



BIOTECH IN CUBA

A trip behind Cuba's iron curtain reveals the country's best-kept **SECRET**.

BY DAVID LIPSCHULTZ AND PETER ROJAS

DAVID ALLAN didn't know what he was in for when a colleague urged him to call a high-ranking Cuban official in December 1993. As the CEO of YM Biosciences in Toronto, Mr. Allan was accustomed to getting pitched by universities and labs from around the world. But this pitch was especially different. The official invited Mr. Allan to the isolated communist island to check out its medical research facilities and programs. Mr. Allan was skeptical.

He immediately went to the office of his chief biotechnology researcher, Ezra Lwowski, and asked: "Do the Cubans have anything worth seeing?" Almost without a pause, Mr. Lwowski responded: "I have to tell you there's nothing down there."

And why would anyone expect Cuba to be on the cusp of producing cutting-edge

medicine? The country is an anachronism locked in a 50-year time warp, while Miami's ultramodern skyline, only 80 miles away, continues to grow. Chevrolets from the '50s rumble down Cuba's dilapidated streets, and once-stately mansions and gardens have fallen into ruin.

Most visitors to Cuba, and even many Cubans themselves, don't get to see what's really going on behind the curtain. Mr. Allan and Mr. Lwowski, however, were to become exceptions.

The two Canadians went, mostly on a whim. Had it not been freezing and gloomy in Canada, they probably never would have made the trip. Their Cuban hosts gave them a lengthy tour of the modern medical research complex that covers about five square miles of Havana's wealthiest suburb. A sign towering over one of the large buildings reads: "The future of our nation is necessarily

COMRADE IN PHARM: David Allan, CEO of YM Biosciences, at the Center for Biotechnology and Engineering in Havana.

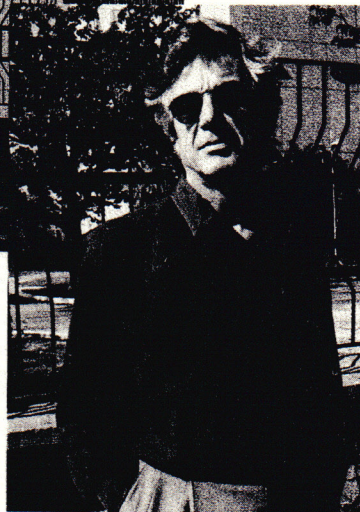
the future of men of science." The quotation's author is Fidel Castro, who since the revolution has made science and medicine a major part of the Cuban agenda. The emphasis on science, however, came well before Mr. Castro. The first paper on science published by a Cuban was in 1673, around the same time Harvard University was getting started.

Mr. Allan was quite taken aback by the medical heritage, but it was his visit to the biotechnology complex that quickly sparked his inner opportunist. After walking around the tall, spiked fences

that surround the complex and passing by the armed guards that watch over its entrances, he was ushered into the immunology center at the Center for Biotechnology and Engineering. Mr. Allan and Mr. Lwowski learned that the director of the center, Augustin Lage, had studied under Luc Montagnier, the famed French scientist who claims to have discovered the AIDS virus. And then they were shown the type of science that they didn't expect to see: a monoclonal antibody targeting the epidermal growth factor (EGF) receptor that would treat cancer. What's more, the director of research at the center was Rolando Perez, who was the first person to write a paper on the EGF receptor when he was working at the University of Nice in France.

"These guys are not only way more advanced than the rest of Latin America, they are on par in many areas with top places in the U.S.," Mr. Lwowski told Mr. Allan after the tour. And despite all the problems that Mr. Allan knew could arise in dealing with a country facing a strict blockade by the world's only remaining superpower, YM Biosciences would soon strike a deal.

Their earlier misconceptions about



Cuba

Cuba are far more the norm than an aberration. Most people know that Cuba has a communist leadership, but many don't know that it is very different from any other country in Latin America. It boasts one of the highest literacy rates in the world and, because of the emphasis placed on education, it has a high percentage of well-educated, highly trained professionals (see "Case in Point," page 74). "After figuring out that we had taken care of our own people it made sense to export that research to help fund more," says German Roges, a researcher at the Pedro Kouri Institute for Infectious Diseases in Havana and the Cuban liaison to YM Biosciences.

