Nex-gen technologies expand sequencing options for doctors

Genetic data has gone the way of fast food: It's cheap, speedy, and widely available. And that's a good thing, because the sequence of bases—the As, Cs, Gs, and Ts that comprise DNA—contains a lot of information. Doctors can use that sequence to track changes in cancer cells as they mutate, researchers can use it to discover new disease-associated genes, and nonscientists can use it to divine their medical destiny. Next-gen sequencing machines make all that possible—and they use a couple of different technologies to get it right.

Illumina's machines can resolve a person's full genome for under \$1,000—an appealing combination for researchers who are combing our DNA for genes associated with various traits. The company is also the go-to choice of personal-genome companies like Gentle. The HiSeq X works by unzipping DNA helices and rebuilding one side with fluorescent-tagged bases that a special camera can see and count.

But doctors and genetic counselors looking for specific information—about a particular disease-causing mutation, say—don't always need the entire genome. The exome, which is the 1 percent of the genome that encodes proteins, is enough. The Thermo Fisher Ion Proton works with pH instead of light: When two complementary bases stick together, they throw off hydrogen ions, which register as a tiny increase in acidity.

Read full original article: How two different gene sequencers comb through DNA