Issue 1 Volume 2 2014

Mercator NovioTech

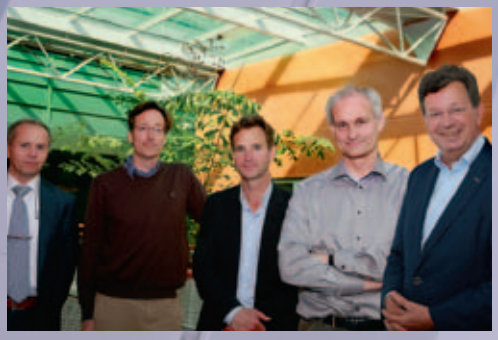
Science Meets Business Nijmegen

Treaties of Nijmegen Medal 2014

Neelie Kroes

Technology

iLAB Nijmegen



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More interaction between science & business

Technological innovation and new productivity can stimulate economic growth and help overcome the economic crisis. The increasing interaction between science & business and the cooperation between partners in Nijmegen's ecosystem for young entrepreneurs are invaluable. The magazine 'Mercator Novio Tech, Science meets Business Nijmegen' offers examples of that interaction, and connects the two locations in Nijmegen for knowledge-based companies: the Novio Tech Campus and the Mercator Technology & Science Park Nijmegen. First and foremost, we aim to give an insight into the growth and diversity of connections, partnerships and the results of science & business. This combination will certainly contribute to the external profiling of our region. Modesty is a praiseworthy virtue, but 'be good and tell it' suits us much better, certainly considering our high level results and large number of (inter)national business relations. A digital version of this magazine in English is therefore available, which shall be widely distributed.

Our main topics in this issue are: the Radboud Nanomedicine Alliance, iLABs Nijmegen, and ICT expertise. This expertise has recently been demonstrated at the award ceremony of the Treaties of Nijmegen Medal, awarded to Neelie Kroes. Three ICT companies from Nijmegen have also been admitted to the Magic Quadrant of Gartner: Planon, GX and Aia Software. We therefore offer a platform both for young entrepreneurs and for initiatives and facilities that stimulate the set-up and growth of innovative companies. The partners of Mercator NovioTech magazine have mainly a supporting role in strengthening these dynamics. Companies, knowledge and care-based institutions form a strong foundation for innovations and start-ups to be created and expanded. It is here, therefore, that we find most of the content of this magazine.

There still is a vast growth potential in science & business that can be addressed with more supporting and accelerating activities. Unfortunately innovations do not happen overnight. Nor do researchers become entrepreneurs in the blink of eye. Not every starting business survives the so-called 'valley of death', or becomes a fast-growing innovative company. That is why we work with various partners to strengthen the ecosystem of Nijmegen, to stimulate more successful innovations, and to start and help young knowledge-based businesses to develop. For this purpose, many initiatives have been designed in collaboration with both larger companies and knowledge and care-based institutions. Prime accommodation and facilities are available at the science & business location in Nijmegen. With Mercator NovioTech magazine we want to increase awareness about all of these subjects.

Ir. Drs. Antoine Fraaij,
BV Campus Radboud University

Drs. Hein van der Pasch,
Mercator Incubator Nijmegen

Dr. John J. Schalken
SMB Life Sciences.

Ir. Rikus Wolbers,
NovioTech Campus

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Radboud Nanomedicine Alliance central to cooperation

The management team of the Radboud Nanomedicine Alliance, from left to right: professors John Jansen, Wilhelm Huck, Hub Zwart, Jan van Hest and Jan Smeitink.

The Radboud Nanomedicine Alliance (RNA) is a cooperation between the Radboud University, Radboudumc and select companies. Within the Alliance, molecular scientists and organic chemists work closely with biologists and medical specialists, ensuring that the right materials are developed for specific medical applications.
Professor dr. Wilhelm Huck is professor of physical organic chemistry at the Radboud University and director of the Radboud Nanomedicine Alliance; Prof. Dr. Jan Smeitink (professor of Mitochondrial Medicine Radboudumc) is vice-director. Other board members are Prof. Dr. Jan van Hest (professor of Bio-Organic Chemistry RU), Prof. Dr. John Jansen (professor of Biomaterials and Experimental Implantology Radboudumc) and Prof. Dr. Hub Zwart (professor of Philosophy at the faculty of Science RU).

Nanomedicine

Nanomedicine is the medical application of nanotechnology, working with microscopically small components at the nanometre level, i.e. a billionth of a metre. In nanomedicine, these tiny nanoparticles are used in a targeted manner and enabled with special properties, such as for the early detection of diseases, targeted administering of medication to the right parts in the body, and for fixing defects. In short, nanomedicine contributes to molecular diagnostics, drug delivery and regenerative medicine.
"Radboud Nanomedicine Alliance is a virtual institute," begins Wilhelm Huck. "We start with two research topics: checking the extracellular matrix (ECM) of the cell in its surroundings, and targeting mitochondrial disorders. These subjects have been chosen specifically as the Radboud University Nijmegen and the Radboudumc are renowned worldwide for their scientific expertise in these areas. Nanomedicine is a way to find solutions for disorders that are difficult to treat, by checking parts of the cell or its surroundings at a nanometre level. This can be the case with mitochondrial diseases, where disorders in the energy supply of a cell play an important part. The topic 'extracellular matrix' refers to structures that are part of biological tissue but placed outside the cells, and deals with such things as different types of cancer. In addition to this there is regenerative medicine, where we try to enhance the integration of implants and biomaterial into body tissue."

Cooperation is crucial

"Cooperation with other disciplines is extremely interesting,' says Jan Smeitink. "It results in new ideas and new opportunities. Linking scientific research with the UMC is a golden combination: scientific treasures are there for the taking. There are leading groups both on the side of the RU and the Radboudumc, who share their ambitions and are willing to work. The research topic 'mitochondrial disorders' has been chosen specifically because of available knowledge and past performance. Input from the field of nano-

medicine is a unique opportunity for us," Smeitink continues. "Patients with this metabolic energy condition often have brain anomalies. Bridging the blood-brain barrier is in itself an enormous challenge, and inside the brain there are yet more obstacles to deal with in order to get the medication to a specific spot. Targeting with nanomedicine gives medication for mitochondrial disorders an extra dimension."

