Small company has big plans to market its GeneIndexer

By Daniel Connolly

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As scientific journals worldwide constantly publish articles about genes and their role in human health, a small Memphis company has used University of Tennessee research to create a computer program to help scientists sift through that mountain of information.

Computable Genomix LLC hopes the program, called GeneIndexer, will help researchers at universities and drug or biotech companies make quicker progress in research that could help combat conditions ranging from diabetes to Alzheimer's disease.

The company, which plans to go to market with the product in a few months, has spent less than $25,000, but it is looking for venture capital funding to expand, said Ramin Homayouni, one of the firm's founders.

The company employs three people, and two have other jobs at universities.

If Computable Genomix succeeds, it would be a symbolic boost to local efforts to create high-quality companies from university research.

"It's really at the cutting edge of where academic research wants to be, and it's really exciting for me to be able to do that," Homayouni said.

Homayouni, 40, is head of the University of Memphis program in bioinformatics, a field that uses computers to analyze complex biological systems.

Advances in genetics have led to a flood of data and an increased demand for computer programs to help interpret it.

The human genome, the complete record of genetic data within a person, was sequenced in 2003 and contains 3 billion pieces of information.

To understand the scale, consider that if each piece of information was represented by a person, the resulting population would be nearly 10 times that of the United States. And other advances in genetics have created even more information.

The firm's inspiration came in 2002, when Homayouni heard a talk by Michael W. Berry, a computer science professor at the University of Tennessee, Knoxville.

He realized that Berry's work in data retrieval, the study of pulling key pieces of information out of a big pile, could be applied to biology.

They started to collaborate, and a doctoral student named Kevin Heinrich played a lead role in building the GeneIndexer. The researchers applied for a patent for the program's key idea and started a firm in July.

The three lacked business experience so they have partnered with Mercury Technology Labs LLC, a local firm that assists early-stage companies.

Heinrich, 28, completed his doctorate and is now the firm's CEO. He's staying with his wife in Fredericksburg, Va., until the firm earns enough money to pay his salary. Berry, 47, remains in Knoxville.

Their computer program attempts to clarify an extremely complex system.

The simplest pieces of information in the genome are called base pairs. These chemical combinations are critical to the structure of deoxyribonucleic acid, or DNA, which carries traits such as eye color and height from generation to generation.

The GeneIndexer program analyzes the texts of thousands of scientific articles about genes. Genes are clusters of base pairs on the DNA chain that program cells to do certain tasks and can play a role in health.

A researcher who types a phrase such as "Alzheimer's disease" into the GeneIndexer receives a list of genes that scientific articles have tied to Alzheimer's or related illnesses -- the word "Alzheimer's" doesn't necessarily have to be in the article.

The researcher can then ask the program to graph the relationships among genes.

Berry said the tool saves reading time and can show connections that would otherwise go unnoticed.

"It's not all about the obvious stuff," he said.

Genetic researchers need computer help because the amount of data available is overwhelming, said Seth Crosby, director of translational research at the Genome Sequencing Center at Washington University in Saint Louis. He said the program by Computable Genomix LLC sounded similar to one made by the firm Ingenuity Systems of Redwood City, Calif.

"If this company were able to provide a product similar to Ingenuity but at a cost point significantly better than Ingenuity, I could definitely see a market for it," he said.

Homayouni said his firm's program is different from Ingenuity's because it relies on a computer system to read and interpret scientific articles. Ingenuity's database is created by doctorate-level scientists who read papers, a more expensive process, which means Computable Genomix could offer its product at a lower price, he said. One-year licenses would start at around $3,000, Homayouni said.

Heidi Bullock, a spokeswoman for Ingenuity, said the firm's manmade database is more accurate than computer systems, which can make errors.

Homayouni contends his firm's program is at least as accurate as a human reader in providing useful data.

He said he's excited to turn academic research into a business idea. "I think this is kind

of an extension of why I wanted to get into research to begin with," he said.

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Computable Genomix

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