RESEARCH YIELDS BETTER PREPAREDNESS FOR NATURAL DISASTERS

UPPSALA-STOCKHOLM COMMITTING TO LIFE SCIENCES

LANGUAGE STUDENTS GAIN INSIGHTS INTO WORKING LIFE

WORLD’S LARGEST INNOVATION FACTORY TAKES SHAPE

TOBIAS KRANTZ LIKES WEARING TIES
THEME: CRISIS

Threats to humanity, wars, HIV1 influenza, and resistance to antibiotics. A cloud of ashes paralyzes Europe. Huge challenges need solutions. It has been said that crisis brings progress.

When crises and disasters strike, we turn to those who can help us – doctors, police, and authorities – but we also seek solutions and want to know more.

In the best case there are researchers who can provide perspective, explain, and place things in context. Uppsala University researchers are often seen in public commenting on, elucidating, debating, and offering perspective on everything from volcanic ash to pandemics, from the job market, energy issues, and conflicts to new legislation, language use, and religion.

This is just as it should be. The University is there, in the middle of global developments, in the middle of public debate, to use research and education to help create a better world.

In this magazine we have brought together some of the expertise at Uppsala University and overlaid a crisis perspective. It may sound absurd, but it is both fun and heartening to put together a magazine with crisis as its theme. What we are trying to do is show some of all the exciting things that are underway at the University, I can guarantee that it is not all crisis and disaster.

You can read about what’s going on in education and research, about exciting innovations and our prominent alumni. Uppsala University also boasts an extremely vital cultural heritage – in June the University Grand Auditorium will be converted to an opera stage when Otello comes to Uppsala.

In the past Uppsala University issued the annual magazine Horizon to showcase the year gone by. Instead, we are now presenting the New Horizons magazine to highlight what is happening now, twice a year, in Swedish and in English.

If you have ideas, viewpoints about the contents, if there’s something you would especially like to read about, please let us know!

WE ARE SURROUNDED by crises. Energy crisis, financial crisis, life crisis. The schools, democracy, and the climate are in crisis. Threats to humanity, wars, HIV1 influenza, and resistance to antibiotics. A cloud of ashes paralyzes Europe. Huge challenges need solutions. It has been said that crisis brings progress.

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At the newly established Centre for Natural-Disaster Science, researchers want not only to predict and moderate the effects of natural disasters, but also to prevent them. This will be done through broad interdisciplinary collaboration.

The first thing is to understand what a natural disaster is. Then you realize that it is actually possible to prevent it. Sven Halldin is a professor of hydrology and he explains that every natural disaster consists of two parts. One part involves what the forces of nature can do; the other is about what impact the force of nature has on humans and societies.

“If there’s a forest fire in Siberia where there are no people, it’s a major natural event, but not a disaster,” he explains.

By predicting where a disaster might take place and guarding against its effects, we can mitigate and in some cases even prevent the disaster.

A local example is Lake Vänern. In the Climate and Vulnerability Task Force the lake has been pointed out as an area where the water level will rise apace with climate changes and where there is a great risk of
THEME: CRISIS

Iceland having such an impact on air traffic
Office in Stockholm.

Crisis Management Office at the Cabinet
political science.

constructed. Whether it’s Lake Vänern or
work.

of earthquakes. Examples are construction
liberately worked to moderate the impact
for this type of disaster, while Chile has de-
reason is that Haiti was not at all prepared
were still much more devastating. The
one in Haiti, but the consequences in Haiti
was many times more powerful than the
in Chile and Haiti. The earthquake in Chile
Another fresh example is the earthquakes
Short-term, fragmented thinking

And when the water rises, they may be fac-
flooding. Nevertheless lots of attractive

“In those situations the question is how
society can create preparedness to take ra-
pid and coordinated action when unfore-
seen events occur,” says Sven Hållin.

Research reveals risks
The Centre for Natural-Disaster Science
researchers gather in earth sciences, social
sciences, and engineering sciences. They
are to work across disciplinary borders and
focus on communicating threats and risks of
disaster, what effective collabora-
tion looks like, how to control and pre-
vent natural disasters, and how to protect
infrastructure.

Since all the researchers bring different
perspectives to the field of natural disasters,
the goal is for them to broaden and deepen
each other’s research, for example by
identifying needs from their respective
angles.

Fredrik Bynander feels that it is at least
as important as documenting and predict-
ing natural disasters to prepare society for
the aftermath.

“Engineers can set up sensitive and ad-
vanced warning systems, but without pre-
paredness among authorities to deal with
warnings, it isn’t very helpful,” he says.

But getting there is more easily said than
done. It can be hard for politicians with
short-term needs to commit to preparing
for something that might happen in 20
years, or 30 years, or

“What we can do in terms of research is
point to the risks. Well-underpinned re-
search can provide a better foundation and
legitimacy for politicians who nevertheless
want to pursue these issues,” says Fredrik
Bynander.

Want to involve young researchers
Tied to the Centre for Natural-Disaster Sci-
tence there is to be a research school with
docukal students both from Central Amer-
ican countries and from Sweden. Among
the Swedish doctoral students, two will be
recruited from each unit participating in the
project.

Sven Hållin explains this commitment in
this way.

“You can’t teach old dogs new tricks.
There’s an attitude among some research-
ers that only those in their own subject are
real scientists. That’s why we want to in-
volve younger people with open minds.”

Fredrik Bynander adds:
“We need to integrate this research in or-
der to move forward. Our researchers will be
working in teams and focusing on clear and
concrete research issues.”

Developing instruments
Brings science and social science perspec-
tives, an important part of the project is also
to develop sensitive instruments that are ac-
curate in both time and space.

“To make faster and better predictions
we really need to monitor natural phenom-
en in real time,” says Sven Hållin.

Since the objective is for this research to
be useful, the researchers at the Centre
will also be emphasising close and frequent
contacts with countries where the risk of
natural disasters is great.

This may involve collaboration with
Swedish companies wanting to sell security
solutions to countries at great risk of exper-
encing natural disasters.

“We have said that the Centre will be
one of most respected institutions in the
world and provide authorities and busi-
nesses with well-educated staff,” says Sven
Hållin.

Haiti was ill prepared for earthquakes, which
is why the consequences were so devastating.

“WE WANT TO HELP more people suffering
from severe disease to feel better emotio-
nally,” says Louise von Esen, professor at
the Department of Public Health and Caring
Science.

“When a child develops cancer, the child
and its loved ones are forced to face a diffi-
cult psychosocial challenge. The disease has
an uncertain outcome and takes many lives –
one in four children or teens with cancer will
not survive. In contrast with this dreary
background, research at Uppsala University
has led to hopeful results. Children and
teens who receive a cancer diagnosis seem
to have a capacity to master a surprising
fighting spirit.”

“Our research indicates that a severe life
adversity can lead to some form of emotional
amelioration,” says Louise von Esen.

For the last ten years her research team
has followed children and teens receiving
care at cancer clinics in Uppsala, Umeå, and
Lund. Their perceptions of quality of life
have been compared with the perceptions
of their cohorts not suffering from cancer.

There are individuals who are emotionally
miserable for a long time after their cancer
diagnosis, but as a group children and teens
with cancer feel better than their cohorts in
the reference group. The difference in self-
reported quality of life becomes apparent
18 months after the cancer diagnosis and
persists for four years.

Emotional hothouse
“Every month after the diagnosis they drew
mental strategies to cope with the situa-
tion, which is remarkable, but they respond
that ‘it could have been worse.’ They also
have a positive attitude towards the future,
though they don’t know if they’re going to
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Children and teens who have cancer often feel
emotionally than their healthy cohorts, according to research at
Uppsala University. Now researchers want to know why.

To some extent the findings are a result of
the support that loved ones and child
oncology wards mobilise around the can-
cer victim. Louise von Esen describes it as
an emotional hothouse, where a very im-
portant component is the mental strategies
of the cancer patient.

“The child seems to grow more psycho-
logically than they would have without the
cancer diagnosis,” she says.

Programmes on the Internet
Now the researchers, within the framework
of the strategic initiative U-CARE, will stu-
dy in more detail how the mental strategies
are related to emotional well-being. The
goal is to be able to develop treatment pro-
grames, delivered via the Internet, with
the aim of helping patients and their loved
ones in various disease groups to feel better
economically.

“If we learn how those who manage to
process their trauma inwardly do so, we
can also help those who can’t cope on their
own. Both children and adults affected by
severe disease and their loved ones,” says
Louise von Esen.
Database that helps bring peace

Knowledge is power, it is said. At Uppsala information is gathered about all the wars, conflicts, and peace processes in the world. It is hoped that this will help bring more peace to the world.