In 2012, the Board of Directors of the Radboudumc gave Jan Smeitink the opportunity to establish the spin-off company Khondrion, of which he is CEO. With the help of a team of experts, Khondrion develops medication for metabolic disorders. In close cooperation with the Radboudumc, a unique chain evolved, consisting of diagnostics, patient care, fundamental and applied research. "We have systems at our disposal for mitochondrial disorders that allow us to test products developed from the approach of organic chemistry using animal models, to which companies can add their newly developed medicines. The cooperation with researchers at the RU and regional companies such as Mercachem, Chiralix, Synthon, ChemConnection and of course Khondrion, is very fruitful. Research continuously gives results, for example allowing us to better analyse the atomic structure of compounds from the metabolic system. Together with the Human Genetics department we founded a Next Generation Sequencing (NGS) platform; a large-scale gene research that traces genetic defects to offer an explanation for new mitochondrial disorders. From the Radboudumc we outline patient cohorts, follow them over a longer period of time and develop result-based criteria, allowing us to try out new therapies. At Radboudumc we have characterised the patient well, and mapped out the mitochondrial biology in health and illness. Companies like Khondrion develop different classes of medication, and the cooperation within RNA gives this an extra boost. In short, we completed a unique chain: from molecule to patient."

For translating nanomedicine research to clinical applications, participation of medical research groups with a large store of practical knowledge about disease processes is indispensible. This also helps with defining research questions for basic research and clinical trials of applications.

Wilhelm Huck: "What chemists come up with usually works very well as long as it is within a model. But there is a gap between the chemical lab, and the product that is actually marketed for medical purposes or as medication. That is why it is important that our products are tested in a clinical setting and that the research question is given direction by that same clinical environment. The advantage of this is that our research is given a good push in the right direction with one and the same effort and investment. When it is time to start talking with the industry at a later stage, this coordination with clinical practice ensures that many risks have already been covered. In short, you become more interesting to investors. Companies can contact us with a problem and we will look for the right parties to work towards a solution as efficiently and productively as possible. This way we would also like to generate our own funds within RNA, and acquire extra financing to be able to adapt quickly."

Added value of nanomedicine

John Jansen: "A collaboration with the Faculty of Science already existed. They have the necessary basic knowledge of organic chemistry, while we are better at reasoning from the perspective of the clinical problem, enabling us to make the transition between the two. To me it is already a great advantage that the research groups are complementary, but if a collaboration aims to be successful, it needs to be structured. This means making joint decisions about research topics, and discussing these thoroughly as well as consulting each other on a regular basis. The RNA offers a structured environment for this cooperation. We mainly focus on researching the extracellular matrix. This covers the regeneration of tissue using biomaterial that has been structured at nano level, forming matrices within which cells can grow and new tissue can be created. This accelerates wound healing in cases such as burns, or hip or dental implants. Our challenge is to develop materials that are not recognised as being foreign to the body, and that are able to stimulate new tissues or tissue growth. It can be either synthetic or biological material, as long as it is structured in the same way as natural tissue where shape, anatomy and composition are concerned."

The board of directors of the RU has invested in the RNA by making six PhD research positions available. These PhD posts have been divided between the research topics 'extracellular matrix' and 'mitochondrial disorders'. Moreover, there is also a PhD position available for the ethical side of nanomedicine, resulting in the participation of philosopher-ethicist Hub Zwart in the RNA. According to Wilhelm Huck, the board of directors is sure that there will eventually be more than these six PhD positions. "In a few years there may be fifty PhD research posts, mainly financed by the industry. At the same time, we are conferring with Oost NV and Innovatie Gelderland, to see if apart from working with the industry, we can valorise IP or organise spin-offs in a way that is different, yet still effective. By working with companies within the RNA, we first of all try to reach a critical mass regionally. Companies that have shown an interest are Synthon, Mercachem, ChemConnection, Khondrion and other spin-offs. Together with these leading companies, a cooperation is founded that attracts many international market parties. By collaborating, we mainly want to tackle larger projects that are interesting for corporate sponsoring. Besides this, we also want to make sure that PhD students can start working for these companies, and we want to file joint applications for grants both with bodies such as STW and ZonMW, and internationally."

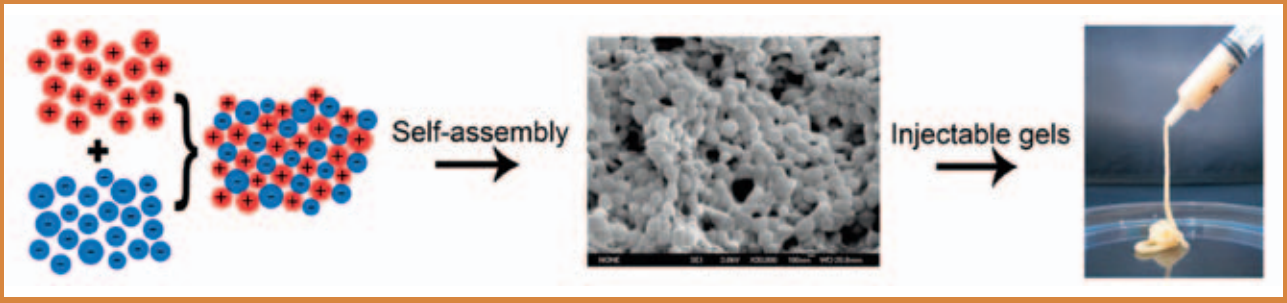
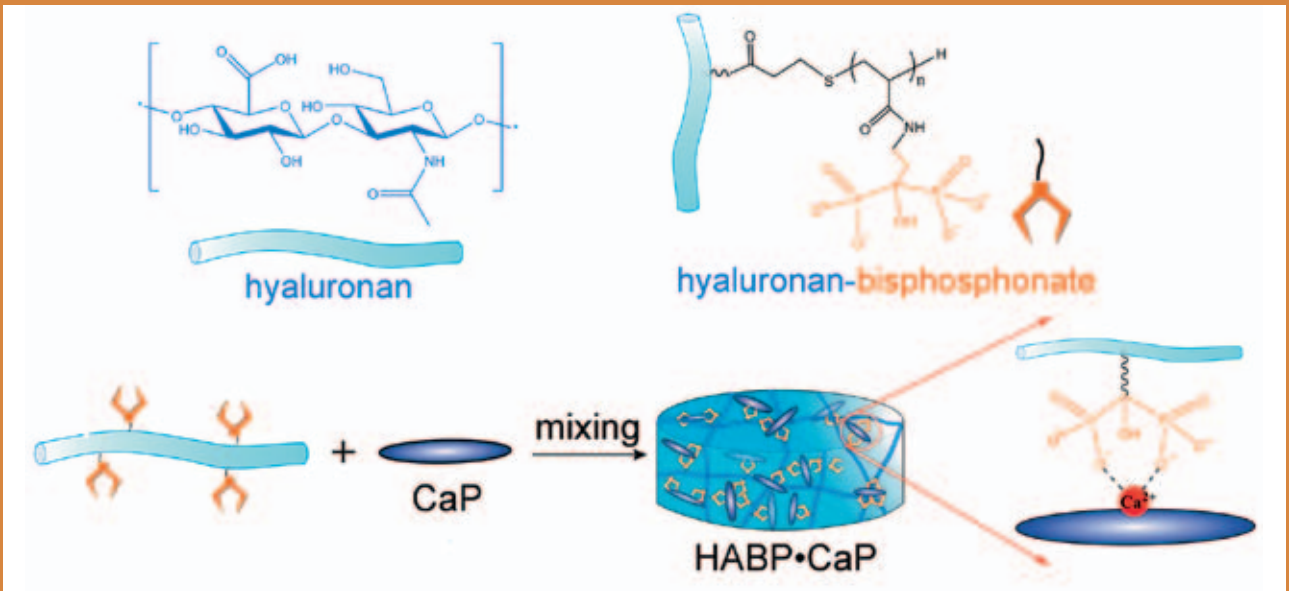


Figure is a schematic representation of how micro/nanospheres can be used to make injectable bone replacement bottom-up. The micro/nanoparticles are made of gelatine and have an opposite charge ("+/-"), which means they attract one another and consequently form a gel-like material.



