The United Front of Estonian Cancer Research

COMPETENCE CENTRE FOR CANCER RESEARCH

European Union
Regional Development Fund

Investing in your future

The united front of Estonian cancer research companies:

68 scientific articles and 10 patent applications

A good example of Estonian R&D companies coming together and joining their capabilities is the Competence Centre for Cancer Research, which was founded in 2005. Today the consortium includes 12 partners: Tallinn University of Technology, Protobios, Celecure, Kevelt, InBio, Cambrex Tallinn, TFS Trial Form Support, North Estonia Medical Centre, University of Tartu, Quattromed HTI, Baltic Technology Development, and EPhag.

Riin Ehin, Chairwoman of the Board of the Competence Centre for Cancer Research (CCCR), how does the Centre relate to its members and what was the incentive for establishing it?

The Centre has managed to bring together more or less all the organisations which work actively on cancer research in Estonia. Our aim is to save human lives and to improve the quality of life of cancer patients.

The fight against cancer is definitely not an easy one, because cancer is an extremely heterogeneous disease. In terms of molecular biology, 'cancer' means more than 350 different diseases with varying diagnostic methods and treatments as well. So in the light of our current knowledge, it would be impossible to develop a single universal cure for cancer which would help all in need. Cancer is one of the main causes of death in the developed world: every second man and every third woman will face the diagnosis of cancer in his/her life. At the same time, the development of medicine and biotechnology today has made it possible to re-evaluate the general prognosis of cancer as an illness. Whereas just a few decades ago the diagnosis of cancer meant more or less a clear and fast death sentence, biomedicine today provides the opportunity to regard cancer as a disease which can be treated or as a chronic illness where the best response to treatment is a result of a personal medical approach.

What is the difference that the Competence Centre for Cancer Research will bring along?

Estonia has historically strong schools of biochemistry, molecular biology, oncobiology and oncology. Each branch has found its own outlet through clinical medicine, academic research or business. Before the Centre was founded, the contacts between those areas were relatively sporadic. The Centre enables us through synergy between different branches to find innovative solutions in diagnosing and treating cancer as a very difficult and complex illness.

What is the goal of the Centre?

We are running development projects in two important fields – developing new generation cancer drug candidates, i.e. therapy, and developing and applying the methodology of early cancer diagnosis and prognosis, i.e. diagnostics.

The success of the treatment depends a great deal on how early the cancer is detected. Thus, the diagnostics development orientation of CCCR develops new technological platforms for early diagnoses of cancer. It will enable to diagnose cancer non-invasively, that is, without having to perform surgery on the person to make a diagnosis. CCCR is in the process of developing a new diagnostics platform that will help to test for the markers of certain types of breast cancer and intestinal cancer, using peripheral blood, in very early stages. Protobios, a partner of CCCR, has already licensed a set of markers to a US pharmaceutical company. The next marker-based diagnostic tests are currently undergoing clinical studies, in co-operation with the North Estonia Medical Centre.

Some tumours are genetic in nature, meaning that the gene that increases the risk of cancer is inherited from parents. These people have a much greater risk of cancer than the average population. CCCR has developed an onco-genetic testing platform combined with onco-genetic consultation. Gene testing and genetic consultation are already used in the case of genes that predispose people to certain types of breast cancer.

The early diagnosis of cancer is essential. And it is important to know, for the treatment of cancer, how aggressive the particular form of cancer is. The cancer drugs used today usually have many side effects. Therefore, it is important for the patient's well-being to use an optimal treatment plan. One of the projects of the CCCR's diagnostics development orientation studies the use of semaphorins and plexins (certain proteins) in the diagnosis of gliomas (a type of brain tumour), and the determination of how aggressive these are.

The Competence Centre for Cancer Research Ltd. (CCCR) was founded in 2005 with the mission to save lives and improve the quality of life of cancer patients.

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CCCR is running projects in two important fields – developing new generation cancer drug candidates, and developing and applying the methodology of early cancer diagnosis and prognosis. In the former, therapy field, the focus is to develop drug candidates of greater selectivity. That means the drugs will only kill cancer cells and not anything vital to the body, and will minimise side effects.

