



LiU magazine

LINKÖPING UNIVERSITY NR 2 - 2008



The international issue!

The world on campus!

A colorful celebration of culture • sid 12

Global environment high on the agenda

LiU researchers contribute to climate negotiations • sid 4

“We will find the holes and plug them”

EU project to prevent hacker assaults • sid 23

Internationalization is the road to the future



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 got 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 front-line 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 marketplace 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 inspiring academic mission of LiU.

Mille Millnert

Mille Millnert, Rector • mille.millnert@liu.se



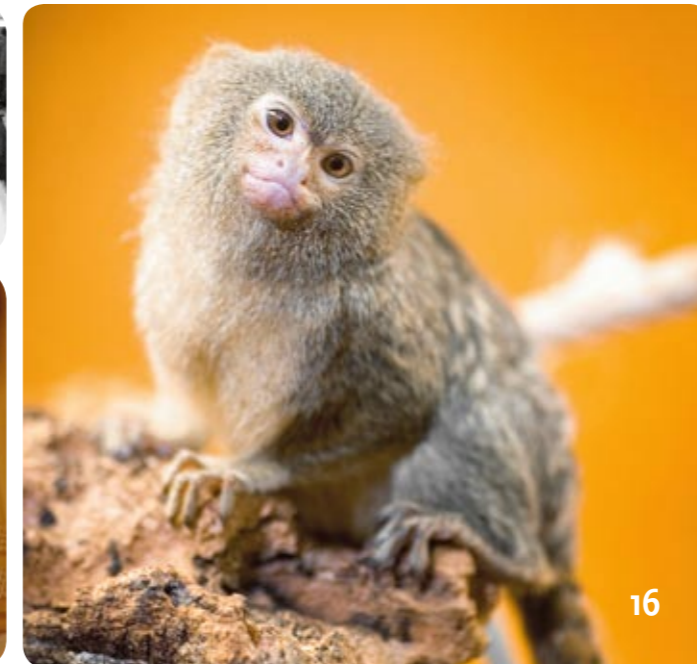
12



24



8



16



6



18

4 Global environment is high on the agenda

LiU researchers contribute to the ongoing UN-led climate negotiations.

6 "Change is about more than climate"

LiU alumna heads up a Canadian institute for sustainable development.

8 New supermaterials better than gold

Will benefit industry and users in many different areas.

11 On changing cultural habits

Column from LiU alumnus in Paris.

12 Meeting the world on campus

International Day became a colorful celebration of culture.

16 Close encounters with dolphins and gorillas

Unique collaboration between LiU and Kolmården Zoo.

18 LiU chemist researches at Stanford

Creating contacts with high-tech entrepreneurs.

20 Developing health care in Kenya

Two decades of collaboration with Moi School of Medicine.

23 "We will find the holes and plug them"

EU project to prevent hacker assaults.

24 Asian adventure

Meet six exchange students and an LiU alumnus in Taiwan.

26 "Post-doc work abroad is a great experience"

Medical biologist is doing research in a New York lab.

28 The world is her workplace

Experiences from Switzerland, Norway, South Africa and Australia.

28 LiU alumni

Read about LiU alumni, who are working in many parts of the world.

LiU Magazine goes international

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, academic peers and partner universities.

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 Öberg, 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 Cameroonian 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!



Lennart Falklöf, Editor-in-chief • lennart.falklof@liu.se

LiU magazine

Address	External Relations Office Linköping University SE-581 83 Linköping Sweden
Editor-in-chief	Lennart Falklöf +46 13 28 16 93 • lennart.falklof@liu.se
Editorial staff	Anika Agebjörn • Eva Bergstedt Kristina Edlind • Åke Hjelm Gunilla Pravitz
Translation	Janice Soderling
Revision	Kristina Edlind
Layout	Lennart Falklöf
Graphic Form	Peter Karlsson, Svarteld form & foto 0709-13 00 46 • peter@svarteld.com
Printed by	VTT Grafiska, Vimmerby, 2008
Circulation	25 000 copies
Cover photo	Göran Billeson

Ett internationellt magasin

 Välkommen till det allra första internationella numret av *LiU magasin*, med texter på engelska. Det beräknas utkomma en gång per år. Här berättar vi om spännande forskningssamarbeten, studentutbyten och alumnier som arbetar i olika delar av världen.

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 **ANIKA AGEBJÖRN**

Deforestation 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 much more difficult to work out how to justly 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.

“Sri Lanka has lost much of its primary forest cover during the past two decades,” Madelene explains. “Our team uses satellite images to locate and measure the carbon storage in the remaining forests. We will simulate several models to see how they affect Sri Lanka. We hope to contribute our suggestion to the 2009 Copenhagen Conference.”



Madelene Ostwald's research focus is on deforestation in tropical countries.

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 threats, 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



Björn-Ola Linnér



Mats Eklund



LiU scientists are looking at the nutrition dynamics and overenrichment of the Baltic Sea.

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 biofuel from waste. Bo Svensson and Jörgen Ejlerstsson, two scientists at the Tema Institute's Water and Environmental Studies were among the foresighted who brought about these developments. ■

Bred miljöforskning på LiU

De internationella klimatförhandlingarna, övergödningen i Östersjön, energieffektiviseringar och miljöteknik. Det är några av de områden som miljöforskare på LiU arbetar med.

En av dem är Madelene Ostwald på Centrum för klimatpolitiska studier. Hennes fokus ligger på skogsavverkning i tro-

MORE ENVIRONMENTAL RESEARCH

- Researchers at the Division of Energy Systems show that energy consumption of many Swedish industries can be cut in half. A current research agenda will create energy-efficient dwellings, so-called passive houses.
- Environmental statistics is a specialty at LiU. Within a national research program tools are developed to evaluate how Sweden meets its defined environmental goals. In charge of the program is Professor Anders Grimvall who also participates in an EU project to find reliable ways of measuring greenhouse gas emission.

pikerna – något om kan bidra med hela 20 procent av de globala växthusutsläppen.

Att dessa avverkningar behöver bromsas är alla överens om. Men hur utvecklingsländer ska kompenseras för detta är en knäckfråga. Ett pilotprojekt som Madelene Ostwald driver i Sri Lanka kan komma att visa vägen.



