

# OSLO BIO UPDATE

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

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Photo: BerGenBio

Norwegian translational oncology continues to bring results, with BerGenBio well positioned to follow Algeta, Clavis Pharma, Photocure, PCI Biotech and Affitech.

## **BERGENBIO TACKLES TUMOUR METASTASIS AND DRUG RESISTANCE WITH EXCITING NEW DRUG**

Tipped by many as the next major success in Norwegian biopharma, BerGenBio AS, has initiated preclinical development of its proprietary lead compound, BGB324. This compound will be a first-in-class inhibitor of AXL kinase, aimed at preventing cancer tumour metastasis and the increasing problem of drug resistance.

*Read more at page 3*



Simon Dwyer has worked on Anglo-Norwegian marine projects for over 20 years.

## NEW WAVE OF COLLABORATION COMING

*By Simon Dwyer, CEO Seafox Management Consultants Ltd.*

About one year ago I sat in a Workshop in Teesside, England, at the invitation of The Centre for Processing and Innovation listening to some highly intellectual and qualified experts talking about Social Science, Okadaic Acid Production, Organic Photovoltaic, Bio-prospecting and it went on and on. But here started for me another chapter in my twenty-year relationship with Norway.

The Workshop's main objective was to introduce the collaboration between the Innovation Norway organisation and the UK's Technology Strategy Board and its Knowledge Transfer Network. Being a Grimsby, UK, born simple shipping and logistics guy with a built up knowledge of the Seafood industry my eyes glazed over as some of the UK's and Norway's leading authorities made presentation after presentation of the vision for a successful collaboration. Then it was my turn to stand up and talk about 'Fish', I guess somebody had to do it!, and the Grimsby Seafood Cluster which has an international reputation for seafood processing and was recognised in 2010 by the previous British Government as the best example of a National Industry Cluster in the UK beating off competition from Aerospace, Scottish Drinks Industry and so on.

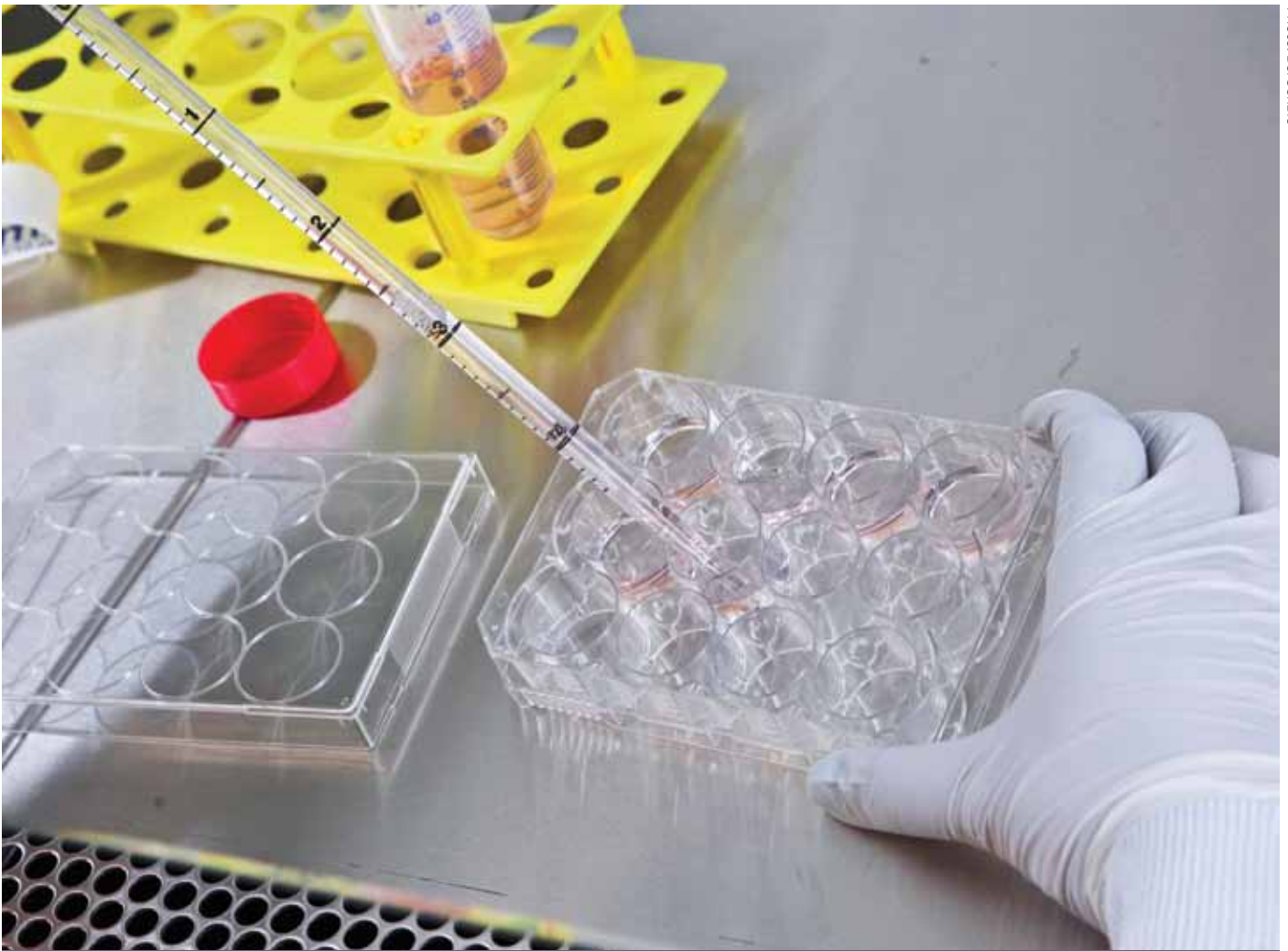
Anyhow, several months on Innovation Norway and The Technology Strategy Board signed an MOU to establish collaboration on various initiatives linked to Bio-technology and Bio-refining. Nine months later in September 2011 I was delighted to host a Workshop in Grimsby on 'Marine Co-products' and the potential use of the fish co-products in Bio-refining process. The event was supported by some of Norway's world class industry experts as well as established

and respected UK partner organisations. It was well received by the Grimsby Seafood Cluster.

