

Houston breeds biotechnology hot shots

Houston. In 1984, Dominic Man-Kit Lam and Jared M. Emery discovered a monoclonal-antibody-based product to prevent the recurrence of cataracts after surgery. Lam says that he and Emery, both professors of ophthalmology at Baylor University, had intended to license the product to an out-of-state pharmaceutical company. But after discussions with James Elkins Jr, then chairman of First City Bank and vice chairman of the board of trustees at Baylor, and energy and land baron George Mitchell, they were persuaded to keep their invention in Texas.

With that, Lam and Emery founded Houston Biotechnology, Inc. (HBI), one of the few companies to concentrate on developing novel therapeutic agents with ophthalmic applications. In 1986, HBI became one of the first biotechnology companies to establish its headquarters in the Woodlands — the 25,000-acre high-tech community outside Houston.



Dominic Man-Kit Lam.

toxin) designed to destroy selectively any lens epithelial cells remaining after cataract surgery. Epithelial cells that are not destroyed cause cataracts to re-form in about half of the patients that have undergone surgery. J. Russell Denson, HBI's president and chief executive officer (CEO), hopes to have the drug on the market by 1997 and estimates that annual worldwide sales could exceed \$600 million. HBI has already caught the eye of the leading Japanese ophthalmic company, Santen Pharmaceutical Company Ltd, which holds exclusive rights to market HBI's drug in Japan.

Since founding HBI, Lam has established two other companies — LifeTech Industries Ltd and GES Pharmaceuticals. Last year, he was appointed chairman and CEO of AgriStar, Inc., one of only a handful of start-up agricultural biotechnology companies in Texas. In the year since his appointment, Lam has brought the company back from the brink of bankruptcy and watched its market valuation rise from a low of \$2 million to almost \$40 million. At the heart of the company's technology is a patented membrane system for the cloning and micropropagation of plants. The membrane lets gases and light through but is impermeable to liquids and bacterial contaminants.

So far, Lam has resisted the temptation to license the technology to the giant agricultural companies. He says AgriStar prefers instead to undertake custom projects, and last March it agreed to micropropagate a proprietary line of potatoes for the Monsanto Company.

Triplex Pharmaceutical Company was formed three years ago as a spinoff of Michael Hogan's laboratory at Baylor. This Woodlands-based company is developing human therapeutics based on triple-helix-forming oligonucleotide compounds that bind directly to DNA and inhibit expression of protein at the level of transcription. Triplex hopes to be able to apply the 'triple-helix' approach to any disease where there is abnormal or unwanted gene function, such as is seen with certain cancers, cardiovascular and autoimmune diseases. But the most immediate application of the technology is in the treatment of human immunodeficiency virus (HIV) and herpes simplex virus. Candidate compounds are being evaluated in animal studies.

With \$19 million in venture financing under its belt, Triplex earlier this year signed a multi-year collaboration with Hoechst AG, one of the world's largest pharmaceutical companies. The deal, worth \$30 million, grants Hoechst worldwide marketing and manufacturing rights to antiviral drugs developed by Triplex using the triple-helix technology.

LifeCell Corporation was formed in 1986 to commercialize an ultra-low temperature freeze drying technique for biological cells and tissues, a technology developed at and licensed by the University of Texas Health Science Center (UTHSC) in Houston. It was the first time that any part of the UTHSC system retained an equity position in a company. LifeCell spun off its equipment business to RMC, Inc. in 1991 to concentrate on the therapeutic applications of its core technology.

LifeCell has six government grants and contracts worth almost \$2 million, with funding provided by the US Navy, the US Army and the National Institutes of Health. In addition, LifeCell recently raised \$7.1 million in an initial public offering. Clinical trials are planned for July with the company's leading product, a transplantable full-thickness skin graft using processed human cadaver skin. The skin graft is designed as a permanent treatment for patients with third-degree burns and bed sores.

LifeCell's tissue-processing technology selectively removes the cellular component of skin that elicits an immune response and causes graft rejection, leaving the structural dermal matrix and basement membrane intact to serve as a template for repopulation with the patient's own cells. The company hopes to have the product on the market next



LifeCell Corporation's facility in the Woodlands research park, Houston.

year. Additional transplantable tissue grafts under development include vascular conduits for bypass surgery and replacement heart valves.

In a southwest section of Houston, the wife-and-husband team of Nancy and Tse Was Chang have been quietly building a biotechnology company. Founded in 1986 on the basis of technology transferred from Baylor, Tanox Biosystems, Inc. is developing neutralizing monoclonal antibodies for the treatment of HIV, allergies and certain autoimmune diseases. And, while the company maintains a low profile, it has caught the eye of the Swiss pharmaceutical company, Ciba-Geigy Ltd. Collaborative research agreements between Ciba-Geigy and Tanox cover the development of the company's lead product, CGP47439, for the treatment of AIDS (which is in early-stage clinical trials) and the company's allergy research.

Nancy Chang is no stranger to the biotechnology industry, having worked for the now ailing Centocor, Inc. She believes that the right way to build a company is slow and steady. "It is not what you say, it is what you hope you can do", she says. "Eventually you've got to deliver."

One of Houston's most recent biotechnology start-ups is Texas Biotechnology Corporation. Located in the heart of the Texas Medical Center campus, the company is developing novel biotherapeutic agents to treat cardiovascular diseases such as atherosclerosis and hypertension. However, unlike most of the Houston-based start-ups, it is not a product of just one academic institution. Texas Biotechnology has close associations with several institutions, including the UTHSC, Baylor, Texas Heart Institute and the M. D. Anderson Cancer Research Center. Richard Dixon, scientific director at Texas Biotechnology and former head of molecular biology at Merck Sharp and Dohme, says that last October the company raised \$22 million from private donors to finance its research.

Diane Gershon