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

“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.

text **ANIKA AGEBJÖRN**
photo **MARTIN DEE**



Gunilla Öberg, director of IRES.



Vancouver, Canada.



Working in the lab.

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 Sustainability, 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 usage, 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.”



Gunilla Öberg is enthusiastic about her present work setting. “Stimulating intellectual discussions occur on a daily basis”.

“Though our supervisors are top tier scientists with their own scientific interests to nurture, they are unselfishly 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 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.” ■

Leder miljöinstitut i Kanada

 För två år sedan lämnade professor Gunilla Öberg föreståndarskapet för Centrum för klimatpolitisk forskning vid LiU för att bli chef för ett av världens ledande forskningsinstitut inom hållbar utveckling, IRES. Hennes bas är numera Vancouver i Kanada.

“Emphasize the good examples”

LIU ALUMNUS MONITORS CLIMATE ISSUES IN THE USA

He graduated from LiU in 2001 with a degree in economics. Today 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.



Lars Roth is at the Swedish Embassy in Washington.

“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 technologies 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-

pic, but what are the practical results?

“Well, the United States is a motorized society,” Lars admits. “No one goes anywhere except in a car!”

Though Lars himself manages fine without a car. The public transportation in Washington D.C. operates reliably, he tells us, and is affordable. In some cities, public transport is free.

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 straight career in other words, where environment and economics have been his lodestars.

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.” ■

Bevakar miljöfrågor i USA

 LiU-alumnen Lars Roth arbetar på svenska ambassaden i USA med att bevaka miljö- och energifrågor. Efter ekonomexamen på LiU 2001 studerade han miljöekonomi i Australien och har sedan arbetat på Naturvårdsverket och Miljödepartementet.

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 HJELM

photo GÖRAN BILLESÖN, PETER KARLSSON, VIBEKE 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 LiUs capability to maintain a spearhead position in research.

IT IS THIS KIND of farsighted thinking that opens the sluice for investment capital, creates leverage and rallies resources. Between

2007 and 2016, MSEK 750 (approx 80 million Euro) has been pledged for research in advanced materials at Linköping University. The funds derive from LiUs industrial partners, major research funding agencies in Sweden, the European Union, and from the university's own strongbox.

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 LiUs 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.

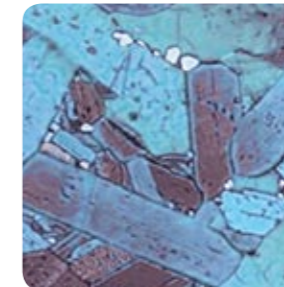
"At LiU, we have always been good at innovation and invention, but these have

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.

"But it may seem abstract to outsiders in the beginning," he adds with a smile. "That's how it was when steel was introduced." ■



"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, professor of thin film physics.



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.

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 nanostructuring. 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," explains Lars Hultman.

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 Ljungcrantz, CEO at Impact Coatings, presented his doctoral thesis in 1995, he was part of LiUs thin film research team.



Henrik Ljungcrantz

Perfect surfaces

The university's materials science bank contains a lot of know-how about magnetron sputtering and cathodic arc deposition technology in vacuum for coatings application.

A new team member is Johanna Rosén, LiU post-doctoral fellow whose speciality 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 Rositza Yakimova, it is now in commercial production at Norstel AB i Norrköping.

Supermaterial bättre än guld

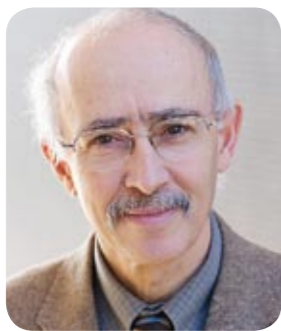
LiU-forskare utvecklar nya material som kan bli lika banbrytande som stålet än gång var. De är redan på väg att ersätta guld som ytbeläggning för elektriska kontakter. Under tio år satsas 750 miljoner kronor på forskningen som leds av Lars Hultman, professor i tunnfilmfysik.



LiUs 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, Javier Bareno, postdoctoral fellow from Spain, Naureen Ghafoor, newly hatched PhD from Pakistan, and Jiangiang Zhu, PhD candidate from China.



Paula S. Fass



Malik Ghallab



Christopher K. Glass

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 Transfers). Dr. Ghallab is in charge of INRIA applications projects, industrial relations and international liaisons. He is an eminent researcher in autonomous knowledge-based control systems.

Dr. Ghallab has collaborated with several LiU researchers and had an instrumental role in the WITAS project for autonomous aircraft. Currently he is associate advisor at the LiU research center MOVII – models, visualization and information integration.

THE FACULTY OF HEALTH SCIENCES conferred an honorary degree on Dr. Christopher K. Glass, professor of cellular and molecular medicine at the University of California, San Diego, UCSD. The research of Professor Glass focuses on the pathogeny of significant areas, including inflammation, metabolic disorders and cardiovascular disease.

He has a 15-year scientific collaboration with researchers at LiUs 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 honored 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 a landscape painter and Mr. Bengt Åke Bengtsson, owner and Group CEO of Boxholms AB, is a key player in regional industry and business. ■

Farewell to exchange students

Each year around 800 foreign exchange students come to LiU to study. Now it is time for some of them to return home. A farewell party was held for the departing students on May 7. The same afternoon, a briefing conference was held for the 400 Swedish students who will depart next fall on student exchange programs abroad.

Laura Bago from Spain and Lena Renner from Germany were among those who joined the farewell party. Laura has studied economics at LiU during one semester.

"It's been really great. Not only has my English improved, but I appreciate having met students from all over the world and having experienced a new culture," she says.

Lena Renner, sitting at the same table, agrees. She has studied speech and language pathology and speaks Swedish very well after only one semester. She says her time in Sweden has been interesting and lots of fun.

"I wasn't really prepared that there would be so many differences between the Swedish and German cultures, but I have noticed several. For one thing, the students here work harder."



Laura Bago from Spain and Lena Renner from Germany.

Peter Szilagyi, a Swedish student, has studied industrial engineering and management with international focus on Japan. He will get a close-up look next fall when he starts a year of studies on site.