I mentioned earlier this was the start of another chapter in my twenty year relationship with Norway. The opening chapter started when I was a Sales Executive for a Grimsby based shipping and transport company which represented Fred. Olsen Lines roll on-roll off freight carrying ships which, at the time operated weekly sailings from the Oslo Fjord and Kristiansand to the port of Immingham on the River Humber. I would travel frequently to Oslo and at times, single-handedly would drive around the Oslo Fjord meeting Norway's most famous industrial brands and transported related companies promoting the shipping route, closing deals and ensuring the supply-chain from end to end functioned efficiently. This was in the 1990's and early 2000's and I eventually ended up on the payroll of Fred. Olsen's organisation. It's amazing to think the at that time we'd virtually fill two large ships from Oslo Fjord and Kristiansand to the UK and the Continent each week with predominately industrial cargoes from the majority of the manufacturing base. Today, it's a different picture with the cargo volumes from Norway being a shadow of their former selves and even today Kristiansand Port no longer has a direct shipping route to the UK. How times have changed.

The majority of first decade of 2000's I spent working still within the shipping and transport sector but with a different emphasis on other parts of the Scandinavia and becoming closely involved with the seafood sector. Last year the business magnet in me once again was attracted to Norway and in 2010 Seafox Management Consultants Ltd was established and, yes you've guessed it, along with partners based Kristiansand. The Årikstad family, who I've had the pleasure of knowing for many years, own the Seafront Group of companies that are involved with real estate management, oil and gas freight forwarding by sea and air, warehousing and terminal operations as well as general global air and sea freight forwarding. They are great partners with a like-minded attitude, a sensible approach to risk, a competitive edge to be different and make a difference, and the value of humility in a happy workplace. Traits that I've found with many Norwegians and in the majority of businesses and organisations I've dealt with in the past and hopefully will continue to deal with in the future.

Certainly, my new colleagues in Innovation Norway and their stakeholder partners have some great ideas and ambition to bring Norwegian influence to bear on one of the UK's major clusters.



BerGenBio hopes to take its lead candidate into human trials by the end of 2012.



*“Leading researchers now believe that inhibition of the EMT process has the potential to delay or prevent metastasis, overcome and even reverse drug resistance and prevent cancer recurrence.”*

Richard Godfrey, BerGenBio's CEO

*Continued from page: 1*

Richard Godfrey, BerGenBio's CEO, explained that BGB324 is the result of BerGenBio's focus on therapeutics that target the epithelial-mesenchymal transition (EMT) in cancer, considered to play a critical role in tumour metastasis and escape from chemotherapy. “Interest in EMT has increased dramatically; leading researchers in the field now believe that inhibition of the EMT process has the potential to delay or prevent metastasis, overcome and even reverse drug resistance and prevent cancer recurrence.”

Professor James Lorens, cofounder of BerGenBio noted that “the vast majority of cancer-related deaths are attributable to secondary or metastatic tumors, which tend to be resistant to current therapies and difficult to treat.”

BerGenBio's drug development strategy builds on an understanding of the fundamental biological mechanisms that drive tumor metastasis and drug resistance. AXL represents a novel target in this area and this has provided a unique opportunity for clinical translation.

Godfrey added “Having completed a successful fund-raising, we have assembled a highly experienced international team to accelerate the development of BGB234. We have in-licensed BGB324 from South San Francisco-based Rigel Pharmaceuticals (Nasdaq: RIGL), where substantial preclinical characterization has already been completed. Our development plan for BGB324 aims to initiate Phase I clinical studies by the end of 2012. [www.bergenbio.com](http://www.bergenbio.com)

### ALGETA ENDING YEAR ON A HIGH

Commenting on Algeta's Q3 results, Andrew Kay, President and CEO, said: "We are delighted with the positive ALSYMPCA results in the autumn. The reaction to these data from the prostate cancer community has been very positive and reinforces our belief in Alpharadin's potential to become an important treatment for CRPC patients whose disease has spread to the bones. Activities from Algeta and Bayer to support the regulatory filing and global commercialization of Alpharadin are well underway to ensure it reaches patients as quickly as possible. The next 12 months will be very busy and exciting as we get closer to introducing our first product for cancer patients." [www.algeta.com](http://www.algeta.com)

### NAESS-ULSETH RECOGNISED

Serial entrepreneur Eirik Næss-Ulseth has been awarded the prestigious Oslo Innovation Award. Næss-Ulseth, is a deserved recipient. Over the last 20 years he has one of the major driving forces in the Norwegian life science having been strongly involved in the development of a host of companies including PubGene Inc., Biomolex AS, Spermatech AS RheumaTech AS, Ideas ASA, IPnett AS GetMedic AS and the latest Novelda. He is also now lending his expertise to the medtech sector in general as a director of Oslo medtech.

