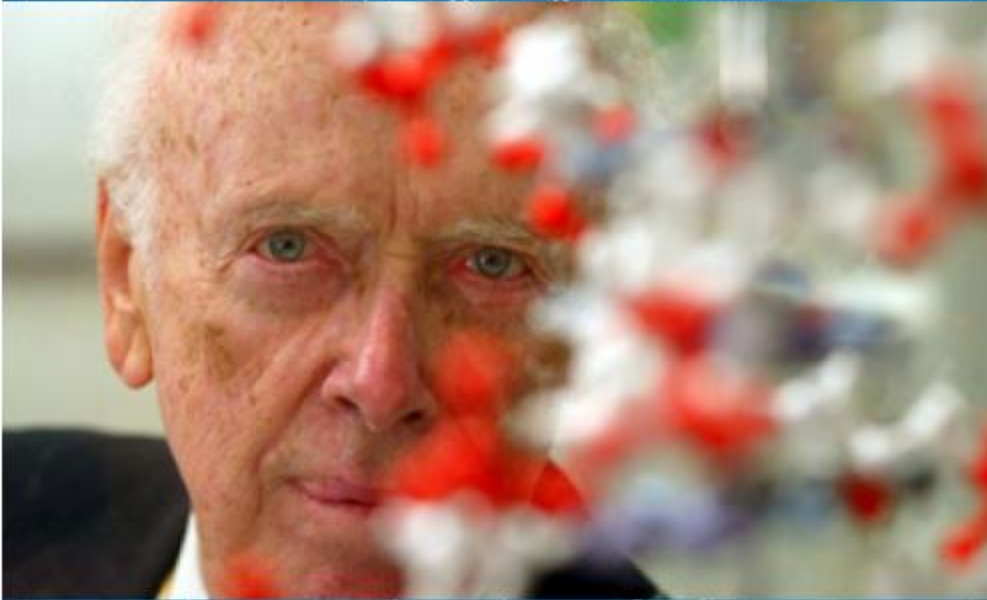
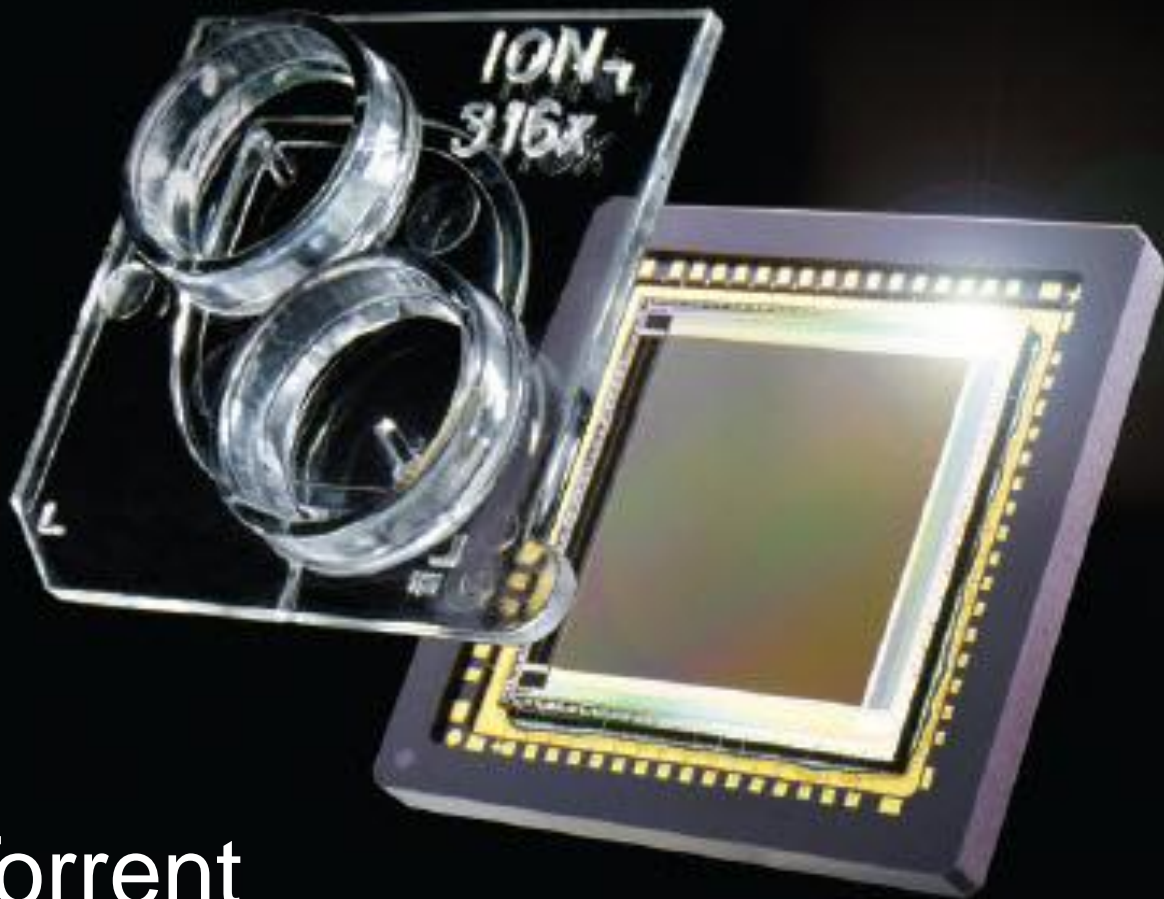


