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OVERVIEW
TARTU – CITY OF GOOD THOUGHTS AND ADVANCING TECHNOLOGY VILLAGE
What will Tartu look like in 2030, when the city will celebrate its millenarian anniversary? Laine Jänes, the mayor of the City of Tartu, has her own vision. By Õnne Pärl

INTERVIEW
ESTONIANS ARE RESEARCHING STRESS TOLERANCE LIMITS
Eero Vasar, Professor of physiology at the University of Tartu, was awarded the National Research Award of Estonia for their study on the neurobiological mechanisms involved in negative emotions. By Õnne Pärl

BIOTECHNOLOGY
RICHARD VILLEMS: LET’S WEED OUT MEDIocre SCIENCE
When Richard Villems was elected academician at the age of 43, he was one of the youngest members of the former Academy of Sciences of the Estonian SSR. Now he is the president of the Estonian Academy of Sciences. By Tiit Kändler

ECONOMY
LARGE-SCALE GENE FORUMS IN SMALL CITY OF TARTU
Over the last decade Tartu has gained recognition as a host of international scientific conferences. Interview with Maris Väli, board member of the Estonian Genome Foundation. By Taivo Paju

NEW CONVENTION DESTINATION – TALLINN
Estonians have already gained some experience in organising major international events involving a high level of responsibility and complexity: Tallinn was the venue of the Eurovision Song Contest in 2002. By Taivo Paju

NANOTECHNOLOGY – THE NEW PASSION OF STEVE JURVETSON, THE FATHER OF HOTMAIL
There are several well-known Estonians in the world, such as composer Arvo Pärt, but Jurvetson is probably the most famous Estonian in the field of economics. By Taivo Paju

FOR WHOM THE BELL TOLLS
Well, it certainly does not toll for the Estonian clothing industry, as proved by Monton, the fashion brand! By Taivo Paju

CULTURE
TARTU – CULTURE CAPITAL OF SOUTHERN ESTONIA
Tartu, the second biggest city in Estonia, is first of all known as a scientific centre. In addition to the campus, the beautiful landscape and the other sights of Tartu, there is also the Jaani Culture Quarter. By Aivi Ross

RUHNU ISLAND – REMOST PLACE IN ESTONIA
In complete isolation, Ruhnu people created an entirely separate lifestyle and culture which stayed archaically unchanged until the Second World War. By Martin Adamsoo

CONTACT
ESTONIAN BIOTECHNOLOGY COMPANIES AND RESEARCH INSTITUTES
Estonia shall have every opportunity
to become one of the leading centres
in biotechnology

You are holding in your hand a recent issue of a journal providing an overview of Estonian biotechnology. Since the publication of the previous issue one and a half years ago several important events have taken place, having a direct impact on the development of biotechnology in Estonia.

Firstly, the Government of the Republic decided to provide substantial support to the infrastructure of research institutions, first and foremost with regard to research equipment. Despite close competition, the research institutions in Tartu (University of Tartu, Estonian Biocentre and Centres of Excellence in research) received ca 6.5 million EUR for acquisition of equipment required directly for the purposes of biomedicine and gene technology. This is the first time since the restoration of independence in Estonia that the state has supported the purchase of research equipment to such an extent. Naturally, support from the European Union has a significant role.

Another important event was the completion of two construction projects – a new building for natural sciences of the Tallinn University of Technology in our capital, and the building of the Technology Institute of the University of Tartu in the Maarjamõisa science campus in Tartu. The already existing Biomedicum, the new chemistry building of the University of Tartu to be completed in the near future, and the extension of the main hospital facility of the University of Tartu Hospital shall increase the value of the science campus and hopefully bring along advancement in its basic purpose.

And thirdly, three ministries – the Ministry of Economic Affairs and Communications, Ministry of Social Affairs, and the Ministry of Education and Science recently decided to support the Estonian Genome Project Foundation. In case the EGPF database reaches 100,000 gene donors during the next four years, as stipulated in the Development Plan of the Estonian Genome Project Foundation, Estonia shall have every opportunity to become one of the leading centres in biomedicine and gene technology.

The current proportion of biotechnology in the Estonian economy is inessential. However, in view of Estonian natural resources, our geopolitical situation and demographic changes, innovation represents a key factor in ensuring economic growth in the long run. Development and high-technological production are also necessary to ensure constant improvement of public welfare by the time we have run out of timber, because it is not the number of hands, but high level of education and skills that matters in the end.

Andres Metspalu
Head of Department of Biotechnology, University of Tartu
European Society of Human Genetics president-elect 2005-2006
Mart Loog is one of the six European scientists to receive a grant from the Howard Hughes Medical Institute and the European Molecular Biology Organization in the amount of 225,000 USD. This grant, receipt of which is a mark of the highest scientific excellence, was awarded to the young scientist for establishing his first independent laboratory contributing to even more in-depth studies of cell division control mechanisms.

Loog will set up his laboratory in the new building of the Institute of Technology at the University of Tartu. At present the building has plenty of vacant space, but in a few years' time the management of the institute expects it to be full of laboratories. The Institute aims at attracting more resources – both in terms of drawing additional money and, first and foremost, bringing doctoral researchers back to Estonia.

"We are ‘angling’ for every opportunity to find other sources of funding in addition to those provided by the state," says Eerik Puura, Vice Director of the Institute of Technology. "Otherwise we would be ‘eating up’ the limited resources of small Estonia."

However, the Institute of Technology is not so much focused on the academic work but instead aims at generating intellectual property applicable in business in the near or distant future.

**Intellectual property gains strength**

The Institute is also responsible for managing the intellectual property of the University of Tartu. In comparison with western universities the patent portfolio is rather thin, but the figures are not of significant importance at the given moment. "One cannot run from one’s own shadow. We are currently at the same level where the USA was in the 1960s – the situation in Estonia is currently the same as 15 years after the war," says Puura, referring to the leap Estonia made from a Soviet society to a market economy.

Actually, at least one research institution in Tartu made such a leap back in the Soviet times. In 1984, after his research as a post-doctorate at Uppsala University and at the University of Edinburgh (an education that was very rare in those times), Richard Villems, presently the president of the Estonian Academy of Sciences, went straight to the USSR Council of Ministers in Moscow, armed with nothing more than a 13-page argument for establishing an independent research centre in molecular biology in Tartu. Hard to believe, but he pulled it off.

The centre, now called the Estonian Biocentre, has become a quality mark, and was designated an EU Centre of Excellence. Five years ago the research centre reached the top five among 184 laboratories.
within the framework programme for European Development Centres.

After new opportunities became available in 1992, the Tartu Science Park, the first science park in the Baltic States, was established in Tartu. Erstwhile the low-key foundation has served as a launch-pad for several well-known companies, one of which is Tarmetec, a company that has evolved into an internationally recognised auto industry supplier and established several plants in Tartu, thus providing employment for ca 200 people.

Toomas Noorem, the present director of the science park, regards the park as a bridge connecting industrial and development institutions. “For example, recent discussions with the University of Tartu concerned four projects that were about to grow beyond the bounds of the university – our task is to support such projects,” he confirms.

Toomas Noorem is a perfect liaison for mediating industrial contacts, mostly because of his 10 years of management experience from Tarkon, the largest company in Tartu. In Soviet times this plant became well-known for producing “black boxes” for Russian airplanes.

At present the Tartu Science Park offers incubation service for start-up companies and deals with EU projects. Due to the small size of Estonia, the science park has a significant role in enhancing business throughout all of Southern Estonia.

A competition for finding a new set of start-up companies is organised each year and several good concepts have emerged from this competition. For instance, Tervix, a company established in 2003, prepares health products from sea buckthorn. The idea for this endeavour originated eight years ago, when two families started growing sea buckthorn. Today various nature products such as syrup, ointment and oil produced by Tervix are on sale in Estonian drugstore chains, but they still have not run out of ideas. Such companies with an active attitude towards life and constant urge to develop represent exactly the type of companies the managers of the science park dream of.

Expansion on the agenda

The Tartu Science Park and Tartu Biotechnology Park are proud to present their extension plans – in a few years Tartu shall have thousands of square metres of incubation space. Both centres accommodate biotechnology companies, yet there is no competition, but close cooperation instead.

Similar to the science park, the biotechnology park also functions as an incubation centre. Andrus Tasa, the manager of the park, gives an example of a recently concluded competition, during which four
companies from different parts of Estonia were selected for incubation: one veterinary clinic from Haapsalu, physiotherapists from Rakvere, a tissue-producing Finnish-Estonian company from Tartu and a Swedish-Estonian company from Tallinn.

According to Andrus Tasa the plans of expansion are closely related with the Estonian Genome Foundation, the premises of which are situated in the same building as the science park. The Estonian Genome Foundation was established in 2001. Today it contains the information on 10,319 gene donors and is participating in two international health examination projects. One of the projects is focused on working out the screening measurements for different genetic forms of cancer. The objective of the second project is mapping the knowledge, experience and technical basis of the universities, hospitals and companies in the Nordic countries and the Baltic Sea region in order to create a basis for carrying out high-quality clinical examinations. The Estonian Genome Foundation is coordinating this project. This is also the first time the project sponsored by the Nordic Innovation Centre has been coordinated by a non-Scandinavian institution.

A year ago the contracts between the Estonian Genome Foundation and its former financer were terminated, thus leaving open several future scenarios; today the Estonian state has made the decision to put forth its full effort into financing the project.

Laine Jänes, the mayor of the City of Tartu, points out that the city government has always contributed to the establishment of an environment supporting the development of knowledge-intensive companies. For instance, the City of Tartu is one of the founders of the Tartu Science Park; the Estonian state and the City of Tartu also support the completion of another incubation centre established within the framework of the Phare Project.

