Surrounded by big questions

**UPPSALA UNIVERSITY HAS ALWAYS** been very ambitious and 2016 has been no different. In our Mission and Core Values, we state that we will gain and disseminate knowledge for the benefit of humankind and for a better world. In addition, we say that the University will be a local, national and international meeting place for knowledge, culture and critical dialogue. This year we are making these goals more concrete with extra undertakings in various areas where the University is in a position to provide society with knowledge. One of these areas is the refugee situation. To this end, we have appointed a person to co-ordinate University initiatives and activities related to social inclusion and new arrivals. In addition, we are creating a forum for interdisciplinary racism research. Another area of interest is that of sustainable development. We have therefore appointed an adviser to the Vice-Chancellor to highlight all the upcoming University initiatives related to this topic as well as those already in progress.

In medicine, antibiotics resistance is a key issue. The Uppsala Antibiotics Centre is the name of our new knowledge centre – an important resource for decision-makers and other societal sectors. It will focus strongly on training and educating a new generation of researchers with a holistic view of antibiotics resistance.

A prerequisite for being able to do all this is and contribute to improving the world is that the University is constantly developing. In order to improve our own researchers’ opportunities, we are starting work on Q&R17 in 2016. Q&R17 stands for ‘Quality and Renewal 2017’. Our researchers and experts from all over the world will be discussing what we can do to strengthen the University’s status as a leading international research university.

This issue of New Horizons features extensive discussion of future health-care challenges, but also articles about the areas mentioned above. All of these issues are interconnected and at Uppsala, due to our breadth and international collaboration, we have the capacity to tackle many large issues at the same time. Openness, commitment and co-operation make us a world-class university on the leading edge. It is all about quality.

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Eva Åkesson, Vice-Chancellor

“... due to our wide range of interests and international collaboration, we are privileged to be able to tackle many great issues at the same time.
ENJOYING GOOD HEALTH is high on the wish list of most people. And the likelihood of actually doing so increases at the same pace as medical progress.

For example, knowledge of the genetics which underlies various cancers is expanding so that it becomes easier to decide upon the right treatment for different individuals. Materials science is producing materials which imitate human tissues and can be used, for example, to repair damaged skulls.

Another tool which can help us on our way to better health is IT. Smart computer systems can help pathologists to interpret images and make diagnoses. Gravely ill people can receive therapy in their homes via the internet.

At the same time, there are great challenges facing health care in the future. Sub-Saharan countries are facing two-pronged challenge. They have to deal with both infectious diseases and first world diseases such as diabetes, high blood pressure and obesity. Solving these problems requires collaboration between researchers in the fields of medicine, the humanities and the social sciences.

All this and more you can read about in our theme of future health.
PINPOINT
cancer treatment

Knowledge of the genetics underlying cancer and which patients respond well to various treatments is expanding. In Uppsala, work is being done to help develop treatments which are more adapted to individuals and methods for making earlier diagnoses. “It requires close collaboration between researchers and clinics,” says Tobias Sjöblom.

U-Can
Run collaboratively by Uppsala University, Umeå University, Stockholm University and KTH (the Royal Institute of Technology, Stockholm).
Collects and organises samples taken from patients before, during and after cancer treatment. Information about the patients and X-ray images are also collected. To date, more than 8 500 patients have been included, diagnosed with colorectal cancer, haematological neoplasms, lymphoma, prostate cancer, brain tumours, gynaecologic cancer, neuroendocrine tumours, breast cancer and lung cancer.

The material is used for:
• developing improved diagnostics and better characterisation of various cancer types
• developing and evaluating new medication and other new treatment methods
• examining what makes a treatment work or not

The Uppsala Biobank at Akademiska sjukhuset has a unique collection of samples from over 8 500 patients with nine different cancer diagnoses. Tobias Sjöblom is programme coordinator for U-Can.
HE IS A RESEARCHER at the Department of Immunology, Genetics and Pathology at the Rudbeck Laboratory in Uppsala. Here, research is being carried out on several of the most common cancer diagnoses such as breast cancer, colon cancer and leukaemia.

For the last five years, samples have been collected from cancer patients with nine different cancer diagnoses before, during and after treatment as part of the strategic U-Can programme. It is an excellent basis for the research according to Tobias Sjöblom:

“What is unique about U-Can is that we monitor the patients throughout their treatment. There are plenty of biobanks with samples from when the patients were given their diagnosis but we continue to collect samples from every patient, which makes sense.”

THINGS HAVE GONE WELL. Among the reasons for this are the research nurses “who keep a very close eye on their patients”, and the skilled pathologists. But collaboration has also been needed between various hospital departments and the researchers at the Rudbeck Laboratory.

When a patient is treated for cancer, a number of different specialisations are involved: oncology, surgery, pathology, radiology… Building up a collection from one particular diagnosis requires that around ten people need to agree on how the samples are to be collected. This has meant long discussions about who is to do what and who is going to pay for it. But it is worth it, according to Tobias Sjöblom.

“We have hit upon a good model for doing this which very few others in the world have – a way to involve large sections of the care chain. Our total has now passed 8 500 patients from whom we have collected samples and we can now start to reap the harvest.”

ONE OF THE RESEARCHERS who uses U-Can is professor Richard Rosenquist Brandell. He is doing research on a form of leukaemia, chronic lymphocytic leukaemia (CLL). This is an incurable cancer where some patients can live without symptoms for many years even without treatment. In other patients, the course of the disease is more aggressive. They relapse more quickly despite new medication.

Richard Rosenquist Brandell and his research team recently discovered a gene which may be connected with relapses after treatment.

“Our study is one of the first to examine a homogenous group of patients who have all undergone the same treatment and have had a relapse...”
CONT.

Pinpoint cancer treatment

within an average of two years. Many of these, we discovered, had mutations in the same gene. In most cases, the mutation was there before treatment was started.”

In addition to being a researcher, Richard Rosenquist Brandell is also a physician specialising in clinical genetics and he co-operates closely with cancer care. Close collaboration between the university and the hospital has led to a facility for clinical genetic testing being set up at SciLifeLab. Its aim is to apply new technology to current diagnostics for cancer, leukaemia and hereditary diseases.

“If in the past we looked for three genes in a leukaemia patient, we can now look for 50 genes for the same cost. We have both completely new opportunities for treatment and for improved diagnostics. It is a combination which bodes well for the future.”

Richard Rosenquist Brandell envisions an explosion of new knowledge in the next few years: “As a geneticist I think it is a very exciting time.”

HE SHOWS ME A PANEL – or map – of genes used to find the most important genetic abnormalities. This information can then be used to determine which type of treatment the patient receives.

“We see which abnormalities the patient has at molecular level and so we can group the patients into high, medium or low risk.”

Doctors and molecular biologists work closely together to ensure that such knowledge gets to where it is needed – the health service and the patients.

“We print the results and interpret them for the doctors at the clinics. The results are quite complicated, after all. We put a lot of energy into explaining them and this makes for a useful dialogue.”

Experts in bioinformatics and bioethics are needed in order to deal with all the genetic information. But both researchers and doctors can make use of the knowledge, according to Richard Rosenquist Brandell. He envisions an explosion of new knowledge in the next few years.

“As a geneticist I think it is a very exciting time.”

THERE IS ANOTHER major unexplored area for U-Can. With such a large collection of samples from a number of different cancer types, it is possible to search for biomarkers for cancer. Such knowledge could lead to earlier discovery and improve survival rates.

“We have a collection which looks into the future. It includes more or less every patient in a certain geographical area with certain illnesses. At the same time, other cohort studies are in progress in the same area which also encompass a large proportion of the population. It is a very good starting point for biomarker development,” says Tobias Sjöblom.

At present, a major project is being planned jointly by Umeå University and Uppsala University to try to find a systematic way to develop biomarkers for the early discovery of cancer in different patient groups.

“This is something which has previously been very difficult to do. Much of the difficulty has been the lack of access to patient cohorts grouped together in an optimum manner for this purpose. But now we have them. There are not many around the world who have our breadth of diagnoses.”

DEVELOPING TESTS for the early discovery of cancer does not just mean the early discovery of the preliminary stage of cancer. One has to know which organ is affected. Otherwise, the result will just cause anxiety for the patient and the health professionals can do nothing about it. These kinds of analyses must therefore be carried out in parallel for many different cancer diagnoses so that it is possible to pinpoint what is distinctive for different kinds of cancer.

Why is it so important that cancer is discovered in time?

“Early discovery is the best cure for cancer I usually say. If you could discover any potential tumours only a few years earlier, it would greatly increase the chance of survival”, says Tobias Sjöblom.
Studies to put an end to childhood obesity

Overweight and obesity have increased significantly among children in the last 20 years. Peter Bergsten, Professor of Medical Cell Biology, is leading an EU initiative that will find new methods to not only treat, but also prevent childhood obesity.

