	17.5 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 520 Chip	**Ion 530 Chip**	**Ion 540 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	**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/measured accuracy. Output dependent on read length and application.
** Analysis time to aligned BAM files.

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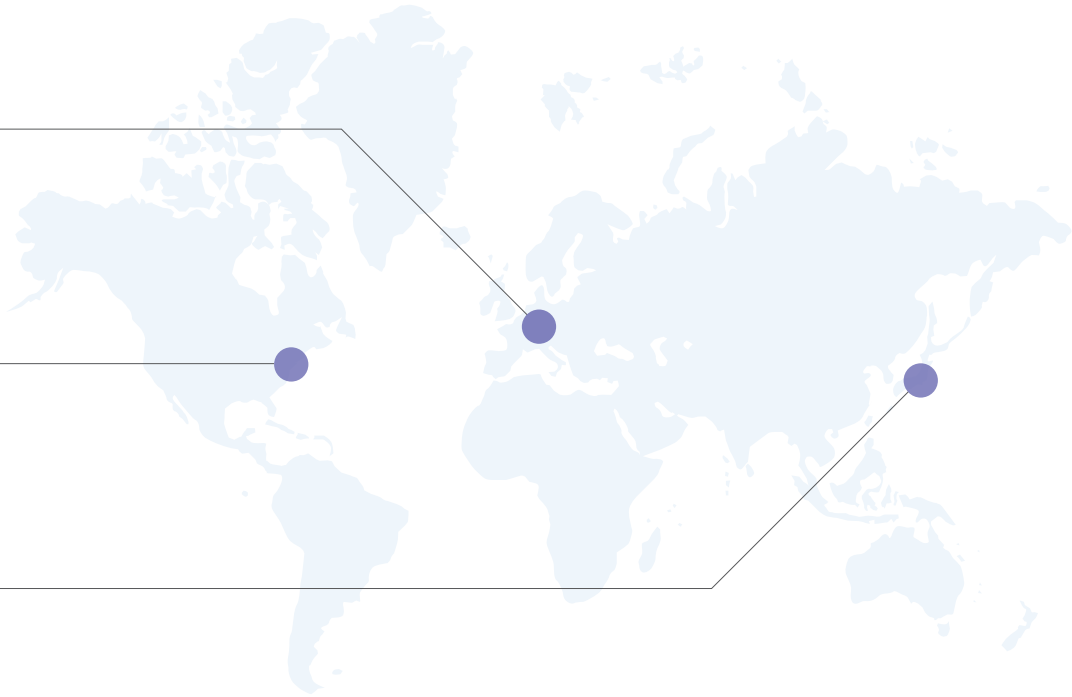
Service and support

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.



Europe
60 field application specialists,
103 field service engineers

Americas
90 field application specialists,
120 field service engineers

Asia-Pacific
22 field application specialists,
33 field service engineers

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