### ALERE COMPLETES AXIS-SHIELD PURCHASE

An era came to an end with the purchase by healthcare giant Alere of Axis-Shield. Many observers saw the driving reason behind this to be the Affinion POC system developed and manufactured in Oslo. With already over 10,000 instruments placed in worldwide, this gives Alere access to the highly lucrative diabetes testing market. [www.alere.com](http://www.alere.com)

### TARGOVAX RAISES 8 MILLION NOK FOR CANCER VACCINE

Targovax has been granted 8 million NOK (1.03 million EUR) from Innovation Norway to initiate a phase II/III clinical study of its lead candidate TG01 in operable pancreatic cancer. TG01 is a peptide cancer vaccine which activates the body's own immune system to recognize and kill cancer cells which have a mutated RAS-molecule. [www.targovax.com](http://www.targovax.com)

### MEDISTIM'S VERIQ™ SYSTEM RECOMMENDED BY NICE

Medistim's VeriQ system for assessing graft blood flow during coronary artery bypass graft (CABG) surgery has been approved by NICE in the UK noting that "the VeriQ system is associated with an estimated cost saving of £115 (135 EUR) per patient compared with clinical assessment, when it is used routinely for assessing coronary artery bypass grafts during surgery."

"There are tremendous differences in clinical practice between European countries when it comes to graft patency verification during CABG," says Kari E. Krogstad, Medistim's President and CEO. "It is our hope that the NICE recommendations will enable UK surgeons to adopt the objective and reliable measurements offered by the VeriQ system. We also believe this endorsement has the potential to impact practice in many other countries, including the USA." [www.medistim.com](http://www.medistim.com)



VeriQ's NICE approval should stimulate market penetration throughout Europe.



PCI Biotech caps a great year for its localised PDT therapy.

### PCI BIOTECH TOPS BIOTECH POPULARITY STAKES

PDT specialists PCI Biotech has won both the prestigious DNB Innovation prize 2011 and the Norwegian Peoples award. The Innovation prize of 1 million NOK (129.000 EUR) was handed over by Rune Bjerke, CEO of DNB and the Peoples award of 100.000 NOK (13.000 EUR) was handed over by jury member and member of parliament, Per Kristian Foss. "We are both delighted and proud to receive these awards. This is a great recognition and a huge motivation for all of us," said Per Walday, CEO of PCI Biotech. A total of 716 companies competed in the contest and 10 companies from all around Norway were selected to participate in the final. [www.pcibiotech.com](http://www.pcibiotech.com)

### CONFIDENCE HOLDS

A snap poll in advance of the annual DNB Nordic Healthcare conference in Oslo on December 6 found confidence holding amongst the 20 leading CEOs. The majority reported that 2011 had been a good year and that they were confident about prospects in 2012. However, when asked which single factor would aid their business access to capital was by far the winner, although finding people and contacts for licencing deals also featured strongly.

### NEOMED RAISES 800 MILLION NOK FUND FOR HEALTHCARE

NeoMed, one of the key VCs in the Nordic region has raised an 800 million NOK (103.22 million EUR) fund for healthcare. The money will be invested in 10-12 companies. [www.neomed.no](http://www.neomed.no)

### NAVAMEDIC ENTERS GENERICS FIELD

Navamedic has launched its first two generic pharmaceutical products - Mycophenolate Mofetil®(MMF) - an immunosuppressant being used by patients who have undergone organ transplants - and Olanzapine® - used in the treatment of patients suffering from psychotic diseases. "We are now a player in the dynamic and exciting generic drugs market. Our aim is to be one of the top five Nordic companies in this sector in 2015," said Navamedic's CEO Olof Milveden. The Norwegian Medicines Agency estimates that the annual savings in selecting generic alternatives currently amount to 2 billion NOK (258 million EUR) in Norway alone. In addition to the two products now launched, Navamedic currently has 11 products under review by medicines authorities and expects to launch eight of them next year. [www.navamedic.com](http://www.navamedic.com)

### TRANS NOVA MAKES VCCP OFFER FOR AFFITECH

Following the payment of a first milestone on development of lead antibody candidate AT001r84, Trans Nova has made a Voluntary Conditional Public Purchase Offer to other Affitech shareholders to take full control of the company. [www.affitech.com](http://www.affitech.com)



Affitech has been a pioneer in human antibody therapeutics.



Sarsia's experienced team are playing a major role in seeding the Norwegian life science sector.

## SEEDING THE FUTURE

Oivind Enger is well placed to comment on the health of the Norwegian life sciences sector. For the last 4 years, he has been a partner in Sarsia Seed, which now has 13 life science/medtech companies in its portfolio and thus the leading life science seed fund in Norway. The Fund raised some 40 million Euros with the state providing 50% through Innovation Norway and the rest from leading companies including Statoil and banks such as DNB. "We've learned a lot over these years but now we have almost completed our first round of investments and are delighted with the

results. From DNA sequencing tools to pain monitors to new cancer therapeutics, the portfolio is diverse and exciting. With over half of our fund invested we are now looking at who to follow-on with."

A source of pride for Sarsia is that they have always managed to match every Euro invested with two more from other sources. "Typically this has been a combination of co-investor and government grants. With our investment ranging from 0.5-2 million Euros this has ensured our portfolio companies have a secure starting point. We also insist

that companies operate properly right from the beginning and provide every assistance to help them do so. Especially for companies coming from research backgrounds, this is something best tackled sooner than later. Although initially apprehensive, our companies soon thank us for taking such proactive steps and making the transition to the commercial world smoother. We also always take a seat on the board and provide help whenever and wherever needed – we see that new portfolio companies are extremely happy with the big national and international network they get access to through us” says Enger.

To date Sarsia has had some 750 investment opportunities which have been whittled down to the current 21. “Surprisingly to us, only a few came through genuine entrepreneurs, they tend to favour more the energy and cleantech sectors,” admits Enger. “Most originated through TTOs, but again there have been variations, since some favour more licencing agreements than founding start-ups. And although we started in Bergen we now cover the whole country from Tromsø to Oslo.”