As many as one in five children in Sweden have major weight problems, which lead to complications such as type 2 diabetes and cardiovascular disease already at a young age. The EU project “BetaJUDO” studies what is happening in children at the cellular level. “It’s not just about how many calories we’re eating. A wide variety of conditions determine the result of the calorie equation in an individual, whether it is positive or negative,” says Peter Bergsten.

Researchers have studied how fatty acids in the blood vary among children with obesity and overweight compared with normal-weight children. “High levels of fatty acids may be a contributing factor to certain people developing obesity already at a young age. Some of the kids we meet at Uppsala University Children’s Hospital are as young as three years old.”

An important part of the ‘BetaJUDO’ project is to find new ways to treat children. By testing a certain pharmaceutical principle on cells in the laboratory, researchers have identified a medication that causes insulin-producing beta cells to function normally again.

“The medication is currently being tested by 44 kids with obesity in Uppsala and Salzburg while research is being conducted on the cells in the laboratory,” says Peter Bergsten. “The study will conclude in September and the results will begin to be analysed.”

One basis for this work has been a close collaboration with pediatrician Anders Forslund in particular at Uppsala University Children’s Hospital. The researchers are also studying what happens at the beginning of life while in utero. Even at that point, the environment can be more or less healthy for the growing fetus and more knowledge will make it possible to take action early.

The rise in obesity has involved decision-makers in Sweden, at the European level and even in WHO. “WHO published a report in February with a strategy to end childhood obesity. It reafirms that it is our obligation as adults to provide children with an environment that does not make them sick,” says Peter Bergsten.

An international summit, Uppsala Health Summit, will be held in Uppsala this fall on childhood obesity. Peter Bergsten sees it as an opportunity to gather the entire breadth of players who can help impact the health situation of children. “This is a complex field and if Uppsala Health Summit can make some progress, then that’s outstanding. A lot of players will need to reach consensus. The goal is for us to provide children with an environment that gives them opportunities to live a healthy life.”

“... it is our obligation as adults to provide children with an environment that does not make them sick.”

One in five children in Sweden have major weight problems.
The African countries south of the Sahara are in the middle of a two-pronged medical challenge. Healthcare services must handle infectious diseases such as malaria, Ebola and HIV, while so-called lifestyle diseases are rising sharply. Uppsala University is now undertaking an initiative to find new paths to solutions.
A GROWING MIDDLE CLASS in African countries has led to the rapid spread of lifestyle diseases such as type 2 diabetes, high blood pressure and obesity. "We must seek solutions to the health problems in the African countries beyond the traditional scientific approach I learned in medical school at one point in time," says Stefan Swartling Peterson, Professor of Global Health.

"We know that two out of three women and children die unnecessarily because known medical knowledge is not reaching them. This is not primarily a medical problem; a better vaccine isn't going to do much good if it isn't used," he continues.

To find paths forward, Uppsala University is launching an education and research environment called “Health, Politics and Culture in Africa”, which aims to be a dynamic environment at the interface between the humanities, social sciences, medicine and pharmacy. The research environment will work with interdisciplinary seminars for researchers, doctoral students and undergraduates, common research applications and partnerships with researchers in African countries. "Health care is a political issue that affects people’s daily lives. Politics, especially municipal politics, will be essential in this issue," says Sten Hagberg, Professor of Cultural Anthropology.

“The challenges posed by health issues require us to work together and see different perspectives. For example, growing democracy presents opportunities to require better food control, which is in turn a condition for better health.”

THE SPECIFIC PROBLEMS of managing lifestyle diseases in African countries are numerous and include adapting diet, implementing lifestyle changes and adjusting attitudes towards affluence. The challenges also include other aspects, such as access to clean water, refuse collection, climate change and social and economic inequalities.

A clear correlation exists between the places in the world that have had problems with starvation; today, the same areas struggle with a sharp rise in problems with overweight and lifestyle diseases. Immigration to the growing cities has resulted in a transition from undernourishment to overweight in only one generation.

A sedentary lifestyle, fatty foods and the

D I A B E T E S I N S W E D E N AND THE WORLD

Every year, 5 million people die of diabetes worldwide, which is the equivalent of one person every six seconds every day, all year.

For comparison, every year worldwide:

• 1.5 million people die of HIV/AIDS
• 1.5 million people die of tuberculosis
• 0.6 million people die of malaria

Around 47 percent of people with type 2 diabetes worldwide are undiagnosed. In Africa, that number is 67 percent. 79 percent of people who die of diabetes die prematurely (under the age of 60) in sub-Saharan African countries.

415 million people are believed to have diabetes worldwide. If that trend continues, 642 million people will have diabetes by the year 2040, an increase of over 50 percent in 24 years. The greatest increase is expected to take place where the economy has gone from low to middle-income.

About 8 percent of people have diabetes in South Africa, a middle-income country. But prevalence varies significantly within the population, from approximately 4 percent of the white population to approximately 13 percent of the black population.

In Uganda, a low-income country, approximately 7 percent of people have type 2 diabetes in rural areas and 20 percent have prediabetes. However, many medical centres lack sufficient test equipment and the figures are thus probably too low.

In Sweden, approximately 5 percent of people have diabetes and 6 percent have prediabetes. But diabetes is rising in Stockholm County and prevalence differs sharply between the various areas. In socioeconomically vulnerable areas of Stockholm County, prevalence reaches 23 percent among the elderly.

After the article was written, Birgitta Essén, Professor of International Maternal and Child Health, has taken over after Stefan Swartling Peterson, who now works for UNICEF.

Health care is a political issue that affects people’s daily lives.

THE UN’S NEW DEVELOPMENT GOALS

Last autumn, the UN adopted 17 new global sustainable development goals for 2030. One of the goals is to ensure a healthy life and promote well-being at all ages.

un.org/sustainabledevelopment
Biomaterials which can repair injuries

One is an expert in ceramic bone implants, the other a specialist in the interaction between polymers and human body cells. Together they are developing and improving the orthopaedic and dental biomaterials of the future.
Which can repair injuries...

ANOTHER FACTOR which can also help to strengthen ceramic plates is plaster or other materials based on synthetic polymers. In order to understand how their properties can be best applied to their purpose and not be rejected by the body, professor Jöns Hilborn’s team analyses the response of cells and tissues at a molecular level. Into materials which might be used for implants, researchers add molecules made up of polymers. On the surface of the material, selected cells are planted and the reactions are examined.

"The results we obtain are very likely to be the same as if the material was implanted into something living," says Jöns Hilborn. He adds:

"Even more interesting are the body’s own polymers which are also able to control biological functions. We have observed that when the body’s natural substance hyaluronic acid is added to the implant material, the surrounding blood vessels grow better."

Studies have shown that some gels injected into animal tissue give protection against inflammation, hasten the healing of wounds and reduce scarring.

"Injectable gels also work very well to form bone or cartilage. One of the researchers in my lab has developed a gel containing a substance intended to search for bones needing treatment for osteoporosis. So what would be interesting with regard to bone generation is the ability to produce injectable ceramic composites. Håkan and I want to do further research into this."

ANOTHER ADVANTAGE of the ceramic material is that its composition prevents the surrounding skin from becoming thinner. Thin skin may suffer from splitting and pitting. In addition, Håkan Engqvist’s research team has published two articles describing how the material triggers bone formation in the head.

"This is feedback we have received from the doctors we work with who have regularly followed up their patients’ progress over several years. The first patient has now had his ceramic implant for over five years. It can be seen that bone is being formed more and more densely around the implant. This also leads to many exciting thoughts about how you can build up bone," says Håkan Engqvist.

The idea of using a mosaic to repair bone comes from plastic and reconstructive surgeon Thomas Engstrand at Karolinska Institutet. His collaboration with the researchers at the Ångström Laboratory is now in its fifth year.

"We also carry out research in close collaboration with orthopaedic practitioners and radiologists. We aim to produce new biomaterials which can be used in several different parts of the body. We can already tailor-make various kinds of implant, other interesting areas we are looking into are the back and the face."

ONE EXAMPLE is fractured vertebrae. These have to be stabilised so that they do not cause severe pain. Håkan Engqvist’s team have created a new technique using a ready-mixed ceramic material which can be injected into the site of the injury to stiffen the fracture. A simple and time-saving method which, however, is a long way from being used clinically.

"Much documentation will be required to take it further, as well as many strength tests in order to make the material and evaluate it - firstly in cells and then in animals. The whole chain of evaluation has to work from pre-clinical to clinical to commercialisation via a company," says Håkan Engqvist. ■
PATHOLOGISTS have a vital occupation. One of their tasks is to examine tissue samples to see whether a patient has cancer and, if so, its degree of severity. The assessment made by the pathologist then serves as a critical piece of data for deciding how the patient is to be treated.