STINA HOGBLADH

“Sometimes it strikes you how unfair the world is. You have to look for something positive, such as the fact that the world is actually more peaceful now compared with the early 1990s,” Stina Hogbladh points out.

The database is absolutely unique in the field of peace and conflict resolution, and it has made us world famous,” says project leader Stina Hogbladh.

Reported but not judged

Much war reporting is based in some way on the Conflict Database. For more than twenty years they have been taking inventory of all the wars and conflicts around the globe, work that now employs about ten people.

They keep track of who is warring with whom, how large the troops are, how many people die, and what peace negotiations are in progress.

All the information is placed in a conflict database that researchers, students, journalists, and others across the world can access free of charge.

“The database is absolutely unique in the field of peace and conflict resolution, and it has made us world famous,” says project leader Stina Hogbladh.

It is usually possible to keep the circumstances behind the figures and descriptions out of it. But even the most hardened reader is sometimes affected by the reality being depicted.

Invaluable information

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The information placed in the database make it possible for anyone interested to follow developments in individual conflicts, day by day. Thus far about 500 conflicts have been registered. To researchers interested in world conflicts and peace processes, this information is invaluable.

“We hope we can help make the world a little more peaceful. There are researchers who have used our data to analyse why certain peace agreements last and others do not,” says Stina Hogbladh.

Knowledge of mental illness key ahead of next disaster

Gottröra, Estonia, the tsunami – researchers at the National Centre for Disaster Psychiatry study the mental health of residents of Nordic countries who have been affected by disasters.

TEXT HELENA EDSTROM
PHOTO ANDERS KALLERSJO/NOSCAPP

It is long after the drama has abated at the site of the disaster and in the media that mental illness can affect those victimised by a major accident or disaster. Depression, anxiety, or post-traumatic stress syndrome can appear many years after the event.

“Mental illness is costly, both for individuals in the form of loss of quality of life and for society in the form of absenteeism from work,” says Tom Lundin, an adjunct professor and director of operations at the National Centre for Disaster Psychiatry.

To enhance our knowledge of mental illness in the wake of major accidents and disasters, the Swedish Board of Health and Welfare instituted the national centre in 1999.

“Regardless of whether you fought for a place in a lifeboat on the Titanic, had a pistol held to your temple, or ran for your life from a tidal wave, it is the period of exposure to the threat that is crucial. The longer the exposure to a life threat, the greater the risk of mental illness later,” says Tom Lundin.

The Centre participates in national and international networks and focuses on the University’s Third Mission – to transfer knowledge to the surrounding community. The goal is for medical and health care to have a crisis preparedness to look after people who suffer from mental illness following disasters,” says Tom Lundin.
The political entrepreneur

A comprehensive change is taking place in the Swedish democratic system. Party membership is shrinking, and voters are becoming more and more independent with each election. Not even elected politicians are as faithful to their parties any more, according to research from the Department of Political Science. A new breed of politician has seen the light of day – the political entrepreneur.

TEXT ANNIK BRYAN
PHOTO STAFFAN CLARSSON
ILLUSTRATION: TOBIAS ROGOZ

THERE WILL BE ELECTIONS in Sweden this autumn and politicians want your vote. Nowadays we voters decide very late what party to vote for. In 1964 only 18 per cent did not make up their minds until the campaign period. In 2002 this figure has risen to as many as 57 per cent. And among parliamentary politicians we find the same lack of fidelity. The faithful party worker now has to compete with the “political entrepreneur” who jumps in and out of politics at will.

“We are seeing the emergence of a new type of politician,” says the political scientist Shirin Ahlbäck Öberg, who with her colleague Jörgen Hermansson, has researched the subject. They have written the book Exit riksdagen (Exit Parliament) together with the political scientist Lena Wangeroth from the University of Gothenburg.

Long-time work not attractive

The political entrepreneur sees politics as an assignment that is regulated by a short contract rather than lifelong commitment. To them parliament is only one of many possible arenas for their own agenda. They want to be heard and seen and to convey their message via all possible means, not least the mass media. They are not attracted by long-term anonymous and faithful service to a party.

“They are constantly rethinking their mission. If they find that parliament is not the most attractive and effective arena, they drop out and find another,” says Jörgen Hermansson.

It isn’t hard to find prominent examples of drop-outs. But the researchers also point out that it’s not just a matter of individual drop-outs but also a comprehensive change of the entire parliament.

The turnover among politicians has increased dramatically in recent years. It used to take five term periods to replace the entire parliament. The turnover among politicians has increased dramatically in recent years. It used to take five term periods to replace the entire parliament. Today it takes 2.5 terms,” says Shirin Ahlbäck Öberg.

These changes in political working life also have consequences for our democratic system, according to the researchers.

Not the same as populism

But public democracy isn’t the same as populism, as Jörgen Hermansson sees it.

“It may be that there is greater scope for populism in a public democracy than in a party democracy. On the other hand, we must not forget that today’s voters are both better informed and better educated than in the past. To make it as a political entrepreneur, you need to have a message that voters find both important and attractive.”

The new breed of politician entails a greater emphasis on assuring than on united party politics, on the person rather than the party.

“The party whip is hard to crack over members who have their own set opinion. They feel obliged to stand up for their opinion, even in conflict with the party if necessary,” says Shirin Ahlbäck Öberg.

The political entrepreneur parlament is one of many possible arenas, according to Shirin Ahlbäck Öberg and Jörgen Hermansson.

Waste to be used in green chemistry

BY-PRODUCTS of agriculture and forestry can contain valuable chemical compounds that are not being used. This is something Charlotta Turner at the Division of Analytical Chemistry and her colleagues want to change. To do so, they have received SER 19.5 million (EUR 2 million) of the government’s strategic funding via Formas.

By-products also contain substances of importance to the health, food, and cosmetics industries. The idea is to extract these from waste before it, as in the past, is put to use as animal fodder, soil improvement, or raw material for bio-gas facilities.

“The project turns waste away from chemistry to sustainable profitability,” says Charlotta Turner, who coordinates the project. The group includes researchers from Uppsala, Linköping, and the Swedish University of Agricultural Sciences.

New search service for academic publishing

SWEPUB IS A new search service and joint portal to academic publishing at Swedish universities and colleges. SwedPub contains research publications like journal articles, conference papers, dissertations, etc. Many of them are freely accessible in full text.

The issue of access to research publications has been topical not least because the Swedish Research Council now requires open access of all researchers receiving grants. The SwedPub project has been a collaboration between university libraries in Uppsala, Linköping, Gothenburg, and Luleå as well as National Collaboration/Abhi at the Royal Library in Stockholm.

Theatre relieves pain

PLAYING THEATRE ROLES with strong emotional expression can relieve pain in fibromyalgia patients. This is shown in a unique research project in cultural health, where the researchers were assisted by famous actors Marie Goransson and Jan Malmaeus.

Patients with fibromyalgia and stress-related pain were trained with the aid of body and voice expressions to enact strongly charged texts on a theatre stage. They were then asked to interpret their emotional expressions from videos and to estimate their health and pain.

“We found a correlation between strong emotional expression and reduced pain, a correlation that persists at a follow-up three months after completed treatment,” says Eva Bojner Horwitz, researcher in social medicine and director of the study.

Surfing at work not just disobedience

JUST BECAUSE many Swedes privately surf the Net at work does not necessarily mean that they are not doing their jobs. Many office workers simply have too little to do, according to a study by Roland Paulson, a doctoral candidate in sociology.

“In previous studies it has been assumed that idle work is about disobedience or ‘going slow.’ But my findings indicate that inefficient organisation can be an equally important explanation,” he says.

This is especially true of more privileged occupational groups. When the work is based on some type of expertise, insight into the work process is often poor, and in some cases employees have more time on their hands than they really need.

The study appears in the journal Arbetsmarknad & Arbetsliv [Labour Market & Working Life].

At Uppsala University research is conducted at nine faculties: theology, law, arts, social sciences, languages, educational sciences, medicine, pharmacy, and science and technology. In a great many areas this research is on the international cutting edge. According to independent experts, Uppsala University is especially well positioned to contribute to the development of Sweden as a knowledge-based nation in the fields of renewable energy, peace, security, and democracy; genomics (research on our genes); drug development and new therapies; and the brain, cognition, and behaviour.
Science for Life Laboratory

Research for life

What happens in people’s cells when they develop cancer, diabetes, or some other of our public health diseases, and can we prevent it? These are the overarching questions that researchers at the Science for Life Laboratory, SciLifeLab, are trying to answer. The goal is to create the conditions for more reliable diagnosis and better treatment.

“This will not only contribute to improving people’s health, but also to opportunities for businesses and industry to commercialize new research findings,” says Kerstin Lindblad-Toh, professor of comparative genomics, who will direct the new SciLifeLab.

