

***"In 1984 no one knew how to spell biotechnology and the federal government started to invest in it. We particularly chose to focus investments in a couple of cities, and to collaborate and attract major multinationals. It was a long-term strategy that is now paying off."***

*Dr. Peter Hackett, Vice-President, Research,  
National Research Council Canada*

#### **Investment in vaccines a real boost**

An Industry Canada Technology Partnerships Canada (TPC) investment will enable the Laval Technopole, Québec-based BioChem Pharma Shire to evolve into a fully integrated biotechnology company in the field of vaccines—a move that promises to benefit world health. Thanks to TPC's \$80-million repayable investment, BioChem Pharma Shire is expanding its research activity. Nine new vaccines are set to go through clinical trials, including three leading vaccines combatting meningitis, pneumonia and streptococcus infections. All three diseases have been identified as priorities by the World Health Organization. The TPC investment is part of a wide-ranging research and development project that, if successful, will involve further investments of up to \$600 million.

#### **Bionic humans: We have the technology**

A partnership between the University of Ottawa and Ottawa-based World Heart Corporation may provide the world's best chance for a completely implantable, easy-to-live-with, reasonably priced heart-assist device. Worldwide, heart failure kills about five million people each year. There are options, such as transplants, but all have clinical limitations. Enter the Ottawa University researchers and their HeartSaverVAD™ (Ventricular Assist Device), a heart-assist device. It is small enough and light enough to fit into the chest cavity, requires no holes in the body or the diaphragm, doesn't cause clotting, can be monitored remotely and, importantly, is affordable. With over \$100 million raised by the World Heart Corporation, research is progressing: human trials are pending, and plans for commercialization are in the works.



Photo courtesy of National Research Council Canada

## **Life Sciences**

Many analysts have suggested that we are now entering the "Age of Biology," when many S&T advances will be centred on the life sciences or biotechnology. Canadian S&T has embraced the life sciences, with over 500 companies and revenues in the billions at last count. In fact, three Canadian cities—Montréal, Toronto and Vancouver—are among North America's top 20 cities for biotech revenue.

Excellence in Canada's life sciences sector falls into two areas in particular—pharmaceuticals and agricultural biotechnology—although Canada is also making great strides in medical devices used for the diagnosis and treatment of illnesses, genetic engineering, health care, telemedicine and environmental biotechnologies.

Greater Montréal, Québec, is Canada's pharmaceutical powerhouse, with more than 200 health biotech firms active in the area. The city boasts international players Abbott Laboratories, BioChem Pharma Shire, Merck Frosst, Pfizer and the Bristol-Myers Squibb's Pharmaceutical Research Institute, as well as many small- and medium-sized enterprises. These companies and organizations benefit from the activities of the four local universities (McGill, Concordia, Université de Montréal, Université du Québec in Montréal) and NRC's Biotechnology Research Institute. In veterinary medicine and agri-food research, Saint-Hyacinthe near Montréal boasts over 120 companies in its scientific park.

In agricultural biotechnology, Saskatoon, Saskatchewan, is the largest centre for this research in the country, home to two federal laboratories, Agriculture and Agri-Food Canada's Research Centre and NRC's Plant Biotechnology Institute, as well as two educational institutions, the University of Saskatchewan College of Agriculture and the Western College of Veterinary Medicine. There are also over 50 agricultural biotechnology companies in Saskatoon, including Ag-West Biotech and POS Pilot Plant. In addition to Toronto's important generic pharmaceutical industry, some of the most significant agriculture research in Canada takes place in Guelph, Ontario, at the University of Guelph and in biotechnology companies clustered in that area.