"I am fascinated by Japan. It is a modern country but has retained old traditions. Not least, I am interested in the language," Peter says.

The briefing conference provided an opportunity for the LiU students going abroad to train their role as "student ambassadors". They learned how to handle cultural clashes and got pointers on how to ensure their personal safety.

"Basically it is about being a good representative. Though actually we are more ambassadors for Sweden than for the university when we go abroad," Peter says thoughtfully.

The road to Hollywood passes through Norrköping

Students enrolled in the Master of Science in Media Technology and Engineering program at LiUs 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-USA university selected as a member of the Sony Imageworks academic network IPAX (Imageworks Professional Academic Excellence program).

Sony Imageworks is one of the most high-profiled 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 relationships with established academic study programs and to nurture 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.



COLUMN FROM PARIS, FRANCE

On changing cultural habits



Ola J. Hedin

DAVID OBERSCHMIDT

"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 smelly 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 ex-pats change all their habits from the old country for all those of their new homeland? I guess it's because it's 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 nationality!

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 Heidenstam's nationalistic Hymn to Sweden, as we gathered in the prestigious Swedish club on rue Rivoli, two blocks from the Elysée Palace.

But I draw the line at Midsummer—the Eiffel Tower will simply not do as a substitute *midsommarstång* (maypole). Besides, it's a good rule never to do *Små grodorna* ("small frogs")—you know, the silly quack-quack dance and song?—while heavily armed guards are staring at you.

OLA J. HEDIN

Ola J. Hedin is Assistant Director at the Swedish Student House in Paris, France. He has studied Business Economics and French at Linköping University.

Meeting the world on campus

text **GUNILLA PRAVITZ**
photo **GÖRAN BILLESÖN**

Turkish grape leaf rolls, Cameroonian casserole, and Latvian cookies. The world paid a call when LiUs 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 waded to the public, wiggled its ears and shook its colorful bottom.

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



The Chinese exchange students were the motor for iDay's most popular dance.



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. "If I can find a job, I'd love to stay a little longer," she says, before whirling off into a Belgian folk dance.



"I like everything! Especially ice hockey!" Kergel Paral, who is studying Innovation Engineering, offers passers-by some Czech cookies which he baked himself. "There are many large 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 amazed 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."



Irem Calik 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.



"Swedish students seem more independent. I see many cultural differences between here and in Tajikistan," says Nurangez Abolulhamidova. After reading about LiU on the Internet, she applied for the Master's program International and European Relations.



Full-fledged cosmopolite! Austris Eylitis from Latvia had a choice of 16 countries for his student exchange year and initially selected Maastricht. "But I wanted to see Sweden too," he says. "This seems to be a fine country to live in." At LiU he studies Innovation, Government and Culture.



"I like the attitude and the atmosphere at LiU. The students discuss more in the classroom," says Shari Xia Qiyun from Shanxi in China when asked about the differences between studying in Beijing and in Linköping. She is enrolled in Language and Culture in Europe, and hopes to find employment at a European firm when she returns to China.



Noemi Horvath is a theology student who received a scholarship to pursue religious studies at LiU. She plans to teach when she returns to Hungary. "The beautiful nature is what I like best about Sweden," she says. "And I dig all these soft-spoken Swedes."



“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!”

AINA MUROWSKA, POLEN



Outdoor Education caught the attention of Karliju Dalhuijsen 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 when I was her mentor.”



Traditional tones. Hanxiao Ge, who is enrolled in the Master's program System-on-Chip (Socware), entertains us with her lute. “The classroom situation is very informal here. I like being able to plan my studies to suit my needs,” she says.



A course in African dance can change your life! Asa 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 Asa with one-year-old Maureen in her arms.



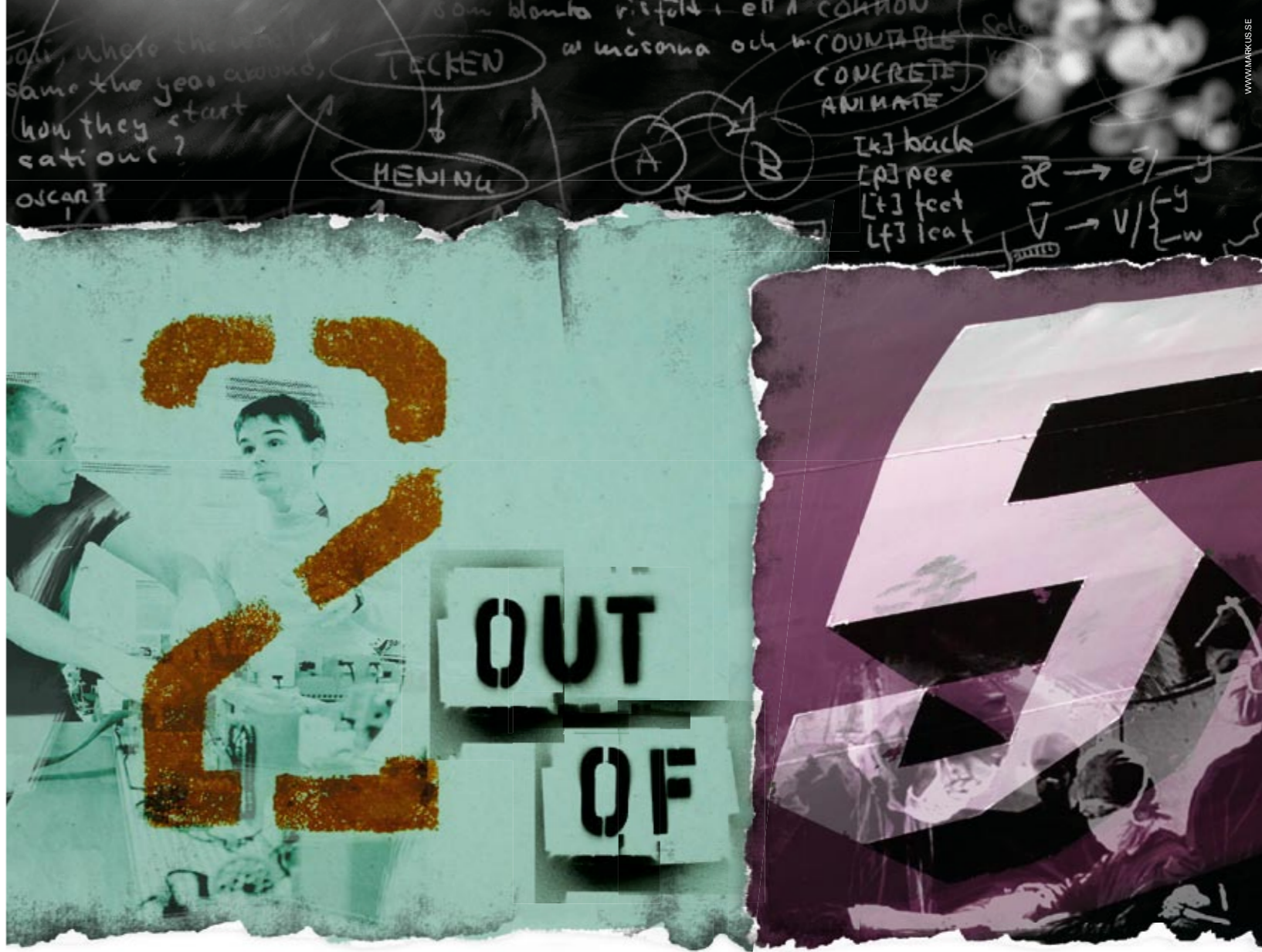
Alia Amir has only two more courses to complete before returning to Bangladesh to work as a language teacher. “I have friends who studied at the universities in Uppsala and Lund, so I knew a little about Sweden before I came here. The Swedish education program for teachers focuses more on the pupils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



