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New dean plans to promote research

A new dean was appointed to the Faculty of Health and Science (also known as Hälsouniversitetet) at Linköping University in January. Professor Mats Hammar's main task will be to strengthen the position of the faculty and make its research more competitive.

Since completing his medical studies in the 1970s, Mats Hammar has worked at the Regional Hospital in Linköping, now the University Hospital, and the Faculty of Health and Science as a doctor in the Department of Gynaecology, researcher, lecturer, senior physician, professor and head of department. In his new role as dean, he intends to work towards promoting the faculty as Scandinavia's best medical teaching faculty. He also hopes to raise the standard of research even further.

"The greatest challenge will be to make our research more competitive," says Professor Hammar. "For example, we need to publish in the more renowned and most widely read and frequently cited scientific journals. Our goal is to raise the average level by ten percent next year. We also need to focus our research resources better."

Prior to assuming his current position, Professor Hammar headed the Department of Molecular and Clinical Medicine (IMK) where he taught and supervised students, as well as caring for patients. He has been awarded the distinction "Teacher of the Year" on four occasions.

"Some of my aims as dean are to strengthen the research connected with our teaching subjects, and to improve cooperation with our own county health authority and other health authorities in the region," he concludes.

Source: www.lio.se

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PHOTO LANDSTINGET I ÖSTERGÖTLAND

New supercomputer offers great potential

A new computer system with Sweden's largest shared primary memory – half a terabyte – is being installed at the National Supercomputer Centre (NSC) at Linköping University.

"This system will make it possible for researchers to carry out calculations and studies that have until now been impossible, for example, in quantum chemistry and quantum physical contexts," says Sven Stafström, Professor in Computational Physics, and head of the NSC.

A computer architecture with shared memory means that each processor can access the whole of the memory. This is of great advantage when a large amount of data is to be used at the same time. A large memory makes it easier and quicker to study large molecules or complex crystalline materials. It also facilitates the analysis of large amounts of data, which is common in, for example, bioinformatics.

The hardware of the new system consists of an SGI Altix 3700 Bx2 with 64 Intel® Itanium® 2 processors, and 512 GB primary memory. The system cost SEK 5.7 million and was funded by the Swedish Research Council via the Swedish National Infrastructure for Computing (SNIC).

Source: www.liu.se

For further information, please see:
www.nsc.liu.se

INTERNATIONAL CONFERENCE

IPR management in Life Science

The Linköping University Holding Company (Universitetsholding) and BioMedley Linköping arranged a conference on intellectual property rights in life sciences on 8 February.

Among the main speakers were Philip Webber from Frank B. Dehn & Co in London, who spoke about "Patentability of Bioscience Inventions", Peter Ludwig from Darby & Darby in New York, who spoke about "IPR Strategy and Patent Portfolio Development for Start-Up Companies", and Peter Horn Møller from Plougmann & Vingtoft in Copenhagen, whose talk was entitled "IPR Initiatives to Boost University Innovation". The subject generated a great deal of interest and attracted about 70 participants from research and business, both within and outside the region. A lively and interesting panel debate on complicated IPR issues in the life sciences was expertly led by the moderator, Ulf Wickbom. Several of the panel members have already become engaged in Linköping's interesting development environment and will be able to make a significant contribution to improving knowledge in life sciences in the region.

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Nanoresearch receives SEK 30 million from SSF

Two large nanoscience research projects with electronic and medical applications will soon be starting at Linköping University. The projects will be financed by Sweden's Foundation for Strategic Research (SSF) to the tune of SEK 15 million each over a period of five years.

The two Linköping projects – Nano-N and Nano-Sense – are both headed by professors in physics, Per-Olof Holtz and Bo Liedberg, respectively. The aim of the Nano-N project is to develop better semi-conductor structures for opto-electronics with the aid of nanowires or nanoboxes with dimensions of about one nanometre (1 nm = one millionth of a mm). The material used will be gallium nitride. Using this technique it is possible to construct light-emitting diodes (LEDs), lasers and detectors that can be used in applications to produce better lighting, monitor pollution and improve optical communication in water.

Nano-Sense aims to develop new nanomaterials and nanoparticles for biological and medical applications, for example, better contrast agents for imaging in MRI scanners. One idea is to attach target-seeking molecules to the nanoparticles so that they can more easily find their way to the tissue to be imaged. Another application is biosensors that can help doctors to make diagnoses.