Collaboration with Stockholm

Kerstan Lindblad-Toh herself divides her time between Uppsala and the biomedical research giant Broad Institute in Boston, which serves as a model for SciLifeLab.

Research giant in Boston

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Science for Life Laboratory

A centre for world-class research about life. This is the vision for the Science for Life Laboratory, which is now taking shape in Uppsala and Stockholm, funded by the government’s initiative for strategic research.

Collaboration with Stockholm

The Royal Institute of Technology in Stockholm, the Karolinska Institute, and Stockholm University will be sharing this governmental funding for strategic research in molecular biology under the joint name of SciLifeLab.

Uppsala will not have to wait for the construction of a new centre in a physical sense. The competence needed is already in place, but it will be coordinated and expanded. Here the focus will be on research on genes (genomics), proteins (proteomics), and comparative genomics with animal models. These three “platforms,” in turn, will underpin two programmes, in pathological and evolutionary biology.

“These are central areas where we are already highly advanced in terms of knowledge and technology,” says Kerstin Lindblad-Toh.

Research giant in Boston

Kerstan Lindblad-Toh herself divides her time between Uppsala and the biomedical research giant Broad Institute in Boston, which serves as a model for SciLifeLab.

As one of the world’s leading researchers in medical genetics, she has directed the mapping of the genomes of more than 20 mammals with the aim of understanding human genes. For example, by comparing the genes of healthy and diseased dogs, it is possible to find hereditary features that are linked to diseases that also affect humans, such as diabetes, epilepsy, and cancer.

“With the aid of new technology for sequencing genes, we can now pose many more and more complicated questions about the function of genes and what can go wrong in diseases. This will be an important tool for us at SciLifeLab,” she says.

Ulf Landegren’s research profile involves precisely the development of new technologies for analysing DNA, RNA, and proteins. He is especially active in research on what the proteins of cells can tell us about various pathological conditions.

“In this field we are on the cusp of a breakthrough similar to what has been happening in genetic research. Studies of the cell’s production of proteins will be providing us with valuable information about how to proceed. We don’t want to miss that train!”

Collaboration spells success

But for this initiative of creating a centre for life science to be successful, what is needed is not only advanced researchers but also advanced collaboration. Not only between researchers and different universities but also with businesses and public authorities.

“One of the primary reasons I’m involved in this is that I see the opportunities for collaboration among various players that will be created,” says Ulf Landegren, whose research has generated five companies.

Kerstan Lindblad-Toh sees the ability to collaborate as a crucial factor for SciLifeLab to be a success. Another is to be able to show results right away.

“Together we can solve major problems faster when it comes to understanding how diseases develop. This can yield both more reliable diagnoses and new treatment methods,” says Kerstan Lindblad-Toh.

The government’s commitment to SciLifeLab will last five years. What will happen when the funding runs out?

“To be clear, Uppsala and Stockholm will have jointly created a world-leading centre for molecular biological research that will be able to generate resources to promote education, research, and businesses in this country,” says Ulf Landegren.
Historian compiles data on women's work

TEXT ANNETTE WALLQVIST • PHOTO: STAFFAN CLAESSON

We know very little about what people worked with in the past – and especially little about women. But that is now going to change. A new database on women’s work is now being created.

It is Maria Ågren, a professor of history, who, together with about ten colleagues, is going to sift through thousands of ancient documents in search of the tiniest pieces of information that might provide a hint of what people busied themselves with in the past. What these researchers are primarily interested in are the working conditions of women. What they worked with, and who had the power over the work they did.

Many of the documents they are going through are court records, often about crimes. What primarily interests these scholars are the testimonies that were recorded. They include interesting collateral information.

Impossible questions are answered

“IT might be testimony of the type ‘there I sat minding my own business, weaving baskets when a man came running past,’” Maria Ågren exemplifies.

From this information the historians can add an observation to the database about a basket-weaver and her gender. When these observations are then put together, they form patterns that can answer questions that have been virtually impossible to address.

She will be able to search huge amounts of data and extract connections in a way the human mind would never have been able to,” says Maria Ågren, who directs the project.

She has been granted SEK 3 million (EUR 310,000) per year for five years from the Wallenberg Foundation for research. During that period Maria Ågren hopes that her and her colleagues will have time to collect some 100,000 observations covering the period from 1550 to 1800.

“It’s a great advantage to have so many people working with this. It’s such a huge question that it would be difficult for an individual scholar to carry out a project of this type on her own,” says Maria Ågren.

The work is just getting underway, having started at the beginning of the year. The objective is to find out who did what and what the power relations between men and women looked like. The idea is also to store the data so it will be of use to coming generations of researchers.

The inspiration came from, among others, a Cambridge scholar who has studied southern Germany and gathered similar types of information, albeit on a smaller scale.

“She demonstrated that it was possible to get answers about a lot of things we previously thought were impossible owing to lack of sources.”

Women and growth

Another source of inspiration is contemporary research that shows the importance of women for economic growth in the third world.

“It has been possible there to see major differences between countries that invested in helping women make a living and those that did not. This may also be an explanation for why the countries of Europe developed differently,” says Maria Ågren.

These researchers are therefore looking at what regulations and norms existed in Sweden for men’s and women’s work, in order to then go on to compare how they were actually implemented.

“It may well be that in many parts of Sweden women were allowed to work even in areas where they lacked any formal rights,” says Maria Ågren.

We’ll know in five years.

Maria Ågren and her colleagues hope to gather about 100,000 observations about women’s working conditions between 1550 and 1800.

RESEARCH

New network for research on Roma

ALTHOUGH THERE ARE roughly 40,000 Roma and Travellers in Sweden, there is no history of them. At the Hugo Valentin Centre, the University’s most recently created centre, scholars will be compiling what knowledge exists about the Roma.

“A strongly and unifying force among all Roma is the sense of alienation and discrimination. The Roma have been discriminated against for a very long time, and this has led to their often negative attitude towards Swedish society,” says Satu Gröndahl, director of the Hugo Valentin Centre.

The course in Romani culture that has been given for several years has been greatly appreciated by students. Now the Centre has received funding from the Faculty of Arts to establish a part-time position as co-ordinator of Romani studies, where the first assignment will be to establish a network to gather what research there is about the Roma around the country. They are also hoping to attract external funding.

“We need more knowledge about Romani culture, in order to understand how we can create a society that Roma feel they too are part of,” says Satu Gröndahl.

Marina Nilsen and Marie Allen (right) have analysed the skulls with a hypersensitive method, based on so-called mitochondrial DNA, which makes it possible to analyse extremely small amounts of DNA.

Saint Birgitta’s relics probably not authentic

TEXT ANNE-LWAARA PHOTO: HANS LUNDBERG

The two craniums in Vadstena Abbey Church said to be those of Saint Birgitta and her daughter Katarina do not come from a mother and daughter. Nor do the datings of the skulls square with when Birgitta and Katarina lived, according to research.

IT IS ASSOCIATE PROFESSOR Marie Allen’s research team at the Department of Genetics and Pathology that have studied DNA from the two crania with the aim of determining whether they are related, and genuine.

Two crania, a mother and daughter, which is also shown by the datings of the skulls. The cranium of Birgitta has been dated to a period between 1470 and 1670, and the other to a period between 1215 to 1270.

“The results of the two methods support each other. The DNA analysis shows that the craniums are from different time periods. One cranium, which has been thought to be that of Birgitta, was dated to a period from 1215 to 1270, and the other to a period between 1470 and 1670,” says Allen.

“Today the chest contains two crania, 23 and 22 other bones. The Uppsala scientists’ DNA analyses now demonstrate that the two skulls are indeed those of two women but that they are not mother and daughter. Carbon 14 dating by Professor Goran Forsstrom at the Tandem Laboratory in Uppsala shows that the crania were from different time periods,” says Allen.

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“Today the chest contains two crania, 23 and 22 other bones. The Uppsala scientists’ DNA analyses now demonstrate that the two skulls are indeed those of two women but that they are not mother and daughter. Carbon 14 dating by Professor Goran Forsstrom at the Tandem Laboratory in Uppsala shows that the crania were from different time periods. One cranium, which has been thought to be that of Birgitta, was dated to a period from 1215 to 1270, and the other to a period between 1470 and 1670. The results of the two methods support each other. The DNA analysis shows that the craniums are from different time periods. One cranium, which has been thought to be that of Birgitta, was dated to a period from 1215 to 1270, and the other to a period between 1470 and 1670.”

Maria Ågren exemplifies.

From this information the historians can add an observation to the database about a basket-weaver and her gender. When these observations are then put together, they form patterns that can answer questions that have been virtually impossible to address.

“It may well be that in many parts of Sweden women were allowed to work even in areas where they lacked any formal rights,” says Maria Ågren.

We’ll know in five years.