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 LiU's 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.



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

Control Systems is one of the core subjects in our engineering programmes and one of the university's strongest research areas.

The medical programme has been at the forefront of educational development for more than two decades and has been one of the great rejuvenating forces in Swedish higher education. Time and time again it has been evaluated as the country's leading medical training programme.



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



Linköpings universitet
expanding reality

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 EDLIND**
photo **STEFAN JERREVÅNG**



The marmosets are curious, but a bit wary...

Gorilla trying to look behind the door where the mirror is attached.



"Observing the behavior of animals is a new experience for me," says Magdalena Maciag, exchange student from Poland. Magdalena came to Linköping in January 2008 to study for one semester at LiU within the Erasmus exchange program. One of the courses she is taking is Primate Ethology.

Magdalena's major back home at Nicolaus Copernicus University in Torun is medical biology in combination with experimental psychology. This fall she will be finalizing her master's thesis there, which deals with the effects of stress on adrenalin and noradrenalin production in humans.



Studying in Sweden is quite different from studying in Poland, says Magdalena Maciag, Erasmus student. In Sweden, there is more of hands-on project work, compared to Poland, where we do more of literature studies.

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 Primate 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.



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

Facts about Kolmården Zoo

Scandinavia's largest wildlife park, covering an area of 250 hectares (617 acres). 500 000 visitors annually.

Number of species: 750

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

Focus on smell and taste

Matthias Laska is professor of zoology at Linköping University and responsible for the course Primate 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 perfor-




Matthias Laska

mance 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).

Unikt samarbete med Kolmårdens djurpark

 Hur gör djur? Den frågan går som en röd tråd genom en internationell masterutbildning som Linköpings universitet driver i samarbete med Kolmårdens djurpark. Utbildningen sätter fokus på djurs

beteende och olika former av djurskydd.

– Samarbetet mellan LiU och Kolmårdens djurpark är unikt. Inget annat universitet i Europa kan erbjuda samma möjligheter, säger professor Matthias Laska.

LiU chemist researches at Stanford University

CREATING CONTACTS BETWEEN SWEDEN AND AMERICAN HIGH-TECH ENTREPRENEURS

In 2004, Vinnova, the Swedish Governmental Agency for Innovation Systems, was seeking a business ambassador to be stationed at prestigious Stanford University in the heart of Silicon Valley. The shoulder tapped belonged to Gunilla B. Jacobson, LiU alumna with chemistry as her chosen field.



text **LOUISE FRYKHEDEN**
photo **SARAH FRYKHEDEN**

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 researcher who was familiar with American business culture, entrepreneurship and academia. Gunilla recalls the day she got the phone call that redirected her life.

"At 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.

Gunilla and Vinnova reached an agreement. 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 to 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



Gunilla B. Jacobson

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.

