BioMedley.com
3 | 2007
Network within Life Science Technologies & Biomedicine | LINKÖPING | ÖSTERGÖTLAND |

New technology enables early discovery of Alzheimer's

A new method under development at Linköping University and BioChromix can aid early diagnosis of Alzheimerís and other serious neurological diseases.

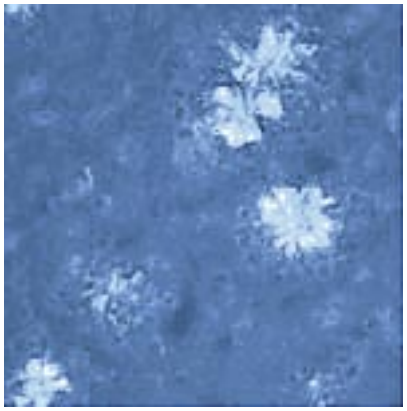
The method uses a carbon chain with a special structure, known as a conjugated polymer, which discloses pathological changes by changing colour. The function of proteins in the body is dependent on their three-dimensional structure, and in diseases such as Alzheimer's, ALS and Parkinsons, misfolded proteins manifest themselves as long threads known as amyloid fibres, which clump into plaques.

The polymer changes colour when it interacts with one of these fibres, a property first discovered when research scientists Peter Nilsson, Per Hammarström and Anna Herland mixed one of the polymer probes with a pathological type of insulin. The insulin suddenly changed colour from yellow to red, pointing the way to diagnostic techniques for diseases associated with misfolded proteins. The colour change is visible to the naked eye, but is most reliably detected using spectroscopy. The method has been tested on tissue samples from the brain, muscle, pancreas, abdominal fat and kidney, and in all cases, scientists have managed to get the polymer to stain plaques so that they are visible under the microscope.

The next phase in the development of this sensitive method is to find traces of misfolded proteins in spinal fluid or other fluids. This would allow the diagnosis of diseases like Alzheimerís at an early stage. The researchers described this breakthrough on Swedish Television on 24 September this year.

Another area of use is quality assurance in the pharmaceuticals industry. Protein fibres also form when insulin and other protein-based substances are being manufactured, rendering them useless as drugs. The diagnostic methods and quality-assurance methods for protein drugs are now being commercialised by BioChromix, under the leadership of CEO Dr Peter Åsberg.

Sources: www.liu.se and www.svt.se.



Histological staining of Alzheimer plaques in the brain using the polymer method.

For further information, please contact
Peter Åsberg, CEO BioChromix AB,
tel +46(0)709-49 17 21.
E-mail: peter.asberg@biochromix.com

Well-attended venture capital day at BioMedley

For the third year in succession, BioMedley and LiU Innovation arranged a venture capital day for life science companies in Stockholm. A number of participants have strong links to Linköping University (LiU). The eight companies and research projects which were the subject of the presentations during the day are primarily active in diagnostics and medical technology such as medical image processing. Representatives of ten Scandinavian venture capital companies active in the life sciences field took part in the event. According to participants, the meeting has already resulted in ongoing discussions with a number of the companies.

For further information, please contact
Niklas Paulsson, tel +46(0)70-209 91 21.
E-mail: niklas.paulsson@biomedley.com

Sweden's biggest county council-owned Phase I clinic expands

The Berzelius Clinical Research Center AB (BCRC) in Linköping, Sweden's biggest county council-owned Phase I clinic, is expanding from 12 to 18 beds. This is a response to increased demand from the pharmaceuticals industry for early clinical studies (phase 0/I/II).

BCRC sees great opportunities to develop the research environment at the Faculty of Health Sciences (FHS) and the University Hospital (UH) and boost its international profile. The clinical studies conducted by BCRC benefit the basic research taking place at the FHS and point-of-care research at the UH. BCRC will continue to develop its specialisation in the field of microdosing, a technique used to make the drug development process more efficient.

– BCRC is currently involved in a number of preliminary clinical studies using microdialysis. Linköping University and Linköping University Hospital are strong research actors here too, says Stig Blom, CEO of BCRC.