What will Tartu look like in 2030, when the city will celebrate its millenarian anniversary? Laine Jänes has the following vision: the science park region in the Räni district between the fields at the outskirts of the city has become a centre for technology companies. The Maarjamõisa region, which currently comprises the University of Tartu Hospital, the state-of-the-art complex of the Biomedicum built in 1999, and the new Institute of Technology, has become a university research centre.

The mayor is well aware that it is more than just a dream: the first stage of the extension of the university hospital will be completed in 2008, and the second stage bringing other clinics of the hospital to this area will be completed only a few years later.

The slogan of Tartu is “City of Good Thoughts.” Laine Jänes is convinced that one day all good thoughts will come true.

By Õnne Pärl
ESTONIAN SCIENTIST WAS ELECTED PRESIDENT OF THE EUROPEAN SOCIETY OF HUMAN GENETICS

Prof. Andres Metspalu, the head of the Department of Biotechnology at the University of Tartu, was elected president of the ESHG for the period of 2005-2006.

According to Prof. Metspalu his first concern as the president of the ESHG was to bind national societies of human genetics with the ESHG – for that purpose the presidents of national societies of human genetics were convened and possible opportunities were discussed. “In many countries human genetics has not been registered as a medical specialty; instead it is presumed that doctors in all specialties should be familiar with genetics as well,” the professor exemplifies.

The president brings forth several other purviews: as a member of the Scientific Programme Committee of the International Congress of Human Genetics, he had to fend for a balanced scientific programme so as to ensure worthy representation of top European scientists. The ESHG was also actively opposed to the monopolisation of breast cancer diagnostics by a US company, by calling on the European Patent Office to withhold their patent in Europe.

The ESHG is an international professional society founded in 1967 which promotes research in basic and applied human and medical genetics and facilitates contact between all persons who share these aims.

TRANSFER OF NEW KNOWLEDGE BETWEEN ENTERPRISES AND INSTITUTES

The Estonian state decided to allocate approx. one million euros to support the BioSPINNO 2 project, which aims at facilitating the transfer of new knowledge between enterprises and research and development institutions in the field of biotechnology in 2004-2007.

The objective of the project is to establish one or two biotechnology companies each year and submit at least two new patent and licence applications; it is also expected to conclude at least 25 contracts for performing R&D works.

The BioSPINNO 2 project shall be implemented in cooperation with the Estonian Biocentre, Institute of Chemical and Biological Physics, University of Tartu, Tallinn University of Technology, Estonian University of Life Sciences, Estonian Genome Foundation, Tartu Biotechnology Park and the Estonian Biotechnology Association. The range of partners involved in the consortium should provide maximum value added to the commercialisation of the results of research and development activities in the biotechnology field.

Total value of the BioSPINNO 2 project is 1.3 million euros, whereas Enterprise Estonia provides 2/3 and project partners (through self- and cofinancing) 1/3 of the total funding.

NEW SCIENCE AND TECHNOLOGY CENTRE IN TALLINN

In July 2005 the cornerstone was laid for the IT and Biotechnology building of the Tallinn Technology Park (Tehnopol), with an estimated rental space of 6000 m² and construction cost of ca 5 million euros.

The premises of Tehnopol are located in the vicinity of the Tallinn University of Technology in the Mustamäe district. Today, in addition to the institutes of the Tallinn University of Technology and recently established Tallinn Business Incubator, more than a hundred enterprises operate on the ca 10 ha territory of the TUT campus. Tehnopol’s tenants are knowledge-based enterprises, mainly in the fields of IT, electronics, and biotechnology and gene technology.

The founders of Tehnopol, which was established in March 2003, are the Republic of Estonia, the City of Tallinn and the Tallinn University of Technology.

JAANUS PIKANI, THE MOST EXPERIENCED MEDICAL MANAGER IN ESTONIA, STEERS INTERNATIONAL COOPERATION NETWORK

Jaanus Pikani is a vice chairman of the ScanBalt network. He graduated from the Faculty of Medicine at the University of Tartu and has been working more than 10 years as a cancer and reconstructive surgeon. He has also worked as the Chief of the Office of the President of the Republic of Estonia and was appointed CEO of the University of Tartu Hospital, the biggest healthcare organisation in Estonia.

ScanBalt is a mediating and coordinating network without formal power and its strength depends on the strength of the individual networks. It implies coordination of existing networks and organisations as well as stimulating the creation of new ones.

ScanBalt has developed out of ongoing activities in the individual biovalleys in the ScanBalt Bioregion, which encompasses 11 countries and 85 million people. There are 60 universities and 870 biotech-related companies.

BIOTECHNOLOGY-RELATED PROJECTS SUBMITTED SUCCESSFUL PRELIMINARY APPLICATIONS

In September 2005 the Board of Enterprise Estonia approved five winning preliminary applications for the infrastructure development programme of research and development institutions.

Three out of five projects relate to the development of infrastructure necessary for biotechnological research, namely infrastructure development of the Tallinn University of Technology in the field of chemistry and biotechnology for the period of 2005-2008, the infrastructure project of the Estonian Biocentre, and the project for biomedicine and molecular biology laboratories of the University of Tartu. According to Alar Kolk, the CEO of Enterprise Estonia, the decision was based on the rank order proposed by an international evaluation committee. Kolk pointed out the rather close competition between the preliminary applications. Eight renowned scientists and experts from various European countries analysed and ranked the preliminary applications. The right to submit a full application for a grant in 2006 was given to the five best projects.

The total programme value is ca 15 million euros, 75% of which is covered from the means of the European Regional Development Fund (EU Structural Funds).
How would you summarise the research?

The purpose of the research was to study the stress tolerance limits of the human body. This research is not about developing some sort of happiness drug – these substances are actually present in nature and in us. Our task is to learn to know the stress response system better, which has allowed our forefathers to adjust to the ever-changing world.

Stress knowledge is necessary for helping people to avoid stress-related disorders. Externally, some people seem to have high stress tolerance, but even they may develop illnesses – such as hypertension with reduced quality of life resulting therefrom.

Have you always been interested in stress, depression and other behavioural disorders?

Actually, at first I was interested in schizophrenia as a disease, perhaps because of the signature of geniality the human spirit contains. The aspect of abstract thinking is important in schizophrenia; there are extremely talented mathematicians-physicists among the people suffering from this disease.

According to a modern hypothesis schizophrenia is a neurodevelopmental disorder where genetic factors play an important role. Ca 1% of the human population suffer from schizophrenia, but ca 3-4% have a predisposition to develop schizophrenia. Therefore adverse external factors, including the consumption of illicit drugs, have a crucial impact. It is believed that smoking cannabis virtually doubles the risk of developing this particular mental illness.

Schizophrenia is frequently developed at the age of 18-20, when the connection between the two hemispheres has developed. Usually this period also involves major changes in a person’s living environment, causing stress which may trigger the process of the disease in people with a predisposition.

You have studied a neuropeptide called cholecystokinin or CCK for almost twenty-five years. What makes the research on that neuropeptide so essential with regard to the study on brain functioning?

By now it has been established that CCK and related peptides are abundant throughout the brain. At the
same time there is no clear explanation of why the concentration of CCK is significantly higher than necessary for neurotransmission in some parts of brain. However, it is possible that CCK has a significant role in oxidative stress mechanisms, because it can capture reasonable quantities of free radicals formed during metabolic reactions. Thus CCK may exert protective effects on the nervous system – but that hypothesis requires further studies.

So you focused on studying the impact of CCK on brain in the 1980s?
These choices were somewhat occasional: namely, Viktor Mutt, a famous Estonian scientist working in Stockholm, was associated with research on biologically active peptides. He sent ampoules with CCK to Prof. E. Käer-Kingisepp, the former Head of the Department of Physiology, and that was the beginning of our saga of neuropeptides.

CCK has been shown to inhibit the effect of morphine in the gastrointestinal tract, and these observations led us to the suggestion that CCK may have a similar effect on the brain as well. We succeeded to demonstrate it in the aggressive behaviour model, but it was rather difficult to publicise our results from behind the Iron Curtain. We attempted to do it in 1981, but unfortunately there was no experience in communicating with international journals back then, and thus the results remained unpublished. A few years later a study by US scientists was published, first demonstrating CCK antagonism in regulating morphine antinociception.
And later on it appeared that peptide CCK was also connected with anxiety?

In fact, the effect of CCK fragments on inducing panic attacks was discovered in late 1960s, in the course of research on the effect of CCK on insulin release in young soldiers. Once, instead of the usual neuropeptide, a CCK fragment consisting of four amino acids was ordered and soldiers developed a state similar to a panic attack. Later on, intravenous injection of CCK-4 was found to provoke a short-lasting (a few minutes) panic-like attack.

This issue is significant from the social aspect, e.g. in the US the proportion of people suffering from panic disorders constitutes ca 2-3%. Many pharmaceutical companies have studied CCK in order to find substances that would inhibit panic attacks. However, these drugs did not prove to be efficient in treatment of “natural” panic attacks and hence the interest of companies declined significantly.

In 1996 the Japanese developed a transgenic mouse lacking the CCK₂ receptor mediating the panic-like effect of neuropeptides. We received such a mouse from Japan in 1998. We have been engaged in working on that issue since then and by now we have seen many interesting effects.

What kind of effects?

For instance, several studies involving laboratory animals ignore the fact that invalidation of a gene induces different effects in male and female animals, which is actually not surprising in view of human practice.

Our studies concern first and foremost fear and anxiety, which are evolutionally connected with older brain structures.

It is an accepted fact that depression and anxiety are more frequently present in women, because they generally have a more vulnerable emotional sphere. But substance abuse such as alcoholism is more common via the paternal line.