Such assessments rely upon the pathologist's knowledge and accumulated experience. Quite often, however, different pathologists arrive at different results. Prostate cancer is one of the kinds of cancer which is difficult to assess.

“If you show two pathologists the same samples, they only agree in 60–70 percent of the cases,” says Ingrid Carlbom, visiting professor at the Department of Information Technology.

Along with her colleague Christophe Avenel and pathology researchers, Ingrid Carlbom is developing a digital support system for making prognoses in prostate cancer cases. When it is up and running, the system, CADESS, will help pathologists to analyse tissue samples and point to where the abnormalities are. The system can also indicate the severity of the cancer. The advantages are many. The aim is to remove the subjective elements of the assessment as far as is possible and thus make it safer for the patient.

“A better assessment can help reduce the number of unnecessary treatments – those which do not help the patient to live longer but which do have distressing side effects. Only 10–15 percent of newly discovered prostate cancer needs treating. The remainder has slow growth and is not life-threatening,” says Christer Busch, pathologist and senior professor at the Department of Surgical Sciences, who is collaborating with the IT researchers.

It also saves time. Pathologists are already in short supply and the average age of those currently working is high. “Using the support system means that assessments which presently take an hour can be carried out in five minutes,” says Ingrid Carlbom.

“Our intention is not to replace pathologists,” she points out, adding that the system is intended to support decision-making.

Put simply, it can be said that researchers use two different methods to ‘train’ their cancer-recognition algorithm. Firstly, the research team uses samples from a large group of patients where it is known how things went for them. Secondly, they use a group of 13 internationally eminent pathologists who provide expert statements regarding patterns found in the tissue samples. This also has a second important purpose: They help the system to be accepted by pathologists.

Ingrid Carlbom, visiting professor at the Department of Information Technology, is collaborating with researchers in pathology in order to develop digital support for analysing tissue samples.

**PROSTATE CANCER**

This is the most commonly occurring form of cancer in Sweden. It mostly affects older men. Approximately half are over 70 and only a few are under 40 when diagnosed. There are many different kinds of prostate cancer which are dealt with in different ways. Some grow slowly and do not become life-threatening. Others are aggressive and need treatment. Assessment and prognosis is carried out using the Gleason Scale which grades the cells on a scale from one to five, where five is the most serious category of cancer.

The figure shows a tissue sample where the upper left half is coloured for visual grading by the pathologist. The other half is colour-coded by CADESS. It shows the cancer and how malignant it is. The pathologist can zoom in on the image and study the cancer in detail.

**DIGITAL PATHOLOGY can give a better prognosis**
More people can be saved FROM HEART ATTACKS

Swedish coronary care has attained the highest international standards and is in a good position to take the lead in future developments. So says Stefan James, recently appointed Professor of cardiology at Uppsala University.

“EVERY YEAR, seven million people die as a result of heart attacks, making it the most common international cause of death. With better methods for early discovery, diagnostics and treatment, many more could be saved,” says Stefan James, who was recently made Professor of cardiology specialising in clinical cardiovascular research.

Stefan James was also recently ranked in the top one percent of the world’s most cited researchers in clinical medicine.

“Nine out of ten risk factors for heart attacks are life-style related. Better diet, more exercise and reduced stress are effective ways of preventing cardiovascular diseases. The first important contribution we can all make is to encourage our children to choose healthy habits,” says Stefan James.

Unfortunately, heart attacks will most probably continue to burden society and individuals. Stefan James and his research team have the express aim of contributing to improved medical treatment. One way they have achieved this is by studying the results of Swedish coronary care.

“We studied and ranked the outcomes of the care measures carried out at Swedish hospitals and published our figures. This in itself led to discussions but it also fulfilled its purpose. When we followed it up ten years later, Swedish coronary care had achieved top international standards,” says Stefan James.

Stefan James’ pioneering methods for researching medical records attracted extensive international attention.

“It is good to see the great interest in cardiovascular research. This is also shown by how many research grants can be applied for. If we can also improve our collaboration with industry, pre-clinical research and international partners, then Sweden will be in a good position to lead developments in this field,” says Stefan James to sum up.

“Nine out of ten risk factors for heart attacks are life-style related”, says Stefan James.

... ten years later, Swedish coronary care had achieved top international standards
ONLINE THERAPY for the seriously ill

Is it possible to give psychological support via the internet to seriously ill patients and their relatives? Absolutely: it works well, according to research being conducted in U-Care at Uppsala University.

MORE AND MORE internet-based self-help programmes are in development, and the primary starting point for the research programme U-Care is cognitive behavioural therapy (CBT), a well-proven treatment method with excellent results. Licensed psychologist and Professor of Caring Sciences Louise von Essen and her research team at Uppsala University are developing programmes in close cooperation with system developers and others. “One programme is completely finished. It offers online support for parents of children with cancer and has been evaluated with great results. Now we have to make sure it’s used in health care, which is the next challenge,” she says.

THE RESEARCHERS are also in the process of developing self-help programmes for young people and adults with cancer, and for patients affected by heart attacks; the programmes for the latter two groups are now being evaluated. These physical diseases often lead to emotional problems. Louise von Essen points out that contrary to what one may believe, only a minority of teenagers with cancer are interested in using internet-based self-help programmes. “We thought the online option would attract teenagers, but a lot of them don’t want any kind of psychological help. A minority of young people want to bother working with emotional problems, in addition to cancer and all it entails.”

OTHER RESEARCHERS associated with U-Care are studying the effects of self-help programmes for women with fear of childbirth, women experiencing post-traumatic stress after an abortion or a difficult labour, and people at risk of developing depression. “When you’re affected by a mental disorder related to disease, the ramifications are often challenging and lasting, both for the individual and society. Options for professional psychological support are limited. But with the help of the internet, we can increase the geographical spread of psychological help and even reach out to socioeconomically disadvantaged groups, who can never afford professional support,” says Louise von Essen.

A functioning business model is required to make the programmes available to both private individuals and medical clinics. Support has therefore been sought from the University’s central support unit, UU Innovation.

THE RESEARCH GROUP also studies how patients and families use the U-Care portal, such as how they log in and work with the programmes, in order to make improvements. “Many people who conduct psychological treatment online have found that compliance with the programmes is better when our participants have a contact person who follows them through the programme,” says licensed psychologist Martin Cernvall, researcher at the Department of Public Health and Caring Sciences. “Self-help programmes should be seen as a complement to other psychological treatment; it’s not a solution for everyone. But it’s a field that is going to grow sharply.”

Louise von Essen and her research team are developing a programme in close cooperation with system developers and others.
Game design for better health

In August, students and professionals will come to the Department of Game Design at Campus Gotland to spend two weeks learning about innovative processes and creative groups – knowledge that can lead to the development of games that contribute to better health, for example through modified behaviour.

THIS YEAR, for the first time, an interdisciplinary summer course will be held in Visby under the auspices of the EU project EIT Health. Participants will learn about innovation processes and, above all, about how innovations in game design can improve the future of health and medical care, such as innovations that can be used in health care or for self-help. “Innovative thinking is essential to understanding how to unify various subject or professional skills and apply them to new kinds of games that are based on users’ needs and desire to compete,” says Catharina Svensson, Professor of Molecular Virology and one of the initiators of the summer course.

In addition to teaching about the actual innovation process, the course includes important subjects such as group dynamics and conflict resolution.

Thumbs up to online chart service

Three years ago, it became possible for patients to read their chart online. Åsa Cajander researches human-computer interactions and has now studied how the service works for patients.

TOGETHER WITH RESEARCHERS from other institutions of higher education, she has carried out in-depth interviews with 30 cancer patients. Half of them had used the service and half had not.

“Some of the misgivings when the service was introduced included that patients might suffer when receiving bad news via their chart online, or that they wouldn’t understand the text. But that hasn’t been the case in our study,” says Åsa Cajander.

Among other things, the study shows that a majority of all interviewees felt positively about the service and found it useful. Most of those who read their chart online said the option to be able to see test results quickly was one of the leading reasons for using the service. They also felt it was important for their peace of mind to be able to learn about bad news from home; that access to the chart allowed them to better prepare for a visit to the doctor, and that it increased participation in their own care. The majority also thought the service was easy to use and understand.
NEW HORIZONS: ISSUE 1, 2016

4 QUESTIONS TO OLLE LUNDIN
– Professor of Administrative Law, who is to investigate whether it is possible to achieve equality of schooling in Sweden. He is the leader of a four-year project which has been awarded approx. SEK 11.8 million by the Swedish Research Council.

What is ‘an equal school’?
“The law says that all school children in Sweden are to receive equal education of the highest quality regardless of where they live, their personal qualities or abilities or other factors.”