*“We’ve learned a lot over these years but now we have almost completed our first round of investments and are delighted with the results”*

Looking forward Enger is optimistic but believes the next challenge is to improve follow-on funding. “We already had positive signals in the recent budget that there will be a 2nd wave of seed funding. We also see a better class of ideas coming through thanks to the continuing excellence of the Norwegian research base. We are even attracting interest from other Scandinavian seed funds such as Novo from Denmark who have co-invested in our portfolio company C10. But now the challenge moves to the next phase - securing early VC money. Part of this stems from the lack of a proper pharma sector in Norway. In Denmark and Sweden for example, companies such as Lundbeck, AZ, Novo, Jansen etc act as real sector drivers, providing a pool of expertise - from management to analysts - which the life sciences can benefit from. However I believe there is a fairly straightforward solution.

“Investinor is a government funded investment company that aims to invest into highly competitive and promising Norwegian companies aiming for international growth and expansion at the late seed, early VC stage. With 280 million Euros under management, it is one of the largest in Europe. Until now its mandate has been the energy, cleantech, marine technology and tourism sectors, but it has invested in two healthcare companies. If this mandate could officially be expanded into life sciences I believe we would see a major leap forward. Expertise and confidence would grow and the seeds we are planting would flourish,” concludes Enger.  
[www.sarsiaseed.com](http://www.sarsiaseed.com)

## STAR SEEDS

**APIM Therapeutics AS** develops novel peptide drugs which have the potential of improving the action of a wide range of chemotherapeutic agents, including top selling DNA-interacting drugs, currently used for the treatment of several types of cancer.

[www.apimtherapeutics.com](http://www.apimtherapeutics.com)

**C10 Pharma AS** develops semisynthetic antibiotic compounds with activity against a broad spectrum of antibiotic resistant bacteria. The new compounds are based on research from The University of Oslo and are modifications of already existing antibiotic compounds that are in daily use in modern medicine. This will speed up the regulatory processes and lead to that the new compounds may be approved for use in the treatment of life-threatening infections within few years. Sarsia Seed is invested in C10 Pharma AS through a co-investment with the Danish investment fund NovoSeeds. [www.c10pharma.com](http://www.c10pharma.com)

**Prophylix Pharma AS** develops a prophylactic treatment for the condition Neonatal Alloimmune Thrombocytopenia (NAIT) in newborns. NAIT is caused by tissue incompatibility between a mother and her child and causes severe illness and often mortality in newborns. The technology comes from research at The University Hospital of North Norway and Ullevål University Hospital. [www.prophylixpharma.com](http://www.prophylixpharma.com)

**Avexxin AS** develops anti-inflammatory agents for treatment of psoriasis and other inflammation related conditions. The company aims to develop better and more cost-effective drugs than those available today. Sarsia Seed participates as a co-investor together with Karolinska Development, the commercialising unit of the Karolinska Institute. [www.avexxin.com](http://www.avexxin.com)

**GeneSeque AS** develops a technology that can, potentially, dramatically enhance the throughput capacity of the next generation DNA-sequencing technologies, thereby enabling further penetration of sequencing technology into new areas of application.  
[www.geneseque.com](http://www.geneseque.com)

## WELSCHOF LEAVES AFFITECH READY FOR NEXT PHASE

**A fascinating chapter in Norwegian life sciences looks like coming to an end in 2011 as Affitech completes its transition to a product development company after a long but never dull journey. OBU interviewed CEO Martin Welschof who after nearly ten years at the helm is to take up a new challenge in Ireland in February, whilst simultaneously major shareholder announced its desire to buy out remaining shareholders and take the company private.**

In a wide-ranging discussion Welschof revealed some of the frustrations and challenges faced by one of the first biotech companies in Norway, as well as his hopes that the Affitech legacy will not be wasted.

“There is no doubt that Affitech suffered from being one of the first on the scene in Norway. Founder Ole Jurgen Marvik certainly had the vision, but was faced with the enormous task of turning a research operation into a development company. In addition the support network just was not there – skilled management was difficult to find, nor did investors understand the levels of expertise and support needed. Also, and this was true of other antibody companies at the time there was too much emphasis on diagnostics and platforms.

“When I took over in 2003, I saw two immediate actions were needed to turn us from a research and technology platform into a therapeutic development company – to validate our IP and our technology platform. The first was achieved through a series of licenses and cross licenses with other key patent holders such as Dyax, Micromet and Xoma, giving us the all important freedom to operate and the second by being able to deliver in a number of research and development collaborations. The most important was with Peregrine Pharmaceuticals with whom we implemented a multi target deal based on a successful initial project. This became our lead product AT001/r84 after we were able to license it back from Peregrine.

The success in our research and development collabo-

rations attracted the interest of Roche and we are now well along the road in a highly successful collaboration, having met all our milestones to date. We also went through a merger with Pharmexa which gave us a listing in Denmark. In 2010 we brought in Russian strategic investors and a research and licensing collaboration with IBC Generium which was looking for innovative products for the Russian market. This has gone very well and we just received the first milestone payment of 2.5 million Euros for delivering the pre-clinical package for AT001/r84 to enable them to start clinical trials in Russia.

So I feel Affitech has successfully managed the transition from research and discovery into an early stage development company and when this new opportunity arose out of the blue I realized that perhaps I needed a fresh challenge. I will now be going to an already established development company with a mixed portfolio consisting of familiar antibodies and small molecules, which are a new area for me.

Of course I will be sad to leave Affitech after such a long time. However I will stay connected with the Oslo region since I and my family will continue to live in Oslo. But I can't depart without a warning. I fear that even though there are signs of growing success through companies such as Photocure, Algeta, Clavis Pharma, PCI Biotech, Lytix Biopharma and Biotec Pharmacon, the sector is by no means secure. There are some great scientists and individuals, but more are needed along with continuing support from government and financial circles.

