

# OSLO BIO UPDATE

A newsletter from Oslo Teknopol covering activities in the life science cluster in the Oslo region

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## OSLO CANCER CLUSTER IN MAJOR US DRIVE

The Oslo Cancer Cluster initiative continues to gain momentum. Following a successful launch in Scandinavia, Norway recently announced plans for a series of linked events to introduce the concept in the key US market around the time of the BIO International Convention in Boston in May.

### RESEARCH TRIANGLE PARK SYMPOSIUM

North America and Norway have a longstanding tradition of collaboration in cancer research. A range of ongoing academic and commercial research and development projects will therefore be presented on 3rd and 4th of May 2007 (preceding BIO2007 in Boston) at a symposium in the Research Triangle Park (RTP) in Raleigh, North Carolina, a hotbed for medical research and innovation.

According to Sander Tuft of Innovation Norway in Boston, the aim of the symposium is to highlight and build on the existing high quality transatlantic collaborative projects: *"We aim to discuss and agree on strategies to stimulate further collaborations for the benefit of medical researchers and biotechnology entrepreneurs and ultimately patients on both sides of the Atlantic. Specifically, the Norwegian university hospitals and the comprehensive cancer centre, the Norwegian Radium Hospital, have developed world-class capabilities and skills in basic and clinical cancer research through collaborations with their North American counterparts. Many Norwegian oncology companies also have extensive US links such as PhotoCure, Affitech, Algeta, DiaGenic and Clavis."*

Although the main thematic focus of the symposium will be on breast cancer and vaccination and stem cell technologies in cancer therapy, it will not be limited to these areas alone.

### BOSTON SHOWCASE

The Oslo Cancer Cluster will also be a major focus of the Scandinavian Pavilion at BIO2007 in Boston. In addition, Innovation Norway is planning an OCC Showcasing and Networking Event: *"The idea is to bring together OCC members and Scandinavian BIO2007 delegates within cancer therapy and diagnostics with similar US delegates, local VCs, fund managers, industry representatives and researchers from prominent cancer research institutions such as Dana Farber Cancer Institute, Brigham and Women's, MGH and UMass Medical. We aim to hold the event in a key local institution and again explore potential collaborations. Planning for both events is at an advanced stage with strong interest and support from all invited parties."*



North Carolina Biotechnology Center, a hotbed for medical research and innovation.

PHOTO: North Carolina Biotechnology Center

## DAVID NEWMAN OF THE US NATIONAL CANCER INSTITUTE

The US National Cancer Institute (NCI) is committed to the discovery and development of new and effective therapies for cancer. As a result, about half of the drugs used to treat cancer today are due to NCI's efforts. David Newman, D. Phil. is head of the NCI Natural Products Branch and a leading advocate of the new discipline of marine bioprospecting. A keynote speaker at the recent BIOPROSP conference in Tromsø, Norway, he gives his personal view here on the potential pivotal role Norway can play.

### PROSPECTS FOR BIOPROSPECTING IN NORWAY'S MARINE FRONTIER

Norway is unique in the Northern hemisphere in having territorial and EEZ waters that range from the relatively cool Northern part of the North Sea/Western edge of the Skagerrak to the frigid polar areas surrounding Svalbard, Jan Mayer Land and the Western part of the Barents Sea. Of these maritime areas, little is known of their invertebrate fauna outside the relatively shallow coastal areas, even though parts of Svalbard have had some surveys performed.

### UNKNOWN SECRETS

What is even more important nowadays is that essentially nothing is known of the marine microbial flora of these waters and the seabed beneath them. Why is that important? If we extrapolate biologically from the discoveries made in tropical waters (mainly due to the fact that divers often prefer warm water!) over the last 5 or so years, it has become obvious, and in some specific cases scientifically proven, that the secondary metabolites isolated from marine invertebrates are not solely the product of the invertebrate, but are probably microbial in origin with perhaps a "helping hand" at times from the invertebrate. If we are then allowed a small "flight of fancy", the most important aspect of the Norwegian endeavours is in fact in the collection of marine invertebrates and their commensal microbes, plus microbes gathered directly from sea-floors particularly in areas of "cold seeps" and "black smokers". Another very important area, though it may appear peripheral at the moment, is the investigation of the microbial flora before, during and after the utilization of intermediate geological layers as "carbon dioxide sinks" in some of the operations suggested by Statoil and their collaborators.

