

Computer Giants Invest in Genomics

By James Heckman, LocalBusiness.com

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NEWS ANALYSIS CHICAGO, Dec. 28 (LocalBusiness.com) — Last year, the Human Genome Project unlocked the DNA code for 23 human chromosomes. Contained within are millions of potential genetic markers for the development of new drugs and other treatments for disease.

Making sense of all that data is the job of bioinformatics companies, and they need some heavy computing muscle to do it. Because of that need, high profile companies such as Motorola Inc., Compaq Computer Corp. and Sun Microsystems Inc. are setting up life sciences divisions and investing in bioinformatics companies to gain a foothold.

In five years, bioinformatics is expected to grow into a \$10 billion industry. This year alone it was expected to double to \$2 billion.

Era of the petabyte "The biggest commercial systems available today are 300 terabytes (1,000 gigabytes or trillions of bits of information)," said Sia Zadeh, group marketing manager, high performance computing at Sun (Nasdaq: SUNW) of Palo Alto, Calif. "We estimate that the size of computing power needed to fully analyze the human genome data will be measured in petabytes (1,000 terabytes). Those are massive storage requirements, so solution providers need to create an integrated stake with technology companies and work together."

Bioinformatics companies design tools and strategies to take the DNA sequencing data, either from the Human Genome Project or individual samples, and use computerized analysis to turn it into information that can be used in research.

At the most basic level, computers communicate in a series of ones and zeros - binary code.

A DNA strand, on the other hand, consists of a series of four types of molecules called nucleotides, or "base pairs," in effect a base four code.

The sequence of those base pairs contains instructions to build various proteins - which are then assembled into a living cell or organism.

Bioinformatics uses computers and electronics to read pieces of the genetic code and identify the function of specific genes. That information can then be used to develop new drugs or diagnostic tools.

Hwa Lim, president of D'Trends Inc. of San Ramon, Calif. actually coined the term "bioinformatics" in a journal article in 1987. His company works as a consultant with

bioinformatics and biotech companies to design software tools, databases and devices to analyze biological information.

"The DNA sequencing data from the human genome project contains a lot of information, which when used for diagnostic or therapeutic purposes, flows that data into certain areas," said Lim. "Bioinformatics is the study of the flow of that information in biologic systems."

Computer giants bring credibility and cash Investment from large computer companies provides a double benefit. The first is obviously the cash, especially considering today's anemic flow of capital to technology startups.

The second benefit is a boost in credibility. A bioinformatics startup can be seen as a shaky venture, a bioinformatics startup backed by IBM is not.

In late November, San Diego-based Structural Bioinformatics Inc. won the favor, and the investment dollars, of IBM Corp. (NYSE: IBM). The investment, terms of which were not disclosed, was the first for IBM's \$100 million life sciences investment fund. The fund was established in late August to help biotech and pharmaceutical companies process genetic data. Structural Bioinformatics is developing a protein modeling software.

"IBM provides access to technology with great storage capabilities," said Ed Maggio, president and CEO of Structural Bioinformatics Inc. "For instance, if we are to look at the flexibility of a protein, our cross-file could expand to many hundreds of megabytes. There are 100,000 proteins in the human genome so that's a lot of storage space required. In addition, scientists and potential customers for our data are concerned about security when transmitting over the Internet and IBM provides that."

The Role of the Internet

Sometimes the bioinformatics ventures are grown within the technology companies themselves.

SAS Institute Inc., a Cary, N.C.-based company that makes statistical analysis software, spun off a bioinformatics division into a company called iBiomatics, also based in Cary, N.C. The company creates Web portals for biotech and pharmaceutical companies to use as a management tool for genetic research.

The portals make worldwide research programs easier to manage. When a technology is sold or licensed, the biotech company gives the buyer passwords to an existing Web site rather than shipping truckloads of files.

"We take all these disparate data sources, collect it, clean it and annotate it for regulatory compliance," Scott Neuville, CEO of iBiomatics, told LocalBusiness.com. "We put all that information within a framework that a researcher or statistician can use. They log onto a Website and do collaborative research anywhere in the world."

Schaumburg, Ill.-based Motorola (NYSE: MOT) created a life sciences division two years ago to exploit an opportunity in biochips.

Biochips are electronic devices - about one inch square - that can detect the presence of several genes at once. This spring, the company plans to introduce their firms commercially available biochip, which is currently in beta testing.

"Motorola did a full evaluation two years ago of where the opportunities were to leverage Motorola technology in new fields," Nancy Schmelkin, director of marketing at Motorola Life Sciences, said. "What was happening in genomics made sense with Motorola's technologies and expertise in miniaturization and high output manufacturing."

Genomics VC Funds Emerging

Leading computer companies are not the only ones investing in the anticipated genomics revolution. This fall, Applied Genomic Technology Capital Funds LP of Cambridge, Mass., became the first venture capital fund dedicated to financing early-stage genomics application companies. The fund is trying to raise about \$150 million by the end of 2000.

Among the fund's backers is Compaq Computer Corp.(NYSE: CPQ) of Houston, which in September said it made a "significant," but unspecified, investment in AGTC Funds as part of a \$100 million pool that it has set aside to put into early-stage life sciences companies in the areas of genomics and bioinformatics.

"There's a conceptual bridge from the Internet to genomics, because genomics is about a technology shift," said David Stone, a partner in AGTC Funds and former head of SG Cowen & Co.'s biotechnology group.

"It's a first-mover opportunity and it's a new economy that doesn't end in dot-com."

What the technology and computer companies get for their investment is a foothold in a rapidly growing industry that is dependent on advanced computing technology to grow.

A Hotbed of PC VC

Compaq, for example, has a \$100 million investment fund for bioinformatics companies. The companies' investments are either direct cash equity deals, or provide a combination of cash and services in exchange for equity.

"We're not interested in being a lead investor, we want companies that have worked with venture capital before," said Ty Rabe, director of high performance

technology at Compaq. "We're looking for companies that have strong prospects for growth, and we certainly want investments that will give a financial return, but the priority now is building business relationships."

Sun Microsystems has a similar investment strategy, although the company does not take an equity stake in bioinformatics companies.

Sun has a partnership program with bioinformatics companies to invest in the computer processing infrastructure. The company's goal is to give the industry a boost today, and cash in later when bioinformatics is better established and funded. Sun is betting the relationships will give it inside perspective of what technology will be needed down the road.

Sun does not take equity stakes in the companies it supports. "Taking an equity stake in one or two companies creates a bias," Zadeh told LocalBusiness.com. "It's not charity, our idea is we will provide a partnership program. If we can enable the community to grow, we will grow with them."

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