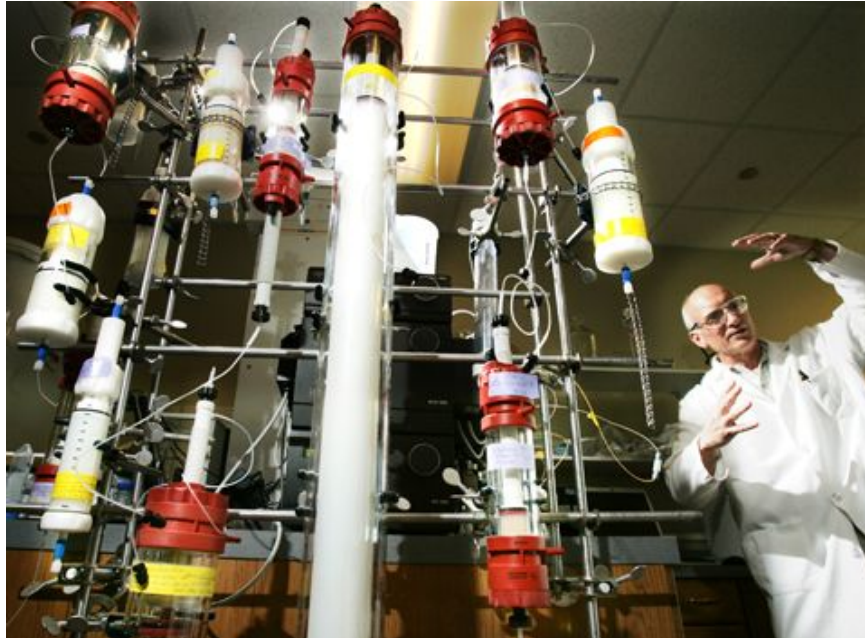


BUSINESS



Rick Noble, director of operations for Quintessence Biosciences, uses column chromatography, a series of long, glass cylinders, to purify QBI-139, the compound the company is developing to fight cancer.

A CONTENDER?

Quintessence Biosciences Has A Chance At Success With Its Incipient Cancer Drug

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Like a graduate earning a diploma and heading off to explore new worlds, Quintessence Biosciences is about to reach a major milestone and tackle a new frontier.

QBI-139, the drug Quintessence has developed that could fight prostate, ovarian and pancreatic cancer, will begin tests next year to see if it's safe for people to take. And observers say, although the odds are long against any new drug coming to market - let alone that of a small Madison company working on its first product - Quintessence has a fighting chance.

That's mainly because its founders, Laura Kiessling and Ron Raines, are internationally acclaimed UW-Madison scientists. Its chief executive officer, Ralph Kauten, is a serial entrepreneur. And its EVade Ribonuclease technology uses a new approach in attacking cancer cells, an approach that's shown good results in animal tests, the company says.

But Quintessence will need more than brilliant minds and business moxie to muscle its way into the powerful pharmaceutical arena: It will take perseverance, lots of money, impeccable clinical trials and probably a good measure of luck.

Ralph Kauten, chief executive officer, left, and Laura Strong, president and chief operating officer, hope Quintessence Biosciences' first drug, QBI-139, will make the big jump from animal tests to human trials in 2008.



Quintessence Biosciences

Address:

505 S. Rosa Road

Founded:

2000, by UW-Madison professors Laura Kiessling and Ron Raines

Chief executive:

Ralph Kauten

Products:

Cancer drugs

Employees: 8

Revenues to date (from grants and angel investors):

\$8 million

Of the drug candidates that go into phase 1 clinical trials - the stage Quintessence is poised to enter - "on average, about 20 percent make it to market," said Karen Andersen, equity analyst with Morningstar in Chicago.

"It's a difficult path but it's so worthwhile," said Quintessence president and chief operating officer Laura Strong. "If a year from now, we're in the clinic and we see a patient respond (to the treatment), it's all going to be worth it."

'Novel idea'

Here's the theory behind QBI-139: Inside each cell, DNA makes RNA, which, in turn, creates proteins that allow cells to divide and cancers to spread. Most early drugs focused on attacking DNA to kill cancer cells; some newer compounds target proteins.

But cells have a way to repair damaged DNA, and cancer cells are "particularly effective in developing a mechanism to be able to spit out drugs that they see and don't like," Strong said.

Quintessence's EVade technology, discovered by Raines, a UW-Madison biochemistry professor, attacks the RNA instead.

QBI-139 "attacks the entire strand of RNA and breaks it all up," preventing the proteins that produce the cancer cells from being formed, Kauten said. And because it's a larger molecule than many of the current treatments, cancer cells are less able to develop resistance to it, he said.

