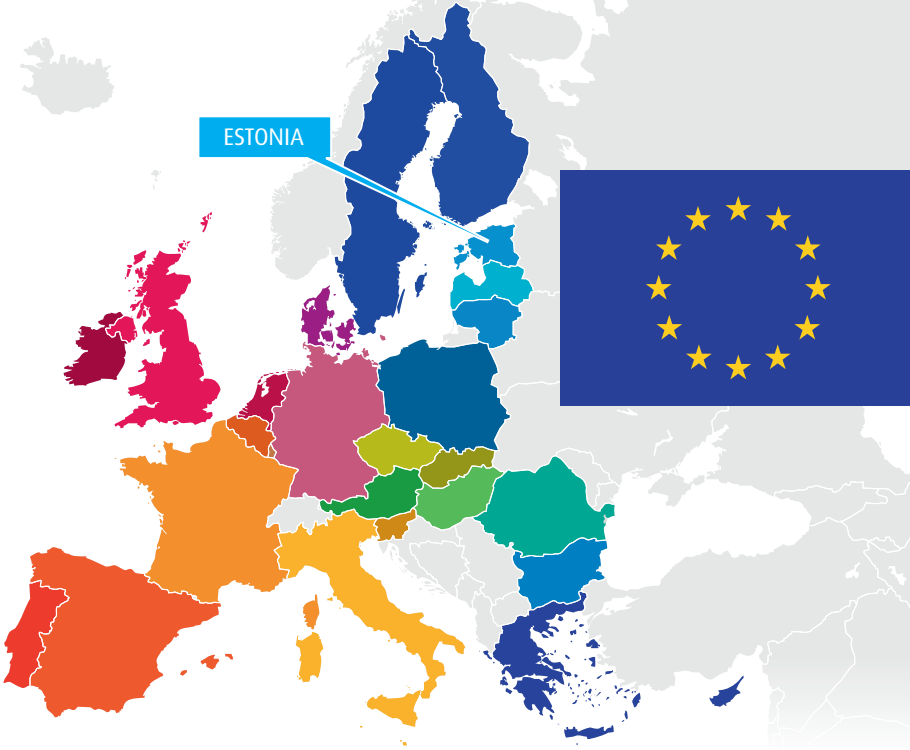
Mobilitas Programme –
Express yourself through mobility

Publisher: Estonian Science Foundation
Endla 4, 10142 Tallinn, Estonia
www.etf.ee
Design: Dada AD

One premise for development of our modern knowledge-based economy and society is fostering research and development activities and innovations. The goal of Estonia to become an innovative top research and high-technology country with a competitive economy is stipulated in the Estonian Research and Development and Innovation Strategy for 2007-2013.

Being a small country, Estonia must plan activities in a narrower manner and that is why scientific work focuses on high-profile fields that create substantial added value. The Strategy defines the key research, development and innovation fields in which Estonia is capable of achieving first-class results on the international science level. The fields in which Estonia is already globally competitive today are materials science, environmental sciences and ecology, pharmacology and toxicology, as well as botany, zoology and chemistry.

One of the main objectives of the Strategy is to increase the research and development volume and ensure that its quality is comparable to the worldwide acceptable level. For that purpose primary investments must be made in people. Successful research and development activities are based on researchers with



constantly updated knowledge and experience. Every researcher matters for Estonia and they must be well-informed about the latest accomplishments of research and development institutions in other countries. The expertise of Estonian research institutions and the local scientific community can be enhanced through properly functioning and coordinated knowledge circulation and influx. That is why the **Mobilitas Programme** was created. It is dedicated to researcher mobility and allows post-doctoral researchers and top researchers to apply for research grants in Estonia, thus enlivening international research cooperation.

The programme's duration is 2008-2015. It is carried out by the **Estonian Science Foundation**.