BCRC has established itself in a mature, highly competitive international market dominated by major multinational contract research companies known as CROs (Contract Research Organisations). These companies do not actually produce drugs, but have their own research organisations, backed up by their own large clinics. Their clients are pharmaceutical and biotechnology companies. Since BCRC's inception in 2003, over 80 clinical studies have been carried out in a variety of therapeutic indications. This has also helped to attract

Stig Blom, CEO of BCRC

considerable amounts of externally funded research to the FHS/UH in Linköping: the current total is SEK 70 million since 2003. The next stage is to improve research cooperation in the field of »New methods for more efficient drug development«.

For further information, please contact
Stig Blom, CEO BCRC,
tel +46(0)13-473 26 30.
E-mail: stig.blom@bcrc.se

SEK 12 million for medical technology renewal

Two new research schools at Linköping University are to contribute to the renewal of the Swedish medical technology industry. Vinnova (the Swedish Government Agency for Innovation Systems) has approved SEK 12 million for the project.

The focus is on strengthening industrial delivery at Forum Scientium and the research school at the Centre for Medical Image Science and Visualisation (CMIV). Research scientists will be given a deeper insight into the business world and be made more aware of how the health services work. The plans include training in entrepreneurship and a special mobility programme.

The project, known as AgoraLink, is part of Vinnova's work to boost cooperation between research schools and leading centres of research and innovation under the Vinnpro initiative. The Linköping University project involves the skills centres NIMED (medical technology), S-SENCE (sensor science), CMIV (medical image science and visualisation), CIE (innovation and entrepreneurship), CMT (medical technology assessment) and New Tools for Health.

For further information, please contact
Per Ask, Professor of Biomedical Engineering
tel +46 (0)13 22 24 53.
E-mail: peras@imt.liu.se

Sectra signs multiyear service contract with biggest healthcare provider in the US

The New York City Health and Hospitals Corporation (HHC), the single biggest US public health care provider, has signed a five-year service contract with Sectra.

Under the terms of the contract, Sectra will supply systems for handling digital images (picture archive and communication systems, PACS) and provide direct service and support to five of the HHC's emergency hospitals in Manhattan. Together these hospitals carry out about 700,000 imaging procedures each year. John Goble, President of Sectra North America, describes the New York City Health and Hospitals Corporation as the largest and one of the most productive healthcare providers in the US.

For more information, please contact
Torbjörn Kronander, CEO Sectra Imtec AB,
tel +46 (0)13-23 52 27

Mille Millnert, President of Linköping University

PHOTO LARS-ERIK MORELIUS

Linköping and Norrköping incubators merge

The corporate incubators in Linköping and Norrköping are now being merged into a single company under the ownership of Linköping University. The new company is part of the university's increased efforts to commercialise its researchers' innovations. The Norrköping Science Park incubator and the Mjärdevi Business Incubator in Linköping have been among the most successful in Sweden.

The merger will generate a greater critical mass of companies and resources, and this is seen as a key factor in the further development of operations. The target for the new incubator company is to have 30 companies in the process at any given time. The expected uptake is around ten new companies annually, with the same number leaving the process each year.

– The merger is an important step for the region, allowing us to concentrate our efforts and resources on providing even better support for innovative growth companies. We now expect to attract more potential growth companies, more partners, and – not least – more investors, says Mille Millnert, President of Linköping University.

Source: www.corren.se

For more information, see www.incubator.se

New method helps doctors interpret 3D images

Virtual 3D technology is increasingly used in medicine. Three-dimensional images tell us more than two-dimensional ones do, but they do not reveal the whole truth.

– What doctors see is an image created by computers, not an exact copy of reality, says Anders Persson, head of the Centre of Medical Imaging Science and Visualisation (CMIV) at Linköping University.

New software will simplify interpretation of the images. There have been cases where a patient has undergone surgery for vascular stenosis which was visible on the 3D image but did not exist in fact. There are no statistics of how many mistakes of this type virtual technology has led to.

Although 3D technology provides only a pale reflection of reality, it is extremely helpful when preparing for surgery, according to Persson, who believes this technology will become increasingly common.

