

Getting the gene out of the bottle

Boise's O.D.260 develops biotech research tools

By Rick Carpenter

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Research grants for two major studies have enabled a Boise biotech company to get a jumpstart on producing two technologies that could write new chapters in the understanding of the human genome.

One will help gene therapy research, either by developing vaccines, finding cures for cancer or replacing defective genes. The other may help speed the process of identifying characteristics of the human genome.

The National Institutes of Health defines genome as an organism's complete set of DNA, a chemical compound that contains the genetic instructions to develop and direct the activities of every organism.

During the last four years, O.D.260 Inc. has received more than \$1 million in grants through a National Institutes of Health Small Business Innovation Research program. That program aims to provide small businesses with commercial opportunities to use innovative technologies to benefit mankind.

O.D.260 stands for "optical density at 260 nanometers," explains Xavier Danthinne, one of three partners of the company. He said molecular biology scientists know that DNA can be measured using a spectrophotometer that reads at 260 nanometers.

Danthinne, a Belgian citizen with a PhD in molecular biology, received the company's first SBIR grant for developing a tool for gene transfer known as "adenovirus."

Adenovirus is similar to a mild cold virus. By harnessing the virus, Danthinne and his staff can remove the infectious part of the virus, but use the same vector – the organism that



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O.D.260 founders Dan Salmi, Xavier Danthinne and Yongsheng Ma are experimenting with technology that could allow researchers to uncork the mysteries of the human genome. The bottles contain chemical solutions used in their experiments.

would have transmitted the germs – to replace the virus with a study gene. Researchers use the technology to study genes to determine whether they can cure a hereditary disease through gene replacement; to find "killer" genes to cure diseases such as cancer; and to develop vaccines to prevent everything from HIV to West Nile.

The first grant was to prove that the technology would work. Once that happened, a second grant fueled the full-scale production of the technology.

O.D.260 now sells kits to allow universities and other researchers to test genes themselves. The company also contracts to test genes for clients.

By the end of the grant's second phase this year, O.D.260 plans to have a patent on the process and begin to generate enough income from sales to expand its operation.

That is where Dan Salmi comes in. Not only is he the one

out talking to investors and marketing the company, he's the business partner who manages the day-to-day operation of the company so that Danthinne and Yongsheng Ma, the other molecular biologist in the partnership, can focus on their research.

O.D.260 was founded by the trio in 1999 but actually started business in 2001. By investing their own money and going on a nationwide scavenger hunt for bargain-priced equipment from defunct biotech companies, they have been able to focus on using the grant money to develop their research. Salmi, who is also a molecular biologist, said the company has not had to borrow a penny.

Once the company's intellectual property rights have been secured and their patent-pending technology has cleared the patent office, they plan to license their products to larger companies.

That could be soon because Danthinne has reached the production stage while Ma's research is just starting to turn heads.

Ma, who is a naturalized American citizen from China and a medical doctor with a PhD in molecular biology, has received a grant to research a tool to more efficiently map or locate genetic switches.

While there are products available to map individual genetic switches that turn on or off specific genetic traits, Ma's technology would allow researchers to track more than one gene at a time.

He said now that the human genome has been mapped out, there are innumerable details that need the focus of research.

"A computer can predict where a switch is, but you need a live experiment to verify the predictions," he said.

Ma said some researchers liken the human genome to a dictionary with all the words but no definitions. Researchers who focus on the switches are defining the words in the dictionary, one by one.

Ma's technology of defining more than one word at a time in the genetic dictionary would accelerate the time it takes to



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Michael Stevenson of O.D.260 uses technology to grow human cells with a tissue culture in the company's lab near I-84.

write a new chapter in medical textbooks.

If he receives the second phase of his grant, the company will move into production of technology that could be the catalyst to clarifying the remaining questions surrounding the human genome.

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