The situation is the same in transgenic mice, lacking the CCK₂ receptor. We have found reduced anxiety in female mice. Male mice reveal reduced pain sensitivity and lower amphetamine-conditioned place preference, which represents an animal model of drug abuse potential. It has been proposed that these effects in genetically modified mice are related to the increased function of the opioid system that mediates the effects of morphine.

You apply various models for studying rodents. What does it mean?

Relatively standardised experimental models have been developed to study certain functions. For example the elevated plus maze model represents a model of anxiety, based on a rodent’s innate fear of open illuminated areas and height. There is also the fear conditioning test that studies the learning mechanisms based on negative emotions.

In case of rodents we can examine innate and acquired mechanisms. The knowledge gained from these studies (primarily on the molecular level) is also applicable to humans.

Innate mechanisms play a certain role in anxiety and fear in humans, but learning is also important. For example, people suffering from panic disorder learn to avoid places where they usually experience panic attacks. The prefrontal cortex is also considered important in exerting control over anxiety and fear. These mechanisms enable us to understand that a shadow seen in a moonlit forest does not belong to a bear, but to ourselves.

To what extent does the information based on genetically modified mice apply to humans?

Our studies concern first and foremost fear and anxiety, which are evolutionally connected with older brain structures. Charles Darwin provided a rather figurative demonstration of the similarity of the emotional responses in humans and animals.
Genes that are associated with fear and anxiety are carefully preserved in animals. Rodents used in modern laboratories have been separated from their natural circumstances for more than a century, but they still respond to certain stimuli. If a piece of cloth where a cat has slept is placed on a rat cage, the animals instantly develop anxiety. They freeze in the cage, the level of stress hormones in their blood increases and the exposure of these animals to anxiety models clearly indicates elevated anxiety.

In these studies we have found several interesting genes in the amygdala – the central part of the brain linked to fear and anxiety. Sulev Köks and Hendrik Luuk, research fellows from the Institute of Physiology, have created a transgenic mouse lacking the wolframin gene. The first experiments with that mouse indicate a remarkably high concentration of this gene in the amygdala. According to current studies in psychiatry the mutation of this gene seems to be associated with depression.

And one outcome of the research concerned seasons?
There are a number of experiments that cannot be carried out during certain seasons. In summer the behaviour of laboratory animals indicates that it is time for rest. In a natural environment rodents have plenty of natural enemies, i.e. their basic anxiety is high. But in winter the anxiety level lowers significantly – apparently there are fewer enemies around, when rodents hide under the snow. Although laboratory animals are not aware whether it is summer or winter outside, the observation of changes in animal behaviour enables upcoming freezing weather to be forecast.

Similar seasonality is seen in humans: people suffering from panic attacks feel much worse in early summer. As for depression, the effect is just the opposite – they feel worse in late autumn.

Seasonal depression seems to depend on the level of serotonin. In summer, when there is a lot of sun, the level of serotonin in the human brain is higher and they feel better. The effects of pharmacological substances in laboratory animals also depend on seasonality – they do not always have identical effects.

ESTONIAN STATE SUPPORTS GENOME PROJECT
In December 2005 the Government of the Republic of Estonia decided to find means necessary from national reserve capital to keep the Estonian Genome Project afloat and to support the foundation with 7.7 million euros within a period of four years. The Government also resolved to form a working group that will prepare the reorganisation of the Estonian Genome Project Foundation into a research institution.

The Estonian Genome Project Foundation, comprising a database of health, genealogy and genome data of a large part of the Estonian population, is currently participating in two international projects. The focus of the Estonian-Latvian cooperation project is on working out the screening measurements for different genetic forms of cancer and on working out the system for analysing the results of the abovementioned screening measurements. The objective of the second project is mapping the knowledge of the universities, hospitals and companies of the Nordic countries and the Baltic Sea region in order to carry out the high-quality pre-clinical and clinical examinations.

The contracts between the Estonian Genome Project Foundation and Public Limited Company EGeen were terminated by mutual agreement in December 2004.

TARTU SCIENTISTS RECEIVE REPUTABLE RESEARCH GRANTS
Biotechnology Professor Maris Laan and genetics Docent Maia Kivisaar from the University of Tartu were selected to receive international research awards from the Howard Hughes Medical Institute, which supports promising basic research in the field of biomedical science.

Each scientist will receive $100,000 a year for a five-year term. Sixteen of the 28 researchers – incl. Docent Kivisaar – were selected to become HHMI international scholars in 2000 as well. More than 400 scientists applied for the competitive awards.

The impact of the HHMI’s research grants goes beyond the research of individual scientists: part of each award is earmarked for equipment, supplies, and other support for the scientists’ home institutions. Funds are also used to provide training opportunities for students, electronic journal subscriptions, collaborative research, and travel to scientific meetings.

THE FIRST ESTONIAN IN THE EUROPEAN MOLECULAR BIOLOGY ORGANISATION
In October 2005 Prof. Mart Saarma, the director of the Institute of Biotechnology at Helsinki University, was elected new member of the EMBO.

The EMBO elects 40 new members each year, and EMBO membership is a life-long honour. Selection is based on proven excellence in research, as its membership includes leading researchers in the field, amongst them 38 Nobel Laureates. Professor Saarma is the first Estonian ever elected to be a member of the EMBO.
You have performed experiments with human subjects as well, haven’t you?
Yes, we have performed some research on mood and anxiety disorders.

For example, in consideration of the wolframin gene, our research fellows Sulev Kõks and Kati Koido have ascertained that the depression risk in Estonians is linked to the chromosome 4 region, which requires further study. This region is related to several subunits of the gamma-aminobutyric acid GABA<sub>A</sub> receptor that mediates the action of anxiolytic substances – starting from alcohol and ending with benzodiazepines.

As of late you have focused on the endocannabinoid system. Why?
CCK-containing neurons in the brain express one particular receptor – the cannabinoid CB1 receptor. This receptor mediates the effects of marihuana and endogenous cannabinoids.

We are interested in two different substances: the efficacy of one substance (2-arachidonyl-glycerol) is significantly higher at cannabinoid CB1 receptors compared to the other (anandamide). These two substances seem to interact in an antagonistic way: the molecules with lower efficacy seem to inhibit the action of molecules displaying a higher efficacy.

Therefore, we intend to develop two different transgenic mice: one that lacks the substance displaying the higher affinity for receptors and another that lacks the substance with the lower binding affinity.

Our interest is focused on the impact of such genetic manipulations on the function of the endocannabinoid system in the brain. Any stress increases the level of endocannabinoids in the brain. Therefore, one may assume that these mice display an altered response to stressful stimuli.

Why do you prefer gene technology in research?
Gene technology provides a more selective approach than pharmacology, as it enables particular genes to be deactivated and whether the expected effect occurs or not to be seen.

Previously we examined the effects of particular substances and their impact on behaviour. Such research may be considered the top-down approach. But now we can perform bottom-up research, by moving from the gene level towards behaviour. However, moving closer to the molecular level contains a potential risk of losing the “whole picture.”

What is your opinion on the research opportunities with regard to your field in Estonia today?
It seems to me that motivation and advancement in science requires first and foremost personal interest. Naturally, international cooperation is also important. For example, we are grateful to Prof. Toshimitsu Matsui from Kobe University, who helped us to receive our CCK<sub>2</sub> receptor-deficient mouse that was actually our key to “postgenomic psychopharmacology”. Sulev Kõks, one of the most motivated and talented scientists of our research team, was awarded a Marie Curie Fellowship to continue research at the famous Institute of Psychiatry, King’s College London.

I believe that today researchers have found motivation to return to Estonia: a new animal research centre shall be built in Tartu. That will raise the research in genetics to an absolutely new level. The opportunities are constantly improving and I am very positive about the perspectives of Tartu as a city of science. [By Õnne Pärl]
QUATTROMED AS OBTAINS TWO TECHNOLOGY-INTENSIVE BUSINESS AREAS

According to the agreement signed in June 2005, Quattromed AS obtains the business area of production and distribution of antibodies and technology patented by FIT Biotech Plc. in the field of latex allergen testing. Both business areas are complementary to Quattromed's current product portfolio.

“The divestment from the abovementioned business areas is a logical step of restructuring and refocusing our activities,” said Dr. Kalevi Reijonen, the CEO and President of FIT Biotech Plc. “The main focus of our company in 2005-2007 is the development of the GTU technology platform – a very promising approach in the field of gene therapy against HIV/AIDS and other diseases. Quattromed AS has solid production capabilities in both of the business areas we sold and the company has maintained its operating efficiency despite the fast growth Quattromed has faced during the past few years.”

According to the agreement, the purchase price of business areas comprises fixed payments and royalties based on sales volumes, which are not subject to disclosure in consideration of mutual agreement.

“Antibodies for research purposes have been an integral part of our product portfolio for four years, and the additional products fit well with our existing business,” said Erki Mölder, the CEO of Quattromed AS. “The technology platform for latex allergen testing we obtained from FIT Biotech Plc. is unique and it gives us a strong competitive advantage in the growing markets of the Asian countries.”

PATENT APPLICATION FOR INNOVATIVE TECHNOLOGY

In February 2005 the University of Tartu and AS Quattromed submitted a provisional patent application in the US to protect a technology that significantly accelerates the production process of therapeutic proteins and other biological substances in mammalian cells.

“Until now the development of stable cell lines used for the purposes of protein production took about 10 to 12 months, but now thanks to the introduction of new cell lines, the process is shortened to 2 to 3 months. And time is essential for our customers in the development of therapeutic programmes,” said Erki Mölder, the CEO of AS Quattromed.

INTERNATIONAL PATENT APPLICATIONS FOR ANTICANCER DRUG

In March 2005, after the successful PCT application stage, Celecure filed national patent applications in the US, EU, Canada, Australia, Japan, China, and India for the SB101 angiogenesis inhibitor for cancer treatment. Celecure has an exclusive global license to develop that technology from Sweden's Angitia AB.