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We’ll know in five years.
Maria Selmer did research together with a Nobel laureate

“Working with a Nobel laureate has given me the belief that anything is possible,” says researcher Maria Selmer at the Department of Cell and Molecular Biology. She has worked together with the 2009 Nobel laureate in chemistry, Venkatraman Ramakrishnan, or Venki as Maria call him.

Venkatraman Ramakrishnan works at Cambridge in the Medical Research Council Laboratory of Molecular Biology. An institute that was formed when molecular biology was new and where many pioneering advances have been made since then. And that was where Maria Selmer found her way to after finishing her doctoral dissertation, which was about some of the proteins that bind to ribosomes.

Ribosomes build proteins according to a code located in the genes.

It’s the proteins in cells that see to it that things happen, that chemical reactions are triggered as they should be. In some cells, for example, it’s skin and hair that is to be created; in others it’s antibodies that need to be formed. And it’s the ribosomes that build the proteins according to a code located in the genes.

“Most functions in the cell are run by proteins. It’s important to understand how that process works, since it provides a fundamental understanding of how life functions,” says Maria Selmer.

A direct application of this research can be to develop new and better antibiotics.

Experts on ribosomes

Maria Selmer chose Cambridge because there, unlike Sweden, there are experts who study complete ribosomes using crystallography.

“I wanted a post-doc position where there were resources to look at the whole ribosome complex, and there were three, four teams that were possible, and Venkatraman Ramakrishnan was directing one of them.”

But when she arrived in Cambridge for an interview, she immediately lost interest in the other groups. Venkatraman Ramakrishnan and his associates made such a good impression on Maria Selmer that she really wanted to spend a few years with them.

“It felt right from the outset since there was such a good atmosphere in the team and they worked together in a way I wasn’t used to.”

A grant from the Wennergren Foundation made it possible, and in the summer of 2006 Maria Selmer arrived in Cambridge with her husband and children. A decision she has not regretted.

“The whole institute is a first-class research setting where important questions are being addressed.”

“What’s more, Venki has a capacity to enthuse and pep up the team members to do their very best, but without cracking the whip. He allows the individual researcher great freedom, at the same time as he manages to create an atmosphere where everyone is burning for the projects they are working with. This is ideal in a research environment.”

Stimulating teamwork

Maria Selmer was also stimulated by working in a team. Work in the group was based on a common platform, so progress made by one person could help advance the rest of them.

She says that a big advantage for research at the institute is that the team leaders have their basic funding secured and can therefore devote a great deal of their time to doing research, instead of seeking funding and administrating.

“This also entails that group leaders dare to address projects that are important but may take a long time to find answers. They are not under pressure to publish in the short term to secure their funding. It felt great to work where people dare to commit to answering difficult issues,” says Maria Selmer.

Good contact network

She spent four years in Cambridge before returning to Sweden. Maria Selmer now brought with her excellent qualifications and a good network of contacts with researchers around the world.

Now she has a post at the Department of Cell and Molecular Biology, directing her own research team with two doctoral students and two post docs. The team’s research is partly based on her work at Cambridge.

When Venkatraman Ramakrishnan came to Sweden to receive his Nobel Prize, Maria also had a chance to congratulate her former team leader.

Ribosomes build proteins according to a code located in the genes.
Footprints that alter history

An Uppsala Scientist, together with Polish colleagues, have discovered fossil footprints from land-based animals that are 395 million years old. This means that the history of land animals is at least 18 million years longer than we previously thought.

“THE FINDINGS MEAN that we need to reconsider a great deal of the early evolu-
tionary history of land animals,” says Per Ahlberg, a professor at the Department of Physiology and Developmental Biology and one of the group’s two directors.

For nearly 80 years palaeontologists have combmed the earth looking for bones and skeletal remains of the earliest land vertebrates or tetrapods – the origin of all later amphibians, reptiles, birds, and mammals, including humans. Their finds have indicated that land vertebrates emerged relatively quickly roughly 380 million years ago. But there is another possible source of information about the history of the earliest four-footed animals: their fossilized footprints. Per Ahlberg and his associates have studied footprints at the Zachaciene stone quarry in Poland that are 18 million years older than the oldest known fossil skeletons.

The prints show that large tetrapods, up to three metres long, lived in the ma-
rine tidal zone roughly 395 years ago. The setting as such is also surprising. Nearly all previous hypotheses about the emergence of tetrapods have placed the step from wa-
ter to land in freshwater environments, and linked it to the evolution of land vegetation and land ecosystems.

“In fact it appears that our distant ancestors left the sea to feast on stranded animals beached by the tides,” says Per Ahlberg. ■

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MAX-IV a boost for Uppsala research

THE NEW FACILITY for synchrotron light, MAX-IV in Lund, represents a great boost for research in science and technology. This according to Uppsala University materials scien-
tists, who have been part of it from the outset and who constitute the largest research group at the current facility; MAX-IV.

The electron accelerator will consist of a huge ring more than 500 metres in dia-
meter from which scientists direct x-rays in steel tubes, each one of which ends in an individual experiment. How they are

Focus on resistance to antibiotics

FOR THREE YEARS thirteen research teams in six countries will be studying how re-
sistance to antibiotics can be prevented, a project to be coordinated by Professor Dan Andersson at Uppsala University. The project has been granted SEK 63 million (EUR 4.5 million) from the EU.

Today resistant bacteria pose such a threat that many antibiotics have been rendered, or are about to become, ineffec-
tive. The development of new antibiotics has stopped, and the question of how we can slow down the development of resis-
tance is therefore highly topical.

“Research results will hopefully lead to a redesigning of antibiotics so that bacteria won’t become resistant so quickly, and to our being able to develop better and more rational strategies for preventing the spread of bacteria,” says Dan Andersson.

In the past year Uppsala University has received major grants for antibiotics research. ■

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It’s hardly news that encouragement works better than nagging. But there are educational programmes that offer structure and systems to teachers who want to know how to manage unruly students, and can yield long-term and sustainable results.

TEST ANNETTE WALL JØRSTAD PHOTO: FINN CALANDER

BOWDERS STUDENTS who take space in the classroom by being disruptive, unco-ordinated, and unmotivated are a problem in many schools. In the short term these children jeopardise their school outcomes and bodily relationships. In the long run they can become involved in crime and substance abuse. More than every tenth student is at risk.

But studies at Uppsala University show that it is possible to deal with the problem. Encouragement in combination with igno-
rance behaviour in certain well-chosen situa-
tions is part of the recipe for success. And being aware that everything that happens in the classroom occurs in interaction be-
tween teacher and students.

“You have to realise that it’s not only the children who create these situations,” claims Martin Karlberg, a doctoral candidate at the Department of Didactics.

The educational programme Comet (Communication Method) was primarily designed for early elementary students, but there are indications that it also works for older students.

“For early and late elementary pupils we have reliable data. We have also run a minor study for lower secondary students that is promising,” says Martin Karlberg. ■

Teacher behaviour important

The programme is based on the idea that children and adults behave differently de-
pending on what environment they are in and what reactions they get from others.

“That’s why it’s important: how the teacher acts. Nagging and even bawling things out seems to encourage students to be disruptive.

This is because some pupils would rather get negative attention than none at all. As a doctoral student Martin Karlberg has been studying Comet in various forms, including comparing it to other program-
mes. He plans to complete his dissertation this autumn. But he has already established that Comet has positive effects in the great majority of cases, and that it is even better if parents are involved. And that the method does no harm.

Systematic work

Martin Karlberg previously worked as a teacher and has personally been involved in developing and testing Comet on students and colleagues. He is co-author of a guide: “I’ve gone through several phases, from developing the programme to disseminat-
ing and introducing it. Now I’ve also be-
come a metacritical evaluator.”

He stresses that it is important that work with Comet in the classroom be done in a systematic and manual-based way. Not least to avoid mistakes in the part of the programme that entails ignoring the nega-
tive behaviour of students.

“Ignoring student behaviour is a fea-
ture of the programme that has prompted criticism in the media. But we claim that ignoring behaviour should never be used without analysing the situation, and always in combination with encouragement of the student.”

Another central element is to show-case good examples, by drawing attention to classmates who behave in the way you want the child to be encouraged to act.

Nor can you forget the surrounding structure. Clear rules, structured teaching, and routines that work for the child.

“We need to create optimal conditions for the child to behave the way we expect them to.” ■
STUDENTS at Uppsala University are coaching secondary school students who are stamped by maths. By logging in on Homework Coach pupils can chat with an engineering student. There are also a few education and biology students available. The focus is on mathematics but we also get other questions. The advantage of using students is that they know the situation. It’s not so long ago that they graduated engineering student. There are also a few are stumped by maths. By logging in on Homework Coach students can’t cope with if they need to use the various tools they are trained for future working life.