Considering that the Cuban government says it takes in roughly \$130 million a year from medical exports and there's a distinct absence of other exports, that research is probably doing more than just funding itself. It's providing a cash infusion for an economically starved country.

And Cuba has been able to achieve these remarkable advances despite a lack of modern computers, networks, and machinery—luxuries that developed countries take for granted. The U.S. embargo has made it illegal for U.S. companies to provide drugs and medicines to this small island. And European goods are too costly. Conversely, communications barriers have prevented Western companies

from learning about Cuba's scientific achievements.

There have been some efforts to bridge the scientific gap with Cuba. The pharmaceutical maker Merck tried five years ago. After a visit to the Cuban labs, U.S. officials caught some Merck scientists trying to smuggle samples of an advanced Cuban-produced hepatitis B vaccine. Supposedly, those scientists wanted to test the drug. The company eventually paid a \$127,500 fine and apologized for its actions. After the fiasco, Merck said it would respect the embargo.

HISTORY MARX

It's hard to overestimate the importance of the embargo, which has been intact since 1962 and prohibits any commercial interaction between the United States and Cuba. There are no U.S. businesses in Cuba (not even McDonald's), no trade between the countries, and the U.S. government has made it illegal for its citizens to spend money in Cuba, which makes it impossible to use U.S. credit cards on the island. But this blockade extends beyond U.S. companies and citizens. Even companies not based in the United States have a rough road to navigate. "If you worked with Cuba once, maybe someone at the FDA could look at your request for something else and

decide to put it at the bottom of the pile," says Mr. Allan. "Insomuch as it deters people from doing business, the embargo has been wildly successful."

Still, Mr. Allan wouldn't let the risks get in the way of what he saw as a great opportunity. After witnessing firsthand the impressive personnel and research, both Canadian scientists realized they were onto something big. When the rest of the world abandoned monoclonal antibodies in the early '80s because of uninspiring results, the Cubans continued their research.

Now the vexing issue facing YM Biosciences was trying to secure a deal. That meant persuading Cuban scientists that their best bet was to build a company together. While YM Biosciences had established these kinds of partnerships before, it was a very foreign concept for the Cubans.

A few months passed. Mr. Allan was able to cajole former Canadian Prime Minister Pierre Trudeau to visit Cuba and speak on his behalf. That did the trick. In 1995, after another 15 months of negotiations, YM Biosciences struck the first joint venture deal with the Cubans, in which the company would act as the commercial liaison to the world—handling regulatory affairs, intellectual property, clinical trials, and licensing—while the Cubans would develop the products.

While the Cubans continued to develop the cancer product, Cuban medicine received a big dose of international validation when a small Indian company, Panacea Biotec, formed a joint venture with the Cubans in 2000. Its charter was to commercialize hepatitis B vaccines for markets outside the United States. And in 1999, Glaxo-SmithKline, the large pharmaceutical company based in the United Kingdom, received the first license ever to begin the process of distributing a Cuban-made meningitis B vaccine in the United States. The vaccine, however, had already been distributed by the Cubans for the past ten years in 12 countries, including China and Brazil. In fact, it actually has been around since it was created at Cuba's Finlay Institute in 1985. What's more, it was the only



PAST PRESENT: Havana's '50s cars and decaying buildings belie the city's advanced biotech industry.

vaccine of its kind in the world.

But because of the embargo it was not allowed into the United States, which means that thousands of U.S. citizens afflicted with meningitis B have deprived of the legal means to acquire the only vaccine that could have prevented their illness.

That argument, put forth by Glaxo-SmithKline, was strong enough to convince the often rigid Office of Foreign Assets Control, the branch of the U.S. Treasury Department that administers the embargo. "It was highly unusual to grant the license, but because of the humanitarian implications it was approved," says a spokesman for the office.

