EVERY DAY I AM DELIGHTED, proud and impressed by all the relevant and successful research being conducted at our university. As recently as April, the Swedish Foundation for Strategic Research (SSF) paid out nearly SEK 100 million to three research directors who, together with their groups, are studying smart systems and materials science. It concerns research into smart body area networks, into knowledge that makes unmanned aerial vehicles able to collaborate with humans during rapid search and rescue operations, and into methods for producing components used in high-frequency electronics. In a press release, SSF CEO Lars Hultman said that the framework grants are intended to reward interdisciplinary science of the highest quality, where the results can also be utilised.

RESEARCH FROM LINKÖPING UNIVERSITY is often met with great interest, even far beyond the nation’s borders. This applies especially to the selection presented by the editors in this issue, which contains exciting reading about topics including organic electronics, poultry and paternity leave.

INTERNATIONAL CONTACTS AND COLLABORATION are important for continuously developing quality in research – and in education as well, of course. In Guangzhou, China, Linköping University is in the process of building up a large collaborative project about sustainable urban development. Brazil is another interesting example of a country that evokes great interest in Sweden. In May, just before LiU Magazine reaches your mailboxes, a number of researchers from Swedish universities will travel there together with Swedish research funding agencies and industry representatives for a symposium: The Brazil–Sweden Excellence Seminar. Linköping University and Uppsala University are the hosts for this week, which will be chock full of knowledge and networking. Linköping University, and several important industrial concerns here in Sweden, have extensive dealings with Brazil.

LAST BUT NOT LEAST, I encourage you to read about what some of LiU’s students and alumni are up to in the international arena.

HELEN DANNETUN, VICE-CHANCELLOR
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Ideas build the future

In this issue of *LiU Magazine* you get to meet several inventive people who are part of building the future in both great and little things, and in different parts of the world.

First, a visit to Linköping University’s Laboratory of Organic Electronics. New ideas are constantly being born here; they are the very motor of the operations. But it doesn’t stop at the idea stage. Again and again, ideas from the lab have evolved into internationally recognised results. The research group has developed things such as the world’s first chemical chip, an ion pump that can stop pain impulses, and paper that can store electricity.

Last winter they astounded the world again when they were the first to create electronic plants. The researchers found a way to build both analogue and digital circuits into living flowers, bushes and trees.

Read our feature on a lab where ideas come first, and meet its visionary director Magnus Berggren.

**WE’LL TELL YOU ABOUT MORE** people with ideas. Over the spring, LiU student Marcus Nygren was in Zambia and Uganda to see how mobile phones can be used to teach entrepreneurship. He has developed a mobile app that helps train budding businesspeople.

In another part of the world – southern China – LiU graduate Zhong Ling opened a Swedish-inspired, organic café: Fika House. After her studies in the international master’s programme Science for Sustainable Development, she wanted to put sustainability into practice. It was a success – although she later had to close down. But Ms Zhong still hopes to one day re-open her Fika House, and she is full of ideas about how environmental work can be developed in her region.

In Argentina, LiU alumna and psychologist Ayeray Medina Bustos is involved in scrutinising what happened under the military dictatorship from 1976 to 1983, and in supporting people who either themselves were affected or had family members who were kidnapped and tortured, or disappeared. She was recently back in Linköping – where she studied in the master’s programme Applied Ethics.

You can also read about what several of our international alumni are currently engaged in.

Enjoy!

LENNART FALKLÖF, EDITOR-IN-CHIEF
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New ideas are constantly being born at the Laboratory of Organic Electronics, several of which have led to a range of internationally recognised breakthroughs. Now the road to practical application lies open.

**THE IDEA FACTORY**

- the lab that amazes the world

New ideas are constantly being born at the Laboratory of Organic Electronics, several of which have led to a range of internationally recognised breakthroughs. Now the road to practical application lies open.

**STORY** MONICA WESTMAN SVENSELIUS **PHOTO** THOR BALKHED
They developed the world’s first printed electrochemical transistor, and the world’s first chemical chip. As well as an ion pump that can stop pain impulses, paper that can store electricity and electronic plants.

Over the past five years, one astounding research breakthrough after another has emerged from the Laboratory of Organic Electronics at Linköping University, located at Campus Norrköping.

Publications in top scientific journals are coming thick and fast from the group, which has grown from some 30 people in 2012 to the current 60.

The head of the laboratory, Professor Magnus Berggren, is a visionary man of ideas and a hands-on boss – which may be one of the explanations for the lab’s great successes. In his leadership he has drawn inspiration from his time as a doctoral student with LiU professor and doyen Ingemar Lundström, and from his postdoc stint at the legendary Bell Labs in New Jersey.

“Professor Lundström was interested in us all, he created a cheerful, comfortable atmosphere. At Bell Labs they had a very flat organisation – there was a sense of community there and the ideas flowed, everything was possible. I often went in through the main entrance, where all of Bell Labs’ Nobel laureates were displayed; it felt magical,” he says.

**THIS JOY, VISION, OPENNESS** and desire for collaboration he brought with him to his own research group which, with its basic research, now occupies open offices together with Acreo Swedish ICT, a research institute. It’s unique set-up in the Swedish research world.

“There’s a lot of talk about commercialisation right now, but I’m naïve enough to think that we can change the world. Our results will benefit humanity, and we don’t need to earn money along the way,” Professor Berggren says.

The research breakthroughs that have
After lunch the doctoral students went down to the lab and set up the experiment. And it worked! We had to repeat the experiment a few times, but from idea to implementation really took only one day," he tells us.

It can then be a year or two until publication.

"The doctoral students get a little impatient sometimes, but we're slow to publish, we want to make sure all the results are in proper order."

**This may be a good thing,** because there are people who think the ideas are a bit on the wild side. When the article about electronic plants was published in Science Advances, it was placed next to an 'application declined' notice, where the verdict read: 'genius, excellent research group, important area, but entirely unrealistic'.

"I wouldn't have thought it possible either, if I were in their shoes," Professor Berggren says, generously.

The news of electronic plants – where the researchers created both analogue and digital electronic circuits inside living flowers, bushes and trees – has spread around the world like wildfire, with features on BBC Forum and Australian radio, hundreds of articles and large numbers of posts on social media.