The following groups are supported:

1) **Top researchers** arriving from abroad to work at Estonian research and development institutions. The top researcher grant duration is 3, 4 or 5 years.
2) **Post-doctoral researchers** choosing work at Estonian research and development

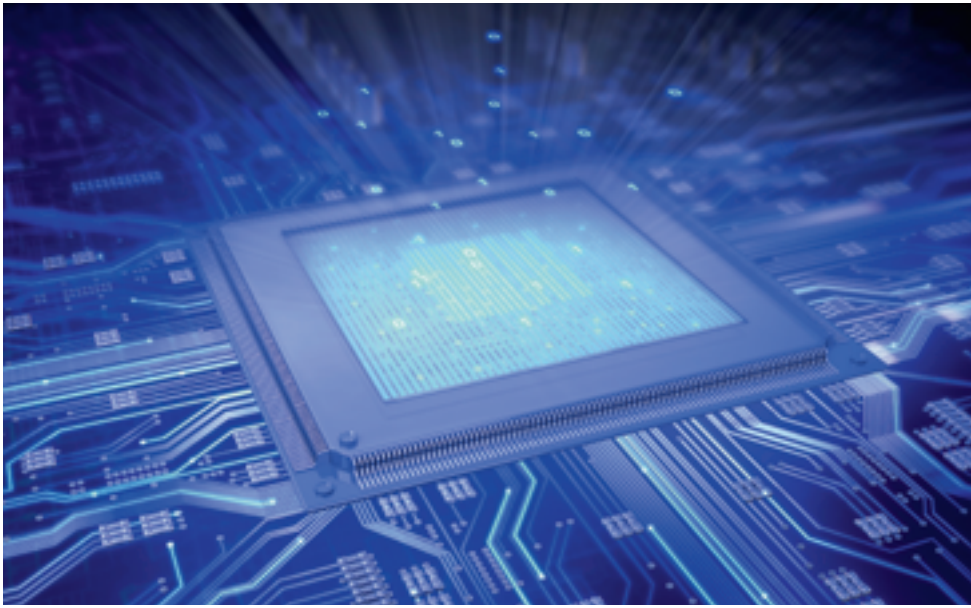
institutions to continue their career. Estonian post-doctoral researchers can also apply for this grant if they wish to improve themselves professionally at foreign research and development institutions or continue their work in Estonia. The post-doctoral researcher grant duration is 2 or 3 years.

The Estonian Science Foundation (ETF), established in July 1990 by the Estonian Government, is an expert research-funding organisation.

Its main goals are:

- to foster the development of basic and applied research in the principal areas of scientific strength and in fields of special importance to Estonian economy and society;
- to support the most qualified and successful researchers and research groups;
- to involve post-graduate and doctoral students in active research;
- to facilitate international cooperation and mobility of researchers.

The ETF also represents the Estonian scientific community on an international level.



Below you will find comments of two persons who conducted post-doctoral research in Estonia. You can read what brought them to Estonia, what attracts them here and why they would advise their colleagues to join them here.

Yuji Kajiyama

You have been conducting post-doctoral research at the Estonian National Institute of Chemical Physics and Biophysics (NICPB) since 2006. Why did you choose this institute to pursue your scientific career?
Having received my PhD in my home country, Japan, I sought options to improve myself professionally abroad. I had heard about the Estonian NICPB scientist Doctor Martti Raidal, that he was one of the best physicists and I was intrigued by the possibility of working alongside him.

You have joined the LHC Quest for New Physics Project that will end in 2012. So it can be assumed that you will remain in Estonia for three more years. What are your expectations for these next years and have you considered staying in Estonia afterwards, too?
I am mainly interested in closer cooperation with the NICPB researchers. The option to extend my grant period is attractive indeed because Estonia is really open to foreign researchers and offers them good work conditions. The theoretical physics group that I am member of consists of very industrious people but we could achieve results faster if we had more researchers on our team. I believe that the Estonian research landscape can become more vivid if advertised abroad.

Ulrich Norbisrath

How did you decide to continue your scientific career in Estonia and why did you become interested in this country in particular?
When I was studying for my PhD at the RWTH Aachen University in Germany, I supervised post-graduate students from Estonia. They described Estonia to me and that was how I established good connections. Prior to moving to

Estonia I visited the University of Tartu on several occasions and my young and open-minded future colleagues left a lasting impression. I also liked the freedom that is so typical of science here.

