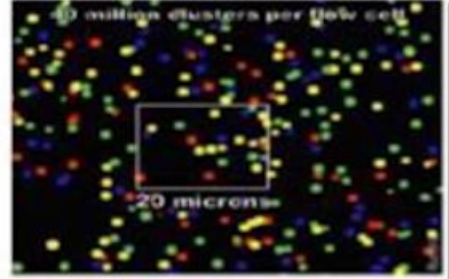

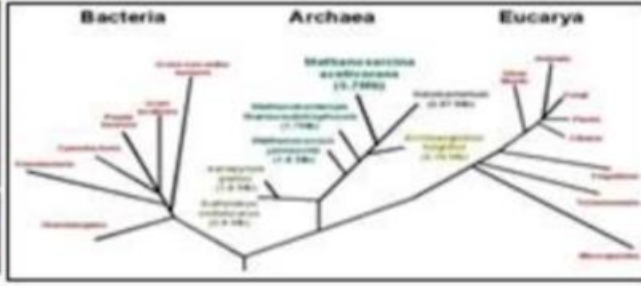

Supplementary Materials

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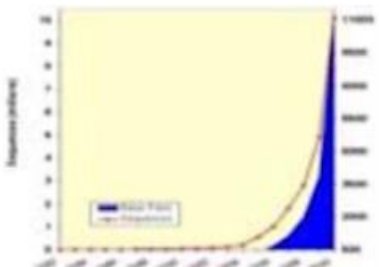
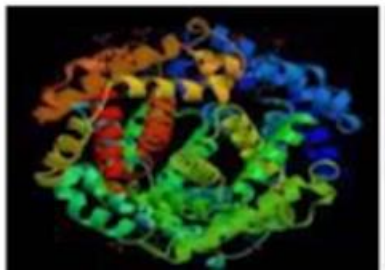
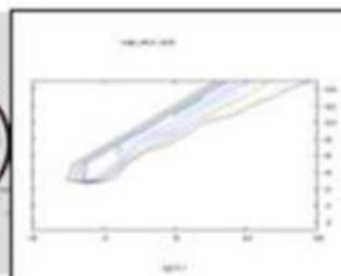
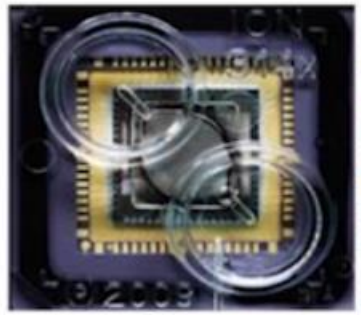
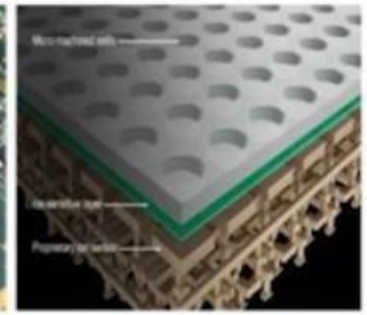