Tarmo Kivi, chief executive officer of Celecure, said, “We are exited by the recent results in the preclinical development of the lead compound of SB101 for cancer treatment. We are finalising the preclinical efficacy studies and are preparing for safety work. Our plan is to be ready for clinical trials by the end of 2007. Also, we are already having preliminary discussions with large international biopharmaceutical companies to potentially launch strategic partnerships to co-develop the drug through clinical trials.”

SB101 is a novel angiogenesis inhibitor, based on parts of the endogenous protein CD44 working via a novel mechanism not previously ascribed to CD44. SB101 binds to endothelial cells and specifically blocks their proliferation. SB101 works efficiently and at very low doses in different experimental animal models to block angiogenesis and tumour growth. SB101 has the potential to be a significant breakthrough in cancer therapy by its novel mechanism of action.

In addition to cancer therapy, SB101 also has a potential market in therapy for adult blindness caused by diabetic retinopathy or macular degeneration as well as for psoriasis and various forms of chronic inflammation. SB101 has recently entered preclinical development.
Richard Villems: Let’s Weed out Mediocre Science!

Richard Villems was only 12 years old when the first satellite was launched into space in 1956. This event caused a scientific boom both in the Soviet Union and in the United States. Villems, however, finds that the launch had no significant effect on his future aspirations. Instead, he feels that the idea of becoming a scientist has been there all along, channelling his curiosity. By the way, Villems believes that curiosity requires a genetic predisposition.

Writing an article about Richard Villems is a task that is complicated and simple at the same time. One of the reasons seems to be his one-of-a-kind figure. When he was elected academican at the age of 43, Richard Villems with his ever-present pipe was one of the youngest members of the former Academy of Sciences of the Estonian SSR. Back then it was good news and due to his uncompromising nature Villems had a significant role in avoiding the stagnation of the Academy when the Soviet Union crumbled.

Villems has always been a tough nut to crack for a journalist. He may go on and on explaining things that sound rather simple. Then again, when rambling about another, far more complicated issue, he may snap at you for not doing your homework, saying that “after all, this is such a simple thing!”

Years ago Richard Villems wrote in the jubilee collection of the Academy, paraphrasing a famous Estonian novel: “When I entered the laboratory in my second year at the university, the work with...
nucleic acid had already begun [...]” Villems was rather verbose when praising Artur Lind, the founder of Estonian genetics. But he also admitted that the future of Estonian molecular biology would have been rather obscure, had there not been such academicians as Rebane, Lippmaa and Einasto, who carried out a rather uncompromising scientific policy at the right time and in the right place.

The study of the fundamentals of life has survived and today Estonia has got cutting-edge research centres in Estonia’s capital, Tallinn, and the university city of Tartu. Based on private capital the researchers in Tartu managed to establish a laboratory building with transgenic mice in the cellar and virtual genes on the screens of the upstairs computer hall. Richard Villems had a significant part in it – both in terms of raising funds and attracting and keeping young and talented scientists in the laboratory. We should also consider ourselves fortunate that he has not followed the example of his mentor, Lind, in terms of ignorance in dealing with paperwork, because there is much paperwork to be done and many grants to be received.

Richard Villems was elected president of the Estonian Academy of Sciences in November 2004. His inaugural speech held in January 2005 fascinated those fond of esprit as well as those who value innovative ideas and depth of thought.

Estonian science has to become more attractive, and there will be no room left for mediocrity in Estonian science after accession to the European Union – these are the tenets voiced by Villems.

John Bohannon, a reporter of the scientific journal Science wrote the following in December 2004: “A necessary step for Estonia to remain competitive, as Villems sees it, is to reduce what he calls the ‘mediocrity’ in his country’s science. Sound like a draconian thesis adviser, he says that after years of Soviet exploitation, some Estonian researchers have a sense of entitlement, that they should be funded without having to do excellent work.’ He plans to make sure that Estonian research institutions and projects are assessed by peer-review from outside the country.”

By the way, the article was titled Cutting a Path in Genetics and International Diplomacy and Bohannon repeatedly referred to Villems as a scientist-diplomat, thereby emphasising his substantial role in Estonian science. Villems himself believes that he had been referred to as a diplomat due to the fact that he had been principal negotiator for Estonia’s early entry into the European Union research funding scheme. “It was not actually complicated, but we were the first to sign it among the acceding countries,” he comments. ■

By Tiit Kändler

GRANNUS BIOSCIENCES LIMITED ANNOUNCES APPOINTMENT OF EGEEN AS CONTRACT RESEARCH ORGANISATION

In December 2005 Grannus BioSciences Ltd. (GBL), a bio-pharmaceutical company developing novel products to control inflammatory and hyperproliferative disorders, announced the appointment of EGeen AS, a subsidiary of EGeen International, as a contract research organisation for the company’s clinical development activities.

Under the terms of the agreement, Grannus will utilise EGeen for the clinical testing of its lead biological and small molecule therapeutics in Phase I and II human clinical trials, respectively, against a number of dermatological diseases and conditions. Dr. Elizabeth McLaughlin Taylor, Grannus’ chief operating officer, stated: “We are pleased to be moving into the clinical testing of the company’s products in diseases such as psoriasis, contact dermatitis and actinic keratosis where there is considerable unmet clinical need. We are equally excited to be able to initiate our clinical development with such a capable partner as EGeen. We expect that the clinical studies starting in 2006 will generate data critical to the development of Grannus’ innovative pipeline and its growth as a pharmaceutical company.”

Kalev Kask, Chief Executive Officer of EGeen, said “The addition of Grannus to the growing list of EGeen customers is another sign of the strengthening of EGeen’s reputation and signals expansion of its activities against the background of global competition. This again proves the strength of EGeen’s business model and represents a reflection of the skills, quality and good work of the entire EGeen team.”
Large-Scale Gene Forums in Small City of Tartu

Academia Gustaviana, the forerunner of the modern University of Tartu, was established by Gustav II Adolf, the King of Sweden, in 1642. However, over the last decade Tartu has gained recognition as a host of international scientific conferences.

Taivo Paju conducted an interview with Maris Väli, board member of the Estonian Genome Foundation, in order to find out how Tartu became a venue of international Gene Forums.

How and when was the tradition of international Gene Forums in Tartu started?

Tartu became a venue for major international scientific conferences in the field of genetics and biotechnology in 1999, when a four-day scientific conference held under the auspices of the Human Genome Organization (HUGO) brought together over fifty leading gene scientists.

Why did HUGO, an international organisation of scientists involved in human genetics, choose Tartu as the location of the scientific conference focused on application of DNA chip technologies? By that time Tartu scientists had been working on the development of DNA chip technology for more than four years and were well-known worldwide, particularly Professor Andres Metspalu from the Estonian Biocentre and conference organiser. You may say that the success of that Forum placed Tartu on the international map of gene technology.

The Estonian Genome Foundation was also established in 1999 with an objective to promote comprehensive popularisation of genomics and biotechnology. By that time the draft project of the Estonian Genome Project had also been completed, and thus the Estonian Genome Foundation came upon the idea of organising an international scientific conference in the field of genetics and biotechnology, with main emphasis on human genetics, to bring together representatives of different fields from all over the world.

The First Gene Forum in Tartu was held in September 2000.

Next Forum took place in 2001 – a time of upheaval in biotechnology.

Estonia managed to set an example as early as the end of 2000, when the Riigikogu adopted the Human Genes Research Act, which was undoubtedly unique at that time. In September 2001 top scientists in the field of biomedicine and genetics attending the second two-day International Gene Forum in Tartu discussed the development opportunities of biotechnology after the successful sequencing or “deciphering” of the human genome in the beginning of the same year. The main issues discussed at the conference focused on new trends in genomics, the genetics of complex diseases, and the commercial applications of genetic information aimed at the development of new drugs.

The speakers of the programme included 21 leading experts from Europe and North America;

New Convention Destination – Estonia

You may consider yourself fortunate if you manage to make a hotel reservation in Tallinn, the capital of Estonia, for June this year. Before St. John's Day the city will receive two thousand foreign visitors who will participate in the Junior Chamber International Conference, which lasts for four days. This conference is by far the greatest and most prestigious conference held in Estonia, and thus provides a great challenge for the organisers.

The right to organise the JCI Conference did not come easy for Tallinn. The qualities that tipped the scales in favour of the Estonian capital included modern conference services offered at reasonable prices, the number of excellent hotels situated in the city centre, the beautiful Old Town, quality dining, etc.

But according to Meeli Jaaksoo of the Tallinn City Government Tourist Office and Convention Bureau, the organisation of the JCI Conference in Tallinn is not an entirely unprecedented event, because Tallinn has been a venue of prominent conferences for many years. This includes conferences held by large-scale corporations who prefer to avoid excessive public attention. Discretion and good service have proved to be the best publicity and the number of such events in Tallinn has steadily increased.

In addition to the conference programme Tallinn also offers quality entertainment. Local restaurants, starting with Olde Hansa, the famous medieval restaurant, and ending with numerous restaurants of modern design, are well-known among Scandinavians. The 30% increase in the number of tourists visiting Estonia, which represents the fastest growth...
more than 370 people participated from Estonia and abroad. The successful organisation of the Forum left no doubt in the need to continue this Forum series.

**So we may say that today hosting annual Gene Forums has become one of the main activities for the Estonian Genome Foundation?**

By today six international Gene Forums (www.geneforum.ee) on various subtopics have already been held in Tartu. The speakers – 120 leading scientists in biomedicine and genetics worldwide – have come from Europe, North America, Australia and Pakistan. Perhaps the most famous person in the history of Gene Forums was the keynote speaker of the Gene Forum 2003, Professor Rolf Zinkernagel, the Nobel Prize Laureate in 1996 for fundamental research in medicine concerning the specificity of cell-mediated immune defence (“dual recognition”).