### COLD TREASURES

What is not realized by people outside of the field is that microbes (and by this I mean all mono-celled organisms, be they from any of the three domains of life (Archaea, Prokarya or Eukarya) can exist in many areas where the environment is not conducive to life as we know it. Thus high pressure, low temperatures, high metal content, anaerobiosis or any combination of these are areas where they will survive and thrive. It is from these organisms that the initial biosynthetic genes may have evolved and /or continue to be present. The groups



Potential new miracle drugs may be found at the bottom on Norway's fjords.

at the University of Tromsø have begun to investigate the marine environment of Norway from these aspects with the establishment of the two organizations designed to collect and curate the riches of Norway's invertebrate fauna and then subsequently assay and identify the secondary metabolites giving rise to the pharmacological activities in a variety of areas.

### EXCITING PROSPECTS

In conjunction with collaborators from Norway, Russia, the EU and the USA, they are poised to discover and then to further develop materials that have not been seen previously and that may well lead to new treatments against a variety of diseases, not only for humans but also for veterinary and perhaps fish-related diseases. What should not be forgotten either is that investigation of the biosynthetic machinery of some of these yet undiscovered organisms may well lead to opportunities that cannot even be imagined at this moment in time.

A relevant example would be the work performed in the USA on the biosynthesis of the "silicateins", which direct the formation of the siliceous outer layers of diatoms. These have led to novel ideas for the production of nanomaterials, which would not have been expected when first proposed as a basic research exercise. Perhaps the best motto for this type of work would be "Fortune favours the prepared mind" and the minds of the groups at Tromsø are certainly prepared!

## AP3 PREDICTS INTERESTING YEAR FOR SCANDINAVIAN BIOTECH

AP3, the 3rd Swedish National Pension Fund, invests actively in a specialised life science portfolio. Ulrica Slåne Sens is in charge of the portfolio and predicts an interesting and perhaps even breakthrough year ahead. *“There is a new generation of companies in Scandinavia, and a large number of them are slated to reach critical milestones or undertake important launches in 2007. If they succeed, we are likely to have a strong sector performance”.* There is no doubt now that big pharma needs medical innovation from biotechs to fill its pipelines - indeed it is predicted that by 2010 licensed product sales will equal the contribution of internal products to growth. Furthermore, as populations age, potential markets are growing. The rewards for success can be high, as proved by Genentech and Avastin.

PHOTO: Håkan Lindgren



Ulrica Slåne Sens, Portfolio manager - AP3, Third Swedish National Pension Fund

*“However it also remains true that biotech is high risk. Here at AP3 we seek to spread the risk by having a broad portfolio comprising some 30+ companies across the whole spectrum of life sciences - i.e. not just pharmaceuticals but also sub-sectors such as speciality pharma, drug delivery, lab/service companies, medical devices and diagnostics. As a pension fund, we are also able to take a long term view, knowing that this also gives stability to the companies.”*

*“For example, we see diagnostics as having great but often overlooked potential and being the key to the introduction of truly personalised medicine. In Norway, for example, we invest in DiaGenic, which is developing gene expression signature-based tests for early diagnosis of breast cancer and Alzheimer's. Overall, I am looking forward to 2007. There is a great deal of innovation here in Scandinavia and a maturing industry able to take advantage of it.”*

## CLAVIS SCALES UP R&D AND SIGNS MOUNT SINAI COLLABORATION

Clavis Pharma recently released its latest results, which showed that a planned scale-up of R&S activities had been achieved across the board, as forecast. For example, the “first-into-man” study of Clavis Pharma’s second cancer drug development candidate, CP-4126, started in September. The study allows inclusion of all solid tumours and is progressing according to plan. In a significant move, the company also signed an exclusive

collaborative development and licensing agreement with the leading US cancer institution, Mount Sinai School of Medicine in New York, to jointly develop Clavis’ third cancer drug candidate CP-4200. [www.clavispharma.com](http://www.clavispharma.com)

