IBM Research Aims to Build Nanoscale DNA Sequencer (w/ Video)

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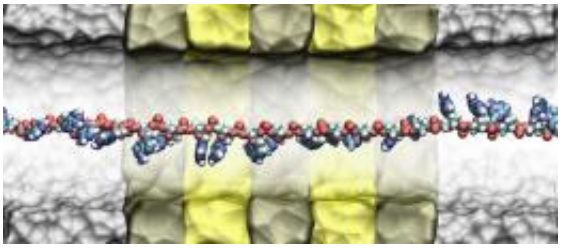

A cross section of IBM's DNA Transistor simulated on Blue Gene supercomputer showing a single stranded DNA moving in the midst of (invisible) water molecules through the nanopore. The DNA molecule, at the center of the pore, contain the bases A, C, G and T, that code of biological information necessary for life.

(PhysOrg.com) -- In an effort to build a nanoscale DNA sequencer, IBM scientists are drilling nano-sized holes in computer-like chips and passing DNA strands through them in order to read the information contained within their genetic code.

This advanced research effort to demonstrate a silicon-based “DNA Transistor” could help pave the way to read human DNA easily and quickly, generating advancements in health condition diagnosis and treatment. The challenge in the effort is to slow and control the motion of the DNA through the hole so the reader can accurately decode what is in the DNA. If successful, the project could improve throughput and reduce cost to achieve the vision of personalized genome analysis at a

cost of $100 to $1,000. In comparison, the first sequencing ever done by the Human Genome Project (HGP) cost $3 billion.

Having access to an individual's personal genetic code could advance personalized medicine by using genomic and molecular data to facilitate the discovery and clinical testing of new products, and help determine a person's predisposition to a particular disease or condition.

In the Fall of 2005, IBM revised its corporate privacy and equal opportunity policies to reflect the corporation's intention to handle information about an employee's genetics with a high regard for its privacy, and also to refrain from using genetic test information to discriminate against a person in the employment context. At that time, IBM was arguably the first company in the world to restrict genetic data from being used to make employment-related decisions.

On May 21, 2008, the United States signed into law the Genetic Information Nondiscrimination Act (GINA) that protects Americans against discrimination based on their genetic information when it comes to health insurance and employment. The bill passed the Senate unanimously and the House by a vote of 414 to 1. The long-awaited measure, which has been debated in Congress for 13 years, is helping to pave the way for people to take full advantage of the promise of personalized medicine without fear of discrimination.

Provided by IBM