



**A special year for**

# **The biotech sector**

■ In many ways, the biotech sector in Finland has had a remarkable 2013. It has been a year of enforcement of the biobank law, trading licenses for Finnish drugs, and new strategies for the health care sector and bioeconomy.



The first clinical biobank, new drugs and biorefineries. 2013 has been a successful year for Finland's biotechnology sector.

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The concept of personalised medicine is to find an individual patient the precise drug and avoid unnecessary treatments. This will save the growing costs of public health care in an ageing population. The basis of personalised medicine is the knowledge of genetic risks, and the lowering cost of genome sequencing enables its use.

In Finland, especially cancer treatments are increasingly individualised based on pharmacogenomics, the technology that analyses how genetic makeup affects an individual's response to drugs.

Finland could be the forerunner in personalised medicine due to the optimal size of the population, the large patient sample collections and patient data, biobanks, and the high level of genetic research.

Biobanks, collections of human biological samples with associated medical data, have an important role in unravelling the aetiology of diseases, identification, and validation of new diagnostic methods as well as advancing personalised medicine.

The enforcement of the Finnish biobank law will begin in September 2013. The Finnish Institute of Molecular Medicine (FIMM) has joined forces with the National Institute of Health and Welfare (THL) and the surrounding hospitals in the Meilahti campus in Helsinki to create a biobanking facility called MIBI (Meilahti Integrated Biobank Infrastructure), which contains samples from nearly 200,000 subjects.

Established by the University of Turku and the hospital districts of Southwest Finland, Satakunta, and Vaasa, the first clinical biobank in Finland will be the Auria Biobank in Turku. Applying for a licence from Valvira (the National Supervisory Authority for Welfare and Health), the biobank should begin its operations in autumn 2013.

Approximately 80 per cent of the samples in Auria Biobank are cancer samples. Besides research in cancer, the biobank also supports research in diabetes and cardiovascular diseases.

## Drugs from Finland

The year 2013 is also a remarkable year for Finnish drug discovery. Biotie Therapies Ltd and Hormos Medical Ltd, two small Turku based drug discovery companies, will gain trading licenses for drugs originally developed in Finland.

In February 2013, Biotie Therapies Ltd's product Selincro (nalmefene), which is licensed to Lundbeck A/S, received European marketing authorisation for the reduction of alcohol consumption in adult patients with alcohol dependency who consume alcohol on a high level. In May 2013, Selincro was launched in the United Kingdom.

The pharmaceutical invention Ospemifene, which was developed in Finland by Hormos Medical Ltd and its parent company Quatrux Pharmaceuticals, also received trading approval from the FDA, the US Food and Drug Administration, in February



## Jubilee week celebrates biotech

The year 2013 is the 60th Jubilee year of the discovery of DNA. During those 60 years, the development of molecular genetics and biotechnology has been tremendous.

To celebrate the anniversary, EuropaBio, the bioindustry organisation of Europe, is organising the European Biotech Week from September 30 through October 4, 2013. The week celebrates biotechnology and highlights biotech's achievements and opportunities through events across Europe.

In Finland, the Biotech Week is coordinated by the Finnish Bioindustries. It is organised in collaboration with Tekes, VTT, FIMM, the Luma Centre, and the Chemical Industry Federation of Finland, among others. During the week, several seminars and other events will be organised, for example, in Helsinki, Turku, and Tampere.

**In Finland, the European Biotech Week is celebrated through events in Helsinki, Turku, and Tampere.**



2013. The drug is designed for the treatment of vulvar and vaginal atrophy (VVA) due to menopause.

The drug has been licensed to the Japanese Shionogi & Company, which is launching it to the US and global market.

In addition a Helsinki based biotechnology company Oncos Therapeutics Ltd, focused on the development and commercialisation of targeted oncolytic immunotherapies for solid tumors, was granted an orphan drug designation for CGTG-102, a granulocyte-macrophage colony stimulating factor-coding oncolytic adenovirus (Ad5/3-D24-GMCSF) for the treatment of soft tissue sarcoma by the FDA and European Medicines Agency (EMA).

### Health care strategy

In June 2013, a working group was appointed to prepare the growth strategy for health sector research, development and innovation activities (RDI). Appointed by governmental bodies, including the Academy of Finland, the working group aims to present a draft strategy to the stakeholders in October and to the Research and Innovation Council at the end of the year.

The objective of the cooperation is to make strategically important choices and coordinate the resources allocated to their implementation.

The growth strategy is based on the fact that Finland has a great opportunity to be a leading country in health technology, medical research, personalised health promotion, and treatment of illnesses as well as health sector service innovations.

In addition, there has been a long-term development of the life science environment and industry in Finland. The goal is to create collaboration between all these sectors.

### Fuel from biomass

There are also future plans for the Finnish bioeconomy. A national bioeconomy strategy for Finland has been prepared since autumn 2012 by several ministries, and the final report will be published in autumn 2013.

Forest companies in Finland need to find new areas for the use of wood as raw material due to the decreasing global demand for paper.

UPM, for example, is investing in a biorefinery producing biofuels from crude tall oil in Lappeenranta. The industrial scale investment is globally the first of its kind. Annually, the biorefinery will produce approximately 100,000 tonnes of advanced second generation biodiesel for transport.

With her large forests, Finland is in an excellent position considering the global need and competition for biomass. Still, the concept of bioeconomy should not be restricted to only wood as raw material. Important sources of biomass are also, for example, agriculture and municipal waste.

Big Finnish chemical industry companies are also seeking new business opportunities in biorefineries for producing biofuels. Neste Oil already has biorefineries in Porvoo, Singapore, and Rotterdam, the Netherlands. Renewable fuels recorded a comparable operating profit of 33 million euros already this year.

The Rotterdam biorefinery has an annual production capacity of a billion litres of renewable diesel fuel, making it Europe's largest biorefinery. The biofuel is made from a variety of vegetable oils, by-products of vegetable oil refining, such as stearin, as well as waste oils and fats.

Biofuels form only a small part of the possible products, other important bio-based products are for example bioplastics, biochemicals, and drugs.

### From chemistry to biotech

In Finland, there is a long tradition of industrial biotechnology, and especially the knowledge and development of industrial enzymes is world class. The Finnish Roal Ltd, which produces enzymes for different industrial applications, such as baking, food, technical and feed industries, is one of the world's largest enzyme companies exporting over 90 per cent of its products worldwide.

According to a prediction of McKinsey and Company, biotechnology will replace 33 per cent of chemical processes by 2025. In 2005, the share was only 6.7 per cent.

The refining of biomass, the global need for which will be enormous, will also be a combination of traditional chemical processes and a growing use of biotechnology. Biotechnology will similarly be important in producing biomass, for example in growing algae and using genetic modifications in plant breeding. □

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