## ALGETA’S PROSTATE CANCER DRUG SHOWS FURTHER POSITIVE RESULTS

Algeta has announced further positive results from a Phase II clinical trial of its lead product Alpharadin™ in patients with hormone-refractory prostate cancer (HRPC). Professor Sten Nilsson of the Karolinska Institute in Stockholm and Principal Investigator of the trial commented: *“The PSA response seen in treated patients is particularly promising given that it correlated with the beneficial effects on other markers of bone metastases by Alpharadin treatment. Overall, the biomarker and safety data analysed so far continue to support our view that Alpharadin has the potential to become an important new therapy.”* [www.algeta.com](http://www.algeta.com)

## LEADING NORDIC DNA-COMPANIES TEAM UP TO INCREASE RESEARCH AND DOUBLE REVENUE

Norway has a strong tradition in DNA-based diagnostics through companies such as Dynal (now Invitrogen) Genovision (now part of QiaGen), NorDiag and DiaGenic. Now another, Genpoint, has merged with Swedish MBS, to form what is claimed to be the leading Nordic company within test sampling for DNA-based clinical diagnostics. The merger will give the companies a broader product base and open up opportunities for sales to European institutions. [www.genpoint.no](http://www.genpoint.no)



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## LEADING BREAST CANCER EXPERTS JOIN DIAGENIC ADVISORY BOARD

DiaGenic recently announced that four leading international experts on breast cancer - Professor Martine Piccart and Dr Christos Sotiriou of the Université Libre de Bruxelles, Professor Anne-Lise Børresen-Dale of the Norwegian Radium Hospital in Oslo, and Dr Alan Hollingsworth of Mercy Women’s Centre, Oklahoma City - have agreed to join its scientific advisory board. The company also confirmed that the first prototype of its unique gene expression signature test for breast cancer is on track. The test uses peripheral blood as sample material and this non-invasive approach has created widespread interest in the breast cancer research community. [www.diaGenic.com](http://www.diaGenic.com)

## AXIS-SHIELD PROVIDES RHEUMATOID ARTHRITIS TESTS FOR ABBOT

Axis-Shield has completed development of a test for anti-CCP antibodies for use on the widely-placed AxSYM® analyzer from Abbott. The test is manufactured by Axis-Shield at its Dundee facility as part of the AxSYM® xtra programme, in which Axis-Shield has contracted to produce a number of new markers for Abbott's successful immunoassay platform. Anti-CCP is becoming increasingly recognized as a marker of choice in the earlier diagnosis of rheumatoid arthritis. [www.axis-shield.com](http://www.axis-shield.com)

## NORDIAG SIGNS LICENSE AGREEMENT WITH THE WELLCOME TRUST

NorDiag ASA has signed a non-exclusive license agreement with the Wellcome Trust, which will allow NorDiag to incorporate an additional gene marker into its Genefec assay for the early detection of colorectal cancer. [www.nordiag.no](http://www.nordiag.no)

## BMI RAISE NOK 11 MILLION FOR THE COMPLETION OF THEIR PHASE II HEART FAILURE STUDY

BMI is nearing the completion of patient enrolment in their clinical phase II study to evaluate piboserod in patients with heart failure. To secure the financing of the study and to allow for further development of BMI's pipeline products, existing and new investors raised 11MNOK in additional equity in late 2006. BMI has also announced that Hanne Mette Dyrlye Kristensen, currently CEO of Diatec AS, will join the company as innovation advisor from January 2007. [www.bmioslo.no](http://www.bmioslo.no)

## SIRNASENSE PARTNERS WITH US SIRNA SUPPLIER INTEGRATED DNA TECHNOLOGIES

siRNAsense has announced the execution of an agreement with Integrated DNA Technologies (IDT) for distribution of siRNA and other RNAi reagents for the Norwegian market. IDT is the leading US supplier of oligonucleotide reagents and offers standard 21-mer siRNA as well as a new class of siRNA, Dicer-substrate siRNA, which generally displays superior efficacy to standard 21-mers. [www.sirnasense.com](http://www.sirnasense.com)