We have made every effort to provide an interdisciplinary conference programme each year, in order to attract the attention of representatives of different fields: scientists, physicians, healthcare officials, business executives, investors, lawyers and other specialists.

**Last year another considerable international conference was held in Tartu, this time in cooperation with the Estonian Genome Foundation and bioinformatics scientists from the University of Tartu.**

Tartu was the venue of the Seventh Annual Nordic Bioinformatics Conference, or “Bioinformatics 2005,” organised by the Society for Bioinformatics in the Nordic countries. This was the first time Estonia had hosted a bioinformatics conference as prominent as this. Foreign speakers at the conference included 21 representatives of leading scientific centres in North America and Europe. Ca 140 conference participants came from abroad, mainly from Scandinavian countries and Western Europe.

International cooperation is also crucial for organising the VII International Gene Forum 2006, which will be held with the V Annual Conference of the ScanBalt Organisation (www.scanbalt.org) in Tartu on 21-23 September, 2006.

**What is the future potential of Tartu as a convention destination?**

In these terms Tartu has good potential – the Vanemuine Concert Hall also functions as a modern Conference Centre. Over the years, the multifunctional Concert Hall has been successfully employed as a conference centre for 800 people; in principle it has all the means necessary for ensuring the high technical level of international events. In my opinion a major disadvantage of the Concert Hall is the shortage of smaller seminar facilities, which may become an obstacle in organising large-scale conferences.

The best solution would be the construction of a state-of-the-art conference centre for ca 250-300 people in the vicinity of the existing Concert Hall, because it is impractical to use the Concert Hall in case of a low number of participants. Currently we do not have such smaller conference centres, although there are scientific conferences with 200-250 participants frequently held in Tartu.

**Are there any other advantages?**

These days a shortage of accommodation should not present a problem, because the hotel business has undergone remarkable development in recent years.

However, people with an enterprising spirit will still remain the key factor in securing the reputation of Tartu as an international convention destination in the future.

The experience of the Estonian Genome Foundation has shown that international conventions can be successfully organised by an efficient team consisting of no more than 2 or 3 people.
Nanotechnology – the New Passion of

When popular management journal Fast Company commenced introduction of the most interesting blogs worldwide, it published the following text:

BLOG: The J Curve http://jurvetson.blogspot.com

WHO WRITES IT: Steve Jurvetson, Managing Director, Draper Fisher Jurvetson

WHO SHOULD READ IT: Whether or not you agree with Jurvetson’s nanotech evangelism, his intelligent, if sometimes abstruse, comments on everything from genomics to the importance of a childlike mind are a nice reprieve from the usual blogosphere back-scratching. If only he’d post more often.

Hard to tell about other small nations, but 1.4 million Estonians are very proud of their compatriots who have become world-famous.

Today, every Estonian is familiar with the name of Steve Jurvetson, Partner and Managing Director of Draper Fisher Jurvetson, a venture-capital firm seated in California. Steve Jurvetson’s parents escaped from Estonia during World War II, he grew up in America and does not speak Estonian, yet he has always considered himself to be Estonian. By the way, he comes from a famous Estonian family – Konstantin Päts, the brother of his great-grandfather, was the president of Estonia before the Soviet occupation.

There are several well-known Estonians in the world, such as composer Arvo Pärt or rally driver Marko Märtin, but Jurvetson is probably the most famous Estonian in the field of economics, or at least as far as the issues of IT and nanotechnology are concerned.

According to Fortune, Jurvetson ranked among the world’s top ten successful managing directors; in 2003 the same journal placed him in 7th on the top-40 list of persons under the age of 40 having a major impact on the world during this century. Bill Clinton is but one person among those who have consulted with Jurvetson.

In the world of investments the success-story of Jurvetson, born in Arizona in 1967, is comparable to the story of Sean Connery or Tom Cruise in the world of entertainment.

After graduation from the reputable Stanford University as a Henry Ford grantee, the young man was not very eager to work for a large corporation. Instead, he applied for a post in the investment company Draper Fisher and was chosen out of 250 candidates. In less than six months his family name was added to the company name – Draper Fisher Jurvetson. Thus we may say that he has become a dignified member of a dignified family.

Jurvetson secured his place in investment world history when Indian immigrant Sabeer Bhatia came before him after having offered his ideas to about twenty other investors. Jurvetson was the first person to take genuine interest in the free e-mail project proposed by Bhatia.

The investment company endowed the project with 300,000 USD. That is how Hotmail came into being. Later on Hotmail was sold to Bill Gates for 400 million dollars and became the cornerstone of the Microsoft Network. The BBC reflected upon that issue by stating that the American Dream has not been lost, even in the Digital Age.

Today Steve Jurvetson has become an acknowledged visionary venture capitalist in Silicon Valley. When the Postimees, a major daily newspaper in Estonia, asked Jurvetson how to reach his current position, he replied, “There is no single formula for that, yet all original thinkers share certain characteristics…such as enormous optimism with regard to the success of their ideas, distinct vision and persuasive power required for making other people believe in that vision. The most successful entrepreneurs should have good ideas, but they also need to be excellent communicators with suggestive power which is necessary to excite other people’s interest in the idea within only 20 minutes.”

In addition to good communication skills Jurvetson is significant for giving high importance to real sciences. He was an excellent debater in high school and he graduated as valedictorian.
Steve Jurvetson, the Father of Hotmail

“The state should attract more graduates to engage in real sciences,” said Jurvetson when visiting Estonia in 2004. “For instance, the state may set up several national competitions and provide awards in this field in order to create some respect towards the nerds in society […]. Everything goes well in a state governed by a culture that shows care and respect with regard to nerds such as scientists and engineers.”

More widely known as an IT investor (he also partnered in the Skype project), Jurvetson has recently emphasised the next boom looming in genetics and nanotechnology. Steve Jurvetson was one of the investors in the large-scale project of the Estonian Genome Project Foundation and he has stated his belief in nanotechnology loud and clear everywhere.

Despite the skepticism of many venture capitalists with regard to nanotechnology, Jurvetson does more than just talk – Draper Fisher Jurvetson has made several investments in that field.

Fortune Small Business writes: “Jurvetson's firm has made some early-stage investments in nanotechnology startups. One such company, the Denver-based ZettaCore, is using a molecule similar to chlorophyll to make memory chips that retain their data even when the electricity is turned off. That could lead to instant-on computers that are cheaper and use less power. Another DFJ-funded company, Konarka of Lowell, is developing solar cells by depositing a thin film on sheets of plastic.”

Up to this day things have developed in a positive direction and nanotechnology has reached from laboratories to production, as stated on the homepage of Draper Fisher Jurvetson by Jennifer Fonstad, a colleague of Jurvetson: “Despite those predictions that nanotechnology is still far away, we are seeing real revenue today in many companies.”

Apparently we should all peruse Steve Jurvetson's blog in order to find out what the Next Big Small Thing is in technology development. Perhaps it is nanotechnology. But it may instead be related to something rather different. Perhaps it is not just a coincidence that one of Steve Jurvetson's favourite hobbies is launching large rockets in the Nevada desert. □ By Taivo Paju

STEVE JURVETSON WINS 2004 WORLD TECHNOLOGY NETWORK AWARD IN FINANCE (INDIVIDUAL) CATEGORY

The World Technology Network (WTN) is a cross between a global meeting ground, a virtual think tank, and an elite club whose members are all focused on the business or science of bringing important emerging technologies of all types (from biotech to new materials, from IT to new energy sources) into reality.

The WTN's membership is comprised of over 800 individuals and organisations from over 50 countries nominated and judged by their peers to be the most innovative in the technology world.
For Whom the Bell Tolls?

Well, it certainly does not toll for the Estonian clothing industry, as proved by Monton, the fashion brand!

How many clothing brands are there that could beat such celebrities as Mango and MEXX? Monton, the fashion brand from Estonia, could. Only two years after entering the Ukrainian market, Monton was awarded the title of Best Clothing Brand in the country for the results shown in 2004.

Monton made an impressive entrance in Ukraine, as well as in four other Eastern European countries – Estonia, Latvia, Lithuania and Poland. On one and the same day, at exactly the same time, the capitals of the five countries saw a magnificent pink light show, supported by a massive advertising campaign in the media. The slogan of this pink campaign was “Go Change!”

Estonian clothing manufacturers had an ambitious goal. By that time fast fashion brands had reached world fashion and they put on the market ten new collections instead of one or two collections per year. While the seamstresses were working on one model, the designers were already looking around in various nightclubs to find ideas for a new, even more fashionable model based on people’s current outfits.

Monton was to become the leading fast fashion brand in Eastern Europe.

Elaborate preparations were made for that purpose: the name and up-to-date shop concept of Monton was developed in cooperation with American brand gurus. Estonians collected information about the business models exploited by such fast fashion flagships as Mango, Zara and H&M, and developed logistics at the same time.

In theoretical terms the new business model was based on Goldratt’s Theory of Constraints, which turned the traditional concept of clothing manufacturing upside down: formerly the manufacturer pushed its production on the shops, but now the shops were in the position to draw the goods they wanted from the manufacturer. And the latter had to be up to fulfilling the wishes bespoken by the merchants in no time.

However, bright dreams of Monton’s rapid triumph faded away when one major set-back appeared after another: an insufficient time capacity to produce new models that would represent the dernier cri; build-up of stocks; high exchange risks; and some partners appeared to have no habit of keeping their promises. Furthermore, buyers in each county were interested in slightly different goods.

As a result of all of this Baltika Grupp, the clothing company manufacturing Monton garments, faced the greatest loss in its history in
2003. The media predicted that both the company and Monton brand would vanish soon.

