Complete Genomics | Powering large-scale human genome studies

For more information, contact:

Complete Genomics Inc.
Jennifer Turcotte
Vice President of Marketing
(650) 943-2846
jturcotte@completegenomics.com

Waggener Edstrom Worldwide Healthcare
Lisa Osborne
Account Director
(202) 261-7806
lisao@waggeneredstrom.com

Complete Genomics Demonstrates Its Technology's Potential by Sequencing 14 Human Genomes for Customers

Its high quality, low cost human genome sequencing technology is helping to further cancer, metabolic and neurologic disease research

MOUNTAIN VIEW, Calif. — Sept. 9, 2009 — Complete Genomics Inc., a third-generation human genome sequencing company, announced today that it has sequenced, analyzed and delivered 14 human genomes to customers since March 2009. Considering that fewer than 20 genomes have been sequenced and published in the world to date, this is a significant advance both for Complete Genomics and medical research.

Complete Genomics currently has more than a dozen customers using its high quality, low cost human genome sequencing technology to conduct small pilot projects, each comprised of five to 10 genomes. These customers represent a mix of academic research institutions and biopharmaceutical companies and include Pfizer, the Flanders Institute for Biotechnology (VIB), Duke University, Brigham & Women's Hospital, the HudsonAlpha Institute for Biotechnology, and the Ontario Institute for Cancer Research in addition to the previously announced Institute for Systems Biology and Broad Institute of MIT and Harvard. These customers have embraced Complete Genomics' unique business model which allows them simply to send DNA samples to the company and receive their requested genome data. Because customers do not need to purchase instruments or reagents, it greatly reduces the cost and complexity of sequencing complete human genomes.

Complete Genomics' customers are using the pilot projects to evaluate the company's technology and also to conduct small-scale disease studies to investigate conditions as diverse as cancer (breast, lung, colorectal and melanoma), HIV and schizophrenia.

In the cancer studies, researchers are comparing patients' tumor genome with their non-cancerous genome to identify variations that may provide insights into the cause or spread of their disease. The goal is to use this previously unavailable whole genome data to accurately characterize the tumor and identify its vulnerabilities. These data can then be used to design more effective therapies for patients.

Dr. George M. Church, professor of genetics at Harvard Medical School, director of the Center for Computational Genetics, and member of Complete Genomics' Scientific

Advisory Board, described his experience: “As part of the Personal Genome Project, we have had a single human genome sequenced by Complete Genomics. We have cross-validated Complete Genomics’ resulting data set, including a list of variants, to gauge its technical accuracy. I am pleased with the quality of the data provided. Complete Genomics’ technology can clearly deliver high quality genomic data, which compare favorably with other published results, and at a low cost. I look forward to continuing to work with the company as it scales up the process to sequence thousands of genomes next year.”

Complete Genomics’ Chairman, President and CEO Dr. Clifford Reid agreed: “It’s all about scale. Sequencing one human genome is a scientific curiosity. We need to sequence thousands of them to be able to make meaningful discoveries about the genetic basis of disease. To that end, Complete Genomics plans to sequence 10,000 human genomes in 2010.”

Added Reid, “While our commercial business will focus on high-volume human genome sequencing, which we will offer at a cost as low as $5,000 per 40x genome, we will also continue to conduct small specialty projects (minimum of eight genomes) at $20,000 per genome.”

Scaling Up

Complete Genomics is conducting its customer pilot projects using its existing R&D sequencing instruments. However, the company is also in the process of scaling up its genome center and transitioning to a commercial operation. After its commercial launch in January 2010, Complete Genomics will conduct much larger sequencing projects and employ new commercial-scale instruments that will be able to read well over one terabase (10^{12} bases) per run.

Complete Genomics will achieve this goal by increasing the efficiency of its technology on multiple levels. The company is building higher-density DNA nanoarrays (DNBs) that will contain 2.85 billion spots of DNA arranged in a grid with 70 bases per spot, allowing it to sequence an entire human genome on a single array. It is also developing new sequencing instruments that will be able to read the sequences from multiple DNA nanoarrays concurrently, thereby sequencing well over one terabase in a single run. These advances will dramatically increase the company’s sequencing throughput to one instrument-day per genome.

The company’s high volume genomic sequencing will naturally generate massive amounts of data, which will be managed and analyzed in its data center using its proprietary software on a high-performance computing cluster.

The key to Complete Genomics’ success is its sharp focus on providing only complete human genome sequencing in a massively-parallel process. By optimizing all of its systems for this one task, the company is strongly positioned to become the dominant supplier of large-scale human genomic data.

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About Complete Genomics

Founded in 2006, Complete Genomics is a California company that has developed a novel approach to sequencing human DNA that is revolutionizing the human genome sequencing industry. Complete Genomics combines its proprietary third-generation DNA sequencing technology with its high-performance computing capabilities to deliver low-cost, high-quality genomic data on an unprecedented scale. The company is currently building the world's largest human genome sequencing center. This development will allow academic and biopharmaceutical researchers, for the first time, to conduct large-scale complete human genome studies that will help identify the genetic underpinnings of complex diseases and drug responses. For additional information about the company, please visit http://www.completegenomics.com.

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