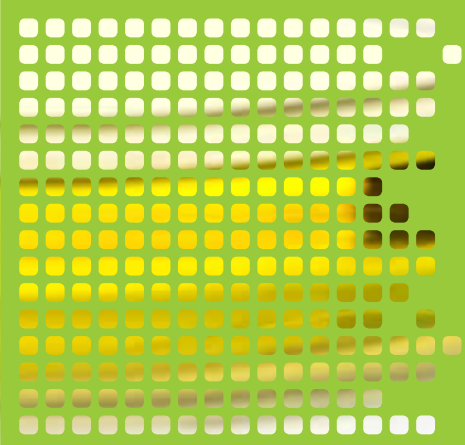


Tekes



Industrial biotechnology

SymBio

Tekes programme 2006–2011

SymBio

transfers biotechnology
from labs to
industrial production

Biotechnological solutions provide a means to make industrial processing more effective, economical and friendly to the environment. The Tekes SymBio programme renews industrial processes and environmental cleansing using biotechnology. SymBio boosts the application of biotechnology across different industries.



SymBio integrates the Finnish industrial biotechnology sector

Finland is a leading country in industrial enzymes and has strong competencies in bioprocessing, bioremediation and various other industrial biotechnology applications. Much of the groundwork for Finland's know-how in biotechnology has been built up through support from several of Tekes' programmes over the years. Currently, Tekes is investing strongly in the industrial application of this know-how.

In the field of industrial biotechnology, the SymBio programme offers a solid foundation for networking, information sharing and international cooperation. For international partners, SymBio is the easiest contact point for networking with key players and obtaining information on new developments and innovations in industrial biotechnology in Finland.

SymBio fast facts

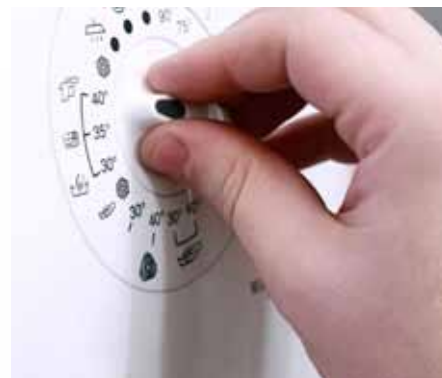
The SymBio programme is a complete package of funding and expert services for R&D in the area of industrial biotechnology. SymBio runs from 2006 to 2011 with a budget of EUR 80 million, half of which is financed by Tekes and half by participating companies. The programme is targeted at a variety of business areas, such as the chemical, pharmaceutical, forest, food and beverage, mining, textile and environmental industries.

Aims of the programme

- To create high quality, cost-efficient, competitive industrial processes, and new products and services using biotechnology
- To enhance the environmental friendliness of industrial processes
- To create new business opportunities in the fields of industrial production and environmental biotechnologies
- To boost the transfer of research results into industrial use and new products
- To increase the implementation of biotechnology in different industrial sectors

Results from Symbio projects

FINLAND HAS STRONG AND INTERNATIONALLY RECOGNISED COMPETENCIES IN INDUSTRIAL ENZYMES, BIOPROCESSING AND BIOREMEDIATION. FINLAND'S LONG TRADITION IN CONVENTIONAL INDUSTRIES, SUCH AS FOREST, DAIRY AND MINING, SERVES AS AN EXCELLENT PLATFORM FOR DEVELOPING INDUSTRIAL BIOTECHNOLOGY APPLICATIONS.



AB Enzymes Oy and Roal

A clean result in only ten degrees

AB Enzymes and Roal have discovered an enzyme that makes it possible to wash textiles with good results in temperatures as low as ten degrees. Thanks to this discovery, households will be able to reduce washing temperatures and thus save energy.

The development work is a response to the strong trend in the market to achieve optimal performance from washing detergents in lower temperatures, at 20–40 degrees. The goal is to save energy. The discovery supports this goal also by allowing the partial replacement of petrochemicals in detergents with enzymes. This means the use of petroleum-based products can be reduced up to 25–30 per cent.

In the future, the enzyme can be applied for a variety of purposes. In addition to liquid laundry detergents, it can be used in, for example, washing-up liquids and washing powders. There are also plans to use the same enzymes in the wool-processing and silk industries, among others.



VTT

Enzymes help reduce the carbon footprint of paper plants

Enzyme treatment can be used for reducing steam consumption at paper mills, which helps to reduce the carbon footprint of the production process. Through the improved process control, smaller amounts of the enzyme are required, which reduces production costs.

The challenge for forest industry companies has been the industrial-scale application of promising laboratory results received with enzymatic modification of fibres. In the project coordinated by VTT, the qualities of paper and the runnability of paper machines were improved by using an enzymatic application.