The fact is that despite its enormous impact, this research has thus far not received a single Swedish crown in funding. It started with experiments when there was time left over, and was made possible when Professor Berggren received a use-as-you-wish research grant of 15 million Swedish crowns from the Knut and Alice Wallenberg Foundation. He then promised to use the funds for high-risk research – a promise he has kept, to his own and the foundation’s satisfaction.
Professor Magnus Berggren is inundated with offers to participate at conferences, speak at seminars and give interviews. So much, in fact, that he's thinking of setting an automated response on his email: “It’s not for lack of interest that I am not responding to your mail, but lack of time”. He can easily get 300 emails a day. “Naturally, it’s great that so many people are interested in what we’re doing, and I have a bit of a guilty conscience when I decline an interesting conference,” he says.

Power paper – nanocellulose and a conductive polymer – with an outstanding ability to store electricity. To the right a light bulb shines, thanks to electricity conducted through power paper wires.

**The Next Wild Idea** that actually received funding concerns developing methods for producing ‘supercapacitors’, for energy storage, in an ordinary paper machine. The Swedish Foundation for Strategic Research announced funding for production methods of the future. Professor Xavier Crispin and Assistant Professor Isak Engqvist, both group leaders at the Laboratory of Organic Electronics, work with energy storage in cellulose-based material. They sat down together and started thinking.

“The need for storing electricity is so great that the supercapacitors need to be produced in a paper machine. We wrote an application, and we were fairly uncertain how it would be received. But we got the funding; we’re in touch with a paper mill and are close to a solution,” Professor Berggren says.

“We start out from needs where we see we can contribute, we look for money for major steps, and we celebrate small successes along the way. Our goal is to contribute to a better world. We can create ideas and take charge of them in a complex manner; the challenge now is to nurture, cultivate and develop them further. We also need to secure more long-term basic funding. It takes time to build up excellent research, and it can be demolished quickly.”

Is the goal a Nobel Prize to display in the entrance?

“No – at least not for many years to come. It’s proven to be devastating for productivity,” Professor Berggren says, laughing.
Linköping is University City of the Year

Collaboration, student democracy, development in teaching and learning, and a sense of home.

In a long citation that covered a large number of points, the head of the Swedish National Union of Students announced that Linköping had been named 2016/17 University City of the Year.

“We’re extremely proud. Student democracy at LiU is extraordinary. This award is confirmation that we students who work as volunteers for a vibrant student life have succeeded. We’re on the right track,” said Martina Johansson, head of StuFF, on behalf of the student unions at Linköping University.

Vice-Chancellor Helen Dannetun agreed:

“I’m doubly proud, this is the second time we get this award. In 2014 it was Norrköping’s turn”.

“About 70 per cent of the students at LiU come from other regions. For us it’s very important that they come to a town where they feel welcome and soon feel at home,” said Vice-Chancellor Helen Dannetun.

LiU ranks 131 in Europe

Linköping University placed in the 131-140 group on the 2016 Times Higher Education ranking of the 200 best universities in Europe. The top three places were taken by Oxford University, Cambridge University and Imperial College in London.

A worldly experience

The C Building smelled of the whole world’s spices when the International Student Association (ISA) celebrated iDay 2016. 15 countries were represented during the day, and both food and culture were on offer.

“You can meet the world here without even leaving campus,” said Pranav Morey from India, chair of ISA.

At LiU there are approximately 2,000 international students from different parts of the world. In the International Students Association, they want to make the most of all these cultures.

iDay – International Day, where students could show off their native countries and their native cultures – was organised for the first time in 2005. The day was an immediate success and has been so since then.

“Experiencing other cultures is not only really fun, it’s also educational and something that can be of use later in working life,” said Mr Morey.

The students who passed through Colosseum could get a really flavourful lunch: there were tapas, stews, and even sweet pastries on offer. Besides the food there were also articles, games, and crafts on the tables.
Robots charging up for the World Cup

Linköping University has qualified for the World Cup in soccer football – for robots. The competition will be held in Leipzig, Germany, in late June and early July.

Three future engineers – Fredrik Löfgren, Erik Örjehang and Zacharias Nordström – and their teacher, Fredrik Heintz, have programmed the robots so that they understand the rules, see the ball, and can move.

Now the robots are training hard ahead of the summer’s tournament. The goal is to make it all the way to the finals.

Growing collaboration with Brazil

Since 2011 Linköping University has been building up extensive research collaboration and student exchanges with Brazil. Today LiU has eight Brazilian partner universities.

The collaboration includes student exchanges, Brazilian master’s students, students working on degree projects, doctoral student exchanges, research collaboration and visiting professors.

LiU professor Petter Krus will spend 12 months in Brazil over the next three years. His objective is to extend collaboration in the aviation sector, and to inspire and exchange experiences with Brazilian colleagues in areas such as sustainable energy, security and crisis management, transportation and logistics, and sustainable urban development.

Since 2006 Brazilian professor Alex Prast has collaborated with researchers in the Department of Thematic Studies – Environmental Change. Results of the collaboration include scientific articles co-written with LiU professor David Bastviken concerning the role of methane and other greenhouse gases in the ecosystem.

One factor that has given rise to the growing collaboration over the last few years is Brazil’s decision to purchase military aircraft from Saab and Sweden. The agreement included both knowledge transfer and research collaboration.

At the end of May, a large LiU delegation visited Brazil in order to strengthen the university’s contacts.

Award to master’s programme in adult learning

The Linköping University master’s programme Adult Learning and Global Change received the Excellence in e-Learning Award at a European conference earlier this spring. 70 programmes were nominated. The programme is a collaboration between Linköping University and universities in Canada, South Africa and Australia. It is one of LiU’s most popular international master’s programmes.

Hearing prize for LiU professor

Stig Arlinger, Professor Emeritus in technical audiology, received the 2016 Grand Hearing Prize (Stora Hörselpriset). He was given the prize for being behind the digital hearing aid.

The Hearing Research Fund celebrated his “path-breaking efforts for the hearing impaired through development of new hearing technology, particularly the first digital hearing aid, as well as pioneering research in hearing diagnostics – gifted with an interdisciplinary curiosity that has inspired both audiology staff and researchers.”

