



Cuba's burgeoning biopharmaceutical sector helps keep the island economy afloat

BY CONNER GORRY

IN THE 1950S, U.S. PHARMACEUTICAL GIANTS, including Abbott Laboratories and Bristol-Myers Squibb, manufactured basic analgesics and various vaccines in Cuba. When the revolutionary government came to power in 1959, these labs, along with nearly all other private holdings, were nationalized, sending U.S.-Cuba relations into a downward spiral marked by a comprehensive economic embargo. Still in place today, these sanctions effectively prevent

BIOTECH: THE MAGIC PILL?

FRENCH BRED

Biotech thrives in a science park outside Paris

BY PAUL MCNALLY

BIOCITECH, A SANOFI-OWNED biotechnology park in a modest Parisian suburb, is known as the go-to destination for life science firms in France. Home to nearly 30 companies, it is a vibrant community that nurtures the ambitious growth plans of its tenants whether small or large, new or established.

Launched in 2003, the 20-acre park provides a flexible R&D facility

that can be scaled according to tenants' changing circumstances. Biotech president Jean-François Bousard likens it to an ecosystem. "I use the symbol of a pond," he says. "We're in a closed space. You need to keep a good temperature, level of sunlight, areas of shade for some. There are smaller organisms that are eaten by the big ones. Each organism in the pond is autonomous, but works alongside the others."

Biocitech seeks to attract businesses as early as possible in their development. One of the newest arrivals, bioinformatics specialist Helios BioSciences, employs just four people. Bousard believes the park acts as a "safe harbor," where inves-

tors and suppliers can trust its tenants and know that they must be serious about doing business because they are based there. "This type of place allows firms to develop more rapidly," he says. "Businesses are here because they have ambition, they have turned

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the island from acquiring U.S.-sourced medications, vaccines and the raw materials to domestically produce them.

The severing of ties between the two countries throttled Cuba's universal health system, which guarantees care and treatment for its 11 million citizens. In response, Cuba turned to Eastern Bloc allies, Finland and others for scientific training with the goal of establishing a biopharmaceutical industry.

In 1981, the island's first biotechnology research and manufacturing center was founded and began producing alpha interferon, followed by recombinant proteins. Building on this success, several scientific institutions were

THE FUTURE STRENGTH OF CUBA'S BIOPHARMACEUTICAL INDUSTRY DEPENDS ON EXPANDING INTERNATIONAL COOPERATION.

founded, including the Center for Genetic Engineering and Biotechnology (CIGB), the Immunoassay Center, the Center of Molecular Immunology (CIM) and the Government Center for Quality Control of Medicines (CECMED).

These institutions became the foundation of Cuba's "Scientific Pole," which is the biopharmaceutical cluster west of Havana that comprises 24 research institutions, 58 manufacturing facilities and employs over 7,000 scientists. Together these entities produce 585 of the 868 essential medications registered for domestic use, according to CIM director Agustín Lage. This includes a dozen vaccines, generic antiretrovirals for people with AIDS and over 40

biopharmaceuticals. Cuba's Scientific Pole also developed many innovative products, including a vaccine against type-B bacterial meningococcal disease, a synthetic antigen vaccine against *Haemophilus influenzae* type b (the first in the world) and Nimotuzumab, an anti-tumor epidermal growth factor receptor.

Several factors drive Cuba's success in the pharmaceutical industry. Most important, the government keeps investing in the development of science and technology, including \$567 million in 2010, up from \$338 million in 2005. Structurally, Cuban biotech functions according to a "closed loop" model that groups research, development, manufacturing, marketing and distribution interests under one roof, thereby encouraging collaboration.

Locally produced biopharmaceuticals supply 80 percent of domestic needs and the sector is now the country's second largest export earner after nickel.

Moreover, Cuba's exports of biopharmaceutical products increased fivefold between 1995 and 2010.

The future strength of Cuba's biopharmaceutical industry depends on expanding international cooperation. Strategic alliances with Brazil, and importantly, China and India—the source of 44 percent of Cuba's raw materials for biopharmaceutical products—enhance the health of Cuba's biotech sector, along with its diversification of market share through the development of biomedical information and software, diagnostic screening systems and nano- and neurotechnologies. Indeed, island biotechnology economies must evolve and adapt to survive.



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However, encouraging companies to stay on the campus once they reach maturity, or after a bigger firm acquires them, is one of Biocitech's big-

gest challenges. In 2010, for example, when AstraZeneca bought Novexel for \$500 million, it fled. Boussard says, "We need to manage a paradox: The success of the resident companies is sometimes a failure for Biocitech."

Despite these challenges, Biocitech has plans for its own expansion. Support from the French state investment fund Caisse des Dépôts will allow work to get underway to extend the park—potentially doubling its rentable space in 10 years. But Boussard is cautious about growing too fast. "We need to monitor what happens," he says. "The park has the ability to grow, but we're not seeing a phase of significant growth [in the wider industry]."

Indeed, in Biocitech's 2011 survey, residents reported a 15 percent year-on-year decline in revenue. Most companies shared a pessimistic view of 2012, which they believe will be no better than 2011 in terms of raising funds either through winning contracts or equity. "Biotech as a sector is hard-going," says Boussard. "It's always been hard, so it can be either a bit less difficult, or a bit more. It's not like Internet phenomena with very fast life cycles and big peaks and troughs."

Nevertheless, many companies want to move to Biocitech. As Boussard says, "The principle is that the more companies we have in the same place, the better their visibility."