Along with Victoria Enkvist, Lotta Lerwall and Gustaf Wall, you are going to analyse school legislation. How?
“One thing we are going to look into is the question of responsibility within education. There are some general regulations within administrative law which do not really fit in with education. Who has the responsibility differs widely around the country. In some local authorities the politicians make the decisions, in others it is the head teachers.”

“We will also examine school inspection and quality control. There are a number of inspection authorities within education – the Schools Inspectorate, the Equality Ombudsman, the Work Environment Authority – whose responsibilities partially overlap.

Another area we will study is the right to support for special needs students.”

Is more research needed into these areas?
“Yes, there is a shortage of research into educational jurisprudence. The idea is that our four different projects together will provide a picture of education from a jurisprudence perspective, a picture which we have not had before. We may then perhaps be able to provide the legislators with some helpful advice.”

The project will be carried out by the Institute of Education Law at the Faculty of Law. What is that?
“The institute was formally set up in November 2015. We run advanced seminars and conferences and have published an anthology. We have mainly concentrated on schools but we will also take up issues related to universities and colleges. There is also very little jurisprudence research into those areas.”

ANNICA HULTH

Proverbs in Swedish

“He who fights and runs away may live to fight another day.” “He who laughs last, laughs best.” These are two of the 119 different proverbs studied and presented in a new dissertation from Uppsala University. Anders Widbäck has studied the use of proverbs in Swedish plays written over 300 years and shows that proverbs serve at least fourteen different linguistic functions.

“Many proverbs can be used in several different ways. They can express an opinion, criticise another person and describe the current situation at once, for example: ‘people who live in glass houses shouldn’t throw stones,’” says Anders Widbäck.

Relief efforts during the war

Earlier research has seen Jewish-Swedish relations during the terror of the Nazis as passive or overly cautious. But in a new dissertation on this history, Pontus Rudberg demonstrates that Swedish Jews aided Jewish people in Europe in many different ways during the entire period from Hitler’s appointment as chancellor to the end of World War II. The dissertation focuses on the relief efforts of the Stockholm Jewish Community.

4000 meters high

The Himalayan forest thrush is the name of the brand new species of bird that has been discovered by an international research group led by Uppsala University Professor Per Alström. What researchers previously believed to be one species of bird is in fact three: the alpine thrush, the Sichuan forest thrush and the new Himalayan forest thrush. The research group found the bird during field work at an altitude of around 4,000 meters in the Eastern Himalayas.

PHOTO: CRAIG BRELSFORD
PHOTO: LEIF KULLBERG
Swedes, refugees
AND THE MORAL CRISIS

Beggars in their thousands, border controls and refugee camps on fire. Sweden’s historical status as a moral major world power is in question. We may have to look in the rear-view mirror to see the way forward.

HOW ARE WE TO DEAL with all the help-seekers who just keep increasing in number? This is a question we are faced with more and more often. Such as when the singer Lill Lindfors was a guest on the Skavlan TV show one Friday in January. When Lindfors talked about how she is learning to speak the Romany because of all the Rumanians on our streets, there was silence from the TV couch. “You speak to them then?” asked a slightly baffled talk show host. “I usually invite home a young mother who sits outside the grocery shop and I give her food and clothing. She can’t just sit there,” said Lindfors before the interview changed direction.

“The 4 700 EU migrants who have suddenly populated our public spaces have caused a moral crisis. They confront us with a kind of poverty we are unaccustomed to, which in turn makes us question the image we have of ourselves as honourable defenders of human equality. The ethical collapse causes us to create new explanations for why we do not like these particular groups of people and we seek arguments to justi-

“...
"At present, we are seeing and hearing language which takes us back to the early 1990s.

At present, we are seeing and hearing language which takes us back to the early 1990s.

FROM GOVERNMENT agency level, we hear every weekday the number of asylum seekers for the week in Sweden as reported by the Swedish Migration Agency (Migrationsverket). The people on the move throughout Europe are efficiently reduced to volumes and tables. Sweden, the moral major world power has been shaken up. From being the most immigration positive people in Europe, more and more Swedes now feel that we should take in fewer refugees. Border controls have already been introduced and the government are preparing the deportation of 80,000 asylum seekers. These are necessary measures taken in extreme circumstances. Or are they?

“Well, politicians like to assert that Sweden has never faced a greater challenge when it comes to the influx of refugees than at present. During World War II, however, the number of refugees in our country quadrupled and we had neither the organisation nor knowledge to take them in. A crucial difference was the prevailing pragmatic attitude back then to quickly put immigrants to work in the forests and domestic jobs. The labour market these days is different but with a creative attitude I am convinced that we could also make use of the skills now arriving in Sweden,” says history lecturer Mikael Byström.

NOT EVERYBODY, however, is equally convinced of our country’s need for foreign labour. Seventy-seven years after the infamous 1939 Bollhus Meeting – when a majority of the Uppsala students in attendance voted against the proposal that Sweden should take in ten German-Jewish doctors from Nazi Germany – loud protests are again echoing around the country. The question is how wide and deep is the support for these protests?

"Xenophobia is nothing new in Sweden. It has been reappearing cyclically for almost a century. What usually happens is that younger people take over nationalist movements at the same time as there is a social climate favourable to their ideas. They used to be cores of committed people who sought out and exploited local expressions of discontent with the aim of making it look like public opinion. These days, these groups operate via the internet which makes it more difficult to gauge how many people are actually involved,” says Heléne Lööw, researcher at the Uppsala University Centre for Police Research.

"AT PRESENT, we are seeing and hearing language which takes us back to the early 1990s when many refugee living quarters came under attack. Experience shows that acts of violence result when the rhetoric reaches a certain level. I therefore think that last autumn’s fires were predictable and that alarm bells continue to ring,” says Heléne Lööw.

There are people who one hears less from. These are the EU migrants and asylum seekers themselves. In the darkest corners of anonymity, those who have had their asylum applications rejected wait for deportation in one of the Migration Agency’s five holding facilities.

“They are by and large an invisible group. After my interviews, many of them thank me
for giving them a short time feeling like more than just an abnormal object,” says Soorej Jose Puthoopparambil who studying life in the holding facilities.

His research shows that the majority of those being held suffer from having had traumatic experiences, severe stress and a low quality of life. Their primary needs are psychosocial in nature. This makes the way they are treated by staff members at least as important as material standards. This observation has already had a practical effect.

“The Migration Agency has recruited a health care co-ordinator and a conflict management instructor. This is a step in the right direction but access to social workers and better trained and equipped regular staff members are still needed if we are to relieve the negative effects of being kept in a holding facility.”

**WHAT IS CERTAIN** is that the situation and the discussions will go on. At the same time, society is facing a challenge which needs dealing with here and now. Evidence-assured solutions are hardly available but given freedom to choose:

What way does science recommend we go?

“History often judges harshly societies which have not welcomed refugees. This does not mean that elected officials are to run society with an eye on how they will be judged in future history books. They should, however, read those that have already been written. They have much to teach us, including how to successfully handle receiving people,” says Mikael Byström.

Putting the responsibility, as some politicians are content to do, on the migrants’ and refugees’ home countries is however, dismissed as a simplified escape route with no need for further elaboration.

“We are at a geopolitical crossroads,” says Erik Hansson. “We can stick with the idea of the nation state and erect walls, but this will hardly make, for example, Romania treat its Roma population better. And extreme injustice in time leads to envy, hate and great risks. The alternative is to restructure ourselves with global welfare policies and share the responsibility for eliminating the worst forms of poverty. This will certainly require resources at first, but given the alternative, the choice is easy.”
“Vulnerability generates demands”

In January last year, Uppsala University received a record grant of SEK 80 million to recruit Don Kulick, Professor of Anthropology. He will lead an interdisciplinary research programme about new perspectives on vulnerability and is now in place to establish a new research environment.

**DON KULICK’S OFFICE** at the Department of Cultural Anthropology and Ethnology bears witness to the fact that he has yet to fully move in to Uppsala University. The bookshelves remain bare, and neither a computer nor paper are to be found on the desk. But the work to assemble a research group is underway and he expects to have a research environment ready by autumn.

The research programme “Engaging Vulnerability” has received funding for the next ten years to contribute new knowledge and perspectives on vulnerability. The starting point of the research is to study groups and phenomena in society based on a new perspective that approaches vulnerability as a resource, and not only as a limitation or shortcoming.

The new programme will build on philosophical ideas about responsibility and ethics that emphasise vulnerability as a relationship that places demands on accountability and involvement, for example. Don Kulick’s interest in vulnerability and how it affects people’s behaviour evolved from his earlier research. “As an anthropologist, I’ve always worked with groups who have been vulnerable in different ways. While living in the rainforest in Papua Nya Guinea or in a favela in Brazil, I too have been in extremely vulnerable situations and in need of help. I have experienced how vulnerability produces interactions and creates relationships many times,” he explains.