However, the leaders of Baltika Grupp kept cool. Step by step the designer team learned to understand what the people wearing *haut couture* actually wanted. Turnover increased and logistics became more flexible. Different marketing strategies for different countries were explored in cooperation with local advertising companies. For example, in Ukraine a fashion model campaign was organised among the persons who purchased Monton products.

In addition to the aforesaid contributors, Penny Robinson from England also played an important part in improved product development. She used her experience gained while working for Laura Ashley, Sears Clothing and Next.

In 2005 the sun began to shine on the Estonian clothing company again, and Baltika Grupp earned their greatest profit ever. In addition to the proper introduction of Monton, the sales of traditional brands of Baltika such as Baltman and Evermen (for men) and CHR (for women) have also skyrocketed.

However, Monton is but one component of the rebirth of the 75-year old Baltika Grupp. Somewhere at the turn of the century the leaders of Baltika came to understand that if they continued to produce clothes in the traditional way, they would be outperformed by Asian competitors sooner or later. In order to snap out of that situation it was decided to switch from the sewing industry to retail sales with equally competitive production and sales.

Today retail trade provides more than 80% of Baltika’s turnover and the company has become a considerable chain consisting of 86 shops in 6 Eastern European countries.

Russia is another country that recently became a partner of Baltika.

It is most likely the elaborated and rapid changes that make Baltika unique among Estonian and probably among all other European clothing manufacturers. In 2002 the management and shareholders of Baltika were aware of the risk when they decided to go for rapid changes after only a short preparation period, and learn in the course of work. It proved to be a painful but also very efficient method of study.

Today Monton is gaining on the greatest fashion brands in Eastern and Central Europe. **By Taivo Paju**
For the most part the Jaani Culture Quarter was completed by the summer of 2005, when the great international Hanseatic Days were organised in Tartu. The most magnificent medieval architectural monument of Tartu and in fact the whole of Estonia, the fourteenth-century St. John’s Church, is the heart of the quarter. Restoration works on the church, which burned during World War II, were completed this summer.

St. John’s Church is known for its terracotta sculptures, which are unique throughout Europe because of their artistic quality, size and number.

Unique terracotta sculptures

About two thousand terracotta sculptures originally decorated the church, half of which now remain. The way the terracotta sculptures were made was also unique. While terracotta sculptures are usually made in moulds, each of the Tartu St. John’s Church terracotta figures was cut out from wet clay and then fired. The sculptures represent Jesus Christ, the Virgin Mary, John the Baptist, various saints, fantastic animals, as well as the Devil and a knight. There are a lot of human busts. Some historians have suggested that these might represent Tartu citizens of the time.

Also the largest medieval terracotta sculptures in Europe can be found in St. John’s Church: life-size figures of the Virgin Mary, Christ on the cross and John the Baptist.

In the immediate vicinity of St. John’s Church there is the 19th century Tartu Citizens Home Museum, Sports Museum and the Estonian Postal Museum, as well as the houses of Tartu’s twin cities of Uppsala and Tampere.

On Lutsu Street, beginning at the front of the church, artisans and craftsmen have opened their workrooms and little shops; St. Anthony’s Courtyard has also been completed.

Home of the Arts – St. Anthony’s Courtyard

The Tartu Small Guild, or St. Anthony’s Guild, was first mentioned in 1449 but it is likely to have functioned before that. The guild ceased to exist in 1919.

In 1999, St. Anthony’s Guild was founded once
more, and it has now developed into a successful cultural venture. St. Anthony’s Courtyard consists of three buildings and the ground between them with a dance floor, market place, stage, exhibition gallery and a terrace. No doubt the atmosphere and aura of these buildings is special. Perhaps this is due to the fact that in the Hanseatic period the same district belonged to St. Anthony’s Guild, to which Tartu craftsmen belonged.

The studios and artisans’ halls work on the principle of “open studios.” Anyone can step in, look, participate, buy and order. There are 21 artisans’ and craftsmen’s halls open for visitors in St. Anthony’s Courtyard: a stained-glass hall, a leather hall, a goldsmith’s hall, a carpet-weaving and patching hall, a porcelain hall, a fabric decorating hall, a textile hall, a hatter’s hall, a period clothing hall, etc.

St. Anthony’s Courtyard is a special place, which hosts fine arts and where music, performing arts and dance live. It’s a place where history and the present meet, creating a special feeling.

Opposite St. Anthony’s Courtyard there is the new complex of the Toy Museum and the House of Film and Theatre Puppets. The cultural street is finished by a historical wooden building, which is being renovated into a children’s theatre and art centre.

A favourite place for children – the Toy Museum

The Tartu Toy Museum, which opened in 1994, is one of the most popular museums in Tartu. Since 2004, the museum has been on Lutsu Street, in a building complex dating from the eighteenth and nineteenth centuries which has been specially renovated for the toy museum. It consists of a main building, a House of Film and Theatre Puppets and a building containing work rooms and storerooms. The inventively designed old-fashioned interior and child-friendly environment with its various hands-on facilities have turned this place into a favourite for many.

The permanent exhibitions present dolls and toys that children have played with in the last hundred years. On the first floor one can find national dolls from all over the world, traditional Finno-Ugric toys, a gnome house and a stand for temporary exhibitions.

On the first floor there is a spacious playroom with many educational toys, most of which are made of natural materials. In the playroom children can play with a puppet theatre, put on various costumes, make things, look at old children’s books and do many other exciting things.

In the courtyard of the House of Film and Theatre Puppets there is a unique exhibition of Estonian film and theatre puppets which come from Estonia and elsewhere. In the Film Club one can get acquainted with the ancestors of modern film, watch animated films from Estonia and, as part of a course, even try filmmaking.

The Toy Museum is primarily a museum for children, but it is also a place of nostalgic musing and a good spirit for all age groups. By Aivi Ross. Reviewed from Tallinn Airport Magazine
Ruhnu Island —
Remotest Place in Estonia

In a different climate this lawn would be used as a golf course. Here, it is used for landing planes. During the autumn rains, the grassy surface of the airfield becomes soft. A plane's wheels often go so deep on landing that the village tractor has to tow the plane off. This is Ruhnu, the remotest place in Estonia.

In 1944, the original inhabitants left in one boat to escape the advancing Russian troops, and never returned from their war-imposed exile. Living on in silence, the island is dominated by a lighthouse designed by the Eiffel Engineering Company. Another tower by the same company decorates Paris postcards.

Runö, Swedish Subject
Strictly speaking, Estonians can see themselves as the real masters of the island for the last fifteen years, if that. However, Ruhnu left its first written record as early as 1341. According to this document, the island of Runö, as the inhabitants called it then, was inhabited by a Swedish-speaking people who followed Swedish law.

Officially, Ruhnu became Swedish during the reign of the great King Gustav II Adolph. Ruhnu’s cultural pride and joy, the tiny church of St. Mary Magdalene, which is the oldest surviving wooden building in Estonia, dates from the same time. Ruhnu was part of the Swedish-speaking culture on the western coast of Estonia. The isolation of the island is such, though, that Ruhnu people actually lived separately from the Coastal Swedes of Estonia: wives were taken from amongst Estonians, fish was caught off the Estonian and Latvian coasts, and the main export, seal fat, was sold in the nearest coasts and ports.

When Estonia changed hands from Sweden to the Russian Tsar as a result of wars between the big states, little Ruhnu in the remote Livonian gulf was left alone. Ruhnu boys didn’t have to do national service in the Tsarist army. They could do their service on their home island.

An Ethnographic Wonder
In complete isolation, Ruhnu people created an entirely separate lifestyle and culture which stayed archaically unchanged until the Second World War. The Swedish language of the Ruhnu people became a separate dialect. The inhabitants of the islands, nearly 300 strong, lived as a closely intertwined village community where bigger works jobs were done communally.

Ruhnu people followed their customs strictly until the tragic emigration of the 20th century: men and women did separate tasks, national costume was worn, and life was lived according to certain strict rules and customs. The main way of making a living was boat-building and the winter seal hunt. A distant echo of Ruhnu culture can only
be perceived nowadays on the neighbouring island of Kihnu, where the old traditions and customs of Estonian-speaking people partly survive.

The Fatal Twentieth Century

For centuries, Ruhnu preserved its independence thanks to its isolation. In 1919, the new Republic of Estonia announced that Ruhnu was part of Estonia, and the same was immediately done by neighbouring Latvia. The decision in Estonia's favour was made by a general meeting of islanders only after the Estonian delegation that arrived on the island bought a large consignment of the islanders' seal fat and offered various stronger and less strong beverages to sweeten the transaction.

World War 2 led to the permanent disappearance of Ruhnu's traditional culture. During the war the island changed hands more than once between the USSR and Germany. The Ruhnu Swedes decided to leave on 4 August 1944 for Sweden, on a ship called the Juhan. Only two families stayed. Some of the people who left and their descendants returned to the island half a century later.

Shy Paradise

Today's Ruhnu, with its unbelievable natural environment, compensates a lot for the loss of its unique culture. One finds a whole assortment of Estonian coasts here: white beaches, limestone cliffs, reedy marshes, rocky shingle shores, and pine forest.

There are only just over fifty permanent inhabitants of the island, and none of them have Swedish as a native language. Someone who saw the island fifty years ago wouldn't recognise Ruhnu now. A big part of the village in the centre of the island has gone. Cultivated land is disused and disappearing, the seals are protected, and the biggest source of income for the island is tourism – the island is visited by 3500 people each summer.

The Attack of Today

Modern life is penetrating Ruhnu. There are Internet and mobile phone connections on the island. You can make financial transactions with a bank card, although there are no ATMs. A modern wind park has been constructed on the coast and despite the damage done by a storm the construction of a new port continues.

