life
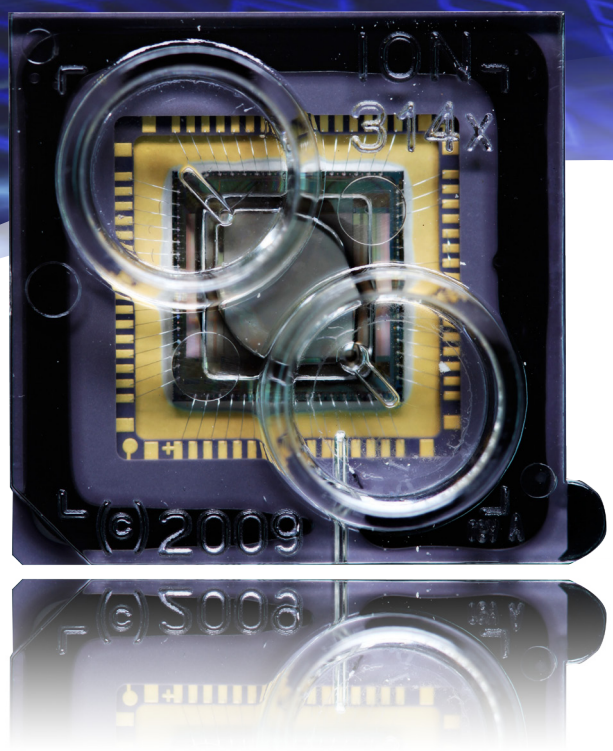
ion torrent
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by *life* technologies™
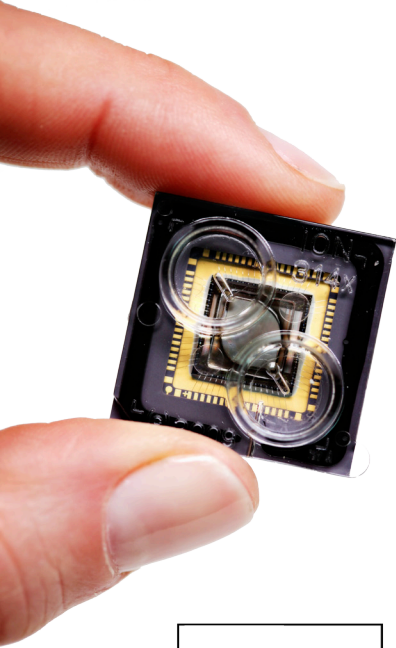
Ion Torrent
The Chip is the Machine

scalability
simplicity
speed
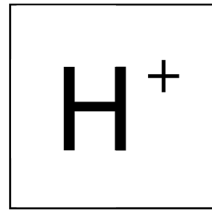
life technologies™

scalability

massively scalable semiconductor technology

simplicity

natural biochemistry, no optical components

speed

runs in about two hours, not days or weeks

discover Ion Torrent

The Ion Torrent Personal Genome Machine (PGM™) is simpler, more cost effective, and more scalable than any other sequencing technology. The **PGM™** sequencer is a bench top system utilizing ground breaking and disruptive semiconductor technology that enables **rapid** and **scalable** sequencing experiments.

Ion Torrent technology uses a massively parallel array of proprietary semiconductor sensors to perform direct **real time** measurement of the hydrogen ions produced during DNA replication. A high-density array of wells on the Ion semiconductor chips provide millions of individual reactors while integrated fluidics allow reagents to flow over the sensor array. This unique combination of fluidics, micromachining, and semiconductor technology enable the direct translation of genetic information (DNA) to digital information (DNA sequence) rapidly generating large quantities of high quality data.

The Personal Genome Machine along with Ion Torrent semiconductor chips, Ion Torrent reagent kits, and the Torrent Server / Torrent Suite software allow Ion Torrent to deliver a cutting edge sequencing solution.

discover scalability

Scales like a semiconductor
- Leverages $1 trillion semiconductor industry investment
- Scales by density: 40 cumulative years of Moore's Law
- Scales by volume: 400 standard semiconductor foundries from which to choose

