

Biotechnology

Making More of Biotech

■ The biotech sector in Finland is seen as offering a growing number of opportunities, both by those in the industry, the academic community and government. Europe is also optimistic about the possibilities of making more of the region's expertise.

Saara Hassinen

Wood-based biomass has the potential to be used as the basis for a variety of new products, such as biodiesel.

Government in Finland takes an interest in many aspects of biotechnology, from basic research and regulation to funding, development, and applications. The situation is somewhat complicated, however, by the fact that matters related to biotechnology are seldom specific to a single sector—industry, environment, agriculture, or health—and often cover many areas. As a result, a number of ministries are involved with international agreements, EU regulations, and nation-

al legislation. Coordination early on in the drafting process and in tracking different projects is of key importance.

Despite the positive cooperation that has taken place to date, there has been a clear need for some time for a national strategy that would pull together the present strategies of the country's ministries and agencies and enable more to be made of Finland's strong science base and technological expertise in the biotech field.

Important New Development Programmes

Tekes—the Finnish Funding Agency for Technology and Innovation has launched two new programmes devoted to biotechnology, Symbio and BioRefine, over the last couple of years.

The first of these, Symbio, was announced in 2006 and aims at transferring the latest advances in biotechnological research to manufacturing by creating competitive environment-friendly industrial processes, products, and services. The programme, which has a budget of €80 million, half funded by Tekes and half by participating companies in chemicals, pharmaceuticals, forest products, food and

beverages, mining, textiles, and environmental technology, will last until 2011.

The BioRefine—Markets and business for biomass products programme was launched in 2007 and will last until 2012. With a budget of €137 million, almost double that of Symbio, BioRefine will focus on using all available technologies to develop products and processes based on biomass. While participants will include companies in the energy, chemicals, pharmaceuticals, food, and agricultural sectors, particular attention will be given to forest-based raw materials and the forest products industry.

Europe keen to move ahead

Competitive pressures from North America and also from the growth economies of Asia have been very much in the minds of European decision-makers, as has the importance of strengthening a European approach to promoting biotechnology alongside national ones.

A mid-term policy review of the EU's Life Science and Biotechnology Strategy, dating from 2002, has recently been completed, drawing on a joint Austrian/Finnish roundtable held in Helsinki in June 2006, which brought together representatives from the European biotech industry, EU institutions, and member states for the first time.

The review, which was published in April this year, and received the backing of the EU Council of Ministers in May, identified five priority themes: research, innovation, ethical issues, agriculture, and implementation.

The fact that biotech companies in Europe are largely small and medium-sized businesses with limited resources operating within a fragmented patent system and suffering from a lack of cooperation between science and business puts the European industry at a disadvantage, believes the Commission. As a result, it wants to encourage the development of best practices to license genetic inventions responsibly and the setting-up of incentives for innovative companies.

The Commission is also keen to promote more public debate on the pros and cons of biotechnology, and explore the potential of biotechnology in agriculture, particularly in replacing chemical processes and fossil fuels.



Most of Finland's biotech companies continue to be concentrated in the health care sector.

The review and its priorities have been welcomed by the European industry, including that in Finland, as marking an important step forward. Concerted action at member state level will be critical to the success of the strategy, however. □

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Finnish Biotech in a Nutshell

The Finnish biotech sector currently includes some 150 companies, two-thirds of which are directly involved in biotechnology or closely related technologies. In addition to these core companies, there are a number of support companies involved in areas such as clinical research, patenting, licensing, contract law, and business development. Three-quarters of companies have been established since 1990.

Many new companies have emerged from research and innovations at universities or institutes of technology. Biotechnology centres and science parks linked to university campuses have been at the forefront of developments, bringing together companies and biotechnology-focused research units. All of these centres—the most important of which are based in Helsinki, Turku, Tampere, Kuopio, and Oulu—include incubators and support services for start-ups.

Health care still number one

More than half of Finland's biotech companies operate in the health care sector. Most are start-ups, with fewer than 30 employees, and mainly focus on R&D. Over 90% of company revenue comes from exports.

Diagnostics and devices account for the largest number of companies—about 40—including Medix Biochemica, Orion Diagnostica, and Raisio Diagnostica.

These are followed by drug discovery and development companies, such as Ark Therapeutics, BioTie Therapies, Karyon-CTT, FIT Biotech, Galilaeus, and Ipsat Therapies. The food and feed sector, with about 20 companies, is the third-largest segment. As some companies are active in more than one sector, there is some overlap in these figures.

There are around 10 companies involved in biomaterials, from biodegradable implants used in bone repair to materials for tooth replacement, wound management, and drug delivery.

Finland also has a significant presence in enzyme production, through companies such as Roal and Genencor International. Novel enzymes are being used in increasing volumes by the pulp and paper, textile, food, and feed industries to improve product quality and reduce the requirement for environmentally harmful chemicals. Some companies, such as Finnzymes, are concentrating on high-quality enzymes for research.