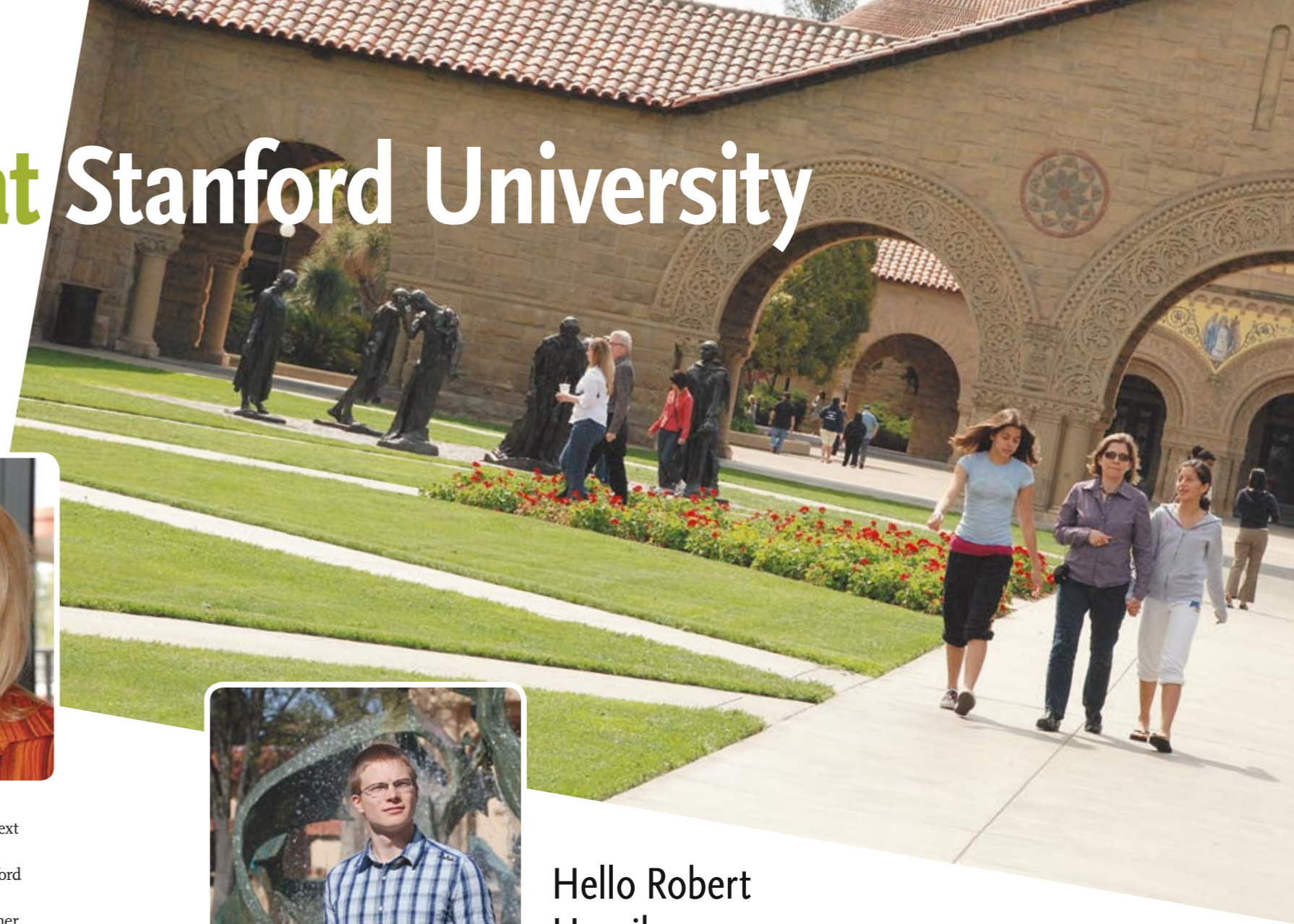
"My mom worked here as a physics researcher. We moved home to Sweden, but I always expected to return to Stanford. I've lived in the States for ten years now." Gunilla's mother, Birgit E. Jacobson, a former researcher and instructor at LiU who operates her own company, is an inspiring role model.

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.

"Here people are encouraged to succeed. You are expected to do your all. It's easy 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 for more than five years. My next job might just be to found a biotech enterprise!" ■



... HOW DID A GUY FROM JUKKASJÄRVI IN NORTHERNMOST SWEDEN END UP AT STANFORD?

"Well, I am an exchange student enrolled in LiUs Master's program in Applied Physics and Electrical Engineering. As you know, Linköping University and Stanford are academic partners. I knew even when I applied for my study program that a personal goal was to study abroad at one of the world's best universities—and now here I am!"

HOW DO YOU LIKE IT?

"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 un-

Hello Robert Henriksson ...

usual 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 HAS SURPRISED YOU MOST SINCE ARRIVING AT STANFORD?

"That despite differences in cultural and so-

cial backgrounds, people can come together as a team. That was a momentous insight!"

YOU CHOSE 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?

"Nah, I miss my girlfriend. She has already moved back to Stockholm. I miss our dog too!"

Kemist med kontakter



Gunilla B. Jacobson delar sin tid mellan egen forskning på Stanford-universitet och att ta emot Sverige-besök, ge råd och förmedla kontakter. Hon har läst kemi vid Linköpings universitet.

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.

text ÅKE HJELM
photo STEFAN JERREVÅNG & JOAR SVANVIK



Fabian Esamai is dean of Moi School of Medicine and also an LiU alumnus.

Dr. Fabian Esamai has been engaged in the fight against malaria in Kenya for nearly twenty years. Though he is encouraged to see a decline in infant mortalities attributable to malaria, he is concerned about the adverse affects on child health attributable to growing poverty and epidemic HIV.

Dr. Esamai serves his community in many capacities. He is a practicing pediatrician, professor, and dean of the School of Medicine at Moi University in the Kenyan city of Eldoret.

"According to the WHO millenium goals, the infant mortality rates shall go

down by two thirds until 2015. That is a great challenge and we are still very far off," says Dr. Esamai.

THE SCHOOL OF MEDICINE was established in 1989. 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.

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 310 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.

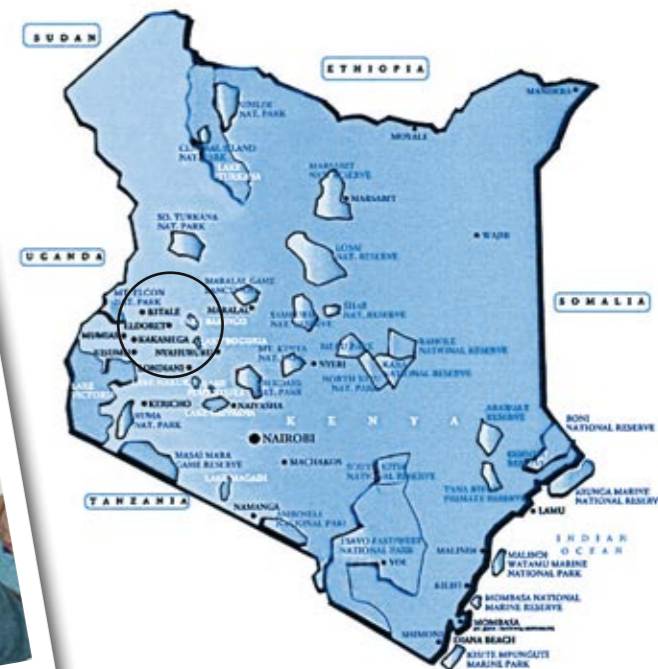
IN ADDITION TO HIS DUTIES as dean, Dr. Esamai continues clinical and research



Fabian Esamai meets with LiU colleague Mats Hammar. Both faculty heads are agreed to continue collaboration.



A student takes care of a female patient and her child at Eldoret Referral Hospital.



