The world on campus!

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EU project to prevent hacker assaults • sid 23
Internationalization is the road to the future

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As I write these lines, LiU has just held a symposium on global health, attended by Gunilla Carlsson, Sweden’s Minister for International Development Cooperation. We were given an opportunity to learn more about the complex relationship between climate, international politics and global availability of water, and the ways these factors decisively affect global health and progress. We learned how researchers in Kenya combat diarrhea diseases that are the main cause of infant mortality among children under the age of five. And we get to know more about LiUs long-standing collaboration with Moi University in Kenya to develop educational resources for physicians, nurses and health officers. This latter enterprise is a fine example of academic cooperation stretching over many years to benefit both partners. It is a model example of a development aid project.

The symposium presented several instances of frontline research with strong international engagement in issues concerning the living conditions of millions—research with faith in knowledge as an instrument for change. This is research that wants to change the status quo. This is one aspect of internationalization.

research has always had a global perspective—it is mainly on the international arena that findings are published and research quality is judged. In a parallel step, today’s education providers have become players in an international market-place where students seek entrance to those universities where educational quality is best. Our academic mission is to educate our students so they will be competitive on a globalized labor market. There is no alternative to a continual and deepening internationalization of education.

Not long ago, Linköping University was named by the National Agency of Higher Education as one of four Swedish universities that are leaders in academic internationalization. This issue of LiU Magazine is one channel to strengthen our relations with the global community. It is my hope that it will help our colleagues and alumni stay in close touch with the academic peers and partner universities.

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Welcome to our first international issue of LiU Magazine. Here you can read about exciting research collaborations, students in exchange programs, and LiU alumni who have interesting jobs around the globe.

This issue is produced especially for LiUs global network of friends: our international alumni, students, faculty and students.

The past few years have been characterized by global climate discussions. LiU researchers contribute to the solutions. For example, they work in Sri Lanka, identifying and measuring data for the UN-led climate negotiations to replace the Kyoto Protocol.

And in Vancouver, Canada. “Climate change must be viewed in its context,” says Professor Gunilla Obeg, LiU alumna and director for one of the world’s leading research institutes for sustainable development. “A one-sided focus will lessen our chance to achieve a sustainable society.”

On the following pages you will also meet materials scientist Lars Hultman who, with his colleagues, has developed a new supermaterial with applications in many different areas.

One of our reporters dropped in on International Day on campus and met students from all over the world. It was a colorful celebration of culture, where Turkish grape leaf rolls, spicy Cibodemian stew, Latvian cookies and lots more were offered to passers-by. Find out why our foreign students chose Linköping University! We also talked to LiU students on exchange programs in the United States and in Taiwan. We interviewed alumni who work at different spots on the world map. Read about Victoria Lindberg, whose nursing career has taken her to Australia, Switzerland, Norway and South Africa.

This issue also tells about a long-term and highly successful academic collaboration between LiU and the Moi School of Medicine in Kenya. Read too about a unique master’s program conducted in collaboration with the Kolmården Zoo, and an EU project where European researchers work together to inhibit disruptive hacker attacks on computer systems. Our columnist in Paris talks about cultural habits.

Something for everybody. A Swedish smorgasbord for you to partake of and enjoy.

Welcome to the feast!

Mille Millnert, Rector • mille.millnert@liu.se
Global environment is high on the agenda

International climate negotiations, eutrophication of the Baltic Sea, energy efficiency, and environmental technology. These are urgent issues for LiU researchers.

text ANNA AGEBJÖRN

Depletion in tropical countries accounts for a considerable portion of global emissions, perhaps as much as twenty percent. “Tropical forests store much more carbon than forests on our latitudes. So the effect of tropical deforestation is much greater,” explains postdoctoral fellow Madelene Ostwald at the Center for Climate Science and Policy Research, CSPR, at LiU. She is one of the LiU scientists who contribute to the ongoing UN Framework Convention on Climate Change (UNFCCC) that will develop the treaty to follow the Kyoto Protocol.

“There is general consensus that tropical deforestation must be mitigated. It is too much more difficult to work out how to justify credit and compensate developing countries.” Madelene Ostwald is currently in charge of a pilot project in Sri Lanka to find a fair yardstick for baseline projection. A baseline for forest conservation has two main components: the projected land-use change and the corresponding carbon stocks. Finding a baseline that all participating nations will accept is a thorny problem.

“When Sri Lanka has lost much of its primary forest cover during the past two decades. Sinharaja is the last remaining rain forest.”

Delegates at that meeting will negotiate a new climate stabilization agreement for post-2012 when the first commitment period of the Kyoto Protocol expires.

Björn-Ola Linnér is the director at CSPR. His research has a different perspective on climate negotiations. At the December 2007 Bali meeting, he found that as many as twenty-five percent of the official delegates also participated in side events where environmental activists, native peoples, non-delegate scientists, and business and civil society leaders highlight special issues outside the official agenda.

“We wanted to find out whether these outsider organizations had any influence on the final decisions. The prevailing opinion seems to be that delegate negotiators are too busy to listen to external opinion.”

Björn-Ola Linnér’s preliminary conclusion is that side events have impact, and are good communications channels, not least for countries with limited negotiating resources.

RESEARCH ON GLOBAL environment often focuses on climate florists, but regional environmental issues also call for attention. Several scientists at Water and Environmental Studies at LiUs Tema Institute are studying the nutrition dynamics and overenrichment of the Baltic Sea.

Professor Lars Rahm is just winding up his research program, SIBER, Silicate and Baltic Sea Ecosystem Response. “Silicate is an essential element of diatoms,” he says. “They, in turn, are major indicators in our ecosystem. Silicate concentration in the Baltic Sea has decreased significantly since the fifties, while nitrogen and phosphorous levels have increased.

Low silicate concentration affects the presence of plankton, thus the entire food chain. At the top end, we have the fish population.

Lars Rahm and his co-workers found that a combination of overenrichment and dam systems helps make silicate scarce. When rivers are regulated, the silicate cannot flow into the sea. Instead it is trapped in the water reservoirs behind the dams. Decomposition of submerged vegetation impacts the release of silicate back to the soil.

ANOTHER IMPORTANT RESEARCH AREA at LiU is environmental technology.

“Environment problems can be redefined to business opportunities,” says professor Mats Eklund at the Division of Environmental Technology and Management. “One industry’s waste can be raw material in another. Household garbage can fuel distant heating plants. Abattoir waste can become biogas.

“Rather than study one industry at a time, we look at them as components in a system. System integration can bring environment benefits. How do materials and energy flow through the production process of the various actors? Who processes the waste byproducts? What happens to the energy surplus?”

This approach can have a national impact on both the economy and the environment. On the global scene it is still rather uncommon.

Östergötland County combines waste management and ecological goals by incinerating waste in the distant heating system. The county was also a forerunner in production of biogas from waste. Bo Svensson and Jörgen Ejlertsson, two scientists at the Tema Institute’s Water and Environmental Studies were among the foresighted who brought about these developments.

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“Change is about more than climate”

LIU alumna and professor Gunilla Öberg heads up a Canadian institute for sustainable development. “Climate change must be viewed in its context. A focus which is too one-sided will lessen our chance to achieve a sustainable society,” she says.

Professor Gunilla Öberg takes challenge in her stride. Two years ago, she was the chief at LIU’s Centre for Climate Science and Policy Research, CSPR. Today she makes her home in Vancouver and is director of one of the world’s leading research institutes for sustainable development: the Institute for Resources, the Environment and Sustainable Development, IRES.