In Sweden alone, there are today approximately a half million people who use hearing aids.

The prize is SEK 100,000.
She started a Fika House in China

Right in the middle of the part of China often called the “Green Tea Golden Triangle”, Zhong Ling opened a Swedish-inspired, organic café: Fika House. With typical Swedish cinnamon rolls.

STORY GUNILLA PRAVITZ PHOTO ZHONG LING
My hometown is such a lovely place. It deserves sustainable development, not a rush for money. I wanted to contribute, myself, to that process,” Zhong Ling says.

In 2014 she earned her degree in the Science for Sustainable Development international master's programme, and after that returned to China and her hometown of Kaihua in Zhejiang, the province south of Shanghai.

Even during her education, she tried to contact government authorities in Kaihua in order to discuss local environmental work, with no results.

She had to re-think things.

“I realised that influencing attitudes is the most important thing in environmental work. Nothing will happen if people don’t change their way of thinking,”

With her Fika House, Ms Zhong wanted to turn thinking about sustainability into practice and get people to think in new ways. It would also be a platform for local growers, where they could exchange and sell organic products to visitors.

HER FIKA HOUSE IN KAIHUA was a success.

Ms Zhong was interviewed in the local press, and a month after its opening in October 2014, the entire city knew that a Swedish café had opened.

“People, especially young people, liked it so much. They loved the environment, the design and decor of the place, the atmosphere there, the food and coffee … People came to shoot photos or make little films. Later even some TV programmes borrowed our place for their shoot.

Once I was interviewed by a big national travelling programme, so my Fika House and I were on TV.”

Her fame spread, and Ms Zhong arranged various events.

“For example, a lecture about the Swedish recycling system and how to reuse kitchen waste, and a whole week of second-hand clothing exchange,” she says.

And a Swedish cultural and film festival as well, with the Swedish consulate on site. For two days in March 2015, Swedish literature was discussed and two internationally renowned Swedish films were screened: The Hundred-Year-Old-Man Who Climbed Out the Window and Searching for Sugarman.

“Fika House signifies a rare platform for Swedish culture and values far outside the large cities of eastern China, at the same time as it represents the beginning of a popular discussion about sustainability,” the institute wrote afterwards on its website.

FROM THE BEGINNING, Ms Zhong’s studies at Linköping University were mostly a way for her to get out into the world.

“The Nordic countries seemed like fairyland to me. I first applied to a Norwegian university. But my parents didn’t allow me to go that route,” she tells us.

The year after she applied again, to LiU and the European Language and Culture programme. She was accepted, and succeeded in convincing her parents to be allowed to travel.

“Well, I had never been abroad, or travelled somewhere very far away in China before. After arriving I was so impressed by the Swedish system in the field of sustainability. A very strong feeling, a kind of awe: ‘Oh my God, this is why I am here and this is what I should study in Sweden!’”

SHE SPENT A WHOLE SIX YEARS in Linköping, and nearly as long in a beloved student apartment in Ryd. Ms Zhong learned Swedish and to fika – and yes, she started baking cinnamon rolls as well.

“Linköping is like my second hometown. I miss my old apartment in Ryd, I miss my Swedish and international friends, I miss the summer there.”

Staying in touch with her fellow students isn’t easy. They’re spread around the whole world, and in China access to social media is strictly controlled.

“It’s even harder since we need VPN to get across ‘the great firewall’ to be able to log onto Facebook, and so on.”

Today Ms Zhong has had to close her Fika House, an old house she worked hard to renovate and decorate in the summer of 2014. It’s situated near a water protection area, with a view over verdant mountains and agricultural landscapes – not so easy to replace.

“I trusted the landlord, and he didn’t write a proper contract. It’s totally from scratch now”, she says.

That isn’t to say that Ms Zhong has given up. Far from it.

“In China food safety is becoming a problem. Many individuals and organisations are starting to grow, produce and sell green or organic food. These days, I’m working to register a company and brand – Crystal Clear China – based on products from an unpolluted area in my hometown that I can quality control.”

“And at some point, I hope the money will be enough for a new Fika House. I still get messages and phone calls from my old customers. So if I have the chance I will re-open it, someday.”
Scrutinising the injustices of the dictatorship

Ayeray Medina Bustos has devoted her life to talking about a dark chapter in the history of Argentina – the period of military dictatorship. Today the former LIU student is working at the Argentinian Ministry of Foreign Affairs and Worship, scrutinising injustices committed during the dictatorship.

STORY THERESE EKSTRAND AMAYA PHOTO GÖRAN BILLESON
I’m not going to do that. Ever. That was my first thought,” says psychologist and doctor of peace and development Ayeray Medina Bustos. The year was 2005, and her teacher in applied ethics at Linköping University had just suggested she write her master’s thesis on the reconciliation processes in Argentina.

The reason she was completely opposed to the idea of writing about Argentina and its unhealed history was that her own parents were kidnapped, tortured and interned during the dictatorship.

“It wasn’t anything we talked about in my family. Should I write a thesis about that?” says Dr. Medina Bustos, taking another tissue out of her pocket and blowing her nose. She is at Linköping University to meet the students who are now studying in the same programme as she did. But during the first week of her two-week stay in Sweden, she had to fight a stubborn cold.

In the end, Professor Göran Collste, got what he wanted, and her master’s thesis dealt with the ethical dilemma in Argentina’s search for justice and reconciliation. Moreover, his question became the starting point for a lifelong commitment for Dr. Medina Bustos. Today she works at the Argentinian Ministry of Foreign Affairs and Worship as an advisor in the protection of human rights. Before that, she worked at the Ministry of Justice in Argentina assisting victims of crimes against humanity at the public trials.

**BETWEEN 1976 AND 1983** approximately 30,000 people disappeared in the military junta’s purging of dissidents. The loss of mothers, daughters, fathers and sons still marks the lives of Argentinians today. Some of the kidnapped, like Dr. Medina Bustos’ parents, returned. But others didn’t.

Dr. Medina Bustos picks up an oil painting from one corner of the classroom. It was painted by her twin sister, Anahi Medina Bustos, who is also in the room.

