

Opportunity In Biotechnology: Searching For Identity

(NAPSA)—“Identity is such a crucial affair that one shouldn’t rush into it,” says award-winning science, nature and travel writer David Quammen.

Identity is “a crucial affair” in the world of biotechnology as scientists work to develop more effective medicine by identifying the differences in normal versus diseased cells using the approximately 20,000–25,000 different genes in the genetic code of humans.

The Opportunity of Identity

A key opportunity of gene identity is the ability to target diseases, a field known as personalized medicine. In 2008, biotechnology and pharmaceutical companies spent \$65.2 billion for drug development. Yet many drugs continue to fail, costing these companies millions of dollars and years of development time. Patients, physicians and drug developers are disappointed that the mapping of the human genome has not resulted in cures for many hard-to-treat diseases like cancer.

To improve results, pharmaceutical companies are looking to genomics to enable more comprehensive insight into gene identity in order to develop more successfully targeted medicines. This need has resulted in the formation of new companies and industry partnerships, and the acquisition of younger biotechnology companies with innovative technologies. (See table.)

Next-Generation Technology

To develop gene-based medicines, researchers study the differences in expression of genes in a normal versus a disease state using current genome analysis tools. Microarray technology is the dominant method used today to determine which genes are active in a given cell. However, microarray technology has limited sensi-

tivity, accuracy and dynamic range, capturing only 20–40 percent of the expressed genes and giving scientists only a partial view of the expression profile.

A second technology, real-time PCR (polymerase chain reaction), is a more sensitive and precise method to measure gene expression. However, it lacks the high-throughput capability and cost efficiencies of existing microarrays.

One new company with a next-generation platform for genome analysis is WaferGen Biosystems, headed by Alnoor Shivji, whose biography includes the co-founding, building and subsequent acquisitions of Fiberlane Communications (split into Cerent, and acquired by Cisco for \$6.9 billion, and Siara Systems, by Redback Networks for \$4.3 billion) and Cyras Systems, acquired by Ciena for \$1.5 billion. WaferGen is in the process of early commercialization of a platform designed to improve genome research results. Led by PCR pioneer David Gelfand, Ph.D., WaferGen scientists combined the microarray and real-time PCR technologies on a single platform to enable scientists to measure gene expression more precisely, with more sensitivity and accuracy AND with high-throughput capability and cost efficiencies.

The need for accurate, highly sensitive, high-throughput gene expression data by researchers, clinicians and pharmaceutical companies will drive the growth of the right drug for the right patient. As this market expands, companies like WaferGen that offer the most comprehensive comparison of biomarkers will succeed, leading to the reality of the much-promised personalized medicine.

For additional information, go to www.wafergen.com.

Recent Snapshot of Gene Analysis Companies and Industry Activity

Affymetrix	Pioneered microarray technology, used to measure gene expression	Founded 1992
BioTrove	Acquired by Life Technologies for an undisclosed amount	2009
Illumina	Introduced new type of microarray technology to measure gene expression	Founded 1998
Life Technologies	Merger of Applied Biosystems and Invitrogen	2008
NimbleGen	Acquired by Roche for \$376 million	2007
Solexa	Acquired by Illumina for \$539 million	2007
WaferGen	Introducing next-generation technology for high-throughput discovery and validation of gene expression patterns	Founded 2003