*“I fear that even though there are signs of growing success through companies such as Photocure, Algeta, Clavis Pharma, PCI Biotech, Lytix Biopharma and Biotec Pharmacon, the sector is by no means secure”*



Photo: Affitech

Martin Welsch leaves Affitech well poised for success, but hopes the sector continues to invest.



Photo: CCB

Thanks to substantial investment, Norwegian research facilities, such as CCB, are state-of-the-art.

## CENTER FOR CANCER BIOMEDICINE RANKED “EXCEPTIONALLY GOOD”

The Research Council of Norway has recently completed a mid-term evaluation of 8 Centres of Excellence that were inaugurated in 2007. OCC member, the Centre for Cancer Biomedicine (CCB) was ranked with the highest obtainable score, “exceptionally good”.

The international evaluation panel, led by professor Sten Grillner (The Nobel Institute for Neurophysiology, Karolinska Institute, Stockholm), concluded that “CCB is delivering, at a very high level, what is expected from a national CoE – clear international scientific impact combined with a societal impact in the form of better cancer patient care.”

Consequently CCB’s CoE status has been extended with another 5-year period, i.e. until 31 August 2017. Soon after this came the news that CCB director Harald Stenmark had been elected a fellow of European Academy of Cancer Sciences. Here Stenmark guides us through the Centre and its work:



Photo: CCB

Director Harald Stenmark and co-director Ragnhild A. Lothe are driving CCB forward.

*“The Centre was founded with the vision of uniting forces across the disciplines in the fight against cancer”*

1) understand molecular events in carcinogenesis and 2) identify and characterize novel cancer biomarkers.

**How does the Centre interact with Oslo Cancer Cluster?**

We typically meet other members at Oslo Cancer Cluster’s R&D Network, and on several occasions we have presented our centre’s research on network symposia. We also present our research on international R&D symposia coordinated by Oslo Cancer Cluster. And of course we attend the Oslo Cancer Cluster Summer and Christmas parties.

**What international collaborations does the Centre have?**

As a Centre of Excellence, it is crucial for CCB to collaborate with top research environments abroad. For example, we have strong and long-standing collaborations with the National Institutes of Health(USA), the Portuguese Oncology Institute and the Panum Institute in Copenhagen.

**What are the key projects at the moment?**

I would class these as:

- Identification and functional characterization of novel biomarkers in colorectal cancer, urological cancers and lymphomas.
- Identification and functional characterization of novel oncogenes.
- Identification and functional characterization of novel tumour suppressors.

**What are the goals for 2012?**

In September 2012 CCB will enter its second 5-year period as Centre of Excellence. Well in advance of this, we will engage our Scientific Advisory Board in extensive discussions about the way ahead. We have several strong research papers in the pipelines, which are due to be published in 2012, as well as several patent applications that concern improved cancer diagnostics and prognostics.

**When was the Centre opened and what is its budget?**

CCB was opened in September 2007. Our annual budget is 87 MNOK (11 MEUR) (2010 figures, excluding in-kind expenses), of which 115 MNOK (15 MEUR) is Centre of Excellence funding from the Research Council of Norway.

**What is the role and purpose of the Centre?**

The Centre was founded with the vision of uniting forces across the disciplines in the fight against cancer. More specifically, translational cancer researchers with special expertise on colorectal cancer, prostate cancer and lymphomas have teamed up with cellbiologists, developmental biologists, bioinformaticians, biostatisticians and clinicians in order to



Networking was in full swing at ECCP 2011 in Toulouse.

## FACTS ECCP 2011:

- 445 participants
- 285 companies/organizations
- 19 countries
- 640 one-to-one meetings scheduled through the partnering platform
- 1800 formal and informal contacts generated during the meeting

## RECORD ATTENDANCE AND NEW COLLABORATIONS

**ECCP 2011 was the third European Cancer Cluster Partnering event organized by the Oslo Cancer Cluster in collaboration with its French partner cluster Cancer-Bio-Santé. Never before have more people joined the ECCP event and the partnering activity established a new record as well: over 445 people generated more than 1800 formal and informal contacts during the two-day meeting in Toulouse.**

Eleven companies and institutions from the Oslo Cancer Cluster participated. In addition to Norwegian companies like BerGenBio, Photocure and Targovax, a delegation of clinicians and researchers from Oslo University Hospital joined the conference. They used ECCP to meet their counterparts from Toulouse during two pre-arranged half-day meetings and discussed collaboration opportunities, especially in the field of lung cancer and early phase clinical trials.

Currently the Oslo and Toulouse teams are applying for funding to initiate their first joint projects. Also the close collaboration with Sanofi around the ECCP event resulted in a novel clinical trial collaboration between the clinical trials unit at the Oslo University Hospital/Radium and the pharmaceutical company.

For the first time ECCP 2011 hosted a European Technology Showcase in Oncology organized by the Danish/Swedish Cluster Medicon Valley Alliance – a new partnership created at cluster level. Affitech used the opportunity to present its technologies and projects in front of a very interested and receptive international audience as one of 18 preselected European innovators in cancer.

The main programme was again extremely high quality, featuring renowned international speakers from academia and industry and 28 companies including BergenBio presented their partnering assets.

Running in parallel, the confidential B2B meetings laid the foundations for future deals in a sector, “where the

development of cancer treatments remains a type of rocket science that is random and difficult, but where we need to move fast”, observed one participant.

Overall, by bringing together the various players along the entire value chain ECCP confirmed its important role as accelerator in oncology partnering. “We see this as essential in a rapidly moving and highly innovative area where 40% of the income from cancer treatments currently arises from drugs that have been developed during the past five years” stressed Jonas Einarsson, President of the Oslo Cancer Cluster.