Watson Meets Moore



So what happens when Two billion years of evolution meets a trillion dollars of investment



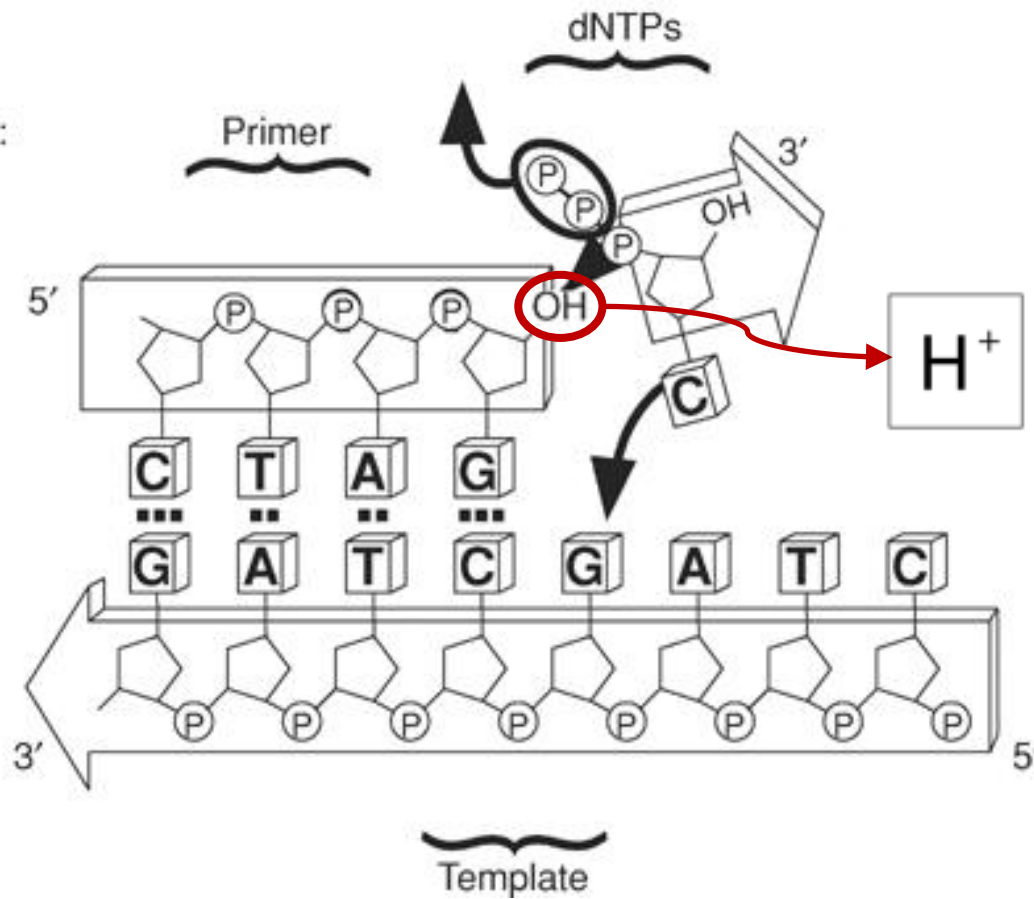
Ion Torrent