“Climate change must be viewed in its context. A focus which is too one-sided will lessen our chance to achieve a sustainable society,” Gunilla Öberg explains. “We have several threats to the environment that might have greater short-term impact. These include changing land use, large-scale migrations, and watershed management and water quality.”

“That’s why the Institute’s focus is both multidisciplinary and global. We explore an array of interacting factors. Though imperative, global change is about more than just climate.”

IRES BOASTS some of the world’s top environmental scientists, names like John Robinson and Hadi Dowlatabadi. Gunilla Öberg describes the research setting as creative, open-ended, generous and exploratory. “Stimulating intellectual discussions occur on a daily basis,” she says.

IRES, seated at the University of British Columbia, has a clear mission: to foster sustainable futures through integrated research and learning about the linkages among human and natural systems.

“A team of eleven senior researchers supervises 80 postgrads and 40 master’s candidates organized in highly motivated teams. We interact with sister faculties.”

“Though our supervisors are top tier scientists with their own scientific interests to nurture, they are unsellably dedicated to their supervisory role. Some might show a bit of temper now and then, and all are strong personalities, but we unite in a common quest: How can we achieve a truly sustainable society?”

THE GENERAL PUBLIC may ask, “And just what is a sustainable society anyway?”

IRES researchers ask that question too. Computerized simulations define concepts of a sustainable society, and evaluation exercises test their validity.

“This is very much the same kind of questions as I’ve used to work with at LIU. A systems approach demands systems solutions and here Sweden often has been at the forefront.”

Professor Öberg concludes. “IRES is not simply educating tomorrow’s researchers. We are building an applications research platform to pay back practical solutions to the society that funds it. Academia and the community-at-large are in this quest together.”

“In times like the present, it is important that the affluent countries set a good example, he believes, and that we emphasize the good examples.

“I’m an optimist,” he concludes. “And so are most Americans. They like to compare the climate problem to the moon landings. ‘If we could fix that, we can fix this’, they say.”

Lars Roth is Second Secretary of the Swedish Embassy in the United States, where he works with environmental and energy issues and coordinates spheres of interest common to Sweden and the United States.

“The most vital task at present is to aid development of a new climate treaty that encompasses all major industrial countries, not least China and India where the emerging industrialization can be launched on an environment-friendly course from the start,” says Lars Roth, who resides in Washington D.C. since the turn of the year.

2008 is election year in the United States. The public expects that the new president, whoever that may be, will play a much more active part in the climate issue. Lars Roth describes the public debate on climate as having literally exploded during the past twelve months. A legislation bill on emission trading is under consideration, investments in biofuel are considerable and a current critical debate concerns the wisdom of producing ethanol from maize.

“We have a collaborative venture between a Swedish and an American company to produce ethanol from cellulose instead of corn, which is preferable from an environmental standpoint,” Lars Roth goes on.

“Roughly half of his time is spent mediating industrial cooperation. He is a door-opener for Swedish environment and energy policies, a many-faceted issue.

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“Emphasize the good examples”

LARS ROTH’S PROFESSIONAL PATH went from LIU via studies in environment economics in Australia and Gothenburg to a post at the Swedish Environmental Protection Agency and later at the Ministry of the Environment. A rather colorful career in other ways, where environment and economics have been his lodestars.

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“Roughly half of his time is spent mediating industrial cooperation. He is a door-opener for Swedish environment and energy policies and has many intermediary duties.

THE REST OF THE TIME he monitors US climate policies, a many-faceted issue.

“The production of biofuel as an alternative to oil is viewed not simply as a climate policy issue, but as a parallel question of internal security. The administration regards some of the oil exporting countries as unstable or unfriendly so they do not want to have to rely on their deliveries.”

The climate agenda is not simply to find fossil fuel replacements. It is also about conserving energy. Energy efficiency is a big to-
New supermaterials better than gold

LIU researchers develop new materials which can be as epoch-making as steel. A supermaterial is on its way to replacing gold as surface coating for electric contacts.

Text: ÅKE HIJLM
Photo: Göran Hallgren, Peter Karlsson, Viveke Mathiesen & Mikael Syväjärvi

The last few years have been a golden age for materials science at LIU and for Lars Hultman in particular. He is a professor of thin film physics, with a capability to transform ideas into successful research results.

He shies away, though, from the large-scale use of gold as an industrial material. Gold is expensive and its mining harms the environment.

Lars Hultman and his team were early proponents of MAX-phase, a new material which is now well on the way to replace gold as a contact material since it is mechanically stronger, cheaper and environment-friendly, but at the same time conducts current relatively well.

MAX-phase, an alloy composed of three base elements of the periodic system, for instance, titanium, silicon and carbon, may well prove to be as epoch-making as steel once was. The development of coating technologies to apply this supermaterial is only one instance of LIU’s capability to maintain a spearhead position in research.

IT IS TRUE that of foresighted thinking that opens the sluice for investment capital, creates leverage and rallies resources. Between 2007 and 2016, MSEK 750 (approx 80 million Euros) has been pledged for research in advanced materials at Linköping University. The funds derive from LIU’s industrial partners, major research funding agencies in Sweden, the European Union, and from the university’s own strength.

Lars Hultman and his colleagues have established three research centers, each with a specific scientific direction, but all contributing to the goal of discovering and developing nanostructured ceramics for a spectrum of applications. The areas of interest range from basic research on the atomistic nature of materials properties to practical collaboration with industrial firms.

THE THIN FILM TEAM works wall-to-wall with most of the natural science fields represented at LIU. The department houses physicists, chemists and biologists.

Since its establishment a generation ago, it has been known for work across scientific borders. Many of LIU’s distinguished scientists have known each other since student days.

A growing trend in scientific circles is that research teams work in ever narrower spheres of interest. The new centers are important as the place where scientific findings cohere to the common goal.

“The centers have injected new enthusiasm in our collaboration,” says Lars Hultman.

HIS OWN SCIENTIFIC PASSION is fueled by visions of future breakthroughs.

“At LIU, we have always been good at innovation and invention, but these have not always been properly commercialized. Now we have set up systems to ensure that innovations fulfill their potential. We might very well discover yet another new materials phase that can be developed to benefit industry and users.”

“If it may seem abstract to outsiders in the beginning” he adds with a smile.

“That’s how it was when steel was introduced.”

Spin-off firm

The new supermaterial MAX-phase is being commercialized by Impact Coatings, which skyrocketed upon its stock market introduction. This spin-off firm has its origins in the thin film research team. When Henrik Ljunggranitz, CEO at Impact Coatings, presented his doctoral thesis in 1995, he was part of LIU’s thin film research team.

Perfect surfaces

The university’s materials science bank contains a lot of know-how about magneto sputtering and cathodic arc deposition technology in vacuum for coatings applications. A new team member is Johanna Rosén, LIU post-doctoral fellow whose specialty is arc deposition—a way to create a perfect surface through exceptional ion current density and high temperature.

Silicon carbide

Silicon carbide is a semiconducting material for extreme conditions. Developed by LIU professors Erik Janzén, Bo Mone-mar and Rosita Yakimova, it is now in commercial production at Nustel AB in Norrköping.

These are the hotspots:

• MULTIFUNCTIONAL MATERIALS, such as MAX-phase, which are flexible, tough, wear-resistant and conductive.