The method entails giving students an assignment form under realistic conditions. The component is implemented as role-playing, where the teacher plays the role of someone commissioning the students to carry out an assignment.

“We think it’s more fun to do maths via MSN. It’s a good complement to regular teaching. Our students enjoy helping out, and they get a chance to review maths,” says Jimmy Ly.

Homework Coach can be accessed at www.hccoach.uppsala.se

“Coaches” make maths more fun

WITH A NEW form of teaching, chaos pedagogy, master’s students in engineering are employed by the municipality of Uppsala to coordinate the project.

Homework Coach was started in 2007 by the municipality, and 50 Uppsala students are now active in the project.

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Law programmes get top grades

Employers give top grades to recent law graduates. This is shown in a survey performed by the Swedish universities that have law programmes – besides Uppsala, also Gothenburg, Lund, Stockholm, Umeå, and Örebro. 86 PER CENT of employers who recently hired new law graduates feel that the graduates have greatly or very greatly benefited from their programme in their work.

This is the first time a survey has been undertaken regarding how employers perceive their recent law graduates. More than 500 personnel directors at companies, authorities, and organisations participated in the questionnaire.

The survey shows, for instance, that the degree is the most important factor when employers hire law graduates. Next comes social competence, and grades come only in third place.

Many employers would like to see more practicum periods in the programmes, and more training in oral skills.

“We are in agreement with employers about what we need to improve,” says Hans Ekland, director of undergraduate studies at the Uppsala University Department of Law and coordinator of the survey.

“The pharmacy student union has sponsored mentoring activities since 2004 and has many experienced mentors in prominent positions in the profession. The union arranges lectures, field trips, and lunches, but it has proven to be difficult to establish more personal contact between students and mentors.

“It might not be so easy for a student to pick up the phone and call someone who is CEO of a company. That’s why we have instituted course mentors,” explains course mentor Martin Svensson, one of those behind the initiative.

“IT MIGHT NOT BE SO EASY FOR A STUDENT TO PICK UP A PHONE AND CALL SOMEONE WHO IS CEO OF A COMPANY.”

Mentor for a hundred students

Since the spring of 2009 there are now some 16 course mentors, which means roughly one course mentor per one hundred students.

“It might sound like a lot of work to be a course mentor for a hundred students, but it’s not. We’ve started mentor pub at the Pharm student union one evening per month, where course mentors spend time with ‘their’ students. We’re also available via e-mail and telephone,” says Martin Svensson.

Course mentors have also dealt with much of the information about deregulation of the Swedish pharmacy market.

“Previously I didn’t know much about what deregulation was all about. The course mentors have been very helpful. It feels good to have learned what’s happening and that it will probably help create more jobs for us when we graduate,” says Elin Holmberg.

To Martin Svensson it’s not just a matter of what students get out of having more contact with the world of work but also what people already in their careers can learn from the students.

“Sometimes it’s about staying abreast of what interests and attracts students in their coming careers. This is important information for employers to know in their recruiting.”

Course mentors bridge the gap to working life

The use of mentors to get better links between studies and working life has become more and more popular in university programmes. In the Pharmacy Programme the student union has taken the initiative to expand its mentoring activities to include so-called course mentors.

THE PHARMACY student union has sponsored mentoring activities since 2004 and has many experienced mentors in prominent positions in the profession. The union arranges lectures, field trips, and lunches, but it has proven to be difficult to establish more personal contact between students and mentors.

“What’s more, course mentors follow ‘their’ course for the whole programme,” says Martin Svensson, who has a few years of work experience and has started his own company together with a classmate.

What can course mentors provide that wasn’t there before?

“It makes a big difference,” says Elin Holmberg, who is in her sixth semester. “It’s much easier to get to know each other and ask questions about what it’s like to be out there working and what kinds of jobs there are.”

“Sometimes it’s about staying abreast of what interests and attracts students in their coming careers. This is important information for employers to know in their recruiting.”

Uppsala University also has mentoring projects in:

•  law
•  psychology
•  science and engineering

Biomimicry (starting autumn 2010)

Are you an Uppsala University alumn and interested in being a mentor in one of the projects? Or are you thinking about starting a new mentoring project? Contact the Alumni Office at alumn@uadm.uu.se

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PHOTO: TEDDY THÖRNLUND

PHOTO: TOMMI WESTBERG
**“Students need impulses from outside”**

Editor, literary agent, interpreter, translator, terminologist... There are many types of work for a language expert. Karine Åkerman Sarkisian sees to it that students on the Language Programme get insight into working life – with lectures on Thursday afternoons.

**Karine Åkerman Sarkisian** gives language-programme students a look at working life:

“**Students need impulses from outside.**”

Students need to see examples of what awaits them after graduation. In other words they need a professional identity.

Karine Åkerman Sarkisian made a lot of calls and contacted companies to find out what career opportunities exist, apart from becoming a researcher, teacher, or translator.

“Finally a number of job opportunities crystallised. There is a growing market for terminologists, literary agents, Web editors, and language stewards, but also for copywriters, manuscript readers, editors... I wanted to elucidate this and see to it that students get a chance to meet all of these professionals.”

This is how the idea of a seminar series was born, with a new guest lecturer invited every Thursday afternoon. Recently a scientific editor at Norstedt Publishers paid a visit. The week before it was a language steward from TT (a major Swedish news agency). The students have also met two language exports from the Scania company, which has a large language unit with eight employees.

The lectures usually feature a coffee session when students flock around the guest with their eager questions. What auxiliary subjects should I study? What languages are in greatest demand?

They benefit from the personal contacts they seek trainee places in their fifth semester.

“Students find trainee positions in all sorts of occupations. They have to create a CV and an application, and a careers coach comes to teach them how to prepare for an employment interview,” explains Karine Åkerman Sarkisian.

**Employability a demand**

Nowadays employability is a demand that all higher education programmes must meet. When the Language Programme started in 2007, Karine Åkerman Sarkisian was charged with working to enhance students’ employability.

“The faculty committed a sum of money, but didn’t know where or how they could apply their language knowledge and skills professionally. That’s why it’s so inspiring for them to meet career professionals,” says Karine Åkerman Sarkisian.

For the last two years she has put a lot of work into arranging guest lectures, field trips, and trainee places for students on the Language Programme. Last year she won the Uppsala University Distinguished Teaching Award “for her indefatigable, energetic, enthusiastic, and creative efforts to arrange encounters between students and representatives of working life outside the University.”

Since the Language Programme leads to a general degree, students need to see examples of what awaits them after graduation, according to Karine Åkerman Sarkisian.

**Popular programme**

So there’s a lot to choose from for the students in their third year. The Language Programme this spring. The programme has climbed the list of the most sought-after programmes at Uppsala University. One explanation is that the programme has such broad scope and can be designed freely. Another explanation is that students get help along the way to find their professional identity, as Karine Åkerman Sarkisian sees it.

“Students need impulses from outside. It’s inspiring to meet people with roughly the same background. They can see that there’s a life outside the University.”

There’s a lot of emailing and phoning involved in the 30 per cent position she has to work with working-life contacts and career counselling. This rest of her time she teaches Russian and coordinates the subject.

**But it has been worth all the effort, she feels.**

“It has provided me with tremendous insights. At first I thought I had to show the students what their job market was, but I discovered that I also had to inform people out there about what a language graduate is. We get a glimpse of their world, and they of ours. It’s meaningful for both parties. Everyone benefits from an arrangement like this.”

As a teacher she has learned a great deal, above all about what is required out working life. Sometimes this has direct effects on her teaching.

“A guest once mentioned that few people know how to proofread these days, so we quickly introduced a component in the programme. It’s essential to know how our students can gain competitive advantages.”

Since the Language Programme leads to a general degree, students need to see examples of what awaits them after graduation, according to Karine Åkerman Sarkisian.
New and old in new teacher education

The bill Best in Class – A New Teacher-Training Programme, suggests that today’s single teaching degree be replaced by four: pre-school, compulsory-school, subject-teaching, and vocational-teaching degrees.

Don’t chase goals all the time. Instead, do things you enjoy. That is Hoa Ly’s advice to other students.

Student of the Year is a true multi-tasker

Psychology student Hoa Ly is the 2010 Uppsala Student of the Year. The SEK 100,000 (EUR 10,300) prize is awarded by the Anders Wall Foundation.

“My plan for the future is to do research in the field of new technology and psychology,” maintains Caroline Liberg. “One question you can raise is if it is a step forward or backward with such a division,” says Caroline Liberg, dean of the Faculty of Educational Sciences.

The proposal to introduce aptitude tests for future teacher-education students will be investigated further, according to the bill from the spring. “It is definitely an interesting suggestion that needs to be looked at further. What is essential is that we get the very best students for the most important profession,” maintains Caroline Liberg.