Semiconductor Sequencing for Life™

Simple Natural Chemistry



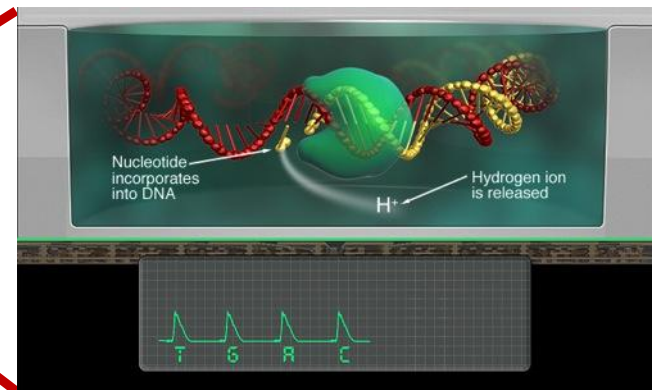
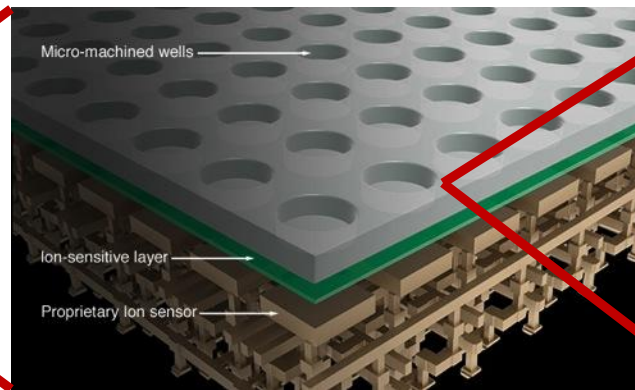
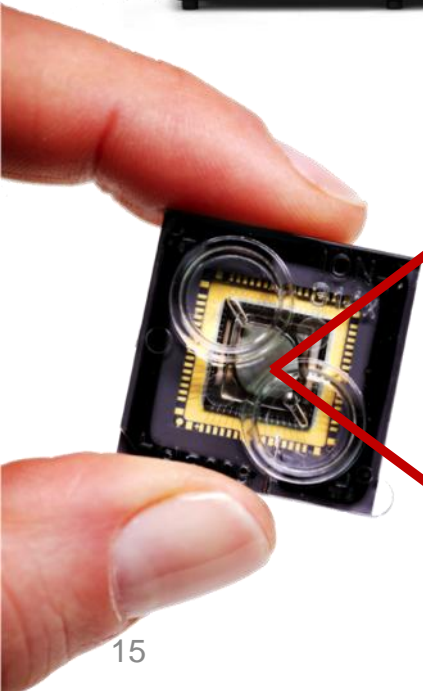
Example:



Ion Torrent Semiconductor Sequencing Technology

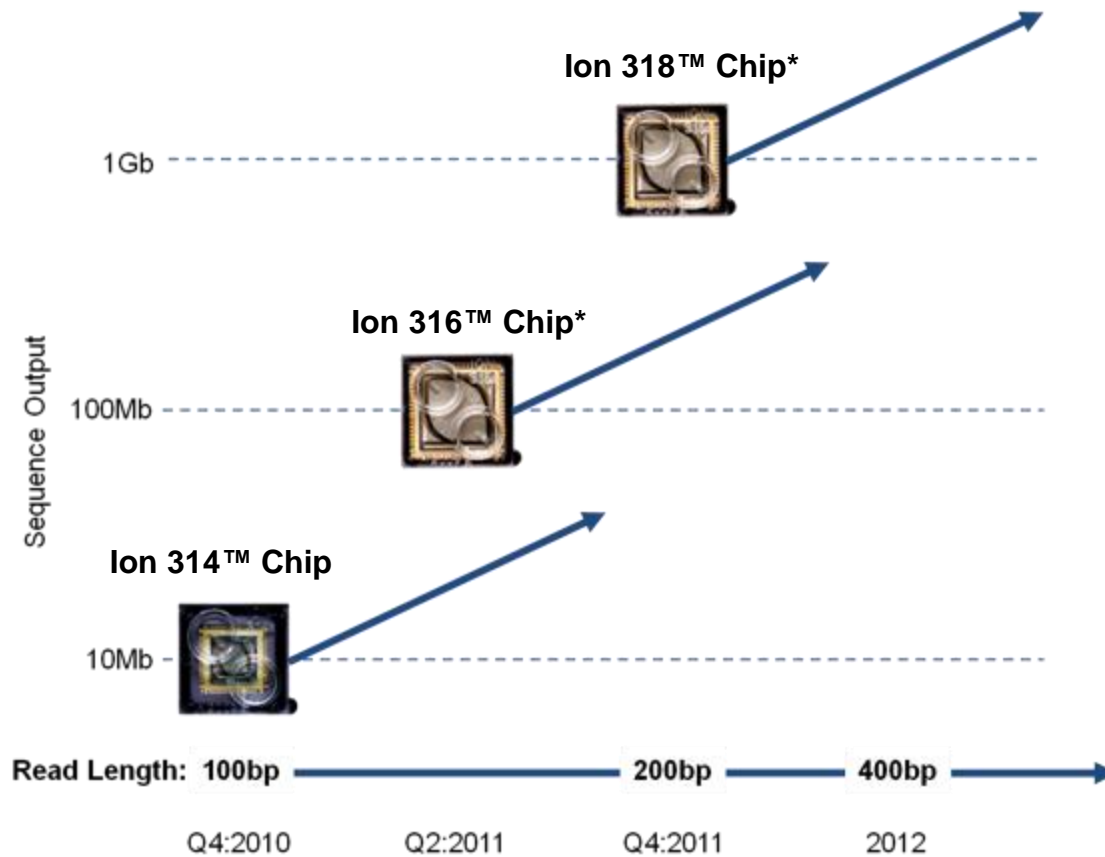


- ❑ ION Semiconductor Sequencing Chip
- ❑ Directly Translates Chemical to Digital information
- ❑ Desk top convenience, real-time sequence, semiconductor cost structure



Scalability

10Mb to 1Gb in one year (100x) — The Chip is the Machine™



*Some products have not yet been officially released and information about those products is subject to change without notice

Killer *E. coli* Outbreak in Germany

HOME PAGE TODAY'S PAPER VIDEO MOST POPULAR TIMES TOPICS SL

The New York Times

Europe

WORLD U.S. N.Y. / REGION BUSINESS TECHNOLOGY SCIENCE HEALTH SPORTS OPINION


AFRICA AMERICAS ASIA PACIFIC **EUROPE** MIDDLE EAST



sim·plic·ity n: automated sequencing term
Introducing the Ion OneTouch

Watch how it works >

Virulent *E. coli* Strain Spreads in Germany and Puzzles Health Officials



In Sequence

The Inside Read on Genome Sequencing

Home News Magazine Blogs Careers

Arrays Dx/PGx Informatics PCR Proteomics RNAi/miRNA

Home » News » In Sequence

Ion Torrent PGM Enables Rapid Identification of New Hybrid *E. coli* Strain in European Outbreak

June 03, 2011

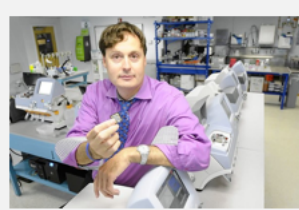
courant.com | ARTICLE COLLECTIONS

You are here: Courant.com > Collections > Dna

High-Speed Connecticut Technology Decodes Deadly *E. coli* Strain

Desktop Sequencer Developed At Ion Torrent In Guilford

June 02, 2011 | By WILLIAM WEIR, bweir@courant.com, The Hartford Courant



Richard Messina, Hartford Courant

The *E. coli* bacterium implicated in a deadly outbreak in Europe is a new, "super-toxic" strain never previously seen, but health officials know more about its genetic makeup because of new, high-speed technology developed by a Connecticut company.

"It really is a Frankenstein bacteria," said Jonathan Rothberg, founder of Ion Torrent in Guilford, which developed the sequencing machine that this week decoded the mutant bacterium's DNA.