• SMART MATERIALS, which can adapt to their environment. For instance, if a cutting tool or drill bit heats up when in use, the smartly designed material can increase mechanical strength instead of softening as would most materials. It is analogous to age hardening, an old process to functionalize steel. Now the function resides in the surface coating through nanotechnology. The thin film team has applied for patents for this innovative process.

“It is increasingly common to concentrate the function on the surface. The bulk material is simply to give the product its shape,” says Lars Hultman.

LIU’s thin film laboratory is a meeting place for researchers and students from many countries. From the left: Aurelia Mockute, master’s student and diploma worker from Lithuania, Janne Berner, postdoctoral fellow from Spain, Naureen Ghafoor, newly hatched PhD from Pakistan, and Jiangjiang Zhu, PhD candidate from China.

Picture on the left: Electric contacts with coatings of gold and of a new MAX-material.

The other pictures show the inner structures of the new supermaterials.

Johanna Rosén

LIU-forskare utvecklar nya material som kan bli lika banbrytande som stålet var.

Omgivningen ringer när denna artikel finskas.

LIU-forskare utvecklar nya smätsbaserade supermaterial.
New honorary doctors at LiU

In the middle of May, Professors Paula S. Fass, Malik Ghallab and Christopher K. Glass received the title honorary doctor at Linköping University together with three Swedes.

The Faculty of Arts and Sciences conferred an honorary doctorate on historian Paula S. Fass, whose current academic setting is the University of California, Berkeley. Paula S. Fass has made trailblazing contributions to child and childhood studies. Notably, she is the driving force behind the Encyclopedia of Children and Childhood in History and Society, and serves as its editor-in-chief.

Professor Fass has edited and authored several books in the field of child studies. She collaborates with child studies researchers at Tema Institute. During the fall of 2008, Professor Fass will be guest researcher at Linköping University.

THE TITLE OF HONORARY DOCTOR of Engineering was bestowed on Professor Malik Ghallab, Delegate General for the major French IT research institute INRIA (Innovation Research and Technology Transfer). Dr. Ghallab is in charge of INRIA applications projects, industrial relations and international liaisons. He has had a 15-year scientific collaboration with researchers at LiU’s Faculty of Health Sciences. His ties to LiU include roles as guest lecturer and leading seminars, jointly authored scientific papers, advisor to doctoral students. He has graciously hosted students and faculty at UCSD.

At the same ceremony, Linköping University also honoured three Swedes, all prominent in their chosen fields. Gerda Antti is one of Sweden’s most widely read authors, Bertil Almlöf is widely known as Sweden’s most widely read actor, and Antti is one of Sweden’s most widely read authors. He has a 15-year scientific collaboration with researchers at LiU’s Faculty of Health Sciences. His ties to LiU include roles as guest lecturer and leading seminars, jointly authored scientific papers, advisor to doctoral students. He has graciously hosted students and faculty at UCSD.

The road to Hollywood passes through Norrköping

Students enrolled in the Master of Science Medi cabinet and Engineering program at LiU’s Norrköping campus now have the unique opportunity to work with degree projects on special effects for film and video.

Linköping University is the first non-US university selected as a member of the Sony Imageworks academic network IPAX (Imageworks Professional Academic Excellence Program). Imageworks is one of the most prominent special effects companies in Hollywood. Major productions that Imageworks has been involved in include Spider-Man 3, Beowulf, I am Legend and Surf’s Up.

A stated goal of IPAX is to build stronger re- lationships with established academic study programs and to nudge and grow future generations of digital talent. At present, only a handful of the most prominent American universities such as Stanford and MIT, are members.

IPAX attention was drawn to the talent and capabilities at the Norrköping campus, when LiU students conducted degree projects at Sony Imageworks previously. Student collaboration has ranged from sand in Spider-Man 3, to flames in Ghost rider and waves in Surf’s Up.

“I’m proud to say that we have a good reputation in the special effects field in Hollywood,” says a pleased Anders Ynnerman, Professor in scientific visualization.

On changing cultural habits

“...so how’s life in Paris? Have you gotten yourself a nice beret yet? I can really picture you with a bottle of red in one hand and a baguette with amelie cheese in the other? Oh my goodness, if I’d had a centime for every time I’ve been asked about my beret! I wouldn’t be on par with Bill Gates, but I’d definitely be able to buy myself some good champagne.

How did this vision of French people grow so strong? And why do people assume that es-pats change all their habits from the old country for all those of their new homeland? I guess it’s because in the little things that you really can make out the differences.

Take bread, for instance. French bread is soft, white and fluffy, and it’s absolutely fresh. You buy it in your local boulangerie, of which you have at least two on your street so that you can alternate when one is closed or the baker’s wife is grumpy. Swedish bread, on the other hand, is dark, wholesome and robust. To avoid wasting time on shopping trips, it is typically bought at the supermarket and made to last for a week or two.

Another one is greetings. When I return to Sweden for holidays, I usually remember that Swedish women frown upon cheek-kissing. But I do fail to see why so many Swedish men look puzzled when I want to shake hands for the third, fourth or fifth time that week. That’s the way we do it here, why can’t they just accept it?

So many details in daily life seem to be culturally dependent, and our national identity is sometimes best described in terms of how we divide household tasks and answer the phone rather than how we celebrate our national day. But moving abroad somehow increases the need to define and display (or hide) our national identity.

I’m told that Erasmus students in Linköping flock to Tannefors locks on Walpurgis Night, to see the bonfire and listen to the choir. I lived 10 minutes away, but never went. It just wasn’t important to me. Nor did I join the Saint Lucia choir or attend the Swedish National Day behind the Linköping Castle on June 6th.

But coming up on my second year in Paris, I count some 16 Lucia performances as stjärngosse (“choir boy”) and I’ve built two bonfires and prepared an extra set of spring speeches in case the main speaker would be ill. And last year I saw five elderly ladies moved to tears by Heidegger’s nationalistic Hymn to Sweden, as we gathered in the prestigious Swedish club on rue Rivoli, two blocks from the Elysee Palace.

But I draw the line at Midsummer—the Eiffel Tower will simply not do as a midsommarstång (maypole). Besides, it’s a good rule never to do små grovkor ("small flogs")—you know, the silly quick-quack-dance and song—while heavily armed guards are staring at you.

Ola J. Hedén

Ola J. Hedén is Assistant Director at the Swedish Student House in Paris, France. He has studied Business Economics and French at Linköping University.
Turkish grape leaf rolls, Cameroonian casse- role, and Latvian cookies. The world paid a call when LiU’s international students put their home cultures on display on April 8.

Three years ago, the Student Union at the Institute of Technology organized the first International Day to assemble the university’s foreign students in a cross-cultural event. It turned out to be a great success and became an annual tradition. This year’s celebration included participants from Bangladesh, Belgium, Cameroon, China, the Czech Republic, France, Germany, Hungary, India, Indonesia, Malaysia, Italy, Lithuania, Mexico, Pakistan, Poland, Taiwan, Turkey, Tajikistan, Ukraine, and United States. Each nationality was represented with a stand serving home cooking and cakes. The students distributed information about their home country and culture. It was an all-day party.