## CANCERCURE RAISES NOK 8 M IN PRIVATE PLACEMENT

Featured in our last One to Watch section, CancerCure AS successfully completed a private placement of 50,000 shares in late December. Gross proceeds from the placement were NOK 8 M where the lead investors were Investor Venture IKS, Holbergfondene and MP Pensjon. The funds will support basic operations and research in 2007. Helse Sør RHF also recently granted CancerCure NOK 360,400 to further support a collaborative research project with Rikshospitalet-Radiumhospitalet on novel acoustically sensitive liposomes.

[www.cancercure.no](http://www.cancercure.no)

# AFFITECH

## RIDES ANTIBODY WAVE

With a host of product launches, mergers and acquisitions, 2006 has seen major changes in the worldwide antibody therapeutic sector, which is currently estimated to be worth USD 15 billion and is growing at a rate of approximately 30 per cent per annum. All of which leaves Affitech, which both discovers antibodies for partners and has its own promising pipeline of oncology antibody therapeutics, in a very interesting position as CEO Martin Welschhof explains in this interview.



### WHAT DO YOU SEE AS AFFITECH'S KEY ADVANTAGES?

Firstly, the antibody field is highly constricted by patent legislation. However, we have a strong position that gives us freedom to operate. In addition to the Norwegian loophole, we are holders of key patents for phagemid display based on

full-length pIII (so called Breitling patents). We have used these to cross-licence with other leading players such as Xoma and Dyax. The revenues from our collaborations have also enabled us to start developing our own product pipeline. Secondly we have a truly unique platform technology. Cell-based antibody screening or CBAS, allows us to screen for antibodies in the in vivo context. This reverse screening approach contrasts with the traditional approach of isolating the target first and then screening for specific antibodies. CBAS provides a direct screening of antibodies libraries on clinically relevant cells, which display their disease specific surface markers in the natural context. Thus we generate disease specific antibody/ target pairs, which are subsequently submitted to further functional analysis.

### AFFITECH SEEMS TO BE FOCUSED ON CANCER THERAPEUTICS, IS THIS WHERE YOU SEE THE GREATEST POTENTIAL?

Yes. Both the team and I did our original research in this field. Another major reason we are focused on oncology is our ongoing collaboration with the Radium Hospital here in Oslo, which is one of Europe's leading cancer centres. CBAS is ideal for looking at tumour cells and the Radium Hospital has good access to such material. Our collaborations with Peregrine and Viventia and our own pipeline are in this area. Human antibodies have proven excellent tumour killing properties and interestingly our initial candidates are showing cross-reactivity between different types of cancer.

### THERE HAS BEEN A LOT OF CHANGE IN THE ANTIBODY MARKET THIS YEAR. WHAT DO YOU FORECAST FOR NEXT YEAR AND HOW WILL THIS AFFECT AFFITECH?

Well this is a good time to be in antibodies. They are proven as a therapeutic class. Next year I expect more deals to be

announced as pharma companies race to fill their pipelines. We feel we are in a particularly good position since CBAS is enabling us to develop our own pipeline of antibody/target pairs far more quickly than those using traditional methods. In 2007 we aim to develop several proprietary candidates as well as candidates generated through our corporate partnerships.

### **FINALLY, YOU AND MANY OF YOUR TEAM HAVE MOVED TO NORWAY FROM ABROAD, HOW DO YOU FIND LIVING AND WORKING HERE?**

Affitech is an international company. More than 50 per cent of our team are foreigners, from Germany, the Netherlands,

France, Iceland, Sweden, South America and Canada, and we all enjoy living and working in Oslo. In the beginning funding was difficult, but the situation is getting better, and there is now a real focus on the sector. The recent rounds of successful IPOs have helped. Business wise we have no problem operating since we have an established subsidiary in the San Francisco Bay Area. Affitech Inc. is the bridgehead in the US life science industry and is coordinating all business and marketing activities of the company. I am also looking forward to the new Oslo Cancer Cluster initiative in which we are involved along with other leading biotech and pharma, both Norwegian and international. [www.affitech.com](http://www.affitech.com)