### PARTICIPANTS RATE ECCP A SUCCESS

**The success of the ECCP meetings was also confirmed again by the participants themselves:**

- 97% were very satisfied or satisfied with the program
- 87% very satisfied or satisfied with networking opportunities
- Almost 40% estimate that two agreements will result from their ECCP 2011 attendance
- 89% plan to attend ECCP 2012

A recent survey for quantifying the outcomes of ECCP 2009 and 2010 indicated 23 reporting companies already signed 10 agreements and have another 56 agreements under discussion indicating the impact of ECCP on oncology dealmaking.



Photo: Nicolas Dohr

Jonas Einarsson, Chairman of Oslo Cancer Cluster, introducing two of the new kids on the block - Targovax and Ultimovacs.

## NEW KIDS ON THE BLOCK

A common hope in Norwegian life science circles in general and amongst Oslo Cancer Cluster's stakeholders in particular is that success will breed success. The signs are encouraging and already a group are emerging who have unofficially been called the "New Kids on the Block" - *Targovax*, *Ultimovacs*, *Nordic Nanovector* and *Oncoinvent*. OBU looks forward to following their progress in future issues, and start with some brief profiles.

Based on research by the founder of Algeta, Roy Larsen, and managed by Jan Aflheim, formerly of Clavis Pharma, **Nordic Nanovector AS** developing novel targeted anticancer therapeutics based on the Norwegian Radium Hospital and Nordic Nanovector's own innovative research on tumor targeted antibody based nanovectors. By applying a beta-particle emitting radionuclide conjugated to a tumor seeking carrier, malignant metastasized tumors can be irradiated with minimal damage to nearby healthy normal tissue. Nordic Nanovector's proprietary technology aims to prolong survival and improve the quality of life of people who suffer from hematologic cancer in particular non-Hodgkin Lymphoma. Whereas current antibody based therapies for non-Hodgkin Lymphoma use the antigen CD20 as the target, Nordic Nanovector's lead compound Betalutin targets the CD37 antigen that is expressed on almost all B-cells in non-Hodgkin Lymphoma. A large number of patients who eventually fail standard CD20 directed therapies may benefit from CD37 directed therapies. [www.nordicnanovector.no](http://www.nordicnanovector.no)

Following strong advances in immunotherapy in Norwegian research, **Oncoinvent AS** aims to develop immunotherapies against cancer, focusing on unmet need bone cancer in humans and dogs. The attractiveness of this approach lies in the fact that clinical studies in dogs can work as Proof of Concept before clinical trials in humans. As for other rare diseases there are possibilities to apply for Orphan Medicinal

Product status to receive exclusive market advantages for 7-10 years. Currently Oncoinvent AS is evaluating candidates for further product development. [www.oncoinvent.com](http://www.oncoinvent.com)

Telomerase is an area of great interest to cancer researchers, being expressed by over 90% of all cancers. **Ultimovacs** is developing a potentially universal vaccine made from peptides that have been identified by studying long term surviving cancer patients following immunotherapy. CEO Audun Tornes reports that clinical investigation of the novel vaccine is planned to 2012 in collaboration with Oslo University Hospital. [www.ultimovacs.com](http://www.ultimovacs.com)

The fresh recipient of a 9 million NOK (1.15 million EUR) grant from Innovation Norway, **Targovax** offers another peptide-based immunotherapy, this time against resectable pancreatic vaccine. The support from Innovation Norway will support a three-year collaboration project between Targovax and Oslo University Hospital. According to CEO Hanne Mette Kristensen, during the three years, the company will reach for the following milestones: regulatory approval for a Phase I study and initiation of the trial by recruiting the first patient by the end of 2012. The company then plans to include the first patient in the Phase II study. The cancer vaccine will be investigated in 15 patients within summer 2014. After the end of the OFU-support, the trial will continue in patients towards a regular phase III-study. [www.targovax.com](http://www.targovax.com)



Photo: Geir Mogen/NTNU DMF

Edvard Moser is just one of the internationally renowned Norwegian neuroscientists providing the brains behind the Nansen Neuroscience Network which aims to attract members from around Europe and further afield.

## NORBRAIN RECEIVES 80 MILLION NOK

The Nansen Neuroscience Network continues to grow in importance, clearly filling a need both in the Nordics and further afield for a network bringing together all the diverse parties involved in this the so-called last frontier in science. One initiative attracting widespread attention is a software tool for designing project funding applications at all levels. In Norway itself, the new national budget allocated 80 million NOK (10.3 million EUR) to NORBRAIN, an NTNU-coordinated national infrastructure project for further developing neuroscience research and innovation. The project is structured around two Centres of Excellence - the Centre for the Biology

of Memory at the Norwegian University of Science and Technology (NTNU) and the Centre for Molecular Biology and Neuroscience at the University of Oslo - as well as one Centre for Research-based Innovation - the Medical Imaging Laboratory at NTNU. The new funding will be used to set up state-of-the-art neuroscience equipment to support a broad spectrum of molecular and systems neuroscience research. "We are collaborating with the intention of building one of the best neuroscience infrastructures in the world," says Director Edvard Moser, "The new state-of-the-art equipment will enhance our opportunity to conduct groundbreaking



Photo: Biotechnology Center

*“Now 20 academic partners in 12 European countries are constructing platforms from scratch, and it’s being done differently and in a smarter way, to be able to develop research tools and commercial products”* Kjetil Taskén, Director, Biotechnology Center in Oslo

## KICK-OFF FOR EUROPEAN SCREENING STRUCTURE

The first EU-Openscreen stakeholder meeting was held in Berlin, 22nd of November. Researchers from all over Europe were invited to give their thoughts on the pan-European Infrastructure being planned for open screening platforms for Chemical Biology, a tool used in the process of finding substances that can be used in the hunt for new pharmaceuticals. These new platforms will make the most advanced technologies available to European researchers from Academia and SME’s, that have limited access to the platforms usually owned and run by Big Pharma.