The big disadvantage of calcium phosphate bone replacements is the fact that they are brittle (break easily) and so cannot be used for the treatment of bone defects that need to withstand a lot of pressure. Natural bone not only consists of calcium phosphate ceramics, but also contains collagen fibres. Collagen gives bone tissue flexibility and is able to absorb forces (pressure). Therefore, it seems better to not only use pure calcium phosphate ceramics as a bone replacement, but to create a hybrid material that behaves viscoelastically. Apart from this, there is also a problem with the shape of calcium phosphate bone replacements. These are granular or come in the shape of large or small cubes. This shape makes it difficult for a surgeon to properly implement them, or to keep the material inside a bone defect. The procedure becomes much easier when the bone replacement is available in an injectable form. In the nano-concept, bone replacements are created that have been inspired by the shape and structure of natural bone tissue. With new technology a hybrid gel is made, consisting of a calcium-binding organic matrix and calcium phosphate nanoparticles. For this purpose, calcium-binding bisphosphonate is chemically connected to hyaluronan. Next, calcium phosphate nanoparticles are mixed with the hyaluronan-bisphosphonate and injected into the bone defect with a syringe. The material turns into a gel after injection, not only locking the nanoparticles into the newly formed hybrid gel, as this in turn connects with the bisphosphonate, but also remaining sufficiently elastic. (Leeuwenburgh 2014).
Nanotechnology can be used for different purposes, such as the production of bone replacement. Conventional bone replacement material is made of calcium phosphate ceramics. This synthetic material shows a likeness to the calcium phosphate ceramics found in natural bone, and therefore enhances the healing process when it is implemented in a bone defect.

Added value for society

Jan van Hest: "Nanomedicine is mainly about the efficiency and effectiveness of getting medication to those areas where it has to do its job, with fewer side-effects. This has now made certain medicines available for a wider range of patients. That is the Radboud Nanomedicine Alliance's added value for society. Large pharmaceutical companies see opportunities for enhancing the administration and effectiveness of medicines. They therefore keep a close watch on what small knowledge-intensive companies develop in the field of nanomedicine. RNA is able to take a central position and bring different clusters together. Thanks to RNA, the university, UMC and selected companies can combine forces and have a stimulating effect. The city and the region will facilitate this process, drawing participation in like a magnet. With more critical mass, more companies and knowledge institutes will be drawn to this area. RNA can become a key member of Health Valley. Interaction between all parties will ensure synergy. Our joint goal: translating nanomedical research and innovations to medical applications with added clinical value," emphasises Jan van Hest. John Jansen agrees with him: "Nijmegen has a lot to offer in the field of research and is a world player. The RNA collaboration is not only supposed to take the quality and quantity of the research to a higher level, but also to increase our visibility. The board of directors opts for a long-term approach. In this field, you need at least 10 to 15 years to build something. During the past three years we have already carried out three projects that resulted in a clinically applicable product: a catheter for peritoneal dialysis, nano-coating for dental implants, and a bone replacement with which clinical trials are now being carried out. All three projects were initially launched with funds from STW, and then continued with other grants. In all projects it took about twelve years before we entered the clinical stage. This means tat you need to think long-term for this course of action, and that you need courage to keep on going. The research trajectory needs to supply, at the very least, the necessary scientific output: doctoral students, scientific publication and a foundation for new research," Jansen continues. "But we also have to be able to apply for grants and other methods of financing to develop more products. After five years, there should be an insight into the applicability of a product, in order to convince investors. The RNA should also have grown considerably within five years, or we are not going in the right direction. Combining forces is the key concept within RNA, with knowledge as well as finances. Research is becoming more and more disciplinary, developments are incredibly fast, and it is impossible for every laboratory to finance the advanced equipment necessary. It would be great to physically combine several labs into one RNA laboratory. I already have a location in mind," smiles John Jansen.

www.ru.nl/nanomedicine

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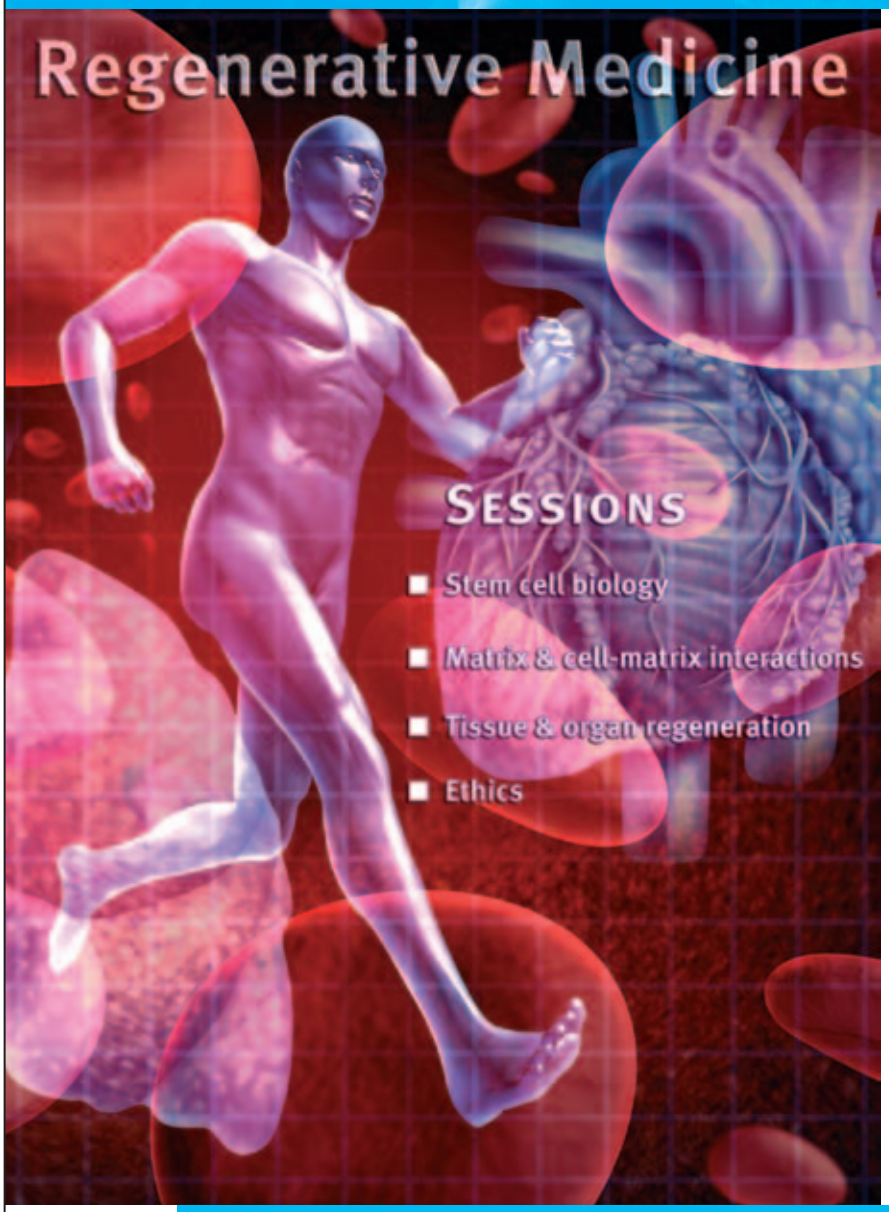