New opportunities for pharmacists

“THERE ARE EXCITING developments in the job market,” says Erik Björk, assistant dean for basic and advanced undergraduate education at the Faculty of Pharmacy.

Anders Wall Foundation.

RESEARCH IN THE FIELD OF NEW TECHNOLOGY AND PSYCHOLOGY

The new pharmacy market is expected to have knowledge of the subjects Swedish, mathematics, and English. At Uppsala we have long had Swedish and mathematics as obligatory, so this is not new for us, but as a matter of principle I have my doubts about too strictly limiting combinations of subjects. This should be grounded in what will be needed in future schools.”

Anders Wall Foundation.

In science and technology new programmes will also be launched in built-in systems (IT), nuclear power technology, increased demand, and major waves of retirement – this is the changeable world facing those graduating from pharmacy programmes at Uppsala University.

THE NEW ONE-YEAR advanced programme in nuclear power technology will be offered to students who have 120 credits (two years) from Swedish engineering programmes in electrical engineering, mechanical engineering, or the equivalent. The aim is to supply the industry with workers in the various aspects of nuclear power. It will also be possible to climb the career ladder to the position of reactor operator more quickly than today. There are already commissioned programmes in nuclear technology at Uppsala University, but the new programme is geared to students interested in working in the nuclear power industry in the future.

New master’s programmes

The contest was a fantastic experience to succeed in working life,” says Martin Gustavsson.

nuclear power technology one of many new programmes

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It was the second year in a row that students from Uppsala University represented Sweden in the contest.

Uppsala economists third best in world

ANDERS WALLER, Niclas Lundqvist, Fredrik Carlson, and Martin Gustavsson at Uppsala University can now call themselves the third best economics students in the world. In the contest International Case Competition, which is arranged by the accounting firm KPMG, they shared third place.

The contest involved solving a scenario in three hours and then presenting the solution to a jury. In the finals in Athens, teams from eleven countries competed. The Uppsala students, in the final semester of their master’s programme, split third place with the German team. The US won.

“The contest was a fantastic experience and a useful introduction to what is required to succeed in working life,” says Martin Gustavsson.

It was the second year in a row that students from Uppsala University represented Sweden in the contest.
Collaboration key at hospital in Enköping

Medical student Julia Šógren holds the floor when the care team makes the rounds.

Focus on the patient, personal responsibility, and collaboration across educational boundaries. Uppsala University medical, nursing, and physiotherapy students now train ‘live’ at Enköping Hospital.

TEXT HELENA EDSTROM
PHOTO: JOHAN WAHLGREN

THE ORTHOPAEDIC ward at Enköping Hospital actually looks like any other hospital — a well-lit, long corridor with patients in their rooms and care staff circulating in county-council clothing. But it is not just any hospital but the newly opened teaching ward for Uppsala County Council. It is a ward where alongside county-council staff there are students from Uppsala University medicine, nursing, and physiotherapy programmes and occupational therapy students from Örebro University.

“In the past we trained different occupational categories in separate moulds. When they then arrived at the hospital, we said: ‘collaborate!’ Here students collaborate during their training, and this is important, because as a matter of fact the parts make up the whole,” says Kjell Jönsson, director of Enköping Hospital.

“It’s great to work in this kind of team. Since all student categories are represented, we get insights into the whole chain of care efforts the patient needs,” says Johanna Hardselius, a physiotherapy student.

“Normally the supervisors are very active around the patient, and the risk is that the students will step back. Here the supervisors are more hands-off, which is great. After all we have the knowledge and this is our chance to grow with the responsibility. I think everyone benefits from this form of supervision,” says Andreas Danielsson, a nursing student.

WE HAVE BIG EYES AND BIG EARS BUT NO HANDS IN OUR ROLE AS SUPERVISORS

There is little doubt about what an inventor does, but an invention is not automatically an innovation. Nor do the inventor and the innovator have to be the same person.

“Sometimes it’s one person who invents something and someone else who implement it,” explains Ivo Zander.

An innovation does not have to lead to economic gain, but it does have to be something you can use.

“Many ideas fall by the wayside before the innovation phase. Just look at patent statistics. Only one in ten major innovations then goes on to be truly successful.”

As he sees it, the cultural sector and the political arena are examples of places where you find innovative thinking. Rethinking the retirement system could be an innovation.

“Or to turn a stone quarry into a concert stage, as in Dalhalla in Sweden. Ingvar Kamprad is another innovator. He created an entirely new business concept with IKEA.”

“Or to turn a stone quarry into a concert stage, as in Dalhalla in Sweden. Ingvar Kamprad is another innovator. He created an entirely new business concept with IKEA.”

Our limited interpretation of what constitutes an innovation has entailed that some innovators have been relegated to the background. “In my daughter’s textbook there was a section on innovations, but not one of the innovators was a woman. We tend to forget that women also innovate,” maintains Ivo Zander.

PHOTO: TOMAS ONEBORG/SVD/SCANPIX

DO YOU WORK IN INDUSTRY AND HAVE AN INTEREST IN COLLABORATING WITH UPPSALA UNIVERSITY?

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Crossdisciplinary work for new battery

The story behind the discovery that a slimy alga can be used in a light-weight and green battery is a long one. But once the idea was conceived, things went very fast. Within a year the Uppsala University research team had aroused the interest of the whole world.

And a tremendous amount of interest was shown by the media and by companies: “At first it was a major pain. I gave between two and three hundred interviews, and my colleagues no doubt gave just as many. Never again will we send out a press release, we thought. It pretty much exhausted us. But looking back we realize that the attention put us in a position we otherwise would not have been in. We’ve been able to sit back and sift through the companies. Many of the ones that contacted us we wouldn’t have been able to find ourselves,” says Maria Stroemme.

Crossdisciplinary work for new battery

The research team working with the algal battery includes, besides experts in nanotechnology and cellulose pharmacy, a professor of materials chemistry, Leif Nyholm. Last September the team’s discovery was published in the journal Nano Letters. The use of the algal cellulose as a thickening agent in medicines and food was already known. But no one had yet considered that it could be used in a battery. But according to Maria Stroemme this was not a very big leap, and this is where crossdisciplinary science comes in.

Enormous interest

“Discoveries of this type are often made by researchers who come from a different background and aren’t familiar with all the well-known problems in a field. They bring new perspectives and can ask all the stupid questions,”

The scientists are also working to create a process surrounding how the battery should be produced. A first product should be available on the market within four-five years, Maria Stroemme estimates. The question is where we will find the algal battery. “My hope is that it will not replace other types of batteries but rather open up new applications. Maybe for storing energy in the insulation of car doors or in textiles.”

How the algal battery works

The cellulose in the green alga Cladophora glomerata has a special nanostructure with a very large surface. By covering it with a 50-nanometre thin layer of the conductive polymer polypyrrole, the research team has managed to create a battery that is very lightweight and that also takes very little time to charge. It takes only ten seconds to fully charge it, roughly a hundred times faster than any other battery can be charged today. The beauty of the large surface area of the cellulose composite is that it can store many ions, which gives it a large charging capacity, 600 milli-amperes per square centimetre. After hundreds of charges it loses only about six per cent of its capacity. Plain saltwater is used as the electrolyte. The battery is lightweight and hopefully inexpensive to manufacture, and at the same time it is environmentally friendly.

The world’s largest array of wave power stations will soon be a reality off the coast of Smögen in western Sweden. This wave power is based on unique energy technology developed by scientists at Uppsala University and adapted to the slow movement of the waves.

Behind the project stands the company Seabased Industry AB and the energy company Fortum, with backing from the Swedish Energy Agency. The aim, as soon as the permit is stamped, is to build a full scale demonstration project where this wave power technology can be further developed and verified commercially. The facility will consist of more than 400 linked units, with an output of 10 MW. This array of wave power stations will thereby be the largest in the world.

It’s exciting to see that our research has resulted in a technology that is now getting a chance to show its commercial viability. We also see a potential to further refine the technology, so our research is continuing. We’re also looking at social scientific and environmental aspects of the technology,” says Mats Lenjon, professor and director of the Centre for Renewable Electric Energy Conversion at Uppsala University and one of the two scientists that founded the original innovation and patent company Seabased in 2001.

Floating buoys generate electricity

What’s special about this wave power station is that it is driven by a linear generator, to which a buoy is attached with a line. An ordinary generator converts rotational energy to electricity to spin at more than a thousand revolutions per minute to be efficient, but the linear generator can directly convert electricity from the slow movements of the buoy bobbing on the waves.

The technology was first tested at the University’s experimental facility outside Lysekil, with funding from several energy companies, and was later refined by Seabased. “The system is inexpensive, robust, and very environmentally friendly, and it can cope with the tremendous stresses and strains that occur at sea,” says Jan Sundberg, coordinator of the Lysekil project at the University.