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CCCR brings together all the organisations which work actively on cancer research in Estonia – currently the consortium includes Cambrex Tallinn Ltd., Kevelt Ltd., Inbio Ltd., Celecure Ltd., Protobios Ltd., TFS Trial Form Support Internationa AB, North Estonia Medical Centre, Tallinn University of Technology, University of Tartu, Baltic Technology Development Ltd., EPhag Ltd. And Quattromed HTI Laborid Ltd. Also, the Centre has very good partners outside Estonia – for example in 2009 CCCR participated in a EUREKA project led by Pharmidea, Latvia .

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The Centre enables to find innovative solutions in diagnosing and treating cancer through synergy between different fields. Although the Centre employs 70 people, it can count on the input of nearly 2,500 people in solving problems. All those scientists, doctors and others are linked with the Centre through its partners.

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CCCR is funded by partners and via the Competence Centre Programme. The aim of the Competence Centre Programme is to raise international competitiveness by enforcing cooperation between enterprises and research organisations. The Programme is co-funded by the European Regional Development Fund (ERDF) and it is administrated by Enterprise Estonia. ERDF resources are mainly used to co-finance:

- productive investment leading to the creation or maintenance of jobs;
- infrastructure;
- local development initiatives and the business activities of small and medium-sized enterprises.

In addition to diagnostics, CCCR also has a therapy development orientation that focuses on the development of candidates for new-generation cancer drugs. The aim is to achieve greater selectivity, so that the drugs will only kill cancer cells and not anything vital to the body, and will minimise side effects. There are currently seven development projects in progress in the therapy development orientation.

Who do you cooperate with?

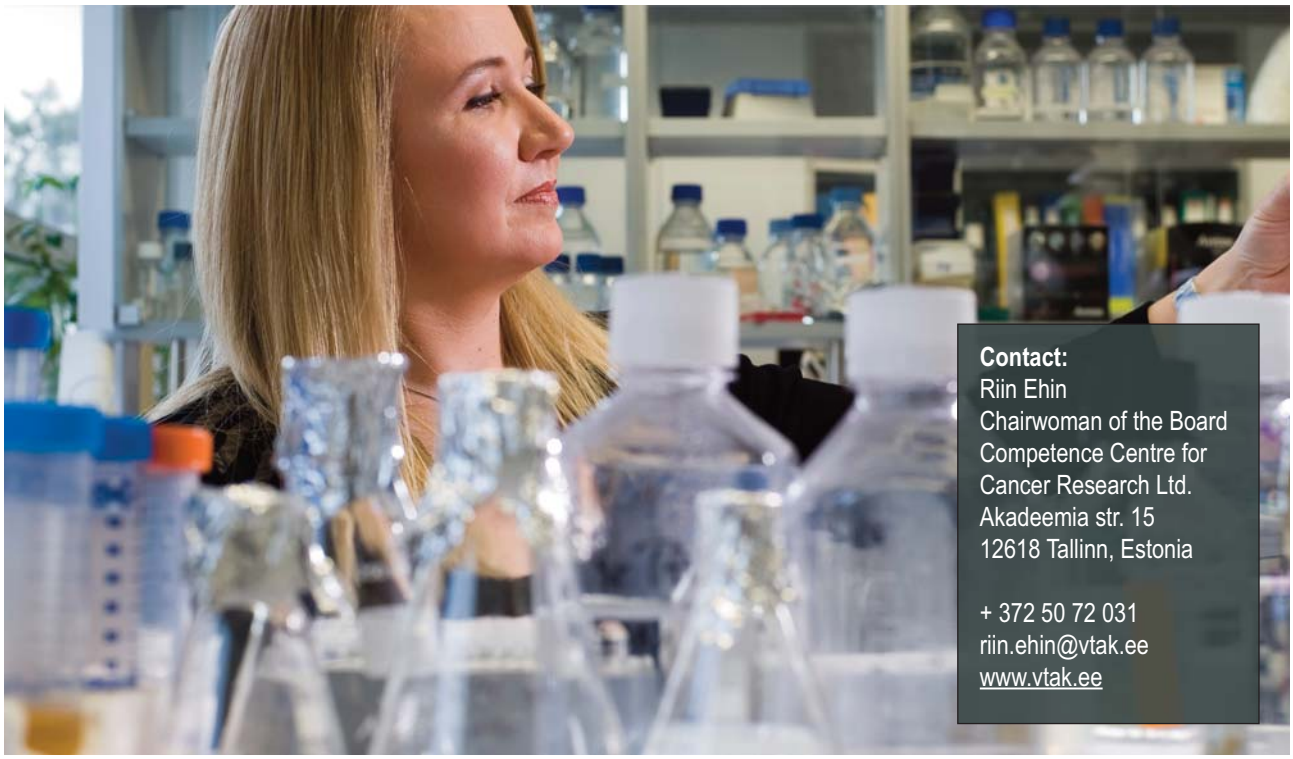
CCCR unites almost all the organisations in Estonia involved in top-level research on malignant tumours. Also, the Centre has very good partners in the USA, Sweden and Finland. Together we have already come up with solutions which each one of us individually could not have achieved.