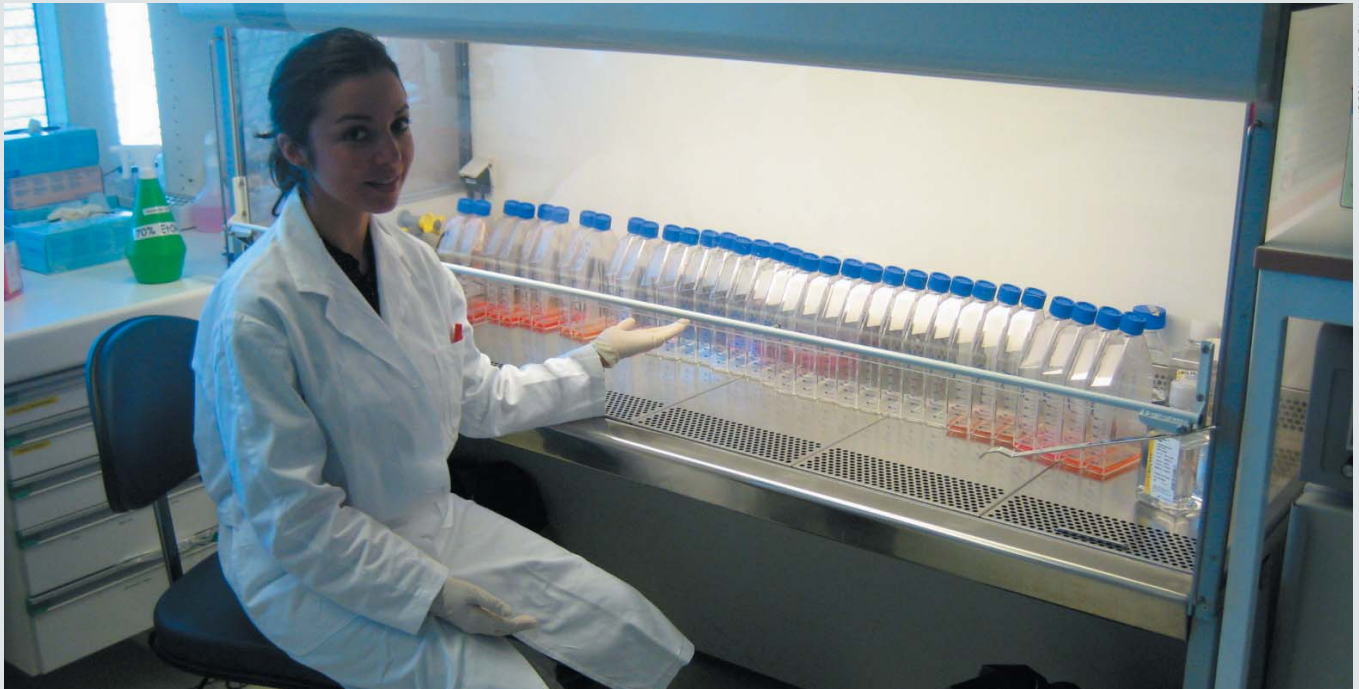


PHOTO: Affitech

Affitech is building its own pipeline of human antibodies for cancer therapy and has several candidates in preclinical development.

#### RESEARCH NEWS

### **EXTENSIVE FOCUS ON ELITE RESEARCH IN OSLO**

Six centres in Oslo and one centre each in Bergen and Tromsø were recently named as new "Senter for fremragende forskning (SFF)" or centres of excellence by the Research Council of Norway.