“It’s a portrait of our aunt in prison. When she lay in her cell, she tied her child to her body so the rats couldn’t bite it. Our aunt came back – but not as the person she was before she disappeared,” she says, looking at her sister.

In the end their parents also came home, but they were also changed after years in prison. This is a family history that is in no way unique in Argentina. But few people have devoted their studies, their professional lives and their free time to revisiting the past, the way Dr. Medina Bustos has.

**SHORTLY AFTER THE DICTATORSHIP ENDED**, the work on finding out what happened to the disappeared began. Dr. Medina Bustos played an active role in the process of justice at the public trials of crimes against humanity. She has been a psychologist for the survivors and their families as they testified against their offenders. It was a tough job, because she knows what they went through.

“The victims had to relive everything, and do this in front of the offenders. They were questioned, and sometimes maligned. But those who testified say that the testimony was extremely important. Keeping silent and trying to sweep it under the rug doesn’t work – not at an individual level, and not at a collective one,” she says.

The public trials is an attempt for Argentina to admit the injustices committed, to accept them to a certain degree, and to deal with the past. But can what happened really be forgiven?

For Dr. Medina Bustos, the answer is no – it cannot. But it is possible to accept and to move on, if justice is done; it is here that the public trials plays a necessary role. It is an important link in the struggle for redress.

But condemning the acts of cruelty isn’t enough, Dr. Medina Bustos argues; action is required and those responsible must be tried.

“Prison is the only way. Victims have met their torturers on the street, and things cannot continue this way. But now the guilty are being tried. High and low. Military or not. This is important for Argentina to move forward as a country.”

Even Dr. Medina Bustos’ family have testified about the injustices they were subjected to during those difficult years. Today she is glad that Prof. Collste pressed her to tread on taboo ground.

“Both my master’s and my doctoral thesis forced me to confront myself with my own history and that was good. I think the public trials work the same way. The truth, and being allowed to speak it, becomes a kind of cleansing.”

During the military dictatorship in Argentina, tens of thousands of people were disappeared and murdered.
Marcus Nygren is studying media technology, an engineering programme at Linköping University. This spring he is in Zambia and Uganda as part of his degree project to develop an app that will improve training for future business owners.

“This is a way for me to realise both my own and other people’s dreams,” he says.

Alongside his studies, Mr Nygren runs his own web development business, so he knows a bit about entrepreneurship. The client for the degree project is the non-profit Swedish organisation Young Drive, which trains young future business owners for free in entrepreneurship, on location in several African countries – Botswana, Zambia and Uganda. In Uganda alone, 12,000 young people have received training so far.

On site first in Zambia, and then in Uganda, Mr Nygren has studied how the training is arranged and what conditions for the participants – some as young as 15 – are like.

“Many come from their villages with business dreams of various kinds. They deal with everything from manufacturing brooms and selling mobile phone subscriptions to developing advanced products and services.”

FOR TEN WEEKS THE PARTICIPANTS receive training in entrepreneurship, one half-day a week. The training is provided by native coaches specially trained by Young Drive. And this is where Mr Nygren’s app comes in. It will function as a supplement to the physical, five-day coach training on site. With the help of four parameters that the app trains the coaches in, they obtain better knowledge and self-confidence, so they in turn can teach the skills of entrepreneurship.

The first three parameters deal with helping the coaches provide correct information, structure instruction for the young people, and calculate how much time each training element takes – and keep to it.

The fourth parameter – which Mr Nygren realised needed to be included after interviews with coaches and participants – was a ‘fun atmosphere’.

LiU student Marcus Nygren is in Uganda to develop an educational app in business enterprise. A perfect combination of doing some good, learning something new, travelling and meeting people.

STORY EVA BERGSTEDT PHOTO ALLAN KWITONDA, MARCUS NYGREN & PATRICK OBBO
How is that done in an app?
Mr Nygren has thought about that a lot.

“Young Drive is no school; the training takes place voluntarily in the participants’ free time. It’s important to make the training sessions fun, and to create a relaxed atmosphere with interactivity between coaches and participants. So one way, in fact, is to help the coaches feel self-confidence when facing their youth sessions, and the app trains them in various scenarios. Of course in the future the app can be expanded to also practice team-building exercises.”

THE PURPOSE OF THE APP is to be a learning tool both for the coaches and the project managers. Via a quiz, for example, the coaches can see how much they have learned after every training day. “For them, it will be a learning tool, and for the project managers it will be a way to direct their efforts; they can see who they are to support and how,” Mr Nygren says.

He is certain that the app would never have been good enough if he had sat at home in Sweden and developed it. “The project stands or falls on technology being developed in interaction with the people it affects. Now I’m on site, I can observe and learn, let the participants test solutions, and based on that develop my work further. It’s very instructive for me.”

For Mr Nygren, his degree project means he gets to work with the things he’s most interested in – technology, entrepreneurship, cultures, and people – at the same time as he contributes something that can help other young people realise their dreams.

“It’s great to be a part of a larger context. To say nothing of being in Kampala; this is an entirely new, exciting city for me.”

One lesson he learned during his months in Zambia and Uganda is the importance of physical meetings between coaches and participants. Still, he hopes that the alternative of just an app on a mobile phone will make it possible for people to learn entrepreneurship.

“Think of the possibilities this could bring. It would then be possible to start training everywhere – in a distant village, in a refugee camp, or in a school. It’s an awesome vision.”

Young Drive http://youngdrive.org/
Rachel’s teaching internship in a Swedish school

Each semester, ten or so international student teachers come to Linköping just to do their internship here. Rachel Allgeier is the third student being supervised by Dennis Östryd at a Linköping senior secondary school. And he’s already planning for the next one.

STORY ELISABET WAHRBY PHOTO STAFFAN GUSTAFSSON

Some 20 students stream into the classroom at Katedralskolan, a senior secondary school in Linköping. They’re in their preparatory year, before starting the two-year International Baccalaureate (IB) Diploma Programme.

Today’s lesson deals with rhetoric, and in charge of the class is Rachel Allgeier, a student teacher from Kentucky in the United States. She is studying to become a high school teacher in English language and literature, and has chosen to do her final internship in Sweden.