At the same time, winters in Ruhnu today are as lonely as in the old days. Radio waves do not really reach here. The connection with the mainland is infrequent, wood for heating is brought from the forest, and people live on the provisions gathered in summer. Ruhnu has several faces which it doesn't always show its visitors. ■ By Martin Adamsoo. Reviewed from Tallinn Airport Magazine
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<td></td>
<td></td>
<td>+372 5 025 559, +372 6 013 861</td>
<td>Proteomics-related services including production, purification and identification.</td>
</tr>
<tr>
<td>BioData OÜ</td>
<td>Oru 3, Tartu 51014</td>
<td>Andrus Kaldalu</td>
<td><a href="http://www.biotech.ee/biodata/biodata@e.e">www.biotech.ee/biodata/biodata@e.e</a></td>
<td>+372 7 441 556, +372 7 442 343</td>
<td>Methods and software for large-scale SNP genotyping, fully automated systems for automatic processing and analysis of large datasets.</td>
</tr>
<tr>
<td>Celecure AS</td>
<td>Sakala 17, Tallinn 10141</td>
<td>Rainer Nõlvak</td>
<td><a href="http://www.celecure.com/info@celecure.com">www.celecure.com/info@celecure.com</a></td>
<td>+372 6 512 670, +372 6 512 671</td>
<td>Discovery and preclinical development of next generation tumour cell specific therapeutic compounds against cancer.</td>
</tr>
<tr>
<td>Cemines Estonia OÜ</td>
<td>Akadeemia tee 15, Tallinn 12618</td>
<td>Kaia Palm</td>
<td><a href="mailto:kaia.palm@cemines.com">kaia.palm@cemines.com</a></td>
<td>+372 6 202 222</td>
<td>Cancer biomarker research</td>
</tr>
<tr>
<td>EGeen AS</td>
<td>Ülikooli 6, Tartu 51003</td>
<td>Kalev Kask</td>
<td><a href="http://www.egeeninc.com@egeeninc.com">www.egeeninc.com@egeeninc.com</a></td>
<td>+372 7 309 530, +372 7 309 531</td>
<td>Analysis of disease and drug response data in association with DNA and biomarker profiles emerging from the Estonian Genome Project (EGP).</td>
</tr>
<tr>
<td>Fit Biotech Oyi Plc Estonia</td>
<td>Nooruse 9, Tartu 50411</td>
<td>Mart Ustav</td>
<td><a href="http://www.fitbiotech.com/ustav@e.e">www.fitbiotech.com/ustav@e.e</a></td>
<td>+372 7 377 070, +372 7 377 077</td>
<td>DNA vaccination, and immuno- and gene therapies.</td>
</tr>
<tr>
<td>Immunotron OÜ</td>
<td>Riia 185, Tartu 51014</td>
<td>Raivo Uibo</td>
<td><a href="mailto:raivoa@ute.e">raivoa@ute.e</a></td>
<td>+372 5 105 079, +372 7 374 231</td>
<td>Novel immunodiagnostic devices for human diseases.</td>
</tr>
<tr>
<td>Inbio OÜ</td>
<td>Akadeemia tee 15, Tallinn 12618</td>
<td>Tarmo Kivi</td>
<td><a href="http://www.inbiolabs.com/inbio@inbiolabs.com">www.inbiolabs.com/inbio@inbiolabs.com</a></td>
<td>+372 6 204 350, +372604358</td>
<td>Custom antibody services and peptide synthesis, research in the field of cell-membrane penetrating antibody technologies and diagnostic and therapeutic intrabodies.</td>
</tr>
<tr>
<td>Kevelt AS</td>
<td>Akadeemia tee 15/1, Tallinn 12618</td>
<td>Ivar Järving</td>
<td><a href="http://www.kevelt.ee/kevelt@chemnet.ee">www.kevelt.ee/kevelt@chemnet.ee</a></td>
<td>+372 6 204 390, +372 6 703 683</td>
<td>Prostaglandin synthesis.</td>
</tr>
<tr>
<td>LabAs AS</td>
<td>Kungla 40, Tartu 50403</td>
<td>Aavo-Valdur Mustiksaar</td>
<td><a href="http://www.labas.ee/info@labas.e">www.labas.ee/info@labas.e</a></td>
<td>+372 7 428 009, +372 7 428 940</td>
<td>Production, purification and labeling of mono- and polycyclic (mouse, goat, rabbit, chicken) antibodies.</td>
</tr>
<tr>
<td>Labema Eesti OÜ</td>
<td>J.Vilmsi 28-1, Tallinn 10126</td>
<td>Karin-Tiiu Türk</td>
<td><a href="http://www.labema.ee/labema@labema.e">www.labema.ee/labema@labema.e</a></td>
<td>+372 6 419 496, +372 6 419 497</td>
<td>Products for microbiology and clinical diagnostics.</td>
</tr>
<tr>
<td>Naxo OÜ</td>
<td>Riia 185, Tartu 51014</td>
<td>Indrek Toots</td>
<td><a href="mailto:naxo@naxolab.com">naxo@naxolab.com</a></td>
<td>+372 7 428 001, +372 7 477 131</td>
<td>Enzymes, reagents and Smart Mix buffers.</td>
</tr>
<tr>
<td>OÜ IasGen</td>
<td>Pikk 98-58, Tartu</td>
<td>Ülo Puurrand</td>
<td><a href="mailto:uolo.puurrand@mail.ee">uolo.puurrand@mail.ee</a></td>
<td>+372 7 406 164, +372 7 374 372</td>
<td>A novel method for genome analysis.</td>
</tr>
<tr>
<td>OÜ Mikrotaim</td>
<td>Sillapää, Räpina 64507</td>
<td>Kaldmäe</td>
<td><a href="http://www.eau.ee/~agt/mustika/mikrotaim.html">www.eau.ee/~agt/mustika/mikrotaim.html</a></td>
<td>+372 5 152 091</td>
<td>Specific micropropagation protocols for different plant species, initiation of plant tissue cultures, micropropagated plant material, consulting production labs etc.</td>
</tr>
<tr>
<td>Pharmasynt AS</td>
<td>Riia 185, Tartu 51014</td>
<td>Jukka Hiltunen</td>
<td><a href="mailto:jukka@pharmasynt.e">jukka@pharmasynt.e</a></td>
<td>+372 5 247 671</td>
<td>Organic synthesis, medicinal chemistry and diagnostics.</td>
</tr>
<tr>
<td>ProtoBios OÜ</td>
<td>Akadeemia tee 15-132, Tallinn 12618</td>
<td>Kaia Palm</td>
<td><a href="mailto:kaia@protobios.com">kaia@protobios.com</a></td>
<td>+372 6 202 222</td>
<td>Stem cell based cell therapy (generative medicine), drug design based on treatment of transcriptional mechanism.</td>
</tr>
<tr>
<td>ProSyntest AS</td>
<td>Akadeemia tee 15, Tallinn 12618</td>
<td>Kaarel Sirde</td>
<td><a href="http://www.prosyntest.com/info@prosyntest.com">www.prosyntest.com/info@prosyntest.com</a></td>
<td>+372 6 204 398, +372 6 547 520</td>
<td>Manufacturing of fine chemicals and developing of chemical processes and new synthetic procedures as well as manufacturing pharmacological active ingredients and advanced intermediates.</td>
</tr>
<tr>
<td>Rakuvabrik OÜ</td>
<td>Nooruse 9, Tartu 50411</td>
<td>TiiT Talshpep</td>
<td><a href="mailto:ttalshpep@quattromed.com">ttalshpep@quattromed.com</a></td>
<td>+372 7 377 070</td>
<td>Development of expression systems (expression vectors plus compatible cell lines) for production of therapeutic proteins.</td>
</tr>
<tr>
<td>Riistakast OÜ</td>
<td>Koidu tee 14, Kelvingi küla, Viimsi vald, Harjuamaa, 74091</td>
<td>Madis Metis</td>
<td><a href="mailto:madis@genomiictoolbox.com">madis@genomiictoolbox.com</a></td>
<td>+372 5 806 009</td>
<td>Genomewide analysis of transcription factor binding sites</td>
</tr>
<tr>
<td>Quattromed AS</td>
<td>Nooruse 9, Tartu 50411</td>
<td>Erki Mölder</td>
<td><a href="http://www.quattromed.com/quattromed@quattromed.e">www.quattromed.com/quattromed@quattromed.e</a></td>
<td>+372 7 377 070, +372 7 377 077</td>
<td>Medical diagnostics services, FUO products of gene-expression analyse systems, research in the fields of gene therapy and gene vaccination (replicating vectors of human papilloma and herpes viruses against cancer).</td>
</tr>
<tr>
<td>Solis BioDyne OÜ</td>
<td>Pikk 14, Tartu 51013</td>
<td>Agu Arntma</td>
<td><a href="http://www.solis.ee/solis@solis.e">www.solis.ee/solis@solis.e</a></td>
<td>+372 7 409 960, +372 7 402 079</td>
<td>Production of high-quality thermostable DNA polymerase.</td>
</tr>
<tr>
<td>TorroSen OÜ</td>
<td>Koorti 37, Tartu 51011</td>
<td>Toonika Rinken</td>
<td><a href="http://www.torrosen/toonika@jut.e">www.torrosen/toonika@jut.e</a></td>
<td>+372 5 262 807, +372 7 375 260</td>
<td>A spin-off company commercialising the new technology of biosensors.</td>
</tr>
<tr>
<td>Visgenyx Ltd.</td>
<td>Riia 23, Tartu 51010</td>
<td>Indrek Toots</td>
<td><a href="mailto:visgenyx@visgenyx.com">visgenyx@visgenyx.com</a>/vigenyx@visgenyx.com</td>
<td>+372 5 155 431, +372 7 477 131</td>
<td>Transgenic animals for gene polymorphism studies, original disease models and biopharmaceutical production.</td>
</tr>
<tr>
<td>Company Name</td>
<td>Address:</td>
<td>CEO/contact:</td>
<td>www/e-mail:</td>
<td>Tel./Fax:</td>
<td>Profile:</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>---------------------------</td>
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<td>-----------------------------------</td>