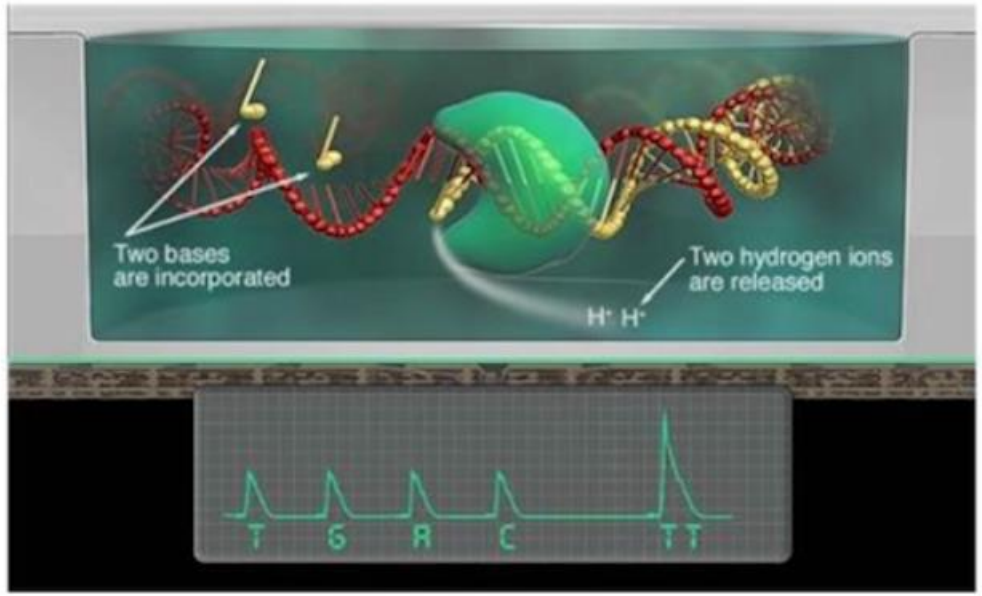




Introduction

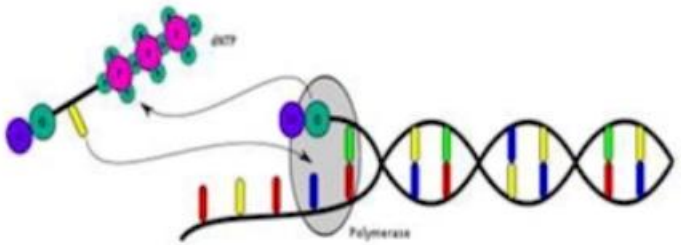




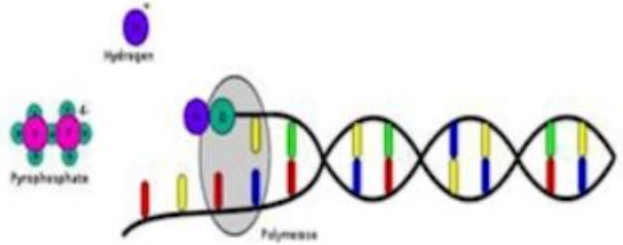


1. Detect H^+ released as a voltage change—fast
2. Common microchip design standards—low-cost

The principle of Ion PGM

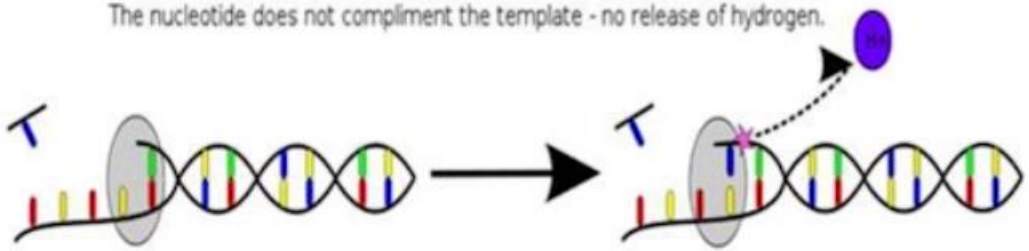


Polymerase integrates a nucleotide.

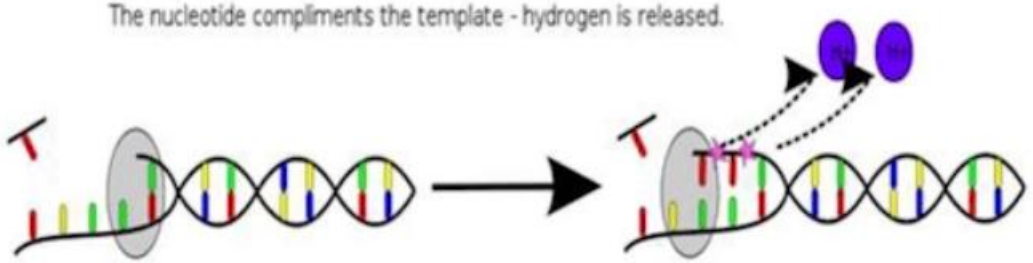


Hydrogen and pyrophosphate are released.