“What was the last advertisement you saw? Was it convincing? Why? Why not?” Ms Allgeier lets the students reflect on the questions in groups before they discuss them together. At the back of the classroom is her supervisor, Dennis Östryd, a teacher of English, English literature, and theory of knowledge in the IB programme. He is also a LiU alumnus, having earned his teaching degree at LiU in 1996.

“Rachel did a lesson series in rhetoric. She planned it, arranged it, and is doing the teaching herself. This is how her university, the University of Kentucky in Lexington, wants it. I set her goals together, and afterwards we evaluate it; I don’t get involved in the actual teaching. Rachel is very motivated, and she’s doing a great job.”

BEING THE SUPERVISOR FOR an international student places somewhat different demands on the supervisor than a Swedish student teacher does.

“The Swedish students have shorter internships, and they come out earlier during their education. Therefore they don’t have the same subject knowledge or experience,” Mr Östryd says. The international students are here for 70 days; after the second week, Rachel had already had her own lessons in four instruction groups.

But this doesn’t mean that Mr Östryd can relax. Ms Allgeier’s university requires that the supervisor assess her performances during the lesson based on 50 different criteria.

“In addition, her professor from Kentucky came here for a full week to look at our setup. And she was satisfied with it.”

THE IB PROGRAMME IS a somewhat special high school programme. The instruction is international: it’s found in 120 countries, all instruction takes place in English and is the same the world over.

“This makes the programme particularly suitable for receiving international student teachers, since the level of English is high,” Mr Östryd says.

In this rhetoric lesson alone, there are students from some ten different countries; some of them don’t know Swedish at all. The students must speak English, and they also have the opportunity to discuss the cultural differences between Kentucky and Linköping, which they like.

The internship exchange began five years ago and is offered to students from any of the teaching programmes at LiU’s partner universities in Kentucky, Singapore, and the United Kingdom. There is also a collaboration between Flensburg, Germany and Linköping Municipality. Ten or so international student teachers come from there each term to do their internship. And vice versa – Linköping sends teaching students in the other direction.

At Katedralskolan, Dennis Östryd is already planning for the next semester.

“I’m learning a lot from having an international intern. I see the students differently – how they are with Rachel and with each other; I’m getting to know them. It also makes me question myself and why I do certain things. For me this is like continuing education.”
INTERNSHIP
• TEACHING

Dennis Östryd

Rachel Allgeier
Research

Mobile apps and games are energy thieves

During his time as a doctoral student, Ekhiotz Jon Vergara developed EnergyBox, a tool that measures and calculates how much energy is consumed by gadgets when connecting to the internet to use apps and games. He found major opportunities for energy efficiency.

“He has developed EnergyBox, a tool that easily quantifies the energy consumption of mobile devices due to data communication. The tool simulates the consumption of wireless interfaces considering the aspects that impact the communication from the network operator and mobile device side. The amount of data sent is not proportional to the energy consumption. Messenger sends a lot of data and uses a lot of energy, Google Hangout sends significantly less data and is more energy-efficient, while Kik, for example, sends very little data but uses a lot of energy,” he tells us.

Brain imaging reveals autism in boys

Researchers at Linköping University and the University of Gothenburg have developed a new brain imaging measure to identify autism in boys. The method opens up new possibilities to track progress and improve treatment.

Together with colleagues at Yale University and the George Washington University in the United States, LiU neurologist Malin Björnsdotter has developed a new method to map and track the function of brain circuits affected by autism spectrum disorder (ASD) in boys using brain imaging. The method provides a quantitative measure of activity in a brain circuit associated with social interaction.

“We can now measure how well this circuit functions in individual patients,” says lead author of the study Dr. Björnsdotter.

This new research has the potential to improve treatment for ASD by measuring changes in the social perception brain circuit in response to different interventions. The research is particularly relevant for ASD patients who are difficult to diagnose and treat by indicating whether behavioural, drug or a combination of the treatments will be most effective.

Marie Curie Fellowship to LiU researcher

We all know how frustrating it is, if the medicine we take doesn’t cure our illness. We can try a different medicine, but what if the illness is simply ignoring the medicine? This is what happens with drug resistance, a major, growing challenge that significantly reduces therapeutic efficacy, induces relapse of the disease and facilitates cross-resistance to a wide spectrum of drugs, resulting in multidrug resistance.

Dr. Hirak Patra at Linkoping University initiated a research approach to design a new class of therapeutic protocol with the help of nanotechnology, an approach that is much closer in concept to those employed in biology. His recent proposal ‘NinZA’ has been awarded with the prestigious EU Horizon 2020 Marie Curie Fellowship at Cambridge University.

If successful, this project will revolutionise the way scientists think about the design of nanodrugs, opening up possibilities to remotely control and regulate medicine, so that it releases different modules in a cascade manner and with a longer-term potential to influence and impact on new clinical drug designs.
Does your cat speak a dialect?

Soon you can find out what your cat’s meow, purr, growling or hiss means. A new research project will investigate how cats talk with us humans – and how we speak to them.

Humans and cats have lived together for 10,000 years; during that time, a kind of communication has developed between us. But still little is known about what this communication looks like.

This will be remedied through the new “Meowsic” (Melody in human–cat communication) research project. By studying communication between approximately 30 cats and their owners, researchers hope to get answers as to what the melody (or prosody) in cats’ – and their owners’ – speech looks like.

Strictly speaking, it was wild cats that were the focus of Dr Eklund’s research as a linguist. But when he met Susanne Schötz, reader in phonetics from Lund University, at a conference he realised that between the two of them they could contribute to research into the cries of cats. Dr Eklund has studied things such as the purr of wild felines, the roar of lions, and the agonistic cries of leopards. Dr Schötz, on the other hand, was entirely focused on the communication of the housecat.

“We simply found each other, and felt we could do something good with this,” Dr Eklund says.

The data gathered over the course of the project will be collected in a sound database open to those who are interested.

Six new honorary doctors

Three international researchers, a business leader, a cultural personality, and an initiator of new research received honorary degrees from Linköping University at a ceremony in May.

The Faculty of Arts and Sciences had chosen Stefan Hammenbeck, art curator at the Östergötland Museum, and German philosopher Sybille Krämer as honorary doctors.