Even Sweden was represented by students who offered the passers-by herring, gingerbread biscuits and cinnamon buns. Lots of food, lots of talk, lots of rhythmic music and not a little dance entertainment. The students from China gave one of many presentations. Hanxiao Ge, master’s student at Socware System-on-Chip, demonstrated the traditional lute despite a noisy background. Both youngsters and oldsters were captivated by the two unseen students hidden in the saucy dragon that waved to the public, wiggled its ears and shook its colorful bottom.

As in previous years, the day was a meeting not only of cultures, but of generations. Many students brought their families and friends to join in the celebration.

Irem Cakil dressed up like a Turkish bride offers a big platter of Turkish grape leaf rolls. She chose LiU and Sweden because of the high tech opportunity. “Food engineering is my field,” she says. Her home campus is Çukurova University.

Laura Cabera from Mexico City found out about LiU at an education fair. She is working toward her Master’s in Science, Technology and Society, but currently studying Applied Ethics. “I can find a job, I’d love to stay a little longer,” she says, before whirling into a Belgian folk dance.

“I love everything! Especially ice hockey!” Kerkel Pari, who is studying Innovation Engineering, often passes by some Czech cookies which he baked himself. “There are many legs Swedish companies with multinational networks and excellent quality control. That attracted my interest.”

Fidelis Fru from Cameroon is studying Technology and Social Change. He wakes up every morning annoyed by the cold weather but he is a master at cooking up a spicy hot casserole that warms from the inside. For iDay, he had a huge kettle full. “When I leave LiU, I hope to find a job in England. If not, I’ll head back to Cameroon.”

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Alia Amir has only two more courses to complete before returning to Bangladesh to work as a language teacher. “I have friends who studied at the universities in Uppsala and Lund, so I knew a little about Sweden before I came here. The Swedish education program for teachers focuses more on the pupils than ours at home does. I think that is wise.”

“A course in African dance can change your life!” Åsa Jönsson who is studying Applied Biology met an Ethics student from Cameroon. “When we finish school, the world is our oyster. We will go anywhere we can get a job,” says Åsa with one-year-old Maureen in her arms.

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Aina Murowska from Poland plans to spend one year in Sweden. She is designing her own study program. Her current course is Dramatic Communication. Aina aims to become a language teacher. “Studies in Sweden are more student-oriented. And I love it that LiU is so international. In my dorm we are seven people from five countries!”

He is indubitably LiUs only student from Kashmir. To celebrate iDay, he is decked out in full mountaineer dress. “But my Dutch clogs look good with this,” says Faisal Akhlaq who took the opportunity to get acquainted with his cohorts. At LiU he studies Software Engineering and Management.

Outdoor Education caught the attention of Karlijn Dalhuijzen from Holland. She is usually found at Campus Norrköping in the teacher education program. “We don’t have this study option in Holland. I learned about it from a Swedish exchange student who was her mentor.”

National Centres of Excellence in Higher Education

Last year the Swedish National Agency for Higher Education requested more than 40 Swedish universities to nominate their best programmes from thousands of courses and fields of study. An exhaustive evaluation process was then conducted with the help of a panel of international experts, which resulted in five units being honoured as Centres of Excellent Quality in Higher Education. Two of these belong to Linköping University: Medicine and Control Systems

Now you can get the competitive edge

Linköping University offers more than 30 Master’s programmes taught in English. Find out more on www.liu.se/education
Close encounters with dolphins and gorillas

UNIQUE COLLABORATION BETWEEN LIU AND KOLMÅRDEN ZOO

During a two-year international master’s program in Applied Ethology and Animal Biology the students spend some of their time making hands-on observations at Kolmården Zoo.

text KRISTINA EDLUND
photo STEFAN JERREVÅN

Why Sweden and LIU? Magdalena likes to travel and she wanted to visit a Nordic country. The fact that Copernicus University and LIU have an exchange agreement made her decision easy. The course Primative Ethology at LIU was an attractive option, in line with her previous studies.

THIS FOUR-AND-A-HALF-WEEK COURSE IS part of the two-year international master’s program Applied Ethology and Animal Biology. One week of the course is spent at Kolmården Zoo, to make hands-on observations. This is where we meet Magdalena on one chilly spring morning, together with ten students who are on the master’s program. While the other students have already visited Kolmården several times, this is the first visit for Magdalena.

During the week in Kolmården, the students have been working in three project groups, making observations on different species. We are invited to follow them for a couple of hours this morning, the fourth and last day of observation.

ONE OF THE ASSIGNMENTS is to observe self-recognition in primates. What happens when the animals are exposed to a mirror? Do they recognize themselves as “this is me”? Magdalena’s group observes marmosets, gorillas and dolphins. The idea is to compare the behavior of these species. A one-way mirror is attached to a glass wall in front of the enclosure and behind it a video-camera is hidden. The video sequences will provide the students with ample material for analysis. Back on campus the findings will be presented in a project report.

“Chimpanzees, orangutans, elephants and dolphins are so far the only animals that are known to recognize themselves, explains Matthias Laska, professor of zoology and course responsible. It is known that gorillas shun the mirror as direct eye contact means threat. And their behavior suggests that what they see in the mirror is another gorilla.”

When it is the dolphins’ turn to be exposed to a mirror, these animals don’t pay any attention at all to the mirror on the glass wall. Perhaps they are blasé—after all, this is the third time they are being observed.

The students stay overnight the whole week at the Kolmården Research and Education Station, and they devote considerable time to literature studies. It’s hard work, but there’s some entertainment, too. One day the students watched the Dolphin Show, one of the main attractions at Kolmården Zoo.

MATTHIAS LASKA has a research background in Germany, Mexico and the US, and several of his master’s students will do their thesis work in one of these countries. But some of the students will be back in Kolmården. One, for example, will study ways to make life in captivity less boring for the snow leopards (environmental enrichment).

“The collaboration between LIU and Kolmården Zoo is unique,” concludes Matthias Laska. There’s no other university in Sweden, not even in Europe, that can offer the same facilities. We are privileged to have this opportunity to study exotic animals in captivity.

Applied Ethology and Animal Biology

The master’s program Applied Ethology and Animal Biology deals with animal behavior and biology from an applications perspective. Central issues are the biology of stress and animal welfare, domestication effects on behavior, physiology of behavior and conservation biology.

The program is taught in association with Kolmården Zoo, which sometimes is the teaching venue. Learning rests on a mix of classroom lectures, seminars and hands-on projects involving studies of animals in captive environments.

Focus on smell and taste

Matthias Laska is professor of zoology at Linköping University and responsible for the course Primative Ethology. He is a sensory physiologist with a special interest in smell and taste. Both senses play a critical role for identification and selection of food, a variety of social behaviors, and evaluation of environmental cues.

Matthias Laska’s research aims at a better understanding of basic questions such as “What determines the odor quality of a stimulus molecule?”, “Which factors affect smell and taste capabilities of a given species?” and “What are possible causes of differences in chemosensory performance between species?”

He uses a comparative approach that includes psychophysical, behavioral, and imaging methods in both human subjects and animal models. Some of his research is conducted at Kolmården Zoo and some of it also in Mexico (in collaboration with the Instituto de Neuro-Etologia of the Universidad Veracruzana).

Several students on the LIU program in Applied Ethology and Animal Biology will do the experimental part of their master’s thesis abroad. Anna Maitz is going to study the sense of smell in mice. Erik Boman will spend next semester at Yale University in the United States where he will be studying the sense of smell in monkeys.