While it was a small victory, it may open the door for approval of future drugs. At least Mr. Allan hopes so, considering the United States represents 50 percent of the market for cancer-fighting products. His hope went from cautious to optimistic when, in 1997, the U.S. biotech firm Idec received approval from the U.S. Food and Drug Administration for the first monoclonal antibody for the treatment of

cancer. Then, in 2000, Genentech, a U.S. biotech firm, started distributing Herceptin, a similar antibody specifically for breast cancer. Now ImClone, another U.S. biotech firm, has its own version in trials. "It's now become the hottest cancer therapeutic around," says Mr. Allan.

ANTIBODY IMAGE

The deal with the Cubans could become a huge home run for YM Biosciences if upcoming tests on Canadian patients are successful. Mr. Allan likes to do the math for that scenario: right now his company is worth roughly \$100 million. ImClone has a market value of \$2.5 billion, mostly based on the huge amount of money the market expects it to make on its monoclonal antibody, which is about a trial phase ahead of that of YM Biosciences. "Almost every pharmaceutical company would like to get their hands on one for themselves," says Mr. Allan. "Out of all our relationships, the Cuba venture has definitely become priority No. 1."

With a successful cancer product from YM Biosciences, Cuba could provide an even more convincing argument that the country's medical technology adds value to pharmaceutical and biotechnology companies worldwide. But the biggest obstacle to this—the United States—has made it clear that it probably won't listen unless Cuba abandons its communist ideology. Most argue that that will require the death of Castro. "If he dies I could see the embargo lifted," says Jaime Suchliki, a expert on Cuba at the University of Miami. Don't count on President Bush in the meantime: anti-Castro Cubans were crucial to his narrow victory in Florida and, therefore, in the presidential election. So even if Mr. Allan's bold joint venture makes a huge splash, Cuba will surely continue working in isolation and so, in all likelihood, will most of its medical products. ☉

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CASE IN POINT

A chance trip to Cuba provides new hope for a man headed for life in a wheelchair.

TARNIE WILLIAMS, a technology entrepreneur and board member of YM Biosciences, has multiple sclerosis. After many weeks at prestigious medical facilities, like the Whitaker Wellness Clinic in Newport Beach, California, his condition only worsened: the right side of his body was extremely weak. Mr. Williams began to give up hope: "They all said, 'You'll be in a wheelchair; you'll just have to accept it,'" he recalls.

Mr. Williams was resigned to that eventuality—until he travelled to Cuba for first time, for a YM Biosciences board meeting. After seeing his condition, German Roges, a

Cuban researcher, suggested he visit Cuba's International Center for Neurological Restoration.

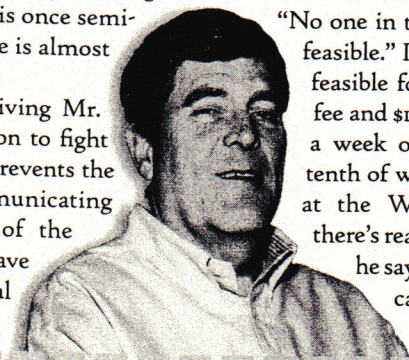
Three years later, after spending roughly one month a year in the center, Mr. Williams isn't only walking without crutches, but his once semi-paralyzed right side is almost fully regenerated.

Rather than giving Mr. Williams medication to fight the illness, which prevents the brain from communicating with other parts of the body, the doctors gave him intense physical therapy. "They'd

put weights on my legs and lift them up and down for eight hours a day," he says. "After a while, the legs started sending messages to my brain, and the brain caught on."

Why couldn't a North American clinic offer the same solution offered in Cuba, which is widely considered to be a third world country? "It's mostly about economics," says Mr. Williams. The center gave him a highly qualified specialist, with two years of training in kinesiology and two years in neurology, for eight hours a day. "Even if they knew about this treatment," he adds, "No one in the States would find it feasible." It definitely wouldn't be feasible for a \$2,500 consultation fee and \$1,500 a week for six days a week of treatment—almost a tenth of what Mr. Williams paid at the Whitaker Clinic. "But there's really no price for health," he says. Today, Mr. Williams can walk.

—D.L.



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