In addition to these grants, Professor Holtz and Professor Liedberg will also receive extended funding of SEK 2 million and SEK 9.5 million, respectively, from SSF. Source: www.liu.se

the latest

Sound growth of the region's life sciences companie. The market analysis company CMA has carried out a study of the region's companies involved in life sciences. Their study shows a continued positive trend with healthy organic growth of established companies. At the same time, new projects in medical research are continuously appearing, which contribute to the region's portfolio of interesting spin-off companies.
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Micromuscle AB new partner in Finnish research project. Linköping company Micromuscle will be participating in the Finnish research project ELCOMPO, which is led by the Technical Research Centre of Finland (VTT). The aim of the project is to develop new, polymer-based, nano-composite materials for use in areas such as biomedical engineering, robotics and advanced consumer products.
For further information, please see:
www.micromuscle.com

Linköping to take part in BIO2006 in Chicago. Several R&D companies from the region will be represented at BIO2006 – the world's most important meeting place for life sciences. The biomedical engineering company Wheelsbridge AB, with its roots in the Department of Biomedical Engineering, will have its own stand, while a portfolio of projects will be presented under the umbrella of BioMedley Linköping.

National Board of Forensic Medicine moves to new complex . The Linköping unit of the National Board of Forensic Medicine (RMV) has moved from the University Hospital to the neighbouring former garrison area, where Sweden's National Laboratory of Forensic Science (SKL) the police authorities and county courts are already located. The buildings previously housed two of Linköping's regiments.

Zafena AB to develop demonstration with funding from Vinnova

Simple Simon

Biomedical engineering company Zafena AB has developed and marketed a small, battery-powered instrument, Simple Simon® PT, for blood analysis in blood-thinning treatment. Now, thanks to one million Swedish kronor from Vinnova, the Swedish Agency for Innovation Systems, the company is to create a web-based demonstration suitable for use in the home.

The demonstrator is a step towards the development of a commercially valuable, medical laboratory diagnostic product that works in the home. It verifies the feasibility of the development of a product which, through its IT content, supports the clinically controlled, medical laboratory monitoring of blood thinning with K-vitamin antagonists like Waran®.

The value of the product lies in the fact that it reduces the cost of care while maintaining analytical quality, healthcare quality, treatment safety and treatment observance. The new product will be based on patented technology, which in turn is based on a small amount of hardware, a large amount of software and rapid, precise and correct analysis at low cost.

During the course of the project in 2006 the following components will be developed: 1) transportation tubes for the reagent and control material, 2) software for USB connection of the readout unit to PCs in the home, and an informative user interface, 3) software for PC connection to a public server to download information anonymously from the readout unit, and 4) software that provides access to data for specific patients for healthcare services, with an informative user interface.

The idea is that the reagent and control material will be posted to the patient, who then performs the laboratory analysis in his or her home, using the internet-based system. The healthcare authorities will, however, retain ultimate responsibility for the whole process.

www.zafena.se

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Sectra digitalises radiology departments at Karolinska Institute

The Linköping-based IT and biomedical engineering company Sectra has completed delivery of its digital image processing system to all of the Karolinska Institute's radiology departments. The Neuroradiology Department was the last to be digitalised in Stockholm County.

The Karolinska University Hospital, one of Scandinavia's largest, started using digital systems for processing, examining and storing X-rays in 1998, at the Astrid Lindgren Children's Hospital. During the autumn of 2005, the General Diagnostic Radiology Department and the Thorax Radiology Department were digitalised, and now the Neuroradiology Department has relinquished photographic film in favour of digitalisation. All the image processing systems in use at the radiology departments have been supplied by Sectra.

"Our long collaboration with Sectra has ensured that we have a safe, efficient digital solution," says Lars Johanson, assistant head of the Emergency Division, and responsible for radiology within Karolinska University Hospital. "At the Astrid Lindgren Children's Hospital, for example, the system has been available 99.99% of the time, around the clock since its introduction in 1998. It is hard to beat reliability like that!"