The nucleotide does not compliment the template - no release of hydrogen.



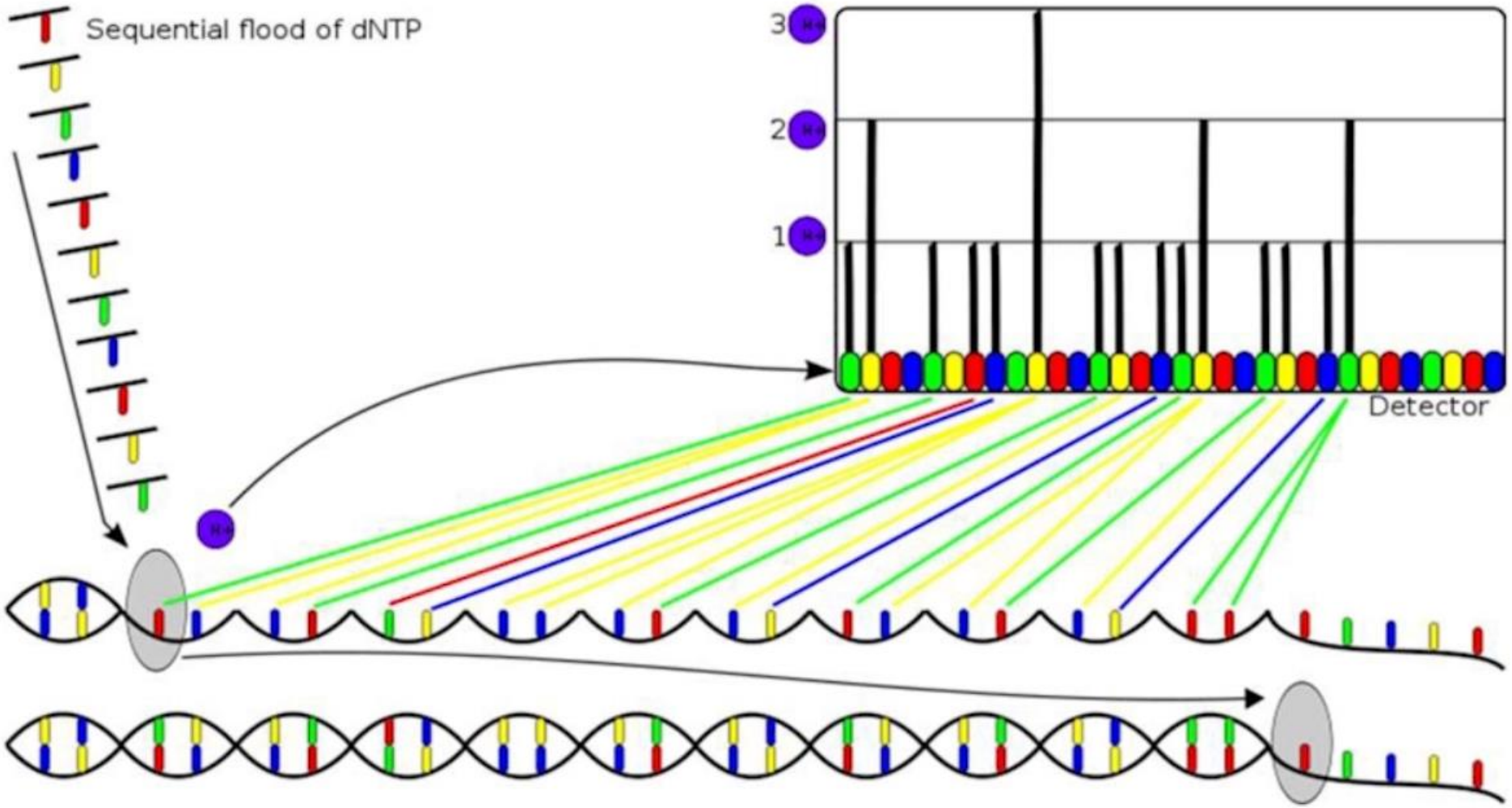
The nucleotide compliments the template - hydrogen is released.