Over a ten year period, the research centres will receive NOK 800 million to conduct world-leading research. Of particular interest in the life sciences are two new centres in Oslo - the Centre for Cancer Biomedicine led by Professor Harald A. Stenmark and the Centre for Immune Regulation headed by Professor Ludvig M. Sollid. The new centres adds nicely to the concentration of pioneering research in Oslo. The Center for Stem Cell-based Targeted Tumour Therapy (SENIT) was recently appointed Centre for Research-based Innovation (CRI) bringing together leading Oslo-based researchers and companies. In addition to the 10 MNOK per year they will receive from the Research Council, SENIT and partners will contribute an equivalent amount. In 2007 Oslo Cancer Cluster will apply for the status of Norwegian Centre of Expertise (NCE). The NCE-programme will appoint ten NCEs before 2008. The objective is to support regionally based business clusters that have the potential for growth.

### **CHRISTOPHER REEVE SPINAL CORD RESEARCH GRANT RENEWED**

Spinal cord repair is one of the hot research areas for 2007, and leading international proponents, Professor Joel Glover and his team at the University of Oslo, have just received a renewed grant from the Christopher Reeve Foundation. *"These funds will be used to continue our efforts to characterize the way nerve fibres from the brainstem connect with motoneurons and interneurons in the mammalian spinal cord. This information is critically important for understanding how spinal neurons are normally activated and how connections that are disrupted by spinal cord injury can be rewired,"* comments Professor Glover.

## FUGE EVALUATION

An independent evaluation of the eleven national-technology platforms established as part of the FUGE program was recently published. FUGE was launched in 2002 initially as a 5-year project funded by the Norwegian Research Council with the aim of involving all university regions in order to strengthen Norwegian research in functional genomics. Four panels of international reviewers looked at the quality of individual platforms in absolute terms and relative to their original plans and budgets. The four panels were Human Biobanks, Expression Analysis, Structural Studies and Model Organisms.

The evaluation committee found that whilst the platforms *“by and large demonstrated an excellent performance at an international level”*, there was still work to be done since *“there are some that, whilst offering high quality services, have not yet reached the status of a true national platform nor offer high throughput technologies.”*

Therefore the report has several key recommendations:

- Increased information within Norway to increase researcher use
- Continue training courses and move to on-line real-time sessions
- Encourage multiplatform projects
- Increase industrial and international collaboration

The committee further recommended that planning for FUGE II should begin as soon as possible with at least equal if not increased funding.

The committee singled out biobanks for particular attention, considering Norway to be one of the few countries in the world where it is genuinely possible to perform population-based

genetic studies of complex diseases. To achieve this, the committee recommended merging the two biobank projects together. Biobanks were also seen as key to moving FUGE – promoted activities away from academic research and preclinical work into the clinical and translational medicine arenas. Two new areas for initiatives were also identified – DNA sequencing/transcript profiling and genotyping.

Commenting on the evaluation Steinar Bergseth, co-ordinator of FUGE said *“We are very satisfied with the reports and their specific comments and advice, which are due to an excellent process that resulted in good interactions between the evaluators and the platforms. They are therefore useful tools for FUGE and FUGE’s stakeholders for the planning of FUGE up to 2012 (FUGE II). Both for remodeling the existing infrastructure and for new ventures.”*

The report can be found at: [www.rcn.no/fuge](http://www.rcn.no/fuge) (in Norwegian)



Sekvensa, the real cow from which the FUGE-platform CIGENE sampled the DNA use for sequencing the Norwegian red.

PHOTO: Linda Cartridge

## NEW MILESTONES IN FISH BREEDING

Oslo is one of the world's leading aquaculture centres, and Aqua Gen is one of the many companies that have sprung up. Now Aqua Gen's new breeding population of Atlantic salmon have been in sea cages for one year, enabling full scale testing to start. This shift in breeding regime was made possible by using a new unique technology for milt cryopreservation. After being tested for disease resistance and growth rate during the freshwater period, the fish were transferred to sea cages during autumn 2005. For the first time, Aqua Gen is recording sex identification before sexual maturation using ultrasound imaging. Sex identification enables a more accurate and effective selection of which fish are going to reproduce the next generation of the breeding nucleus. Together with newly developed data software, this enables Aqua Gen's geneticist to perform individual selection, which is more precise than traditional family breeding. Additionally, sex identification enables the geneticist to correct for the effect of sex on the important trait of growth rate. [www.aquagen.no](http://www.aquagen.no)