Facts about Kolmården Zoo

Scandinavia’s largest wildlife park, covering an area of 250 hectares (617 acres), 900 000 visitors annually. Number of species: 750

Location: 150 km south of Stockholm, 70 km northeast of Linköping

Unikt samarbete med Kolmårdens djurpark

It is another sunny day in California. Here at Stanford University in the high tech hub known as Silicon Valley, Gunilla B. Jacobson has a key role in Sweden’s official networking enterprise. Vinnova was actively seeking a merited research associate to be stationed at prestigious Stanford University in the heart of Silicon Valley. The shoulder tapped belonged to Gunilla. She was seeking a business ambassador to be stationed at prestigious Stanford University in the States.

In 2004, Vinnova, the Swedish Governmental Agency for Innovation Systems, was formed. One possible area of target-seeking molecules are state, nanoparticles which are target-seeking molecules are formed. One possible area of application is sufficiently high, gas will change its properties and become a supercritical fluid. In such a state, molecules move as easily as in a vapor, while the dissolving capacity is that of a liquid. In this state, molecules become a supercritical fluid. When pressure or temperature is sufficiently high, gas will change its properties and become a supercritical fluid. In such a state, molecules move as easily as in a vapor, while the dissolving capacity is that of a liquid. In this state, molecules become a supercritical fluid. When pressure or temperature is sufficiently high, gas will change its properties and become a supercritical fluid. In such a state, molecules move as easily as in a vapor, while the dissolving capacity is that of a liquid. In this state, molecules become a supercritical fluid. When pressure or temperature is sufficiently high, gas will change its properties and become a supercritical fluid. In such a state, molecules move as easily as in a vapor, while the dissolving capacity is that of a liquid. In this state, molecules become a supercritical fluid. When pressure or temperature is sufficiently high, gas will change its properties and become a supercritical fluid. In such a state, molecules move as easily as in a vapor, while the dissolving capacity is that of a liquid. In this state, molecules become a supercritical fluid. When pressure or temperature is sufficiently high, gas will change its properties and become a supercritical fluid. In such a state, molecules move as easily as in a vapor, while the dissolving capacity is that of a liquid. In this state, molecules become a supercritical fluid. When pressure or temperature is sufficiently high, gas will change its properties and become a supercritical fluid. In such a state, molecules move as easily as in a vapor, while the dissolving capacity is that of a liquid. In this state, molecules become a supercritical fluid.

Gunilla and Vinnova reached an agreement. She was offered the position. She would spend twenty-five percent of her work week receiving visitors from Sweden, briefing them, and arranging liaisons to benefit both parties.

“Silicon Valley is a region that attracts the top echelons of businesspeople, heads of our universities and national politicians. I regularly rub elbows with luminaries that I would not encounter in an ordinary workplace.”

CLARK CENTER, a futuristic building on the Stanford campus, is Gunilla’s workplace. Her formal title is Research associate in basic life science. She works under Professor Richard Zare, an eminent chemist who date has raked in every prestigious prize except the Nobel. Team focus is on development of pharmaceuticals for cancer and Alzheimer’s therapies. Gunilla graduated in Chemistry at Linköping University in 1991. Doctoral studies took her next to the university in Uppsala, Sweden. But, she says with a twinkle in her eye, she was at Stanford when she was a mere child.

“My mom worked here as a physics researcher. We moved home to Sweden, but I always expected to return to Stanford. I’ve lived in the States for ten years now.” Gunilla’s mother, Birgit E. Jacobson, a former researcher and instructor at LiU who operates her own company, is an inspiring role model.

UNIVERSITY IN THE HEART OF SILICON VALLEY.

It was time for a life redirection. Gunilla recalls the day she got the phone call that redirected her life.

“When I was a mere child.

“Ah, the time I was working at the Los Alamos National Laboratory in New Mexico. My son, Tobias, was only two years old. I had recently taken on the role of single parent. It was time for a life change.”

Her counter-offer to Vinnova included funding to continue research in her special field, supercritical fluids which, in layman terms, is any substance having properties between a gas and a liquid. Supercritical fluids is an intriguing field with many potential areas of application.

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GUNILLA B. JACOBSON has carved an impressive academic career from a big hunk of courage, lots of hard work, and an ability to travel light.

“She was selected for a scholarship to do her postdoctoral work at Linkoping University in the States. You are expected to do your work and come home. I was able to get a job, but just as easy to lose it if you do not meet expectations. No guarantees and no lifetime employment.” Gunilla explains.

She has walked the high wire and succeeded. Now remarried, she is already thinking about her next professional move.

“No one should remain a Research Associate forever. I’ve got it all, beautiful surroundings with international input. But the studies are rough. All my classmates are elite students at their home universities and everyone is working to be intellectual top dog. We are expected to study all the time and it is not unusual to get an assignment with a twenty-four hour deadline. The result will be graded as an exam. This past week I had two like that.”

THAT DOESN’T SOUND LIKE A LAID-BACK LIFESTYLE. HOW DO YOU RELAX?

“I am an avid wilderness hiker. I need to keep moving physically to retain my mental balance. The Palo Alto vicinity has some rugged forest and mountain terrain, so I have joined one of Stanford’s outdoor clubs for backpacking and mountaineering. I have found several like-minded buddies from other faculties, for instance, one of my best hiking friends is a law student.”

WHAT IS THE JOY OF AUTOMATIC CONTROL? WHAT DO YOU LIKE?

“It’s great! The academic atmosphere is amazing. I’ve got it all, beautiful surroundings with international input. But the studies are tough. All my classmates are elite students at their home universities and everyone is working to be intellectual top dog. We are expected to study all the time and it is not unusual to get an assignment with a twenty-four hour deadline. The result will be graded as an exam. This past week I had two like that.”

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WHAT HAS SURPRISED YOU MOST SINCE ARRIVING AT STANFORD?

“That despite differences in cultural and social backgrounds, people can come together as a team. That was a momentous insight!”

YOU CHOOSE APPLIED PHYSICS AND ELECTRICAL ENGINEERING FOR THE Sake OF MATH. Are YOU a MATH FANATIC?

“I guess so! Especially applied math has always interested me, but later I discovered the joys of automatic control. So now I am diving deep into that as well as optimization theory and robotics. What I have learned will be valuable for my degree project work at ABB back home in Sweden.”

SO A DEGREE PROJECT IN SUNNY CALIFORNIA doesn’t TEMPT YOU?

“No, I miss my girlfriend. She has already moved back to Stockholm. I miss our dog too!”

Hello Robert Henriksson ...
Developing health care in Kenya

For two decades, LiU has maintained a collaboration with the Moi School of Medicine in Kenya. Fabian Esamai, who is dean at the school, has strong academic ties to LiU. In 2002, he earned his degree as Doctor of Medicine at Linköping University with a thesis on malaria.

**THE SCHOOL OF MEDICINE**

The school of medicine was established in 1986. One of its financial backers was the Swedish International Development Cooperation Agency (SIDA). The Faculty of Health Sciences at Linköping University assumed a mentor role in helping to establish a model of problem-based learning. And the academic links have been strengthened with passing years.

“As a dean, I have continued to pursue the collaboration with Linköping University,” says Dr. Esamai.

LiU Magazine met with Dr. Esamai during his four-day visit in the spring of 2008. He knows his way around the campus having visited often the past 15 years. In 2002 he received his degree in medicine from LiU for a thesis on cerebral malaria among children in the highlands of Kenya.