Energy for all of northern Europe

Now Fortum wants to use the technology to expand its green electricity production with a commercial wave power array. It is hoped that it will be the first large-scale wave power array in the world to supply electricity to private homes. “It’s estimated that a Swedish power production could cover some ten per cent of Sweden’s energy consumption, but along the Atlantic coast the conditions are much better. If wave power arrays are built along the Norwegian coast, we should be able to supply a considerable portion of northern Europe’s electricity needs,” says Jan Sundberg.
Right samples can lead to more rape convictions

Danish-Swedish academy for drug research

A UNIQUE PLATFORM for collaboration in doctoral education in the pharmaceutical field has been established at the universities of Uppsala, Lund, and Copenhagen, and the Technical University of Denmark. The aim is to pool resources for generating knowledge in education, research, and commercialisation.

“The is the first time such comprehensive collaboration has been established between two countries, and it’s in a vital and clearly delimited research field,” says Lenaert Dencker, a professor of toxicology and chairman of the Disciplinary Domain of Medicine and Pharmacy at Uppsala University.

The four institutions are participating with a total of eleven faculties that cover the entire drug chain, from idea to finished product. The new platform, the Medicines Research Academy (MRA), is to stimulate developments by facilitating the exchange of knowledge, both between universities and between public and private sectors.

Ethical challenges call for cooperation

HOW DO WE DEAL with the ethical challenges posed by stem cell research, for example? How do we prioritise limited resources in health care? The answers to questions like these will be sought in a new collaboration between the Centre for Research Ethics and Bioculture (CRB) at Uppsala University and the Policy, Ethics and Life Sciences Research Centre (PEALS) at Newcastle University.

“Our research profiles complement each other. PEALS offers strong sociological competence, and CRB’s strength lies in ethics theory and empirical ethics,” says Mats G. Hansson, professor and director of CRB.

PEALS’ executive director of PEALS.

Janice McLaughlin, the Policy, Ethics and Life Sciences Research Centre (PEALS) at Newcastle University.

The upshot of the excavations was that Uppsala University today has the largest and finest collection of fossil vertebrates outside China.

“Euhelopus zdansky is one of several absolutely unique objects in our collections,” says Mats Eriksson, acting director of the Museum of Evolution.

“Euhelopus zdansky” belongs to an extremely rare group of long-necked dinosaurs. Besides being the only specimen in the world, ours is also remarkably complete. Some 60-70 per cent of the skeleton is preserved, which is an incredible amount in these contexts, says curator Jan Ove Ebbestad at the Museum of Evolution, who is directing the casting project on behalf of Uppsala University.

One copy for Uppsala

It is important for scientists to have access to skeletons from several types of dinosaurs to be able to understand the evolution of the group. International researchers regularly visit the Museum of Evolution to study the unique skeleton, and in autumn 2009 Fukui Prefectural Dinosaur Museum in Japan paid a call.

Fukui Prefectural Dinosaur Museum aims to be Japan’s foremost dinosaur museum. They want to have the best material in the world, or casts of it,” explains Jan Ove Ebbestad.

Largest collection outside China

Euhelopus zdansky belongs to the so-called long-necks, sauropods, and lived between 112 and 130 million years ago in northeastern China.

The skeleton at the Museum of Evolution consists of bones from two different animals and came to Uppsala as early as the 1920s. The Swedish geologist Johan Gustaf Anderson worked as a consultant in mining matters to the Chinese government and discovered rich fossil layers that no one had studied before. As thanks for his work for the Chinese government he was granted permission to excavate the areas and entered an agreement with his good friend Carl Wiman, professor of paleontology at Uppsala University, to send the material there.

Geologist Otto Zdansky went from Uppsala to China to help them excavate and found the dinosaur, which was named Euhelopus zdansky. “Zdansky’s genuine marsh foot.” The upshot of the excavations was that Uppsala University today has the largest and finest collection of fossil vertebrates outside China.

“The Euhelopus skeleton is one of several absolutely unique objects in our collections,” says Mats Eriksson, acting director of the Museum of Evolution.

The only preserved skeleton of the dinosaur Euhelopus zdansky is at the Uppsala University Museum of Evolution, but now there is also a copy at one of Japan’s largest dinosaur museums. The Japanese spent several intensive months in Uppsala making two casts of the skeleton, exacting work to say the least.

Uppsala dinosaur copied by Japanese

As of this autumn all victims of sexual crimes who seek care in Sweden will be offered a complete evidence-securing examination.

Health and medical care needs to be better at dealing with victims of sexual crimes and securing evidence. This is the goal behind the national action programme developed by the National Centre for Knowledge on Men’s Violence Against Women (NCK).

“PHYSICIANS’ knowledge of sexual crimes varies a great deal today. The goal is for all physicians to receive in a uniform and professional way, women and men who are victimised to be treated in examinations. Last year the programme was positive,” says Gun Heimer, professor and head of NCK.

One important improvement is that all victims of sexual crimes who seek care will be offered good care and to meet patients’ legal needs,” says Gun Heimer.

PHOTO: BODIL RUDBERG

ONE COPY FOR UPPSALA

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Energy research takes its place in world’s largest innovation factory

Uppsala University will be playing a key role as the EU makes a major strategic commitment to an institute for innovation and technology in the field of energy. Together with the Royal Institute of Technology in Stockholm and the Swedish University of Agricultural Sciences in Uppsala, the University is one of the six regions in Europe charged with addressing future energy needs in a unique partnership between industry and academia.

In the MAJOR European initiative KIC InnoEnergy, Europe’s very best universities and companies in the field of energy are pooling their expertise in a joint corporation to create new companies and products. It is the largest investment ever, worth billions when fully developed. The assignment confirms that the Uppsala-Stockholm region is a leader in sustainable energy systems and energy development. “We already have the scientific knowledge. Now we need to put it to use for the benefit of society,” says Professor Håkan Engqvist, who is coordinating Uppsala’s part of the job.

He also coordinated the prestigious commission that Uppsala University was awarded in 2007 to carry out a pilot project aimed at creating this giant organisation – with Europe’s best research teams working together – which can lead to better understanding and enhanced knowledge on both sides.

“This will be the world’s largest innovation factory in energy, and we know that many players want to jump aboard,” says Håkan Engqvist. Creating this giant organisation – with close collaboration between companies and universities, between Sweden and Europe, and with a solid funding base to build on – is something entirely new and untested. A gigantic innovation company KIC InnoEnergy will be inaugurated in late May 2010 and in Europe in July. Planning for the first research school and the first innovation projects is in full swing.

“I believe in this. After all, Sweden is a small country. To truly succeed we need to work together with Europe,” says Håkan Engqvist.

Other collaborative partners in KIC InnoEnergy are Karlsruhe, Krakow, Barcelona, Grenoble, and Eindhoven-Leuven.

KIC InnoEnergy

“InnoEnergy is one of a few special-ised European institutes that are to serve as models for how the EU wants to work so that research, education, and innovations in close cooperation will lead to growth and solutions to the major challenges facing society. KIC InnoEnergy takes a holistic approach to the entire energy chain – from source via storage and networks to consumers. The world needs all the innovative resources available in order to create new sustainable energy systems. Uppsala University has the main responsibility for the field of electrical energy storage, where it leads the world today.”

World’s largest innovation factory

It is thus an extremely important task to lead innovation efforts in the energy field in Europe, but also to be able to compete commercially with the US. The new model will create new jobs and companies, prosperity, and exciting career opportunities.

“One of the assignments for Uppsala is to lead the world in electrical energy storage. Uppsala University has the largest research group and is considered the world’s second most active in this field. KIC InnoEnergy will enable us to take the research to a new level,” says Sofi Qvarnström, professor in rhetoric, department of linguistics at Uppsala University.

The connection with Almedal Week makes this course special and extremely topical. As a teacher I really feel I have something to offer with a course like this, where the students can get out in the field. This makes it so obvious that rhetoric plays a key role in politics,” says Sofi Qvarnström.

At the conference “Police Research in Progress” in March, 240 police and law professionals participated. The conference was arranged by the new Centre for Police Research at Uppsala University. “You truly get a sense of the whole breadth of the field involving our police work. In everyday policing we don’t always think about that,” says Marie Johansson-Molde at the National Police Board.

She sees a great advantage with the new Centre, namely that theory and practice can come together – which can lead to better understanding and enhanced knowledge on both sides.

“I hope we will gain easier and better access to new research findings by working closely together. We police embrace new findings and new methods, but it can take a long time before they reach everyone,” says Håkan Engqvist.

One of the presentations at the conference was about how DNA analysis can be used to secure evidence. One of the experts in the field was Marie Allen, who has been working with research and routine analyses on commission from the police since the early 1990s.