Eldoret lies at the edge of Rift Valley in south-western Kenya. It is the fifth largest city in the country with more than 200 000 residents. Moi University, established in 1984, is named for former president Daniel Arap Moi.

work. His several roles merge in the fight against malaria infection in children. He has seen a succession of drugs become ineffective as the malaria parasite continues to develop resistance to medication.

Perhaps a herbal drug from the traditional Chinese therapy will improve the situation.

Artemisin, an extract from sweet wormwood (*Artemisia annua* L.), 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. ■

Moi - LiU cooperation 1990-2007 in figures

STUDENT EXCHANGE

Moi to LiU 100

LiU to Moi 80

FACULTY EXCHANGE

Moi to LiU 50

LiU to Moi 30

During this time Moi has examined

- 500 doctors
- 300 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."

Mångårigt samarbete med kenyanskt universitet



Under nära två decennier har Linköpings universitet haft nära kontakter med Moi School of Medicine i Kenya. Samarbetet har omfattat utbyte av studenter och anställda, men också forskning och forskarutbildning inklusive kompetensutveckling inom hälso- och sjukvård.

Den nuvarande dekanen, Fabian Esamai, är LiU-alumn.

2002 disputerade han på en avhandling om malaria. Vid sidan om uppdraget som dekan fortsätter han arbeta mot malarian och dess konsekvenser. Ett stort problem är att läkemedel blir odugliga när malariaparasiten utvecklar resistens. Nu knys förhoppningar till ett örtläkemedel, artemisin, som visat goda resultat i färskastudier.

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.



Atila Alvandpour

“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 Intel Research Laboratory at Portland, Oregon.

His and his fellow researchers’ reputation as specialists on low-effect, high-speed circuits attracted interest from Zarlink Semiconductor, 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.

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.



Stefan Thor with fruit flies.

“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 Stefan 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.

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 2100. The EU also is promoting CCS, suggesting that it be included in the trading of emission rights, for example.

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 placed on CCS requires the storage of several billion tons. In other words, this involves gargantuan volumes. In fact, carbon dioxide would be the world’s largest transported good.

“In full scale this 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 hugely underestimated.

“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.”

“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.

SHE CONTINUES, “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.”

This will improve the state-of-the-art in several ways. Developers will have access to security information that addresses their needs, and users of tools that are ‘SHIELDS-compliant’ are assured that their tools address a particular set of issues.

PARTNERS IN SHIELDS

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

“SHIELDS-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 sited in



LiU professor Nahid Shahmehri is coordinator of the project.

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.”

LENNART FALKLÖF

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 DIPLECS, a project to develop self-learning safety systems for automobiles.

• **GEOFFREY D. GOOCH**, professor in political science, coordinates the LiveDiverse project which is focused on sustainable development and vulnerability in Vietnam, India, South Africa and Costa Rica.



Michael Felsberg



Geoffrey D. Gooch



LiU students in Taiwan. In front Elisabeth Suzuki, and behind her from left to right, Therese Schneidmann, Johan Simonsson, Louise Brask and Mehrad Bavarian. The sixth exchange student, Jens Egeröd, was absent because of a lecture when the picture was taken.

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.

text & photo **EVA BERGSTEDT**

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.

Besides the personal reason behind their choices, there was a professional one. All of them want 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 by being open-minded, you become much more tolerant," says Elisabeth Suzuki.

Two of the students plan to stay on to study Mandarin Chinese, the language spo-

ken on Taiwan and in mainland China.

"I would really like to complete my degree project here and study Mandarin while doing it," says Therese Scheidmann.

Mehrad Bavarian agrees about the value of language studies.

"I believe we could all be good go-betweens for Western business, if we learned to speak casually in Mandarin. And wouldn't it be great to be able to communicate with 25 percent of the world's population in their own language!"

THEY SUM UP their experiences of the past year. Instructive, challenging, different. Very different.

"A warm country, in every sense of the word," adds Johan Simonsson. "The hospitality is so impressive."

"And the feeling of security, of honesty," Louise Brask points out, "is amazing. You might leave your key in the scooter, forget your computer in a public place, or walk away from your briefcase at McDonalds, but you will find your belongings where you left them."

Not to mention which, these students have fun. If they get bored in Hsinchu, the capital city of Taipei is not far away. Public communications are good, the fun spots many. East meets West. ■



Ebbe Strandell went back to Taiwan to work with flood protection and technical support for marine biology research.

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 opportune 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 in front of the world's highest tower, Taipei 101.

His other project is to establish a reporting system to inhibit flooding.

“Every year, three or four major typhoons hit here. Sadly, many lives are lost due to flooding and the ensuing devastation. So we have installed video cameras and metering devices at strategic points throughout the country. These transmit real-time measurements of the water level at designated points in rivers. This gives the authorities an overview of the true situation during a typhoon and allows them to deploy resources where they are most needed.”

THE CENTER where he works is located in one of the world's largest science parks in the city of Hsinchu, about 70 km (40 mi) southwest of Taipei. His worksite has conditions similar to those in Sweden, the work hours are 8 a.m. to 5 p.m.

“Our work climate is good. It is different than in the private sector, where a work day is between ten and twelve hours. And nowhere do you go home before the boss does.”


Ebbe commutes from Taipei, so he still puts in a long day. But there is more to life than work.

“Taipei, where my girlfriend and I live, is a fab city and the nightlife is exceptional. When the nightclubs shut down at five in the morning, other clubs are opening their doors.”

And why did he choose Taiwan in the first place?

Ebbe smiles again. “I knew next to nothing about the country except that it was a high-tech hotspot. And I had read a book by James Clavell, *Tai-Pan*, which was set in Hong Kong and made me interested in the Chinese and other Asian cultures. And here I am!” ■

Utbytesår i Taiwan gav mersmak

 Ebbe Strandell, civilingenjör i mediateknik från LiU, var utbytesstudent i Taiwan ett år. Nu är han tillbaka i landet och arbetar på ett företag med skydd mot översväm-

ningar och stöd till marinbiologisk forskning.

För närvarande läser sex LiU-studenter i Taiwan (se artikel på föregående uppslag).