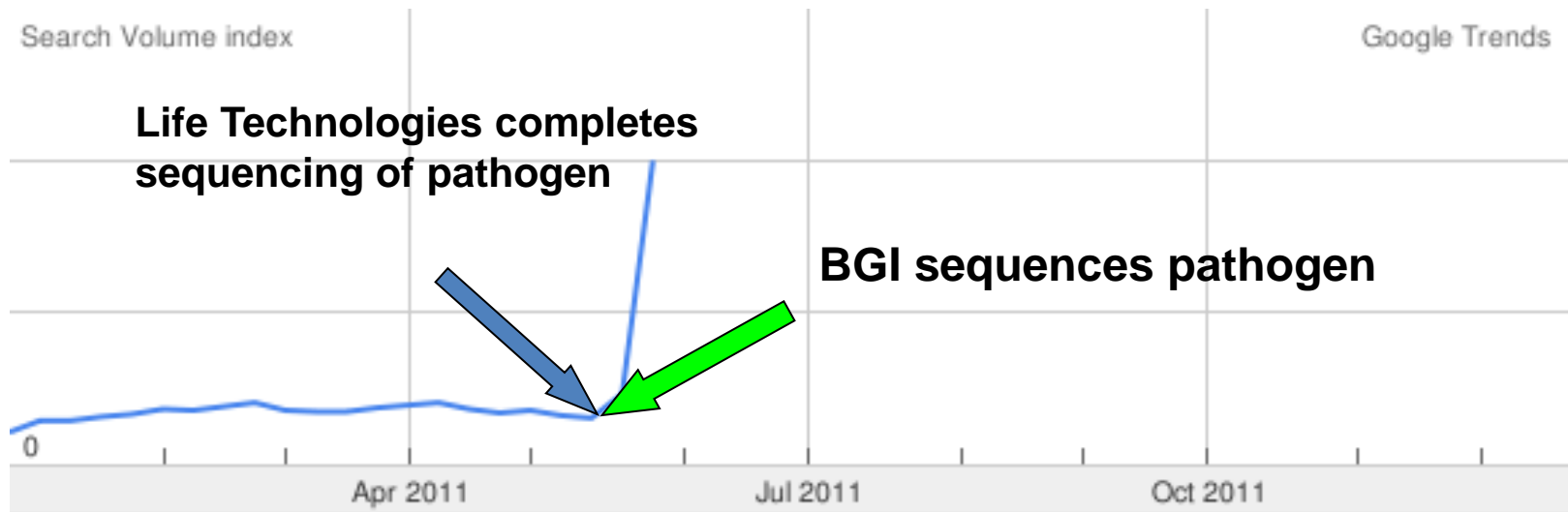
"It's a hybrid of other killer bacteria, a cross between two deadly strains," Rothberg said.

Scientists at two laboratories in Germany and one in China used the company's new Ion Personal Genome Machine to sequence the genome of the bacterium in a matter

of hours. Prior to the development of the sequencing technology, it would have taken days to decode the DNA.



Speed is of the Essence



Identify genetic markers and develop test ahead of the outbreak

Days from sample to sequence to diagnostic test

E. coli Outbreak Characterized using Ion PGM™ in 3 days

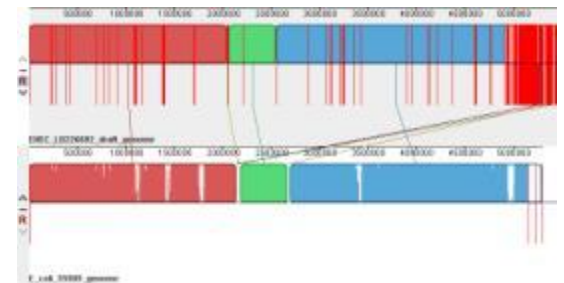
Rapid sequencing, de novo assembly & identification of novel microbial strains.

| | | |
|-----------------------------|---------------------|---|
| Monday May 30* | Library preparation | O104:H4 and HUSC41 samples (reference) strain libraries prepared |
| Tuesday May 31 | Sequencing runs | O104:H4 amplified and sequenced 2 x 2 runs (Ion 314) |
| Wednesday June 01 | Sequencing runs | O104:H4 sequenced 3 x 2 runs (Ion 314) |
| Thursday June 02 | Assembly | Draft Genome identified, Assembled, Submitted and Released from NCBI |
| Friday June 03 | Assay Design | TaqMan Assays Designed |

*May 22 CDC reports significant increase in patients with hemolytic uremic syndrome

E coli LB22692
draft assembly

E coli 55989
complete genome



Combating the Superbug *Klebsiella* Oxa-48

rivm
National Institute for Public Health and the Environment

Research for man and environment

Home Agenda Vacancies Contact Route Help 

Research Publications Search **Pressreleases**

Pressreleases / Pressreleases [printable version](#)