Drew Berry, cell biologist and medical animator at the Walter and Eliza Hall Institute of Medical Research in Melbourne, became honorary Doctor of Technology, together with Jill Trehella, a leading biophysicist who uses methods from physics to study and understand the function of biomolecular structures. Johan Söderström, CEO of ABB Sweden and chair of the Teknikföretagen employers’ association, also became a Doctor of Technology.

Ingrid Asp was selected as an honorary Doctor of Medicine. She is the initiator of two research-focused foundations at Linköping University.

Prestigious Prize to Xavier Crispin

Xavier Crispin, Professor of Organic Electronics, is receiving this year’s Göran Gustafsson Prize in Chemistry. The prize is one of the most coveted and prestigious among younger researchers in Sweden.

Each of the five prizewinners will receive SEK 4.5 million in research grants allocated over three years, as well as a personal prize of SEK 250,000.

According to the statement from the Royal Swedish Academy of Sciences, Professor Crispin has conducted outstanding research in “development and studies of organic thermoelectric materials with potential application for conversion of thermal energy into electric.”

Google Prize to LiU researcher

Marco Kuhlman, researcher at the Department of Computer and Information Science, was one of two Swedish researchers from among 950 applicants worldwide who won the Google Research Award. He works in the field of natural language processing.

The grants cover tuition for a graduate student and provide both faculty and students the opportunity to work directly with Google researchers and engineers.
In Hawaii you see poultry running wild. They are hybrids - and an exciting challenge for genetic researchers. Recently two LiU zoologists were there.

STORY ÅKE HJELM PHOTO DOMINIC WRIGHT
The Garden Isle. That is the nickname of Kauai, the fourth largest and geologically oldest volcanic island in Hawaii. Jurassic Park was filmed here among the lush forests and high mountains. But LiU zoologists Rie Henriksen and Dominic Wright travelled here to study peaceful birds, rather than Velociraptors.

The island is teeming with free-ranging poultry. They are hybrids, originating partly from meat- and egg-producing domesticated poultry, and partly from the more aboriginal fowl carried ashore on Hawaii at least 800 years ago. Now they are feral – running wild, the opposite of domesticated.

“When we came here, we initially thought that the gaudy little poultry we saw everywhere on the island were escaped domesticated poultry. There was varying information about their background,” says Dominic Wright, associate professor in zoology at Linköping University.

He came to Kauai for the first time in 2013 together with American biologist Eben J. Gering. The unique poultry population was an exciting challenge for researchers with an interest in evolution and domestication. In 2015 he returned, this time accompanied by physiologist Rie Henriksen.

The Story Very Likely Begins with the Polynesian sailors who colonised the islands in the 1200s. In their cargo, they had poultry that — according to archaeological and genetic discoveries — were most similar to the aboriginal jungle fowl (Gallus gallus) — small, fast, and timid.

When Captain Cook landed in the island kingdom in 1778, he was met by flocks of poultry roaming free between village and forest. But when English and American settlers introduced the mongoose and other predators, that was the end of them — with the exception of Kauai and neighbouring Ni‘ihau. They continued their free lives at the same time as the island inhabitants started keeping modern domesticated chickens for food production and cockfighting. But during a couple of violent hurricanes in 1982 and 1992, thousands of them moved out into the forests and mountains, mixing with their wild kin and giving rise to a new population that rapidly increased in numbers.

It is their offspring we see today everywhere on the island: feral poultry with white spots on otherwise dark plumage, yellow legs instead of grey, and cocks who cry “cock-a-doodle-doo”.

“The jungle cock’s call has an abrupt final syllable; it sounds like they’re being strangled,” Mr Wright says.

Domestication — taming wild animals into household animals — is a crucial process in the history of the human race. People started keeping poultry in China and Southeast Asia nearly 10,000 years ago. Over time, their genomes have changed as an adaptation to human lives and needs. It has happened now and then that household animals broke out of their imprisonment and created new living conditions in freedom. This is what we call feralisation. On the surface, it can look like domestication going backwards. But upon closer inspection, it turns out that the Kauai poultry has evolved into something other than their wild ancestors: with some characteristics from those same ancestors and others from the tamed household breeds. The same phenomenon can be seen in dogs, pigs and sheep who have followed the same path.

Mr Wright is investigating what it looks like inside cell nuclei and mitochondria — how feralisation is reflected in the animals’ genomes. Now the results are starting to tumble in.

“We’ve found that mitochondrial DNA inherited from the mother contains classical markers for domesticated poultry: white or brown plumage and the ability to lay an egg a day year round. The core genome was specific for wild jungle fowl: the abrupt call and plumage with elements of red and green. Here, we had a pleasant little mix of both.”

The genes that changed the fastest turned out to be separate from those that seem to be involved in modern domestication. In certain cases, the genes of the Polynesian poultry help to adapt to the surroundings on Kauai. Modern domesticated poultry, for example, have been bred not to brood on their eggs, since they are harder to gather. But in the conditions of the wild, this characteristic is risky for unhatched chicks. Mr Wright and Mr Gering found that feral poultry have gene variations in jungle fowl that are linked to brooding.

For researchers, the enigmatic mixed breed on Kauai is an exciting challenge. Their results so far are sometimes contradictory. The mix of genes from the jungle fowl of the 1200s and from modern European domesticated birds — and how they are expressed in visible characteristics — opened up unimagined possibilities for evolutionary studies. It will soon be time for the next trip.
Since the start of 2016, Swedish fathers have been encouraged to spend 90 of the 480 days that parents are given to stay home with their newborn child.

The purpose, according to the government, is to attain a more equitable withdrawal of parental allowance, which strengthens children’s right to both their parents. But the proposal is controversial – both in Sweden and abroad.

LiU researcher Roger Klinth has written a thesis on the subject, as well as a number of books and articles about fathers and parental leave. So when the world began wondering about Sweden’s latest idea as regards gender relations and parenthood, he had to conduct an analysis.

Why did this get such wide circulation? “From the beginning, it was the BBC who contacted me for a report they were going to do. I guess it spread around the world from that. But the fact is that this is a controversial question, even for many Swedes. So it’s not surprising that people react in countries where the gender-based allocation of responsibility between men and women is more traditional than in Sweden. The norm in many countries is that the mother takes care of the children, so on this issue Sweden is regarded as different and exotic.”