Keynote Speaker

- **Robert Langer, USA:** *Novel drug delivery systems, tissue engineering, technology transfer*
- **Christine Mummery, NL:** *Stem cells in cardiovascular development and disease*

Invited Speakers

- **Clemens van Blitterswijk, NL:** *Materiomics, cartilage and bone regeneration*
- **Achim Goepferich, DE:** *Nanoscale materials for drug delivery*
- **Jeffrey Hubbell, CH:** *Biomaterials for drug and growth factor delivery*
- **Ali Khademhosseini, USA:** *Micro- and nanoscale technologies in regenerative medicine*
- **James Kirkpatrick, DE:** *Vascularization in skeletal tissue engineering*
- **Evert van Leeuwen, NL:** *Ethics & stem cells*
- **Frank Luyten, BE:** *Skeletal tissue regeneration, joint morphogenesis*
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At home in Nijmegen

We recently finished the renovation of the UBC for the Radboud University Nijmegen. A project perfectly matched to our expertise, carried out in the existing environment. We also completed several projects for NXP Nijmegen and Astrazeneca. Do our way of thinking, our knowledge of the area and our experience in building appeal to you? Please contact us through:

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Reception and meeting rooms with a view of Park Brakkenstein

Mercator UBC: an inspiring business location

Presentation

At the campus of the Radboud University and Radboudumc, the University Business Centre Nijmegen (Mercator UBC) and the other Mercator buildings at the intersection of science & business offer unique possibilities for the cross-fertilisation of researchers and entrepreneurs, and for the innovation of companies. The UBC, which has been the home base for start-up companies for 25 years, was recently given a rigorous facelift, providing even more opportunities for young entrepreneurs.
To look back over the past 25 years, we are assisted by Hein van der Pasch, then the director of UBC/Stichting Gelder-Kennis and head of the Technology Transfer Bureau, and now the director of Mercator Incubator Nijmegen. "The university allowed us to set up shop in an existing building. We had to take care of the renovation ourselves, as well as for the stimulation of university spin-offs, thus proving that researchers can indeed become business professionals. Thanks to sufficient financing and the ever growing number of spin-offs, we soon needed more building work to be done to expand the UBC building. The initial plans for the Mercator Technology & Science Park followed. Strong knowledge-based companies such as AT Computing, Buck Consultants International and Synthon originated from this university and the UMC. We came into contact with experienced advisors, financiers, and other service companies such as Search Consult, who were all attracted by the campus dynamics of science-to-business."

The home of ICT Network and 'alternative workplace strategies'

Roeland Kavelaar of Search Consultant, a recruitment and selection office for ICT personnel, nods in agreement. "We have been UBC tenants since 1990. These dynamic surroundings with lots of interaction between the companies present immediately appealed to us. You can make use of each other's expertise, in areas such as communication and administration, as well as do business together. This is supported by the reception, secretarial facilities, and flexible work and conference rooms that have been nicely done up. What's more, since the renovation, the UBC amply meets the requirements for 'alternative workplace strategies', with easy-in/easy-out rooms necessary for young ICT companies. In 2012, the UBC was already the home of ICT Network Nijmegen, where ICT experts, entrepreneurs, students and researchers exchanged knowledge, putting Nijmegen on the map as the city of ICT. Both IT students from the RU and ICT companies within Mercator are very active: as recruiters for ICT personnel, we are spoilt for choice. And if we want to relax, we can just pop into the courtyard garden of the UBC, walk to the on-campus sports centre, or go to the nearby Brakkenstein park, where we will soon be enjoying festivals such as Radboud Rocks and Music Meeting."

Central reception

Company Office of Lenwise Media

A moment to relax in the courtyard garden

Entrepreneurship emphasised in the RU curriculum

Dr. Caroline Essers (RU Nijmegen School of Management)

Dr. ir. Nanne Migchels (RU Nijmegen School of Management)

At both the Faculty of Management and the Faculty of Science of the Radboud University, new initiatives are in place to integrate aspects of entrepreneurship into the curriculum. Starting a business has long been a familiar concept on the Nijmegen campus, amongst other things due to the growing ambition of students who want to take their future into their own hands. The current economic crisis has further emphasised this necessity and relevance than was the case in past years. Other impulses for these developments come from student societies such as Synergy, Thalia, UniPartners, AIESEC-Make a Move and the Beta Company Fair. In the Mercator buildings at Toernooiveld - the UBC, iLABs Nijmegen/ Mercator 3 and Mercator Incubator Nijmegen –the required facilities were already in place, as well as the resources for advice and support of young enterprising students and researchers in starting up their businesses. Projects such as Go, KERN, Gelderland Valoriseert and the Knowledge-Alliance Rhine-Waal provide extra resources.

Inspiring 'Wil Ondernemen Week'

The 'Wil Ondernemen Week', which took place from April 14th to April 17th 2014, and originating in the Entrepreneurship Initiative of the Nijmegen School of Management, is a great example of this trend. On the 14th of April 2014, business administration teachers Dr. Caroline Essers and Dr. Ir. Nanne Migchels kicked off the lectures and workshops, organised in cooperation with alumni, student societies and a range of departments. For example, lectures were given by alumni Dirkjan de Wit of SAM International and Malou van Dooren of BZZY about their experiences with starting their own business. In addition, there were presentations on subjects such as corporate social responsibility, university spin-offs and supporting facilities.