**IN ADDITION TO HIS DUTIES**

Dr. Esamai points to funding needs. “The present SIDA funding is coming to a closure at the end of this year. Now we are discussing how we can continue to finance our collaboration in the future.”

An important part of the Moi-LiU academic collaboration is a two-way exchange of students and staff, and the sharing of research findings. Researcher training and competence development of Kenyan health care and medical workers are also on the agenda.

Each semester, eight exchange students from the two schools have switched study sites. The spring of 2008, though, saw a hiatus due to instabilities after the Kenyan presidential elections. Eldoret, only 350 kilometers northwest of Nairobi, was a hotspot.

“Fortunately the university was closed for Christmas holidays when the troubles began,” Dr. Esamai explains. “A few of our staff have been affected by the violence, but now the situation has calmed down.”

The faculty heads of both schools are agreed to continue collaboration, possibly on a lesser scale. The two schools will make a joint application for grants to create a stable base for a newly initiated project on E-learning.

Because the Kenyan government has limited resources for research, scholars often seek monetary help from the European Union and the United States. The spring of 2008, though, saw a succession of drugs become ineffective as the malaria parasite continues to develop resistance to medication.

Perhaps a herbal drug from the traditional Chinese medicine system will prove the situation.

Artémisin, an extract from sweet wormwood (*Artemisia annua* L. J), which the Chinese call qinghao, has been used in combination with other medications and the results seem promising.

“In a recently finished study it turned out to be as effective as a common drug, which is available on the market, but is being misused and soon will be ineffective,” says Fabian Esamai.

**Mångårigt samarbete med kenyanskt universitet**

**Moi - LiU cooperation 1990-2007 in figures**

**STUDENT EXCHANGE**

Moi to LiU: 100
LiU to Moi: 50

**FACULTY EXCHANGE**

Moi to LiU: 90
LiU to Moi: 50

**During this time Moi has examined**

- 100 doctors
- 150 environmental health officers
- 160 nurses

“Students from different programs work together”

The Moi School of Medicine has 900 students in medical and nursing training. Problem-based learning, similar to the learning method at LiU, is used by the three faculties: medicine, public health, and dentistry.

“Students from all study programs team up in practical projects conducted within the greater community,” Dean Esamai explains.

“Our students learn to work together professionally, instead of looking at problems in a hierarchical manner. The system gives better operative results than traditional classroom-based systems.”

Eldoret lies at the edge of Rift Valley in southwestern Kenya. It is the fourth largest city in the country with more than 200,000 residents. Moi University, established in 1984, is named for former president Daniel Arap Moi.
**LiU research**

**Faster in-body electronics gives better life**

Telehealth gives options to significantly improve patient care and cut health costs. To come up to the expectations, however, in-body electronics has to be faster and far less energy-consuming.

Atila Alvandpour, a LiU Professor of Electronic devices, works on the solution in a new research project funded by the Swedish Governmental Agency for Innovation Systems, Vinnova.

**“We want to make use of our progress in new areas, find applications that can help people to a better life”, says Professor Alvandpour, who has a background at Inotel Research Laboratory at Portland, Oregon.**

Has his and his fellow researchers’ reputation as specialists on low-power, high-speed circuits attracted interest from Zarlink Semiconductors, a medtech company supplying systems to e.g. pacemakers and implant defibrillators? Such devices are today possible to control wirelessly from a close distance outside the body. A prerequisite to reach further out is to increase the bandwidth and radically reduce the power consumption. The goal is to build devices that won’t need new batteries during the patient’s lifetime.

The major challenge is to design chip architectures that can handle those extremely weak currents—in the magnitude of nano-amperes.

**The problem is, according to Anders Hansson, that CCS is still a relatively untested method. Globally, a total of some millions of tons per year is being stored today within the framework of CCS. But to live up to the hopes on CCS requires the storage of several billion tons. In other words, this is an increase in a logarithmic scale.**

In fact, carbon dioxide would be the world’s largest transported good. To imagine the technology only exists in the imaginations of the people developing it,” says Anders Hansson. “It’s overly optimistic to place such great faith in it, considering all the uncertainties found in the scientific literature.”

Several researchers studying CCS point out that their models and scenarios in many respects are based on insufficient factual foundations, unrealistic assumptions, and major oversimplifications. The economic calculations rarely factor in external and social costs, which may entail that the costs are grossly underestimated.

“The major challenge is to design chip architectures that can handle those extremely weak currents—in the magnitude of nano-amperes.”

**Grasping at straws in the climate debate?**

Capturing and storing carbon dioxide is predicted to be one of the most important measures to counter the threats to our climate. But the complications and risks of this yet virtually untested technology may have been grossly underestimated.

This is the conclusion drawn in Anders Hansson’s dissertation at the research division Technology and Social Change, Tema Institute, at LiU. He studied documents from the EU and the UN Climate Panel about CCS (Carbon dioxide Capture and Storing), as well as some of the research they are based on. The Climate Panel sees CCS as offering great potential. In various scenarios it accounts for between 15 and 55 percent of the reduction of greenhouse gases by 2050. The EU also is promoting CCS, suggesting that it be included in the trading of emission rights, for example.

“CCS needs to become known and debated,” says Anders Hansson. “It’s overly optimistic to place such great faith in it, considering all the uncertainties found in the scientific literature.”

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“CCS needs to become known and debated,” says Anders Hansson. “Otherwise there is a risk of a backlash similar to what happened with nuclear power.”

**LiU scholar receives prestigious prize**

Stefan Thor, professor of developmental biology at Linköping University, recently received one of the most prestigious national awards available to Swedish scholars—the Göran Gustafsson Prize. It carries with it, four and a half million Swedish kronor (approx. 500.000 Euro). This is the third time in four years that this prestigious award was bestowed on an LiU researcher.

The Göran Gustafsson Prize, like the Nobel Prize, recognizes achievements in five scientific fields: molecular biology, physics, chemistry, mathematics and medicine. Stefan Thor, whose research area is the structure and regulation of neural systems, was awarded the molecular biology prize.

The judges’ citation is: For his elegant studies of the fruit fly and its development, studies that are innovative, well-focused, and which have garnered considerable interest in the scientific community.

**“It is extremely gratifying, a welcomed appreciation of the work being conducted by our research team, not least because the judges thereby encourage basic research. There is a current trend, both in Europe and in the United States, to support mainly applied research,” says Professor Thor.**

Stefan Thor joined the LiU Faculty in 2004, after ten years of research at Salk Institute and Harvard Medical School in the United States.

**“We will find the holes and plug them”**

**EU PROJECT TO PREVENT HACKER ASSAULTS**

Software vulnerabilities in IT systems serve as open doors to disruptive hacker assaults. An EU project teams up European researchers and business firms to thwart attacks by making systems more difficult to penetrate. The SHIELDS project is led by LiU professor Nahid Shahmehri.

Malicious attacks are on the rise and not only are they costly but they constitute a serious breach in public security. Private and government interest in systems security issues has escalated in pace with the growing volume of attacks and infiltrations.

“Hackers zoom in on the system’s most vulnerable spot. Many weaknesses are known to security experts, but systems developers continue to propagate them in new generations of systems. There is a knowledge gap which we will bridge,” says Professor Nahid Shahmehri.