How has this change been received in other countries? “They are both hailing it and horrified at it. In American debate, Sweden is often used as a weapon in internal political debate. Some bring up Sweden as a warning example – ‘look how bad it can get!’ while others use Sweden as an example to strive for.”

“It’s also a question of the status Sweden has long had abroad, as some form of experimental workshop in terms of gender relations and parenthood. This extra ‘father’s month’ strengthens the image of ‘a different country.’”
LiU alumni broke the PANAMA PAPERS

STORY LENNART FALKLÖF PHOTO MATTIAS LUNDBLAD

The Swedish database company Neo Technology, with origins at Linköping University, played a key role in the revelations of advanced tax avoidance schemes based on millions of leaked documents in Panama.

When the ICIJ journalist network had to manage what ended up being called the Panama Papers, they turned to Neo Technology for help with surveying 11.5 million leaked documents. With their technical solution the information could be organised in a way that made it possible to follow the money.

“It’s a question of understanding things that aren’t obvious. We do this by finding connections. In this case, it may be that a head of state is not directly linked to a shady company, but they could be through people associated to them, if you take two, five, or ten steps back,” Neo Technology CEO Emil Eifrem explained.

Neo Technology did not itself have access to the sensitive information, it constructed a database that ICIJ reporters could make use of to find connections and report further.

Neo Technology has its origins at Linköping University. Both founders, Emil Eifrem and Johan Svensson, are LiU alumni and studied the master’s programmes in engineering for computer technology and computer and electric engineering, respectively.

“In the early 2000s we were the only ones who saw there was another way to make databases than the traditional one. When we talked to people they thought we were mad,” said Mr Eifrem in a story in LiU Magazine last year.

For two years they were located at the LEAD business incubator in Linköping, where they got help with things like how to raise venture capital. In 2011 they opened an office in California’s Silicon Valley; now half their employees are in the United States and half are in Europe.
New role for Eriksson

Håkan Eriksson, LiU alumni, is new Chief Strategy Officer at Ericsson in South East Asia and Oceania.

He has spent almost 30 years at Ericsson, one of the world leaders in communication technology. For the last four years he has been Head of Ericsson in Australia and New Zealand. Earlier he was responsible for the company’s research organisation.

In the beginning of the 1980s he was a student in Linköping, where he gained an MSc in applied physics and electrical engineering in 1985 (including a one-year scholarship at Stanford University). He was a member of the Linköping University Board 2005-09 and was awarded an honorary doctorate in 2005.

Diplomat in Chile

LiU alumnus Rikard Sjöstrand has been a diplomat at the Swedish embassy in Santiago, Chile since September 2015. Previously he was at the embassy in Bogotá, Colombia for two years (secondment from Sida).

Mr Sjöstrand has an MSc in Industrial Engineering and Management (Spanish), having studied at LiU from 2008 to 2013.

Works for a better environment

Anna-Katharina Deinhard is climate adaptation and finance expert at United Nations Environment Programme in Bangkok, Thailand since April 2015.

She is from Germany, but is also an alumna from Linköping University where she studied the master programme Science for sustainable development and graduated in 2012. After graduation she has been working with water management, climate adaptation and other environmental issues in both Africa and Asia.

Alumni world

JOHAN BJÖRLUND is head of global portfolio management at ABB in Zürich, Switzerland. He received an MSc in computer science and engineering in 1996.

ANDERS EK BACKMAN is chief operating officer at Asia Biogas Group in Bangkok, Thailand. He gained an MSc in engineering biology in 2005.

HENRIK ELLNER is software engineer at Google in Mountain View, California, USA. He gained an MSc in applied physics and electrical engineering in 2006.

FRIDA FALK is a freelance consultant in Panama. She gained an MSc in industrial engineering and management in 2005.

ASA GÖKSTORP is a teacher in mathematics at the International School in Basel, Switzerland. She studied a programme for education and graduated in 2005.

PIIHA-LOTTA JEREVALL JANNOK is postdoctoral research fellow at Harvard Medical School in Boston. She has a PhD in medicine (oncology) from 2011.

JOHAN KARLSSON is vice president at Robert Bosch Automotive Steering in Pulau Pinang, Malaysia. He received an MSc in industrial engineering in 2000.

GUNNAR LUNDGREN is president at Boise Electric Motor Company, USA. He received an MSc in computer science and engineering in 1987.

SARA OLSSON is software development engineer at Microsoft Ireland. She received an MSc in media technology and engineering in 2005.

ALEXANDER MANI is director at Cleanbios Innovations in Chennai, India. He studied a master in management of innovation and product development and graduated in 2011.

ANDERS SCHENSTROM is professor of physics at Milwaukee School of Engineering in USA. He gained an MSc in applied physics and electrical engineering in 1980.

ANDERS SILLÉN is a consultant intensivist at Mafraq Hospital in Abu Dhabi, United Arab Emirates. He is MD in medicine and graduated in 2002.

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Alumni get-togethers around the world

STORY MARIA KARLBerg

Hearing about experiences from outer space or having some sweaty Swedish “jympa” exercise. The themes of the latest international alumni get-togethers have varied greatly but the enthusiasm of the participants has not wavered.

Since last spring, Linköping University has arranged or participated in several international alumni get-togethers. Sometimes as the sole organiser, sometimes in collaboration with partners such as the Swedish Institute, the Swedish Embassy or other universities. For the alumni, it has been a chance to meet other former LIU students in the same country, and to hear the latest news from their alma mater.

For the first time, six Swedish top universities arranged a joint alumni get-together within the Swedish Academic Collaboration Forum project, which aims to facilitate international research collaborations. The event took place in Singapore in November 2015 and featured astronaut Christer Fuglesang, who gave a speech on his adventures in space. Participating universities were Chalmers University of Technology, KTH Royal Institute of Technology, Linköping University, Lund University, Stockholm University and Uppsala University.

Another popular event for alumni from Swedish universities was “Move with Sweden” in Beijing in October 2015. A workout followed by a healthy buffet attracted many alumni to this get-together at the Swedish residence. The event was organised by the Embassy of Sweden and the Sweden Alumni Network in China, with support from the Swedish Institute.