“Post-doc work abroad is a great experience”

MEDICAL BIOLOGIST IS DOING RESEARCH IN A NEW YORK LAB

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 too in some ways. You see, we had no role 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 a true team spirit. Linköping University is an educational setting that encourages students to develop their full potential. To dare to break new ground without being unnecessarily corralled by conventional barriers!”



Helena M. Linge (then Johansson) as a student in the master's educational program Medical Biology.



Helena M. Linge will spend three years doing research in a laboratory at The Feinstein Institute for Medical Research.

HELENA M. LINGE has a long-standing interest in the symbiosis of microbes and their human hosts. The subject of her degree project was the parasite *Leishmania donovani* 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.

“I am doing my post-doc in sepsis research at The Feinstein Institute for Medical Research which is located on Long Island. My husband Petrus is 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.

Her lab 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 pathology of blood poisoning and the mechanism 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 Cola 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 analysis.

“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 (*fika*) where staff can bond and share daily perspectives. And she sees advantages in the relatively flat organizational structures that Swedes 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 LiUs students.” ■


Medicinsk biolog i New York

 Under tre år forskar Helena M. Linge om blodförgiftning på ett labb i New York. Hon var en av pionjärerna på magisterprogrammet i medicinsk biologi vid LiU.



Victoria Lindberg with a koala in Australia. Since she completed her nursing studies at Linköping University less than a decade ago, she has been working in many parts of the world.

Med världen som sin arbetsplats

 Knappt tio år har gått sedan Victoria Lindberg blev färdig sjuksköterska vid Linköpings universitet. Ändå har hon provat på mer än vad de allra flesta hinner med på ett helt yrkesliv.

Victoria har arbetat som sjuksköterska i Australien, Schweiz, Norge

och Sverige, gjort fältstudier bland folkhälsoarbetare i Sydafrika och arbetar idag på ett internationellt läkemedelsföretag.

– Jag gillar att kombinera arbete med att resa och upptäcka nya miljöer. Som sjuksköterska är det ofta lätt att hitta jobb, konstaterar hon.

Victoria Lindberg has worked as a nurse in Australia, Switzerland, and Norway. She has conducted field studies on public health in South Africa. Today she is employed by an international pharmaceuticals firm. Victoria sees the whole world as a potential workplace.

text **LENNART FALKLÖF**
photo **ANNA MOLANDER & PRIVATE PICTURES**

Less than a decade ago, Victoria Lindberg completed her nursing studies at Linköping University. In that short time she has experienced more vocational change than most do during an entire worklife.

“I like to combine work and travel. I like the challenge of new places. Professional opportunities for nurses are not difficult to find,” she explains.

In January of 1999, she stepped from LiU studies into the labor market.

“My first nursing job was in the neurological clinic at the local University Hospital. Our patients were very ill, having diagnoses such as ALS, MS, brain tumors and Parkinson’s disease. It was a new experience, and tough, but I did it and I learned a lot.”

VICTORIA WANTED TO EXPAND her horizons and see the world. Her next stop was the little Swiss village of Saas Fee, a popular ski resort for young people from many countries.

“It was like being a district nurse—bandaging sprained thumbs and broken wrists. And sometimes comforting youngsters who were homesick.”

On her free time, she could pursue one of her passions, downhill skiing.

“That sounds flashier than it was,” she adds. “I was on 24-hour call, because I was

the only nurse available and was responsible for the well-being of as many as 150 kids. It was one of the most demanding jobs I’ve had, but one of the coolest.”

Victoria returned to Saas Fee three seasons in a row.

Over the years she has done some stints in Norwegian hospitals—in Tromsø and Stavanger—where she, for example, has worked at an emergency ward and an infection clinic.

IN THE FALL of 2002, Victoria returned to LiU to pursue a master’s in public health science.

“The preventive side of community health interested me,” Victoria explains. “And I got a great opportunity to go abroad to conduct field studies for my master’s thesis.”

She and a classmate did research in the eastern region of South Africa for two months.

“We were in a poverty-stricken region of KwaZulu-Natal. Local health care workers working with AIDS patients took us with them on their home visits. We saw a lot of



Victoria Lindberg in the spring of 2008. Today she is working at the Scandinavian headquarters of an international pharmaceutical firm.

misery, but also met a lot of outstanding individuals, patients as well as health care staff.

“I am not averse to doing a stint with Doctors without Borders,” Victoria continues.

THE SAHLGRENSKA HOSPITAL in Gothenburg was her next workplace. First in the emergency ward, and then as research nurse accountable for clinical trials for MS.

“My research nurse job was fairly autonomous. I was in charge of most of the trials planning and served as the primary contact for participating patients. It was a rewarding job. I was there a little over a year and a half.

Victoria could have stayed longer, but she wanted to live and work a while in Australia. So she packed her bags and took off again, to spend half a year at an X-ray center in Sydney.

“That was a new field for me. My workmates were great, but the hierarchical organization of health care in Australia was sometimes frustrating.”

“But I love the country and the lifestyle. I lived near the coast and had a cool social life. It was not uncommon to find a note taped to the door to join a barbeque. It is pretty laid-back down under,” she laughs.

SINCE THE FALL of 2007, Victoria Lindberg is one of the medical information and safety

officers at the Scandinavian headquarters of Wyeth, an international pharmaceutical firm.

“I handle the medical data and external contacts—physicians, patients, pharmacists and nurses. I respond to questions about side effects, drug interaction, shelf life, drug ingredients. We forward information on reported side effects to the Medical Products Agency—a Swedish government agency—and to our head office.”

She likes her job even though she sometimes misses the clinic contacts.

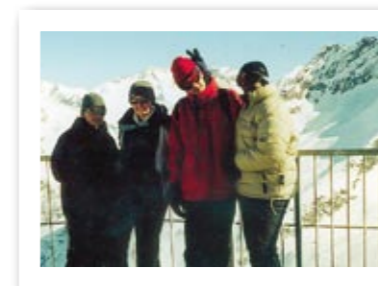
“Nursing provides so many professional opportunities. My boss is a nurse, and we have nurses working in marketing, as clinical trial directors and product managers.”

VICTORIA LINDBERG has covered a lot of ground since leaving home to study at LiU.

“Studying at LiU was probably my smartest move ever! I had a great time there, took part in many aspects of student life and made lots of friends.”