Besides natural sciences, you also specialise in technology and computer science. Estonia has the reputation of being one of the world's most Internet-prolific countries. What future do you envisage for Estonia in this field?
It would be very difficult to predict, especially due to the current economic crisis that has had an effect on the relevant local activities. The future Estonian IT advantages are openness and flexibility to test new computer science solutions. Estonian software companies are likely to implement new discoveries much quicker than their colleagues in Germany. At the same time I am worried about the Estonian IT future development potential as local IT students often have full-time jobs already in their third year.

You have supervised master's theses of several Estonian students. What can you say about the level of Estonian post-graduate students compared to those from your home country?
Unlike students in Germany, those who study computer science at the University of Tartu only spend one-third of the allocated time actually studying. Naturally, this affects the quality. I nevertheless should note that the studies time percentage has been increasing. Practical work experience is a solid foundation for creating real-life solutions, it serves as added value that alleviates to some extent the negative effect of scant study time. Despite this, I am of the opinion that Estonian IT students need more time to become more competitive.

Why would someone come to Estonia for professional improvement and what are the most positive opportunities for you here?
The wages and working conditions are good. Furthermore, the Estonian research landscape is relatively obstacle-free, with less bureaucracy than elsewhere. Although my previous assessment can seem a bit negative, I am also convinced that many positive developments have been happening in the student attitudes and the general study work style. All of this creates a unique environment that would probably be assessed by other foreign academic researchers in the same favourable manner.

Below you will find descriptions of some of the scientific institutions that the Mobilitas Programme participants can join. The brief description provides an overview of the activity fields of the universities and their subsidiary research and development organisations. The list contains, in addition to the larger universities, certain institutions and subsidiary units that boast the highest numbers of grants issued by the Estonian Science Foundation.

The **Estonian Academy of Arts** is a international-level university, a visual-culture centre for studies, research and development, integrated with the European network of art, design and architecture universities through common curricula and joint research and development activities.

The academy's research and development work is geared towards the interdisciplinary approach and integration with other fields. The scientific activities can be conditionally divided into three types by their nature:

- humanities (Institute of Art History);
- architecture, design and fine arts faculties (primarily material technology experiments);
- cultural heritage and conservation.

Details: www.artun.ee

The **Estonian Academy of Music and Theatre** (EAMT) is the only institution in Estonia offering education at university level in all main fields of music and theatre. Several generations of Estonian musicians, music teachers, musicologists, actors, and stage directors have been graduated from the Academy, including internationally acclaimed composers Arvo Pärt, Erkki-Sven Tüür, as well as the conductors Eri Klas and Tõnu Kaljuste. With its 690 students, EAMT is the smallest among six Estonian public universities. Although EAMT trains mainly practical musicians, composers and theatre actors, it is at the same time Estonia's leading research institution in the field of music. Various kinds of musicological studies, including music history, music analysis, musical acoustics and cognitive musicology, ethnomusicology, as well as music pedagogy, are carried out by the staff and students of EAMT. In PhD studies both traditional scholarly approach and practice based or artistic researches are represented.

Details: www.ema.edu.ee

The **Estonian University of Life Sciences** promotes environmentally-friendly mentality as well as wise and balanced organisation of rural life through academic and knowledge-based education.

The university is engaged in international research and development collaboration in all interdisciplinary fields related to rural life, rural economy, sparing use of natural resources and environmental sustainability.

The Estonian University of Life Sciences is the Estonian research and development centre for agriculture and forestry, animal science, veterinary medicine, rural life and rural economy, food science, biodiversity, environmental protection, sustainable use of natural resources and environmentally friendly technologies. The university has started to develop the concept of green university.

Especially welcome are young researchers in the following fields:

- atmosphere-biosphere studies;
- impact of climate changes on the relative importance of catchment and in-lake processes in the carbon balance of shallow lakes;
- modelling of air pollution distribution and deposition patterns;
- plant-stress physiology;
- studies in root ecology.

