What does cheap genome sequencing mean for the future of medicine?

The human genome has been heralded as the key to personalized medicine, but for the longest time complete sequencing of human genomes has been too expensive for everyday clinical use.

This led researchers on a search for cheaper ways to sequence DNA — with the goal of finding a way to sequence an entire human genome for under $1,000. Multiple companies have been striving toward this goal.

Some of these groups think the way to the $1,000 genome is through nanopores. These structures are tiny protein-based holes — built into a membrane — that the DNA strand is threaded through. Moving one letter of the genome at a time, the electrical conductivity of the DNA is read. Because each base of the DNA has a different size and shape, which changes the conductivity of the pore, this enables a sensor on the other side of the membrane to read the changes and identify the DNA sequence.

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