Don Kulick came to Sweden from the US as an exchange student in the
Title: Distinguished University Professor of Anthropology
Family: Partner Jonas and two gluttonous cats.
Makes me mad: People who speak loudly into their mobile phones on the subway, bus or train and act as though the people around them are invisible or non-existent.
Makes me glad: Fresh squeezed orange juice with breakfast (especially if Jonas is the one who made it, rather than me).
Last book read: The Heart Goes Last by Margaret Atwood (a disappointment).
Motto: “Mind the gap”.
early 1980s and was interested in languages from the start. He began studying linguistics at Lund University but soon realised that what truly fascinated him was the combination of people and languages.

“I’m interested in how people talk to each other and why they talk the way they do. That led me to anthropology.”

In the early 1990s, he earned a doctorate in anthropology with a dissertation on language socialisation and the death of a language in Papua New Guinea. “I was there for 15 months and studied a language with very few speakers called Tayap. At that time, it was spoken by 89 people. Today, only about 45 people still use it actively.”

Don Kulick learned both Tayap and Papua New Guinea’s main language on location, and he lived with the people he studied. He is still working on describing the language and has travelled back and forth between Sweden and Papua New Guinea for several years. “After completing my dissertation, I went back to work on a grammatical description of the language, but it became so dangerous to be in the country that conducting research there was impossible. I was able to start going back again in 2006 and now I’m writing a book about what’s happening with the language,” he says. “I fully expect that everything else I write will be forgotten with time, but if I manage to describe this language, it will be my little contribution to the trove of human knowledge.”

WHEN THE SAFETY SITUATION in Papua New Guinea became too strenuous, Don Kulick decided to research something else. He had been to Brazil as a tourist and began to work with Brazilian transvestites who made a living as sex workers. “Gender and sexuality have always interested me and I decided on these people.”

Even in Brazil, he began learning the language from the fundamentals. “The language became my gateway to the group. They taught me Portuguese and most of what I know about Brazil, I learned when I lived with them in a poor, dangerous part of the city of Salvador.” His work in Brazil resulted in the book *Travesti: Sex, Gender, and Culture Among Brazilian Transgendered Prostitutes*. It has become something of an academic bestseller and is used in courses on gender and sexuality worldwide.

In his most recent fieldwork, he has continued to work according to the same method. Together with historian Jens Rydström at Lund University, he has studied the sex lives of adults with disabilities. “The study is a comparison between Sweden and Denmark and also got me to learn the language on location. As an anthropologist, the most interesting things are often what you hear in passing, without directly asking a question. That’s why it’s crucial to be able to talk to people the way that they talk in order to get close to them.”

While the work has been underway, Don Kulick has periodically lived in group homes for adults with severe disabilities to study their daily lives. “You’re always on, and it can be quite exhausting. But if I hadn’t lived on site, I never would have gotten all this information.”

To do a good job as an anthropologist, you have to be curious, unpretentious and persistent. You also have to be able to handle being perceived as ignorant, and even a bit stupid. “You’re often viewed as an idiot by the people you’re working with. And you are an idiot; what do I know about life in the rainforest or as a sex worker or someone with a severe disability? The people I work with are always the experts.”

**CONDUCTING FIELD WORK** as an anthropologist is indeed different from the day-to-day work of most people. The subject of his next research project is not completely clear yet. He might have to learn Japanese this time. “Right now, I’m looking at what’s been done in Japan in research on the elderly. I’ve also developed an interest in how people with Hansen’s disease – what used to be called leprosy – live in Japan, to really talk about vulnerability. I’ve started to learn Japanese, which I’ve realised is a little like saying, ‘I’ve started to climb Mount Everest’. Yikes.”
Discuss like Plato

HOW SHOULD A GOOD discussion be carried on—so that everybody has chance to take part thus giving the discussion its best opportunity to develop? This was the theme of Pauliina Remes’ inauguration lecture.

Pauliina Remes is a newly inaugurated Professor in Theoretical Philosophy and she feels that there is every reason to think about the present level of discourse.

“The tone of discussions about political issues and society issues in Europe is becoming increasingly harsh. Conflicts on Facebook are more like a caricature of a debate. People talk over each other, intentionally misunderstand each other and act emotionally.”

Perhaps we have something to learn from Plato’s dialogues, one of the greatest works of philosophy from 4th-century BCE Greece. Plato was the first to draw attention to the normative aspects of conversation, says Pauliina Remes.

In the dialogues, Socrates meets a number of different partners in conversation and makes clear demands of them. He asks them speak briefly and concisely and also demands sincerity and presence. Ideally, they should present only their own opinions and never somebody else’s and they should back up their opinions with all of their beings.

“This leads to at least two conclusions. Firstly, you can only enter a discussion in which you defend your authentic point of view. Secondly, you can only defend an opinion which arises from a series of beliefs and is not dissociated from everything else you believe. Taking action without revealing your identity, for example, by spreading hate rhetoric anonymously, is not allowed in Plato’s model,” says Pauliina Remes.

PAULIINA REMES interprets Plato’s dialogues as studies in rationality.

“Rationality is not just the logical principles which control argumentation. It is a social activity whereby one’s opinions are improved if they are subjected to Socratic or open scrutiny. Plato shows in his dialogues how conversation is affected by the people taking part, by their characters and opinions, and by everyday problems which might arise.”

Learn a language with a tablet

TABLETS are particularly good for multilingual preschool children. With their help, kids can listen to books in their second native language, use educational apps, and communicate with kids at other pre-schools, for example via Skype. This is according to a new licentiate thesis in education.

“My study shows that actively working with tablets in preschool is good for communication for all kids, especially younger children who haven’t learned to speak and read. For children with a native language other than Swedish, tablets can be extra important, because they have a hard time getting help from Swedish-speaking staff,” says Petra Petersen, doctoral student at the Department of Education.

Sweden has five minority languages, and in 74 municipalities, children have the right to complete preschool in their native language if it is Finish, Sami or Meänkieli. Petra Petersen has followed preschool groups with children between one and six years old, most of whom were Swedish speakers, but a large portion of the kids were bilingual and spoke both Swedish and Finnish.

“Tablets give them the chance to generate involvement among the other kids and to pique their interest in languages. One way of doing this is by figuring out together what different things are called in Finnish, for example,” says Petra Petersen.

Regardless of the language, tablets have educational importance for all children, because communication is based on pictures rather than on being able to read or write. That can reduce children’s dependence on adults and simultaneously create opportunities for kids to use their own creative and innovative abilities.
The purpose of the expedition was to research two events that occurred long ago, before the age of the dinosaurs: when the first “quadruped” or tetrapod stepped out of the water and started living on land 370 million years ago, and 120 million years later, when reptiles crept back into the water and started living there once more.

“No one really knows how it happened. We went to eastern Greenland because that’s the only place on earth where you can study both time periods within a limited area,” says Benjamin Kear.

He is a curator at the Museum of Evolution, which is participating in the project together with the Department of Organismal Biology and the Swedish Polar Research Portal.

An entire room at the museum has been prepared for the findings from the expedition, including casts of a boulder on which footprints from a large four-legged animal are sharply outlined. Grzegorz Niedzwiedzki, postdoc in organismal biology, found them while climbing around the mountains. “We can see that these are tracks from a live animal and that it walked in very shallow water, because these are prints in the sediment that have now been petrified. However, no anatomical details are visible. Next year, we want to go back to find more detailed tracks,” he says.

Researchers already know a great deal about quadrupedal animals, but more research is required to understand the ecosystem in which they lived. One table is covered with fossils, which...
The only real danger is if the wind takes the tent with it …

are important puzzle pieces for understanding plant and animal life. The variety of species seems to have been rich; for example, they found fossils from plants and ammonites, ancestors of the octopus from the time of the dinosaurs. "The ocean was full of food. It's possible that the hunt for food drove reptiles back into the water, but we don't know that yet. Sooner or later, we're going to find the needle in the haystack," says Benjamin Kear.

THE RESEARCHERS are now planning for a new expedition to Greenland in the summer. "We had bad luck with the weather this time, so although we got excellent results, we lost almost half of the planned time. The idea is to go back and research even more, now that we know what we're looking for," says Henning Blom, senior lecturer at the Department of Organismal Biology. "In addition, some of the material is still in Greenland. We left one box on a mountain, and one disappeared in a snowstorm."

The trip was fraught with hardship and the weather was nothing to mess around with. For example, they were caught in a snowstorm that forced them to remain isolated in their tents for 36 hours. "The only real danger is if the wind takes the tent with it, but our tents are specially made to prevent that from happening. The wind blew so powerfully that the roof of the tent was right over my face," says Henning Blom.

Benjamin Kear remembers what it was like. "It's so loud that you can't sleep. You can't relax; you just constantly think about what could hap-
Adventure on Greenland left a taste for more.

pen. “The tents were completely destroyed after the storm.”