## GLUCOMED/FLEXOVE APPROVED BY EU

In December, the EU Commission issued final approval of Navamedic ASA's Glucomed/Flexove product for symptom relief in osteoarthritis. Initially the EU Committee for Medicinal Products for Human Use (CHMP) in September recommended approval of the product in all of the 25 EU/EAA countries included in the procedure. Navamedic CEO Øyvind Brekke commented:

*“This is a great day for Navamedic. We are glad to see that our product reached the final EU approval, which is the final milestone on the EU level. We look forward to introducing Glucomed/Flexove in new markets and believe our safe and effective product will attract significant interest among doctors and in the large and growing group of patients suffering from osteoarthritis.”* [www.navamedic.com](http://www.navamedic.com)

## WIRELESS NETWORK ENERGISED

The new Wireless Patient Network continues to gain momentum. According to project manager Dag Ausen, 2007 will see significant developments. *"We held our first open meeting in Oslo in December where over half of the participants were from industry, representing some 15 companies. Currently we have two agreed project areas – one looking at the early release of cardiovascular patients from hospital through continued home monitoring and the other looking at general monitoring of the elderly and those with chronic diseases at home through a local doctor or health authority network. The idea is for the network to establish and offer test facilities for companies interested in these areas. Already there are some interesting activities such as that by Consensus AS, which, as part of an EU project, intends to install touch screens in elderly peoples' homes to feed health information into a database. Their goal is summed up as "spend one year longer at home".* During spring 2007 we will be holding another open meeting in Gothenburg to recruit Swedish companies and then running a series of technology workshops. For more information see [www.sintef.no/tradlospasient](http://www.sintef.no/tradlospasient) (in Norwegian).

## FOBIS REPORT SEES MAJOR OPPORTUNITIES IN BIOMEDICAL SENSORS

How will biomedical sensors shape the health care systems of the future? How can they impact the quality and cost of health care and what are the business opportunities in the Nordic region? These were the questions FOBIS a Nordic Foresight Program on Biomedical Sensors set out to answer. Headed by SINTEF (Norway) with VTT (Finland), FOI (Sweden), S-SENCE (Sweden), STC (Denmark) and MedCoast Scandinavia, FOBIS held a series of 4 technology workshops during 2005-06 followed by a final dissemination session in Oslo in October 2006. The final version of the FOBIS report will be available in January (printed version around 5 February) at the web-site: [www.nordic-fobis.net](http://www.nordic-fobis.net)

The reports looks at definitions, terminology and delimitation of this emerging area - i.e. the differences between bio and medical sensors, in vitro and in vivo devices, wireless networks, etc. Potential areas of application, such as diagnostics, aids to improve quality of life (e.g. hearing aides), drug discovery, security and safety, and the environment are discussed. Potential market sizes are estimated and both the main opportunities and barriers are identified. The report concludes by identifying two main barriers to further development of the sector overall:

- Regulatory conditions that seriously limit the use of sensors, particularly in hospitals
- A shortage of venture capital, especially to finance the stage between the research stage and the development phase

To address this, the report recommends a programme in Europe similar to SBIR/STTR in the US, which specifically addresses research and development in small business in relation to commercialization and national needs (SBIR/STTR).

## ALERTIS SENSE SUCCESS

Among the growing number of biomedical sensor companies in Oslo is Alertis Medical AS which was established in 2000 to develop and commercialise a unique technology for the early detection of critical conditions related to blood supply and respiration. The patented technology detects tissue CO<sub>2</sub> and originates from the anaesthesiologist Prof T.I. Tønnessen and the physicist P. Mirtaheri PhD, at Rikshospitalet- Radiumhospitalet in Oslo. The company's first device, the miniaturized disposable biosensor IscAlert™, provides early warning of ischemia (blood and oxygen deprivation), which is one of the most frequent causes of death in the western world and a common complication of surgery, post-operative care and organ/tissue trauma. Clinical studies are ongoing at Rikshospitalet University Hospital, with several other university hospitals in Scandinavia due to start in 2007. For more information visit: [www.alertis.no](http://www.alertis.no)



Professor Tor Inge Tønnessen and Dr. Tor Omtveit implanting an Alertis sensor into the patient's arm.

