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Excerpt from the *Wall Street Journal* article “**Putting Drug Development In Patients’ Hands**” -July 29, 2008

“Mrs. Addario started a new organization, the Addario Lung Cancer Medical Institute (ALCMI), and hired [CollabRx](#) to address some of these issues. The company is helping the institute build a virtual specimen bank where researchers participating in the project can share patient specimens and establish joint standards for collecting future specimens. Using the CollabRx Web-based network, the researchers can share research and ideas, and quickly reprioritize projects as new information comes up. Mrs. Addario says the institute expects to spend at least \$5 million over the next year to set up the virtual biotech, fund researchers and establish the specimen bank.”

Putting Drug Development In Patients’ Hands

An Entrepreneur Stricken With Cancer Sets Up Firm To Develop ‘Virtual’ Biotechs

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By AMY DOCKSER MARCUS

July 29, 2008

Jay M. Tenenbaum became a multimillionaire in the Internet boom of the late 1990s. But it wasn’t until he was diagnosed with a lethal cancer that he found his calling as an Internet entrepreneur.

Dr. Tenenbaum learned in 1998 that he had melanoma, the most serious kind of skin cancer. He underwent surgery and took an experimental vaccine for a year. Then, nearly five years ago, the cancer returned, having spread to his liver. “That’s when I started looking at my mortality seriously,” says the 65-year-old from Portola Valley, Calif.

Frustrated with his treatment options, Dr. Tenenbaum began investigating other potential therapies. He found dozens of patient-advocacy organizations dedicated to melanoma that raised money and supported scientific research. They “all had good ideas,” he says, “but no one had put the different pieces together in the right way that would let them make progress in finding a drug in the lifetime of a patient.”

So he tapped his own Internet savvy — and his connections — to create a company aimed at helping patients develop new therapies faster and cheaper for less common diseases, like melanoma, that often don’t attract major pharmaceutical company research funding. He set up his new company, called CollabRx, with \$2 million he had available and is trying to raise \$3 million more from family, friends and private investors.

Dr. Tenenbaum's idea taps into the recent phenomenon of patient-supported research — a trend largely driven by people wealthy enough to help fund drug-discovery projects and who are affected by rare or overlooked diseases.

The Myelin Repair Foundation, founded by a patient with multiple sclerosis, set up a team of researchers to come up with promising drug leads. After spending \$13 million over four years, the foundation will present its two best prospects to drug companies in coming months in the hopes of getting one of them to develop the drugs further. And the Cystic Fibrosis Foundation, started by a group of parents who had children with the disease, recently announced that a drug it is paying a biotech company to develop showed promising results in an ongoing trial. The foundation says its investment in the drug so far exceeds \$75 million.

CollabRx aims to expand patient-funded research further by connecting individuals or small numbers of patients with the tools and services they need. Each CollabRx client is assigned a project manager, a specialist who works with patients to devise a research strategy, interpret the results and later steer any promising prospects toward development of possible treatments.

CollabRx calls such integrated projects virtual biotechs because they aim to replicate many of the steps typically taken as part of a pharmaceutical or biotech company's search for a new drug. As the number of private labs available to do sophisticated research grows, many parts of the drug-development process can now be contracted separately. Researchers in various locations can share information and material by means of a Web-based network created by CollabRx software engineers.

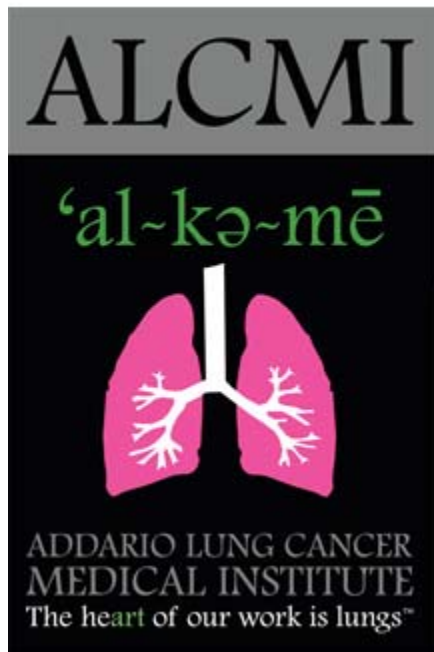
Management Fees

CollabRx's fees vary depending on the scope of a project. But Dr. Tenenbaum says he expects to charge most clients a management fee of 10% of a project's budget and to receive a 20% share of any intellectual property that emerges. Drug screens, clinical trials, and the costs of other contracted services are paid for by the clients.

Dr. Tenenbaum says patients can get started on a project with as little as \$50,000 to \$100,000. Sums like that, for example, could fund the creation of a molecular profile of a tumor to try to predict what combination of already approved drugs might be effective. If results proved promising, more money could be raised to set up a full-blown virtual biotech — with a budget in the millions of dollars — that might test cocktails of therapies in animal models and try grouping patients into subtypes to better tailor treatments for them, among other projects.

Bonnie J. Addario, a former oil-company executive in San Francisco, is a lung-cancer survivor. When she first started thinking about how to make a difference, she figured, "I'll run a gala and a golf tournament, raise money for research, and that will be it." Mrs. Addario, 60, raised \$800,000 through a foundation she set up in 2006. She distributed the money to a number of researchers, and then realized, "there are a lot of wonderful people doing great work, but lung-cancer survival rates [of 15.5% after five years] haven't changed for 40 years. Why is that?"