Stimulating education initiatives

Dr. Robert Kok, a lecturer in 'Innovation Management' at the Centre for Innovation Studies of the School of Management who often works in cooperation with the faculty of Science, points out existing subjects that already address aspects of entrepreneurship: the joint bachelor course 'Sustainable Business', the course 'Entrepreneurship of the Mastertrack Science Management & Innovation' at the Faculty of Science, and the optional courses 'Innovation Management' and 'Entrepreneurship in Social-Cultural Perspective' at the School of Management. He indicates that the field of business education offers great opportunities for different faculties to work together, on such subjects as technological innovations and enterprising

Dirkjan de Wit MSc (director SAM international)

research initiatives. Robert Kok: "Entrepreneurship can also be stimulated by connecting students from different studies. Students can explore each other's fields in teams, and further develop their entrepreneurial potential. A science student who knows about chemistry or ICT, for example, could benefit from working with a business administration student who can offer knowledge on innovation, market research and commercial procedures. It is also possible for students from different studies to work together on a master thesis project. But I am sure many other forms of interaction can be thought of," concludes an enthusiastic Kok.
Dr. Jan Willem Dijk, member of the Faculty of Science and manager of Valorisation and Innovation, says: "We are aiming for a kind of practical education where students get to know the start-up processes of corporate initiatives and are trained in entrepreneurial skills. There are options through JongOndernemen.nl, for example, which has a programme we can make good use of."

Strong examples

Competitions for business plans also have a stimulating effect upon the growth of the number of enterprising students, as well increasing their knowledge and skills. The Radboud University has had positive experiences with the Mercator Junior Award / Mercator Award for Knowledge-based Entrepreneurship. During the 'Wil Ondernemen Week' attention was paid to the schemes New Venture and Dragons' Den, who combine the competitive element with constructive advice. Students with business plans and researchers who want to become entrepreneurs have strong examples to look up to, such as the winners of the Mercator Award: Mercachem, NovioGendix, Modiquest and Bijlesnetwerk. These were all founded by former students of the Faculty of Science, Radboudumc and the Nijmegen School of Management.

Beta Company Fair

"Making acquaintance with companies during fairs, such as the Beta Company Fair organised by students, can be a valuable contribution to their future. Chance encounters can be crucial for the future. Today, the BCF students themselves organise these networking opportunities with companies", says chairman of the board Prof. Dr. Gerard Meijer of the Radboud University, in his opening speech of the Beta Company Fair on 21st of May 2014.
Topics such as innovation, sustainability and corporate social responsibility are areas that inspire new initiatives amongst students, such as starting their own business. The Radboud University has a strong track record of researchers becoming successful entrepreneurs, and students setting up their own companies. More than 600 academics from Nijmegen have started a business initiative in the past 25 years. The resulting companies now employ around 5000 people, mainly academics. Several of these spin-off companies are located on the university campus in the buildings of the Mercator Technology & Science Park Nijmegen.

Prof. Dr. Gerard Meijer, opening speech, and stalls Beta Company Fair 2014

Tokyo Future Style matches European and Japanese knowledge markets

Takashi Endo, CEO of Tokyo Future Style, with two staff members at the head office in Tsukuba, near Tokyo.

In the spring of 2014, the Japanese company Tokyo Future Style Inc. opened its European office at SMB Life Sciences on the Novio Tech Campus. Tokyo Future Style develops various business activities in the biotech industry. Its core business, next to selling innovative products in the world of the life sciences, is assisting small Japanese bio-venture companies in taking their first steps in markets outside Japan. At the same time Tokyo Future Style introduces a range of foreign products and companies with innovative knowledge-based products and technologies to the Japanese market.

Premises on Novio Tech Campus

Takashi Endo, CEO of Tokyo Future Style, travelled to Nijmegen in person to sign the lease of the office situated in the M-building at the Novio Tech Campus. Peter Nelissen, the General Manager for Europe, promotes the interests of Tokyo Future Style around Europe whilst facilitating contact between potential customers and providers of business opportunities. He has a lot of experience and knowledge of the field of technical microbiology, immunology, biomaterial development and production, and medical diagnostics. In addition, he has a large international network in Europe and many contacts with bioscience and pharmaceutical companies.

Global marketing

Takashi Endo: "I founded Tokyo Future Style seven years ago. Our head office is based in Tsukuba City, near Tokyo. Tsukuba is the largest science park in Japan. More than 100 knowledge-based companies have their offices there, and all larger Japanese research companies and institutions base their central labs at this science park. For years, I was manager at a pharmaceutical company, where I gained much experience in marketing products in the field of reagents and diagnostics for infectious diseases, as well as building up a large network. Much of this research done by Japanese scientists and knowledge companies is of the highest quality. The large pharmaceutical companies generally know their way to the market, but many smaller knowledge-based companies do not quite know how to market their product or technology outside of Japan. Research is their main activity, and they often lack the time and money to take the next steps and market their findings in an effective way. That is exactly where we are able to offer added market value and seek out opportunities. We search for customers for these companies both at home and abroad: investors and parties who are interested in co-production or a licence. Initially, Tokyo Future Style's core business was importing for the Japanese market, but we transformed our business model and now mainly aim to establish contacts between parties in Japan and the rest of the world. This makes it global marketing. We received the 2009 Tsukuba Business Model Award, part of the Tsukuba Venture Awards, for our business model 'Tokyo Bio-Ventures'."

Intermediary science and business

John Schalken, programme director of SMB Life Sciences, is enthusiastic about the establishment of Tokyo Future Style on the Novio Tech Campus. "It fits in perfectly with our pol-

icy of 'connecting'. Apart from offering a physical space with modern facilities, we also support the starting entrepreneur on aspects of private enterprise: from market research support, improving business plans and possible financing to creating the right contacts. In Japan, Tokyo Future Style also fulfils the role of a 'Technical Transfer Office'- something many universities have. This corresponds precisely with our activities and gives an extra dimension as well as perspective to our network. Networking becomes real-working!"

Takashi Endo nods in agreement: "Every university in Japan has a Technology Licensing Organisation (TLO), which licences the findings of their researchers out to companies, making it an intermediary between science and business. It is an important component of the IP cycle, where new business is stimulated, consequently freeing new financial means for research. We operate in more or less the same way by creating the right contacts between knowledge and business in and outside Japan."