<td>------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>University of Tartu</td>
<td>Ülikooli 18, Tartu 50090</td>
<td>Jaak Aaviksoo</td>
<td><a href="http://www.ut.ee/proffice@ut.ee">www.ut.ee/proffice@ut.ee</a></td>
<td>+372 7 375 100 +372 7 375 440</td>
<td>As a national university, this one and only classical Estonian-language university offers research-based graduate and postgraduate degree programmes and deals with both fundamental and applied research. The most remarkable recent research achievements have been in the areas of molecular and cell biology, gene technology, immunology, pharmacology, laser medicine, materials science, laser spectroscopy, biochemistry, environment technology, computer linguistics, psychology, and semiotics.</td>
</tr>
<tr>
<td>Tallinn University of Technology</td>
<td>Ehitajate tee 5, Tallinn 19086</td>
<td>Peep Sürje</td>
<td><a href="http://www.ttu.ee/">www.ttu.ee/</a> <a href="mailto:ttu@ttu.ee">ttu@ttu.ee</a></td>
<td>+372 6 202 002 +372 6 202 020</td>
<td>University provides educational, research and innovation services in the fields of engineering and entrepreneurship, which are internationally competitive and significant for Estonia’s sustained development.</td>
</tr>
<tr>
<td>Estonian University of Life Sciences</td>
<td>Kreutzwaldi 64, Tallinn 50114</td>
<td>Alar Karis</td>
<td><a href="http://www.eau.ee/info@eau.ee">www.eau.ee/info@eau.ee</a></td>
<td>+372 7 313 001 +372 7 313 069</td>
<td>The centre of R&amp;D in fields of agriculture, forestry, animal science, veterinary science, rural life and economy, food science and environmentally friendly technologies.</td>
</tr>
<tr>
<td>National Institute of Chemical Physics and Biophysics</td>
<td>Akadeemia tee 23, Tallinn 12618</td>
<td>Ago Samoson</td>
<td><a href="http://www.kbbi.ee/kbbi@kbbi.ee">www.kbbi.ee/kbbi@kbbi.ee</a></td>
<td>+372 6 398 300 +372 6 703 662</td>
<td>An autonomous public research institution applying modern physical methods in chemistry and biochemistry.</td>
</tr>
<tr>
<td>Estonian Biocentre</td>
<td>Riia 23B, Tartu 51010</td>
<td>Richard Villems</td>
<td><a href="http://www.ebc.ee/rvillems@ebc.ee">www.ebc.ee/rvillems@ebc.ee</a></td>
<td>+372 7 375 064 +372 7 420 194</td>
<td>An independent public research institute carrying out research in the field of molecular medicine and biotechnology.</td>
</tr>
<tr>
<td>Biomedical Engineering Centre of Tallinn University of Technology</td>
<td>Ehitajate tee 5, Tallinn 19086</td>
<td>Kalju Meigas</td>
<td><a href="http://www.cb.ttu.ee/centre@cb.ttu.ee">www.cb.ttu.ee/centre@cb.ttu.ee</a></td>
<td>+372 6 202 200 +372 6 202 201</td>
<td>Biomedical Engineering Centre is a research centre for interdisciplinary studies engaged in biomedical engineering research.</td>
</tr>
<tr>
<td>Institute of Gene Technology of Tallinn University of Technology</td>
<td>Ehitajate tee 5, Tallinn 19086</td>
<td>Erkki Truve</td>
<td><a href="http://www.ttu.ee/erkk@kbbi.ee">www.ttu.ee/erkk@kbbi.ee</a></td>
<td>+372 6 398 339 +372 6 398 391</td>
<td>Institute provides education and carries out research in the fields of gene technology, genomics and proteomics, molecular biology and molecular diagnostics.</td>
</tr>
<tr>
<td>Institute of Molecular and Cell Biology</td>
<td>Riia 23, Tartu 51010</td>
<td>Juhan Sedman</td>
<td><a href="http://www.tymri.ut.ee/sedman@ebc.ee">www.tymri.ut.ee/sedman@ebc.ee</a></td>
<td>+372 7 375 037 +372 7 420 286</td>
<td>IMCB is the leading Estonian centre for research, teaching and technological development in the fields of molecular biology, gene technologies and molecular medicine.</td>
</tr>
<tr>
<td>Jõgeva Plant Breeding Institute</td>
<td>Aamisepa 1, Jõgeva 48309</td>
<td>Mati Koppel</td>
<td><a href="http://www.jibi.ee/Mati.Koppel@jibi.ee">www.jibi.ee/Mati.Koppel@jibi.ee</a></td>
<td>+372 7 766 901 +372 7 766 902</td>
<td>Institute develops new varieties of winter rye, winter and spring wheat, barley, oats, field pea, potatoes, vegetables, forage grasses and legumes to obtain high-yielding varieties characterized by genotype x environment stability of traits.</td>
</tr>
<tr>
<td>Tartu University Institute of Technology</td>
<td>Nooruse 1, Tartu 50411</td>
<td>Mart Ustav</td>
<td><a href="http://www.tuit.ut.ee/info@tuit.ut.ee">www.tuit.ut.ee/info@tuit.ut.ee</a></td>
<td>+372 7 374 800 +372 7 374 900</td>
<td>The institute functions as a support system for the entire Tartu University.</td>
</tr>
<tr>
<td>Centre of Excellence for Gene and Environmental Technologies</td>
<td>Riia 23, Tartu 51010</td>
<td>Toivo Maimets</td>
<td><a href="http://www.tymri.ut.ee/105314">www.tymri.ut.ee/105314</a> <a href="mailto:tmaimets@ebc.ee">tmaimets@ebc.ee</a></td>
<td>+372 7 375 028 +372 7 420 286</td>
<td>An institution for research and technological development carrying out cutting-edge fundamental research in molecular and cell biology and developing technological applications in the fields of gene and environmental technologies.</td>
</tr>
<tr>
<td>Centre of Excellence for Molecular and Clinical Medicine</td>
<td>Ravila 19, Tartu 51014</td>
<td>Raivo Uibo</td>
<td>cncm.ut.ee/cmcm@ut.ee</td>
<td>+372 7 374 051 +372 7 374 052</td>
<td>The Centre aims to reduce the burden of neurological diseases, mental illness and behavioural disorders (as separated entities or complex chronic diseases) through research on brain, mind and behaviour.</td>
</tr>
<tr>
<td>Estonian Genome Foundation</td>
<td>Vanemuise 21A, Tartu 51014</td>
<td>Maris Väli</td>
<td><a href="http://www.genomics.ee/info@genomics.ee">www.genomics.ee/info@genomics.ee</a></td>
<td>+372 7 420 132 +372 7 420 286</td>
<td>Organizing, coordinating and promoting R&amp;D activities, training and promotional activities in the field of gene and biotechnology. Regional Branch Office of the European Federation of Biotechnology.</td>
</tr>
<tr>
<td>Estonian Genome Project Foundation</td>
<td>Tiigi 61b, Tartu 50410</td>
<td>Koiti Kikas</td>
<td><a href="http://www.geenivaramu.ee/geenivaramu@geenivaramu.ee">www.geenivaramu.ee/geenivaramu@geenivaramu.ee</a></td>
<td>+372 7 440 220 +372 7 440 221</td>
<td>A non-profit foundation founded by the Government of the Republic of Estonia for the preparation and implementation of the Estonian Genome Project.</td>
</tr>
<tr>
<td>Estonian Biotechnology Association</td>
<td>Tiigi 61b, Tartu 50410</td>
<td>Piret Kukk</td>
<td><a href="http://www.biotech@biotech.ee">www.biotech@biotech.ee</a></td>
<td>+372 5 023 755</td>
<td>Aims to further partnership between the public sector and non-governmental organisations and develop Estonian biotechnology.</td>
</tr>
<tr>
<td>Estonian Society of Human Genetics</td>
<td>Riia 23, Tartu 51010</td>
<td>Tiina Talvik</td>
<td><a href="http://www.estshg.ebc.ee/estshg@ebc.ee">www.estshg.ebc.ee/estshg@ebc.ee</a></td>
<td>+372 7 375 029 +372 7 420 286</td>
<td>The society promotes research in the fields of human and medical genetics, and creates a network for people involved in the field.</td>
</tr>
<tr>
<td>Tartu Biotechnology Park</td>
<td>Tiigi 61b, Tartu 50410</td>
<td>Andrus Tasa</td>
<td><a href="http://www.biopark.ee/biopark@biopark.ee">www.biopark.ee/biopark@biopark.ee</a></td>
<td>+372 7 383 053 +372 7 383 053</td>
<td>Infrastructure and related services for biotechnological development activities and entrepreneurship to Estonian and foreign biotechnology companies.</td>
</tr>
<tr>
<td>Quintiles Estonia OÜ</td>
<td>Soola 8, Tartu 51013</td>
<td>Katrin Otsalt</td>
<td><a href="http://www.quintiles.com/katrin.otsalt@quintiles.com">www.quintiles.com/katrin.otsalt@quintiles.com</a></td>
<td>+372 7 371 150 +372 7 371 151</td>
<td>Clinical studies, capturing the high quality data collection, management, finalising the data-report; Post-Marketing studies</td>
</tr>
</tbody>
</table>
CANDIDATE FOR
EUROPEAN
CAPITAL OF CULTURE
2011