Another sharp memory is when Grzegorz Niedzwiedzki saw two polar bears up close.

“I was alone, quite high up on the mountain, about 400 meters above water. I didn’t expect to see any polar bears there, but suddenly, I saw two about 600 meters away – with just five bullets in my rifle. Time stood still for a moment before the polar bears turned and walked the other way.”

Lasse Tano from the Swedish Polar Research Portal was also on the expedition. After working in Svalbard, he has extensive experience with polar bears and how to navigate the terrain. “His task was to get us home safe and sound. For us researchers, it’s good to have someone else manage the practical planning. We’re so focused on the research that we probably would have taken larger risks otherwise,” says Henning Blom.

It was his fourth time in Svalbard. It was the second time for Grzegorz Niedzwiedzki and the first time for Benjamin Kear. All three say they’ve caught the “Arctic bug” which causes the desire to return again and again.

“I have a picture from Greenland as my background on my computer, and I want to go back every time I see it. It’s astonishing – vast expanses, so much rock that is exposed as the Polar ice melts. It’s unexplored terrain.” In particular, he remembers the total silence. “No birds sing; it’s absolutely quiet. You can sit there and enjoy the silence. The wind is utterly still, so we could hear the tiniest little sound, even at a distance of 30 meters, as we lay there trying to sleep with the rifle beside us.”

THOUGH GREENLAND is covered with researchers, they met no other research groups because the distances are so large. They are alone in their research focus. “It’s historically interesting to return to the Arctic, where similar fossils were first discovered by Swedish researchers in the 1910s and 20s. Now we’ve picked up the baton,” says Benjamin Kear.

Anyone who wants to can learn about their expedition and the finds they discovered, either on the blog which they will continue to update or at the Museum of Evolution. The fossils the group brought home from Greenland now belong to the museum’s collection and can be viewed by teachers, university students, school students and other people who are curious.
Day 3
Woke up to the sound of pounding rain on the tent roof. Warm and dry in the sleeping bag but it means a muddy introduction to the work, or worse being grounded until the weather clears. We all eventually crept out of our tents and sat in the “lounge room” – the huge central tent where we keep all our supplies and communications equipment – to plan our day. /.../After breakfast, and a large cup of specialty coffee (imported from Greece by Ben), we headed out...

Day 7
Spent the morning resting and packing our fossils for transport back to Sweden. Everything needed to be marked with GPS coordinates, labeled and inventoried so that we have an accurate record for the registers in Uppsala. We have permission from the Greenland government to remove 400 kg of samples. This will be accessioned into the Museum of Evolution./.../The sun has been out for the last 48 hours so we are now working in T-shirts. We have also done a few night visits to the closest outcrops (again don’t forget we have 24 hours of light).

Day 9
We found parts of giant ammonite, Otoceras, which would have reached the size of a bicycle tire. Several examples of the large snail Belerophon were also recovered, as well as a very large coprolite (100 mm in length) containing chewed up ammonites. Considerable amounts of plant material, including horsetails and seed-like structures, were also found indicating a close proximity to land. There is one last upriver exposure we need to see. It looks promising but we have run out of time for today.

Day 18
Another fine morning in our Arctic paradise… High winds, more rain and low clouds – we were ready to go but increasingly poor weather has kept us grounded. Rescheduled for tomorrow morning at 0900. Weather is “supposed” to improve then. Have coordinated everything with Lasse via satellite phone. They likewise have rain and fog at Kap Stosch. He also said that they had a couple of polar bears come through the camp last night – only 300 m away! All OK though – the bears moved on. Seems like they were just curious.
Smart windows save energy and block out dazzling sunlight by adjusting the amount of light let in. This innovation from Uppsala has been refined for a number of years and the production of commercial deliveries is now under way at manufacturer ChromoGenics.

Smart windows out on the market

**IT LOOKS LIKE** a normal window but between two layers of glass is a thin-film laminate which regulates how much light and radiant heat is allowed through the window pane. The laminate changes its optical properties and can change from transparent to dark.

On a dark winter day in Sweden, the window will not change shade very often. In spring, however, it will change more often. The advantage? When the window is dark it lets in less solar energy and this makes it cheaper to cool the air inside.

“This is, of course, an interesting feature in warmer climates such as Southern Europe and the Middle East but also up here in the north. Research has shown that from Berlin and up to northern Europe buildings can manage totally without air conditioning if they have smart windows,” says Greger Gregard.

He is the development manager for the ChromoGenics which has been named one of the hottest cleantech companies in Uppsala. Recently, 62 large windows were dispatched from their production facility in Librobäck outside Uppsala.

**THE FACILITY** has a clean room where the windows are assembled and a large production hall which accommodates industrial robots and two large glass lamination ovens. Along the walls are rolls each with 1.6 kilometres of plastic film coated with tungsten oxide and nickel oxide. These are the two layers needed for thin-film
laminate and are later combined together with the electrolyte.

“We are the only producers who use plastic film instead of direct application onto the glass. Using plastic is something of a detour for us but there are advantages. For example, we can cut out whatever shape we want,” says Greger Gre- gard.

“It’s an ideal arrangement. We have found a supplier who can coat rolls of plastic with tungsten oxide and nickel oxide. We mix the electrolyte here. Then we laminate the layers together, add electrical contacts and cut it to suitable lengths. The last batch of windows were 3.5 by 1.5 metres and weighed 150 kilos each.”

It all started at the Ångström Laboratory in 2001 when Greger was doing a degree project supervised by professor Claes-Göran Granqvist. They started ChromoGenics together along with

The sketch shows how a smart window is built up in several thin layers. Just like a battery, the electrical charge moves from the anode (nickel oxide) to the cathode (tungsten oxide).

Above: Doctoral student Ruitao Wen has devised a ‘rejuvenation cure’ for smart windows.

To the left: Production of commercial deliveries at Chromogenics facility in Uppsala.
four researchers. Aided by support from the University’s holding company UUAB, the company began to bear fruit. Up until 2005, they worked out of the Ångström Laboratory.

Professor Claes-Göran Granqvist and his team of researchers have been researching smart windows for thirty years and were among the first to do so.

“In the mid-80s, the notion arose of varying the amount of solar energy that passes through windows. A few researchers around the world were looking into this and I believe we were the first to write an article about it,” says Claes-Göran Granqvist.

THESE DAYS, research is in progress all over the world, not least in China. However, the Uppsala researchers are alone in succeeding with a polymer (i.e. the plastic film).

The windows are called electrochromic windows. They use electricity to control the influx of both visible light and solar energy which is invisible but gives off heat.

Claes-Göran Granqvist gives two reasons to control solar energy. Firstly, to save energy: “In commercial buildings there is a greater need for cooling than heating for much of the year.”

Secondly, people comfort: “Buildings with small windows would solve the energy problem but people need visual contact and daylight. However, with large windows the light can be dazzling and this is a problem we can also solve. The windows are for both energy and comfort.”

THE INNOVATION is using a thin-film laminate which works in a way similar to a battery. The battery is dark when it is charged and transparent when it is discharged. There are many challenges – not just finding the best optical qualities but also how to give the battery a long life.

Recently, a ‘rejuvenation cure’ was devised for smart windows as a result of a study by doctoral student Ruitao Wen. The study was part of his thesis work and gained a good deal of attention after an article appeared in the journal Nature Materials.

“After a long time, the desired optical properties of the window become reduced since the ions that charge the battery get stuck. The solution is to free these ions so that the battery is rejuvenated and now we have a method for doing this,” says Ruitao Wen.

His study shows that electrochromic tungsten oxide layers which have started to lose effect after being charged and discharged many times can recover their original useful properties. This is achieved by running a very weak current through them while they are in light mode which takes about an hour. The electric charge which was ‘stuck’ in the material is freed and the tungsten oxide layers are like new.

“This is a new way of revitalising smart windows so that they can be used for a much longer time,” says Claes-Göran Granqvist.

But there is still much research which needs to be done before the results can be applied to the industry.

“In order to use such a method, we must first understand why it happens. Applying it without understanding why could lead to unexpected side-effects,” says professor Gunnar Niklasson.

FIFTEEN YEARS after starting the company, the research team at the Ångström Laboratory and entrepreneurs at ChromoGenics are still in touch but they work in different ways.

“A company has to make money from a product after all. It has to develop processes and techniques to ensure all the components are in place and do so in a sustainable manner without it becoming too expensive. They cannot change their ideas too often. So it would be risky to have too many researchers in the company,” says Claes-Göran Granqvist with a laugh.

On the other hand, students taking engineering programmes do degree projects at ChromoGenics. And there certainly is a clear relationship both in materials and design.

At the Librobäck plant things are getting busy. The work needed to produce and sell smart windows has begun in earnest after years of development. So far the market is mainly the Nordic countries but this may change.