discover simplicity

Simple chemistry
- Simplest sequencing chemistry: hydrogen ion detection (pH meter)
- Natural nucleotides: no enzymatic cascade, no fluorescence or no chemiluminescence
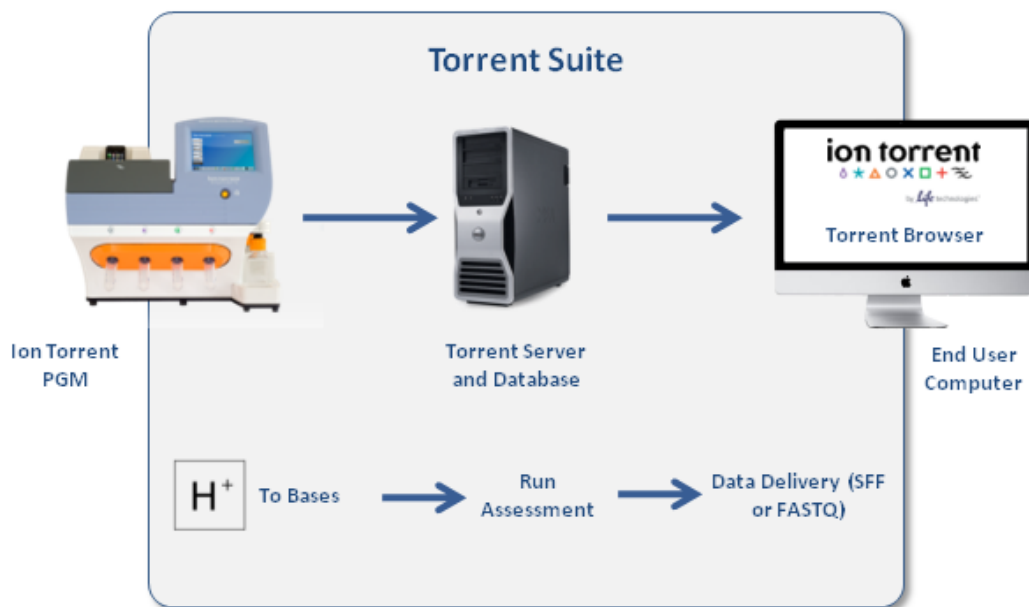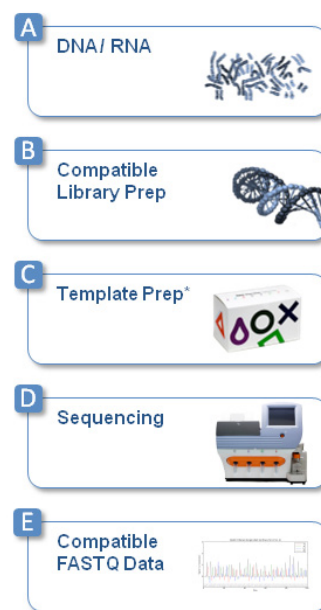- Low cost standard reagents

discover speed

Direct, real-time detection technology
- Makes sequencing accessible to new applications and markets
- Short run time supports fast research cycle and faster time to publication
- The Chip is the Machine™: no optics, no light, no scanning

sequencing and analysis pipeline

The Ion Torrent sequencing workflow consists of a number of standard elements — creation of a shotgun fragmented DNA or amplicon library, a simple PCR process creating amplified templates on proprietary Ion Sphere™ particles, followed by a sequencing run on the PGM™ platform.

With the completion of the PGM™ run, data automatically transfers to the dedicated Torrent Server that runs Torrent Suite software. Here raw ion signals are converted to base calls and stored in industry standard SFF or FASTQ files. These data can be processed by a variety of commercially available software packages for variant detection or denovo genome assembly.

A. DNA / RNA
B. Compatible Library Prep
C. Template Prep*
D. Sequencing
E. Compatible FASTQ Data

Torrent Suite

Ion Torrent PGM → Torrent Server and Database → End User Computer

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Torrent Browser

H^+ To Bases → Run Assessment → Data Delivery (SFF or FASTQ)

Ion 314 Sequencing Chip

Scale	1.3 million wells
Data Output	Starting at 10Mb of high-quality sequence*
Data Format	SFF/FASTQ file output
Reagents	Complete set of 314 reagents, including library, template, and sequencing kits
Applications	Sequencing or resequencing microbial genomes Targeted (amplicon) resequencing
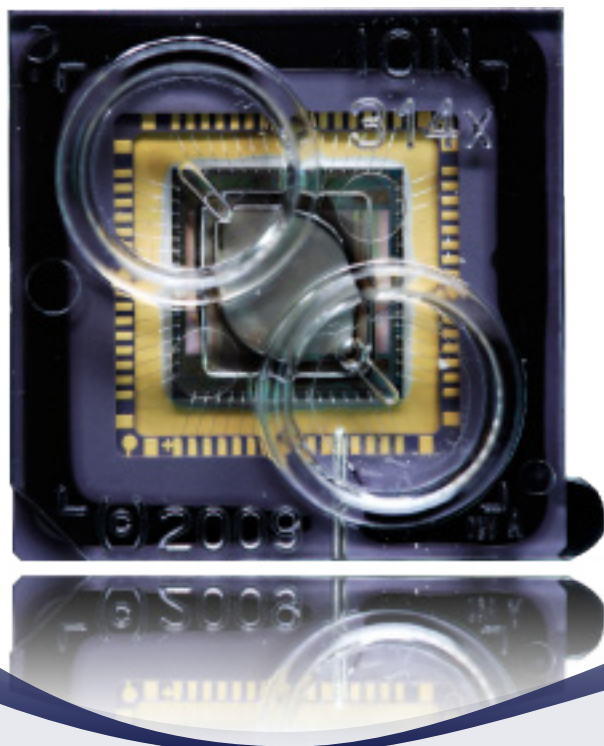
Ion Torrent Part Numbers

Personal Genome Machine

Ion PGM™ Sequencer	4462917
Service Contract	ZGEXSCIONPGMSYS ZG11SCIONPGMSYS
Torrent Server	4462918

Semiconductor Sequencing Chip

Ion 314 Chip Kit (8 Chips)	4462923

Reagent Kits

Ion Fragment Library Kit	4462907
Ion Template 314 Kit	4462908
Ion Sequencing 314 Kit	4462909
Ion Control Materials Kit	4462913

Contact

In North America, contact Ion Torrent at:
1-87-SEQUENCE (1-877-378-3623)

Outside of North America, contact Ion Torrent at:
+1-203-458-8552

www.iontorrent.com

* Throughput calculated with Escherichia coli DH10B genome, using Ion Sequencing 314 chemistry and a 100 bp read length PGM™ sequencer configuration.

13 January 2011
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