In a technology-focused enterprise, the amount of brain-power is critically important. Although the Centre employs 70 people, we can count on the input of nearly 2,500 people in solving problems that we face in development work. All those scientists, doctors and others are linked with the Centre through our partners. Science is an extremely rational field – you cooperate with whoever can offer you opportunities for synergy and the growth of shared values. Estonian biotech companies have various unique capabilities and technological solutions and this has fortunately been noticed in the world already.

What's your assessment of the business potential of your members?

They are top-class in terms of research: our scientists publish articles in the best scientific journals and have continuously received research prizes in Estonia and internationally. For example, during the last three years there have been 68 scientific articles published on topics related to the Centre and 10 international patent applications have been submitted. Our researchers have supervised in the preparation of 14 academic graduation papers (BSc, MSc and PhD) at the Tallinn University of Technology, the University of Tartu and the Karolinska Institute in Sweden.

The business potential is equally noteworthy. As I have already mentioned, our partner Protobios has licensed a set of markers to a US pharmaceutical company; the outcome of another project, involving the company and project partner AS Prosyntest, has now been sold to Cambrex Inc, a listed US corporation. New onco-genetic tests are being used in Estonian hospitals.



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Enterprise Estonia

Enterprise Estonia (EAS), established in 2000, promotes business and development in Estonia. It is one of the largest institutions within the national support system for entrepreneurship, providing financial assistance, advisory, cooperation opportunities and training for entrepreneurs, research establishments, public and third sector.

Enterprise Estonia operates in the following areas:

- Increased sustainability and accelerated growth of startup companies;
- Improved export and product development capability of Estonian companies;
- Larger impact of foreign direct investments on the Estonian economy;
- Increased tourism export and the development of domestic tourism.
- Promotion of regional development and civil society.

Pursuant to the accession of Estonia to the European Union, Enterprise Estonia became one of the implementing units of the European Union Structural Funds (mainly Regional Development Fund, but to some extent also EU Social Funds) in Estonia. In the 2007-2013 financing period of the European Union, 13 billion kroons (203 Mio EUR), out of more than 53 billion kroons (3,4 billion EUR) of structural assistance for Estonia, will be applied by Enterprise Estonia.

Broad lines of Estonian research and development were defined in the document **Estonian Research and Development and Innovation Strategy 2007-2013 "Knowledge-Based Estonia"**, approved by Riigikogu (Estonian Parliament) in 2007.

The activities to be carried out in the sector of innovation fulfill the objective to increase the product development and technological capability of companies, as well as the capability of research and development establishments to provide the commercialisable solutions.

Grants

- The **product development grant** for the entrepreneurs and universities for developing the products and services with high added value.
- The **competence centre grant** for creating the good products and services in cooperation with entrepreneurs and scientists.
- The **innovation voucher grant** for increasing competitiveness of Estonian SMEs through transfer of knowledge and technology, expansion of cooperation with R&D institutions and increase of capability of protection of intellectual property

Implementation of strategy is described in "Revised implementation plan", revised 29th December 2009.a in the government of Estonia (for the period 2010-2013), setting out a strategy to implement the necessary actions, deadlines, responsibility and funding.

As an annex to the implementation plan, **Biotechnology Program** was adopted at 29. December by the Government of Estonia.

It is a national R & D program, which aims to coordinate the implementation of priority actions in the field of Biotechnology in Estonia, identifying funding priorities, direct evaluation of biotechnology research- and business development.

EAS is the implementing agency for the support of Estonian Biotecnology Program.

Enterprise Estonia

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