Incedo BioScience

Peter Nelissen is General Manager for Europe at Tokyo Future Style. He has known Takashi Endo for some years now, and has worked with him before as a client. "We got along straight away and both saw opportunities to connect our networks. I see significant possibilities for European companies to do business in Japan and vice versa. We therefore soon agreed on opening a European office. Initially, Takashi Endo thought of Germany as a business location. The Ruhr area, Dusseldorf, Cologne, Bochum and even the more southern Heidelberg and Munich were looked into, but in the end the Novio Tech Campus in Nijmegen was more to our liking. This was especially due to its central position in Health Valley, and its place on the Red Med Tech Highway of Enschede-Nijmegen-Oss-Eindhoven. What is more, Nijmegen lies central in Europe and on the intersection of international business. Even before the office of Tokyo Future Style on the Novio Tech Campus had been organised, contacts had already been made. Examples include Future Diagnostics (Wijchen), Modiquest (Oss), Biolegio (Nijmegen) and the still to be established company Incedo BioScience (Nijmegen).

At a 'Science Meets Business' event, Dr. Martijn Wilmer of Incedo BioScience recently held a presentation on how human kidney cells developed can be used for improved efficiency with pharmaceutical products, work developed by the Radboudumc. With these in-vitro cultivated human kidney cells, it is made possible to detect and predict at an early stage the side effects of medication still in development, as well as its possible interactions. This saves a great deal on costs and saves time. Incedo Bioscience turned out to be very interested in introducing these findings to the Japanese market. In short, we see many business opportunities for European and Japanese knowledge-based companies, and not only within the market of the life sciences."

Takashi Endo: "After the catastrophe at the nuclear power plant Fukushima, the Japanese government suddenly put alternative energy resources such as solar energy high on its priority list. Europe and especially Germany have by far the lead in this field, and market a lot of innovative products and technology. For Tokyo Future Style this is again a market area to focus on. All things considered, making connections is a fruitful process for knowledge-based companies and is necessary to keep the accumulation of knowledge growing. Connecting is the main driver of innovation."

www.tokyofuturestyle.com

L-R Chiel van Dijen (Kadans Biofacilities), Peter Nelissen (Tokyo Future Style Europe), Takashi Endo (Tokyo Future Style Japan), John Schalken and John van Sambeek (SMB Life Sciencies).

Judith Schöder and Rob Tweehuysen

NovioTech - breeding ground for smart inventions

Innovation impossible without legal sounding board

CASE STUDY

Developing promising ideas and taking them to the market. That is the goal of NovioTech, a Nijmegen company to the core, founded by Rob Tweehuysen and Hans Hanssen. "We are a breeding ground, an incubator," says Rob. "We look for promising developments in the field of the life sciences, and see if suitable applications can be found that are interesting for the market, matching this commercial demand with our knowledge. Bringing technologies to the market, as it says in our mission statement."

It is no coincidence that Rob (mathematician) and Hans (chemist and physicist) named their company NovioTech. After all, they are located in Nijmegen - Noviomagum. It is an excellent setting for developing innovations; the Radboud University not only delivers world-class researchers, but can also offer the best facilities, the best technologies and the best materials.

Combining technologies

NovioTech invests in companies and researchers in the field of the life sciences, a combination of biology, biochemistry, chemistry and medicine. The founders of NovioTech are constantly on the hunt for interesting discoveries themselves, but these two businessmen are increasingly approached by other scientists wanting to team up. "It is a long and complicated road to turn a discovery into an applicable product that can be marketed," explains Rob. "It requires perseverance in a financial sense. Think of the continued development, testing, validation, patents and upscaling. NovioTech invests independently and looks for shareholders who are willing to invest risk capital. However, it is not just about financing. It is also necessary to combine technologies and ideas, search for new applications. Make contacts, find partners, see where potential markets and customers lie, reel in producers and marketers. You have to believe in it."

Legal sounding board

By now, a number of companies have become part of the NovioTech 'breeding ground', including NovioSense, NovioPonics and NovioPlast. Joined by advisors from Hekkelman Lawyers & Notaries, Rob examines which legal form is most appropriate, which contracts are needed, and how the terms and conditions for collaboration are best set out. "We work with several partners, each with their own demands," he says. "As we can not be certain how a product will develop and whether it will bring in any money in the future, we have to make the adequate arrangements. Just to name a few things: who does the intellectual property belong to? What are the exact contents of the patent, and what kind of protection can be enforced? How do we ensure confidentiality? Who is accountable when research results in unexpected setbacks, such as personal injuries with subjects? Everything has to be written down. A legal sounding board such as Hekkelman is indispensable in that respect."

Judith Schröder, corporate law solicitor with Hekkelman: "NovioTech is a fascinating organisation, actually more of a network of companies, with all kinds of partners. They are concerned with developing products and applications of which the outcome is uncertain. This makes it a complex business. At Hekkelman, we employ a team of different specialists for their legal advice. There is the notary as well as solicitors in the fields of contract law, intellectual property, patent law, corporate law and international law - just to name a few."

Rob adds: "Absolutely, Hekkelman has all the professionals, meaning that we do not have to switch from one specialist to another ourselves. I am very happy that Hekkelman coordinates our interests internally, and we do not have to deal with separate advice on each aspect of our business. The world is becoming more and more regulated in aspects of law, so it is better to have your affairs taken care of properly."

HEKKELMAN, LEGAL PARTNER FOR ENTREPRENEURS

Quickly finding an answer to your question, that is what the legal specialists at Hekkelman aim to do. Our solicitors and notaries are masters in their fields of expertise. Simple or complex, we will look for a manageable solution to your problem at the best possible price. Challenge us and allow us to take a skilled look at your business. Hekkelman Solicitors and Notaries, located in Nijmegen and Arnhem, is a leading company in the field of legal services to companies, (semi) public organisations and non-profit organisations. The professionals at Hekkelman are sparring partners of quality for any entrepreneur. Fast, focussed, innovative and groundbreaking. Interested to know whether you have organised your affairs in good order? Please contact Judith Schröder, corporate lawyer,
j.schroder@hekkelman.nl, +31 24 382 83 93.
www.hekkelman.nl

Mercachem: collaboration speeds up development of new medication

Mercachem was founded in 1997 by Frank Leemhuis and Eelco Ebbers, both doctoral alumni of the RUN. Within 17 years, the company has grown into an innovative chemical Contract Research Organisation (CRO) with clients throughout Europe, Japan and North America. The company is located in Nijmegen, where 135 highly skilled chemists work on research questions and synthesis assignments from clients. These clients are mostly pharmaceutical and biotech companies that focus on developing new medication.