The nucleotide compliments several bases in a row - multiple hydrogen ions are released.

http://en.wikipedia.org/wiki/Ion_semiconductor_sequencing

The principle of Ion PGM



http://en.wikipedia.org/wiki/Ion_semiconductor_sequencing

Ion Torrent sequencing workflow

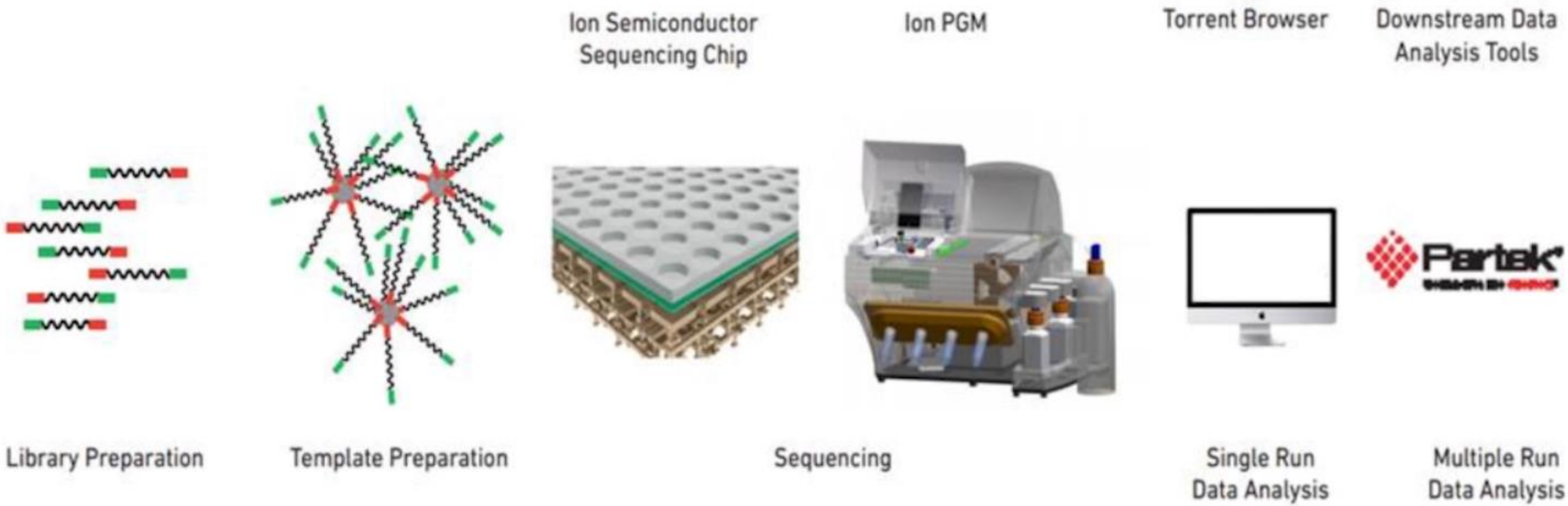


Figure 3. Schematic representation of the Ion Torrent sequencing workflow. A sequencing library is produced by generating DNA fragments flanked by the Ion Torrent sequencing adapters. These fragments are clonally amplified on the Ion Sphere™ particles by emulsion PCR. The Ion Sphere™ particles with the amplified template are then applied to the Ion Torrent chip and the chip is placed on the Ion PGM™. The sequencing run is set up on the Ion PGM™. Sequencing results are provided in standard file formats. Downstream data analysis can be performed using the DNA-Seq workflow of the Partek® Genomics Suite™.

From:http://ioncommunity.iontorrent.com/

Ion Torrent sequencing workflow

- For more detailed steps:
  - **Ion Torrent Semiconductor Sequencing**
  - https://vimeo.com/68069581
  - https://www.youtube.com/watch?v=MxkYa9XCvBQ