## CARDIAC MONITORING SENSOR DEMONSTRATED

In collaboration with the Interventional Centre at Rikshospital University Hospital and Vestfold College, BMI is developing a microtechnology-based sensor for cardiac monitoring during and after surgery. The sensor is currently undergoing clinical trials at Rikshospital University Hospital, and preliminary results are very promising. The technology was demonstrated in real-time from the operating theatre during the recent FOBIS-seminar at Rikshospital.

# PROMAR AS

- HIGH-VALUE COMPOUNDS FROM NATURAL SOURCES.

## BUSINESS FOCUS

Promar is a research and development company currently involved in work to develop production methods and products for the Cosmetic, Pharmaceutical, Aquaculture and Health Foods markets based on production processes with their origins in natural organisms. The main focus at the moment is to develop a narrow banded UVA-Bluelight filter to overcome the shortcomings exhibited by the majority of commercial filters. See: [www.uvablue.com](http://www.uvablue.com) for a simple guide to sun protection.

## CORE TECHNOLOGY

Production and downstream systems for high-value compounds from marine organisms.

## SUPPORTING PUBLICATIONS

There are numerous papers published on the relationship between blue light and Melanoma skin cancer, emphasising the need for new forms of protection since none is afforded by conventional filters. e.g.: Egil Kvam and Rex M. Tyrrell. Induction of oxidative DNA base damage in human skin cells by UV and near visible radiation. Carcinogenesis vol.18 no.12 pp.2379-2384, 1997.

## KEY PEOPLE

Per Åge Lyså, CEO. Svein Atle Uldahl, Research Manager. Audun Goksøy, Technical Manager

## OWNERSHIP

Per Åge Lyså and Ole Krogh (with Westre Invest as a minority shareholder).

## COLLABORATORS

Commercial development of the sunscreen additive is carried out in cooperation with Pierre Fabre Dermo-Cosmetique SA. Trond Ellingsen and Nils Dyrseth and Per Bruheim at SINTEF Applied Chemistry have been the main contributors. The original idea was proposed by Professor Geir Johnsen of NTNU.

## PROGRESS

The work on high-value compounds carried out at SINTEF's applied chemistry department, has led to developments in production methods and productivity. Initial testing of efficacy and toxicity has been encouraging, and a comprehensive documentation process related to safe use in cosmetics has been initiated. Until now, Promar has relied on a production process based on microalgae, but will be initiating a project in 2007 for production based on bacteria strains discovered through the bio prospecting programs of SINTEF-NTNU (Norwegian University of Science and Technology). The company has been offered an Innovation Norway IRD contract valued at NOK 12.8 million on the strength of its relationship with the leading French cosmetics house Pierre Fabre Dermo-Cosmetique.

## NEXT MILESTONE

Q1 2007 seed capitalisation.

For more information: [www.intravision.no](http://www.intravision.no)

## Oslo Teknopol

- your key to the Oslo region

**Oslo Teknopol** is a non-profit regional development agency, established by the City of Oslo and Akershus County Council to stimulate innovation and attract foreign investments and talent to the Oslo region. Oslo Teknopol provides information and assistance to companies seeking business opportunities in Norway's capital region. Services include information on business conditions and clusters, introductions to national and local government agencies, and assistance in establishing business contacts. Oslo Teknopol focuses on facilitating development of the region's five key knowledge-based clusters:

- Maritime
- Energy and environmental technology
- Information and communication technology
- Life science
- Culture



**Oslo Bio** is a collaborative network of stakeholders from the life science cluster. Oslo Bio aims to strengthen the cluster and contribute to long term growth through marketing, initiating and facilitating development projects, and international collaboration. Oslo Teknopol act as the secretariat for Oslo Bio.

**For more information or to subscribe to Oslo Bio Update contact Oslo Teknopol at [info@oslo.teknopol.no](mailto:info@oslo.teknopol.no)**