“Research has taken great strides in recent years. Advances in technology, the demand for analyses has grown,” she says.

Now there is a master’s programme in forensic science, where students learn the very latest methods for analysing crime scene evidence.

Uppsala University also pursues research in police law, honour-related violence, drug dependency, hate crimes, and many other fields of use to the police.

The Centre for Police Research gathers all of this research under one umbrella. The mission is to conduct and coordinate research, arrange seminars, invite guest lecturers, and work with course development and continuing education.

Police have access to broad expertise

Cooperating with Gotland

Investigating crime requires knowledge of a number of field. Uppsala University offers the whole spectrum – with experts in DNA analysis, criminal law, sociology, gender research, and IT.

The new course, given in jointly by Gotland University and Uppsala University, includes field work during politicians’ week at Almedalen in July.

For students it will be a unique opportunity to study rhetoric – or “the art of persuasion.”

“It’s going to be exciting. Since it’s an election year you can imagine that the speeches and debates will be intensive. There’s a lot at stake,” say Sofi Qvarnström.

She is a teacher at the Department of Literature in Uppsala and will be running the course together with Professor Lars Himmel.

The course covers five weeks and requires no prerequisite knowledge. First students will learn the basics of rhetoric and study the literature. During Almedal Week they will then listen to the politician’s speeches and analyse the political rhetoric.

“The connection with Almedal Week makes this course special and extremely topical. As a teacher I really feel I have something to offer with a course like this, where the students can get out in the field. This makes it so obvious that rhetoric plays a key role in politics,” says Sofi Qvarnström.

Rhetoric studies at Almedalen

What are politicians really saying? What tricks do they use to convey their message? During this year’s politicians’ week at Almedalen on Gotland a course in rhetoric will be given, with analyses of the party leaders’ speeches as part of the course content.

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Multi-disciplinary collaborations with Gotland

Uppsala University and Gotland University have a collaborative agreement. Other programmes covered by the agreement are:

• Game design, new research school started
• Teacher education, instructional work with young children
• Art history, advanced-level courses
• Intellectual history, workshop for humanities and social-science students

HÅKAN ENGQVIST
The first printed dissertation at Uppsala University, from 1602, can now be found on the Internet. More and more books, manuscripts, and images from the University Library’s collections are now online.

In a three-year project, librarians, restorers, and technicians are collaborating on how library collections can best be digitised.

“The aim is to put as much of our cultural heritage as possible on the Net,” explains Per Cullhed, curator and head of the cultural heritage team. The library has applied for funding to digitise all Swedish dissertations from the period 1602 to 1855. This involves a total of nearly 20,000 dissertations. The oldest of them all is already available online, in the publication system Diva.

“When it comes to dissertations, the platform is already in place; but for images, manuscripts, and other books we need to construct a new platform. Once we’ve finished that, there will be a ketchup effect,” says Per Cullhed.

The library plans to start by digitising the texts that are most frequently read by users.

“For example, a collection of Coper- nicus’ writings that are very much sought after and frequently read in our special reading room,” says Per Cullhed.

A major advantage of having more digital readers is of course that there is less wear and tear on the original.

“Digitising is also a matter of preserving the documents for posterity. It’s fascinating that copying technology, which is the oldest technology for preserving books, has returned in a modern version,” says Per Cullhed.

Together with other collections, including the oldest printed dissertation from 1602 written by Elias Magnus Rahlambus and Sven Jonssen Moderus.

The oldest printed dissertation from 1602 was written by Elias Magnus Rahlambus and Sven Jonsson Moderus.
YOU STUDIED political science at Uppsala and took your doctorate here in 2002. What memories do you have from that time?

I have many fine memories from club life and parties, and many friends that I’m still in touch with. Your studies are not only about studying. I feel you should also take the opportunity to develop as a person and establish a network. It’s part of learning for life, and that aspect is very good at Uppsala.

Did you have a favourite lecturer?

There were many colourful personalities at the Department of Political Science. Leif Lewin, of course, and Olof Petersson who was still there then. There was a conscious policy of having the professors teach us freshman students, and we thought it was really great that they were so involved in education.

Old colleagues of yours have said that you were very much the politician even as a doctoral candidate. How much of a researcher identity do you still have as a politician?

My doctoral studies have been of great use, especially the way research makes you question things and think critically. It’s a matter of hearing something and wondering if it might be just the other way around. I think it’s important to dare to try out new points of view, even though you don’t agree with everything. That was an approach I typically encountered at Uppsala, both in research and among students.

Did you ever consider continuing your research career?

When I took my doctorate I was already active in the Liberal Party, and at the time I felt it was time to do something else. But I’ve never abandoned the thought of returning to academic life at some point.

What does it mean to you as minister of higher education and research to have completed a doctorate yourself?

The key to success as a minister is to have a vision, but I don’t think my background is a drawback. I’ve sat in the coffee lounge at the department and know what people talk about, and I have many friends in academia.

What are the greatest challenges facing Swedish higher education in coming years?

Global developments. Asia is coming on strong, and we have to meet the challenge. We need to invest and get better across the board, from undergraduate education to cutting-edge research.

What issues do you most want to address if you are still a minister after this autumn’s election?

The quality of undergraduate education. The number of teacher-led hours needs to increase, especially in the humanities and social sciences. And more independence in academia.

How many universities and university colleges do you think Sweden will have in ten years?

I don’t want to speculate about that. The state must establish clear criteria for quality in research and education, but what that entails in terms of the number of institutions is something I have no strong opinion about. Each university and university college needs to carry out its own analysis of the situation they find themselves in and assess its strengths. I think we will be seeing more specialisation. That trend is already clear both in Sweden and abroad.

What are the greatest challenges facing Uppsala University?

Uppsala has an excellent position, with great breadth and high quality in education and research. It has a tremendous reputation and is referred to with great respect in Sweden and abroad. It’s a matter of building on the ancient heritage and, with that as a base, updating operations in order to continue to be a modern university. My impression is that this is a vision shared by the University’s leaders, and all the right conditions are in place.

Finally, I’ve heard rumours that you like ties. It’s said that as a doctoral student you were the only one who always wore a tie, preferably colourful ones to cheer people up.

Yes, that’s true. I like to wear a tie – it’s one of the few details you can vary if you’re a man. Otherwise I don’t like to shop for clothes, but I really like buying ties, although they’re not so colourful anymore. I’ve changed my style a little bit. It has to do with my role: I have to be more proper now. But I do still have a little colour – today I’m wearing a pink shirt.

What does your favourite tie look like?

I pay no attention to labels, but I do have a weakness for a good red tie.
ARGENTINE FILM-MAKER Patricio Cummis is going to make a documentary about Uppsala University doctoral student Alvar Sobral. He was born in 1890 in Argentina and in 1901–1903 participated in the Swedish physician Otto Nordenfeldt’s polar expedition in Antarctica, where they were stranded for two years.

After that Sobral decided to switch careers, and since it was not possible to combine the military with geology studies in Argentina, he went to Sweden to study at Uppsala University. When he took his PhD in 1913 he was the first Argentinean with a degree in geology. He returned to Argentina, where he married Swedish Elma W Klungs-ström. They had nine children together.

The film is expected to be finished by the end of 2010.
What are the most important issues Uppsala University is working with at present?

We were recently granted major research funding in competition with other institutions. In the government’s initiative for strategic research Uppsala University was awarded more than SEK 500 million (EUR 50 million) over a five-year period. Now we are putting that funding to work in a sensible way.

Education is another area in focus, where our goal is to enhance quality even further. We have launched the Creative Educational Development (KRUUT) Project, which is to function as a support in developmental work.

If you look back on this academic year, is there anything that especially pleases you?

I am extremely pleased with Blåsenhus, our newest campus, which brings together research and education about human beings and learning. It is a platform that delivers the conditions for a number of new and exciting collaborations in education, psychology, and educational sciences. I am also very happy that our ambition to create solid collaboration with universities in Stockholm have yielded such excellent results. I have in mind, for example, KIC InnoEnergy, the huge European energy initiative where Uppsala and the Royal Institute of Technology (KTH) are in focus, and the commitment to large-scale biological research in the form of the Science for Life Laboratory, where we are working together with the Karolinska Institute, KTH, and Stockholm University.

Are there any areas that you personally have a burning interest in?

Internationalisation is one such area. There we are currently working with a sharp focus on EU issues. It’s vital always to find inspiration from outside, which is why we are reinforcing our international university networks. One important task is also to identify interesting researchers we can recruit to complement the expertise of our own young stars.

I am also deeply involved in all kinds of work environment issues. A good work environment is a prerequisite for the creation of creative settings. People who thrive in their workplace can accomplish wonders.