**SHEilds: The fundamental concept behind SHIELDS is that there should be a shared repository of security information that can be used by software security tools and methods of all kinds. Tools will access the repository to get information about security vulnerabilities and countermeasures, and translate them into their internal format.”**

The SHIELDS approach will aim to get to several ways. Developers will have access to security information that addresses their needs, and users of tools that are “SHEilds-compliant” are assured that their tools address a particular set of issues.

“SHEilds-compliant tools stay up-to-date with the latest security information as it is added to the SHIELDS repository.”

**A TEAM OF EU RESEARCHERS are charged to help developers to stay current on known security risks. Nahid Shahmehri and her team have created models to find vulnerable spots and make them secure. This EU enterprise will incorporate testing tools developed at the Institut National des Telecommunications in France, and analysis tools provided by Fraunhofer in Germany.**

“The EU forum makes it possible for project partners to brief each other on their specific areas of expertise. Participating universities and research institutes are situated in Sweden, Norway, France, Germany and Spain. Participating business firms are based in France, Italy and Hungary (see the box below). Besides Nahid Shahmehri’s research team, professor Ulf Nilsson participates from LiU. His special competence is analytic software.

Nahid Shahmehri has been involved in two EU projects earlier. “My role as coordinator brings new challenges. There are many partners and all contacts with Brussels are channeled through me. It is a rewarding task, though time-consuming.”

SHIELDS was launched in January 2008 and is running on schedule. Nahid Shahmehri expects that by June 2010, she and her co-workers will have created a long-term and stable apparatus to thwart hacker attacks on software systems. Our database will continually update itself with the latest knowledge on vulnerable spots in computer systems. We will find the holes and plug them.”

**Other EU Projects coordinated from LiU**

Researchers at Linköping University serve as coordinators for two other EU research projects.

- **Michael Felsberg**, associate professor in computer vision, leads DIPELES, a project to develop self-learning safety systems for automobiles.
- **Geoffrey D. Gioch**, professor in political science, coordinates the LiDiverse project, which is focused on sustainable development and vulnerability in Vietnam, India, South Africa and Costa Rica.

**PARTNERS IN SHEILDs**

- Linköping University, Sweden
- SINTEF, Norway
- European Software Institute, Spain
- Fraunhofer IESE, Germany
- Institut National des Telecommunications, France
- Mintimage, France
- SEARCH-LAB, Hungary
- TEXT-e Solutions, Italy

**LiU Magazine 2-2008**
Asian adventure

Six exchange students left the LIU campus to spend a year on Taiwan. They all agree: It is an enriching academic and cultural experience.

The contrast between the tranquil Nordic greenery of Linköping could hardly be greater. Six LIU students changed their academic home and lifestyle to spend a year on Taiwan.

All are aspiring engineers. Five are enrolled in the Industrial Engineering and Management program and one studies Mechanical Engineering. They are all currently enrolled at the National Tsing Hua University (NTHU) in the city of Hsinchu, one of Taiwan’s major academic sites and a partner university of LIU.

The reasons they chose Taiwan as a study site vary, but all say they wanted to study and work abroad, in a country more exotic than a Western culture. We meet up with the six amid the lush tropical greenery on the NTHU campus, well away from the teeming and noisy urban scene.

“When I was a kid I liked to take things apart. Lots of the things I dismantled were labeled Made in Taiwan so that was a phrase I learned at early age,” jokes Mehrad Bavarian, the mechanical engineering student. “I thought it would be cool to put a face on the concept.”

For Jens Egeröd, the driving force was to explore a culture that was completely unknown to him. The reasons he chose Taiwan as a study site vary, but all say they wanted to learn more about Asia—not least the Chinese culture—and establish contacts with students from the entire world.

They arrived in the fall of 2007. Their experiences are many and varied, as are their reflections. They found a new educational climate, and a different attitude to the learning process. Back home, they were used to active classroom discussions and to being urged to draw their own conclusions as part of the educational process. At NTHU, students are expected to absorb the knowledge in the textbooks and not interrupt the instructor. At NTHU, the exchange students find their homework heavier than they were used to. Classes are smaller and the contacts between instructors and their students is often closer. But the educational quality is smoother at LIU, some say.

“I am fascinated daily by the contrasts in academic and cultural life. I look at things differently than at home. You learn a lot faster than you would at home,” says Elisabeth Suzuki.

He provides protection against flooding

After a year as exchange student on Taiwan, Ebbe Strandell flew home to Sweden. But matters of the heart and an opportunity employment for his degree project made him return. Now he has a job at a Taiwan firm and helps provide protection against flooding.

“It’s a really cool tale how I got my degree project job,” Ebbe says, grinning over a cup of latte at Starbucks, a stone’s throw from the world’s highest tower, Taipei 101.

Ebbe Strandell, a future engineer in media technology was home again in Norrköping. But his heart was in Taiwan—where he had left his Panamanian girlfriend—and he had to complete his degree project. The chances of combining both his wishes seemed pretty good. Visualization technology was a hot field.

Ebbe Strandell went back to Taiwan to work with flood protection and technical support for marine biology research.
**Post-doc work abroad is a great experience**

Former LIU student Helena M. Linge is on a three-year sojourn doing sepsis research in a lab at a renowned New York institute. She encourages students to do their post-doc in a new cultural and scientific environment.

**text Lennart Falklöf**

More than a decade has passed since Helena M. Linge (then Johansson) enrolled in medical biology at Linköping University. Between 1997 and 2001 she was a member of the pioneering class pursuing a brand new master’s program.

“To be in the very first class of students was inspiring and certainly interesting, but frustrating at some points. You see, we had no rule models or previous standards to compare with. Looking back, one can’t help but reflect on how actively we students participated in designing the program,” says Helena M. Linge.

Her final verdict is that the master’s program gave her an excellent professional foundation. “We acquired a broad knowledge spectrum and its ability to take command of host cells. Helena wanted to continue her in-depth studies of specific organisms, so she began research training at Lund University in the south of Sweden. Her specialty was streptococci and their ability to trigger human disease. After defending her thesis in 2006, she completed a brief stint as guest researcher in Poland, then returned to Lund for continued research. The next stop was New York.

“During my post-doc in sepsis research at The Feinstein Institute for Medical Research, which is located on Long Island, my husband Petrus was enrolled in the graduate school at the Feinstein too, but in rheumatology and genetics. We met when we studied medical biology at LIU,” Helena adds.

Our colleagues represent several disciplines and a variety of nationalities. “The head of our research group is an English chemist. We have a cardiovascular surgeon and a pulmonologist, both from Japan. One anesthesiologist and a general surgeon are from China.” Together they explore the pathogenesis of blood poisoning and the mechanisms of immunological mediators originating in the lungs.

“These mediators travel through the circulatory system and reach the heart in deadly concentrations and lower its ability to pump blood. It goes without saying that cardiovascular function is vital for successful therapy.”

“The goal of our research is to gain a greater understanding of these mediators, how they work and how we can inhibit their adverse effects. We look at the entire mechanism, at the sites where mediators are released, and in what sequence. We hope to be able to inhibit release and activity and minimize damage potential.”

**HELENA AND HER HUSBAND** plan to remain in New York for three years. “Perhaps we will stay longer. It depends on how our research goes. We don’t plan to stay forever, though New York City is a fantastic place for unexpected encounters and experiences.”

Research work at Feinstein is quite different than in Sweden. “The pace is faster and there is less apprehension about failure.” The Feinstein Institute is among the top six percent of research institutions receiving National Institute of Health (NIH) funding. In the United States a lot of funding also comes from private individuals and businesses.