*“Now 20 academic partners in 12 European countries are constructing platforms from scratch, and it’s being done differently and in a smarter way, to be able to develop research tools and commercial products,”* says professor Kjetil Taskén at the Biotechnology Centre in Oslo.

In Norway the platform is available in four varieties, connected in the ChemBioNet. MabCent SFI in Tromsø has a primary focus on marine bioprospecting with materials and substances from the polar regions. SINTEF in Trondheim have developed special expertise in robotics, while the Universities of Oslo and of Bergen have their strength in identification of compounds affecting new targets together with measurement methods. Øystein Lie, Executive Manager of the Norwegian marine innovation organization MareLife says *“EU-Openscreen is a powerful tool in addressing challenges to the European life science community, and securing a long-term financial framework is crucial to the project”*.

[www.eu-openscreen.eu](http://www.eu-openscreen.eu)



Photo: MareLife

research and also has an international perspective in that it makes it easier for us to attract international collaborators.”

### **Nansen Neuroscience Network Leads brainstorm on Neurodegenerative Disorders**

At the end of November, the Nansen Neuroscience Network brought together Norwegian key groups to brainstorm ideas for participation in a EU Joint Programme for Neurodegenerative Disorders. Topics covered ranged from biomarkers, to stem cell therapies. More at [www.nansenneuro.net](http://www.nansenneuro.net)



Photo: Intrafish

With a wide range of applications, microalgae is increasingly regarded as a key sustainable resource in the new bioeconomy.

## MICROALGAE FOR FISH FEED AND OTHER HIGH VALUE PRODUCTS HIGH ON THE AGENDA

Both internationally and in Norway, algae is one of the main potential sources of biofuels and other byproducts seen as a cornerstone of the new bioeconomy. Thus in October, the Norwegian biotech community gathered in Tromsø for a national workshop on microalgae. More than 80 people engaged in a vibrant discussion about how Norway should take a position in the emerging microalgae industry. There are presently a number of initiatives along the Norwegian coastline exploring its potential, from Oslo in the south to exotic Tromsø with the world's northernmost university. Some of these projects seek to utilize local sources of CO<sub>2</sub> feedstock, e.g. the petroleum refinery at Mongstad or the ferrosilicon factory at Finnfjord. While most of the microalgae debate is about biofuel produced from large raceway-type ponds in sun-rich parts of the world, the Norwegian projects

will be focused on enclosed reactors aiming for high end products such as ingredients, pigments and bioactives. Microalgae could also provide a solution for another increasingly pressing problem. Whilst efforts to persuade growing populations to eat more fish are gaining traction, the fish farming industry is struggling to find enough fishfeed. Microalgae are primary producers of the essential omega-3 lipids feed components needed for fat rich fish species like salmon and herring. As the world's leading producer of both salmon filet and omega-3 rich oil used as an important ingredient by the international food industry, Norway has recognised that it needs a strong knowledge base in microalgae in order to maintain its competitive position in these areas and secure an high quality source of marine lipids for salmon feed.

### NEW HAV 21 PROGRAMME ACTS AS BAIT FOR MORE MARINE RESEARCH

In order to bolster Norway's position as a global leader in marine knowledge and management of marine resources and ocean areas, the Norwegian government has started drawing up a new strategy under the title HAV21.

"Norway is a marine nation and excels in marine research, but we want to become even better. We have started the Hav21 strategy process to promote Norway as a global leader in marine knowledge and management of marine resources and ocean areas," said the Minister of Fisheries and Coastal

"Research is the key to exploiting the potential of the oceans in the most constructive manner. The Hav21 strategy report will provide an outline for shaping Norway's collective research activity to promote sustainability and future value creation based on marine resources."

A strategy committee will be appointed for Hav21 comprising representatives of trade and industry, the public administration and the knowledge community, and will be led by Monica Stubholdt of Aker ASA. The final report containing recommendations will be presented to the Ministry of Fisheries and Coastal Affairs.

### MARINE BIOTECH CONTINUES TO MAKE WAVES

The Norwegian government acknowledged awareness of the importance of marine biotech to the economy by allocating dedicated funds within the new budget in October. Some 30 million NOK (3.84 million EUR) are to be made available for new initiatives alongside continuing support for established programmes such as MABIT and Marbank. "We will have the first call for proposals from the new biotech program (BIOTEK2021) in February says special adviser Steinar Bergseth, who has long championed the sector." Also I am pleased to say that internationally Norway is taking a lead in this area – perhaps only naturally considering our marine traditions and the length of our coastline. I am coordinating an activity that should lead to the establishment of an ERA-NET and furthermore, centrally involved in a major OECD meeting in May in Vancouver looking at the potential of marine biotech to make a major contribution to key issues such as sustainability, health and overall economic growth."

*“This is a well proven technology but our “secret” is the ability to recover the acid and recycle it back into the process again and again.”*

Petter Bartz-Johannessen

## FROM CELLULOSE TO BIOETHANOL

Located on a small industrial site overlooking the Bergen fjords, a fairly nondescript unit houses what could be the key to viable bioethanol production for many countries. Backed by strong consortium including Innovation Norway, Sarsia and Statoil, Weyland has built a pilot plant with the capacity to produce 200,000 litres of bioethanol per annum through an innovative method that promises to be both profitable and environmentally friendly – using cellulosic feedstocks. There are of course other projects aiming at producing these second generation biofuels, but CEO Petter Bartz-Johannessen, claims Weyland has a major competitive advantage: “Our process is based on concentrated acid hydrolysis where instead of using enzymes we only use acid to break down the cellulose and hemicelluloses to fermentable sugar. This is a well proven technology but our “secret” is the ability to recover the acid and recycle it back into the process again and again.”