In a recent PhD thesis, Claes Lundström, head of research at Sectra and industrial postgraduate researcher at CMIV and Linköping University, proposes a solution to some of the interpretation problems of 3D images. This solution is based on software that enables the viewer to assess how likely a given interpretation is.

– One important application is for suspected vascular stenosis. The 3D image that is displayed depends on certain settings, not dissimilar to the contrast and brightness controls on a TV. These settings affect the perceived size of a vessel, so the doctor should examine all the options, says Lundström.

– With the new software, he adds, all relevant alternatives are presented automatically to the doctor. This is important, particularly for doctors without much experience. The biggest problem today is that difficulties in interpreting images can mean that the need for essential surgery is not always identified.

Source: www.nyteknik.se

For further information, please contact Anders Persson, tel +46(0)13-22 89 06
E-mail: anders.persson@cmiv.liu.se

Industrifonden invests in Senset AB

The Swedish Industrial Development Fund (Industrifonden) is investing SEK 2 million in Senset, a Linköping company that has developed a new, ecofriendly measuring system for liquid analysis. The system is called an electronic tongue, because the technology mimics the human sense of taste.

Senset's technology can be used to carry out a number of voltammetric analyses. One application is to check the level of chemicals in water, which is highly useful in sewage plants. Another is the measurement of levels of chemicals in process fluids. The common denominator is the ability to quickly determine whether chemical levels are too high and thus avoid the excessive use of chemicals. Unlike today's traditional instruments, Senset's technology allows simultaneous online measurement of a number of parameters.

Senset, which was founded in 2004, is a spin-off company from Linköping University. The company is still at an early stage of its development. Other company owners and co-investors include the German industrial company Wika, the venture capital company Rendera, and the company's founders.

For more information, please contact Tina Krantz-Rülcker, CEO Senset, tel +46(0)705-27 57 86.
www.senset.se

Joakim Isaksson, post-graduate research student in organic bioelectronics (OBOE).

Linköping University scientists control cells using plastic electronics

Scientists at Linköping University and the Karolinska Institute have now shown that organic electronics – electronics based on conductive plastic instead of silicon – can be used to control signalling in living cells. In normal electronics, information is carried by electrons. Signalling in a living organism, on the other hand, is mediated by ions and proteins. Conductive plastic can use electrons as well as ions, a unique property which scientists have used to construct an ion pump that can translate an electronic signal into an ion flow.

– We can use the ion pump to control flows, such as that of calcium, inside the cells. This is usually very challenging, says Magnus Berggren, Professor of Organic Electronics at Linköping University.

The breakthrough is described in an article in the September issue of the highly respected journal Nature Materials. The study took place under the auspices of the strategic research centre for organic bioelectronics (OBOE) and was led by Magnus Berggren and Agneta Richter-Dahlfors, Professor of Cellular Microbiology at the Karolinska Institute. Most of the practical research work was carried out by the post-graduate research students Joakim Isaksson and Peter Kjäll.

– We know a lot about ion signalling, but one of the most important questions remains unanswered: how does the cell know what to do when so many stages are regulated by the same ion? Now we can start to really get to grips with this issue, says Professor Richter-Dahlfors.

The calcium ion is one of the most important signal substances in the body, and many diseases, including cardiovascular diseases, are caused by calcium signalling malfunctions. Scientists can learn more about signalling routes by controlling the ion streams electronically in a cell culture. This knowledge can prove to be highly valuable in the development of tomorrow's drugs.

For more information, please contact
Magnus Berggren, Professor at the Dept of Science and Technology (ITN),
Linköping University, tel +46(0)11-36 36 37.
E-mail: Magnus.Berggren@itn.liu.se
tel: 011-36 36 37
e-post: Magnus.Berggren@itn.liu.se

Maria Jenmalm

Prize for child allergy researcher

Maria Jenmalm, a reader and child allergy researcher at Linköping University's Department of Experimental Research (IKE) has been awarded the 2007 Fernström Prize for the Faculty of Health Sciences in Linköping. She received the award as a »young, particularly promising and highly successful scientist« in the field of primary immunological response in child allergies. The prize is worth SEK 100,000 (approx. EUR 10,850).