To find answers, Mrs. Addario and her husband, along with David M. Jablons, her surgeon from the University of California, San Francisco, put together a two-day conference last fall of lung-cancer researchers from major institutions around the world. She says the group identified a number of problems that hinder progress toward a cure. Among them: Researchers didn't know what others were doing, tissue and blood specimens needed for experiments weren't centrally located or shared, and the findings of experiments weren't integrated to help assess what the key priorities should be.



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It's far too early to tell whether CollabRx's approach will be more successful at finding new drugs cheaper or faster than the traditional methods of drug and biotech companies, a challenge acknowledged by scientists who target faster cures. "We're not discovering drugs slowly just because of a faulty business model," says John Wilbanks, executive director of Science Commons, a nonprofit in Cambridge, Mass., that seeks to make research more effective by encouraging more open access to scientific data. "We don't understand so many things about toxicity in the human body. It's hard because it's hard," says Mr. Wilbanks, who works with Dr. Tenenbaum on a separate project. On average, the pharmaceutical industry spends about \$1 billion over 17 years to bring a new drug to market.

CollabRx's approach in some respects also goes against the cultural grain of scientific research. In order for academic researchers to get ahead at universities, they must be first to publish

breakthrough findings. This competitive culture deters scientists from sharing information, and could make it difficult for CollabRx to get researchers to work together.

The Internet culture that drives CollabRx encourages collaboration, says Christopher P. Austin, director of the Chemical Genomics Center of the National Institutes of Health. “And unlike the Internet, where people were maniacal about sharing stuff, biomedical scientists are exactly the opposite,” he says. “You have to drag their data from their cold dead fingers. They do not share.” Dr. Austin is testing CollabRx’s network with one of his lab’s projects that seeks to develop therapies for a rare disease.

Internet Background

Dr. Tenenbaum, who has a Ph.D. from Stanford University in electrical engineering and computer science, was deeply involved in the Internet boom of the 1990s. He started a number of Web companies that helped pioneer the use of e-commerce. His most lucrative foray was as chief scientist and a board member of Commerce One Inc., which developed technology enabling the computer systems of big businesses to interact more readily. Dr. Tenenbaum, who goes by the nickname Marty, left Commerce One in 2002 as the company was struggling amid the tech bust early this decade.

Dr. Tenenbaum is engaged in another project with several partners that also borrows from the Internet culture — creating a nonprofit marketplace for data, materials, resources and services needed for studying and treating disease, to be called Health Commons. The partners, which also include Science Commons, the Public Library of Science, and CommerceNet, plan to set up a site where people and companies in the life sciences can go to buy and sell goods and services.

Dr. Tenenbaum says that if [Health Commons](#) is successful, it could help CollabRx locate resources for its virtual biotechs. Even individual patients, should they want to pursue research and drug development on their own, could find information and services at the site, he says.

Chris and Hugh Hempel of Reno, Nev., last fall met with Dr. Tenenbaum a few weeks after learning that their 4-year-old twin daughters, Addi and Cassi, had been diagnosed with Niemann-Pick Type C, a genetic neurodegenerative disorder that usually is fatal by the age of 20. The Hempels joined with a group of parents to fund SOAR-NPC, a virtual biotech CollabRx set up.

The group decided that the fastest way to help the children would be to focus on a combination therapy of already approved drugs and other compounds that could prevent or significantly delay the onset and progression of NPC. Mrs. Hempel, who runs a public-relations firm, says she and her husband recently raised \$500,000 at a gala event in Reno that will help fund the virtual biotech, whose total budget is \$1.3 million for the first year. The project currently is testing a number of drug candidates at an NIH-run facility. Later this year, the first human observational study will start.

Melanoma Study

CollabRx also is helping to coordinate a melanoma study at the John Wayne Cancer Institute in Santa Monica, Calif., which received a grant from the Melanoma Research Alliance. The project, with a budget of \$1 million over three years, is using genomic technologies to test melanoma tumors collected by the institute over the past two decades to find drugs that might work on clusters of individuals whose tumors exhibit certain similarities.

The melanoma alliance, set up with funding from Apollo Advisors founding partner Leon D. Black and his wife, Debra, and [FasterCures](#), an organization created by financier Michael Milken, are also discussing a larger project with CollabRx to set up a melanoma virtual biotech. That project would test various melanoma cell lines against existing drugs and drug combinations with the aim of advancing promising prospects to clinical trials. Gregory C. Simon, president of FasterCures, says he sees the melanoma virtual biotech as a model that could be useful to other advocacy groups with which FasterCures works.

It is a project that Dr. Tenenbaum is following closely, not only in his role at CollabRx but also as someone who might benefit from any potential therapies that emerge. Mr. Tenenbaum has had four surgeries to remove suspicious nodules since his cancer returned, and he gets scans every few months. Right now, there are no signs of the cancer. “But with melanoma,” he says, “that can change overnight.”

He plans to contribute funding for the melanoma virtual biotech out of his own pocket. Eventually, Dr. Tenenbaum says he plans to pay to have his own tumor cells tested with whatever drug combinations the virtual biotech finds are promising.

“The fact that there is no therapy right now that works in general for melanoma patients doesn’t mean that there is no therapy that works on selected patients,” Dr. Tenenbaum says. “That is where CollabRx comes in. I want to have that information in hand, just in case I ever need it.”