“We turn to real estate, construction and glass industry as well as architects. The best thing about our technology is that we improve the energy efficiency in the property while increasing indoor comfort. The need exists worldwide”, says Greger Gregard.
**Business idea: Comfortable ski lifts**

THE UPPSALA-BASED company Boardie was started up by students with the aim of making it more comfortable to use T-bar ski lifts. Now the company has the chance to make it to the Swedish final of the Venture Cup competition.

Boardie won the eastern region Venture Cup in the category Environment and Energy. The prize was SEK 20 000 and a chance to qualify for the Venture Cup Swedish final in Göteborg in June.

The winning business idea was producing a broader and more ergonomic seat for T-bar lifts. This makes it more comfortable for the lift user and gives the ski resort an opportunity to bring in some advertising revenue.

It is used as an accessory for existing T-bar lifts and is mounted on the existing T-bars like a shell. The company is run by Erik Englund and Niclas Stjernberg who are both studying at Uppsala University.

**Part of 52 companies**

103 IDEAS were received by UU Innovation in 2015. Two thirds were product-based innovations and the remainder related to services. A total of 160 individuals, from students to professors, were involved. For 80 percent of them, it was the first time they have submitted a business idea.

In late 2015, the Uppsala University holding company UUAB was a joint owner of 52 companies. In addition, over SEK 340 million SEK in venture capital was invested in these companies. The largest investments were in OssDsign (SEK 93 million), AroCell (SEK 52 million) and Rolling Optics (SEK 49 million).

**Virus tested as cancer treatment**

In November 2015, Erik Englund was named Uppsala Student of the Year and received a scholarship of SEK 100 000 from the Anders Wall Foundation. He has completed the Master’s programme in Industrial Management and Innovation at the Department of Engineering Sciences. He is currently taking the Master’s programme in Entrepreneurship at the Department of Business Studies.

Boardie’s journey from idea to company has been aided by business development support from UU Innovation. Boardie has taken the business development course UIC Business Lab and UU Holding recently invested in the company.

In the Swedish Medical Products Agency and the Regional Ethical Review Board in Uppsala have given the green light for clinical testing of a completely new treatment for patients with neuroendocrine cancer using an oncolytic virus. Donations from thousands of people around the world have enabled the virus to be produced.

Since 2007, Professor Magnus Essand and researchers Justyna Leja-Jarblad and Kjell Öberg at Uppsala University have been working on an entirely new treatment for neuroendocrine tumours. The treatment consists of an oncolytic, cancercrating virus which has been shown to be remarkably effective at destroying neuroendocrine tumours in mice. Thanks to donations from thousands of people, including a major contribution of two million Swiss francs from the late entrepreneur Vince Hamilton, the Oncolytic Virus Fund has raised enough money for Magnus Essand and his research team to begin clinical studies. These will be the world’s first clinical studies with a gene modified virus which specifically attacks neuroendocrine tumours.

The treatment itself will take place at the Uppsala University Hospital under the leadership of physician Kjell Öberg, professor emeritus of Oncological Endocrinology at Uppsala University.
Many seek knowledge on violence

The Knowledge Bank at the National Centre for Knowledge on Men’s Violence Against Women (NCK) is turning five years old and the number of users is steadily rising. The idea is that more knowledge will improve support for abused women.

“We primarily cater to professionals, but also to journalists and other interested parties,” says web coordinator Annika Engström. She has been project manager since the Knowledge Bank launched in 2010 as part of NCK’s task to collect and disseminate knowledge about men’s violence against women, violence in same-sex relationships and honour-related violence and oppression.

The website was built together with the IT department at Uppsala University and statistics show that it has truly been put to use. In the last five years, the full texts of over 310,000 publications have been opened. The pages on which researchers introduce themselves and their research projects have been visited over 260,000 times. Easy-to-read information about new research findings, methods and work methods, in addition to a calendar, are all available here. Publications from 17 authorities, the Swedish Association of Local Authorities and Regions (SALAR) and the county administrative boards are compiled in a database. The database is also connected to the library catalogues Swepub and Libris. “A lot is happening in this field and the Knowledge Bank provides an overview. The content is based on contributions from our network of authorities and researchers, but also from external monitoring,” says editor Klara Johansson.

The Knowledge Bank has over 70 subject guides, for example on judicial accountability and violence in close relationships. The idea is for the content to provide an opportunity for additional learning, with links to reports or researchers’ contact information. “This is truly a matter of working with science outreach. To us, the important thing is that increased knowledge will lead to good treatment and better support for abused women,” says Annika Engström.
THE COMPREHENSIVE renovation of Universitetshuset (the University Main Building) in Uppsala has begun. The aim is to make this already popular building even more alive and visitor-friendly for students, teachers and the general public. The building will now be modernised and given a new electrical system, lighting and acoustics.

Universitetshuset is the main building of Uppsala University and is of great cultural-historical value. One example is the stairway hall, which with its symmetrical stairways and domes is considered as one of Sweden’s foremost architectural achievements of the late 19th century.

"It is a fantastically beautiful cultural-historical building that we are now taking on. There is a lot of decorative painting, specially designed furniture, oil paintings and plaster sculptures. This also means that extra consideration and care must be shown in every part of the project," says Mathias von Schlieben, property manager at the National Property Board of Sweden.

The renovation is expected to be completed during 2017.

"Universitetshuset, with its fantastic Grand Auditorium is popular with students and staff. At the same time, it is irreplaceable for receiving visitors to the university and municipal events," says Pernilla Björk, communications director at Uppsala University. "The renovations and improved technology will make it an even more useful resource and a University Main Building which lives up to its name!"

Extended life for the Vasa ship

THE VASA SHIP is one of Sweden’s biggest attractions. But the seventeenth century ship is built of wood that is aging. Preventing it from collapsing and losing its shape requires a good support structure. The Vasa Museum has turned to researchers from the Ångström Laboratory for assistance.

The goal is to create a computerised tool that can be used to calculate the type of support required to extend the ship’s life, preserve its shape and minimise movements. "Experience and intuition will not be enough to achieve the task. A calculation tool based on mechanics and measurements is required," says Kristofer Gamstedt, Professor of Applied Mechanics.

For example, small oak cubes from the Vasa ship have been tested in various experiments.

To check the accuracy of the computer model, it will be compared to geodetic position measurements and a laser scan of the whole ship.

Modern technology for Universitetshuset

THE COMPREHENSIVE renovation of Universitetshuset (the University Main Building) in Uppsala has begun. The aim is to make this already popular building even more alive and visitor-friendly for students, teachers and the general public. The building will now be modernised and given a new electrical system, lighting and acoustics.

Universitetshuset is the main building of Uppsala University and is of great cultural-historical value. One example is the stairway hall, which with its symmetrical stairways and domes is considered as one of Sweden’s foremost architectural achievements of the late 19th century.

"It is a fantastically beautiful cultural-historical building that we are now taking on. There is a lot of decorative painting, specially designed furniture, oil paintings and plaster sculptures. This also means that extra consideration and care must be shown in every part of the project," says Mathias von Schlieben, property manager at the National Property Board of Sweden.

The renovation is expected to be completed during 2017.

"Universitetshuset, with its fantastic Grand Auditorium is popular with students and staff. At the same time, it is irreplaceable for receiving visitors to the university and municipal events," says Pernilla Björk, communications director at Uppsala University. "The renovations and improved technology will make it an even more useful resource and a University Main Building which lives up to its name!"

Who will be the next president?

ON THE BLOG Amerikaanalys, researchers Frida Stranne, Dag Blanck and Erik Åsard are monitoring the presidential election in the US together with several guest writers.

The three researchers of North America are all active at the Swedish Institute for North American Studies, SINAS, in the Department of English. They have followed American politics in their research for many years.

They will follow the entire campaign on the blog until the new president has been elected. "A lot of people are commenting on the development in the US, but we want to provide a deeper understanding and an interesting perspective that is a little different from the ordinary media feed. The debate needs a historically founded political analysis," says Dag Blanck.

amerikaanalys.se
Desire to learn

UPPSALA UNIVERSITY OF THE THIRD AGE

- Was founded in 1979 with strong support from Folkuniversitetet in Uppsala.
- Has no organisational connection to Uppsala University.
- Regardless of study background, everyone who is at least 58 years old, as well as younger people who receive a pension of some kind, have the right to membership.
- Administration is managed on a non-profit basis.
- In October 2015, the association had approximately 3,500 members.
- Offers approximately 40 lecture series and 130 study groups, 20 theatre trips/field trips and 20 Tuesday lectures annually.

Read more: www.usu.se
Just because you’re retired doesn’t mean you’re finished. Rather, you have a lot of energy and the desire to learn and keep up.
Uppsala business and economics degrees led to top jobs in Asia for graduates Robert Fröjd and Qian Liu.