The method is a result of more than 1,000 laboratory experiments carried out at Bergen University College where research started in 1987. Weyland’s process has a high ethanol yield and can utilise a variety of different feedstocks, such as wood and agricultural waste, wood waste from demolition and similar. “Weyland’s technology can use feedstocks which are available in large quantities all over the world, offering great potential for energy production even in developing countries”, says Bartz-Johannessen.

Second generation biofuels remove the most important objection to conventional, so-called “first generation” biofuels – that they compete with food crops for valuable agricultural land. The worldwide demand for bioethanol is expected to grow rapidly in the future - from 80 billion litres in 2012 to 300 billion litres in 2030. An increasing number of countries are now introducing requirements for blending of biofuels into traditional fossil fuels. In the EU, there is a requirement for 10% blending by 2020 and in Brazil and India, 20% by 2020. “Cellulosic ethanol is recognised as key to achieving these targets: according to the US Renewable Energy Act, it will account for approximately 40% of all ethanol produced in the US by 2022 – this alone corresponds to 60 billion litres,” continues Bartz-Johannessen.

Weyland reveals that the company is now in discussions with several undisclosed customers for building test plants with capacities of 3-5 million litres of ethanol per annum: “We also see our approach as being ideal for small-medium size co-location with any installations with suitable waste heat. Furthermore, using concentrated acid hydrolysis would make our installations far more flexible than most other technologies. Our plants could take whatever raw material was available – for example switching from agricultural waste in the harvest season to woodchips, sawdust, demolition wood during the rest of the year,” concludes Bartz-Johannessen. [www.veyland.no](http://www.veyland.no)

## UK-NORWEGIAN COLLABORATION STRENGTHENS

As mentioned by Simon Dwyer in Viewpoint, autumn has seen a flurry of UK-Norwegian industrial biotech and bio-refining activity flowing on from the general biotechnology MOU signed between Innovation Norway and UK’s Technology Strategy Board. Both countries have major fisheries industries and thus in September a Workshop was held in the UK’s main centre Grimsby on ‘Marine Co-products’ and the potential use of the fish co-products in Bio-refining process. Chaired by Wynne Griffiths of the Humber Seafood Institute, speakers from both industry and academia discussed the potential to recover high value products such ranging from oils to enzymes.

According to Ole Marvik of Innovation Norway, the main conclusion was that this sector, worth already £200 million in Norway, is literally only just in its infancy: “The next step is that would like to see the world’s first truly integrated blue biorefinery emerging from the UK-Norwegian collaboration. Besides the marine sector, there are very promising bilateral opportunities in lignocellulose, an area where Norway has a strong tradition, and also in advanced processing and recycling of household waste. Innovation Norway is very excited about the prospects of this 5-year collaboration with TSB and the results so far are beyond expectations.”



Photo: Weyland

Weyland use concentrated acid hydrolysis to break cellulose - from various sources such timber and agricultural waste - into first fermentable sugar and then bioethanol.

## EVENT CALENDAR 2011/12

Meet representatives from the Norwegian life science and medtech sector at the following events:

### DECEMBER

6 Nordic Health Care Conference  
(DNB Markets/Sigma Fondene), Oslo, Norway  
[www.healthcare.management-access.com](http://www.healthcare.management-access.com)

### JANUARY

12 Cancer Crosslinks 2012, Oslo, Norway  
[www.oslocancercluster.no](http://www.oslocancercluster.no)

### MARCH

6-8 Bio-Marine Innovation Pre-Conference/  
NASF 2011, Oslo, Norway  
[www.nor-seafood.com](http://www.nor-seafood.com)

### JUNE

18-21 Scandinavia Pavilion, BIO International Convention,  
Boston  
<http://convention.bio.org>

## SKANNEX AS

Latest in a seemingly inexhaustible flow of diagnostic innovators stretching from Nycomed to Axis-Shield is Oslo-based Skannex which has been receiving major attention and plaudits on its debuts at key conferences AACC and Medica this year.

### Business idea

To provide a single easy to use result reporting and analysis platform for the increasingly diverse range of test formats in point of care medical, environmental, agricultural, food and livestock testing.

### Technology

Sophisticated barcode-based software for image recognition, capture and analysis of bioassays. First fully integrated Desktop instrument, SkanFlexi, recently pre-launched at Medica. Handheld instrument with mobile internet communication in pipeline.

### Management

Siri Stabel Olsen, CEO, Dag Bremnes, CSO, Christina Casten, Regulatory and QA Manager.



### Investors

Private

### Patent situation

Pending

### Progress to date

Several hundred SkanMultis installed. Three new prototypes developed – SkanFlexi – a desktop system, and SkanSmart and SkanEasy, both using smartphones for image capture and data transmission. Operations established in US and China. First round funding secured.

### Next milestones

Launch of 2-3 production models in 2012 and closing of first OEM contracts.

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Oslo Teknopol aims to stimulate innovation and attract foreign investments and talent to Norway's capital region. We offer free assistance and information about business conditions and opportunities within life sciences and other key knowledge-based clusters in the Oslo region:

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

Oslo Teknopol is a non-profit regional development agency, established by the City of Oslo and Akershus County Council.



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 contact:**

**Oslo Teknopol at [info@oslo.teknopol.no](mailto:info@oslo.teknopol.no)**

