Complete Genomics deciphers 14 human genomes

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Complete Genomics, a Mountain View, Calif., startup, has announced that it had deciphered 14 full human genomes for customers that include pharmaceutical giant Pfizer and leading medical research institutes, a significant step for an industry whose work could revolutionize health care.

"We probably doubled the known genomes in the world," said Clifford Reid, co-founder and CEO of Complete Genomics. "This is just the beginning. The real action starts later next year. Then you'll start to see important medical results come out."

Complete Genomics is among several companies that are generating excitement about the potential for DNA research. In Complete Genomics' case, the company says its technology and economies of scale have enabled it to cut the cost of sequencing a genome from about $250,000 to $4,000.

And executives at Pacific Biosciences, a Menlo Park, Calif., startup backed by $260 million in investments, are predicting that their genetic-sequencing technology will be delivered next year and could lead to advances that within a few years could turn genomic profiles into a standard part of a physical exam.

All life-forms carry a genome, a full strand of chromosomes that is a reflection of its hereditary traits. Deciphering, or "sequencing," a genome generates a vast amount of raw data that researchers are trying

to decode in a quest to understand how heredity influences various maladies. Reid said he expects the company to produce 10,000 sequenced genomes by the end of 2010, greatly enhancing the potential for meaningful discovery. "It's all about scale. Sequencing one human genome is a scientific curiosity," he said.

Complete Genomics offered no names or descriptive information about the persons whose genomes were sequenced. The genomes, Reid said, are being studied by customers to validate the company's technology and for small-scale studies of four types of cancer (breast, lung, colorectal and melanoma), HIV and schizophrenia, the companies said. In the cancer studies, Complete Genomics said, researchers are comparing patients' tumor genome with their noncancerous genome in search of variations that provide insights into the cause or spread of the disease.

The aim is to use this previously unavailable whole genome data to accurately characterize the tumor and identify its vulnerabilities, which in turn can be used to design more effective therapies. The customers include the Flanders Institute for Biotechnology, Duke University, Brigham & Women's Hospital, the HudsonAlpha Institute for Biotechnology, the Ontario Institute for Cancer Research, the Institute for Systems Biology and Broad Institute of MIT, and Harvard.

These are some of more than a dozen customers using Complete Genomics technology to conduct small pilot projects, each composed of five to 10 genomes, the company said.

Complete Genomics' technology has been tested and verified by Harvard researchers led by George M. Church, who has been a member of the company's scientific advisory board. In a press release, Church said, "Complete Genomics' technology can clearly deliver high-quality genomic data, which compare favorably with other published results, and at a low cost."