Both founders are still actively involved with the daily running of the business. Frank Leemhuis: "We have made the strategic choice to specialise in chemistry, expressing this quality in our products and services portfolio. During the process of developing new medication, we look for collaborations with other specialised CROs. Together with these selected CROs, Mercachem carries out integrated drug discovery projects commissioned by clients. Thanks to such collaborations it is possible to achieve synergy gains that will speed up the development of new medication."
In the past years, Mercachem has initiated collaborations with CROs and research institutions in The Netherlands, Germany and Denmark in order to get access to screening technologies and/or specific biological pre-clinical knowledge necessary for executing an integrated drug discovery project. Eelco Ebbers explains: "We collaborate with the Freiburg-based ProQinase in the field of oncology, with a strong emphasis on kinases and epigenetic enzymes. At the moment, we are jointly working on the development of a selective CDK8 kinase inhibitor, with which we will soon be starting an in vivo 'proof of concept' study. Should the results of these studies turn out to be positive, it will be possible to develop the project further in cooperation with a biotech or pharmaceutical company. Mercachem and ProQinase will transfer the IP rights to the client, and in return will receive a signing fee. Next to this, both companies are expected to be employed for further development of the new chemical substance during a period of 18-24 months, in which we will both work in our capacity of CRO."

The founders and board of Mercachem Dr. Frank Leemhuis (l) and Dr. Eelco Ebbers (r).

Epigenetics Drug Discovery Platform

Mercachem also applies this model to their other collaborations. Mercachem seeks to offer innovative ideas, while at the same time showing that the company adheres to their service model. Together with ProQinase, Mercachem received a substantial Eurostars grant of €2.5 million in May 2013, for developing a new 'Epigenetics Drug Discovery Platform'. ProQinase develops new assays, and Mercachem designs and synthesises new substances. This combination will be offered as a specific service in the near future, with the intention that Mercachem and ProQinase work together to carry out integrated drug discovery projects for third parties.
Following the same line of thought, Mercachem initiated several similar collaborations with other CROs. Frank Leemhuis continues: "In Leiden we work with ZoBio, a company specialising in fragment-based screening. With the help of NMR the goal is to find new hits that can then be synthetically developed together with Mercachem."
Eelco Ebbers adds: "In Copenhagen, we cooperate with ViperGen in the field of so-called DNA-encoded libraries. These are collections of many millions of substances that are particularly suited for modulating 'protein protein interactions'. We recently started a collaboration with the Neuroscience Campus Amsterdam on neurodegenerative diseases, organised in the same way as our partnership with ProQinase."
Based on these cooperations, Mercachem believes it has the right foundations for further growth in medicinal chemistry, where long-term contracts may often be eneterd into. These perfectly suit the ambitions of Mercachem: continuing to be a leading player in the Contract Research industry.

www.mercachem.com

Leading sector chemistry: iLAB Nijmegen, two complementary locations

L-R Jan Willem Dijk, Gerard Meijer, John Schalken, Cathy van Beek, Floris Rutjes, and Rikus Wolbers toast the opening.

From April the 17th, the Novio Tech Campus has the status of 'iLAB'. This means that iLAB Nijmegen now has two locations, following on from the earlier opening of the iLAB in the Mercator 3 building at the Radboud University. In the leading chemistry sector a control group led by Prof. Dr. Floris Rutjes of the Radboud University is working on setting up Innovation Labs, or iLABs, at locations near knowledge institutions and R&D companies. These will then provide a place for starting entrepreneurs in chemistry and the life sciences to rapidly continue developing promising concepts into a products on a large scale. An iLAB contributes to this by providing facilities, research contacts and business support.

Event impressions

Floris Rutjes

An important aspect of the iLAB model is facility sharing: the joint use of expensive equipment by fellow entrepreneurs and scientists. This has already been done for many years on the campus of the Radboud University Nijmegen, first in the Huygens building, and now also in building 3 of the Mercator Technology & Science Park. On the 17th of April 2014, the second iLAB was opened in the M-Building of the Novio Tech Campus, near NXP Semiconductors.

The universities of Nijmegen and Eindhoven are working together to set up the first iLABs, and have an advantage and leading position due to their extensive experience. On behalf of the control group 'Chemie' Prof. Rutjes is responsible for the set-up of new iLABs across the country. This concept has now proven to be successful for start-ups in high-tech sectors such as chemistry. Infrastructure and business support are just as indispensable as the scientific knowledge from the universities and R&D companies involved. Floris Rutjes: "We try to connect leading companies to our research in an organised way. Spin-off companies resulting from our research also act as an effective bridge to larger companies in the field. In that context, iLAB Nijmegen was once begun as an NWO-initiative within the ACTS programme, in which Prof. Jan van Hest played an important role. Within the

leading chemistry sector the iLAB gives new stimulation to valorisation and innovation. An iLAB can be used as an instrument for converting scientific findings rapidly and effectively into commercial products, thereby gaining considerable ground in innovation. At other sites in The Netherlands, iLABs also have been and are still being set up in knowledge institutions, organised thematically and connected by research programmes."
In his speech he also addressed the importance of COCIs (Centre for Open Chemical Innovation). A COCI offers entrepreneurs with a proven technique or product still in the growth-phase the possibility to increase their production capacity, allowing them to compete in line with the market.

Cross-over projects

The first iLAB of Nijmegen is located in Mercator 3 at the Mercator Technology & Science Park on the Radboud University campus. On April the 17th, Floris Rutjes opened the second location of iLAB Nijmegen in the M-Building of the Novio Tech Campus, with the theme of 'Chemistry, High Tech & Life Sciences': "At the Novio Tech Campus we mainly focus on realising cross-over projects, on the one hand between high tech and life sciences, and between chemistry and life sciences on the other. The iLAB Nijmegen in Mercator 3 focuses on the continued growth of scientific knowledge and other science-to-business initiatives taking place at Mercator, the university and Radboudumc. The iLAB at Novio Tech Campus is an expansion, a location that allows for growth." Rikus Wolbers (Novio Tech Campus) is enthusiastic about the opening of the second iLAB. "We can also see room here for companies that are able to develop innovative applications. They find themselves in a business environment where there is yet room for both academic and non-academic companies. At Mercator 3, iLAB remains an incubator location, whilst the M-Building is also able to offer space for both accelerator and upscaling companies. In this way, the two locations of iLAB Nijmegen support each other and ensure good cooperation with cross-fertilisation. The iLAB opening in Building M is no stand-alone development; it can rely on the professional organisation in and around the Novio Tech Campus, NXP, Mercator, the Radboud University and Radboudumc."
Hein van der Pasch (Mercator Incubator Nijmegen): "The Nijmegen ecosystem of science-to-business is becoming more and more complete. Organisations and individuals have already come together at both iLAB locations where ideas of knowledge

The opening on April the 17th took place during the Innovation Bootcamp 'Gelderland valoriseert!'

transfer, valorisation, property management, incubator facilities, business development, entrepreneurial networks, marketing and acquisition are key. Our network is again expanded, for example in facilities for finance."
Representatives of the Radboud University and Radboudumc gave speeches at the official opening of the new iLAB location, and appeared on stage together. Gerard Meijer, chair of the Board of Directors of the Radboud University, again emphasised the important role the iLABs fulfil throughout the chain of knowledge valorisation. Cathy van Beek, member of the Board of Directors of Radboudumc, highlighted that Radboudumc is focussed on sustainable health care and described the iLABs as accelerators in this process. Jan Willem Dijk, manager of Valorisation & Innovation at the Faculty of Science at the Radboud University, expected stimulating effects for offshoot companies from the research facilities available at both locations of iLAB Nijmegen. According to Jan Schalken (SMB Life Sciences), iLAB Nijmegen strengthens the collaboration between chemistry, the life sciences and high technology with the help of laboratory facilities. "We rent out flexlabs as well as offering advice to young companies. Our infrastructure and expertise help start-ups on their way and speed up their growth possibilities."