Pressreleases

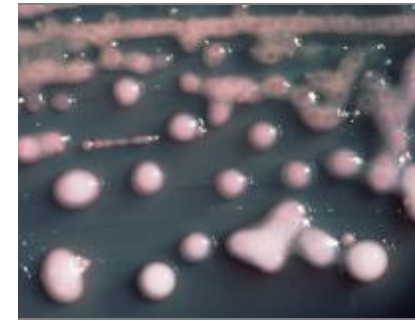
Combating the Superbug *Klebsiella* Oxa-48 Outbreak in a Dutch Hospital 15 August 2011

Over 80 patients have been infected with at Maastad hospital, Rotterdam in the Netherlands due to the outbreak of a multiple antibiotic-resistant bacterium named *Klebsiella pneumoniae* Oxa-48. The hospital has estimated that over 2000 people were at risk of being infected. The Dutch National Institute for Public Health and the Environment (RIVM) was asked to assist the hospital in containing the outbreak.

Experts at RIVM teamed up with scientists of the Medical Faculty of the University Münster (Germany), and bioinformaticans from Life Technologies Corporation (United States of America) and the Wellcome Trust Sanger Institute (United Kingdom) to develop a highly specific, and rapid molecular screening test to detect and prevent further spread of the superbug.

Hajo Grundmann, epidemiologist at the RIVM, coordinated this joint task force. "It was essential to quickly bring together the right people and resources, so that we were able to respond to the potential spread of this multi-resistant bacterium among patients in Dutch hospitals. We are especially pleased about the role of rapid whole genome sequencing of the outbreak strain," he explained.

Microbiologist Dag Harmsen from the Department of Periodontology at the University Münster led the team responsible for sequencing on an Ion Torrent PGM™. "When we first used the PGM™ during the German EHEC 2011 outbreak, this was just a proof of principle (PLoS ONE. 2011 6(7): e22751; PubMed). However, this time the rapid bacterial whole genome sequencing will make a difference for the protection of patients' health. The sequence data laid the ground for the development of a specific molecular test. That is a



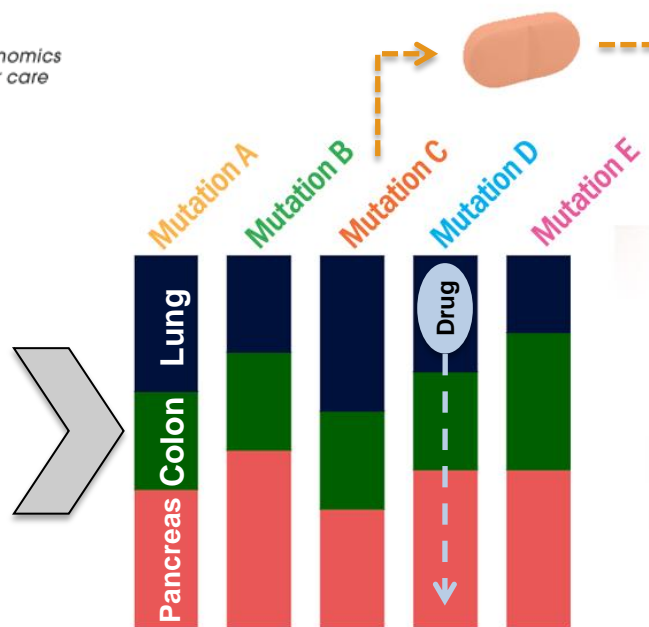
Genomic Medicine - Cancer

- Cancer: disease of DNA – mutations drive disease
- Classification based on molecular profiling data

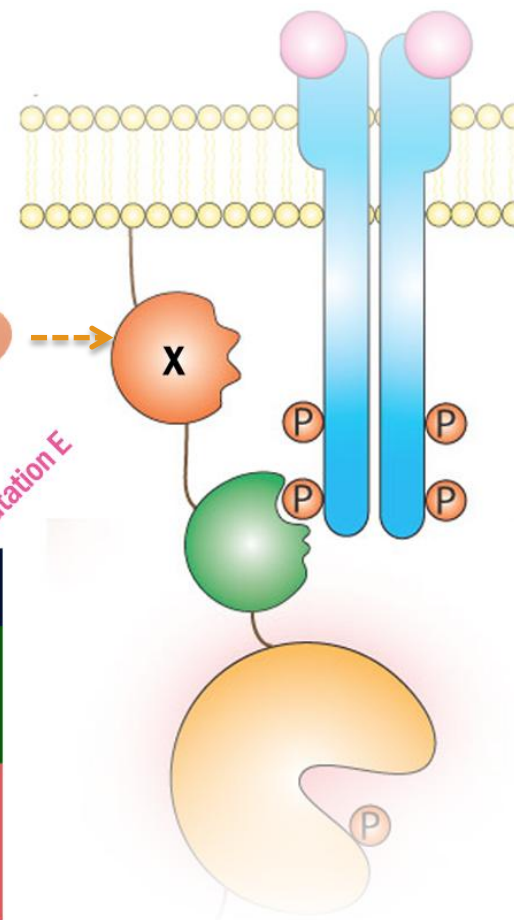
The Cancer Genome Atlas  Understanding genomics to improve cancer care