Alumni get-togethers have also been arranged in Brussels, Istanbul, London, Sao Paulo, Seoul, Shanghai and Taipei.
Liu alumni around the globe

Meet international alumni from Linköping University.

Liliane Niyubahwe

PLACE OF RESIDENCE: Stockholm
FAMILY: Married and one son
NATIONALITY: Burundian
WORK: Grants Manager at Save the Children Sweden (Rädda Barnen).
CURRENT WORKING ACTIVITIES: Proposal management, grant monitoring and follow up with country offices, donor compliance, report management and quality assurance.
BEST THING ABOUT YOUR JOB: Reaching the most deprived and marginalised children to ensure that their rights are respected.
HOBBIES: Hiking, reading, and swimming.
EDUCATION AT LIU: Master in Child Studies.
MOST MEMORABLE LIU EXPERIENCE: Fika and dinner with my classmates from different countries and professors and PhD students from Tema at LiU.

Ramin Shafagatov

PLACE OF RESIDENCE: Ghent, Belgium
FAMILY: Surrounded by women club (my sweetheart + 2 lovely daughters)
NATIONALITY: Belgian, Azerbaijani
WORK: Consultant at Digipolis
CURRENT WORKING ACTIVITIES: Business process analysis at the Project Management Office, researching and analysing IT projects, translating business needs into functional requirements as well as generating new ideas for business process optimisation.
BEST THING ABOUT YOUR JOB: I enjoy every single moment of my job. As a semi-government agency we provide IT solutions to our local partners in the City of Ghent. It’s a challenging, stimulating and at the same time rewarding job. Connecting business and IT is possibly the best thing about my job.
HOBBIES: Biking, playing chess, table tennis, hiking in the mountains, travelling and exploring new places.
EDUCATION AT LIU: MSc in International and European Relations, 2003–2005
MOST MEMORABLE LIU EXPERIENCE: I have great memories from my student life at LiU. When I look back I sometimes miss those beautiful moments. I still remember that enjoyable road to the university from Ryd, my challenging language courses at Folkuniversitetet, Snoddas restaurant where we occasionally used to have a lunch, Gamla Linköping, Midsommar, local traditions and culture, and certainly my cosy residence at Björnkärrsgatan 13A. Also an alumni event of 2015 in Brussels should be mentioned where we met new and old friends from our alma mater. There are definitely many fabulous experiences to mention, but perhaps being able to study with my partner together at LiU was the best experience ever. And of course we have imported the art of Swedish fika (coffee break), which we still have on a regular basis. Best regards from us to the Linköping community!
Askar Obulkasim

PLACE OF RESIDENCE: Rotterdam, The Netherlands

FAMILY: Wife and 2-year-old son

NATIONALITY: Dutch

WORK: Dept. of Pediatric Oncology, Erasmus Medical Center

CURRENT WORKING ACTIVITIES: My research interests concern bio-statistics and bioinformatics. Most of my work to date has been concentrated on developing statistical methodology for analysing high-dimensional genomics data. Particularly, developing methodology to integrate heterogeneous genomics data to meaningful information that can be used as guidance in treating pediatric acute myeloid leukaemia.

BEST THING ABOUT YOUR JOB: The research I have been conducting is quite translational, i.e. my findings are meant to test in clinics to treat cancer patients. In a nutshell, my research can save a cancer patient’s life, or prolong it. Hence, I am very proud of my work.

HOBBIES: Travelling and playing tennis

EDUCATION AT LIU: Master’s in Statistics, Data Analysis and Knowledge Discovery (2007-2009)

MOST MEMORABLE LIU EXPERIENCE: Without any doubt I can say that choosing Linköping University for my master’s study was one of the wise choices I have made in my life. Throughout my PhD till current research at the senior level, I have continually used valuable knowledge I learned during the programme. The teachers’ unique ways of teaching and the supportive study environment created for us fostered my passion for biostatistics. Without my education at LiU, I would never have been able to get this far.

Melanie Kage

PLACE OF RESIDENCE: Vancouver, Canada

FAMILY: I live with my partner, our cat and four motorcycles.

NATIONALITY: German

WORK: I am a Ph.D. candidate in the Germanic Studies Program, as well as Teaching and Research Assistant at the Department of Central, Eastern and Northern European Studies (CENES) at the University of British Columbia (UBC).

CURRENT WORKING ACTIVITIES: As a research assistant I have just finished a book project with two colleagues about the German writer Charlotte Schiller. My work as a teaching assistant includes teaching German language classes. I also just finished assisting my supervisor in a course of the Scandinavian program about Vikings and Norse Mythology – which is a topic I studied at LiU myself. My dissertation about horse-riding in German literature will soon be finished.

BEST THING ABOUT YOUR JOB: I love teaching things I am passionate about, such as language, literature and culture. Interacting with the students is a lot of fun. What I like about my research work is that I can indulge in details, think through a topic in its entirety and then present it to the academic community.

HOBBIES: Motorcycling and storytelling. I also started horse-riding again.

EDUCATION AT LIU: I did my M.A. in the Language and Culture in Europe program at LiU and graduated in 2010 with a thesis on the human-horse-relationship in theatre and plays.

MOST MEMORABLE LIU EXPERIENCE: I have three wonderful memories from my time at LiU. First of all, there was an excursion as part of Nordic Culture course during which we visited many rune stones and other Viking artefacts located in Östergötland. Secondly, I learned Swedish during my stay in Linköping. And thirdly: I made great friends while living in Ryd, some of them for a life time;

I actually founded a band with a roommate and a study buddy, and we played several great concerts in corridors, in the Kårallen theatre and at the Diversity Day event.
LiU Alumni around the globe

Cherif Abdul Majid Khyarhoum

PLACE OF RESIDENCE: Mauritania
FAMILY: Married
NATIONALITY: Mauritanian
WORK: University of Nouakchott
CURRENT WORKING ACTIVITIES: Instructor
BEST THING ABOUT YOUR JOB: Working with adult learners
HOBBIES: Travelling and exploring new societies and cultures
EDUCATION AT LIU: Masters in adult learning and global change
MOST MEMORABLE LIU EXPERIENCE: Having coffee and cakes with friends (fika)