“The region has undergone incredible development and this rubs off on you,” says Robert Fröjd, managing director of a stock exchange office in Singapore.

Qian Liu is an economic analyst in Beijing – a very busy job.
Robert Fröjd is the regional manager for Nasdaq in South East Asia and Australia. He has been based in Singapore for ten years. He is also an alumnus of Uppsala University.

FAST PACE and many meetings

THE LIFT STOPS on the 17th floor of one of the skyscrapers at Collyer Quay in Singapore’s business district. This is where Robert Fröjd works with a view of the Singapore River flowing into Marina Bay and the spectacular buildings on the other side of the water. He has been managing director of Nasdaq in Singapore for ten years. He is responsible for finding and looking after new clients in a region which stretches from Afghanistan to New Zealand.

“There is a lot of travel involved. I am often away two to three days a week meeting clients and colleagues in various countries. It is a very exciting job. I meet many interesting and important people, but all the travel can be somewhat tiring.”

Nasdaq is an international stock exchange operator providing IT infrastructure and trading systems for the world’s leading exchanges and clearing houses. When the company started operations in Singapore in 2003, it had only 10 employees in the region. It now has over 800.

“I came here in 2005 and we have grown an incredible amount since then,” says Robert Fröjd.

BUT LET’S REWIND a little: Robert Fröjd is an Uppsala University alumnus and has a degree in International Economics and French from 1992. He is from Norrköping and after graduating from high school, he started work at the stocks and shares department of the savings bank then called Första Sparbanken in Stockholm.

“It was actually by pure chance that I moved to Stockholm and started working with shares. But things went well for me and that is probably why I later decided to study business and economics.”

At age 19, he was given responsibility for one of the bank’s business areas involving share trading. After a break to do his military service, however, he took study leave and began studying Economics and French at Uppsala University.

The degree programme meant spending a term studying at a French business school. In addition to learning French, Robert Fröjd also met his future wife, Nathalie, while in France.

“We commuted for a time between Sweden and France while we completed our studies and Nathalie was also an exchange student in Uppsala for a term.”

ROBERT FRÖJD SPENT a few years in the finance sector and was then self-employed. At the beginning of the new millennium, he was given a job at OMX as sales manager for South East Asia. OMX and Nasdaq merged in 2007 and their business activities in the region expanded considerably.

“The region has undergone incredible development and this rubs off on you. People here have a positive attitude and see opportunities.”

His job is fast paced and personal relationships are important for success.

“People treat each other with respect and courtesy and personal meetings have considerable importance. I believe that as a Swede, it is fairly easy to adapt and to work with people from many different cultures.”

Everyday life in Singapore is relatively easy to manage. The service level is high and most things work well, according to Robert Fröjd.

“I like it here very much. Singapore is a large multicultural city but a very small country. There are good schools and it is safe for children to move around by themselves.”

THE ONLY THINGS Robert Fröjd really misses from Sweden, apart from his family and some friends, are the countryside and the change of the seasons.

“I don’t really like the climate here. Singapore is one degree north of the equator and it is always little too hot and humid. So even if we have a long winter at home, it is something I actually miss.”

The small size of Singapore is something else that makes itself felt after a while.

Although he very much enjoys being in Singapore, Robert Fröjd does not see his long-term future there.

“I will not retire in Singapore, but it is a very interesting place to work with all the varied cultures and people you meet.”

I believe that as a Swede, it is fairly easy to adapt and to work with people from many different cultures.
These are turbulent times on the Chinese stock market, with shares down and a currency war. Qian Liu follows the development up close as a financial analyst at The Economist’s office in Beijing. When she has time she loves to visit Uppsala, where she earned her postgraduate degree.

TOTAL FOCUS
on China’s economy

“This is my second home,” says Qian Liu with emphasis when I meet her during a visit to Uppsala. She spent a full five years here as a doctoral student and completed her doctorate in 2009. Then she returned to China with a job as a financial analyst in Beijing at The Economist Intelligence Unit.

The last few years have been busy for her. The eyes of the world are on China’s economy, and business has expanded in recent years. Today, Qian Liu and her colleagues monitor 31 different provinces and 287 cities in China. She recently took office as Managing Director. “In recent years, we’ve become increasingly interested in China’s foreign investments. We believe that in only two years, more money from China will be invested in the rest of the world than in China. It’s a power shift that is changing China’s global status,” says Qian Liu.

Her research was largely on Swedish education, the labour market and gender issues. Her focus has now shifted to the Chinese economy, with an emphasis on the real estate market and foreign investments, and she works at a completely different pace. When she began as a financial analyst in 2008, the financial crisis in China had just begun. “It was a very different time and things happened in rapid succession. The global stock market crashes, China’s real estate market, urbanisation, foreign investments – it all continues to be very eventful,” says Qian Liu with a big smile.

Do you have any special memories from your time as a student?

“Tons; what should I start with? Ramlösa – I love Ramlösa. I miss princess cake and buying blueberries, raspberries and mushrooms at the market square in autumn. And I miss the silence in Uppsala. Something about the sense of calm here inspires you to ask deep questions like, ‘Who am I?’ and ‘What is the meaning of life?’”

She also remembers that she got a lot of support and help from her teachers, both when it came to applying for research funding and obtaining data. “I didn’t have to teach very much or worry about administrative issues. All they wanted was for me to think, come up with ideas and write good articles. That’s a really good platform for research students.”
Gunilla Hasselgren is one of 18 new honorary doctors at Uppsala University. On the television show Fråga doktorn ('Ask the Doctor'), she provides medical knowledge to around a million viewers per week. It all began with her training to become a doctor at Uppsala.

**THE CONFERMENT CEREMONY** at Uppsala University was in late January. Gunilla Hasselgren of the television show Ask the Doctor was among the individuals to receive a hat and diploma at the grand ceremony. “Uppsala is close to my heart, so I was thrilled when I heard I would be receiving an honorary doctorate,” she says.

Gunilla Hasselgren came to Uppsala as a 25-year-old in 1987. She spent a few eventful years training to become a doctor. In Uppsala she also met her future spouse, who was one of her classmates. They moved to Karlstad together after graduating and for the last 13 years, Gunilla Hasselgren has alternated work at a medical centre with television shoots. Spring 2003 saw the launch of the SVT series in which Gunilla Hasselgren is the medical expert. She answers audience and viewer-submitted questions and provides preventive health advice. “You can’t turn down such an important task! I see the honorary doctorate as the finest confirmation of that work.”

**WITH A MILLION** television viewers per week, her medical knowledge has truly reached the public. She says that she is passionate about educating people. “I want to determine what people are anxious about and what they’re wondering. I don’t want to use challenging words, even though I do ordinarily, but rather to simplify and explain. That’s also why I chose general medicine. It’s important to put medicine in perspective, to be out in the community and to look outwards.”

She has many memories from her time in Uppsala, the more personal of which include her engagement atop one of the burial mounds in Gamla Uppsala and the apartment she lived in by Vaksala Torg. “It was a beautiful time. Whenever I hear the word Uppsala, I feel happy. I remember how we cycled everywhere and no matter which way we rode, there was always a headwind, strangely enough.”
NEW IDEAS and collaboration between a number of different people and organisations are needed to fulfil future care and health needs. One way forward is the EU programme EIT Health, in which Uppsala University is one of the many partners. This gives us exceptional opportunities to participate in educational and innovation projects for better health.

One of the goals of EIT Health is to use education to increase awareness of how innovation and entrepreneurship can fulfil the health and care needs of society and individuals in Europe. At Uppsala University, a number of activities are therefore planned for 2016.

This spring, the course Health Innovation – an Interdisciplinary Approach will be available to advanced level students who are interested in inputting their subject knowledge into interdisciplinary groups and how this can contribute towards health innovations. In brief, the course may be divided up into three parts:

- **Innovative society**, which describes the innovation cycle and identification of needs within health care services
- **The innovative group**, which deals with group dynamics and creative thinking
- **Innovations within organisations**

PHOTO: MIKAEL WALLERSTEDT

In August 2016, students and professionals will arrive at the Department of Games Design in Visby for two weeks of learning about innovative processes and creative groups. At the interdisciplinary summer school Innovation Game at Campus Gotland, participants will learn how innovations in games design can improve future health care. It is about thinking in new ways and understanding how to combine different kinds of subject or professional knowledge and applying these to new forms of games which are based upon users’ needs and competitiveness.

The 18th of November 2016 is Innovation Day at several European universities including Uppsala University, Karolinska institutet, Copenhagen University, Imperial College and the University of Oxford. On this day, Bachelor’s level students will learn about innovation processes and work on creative problem-solving. The aims are:

- To make long-lasting improvements to the interaction between academia and the public and private sectors
- To increase the awareness of students of global development needs within care and health.

I look forward to the rest of 2016 – it’s going to be an exciting journey!