“I made big personal strides during my student days too. I used to be shy and cautious, but not anymore!

“When I think about it, it seems strange that I have moved around so much. I hate saying good-bye. I am pretty good at keeping in touch though, I have friends all over the planet.” ■



Saas Fee, Switzerland



Tromsø, Norway



Sydney, Australia



KwaZulu-Natal, South Africa

LiU alumni

Prospecting in Silicon Valley

HELLO GÖRAN FELLIDIN, LIU'S 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 sometimes 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 motivate and encourage our students to become entrepreneurs."

"So to make a long story short, nothing is impossible, all research has some findings that can be commercialized, no student is destined to be only an employee, and we can always learn from the elite."

WHAT ARE YOUR MAIN IMPRESSIONS THUS FAR?

"That which is noticeably different is a spirit of wanting-to-know and the positive attitude. To try, to dare are hallmarks. It is



Göran Fellidin

all right to try and not succeed completely. You might say that is the optimal proof that you really tried. And when someone succeeds, their colleagues celebrate them, rather than showing envy. That spurs one on, serves as a lodestar. People think, well, he did it, or she did it, so can I."

WHAT DO YOU DO WHEN YOU AREN'T OUT SCOUTING FOR INNOVATION SYSTEMS?

"Oh, there is plenty to fill up my time. From the Golden Gate Bridge, it's only about three hours to the Lake Tahoe skiing resorts. I was at Squaw Valley recently and got to see a classic Olympic village. I have also spent some time in Los Angeles and drove back through the Valley on Highway 1. What a scenic route! Watching the sun setting on the Pacific Ocean was pretty spectacular, but the food and wine wasn't a bad deal either! I use my leisure time to mountain bike or to jog around Stanford. It's a way to keep my balance."

Göran Fellidin is Director of Marketing at LiU, particularly working with tech transfer and fundraising. He co-founded the ERP-vendor Intentia AB in 1983, today merged with US-based Lawson Software, and co-managed the growth of the company from 4 to 3,500 employees. He studied at LiU for an MSc in Industrial Management and Engineering 1978 to 1983.

SARAH FRYHEDEN

Innovative IT system for patient data garners international applause

He is a member of the award-winning team that created Sweden's best IT innovation in the health care sector. Anders Norr, IT architect and LiU alumnus employed by the Östergötland 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 an era of rapid technological development. Back in the early seventies, we students stood awed 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 worksite after twenty-five years.

AS IT ARCHITECT—a 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 100 million kronor in a project that gets rolling in May 2008. Sweden has a coordinator role.

"The purpose is to make medical records for nationals of all EU countries available at hospitals throughout the Union."

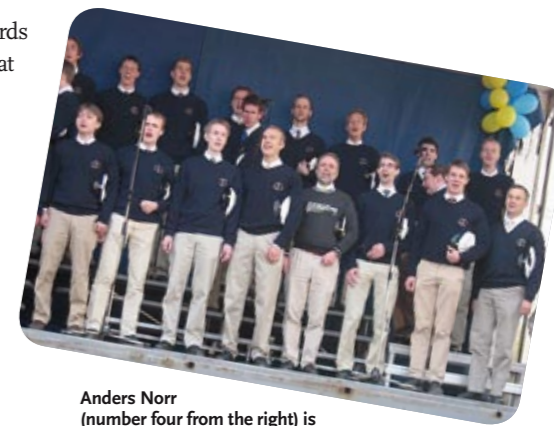
After winning the competition for Sweden's best IT innovation in the health care sector, Anders Norr and his teammates received an invitation from Sweden's Washington D.C. embassy to hold talks and seminars for their American peers. The team previously spoke in Florida before an audience of 28 000 health care delegates.

ANDERS HAS KEPT close professional contact with the researching biomedical engineers at LiU. Recently he has taken a step directly into campus social life.

"Last fall I re-joined the university's male choir, Lihkören, 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 arrack punch were imbibed amidst much high-spirited singing.

"There weren't many campus traditions



Anders Norr (number four from the right) is back in the university's male choir, Lihkören.

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

LiU alumni

SOFIA AHLQVIST is Legal Trust Officer at Citco in Luxemburg. She holds a Master of Science (MSc) degree in Commercial and Business Law which she received in 2007.

MARTIN DAVISON is Associate Director at the 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 2005. She works as Project Engineer at Statens Vegvesen (Norwegian Public Roads Administration) in Trondheim, Norway.

TOBIAS GEISBUSCH works at McKinsey & Company in Munich, Germany. He earned an MSc degree in Manufacturing Management in 2006.

PETER GRIMVALL is General Manager at Swedwood Tradint SB RO Quingdao in

China. He has an MSc degree in Industrial Engineering and Management from 2005.

MÅRTEN GUSTAFSSON works with Business Development at IKEA Services in Plymouth Meeting, USA. He received an MSc degree in Industrial Engineering and Management in 1980.

SAMUEL GUSTAFSSON is Head of Commercial Finance at Sony Ericsson Mobile Communications International AB in Munich, Germany. Samuel received a MSc degree in Business and Economics in 2001.

THANH HAI BUI is Vice Director of Infrastructure Service Sector at FPR Information Systems in Hanoi, Vietnam. He earned a PhD degree in Media Technology and Engineering in 2005.

EMMA HELLSTRÖM works with Sales and Marketing at Busch NZ in Auckland, New Zealand. She earned an MSc degree in Mechanical Engineering in 2007.

MANFRED HILLEBRAND completed a Master of Science degree in 2003 after attending

the LiU international Master's program in Manufacturing Management. He is now Senior Management Consultant at Ernst & Young AG in Munich, Germany.

XIN HU is International Coordinator at Global Village of Beijing Environmental Education Center in Chao Yang, Beijing, China.

Xin earned a Master of Science degree in 2007 after attending the international Master's program in Environmental Science.

STEFAN MARS is Lead Programmer at Frontier Developments LTD, in Cambridge, UK. He received an MSc degree in Applied Physics and Electrical Engineering in 2001.

Keep in touch!

JOIN THE ALUMNI NETWORK

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 magasin 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!





Campus Norrköping



CMIV



Gripen International

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.

ARTOM