“The Feinstein recently received a much publicized endowment of fifteen million dollars,” Helena relates, “from a foundation established by a former executive in the Pepsi Co company. Many projects have non-government funding.”

**HELENA HAS ADJUSTED** to scientific and cultural differences. “Compared with Swedish circumstances, the staff at the Feinstein is more narrowly specialized on one method or one particular field. In Sweden, researchers have a broader base. It may take longer to complete the work, but I applaud the broad perspective, because it allows one to see the context and all mechanisms.”

Moreover, Helena wouldn’t mind having the informal conversation of Swedish-style coffee breaks (where staff can bond and share daily perspectives. And she sees advantages in the relatively flat organizational structures that Sweden often take for granted.

“But it is useful to keep in mind that there is more than one way to do a job well. I like being here. I enjoy doing what I am doing. To do post-doc work abroad is a great experience, which I can recommend LIU students.”

**Medicinsk biologi i New York**

Under tre år forskar Helena M. Linge om blodförgiftning på ett labo i New York. Hon har var en pensjonerad på medicinsk biologi vid LIU.

**The world is her workplace**


Prospecting in Silicon Valley

HELMUT GörAN FELDIIN, LIU MARKET DIRECTOR IN CHARGE OF TECH TRANSFER. WHAT ARE YOU DOING IN CALIFORNIA?

“Prospecting for gold would be a legitimate reply from these parts. And in a way, that is what I am doing. I am here to study innovation processes at Stanford and ways to commercialize research findings. I am also building a network of the most vital links in the Valley. I was fortunate to be awarded a Vinnova grant to study here for four months. It is a wonderful opportunity for my personal development and I expect it to give a good return on investment for LIU and the region.”

WHAT CAN WE LEARN ABOUT THE AMERICAN WAY OF COMMERCIALIZING RESEARCH INNOVATIONS?

“To not be afraid to try, to dare, to take risks. In combination with a supply of risk capital, that is a path to success. Or some times to a bust.”

“The innovative environment of Silicon Valley is like no other place on earth, but it is impossible to transplant an exact copy of it. But we can learn from those areas that can be implemented in our infrastructure. A lot of people I meet talk about eco-systems—systems that are unique for the setting where they run. We can load our eco-systems at LIU with exciting phenomena that will make the students of Linköping University to keep in touch with each other and the university. At the beginning of the year, we all meet to discuss innovation processes at Stanford and ways to commercialize research findings.”

WHAT ARE YOUR MAIN IMPRESSIONS THUS FAR?

“That which is noticeably different is a spectacular, but the food and wine wasn’t as IT architect—designed a system that created Sweden’s best IT innovation in the health care sector. Anders Norr, IT architect and head of tech transfer at Linköping County Council, is justifiably proud.

Three decades ago, Anders Norr received from LIU an engineering degree in applied physics and electrical engineering with specialization in medical informatics. "My life has been a journey through a region of rapid technological development. Back in the early seventies, we students stood awe-struck looking at a remarkable object nestled in a little black plastic box lined with red velvet." Anders says. It was a pocket calculator!

After a stint as research assistant at LIU’s Department of Biomedical Engineering, Anders Norr joined the systems staff serving the Östergötland County Council—still his workplace after twenty-five years.

As IT architect—designer of systems architecture in the field of information technology—Anders had an instrumental role in the creation of a pioneering patient data system. Initiated as a joint project with two other regional councils, the patient data system has operated for four years.

“Our task was to customize views of patient journals to suit the information needs of the County Council’s health care staff and municipal workers, while allowing patients to access their own medical records via the Internet.

“Our greatest challenge was to combine security constraints and patient integrity issues with data availability. The system incorporates the medical files of nearly all of the 420,000 residents of the county. Each individual file contains roughly thirty subentries. “We are now applying our expertise to develop a nationwide system.”

A PAN-EUROPEAN patient data base is also in the pipeline. The European Union has pledged an investment of one million kronor in a project that gets rolling in May 2008. Sweden has a coordinator role.

Anders Norr has an MSc degree in Manufacturing Management. He is now Head of Commercial Finance at Sony Ericsson Mobile Communications International AB in Munich, Germany.

“Last fall I joined the university’s male choir, Likaïton, after twenty-five years. The choir is far more professional than in my student days. It has built up quite a reputation.”

Anders recalls the choir’s traditional Thursday suppers when the Swedish specialties of pea soup and accent punch were imbued amidst much high-spirited singing.

“Thereweren’t many campus traditions back then, the university was so young. But our generation initiated the custom, continued today, of giving a public concert on Walpurgis eve in front of the old bishop palace in Linköping.”

Anders Norr has faithfully attended the Walpurgis concert since his graduation in 1977. But this year he wasn’t in the audience. He was once again up front, singing to celebrate the arrival of Spring.

GUNILLA PRAVITZ

Innovative IT system for patient data garners international applause

China. He has an MSc degree in Industrial Engineering and Management from 2005. MARTEN GUSTAFSSON works with Business Development at REA Services, Germany, an affiliate of UBS Investment Bank in Zurich, Switzerland. He received an MSc degree in Industrial Engineering and Management in 2005.

MALIN ERIKSSON has an MSc degree in Communication and Transportation Engineering which she obtained in 2007. She works as Project Engineer at Statens Vägverker (Norwegian Public Roads Administration) in Trondheim, Norway. She obtained a BTech degree in Civil Engineering from the National University of Singapore in 2003 and an MSc degree in Civil Engineering from the Norwegian University of Science and Technology in 2005.

EMMA HILLSLÖM works with Sales and Marketing at Bucsh NZ in Auckland, New Zealand. She earned an MSc degree in Mechanical Engineering in 2007. MANFRED HILLBRENDT completed a Master of Science degree in 2005 after attending the LIU international Master’s program in Manufacturing Management. He is now Head of Commercial Finance at Sony Ericsson Mobile Communications International AB in Munich, Germany.

“Last fall I re-joined the university’s male choir, Likaïton. The Alumni Network is a place for former students of Linköping University to keep in touch with each other and the university.

As a member you will get access to search among other members and receive our alumni magazine LIU magazine 4 times a year (once a year in English) as well as invitations to reunions or events. The services develop continuously.

Register at: www.alumni.liu.se/en

Join before June 30th and take part in the lottery to receive an LIU Sweatshirt!”
What do unique creativity, leading technology and international success have in common?

The Twin Cities of Sweden, made up of the cities of Linköping and Norrköping, has a proud tradition. A whole host of unique ideas have been born here – particularly at Linköping University, as well as the Science Parks in Mjärdevi and Norrköping. These ideas have now become a reality, creating internationally successful products and concepts. This is one reason why the twin cities is enjoying such strong growth!

**PS:** Linköping University (LiU), one of Sweden’s leading centres of higher education, currently has over 25,000 students in a number of prominent research areas. Interest in studying in Norrköping and Linköping has shown a marked upswing.

The Center for Medical Image Science and Visualization (CMIV) is a multidisciplinary research centre initiated by Linköping University, Östergötland County Council and Sectra AB. It carries out research that leads the world in several medical technology areas.

One of the most successful companies in the region is Gripen International, a company owned by Sweden’s Saab and the UK’s BAE SYSTEMS. Gripen has delivered or will be delivering fighter planes to the Swedish, South African, Hungarian, Thai and Czech air forces, among others. The fighter planes are manufactured in Linköping.