Based on the project results, the carbon footprint of the process could be reduced by more than ten per cent. The information produced during the project can in the future be applied in the implementation of other enzymatic applications into paper making.



Talvivaara Mining Company

Bacteria at work

In the bowels of Talvivaara mine in Sotkamo is one of Europe's largest deposits of nickel sulphide, and in which nickel and other valuable metals are recovered using the bioleaching method. The advanced technology used in the Talvivaara mine has turned a new page in mining.

The Talvivaara deposits are relatively low grade so using conventional metal extraction techniques in mining operations would not be economically viable. The bioleaching process, in which bacteria that are endemic to the area are used, is an efficient method of leaching metals from ore.

The process is environmental friendly, producing hardly any harmful emissions. The greatest environmental advantage of the process is that it is free of sulphur dioxide, unlike conventional smelting. The unit costs of production are also lower since the various stages of the process are relatively inexpensive and the energy consumption remains lower than in the conventional method.



BioSilta

New compounds from the microbe factory to the chemical and pharmaceutical industry

New pharmaceuticals and industrial enzymes – such as the active ingredients in detergents – are often discovered and developed with the aid of microbes. The EnBase cell cultivation kit, developed by the Finnish biotech company BioSilta, allows for the production of microbes efficiently and in higher density, providing a cost-efficient and environmentally friendly method of discovering new compounds.

There are many compounds that cannot be produced chemically or that would be too expensive to produce without using microbes. However, the challenge in cultivating microbes is to yield a large harvest of cells efficiently and in high density.

BioSilta's EnBase method maintains an optimised growth rate by controlling the release of the nutrient glucose to microbes. This enables as much as a ten-fold rate of production for the "microbe factory".

How does Symbio work?

Symbio finances R&D projects and provides programme services in the specific areas of:

- Development and control of biotechnological processes for production and manufacturing
 - Biotechnical methods for cleaning the environment
- Symbio links research organisations with companies at the earliest possible stage, identifies new applications to be transferred into industry use, helps with commercialisation and encourages international cooperation.

Eligibility for Tekes funding

Tekes offers funding for challenging R&D projects. Funding can be granted to Finnish companies, universities and research institutes. Foreign-owned companies based in Finland are also eligible for funding.

Symbio focus areas

For companies

Development of environmentally sound production and manufacturing processes by means of biotechnology

Environmental biotechnology, including fully integrated solutions for in-situ bioremediation of contaminated soils

In public research

Development of cost efficient production processes for industrial needs

Development and application of fully integrated solutions for the remediation of contaminated soil and water

International cooperation

Long-term investments in research and development have made Finland one of the most research-intensive countries in the world. The Finnish commitment to R&D has created an excellent research and innovation environment.

Symbio welcomes mutually beneficial collaboration in industrial biotechnology projects with foreign funding agencies, companies and research organisations. The programme does not finance research projects for foreign organisations, but it can help in other ways: bringing Finnish and international players together, financing researcher mobility and the Finnish counterparts in international joint projects, and facilitating the exchange of information.

Are you interested in creating synergies between your programme and Symbio?

The exchange of information, co-seminars and workshops will benefit all participating countries and organisations in international R&D projects. The mutual focus areas and competencies of project groups or companies can be identified and matched to facilitate cooperation. Creating synergies and jointly optimising research funding can be achieved, for example, through common calls.

Do you want to work in cooperation with Finnish companies or research groups?

Whether you are a company or a research organisation, Symbio can help you find a suitable partner in Finland with which to collaborate. You will benefit by collaborating in research with a Finnish partner and experience Finland's very efficient innovation system. Symbio can also finance international researchers to visit Finnish research groups or companies.

Be in touch

We are open to suggestions! Please contact us to share your ideas. More detailed information on the projects funded by Symbio can be found at our website at www.tekes.fi/symbio.





Tekes, the Finnish Funding Agency for Technology and Innovation

Tekes is the main public funding organisation for research and development (R&D) in Finland. Tekes funds industrial projects as well as projects in research organisations, and especially promotes innovative, risk-intensive projects. Tekes offers partners from abroad a gateway to the key technology players in Finland.

Tekes programmes – part of the innovation chain

Tekes programmes are an essential part of the Finnish innovation system. These programmes have proved to be an effective form of cooperation and networking for companies, universities and research institutes for developing innovative products, processes and services. Tekes programmes boost development in specific sectors of technology or industry, and the results of the research work are passed on to business systematically. The programmes also serve as excellent frameworks for international R&D cooperation.

Further information:

www.tekes.fi/symbio

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