Details: www.emu.ee

Tallinn University encompasses the major part of Tallinn's humanities and social sciences institutions and the percentage of natural and exact sciences is on the increase here. The traditions of this university range from the earliest Estonian teacher training experiences to the world's newest humanitarian and social ideas applied to Estonian conditions. Internationalisation is one of the university's stipulated priorities. Tallinn University

is the third largest university in Estonia consisting of 18 institutes and 4 colleges that teach and research in the following six fields:

- Education
- Humanities
- Arts
- Natural sciences
- Social sciences
- Health

Details: www.tlu.ee

The **Tallinn University of Technology** (TUT) has 3 research and development institutions: Institute of Geology, Institute of Cybernetics and Institute of Marine Systems, 8 faculties, as well as the research, development and teaching institution Technomedicum. The scientific success of TUT is proved by participation of the university's structural units, lecturers and researchers in university, Estonian and the European Union research programmes at centres of excellence, the technology development centre programme and many international cooperation networks.

Of all the various fields of science cultivated at Tallinn University of Technology the primary ones are information and communications technologies, computers sciences, materials science, chemistry, biology and medicine, and environmental technologies. The university has two European-level centres of excellence operating in these fields (Scientific Centre of Excellence in Solar Energy Materials and Equipment; Centre of Excellence in Solar Energy for Nordic Countries) and three national centres of excellence (Centre of Excellence in Computer Science; Centre for Integrated Electronic Systems and Biomedical Engineering; as a partner in Centre of Excellence in Chemical Biology).

The **Institute of Cybernetics** has received more grants than any other institution of TUT and the institute conducts research on the highest level. The Institute of Cybernetics has a phonetics and speech technology laboratory, a photoelasticity

laboratory and departments of control systems, mechanics and applied mathematics, and software.

The Institute of Cybernetics research fields are:

- Information technology – knowledge-based software technology, automatic programme synthesis, parallel and distributed computation, software systems (information systems, computer networks);
- Control systems – conceptual analysis, control systems theory, phonetics and speech technology;
- Mechanics – non-linear dynamics, heart dynamics and cardiovascular mathematical modelling, non-destructive tension analysis (photoelasticity method);
- Mathematics – approximated method theory, inverse problems, mathematical logic, stochastic programming.

Details: www.ttu.ee
www.ioc.ee

The **University of Tartu** (UT) is the only university in Estonia of the classic *universitas* type. Study and research is done in the faculties of theology, law, medicine, philosophy, education, exercise and sport sciences, science and technology, economics and business administration, mathematics and computer sciences, social sciences. UT's 5 colleges, Estonian Genome Project and Library also make a contribution to the study and reasearch in 4 fields of research: *realia et naturalia*, *medicina*, *socialia and humaniora*. The Genome Project promotes genetic research and collects data related to Estonian population health and heredity. It has put Estonia among few countries on the world map of genetic research. The Library of UT contains 3.7 million information sources and offers access to numerous electronic magazines and important databases. It is the largest and most representative scientific library in Estonia. The numerous resources of UT's museums and botanical garden can also be used in studies and research.

UT has built and reconstructed several study and research buildings to create an up to date working environment and infrastructure.

Top level research is done in 6 centres of excellence: Frontiers in Biodiversity Research, Center of Excellence in Chemical Biology, Centre of Excellence in Cultural Theory, Centre of Excellence for Translational Medicine, Centre of Excellence in Computer Science, Centre of Excellence in Genomics. UT as national university also strives to preserve and develop the Estonian language and culture, offering the best research possibilities in the field of Estonian and other Fenno-Ugric languages.

UT makes up over half of the Estonia's national research output, including publications and doctoral degrees conferred.