Anatomic Classification



Genomic Classification



Ion Community

A New Model Based on Collaboration



Operational Info

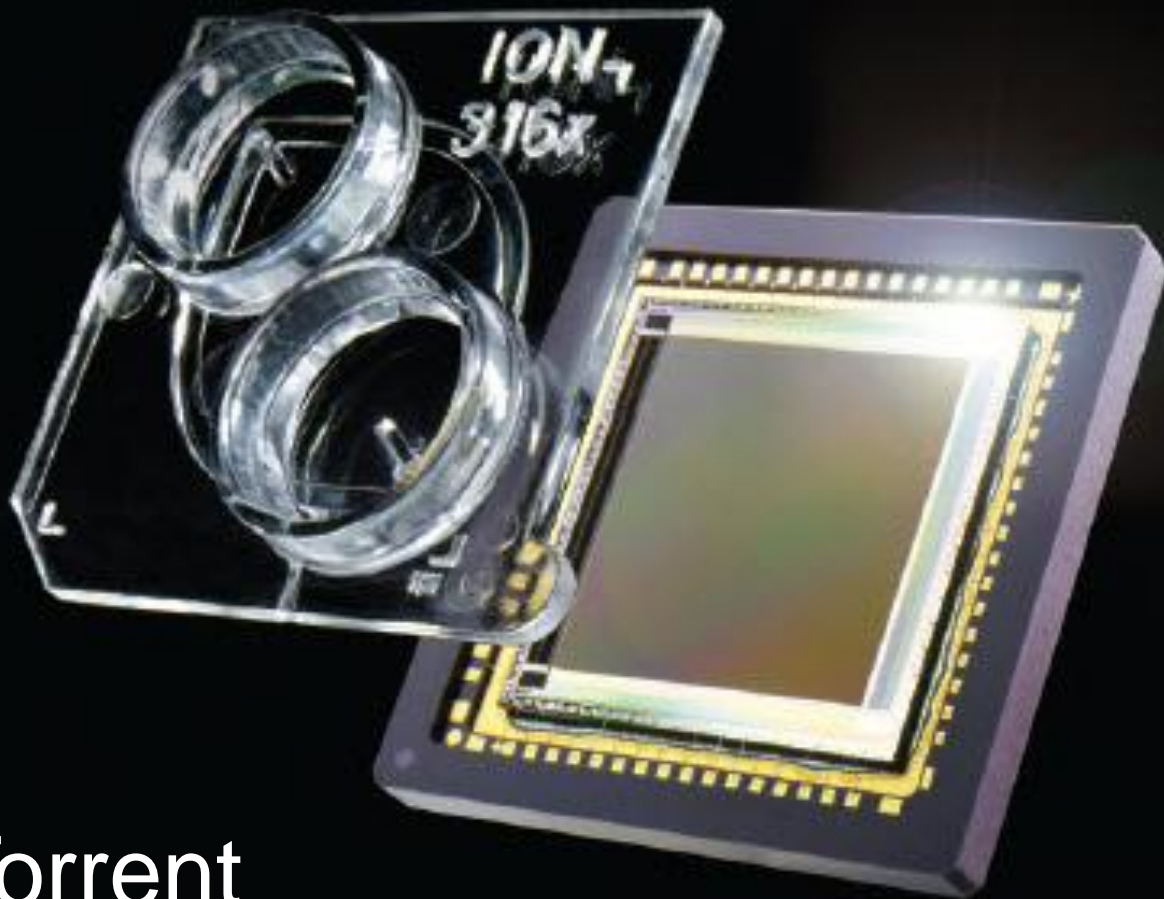
- User Guides
- Manuals
- Training

Developer Info

- New Protocols/Methods
- Bioinformatic Developers/Tools
- Partners

Grand Challenge





Ion Torrent

Semiconductor Sequencing for Life™