"I think it's a pretty novel idea," said Dr. George Wilding, director of the UW-Madison Paul P. Carbone Comprehensive Cancer Center. "They've done a lot of preclinical work to show that this idea has substance to it."

Tumors in laboratory mice, treated once a week for six weeks with QBI-139, shrank, with no observable side effects, Strong said. Studies are under way now on rats and dogs "to demonstrate potential side effects that we may see in humans, so we know what to look for in phase 1 clinical trials," said Strong, and to help determine a starting dose in people.

The studies "give us great hope" that QBI-139 could eventually replace some of the older chemotherapy drugs that leave patients with significant side effects, such as nausea, hair loss and mouth sores, Kauten said.

Finding QBI-139

Finding QBI-139 was a painstaking process. Raines first discovered the ability to break up RNA using a bovine protein. "We thought: if we're going to develop a drug, it would be more elegant to develop one based on a human protein instead of a cow protein," Kauten said.

So Quintessence reorganized DNA strands to create 40 variations, and tested each one over three years to see if they might be effective against a variety of cancerous tumors: pancreatic, prostate, ovarian and non-small-cell lung cancer. Those cancers were chosen because there are "no really good treatments" for them right now, Kauten said.

Some variations did shrink one or more of the cancer types. But QBI-139, the temporary name for the compound, "was most broadly effective against all of these different cancer cell lines than any of the other candidates," said Strong, who has a Ph.D in organic chemistry and was Quintessence's first employee when the company began in 2000.

It is an enzyme that is "95 percent identical" to one found in the human pancreas, used to digest food, Kauten said.

Hope for trials in 2008

Quintessence plans to apply in early 2008 for U.S. Food and Drug Administration approval to begin human tests, and the clinical trials would likely begin in the second quarter of the year, Kauten said. Twenty to 30 patients are expected to participate, and the UW cancer center will probably be part of the test.

But just making enough of QBI-139, using required manufacturing standards, will cost "well in excess of \$1 million," Kauten said.

So far, Quintessence has received a total of \$8 million from angel investors and from federal grants. Now, the company hopes to raise \$5 million to \$7 million to fund the phase 1 clinical trials. Two rounds of trials after that will be needed to see if the drug is effective among a broad range of patients. In all, it's an expensive project that could take as long as six years or more.

"We already have the attention of several pharmaceutical companies interested in this new approach to cancer," Kauten said. "I think we'll get support at some point, probably after the phase 1 clinical trial."

Weighty principals

In Quintessence's favor is the reputation of its principals. Kiessling, a UW-Madison chemistry and biochemistry professor, was elected this year to the National Academy of Sciences and received a prestigious MacArthur Foundation fellowship in 1999.

Raines, her husband, is the university's Henry Lardy Professor of Biochemistry and received a Guggenheim fellowship in 2001.

"Both are tremendously strong scientists and active investigators within cancer center programs," Wilding said.

Kauten, who started with Madison-area biotech giant Promega Corp. in Fitchburg, cofounded PanVera Corp., which is now part of Invitrogen Corp., a publicly traded, Carlsbad, Calif., biological research products company with \$1.3 billion in annual revenue. Kauten also co-founded Mirus Bio Corp., which has licensing deals with drug giant Pfizer and biotech giant Genzyme Corp. for its RNA-related technology.

"They've got great science and capable leadership," said Jim Leonhart, executive director of the Wisconsin Biotechnology and Medical Device Association. Kauten is "a bedrock of the biotech industry in our state," Leonhart added.

Morningstar analyst Andersen, who watches both large and small pharmaceutical companies, said the FDA seems to be taking more time approving newer technologies to make sure they are effective drugs.

Small companies sometimes lack experience in designing their clinical trials and the FDA asks them to go back and do it again, she said.

One small drug developer that scored a recent success was Onyx, whose oral drug to treat kidney cancer was approved over a year ago. But soon after, Pfizer came out with a kidney cancer drug, and so did other companies. "So a lot of times, you get through the approval process then end up in a market that can become really crowded with strong competitors," Andersen said.

For Quintessence, QBI-139 is just the beginning. The company also has other products in the pipeline, including technology that Kiessling has been developing, which could be used to treat multiple sclerosis and some types of cancer, and a more stable type of collagen that Raines is working on, for both cosmetic use and wound healing.

Kauten said with other young pharmaceutical companies in Dane County, such as Mithridion, Centrose, Deltanoid, Collectar and ConjuGon, it's a growing industry here - "one of the biggest untapped markets in the Madison area," he said.