UT has reached the top 1% of most-cited universities and scientific institutions* in:

- Environmental Sciences & Ecology
- Clinical Medicine
- Plant & Animal Sciences
- Chemistry

*according to Essential Science Indicators

Details: www.ut.ee

Research Institutes

In addition to open universities and their research institutes, there are several independent research institutions. The most important ones are:

- The **Estonian Biocentre** is tasked with developing cell and gene research and conduct molecular medicine studies. In 2000 the Biocentre was awarded the Centre of Excellence title in the international EC RTD 5th framework programme.

  Details: www.ebc.ee

- The **Estonian Literary Museum** consists of six different structural units: Archival Library, Archival Library's Bibliography Department, Estonian Cultural History Archives, Estonian Folklore Archives, Department of Ethnomusicology and Department of Folklore.

  Details: www.kirmus.ee

- The **Estonian Research Institute of Agriculture** was founded in 1946. The institute is engaged in cooperation with different Estonian associations and schools. Cooperation with foreign partners is on the increase.

  Details: www.eria.ee

- The main goal of the **Institute of the Estonian Language** is to facilitate preservation of the Estonian language, proper maintenance, organisation and development of the Estonian literary language, compilation and editing of dictionaries important for the national culture, maintenance of databases and to participate in corresponding basic and applied research and creation of Estonian-language technological support solutions.

  Details: www.eki.ee

- The **Jõgeva Plant Breeding Institute** ensures viability and development of Estonian agricultural crops. The institute takes active part in various international research programmes.

  Details: www.sordiaretus.ee

- The main activities of the **National Institute for Health** development are scientific and applied research in health and social sciences, consistent improvement of the health of the Estonian population and constant enhancement of the quality of life.

  Details: www.tai.ee

- The **National Institute of Chemical Physics and Biophysics** (NICPB) is an administratively independent national lab for promoting research and education in chemical and biophysics, biotechnology, molecular biology and structural biology. The Institute is organized around 7 research programmes which include advanced NMR techniques for materials and biochemical research, far-infrared and THz spectroscopy for functional materials study, theoretical high energy and computational physics, *in vitro* toxicology and bioorganic chemistry, bioenergetics and cellular energy metabolism, chemical energy technology and environmental chemistry. NICPB has set up advanced NMR, THz and mass-spectroscopy and chromatography core facilities for interdisciplinary and integrated research activities with universities, industries and international collaboration partners.

  Details: www.kbfi.ee

- The **Tartu Observatory** is Estonia's main centre for astronomy and space research. It is one of the country's oldest scientific institutions as it dates back to the historical Tartu Observatory (Tähetorn) built in 1808-1810. Today the observatory mainly conducts basic research in the following three fields of science:
  - **Cosmology** – origins and structure of the universe as a whole, structure and evolution of galaxy clusters and superclusters, groups of galaxies, single and multiple galaxies, our Milky Way structure.
  - **Stellar physics** – single and binary stars, their evolutionary pecularities, origin and transfer of radiation in stellar atmospheres, statistical regularities in the Sun activeness, processing of data from the Gaia space telescope.
  - **Earth remote sensing and atmospheric physics** – effect of ultraviolet radiation on wildlife, Estonian climate changes, monitoring of state and changes in forests, arable land and bodies of water on the basis of satellite imagery, precision measurements of optical radiation.

The observatory is becoming increasingly involved in applied research, especially in the Earth remote sensing field. In 2008-2011 the observatory is working on the voluminous 7th framework programme EstSpacE project aimed at enhancing Estonia's space research potential and its visibility in Europe.

Details: www.aai.ee
www.estspace.ee

References:

Estonian Academy of Arts	www.artun.ee
Estonian Academy of Music and Theatre	www.ema.edu.ee
Estonian University of Life Sciences	www.emu.ee
Tallinn University	www.tlu.ee
Tallinn University of Technology	www.ttu.ee
University of Tartu	www.ut.ee

Estonian Ministry of Education and Research	www.hm.ee
Estonian Science Foundation	www.etf.ee; mobilitas@etf.ee, +372 699 6210 Endla 4, 10142 Tallinn, Estonia

EESTI TEADUSFOND

Haridus- ja Teadusministeerium