Digital processing of radiology images offers many advantages, and contributes to better, more efficient care. The digitalisation of the radiology departments within the Stockholm County Health Authority has meant that images from any hospital or clinic in the county can be examined by any other local hospital or clinic. Digital systems also have considerable environmental advantages, due to the reduced use of photographic film and chemicals.

Sectra is one of the world leaders in picture archiving and communication systems (PACS) for the digital management of radiographs. In Scandinavia, for example, Sectra has 50% of the market in all film-free systems. The company has also installed systems in North America, most of the larger European countries and the Far East. Over 750 hospitals worldwide use their systems on a daily basis, and more than 35 million radiological diagnoses are made using Sectra's equipment every year. Sectra developed from research carried out at Linköping University, and has its head office in Linköping.

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Three new SSF research centres

Linköping University is to host three of a total of 18 new research centres thanks to a record investment by Sweden's Foundation for Strategic Research (SSF). A total of 800 million Swedish kronor is to be earmarked, of which 127 million will go to Linköping.

"This is wonderful news for Linköping University. It proves that our work is at the absolute forefront of international research in areas of strategic importance to Sweden," says the University's Vice Chancellor, Mille Millnert.

The three new research centres are:

Organic bioelectronics. Head of research from Linköping University: Prof. Magnus Berggren. Grant: SEK 37 million. For further information, please see: www.orgel.itn.liu.se

Functional thin-film materials. Head of research from Linköping University: Prof. Lars Hultman. Grant: SEK 45 million. For further information: www.ifm.liu.se/materialphysics/thinfilm/

Modelling, visualisation and information integration: Head of research from Linköping University: Prof. Lennart Ljung. Grant: SEK 45 million. For further information: www.cmiv.liu.se and www.nvis.itn.liu.se

Source: www.liu.se

Unique project in virtual post-mortems

– technology that quickly puts police on the right track

In a research project at the Center for Medical Image Science and Visualization in Linköping, virtual post-mortems can be carried out on murder victims. The technique makes it possible to quickly establish the cause of death without destroying evidence. In the future, it may be possible to replace some post-mortems by non-intrusive examinations using computers.

The Center for Medical Image Science and Visualization (CMIV) at the University Hospital in Linköping is a unique research facility based on collaboration between Linköping University, Östergötland County Health Authority and industry (Sectra, Philips, Siemens and others). Research at the centre, which is headed by senior physician Anders Person, is carried out by both medics and engineers.

Medical students and technicians, doctors and engineers work side by side in a project that is unique, not only for Sweden, but worldwide. The detailed 3D images of the virtual post-mortem examinations can be rotated in any direction. Layer after layer of tissue can be removed and various body parts examined in detail. Anders Persson explains that since the system was implemented last year, about 100 bodies have been scanned in by the centre's computer tomograph and subsequently examined in the computer. About 40 of these were murder victims.

"We now regularly carry out virtual post-mortems when we suspect violent crime," says Calle Winskog, forensic pathologist, and one of the people behind the project.

So far, the method has been used to complement the conventional post-mortems always carried out in murder cases. The project is still in the research phase, but several advantages have already become clear to both medical examiners and crime investigators. One is that it is possible to get an overview of the injuries much more quickly, including their appearance and what might have caused them. In one particular case, in which a man was stabbed through the eye, many hours of post-mortem examination would have been necessary to establish exactly which stab wound had caused death. By using the computerised system it was possible for the police to get on the right track immediately, speeding up the inquiry. Another advantage is that a virtual post-mortem does not destroy any of the evidence, as no incisions are made and no instruments come into contact with the body.

This is a rapidly developing technology With constantly increasing computer capacity and better MRI scanners and computer tomographs it will be possible to see things that would have impossible to detect only a few years ago.

Anders Ynnerman, Professor of Visualisation Science at Linköping University and one of the founders of the CMIV, plays an important role in the project. He and his PhD students have developed the algorithms that transform the four to five gigabytes of data produced by the tomograph into manageable 3D images in the computer.

"The challenge lies in filtering the data in such a way that you bring out the most interesting aspects," says Anders Ynnerman. "In the future we plan to investigate whether so-called intelligent agent software can identify foreign objects in the body – metal, for example. We are also developing a virtual scalpel," he adds.

The cooperation between engineers and medics makes the project at the CMIV in Linköping one of the leading projects in virtual post-mortems anywhere in the world.

Source: Ny Teknik.

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