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Hezelburcht scores an impressive number of grants

Hezelburcht is one of the leading market players in the field of subsidy consultancy. From its five offices in Nijmegen, Amsterdam, Eindhoven, The Hague and Brussels, Hezelburcht provides comprehensive for the profit sector as well as non-profit organisations. Hezelburcht was founded by mr. Marc Guelen upon completion of his law studies at the University of Nijmegen, now almost 20 years ago. It now employs 70 college and university-educated specialists.

"We take care of the whole subsidy process, from identification, determining feasibility, application, and final reports, all the way to programme management and evaluation," summarises director Marc Guelen. "We specialise in sectors such as ICT, the life sciences, high-tech materials, energy, the environment and the public sector. We have a comprehensive knowledge of all Dutch, European and international subsidy regulations, funds, and research programmes. We distinguish ourselves from other subsidy consultancy firms both through the wide range of services we offer, and through our combination of expert knowledge and subsidy expertise of our highly skilled and very often postdoctoral advisors. Other firms usually offer only a part of these services, or have expert knowledge of only particular subsidy regulations."

Four employees of Hezelburcht update the developments in the field of subsidies on a daily basis. "This knowledge of subsidies is our tool. It is impossible for entrepreneurs to keep track of it all themselves; they first and foremost want to work on their core-business. We house such a large amount of knowledge that we use our second company Hezelbizz to share this information with scientific institutions, organisations such as Health Valley and public institutions through an online database. Our third company, OrangeX, offers interim specialists to bodies that grant subsidies that support the setting up and carrying out of a subsidy programme. We are therefore active across the entire field of subsidies, from the development of subsidy programmes to subsidy grants."

mr. Marc Guelen, director Hezelburcht, in front of the Nijmegen office

Horizon 2020, 'Gelderland Valoriseert' and BCS

Currently hitting the headlines in the field of subsidies is Horizon 2020, a European programme for research and development with a budget of €80 billion with a programme set to run until until 2020. Marc Guelen: "We provide subsidy applications for various universities and large companies, but Horizon also offers many opportunities to innovative SMEs. We participate in 'Gelderland Valoriseert' and have a seat in the commission that assesses whether companies qualify for financing.

Next to this, we give subsidy advice free of charge to starting business. We are even active in the Creative Industry sector, where IT and creativity overlap. The Business Cluster Semiconductors (BCS) in the east of The Netherlands is also a great project where we fulfil an important role. BCS is a joint venture consisting of multinationals, knowledge-based institutions and innovative SMEs active in the semiconductor industry. BCS originated out of NXP, and aims to form a national network with a connection with Twente and Holland innovation. Hezelburcht operates as the administrative link between the BCS consortium and EFRO project management. BCS has recently relocated to the Novio Tech Campus."

He continues: "Most clients have been with us for years and for whom we work on continuing projects, successfully obtaining subsidy grants. We carefully assess beforehand if an application is feasible, on the basis of formal requirements as well as other aspects. This is important, as the application process is rather decisive for successful granting. Our professional knowledge, subsidies expertise and great experience are the key to this process. Were we to apply without this knowledge, there would be no chance of success. It is not surprising, then, that a minimum of 70% of all our applications are granted. For the WBSO scheme, we actually score a granting percentage of 98% in the IT market, while the national average is no higher than 40%. We are just as ambitious as our clients and we aim for results: the successful granting of subsidies.

- *Identification & awareness*
- *Feasibility & risk analysis*
- *Application*
- *Subsidy granting*
- *Declaration & report*
- *Programme management*
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"Digital tools and a kick-start for the future of new generations in Europe"

Treaties of Nijmegen Medal 2014 awarded to Commissioner Neelie Kroes

Hubert Bruls, Neelie Kroes, Guido Dierick and Bernard Bot, accompanied by Bas Kortmann (far left) and Gerard Meijer (far right).

Treaties of Nijmegen Medal

On May the 7th this year, Neelie Kroes, commissioner and vice president of the European Commission, received the Treaties of Nijmegen Medal 2014 from Mayor Hubert Bruls at a ceremony in the Stevenskerk. This award is an initiative of the Nijmegen city council, the Radboud University and NXP Semiconductors N.V., supported by the Ministry of Foreign Affairs. It is awarded every two years to a person who has worked to promote the position of Europe in the world. In 2010 it was awarded to Jacques Delors, former chairman of the European Commission. In 2012, the honour was bestowed upon the Italian writer and scientist Umberto Eco.

Prof. Bas Kortmann, *rector magnificus* of the Radboud University, opened this remarkable academic ceremony in the Stevenskerk in the presence of numerous respected and prominent representatives of companies, the university and the city. Mayor Bruls outlined the history of the award, named after the Treaties of Nijmegen of 1679, a key event in European history. Prof. Bart Jacobs, professor of Digital Security at the Radboud University, gave a presentation on the protection of our digital identity with the help of smart software. With several partners, he is working on the latest smart tool called 'IRMA, I Reveal My Attributes'. "This 'IRMA-card' is based on the principal that you reveal no more 'attributes' of your personal identity than are necessary for a specific situation. In this way your privacy can be protected in the best possible manner. For example, an adolescent who wants to buy alcohol only needs to prove that they are over 18. With the current ID card or similar, you give away much more personal information in this kind of situation than strictly necessary."

Former minister of Foreign Affairs Ben Bot delivered a laudatory speech for Neelie Kroes, and praised her for her efforts on behalf of innovations and faster internet connections for all Europeans, part of the 'Digital Agenda' of the EU. Kroes subsequently thanked the initiators for the honour she had received and finished with these words: "I also have a dream when I think of Europe. I want this continent to become the safest, the most open, and most competitive internet location in the world. Give Europe's new generation a kick-start with the latest digital tools and they will create jobs. They will shape their own future, and together they will work towards a strong and united Europe."

Neelie Kroes

Bart Jacobs

HAN BioCentre: the link between business communities, research and education

Based at the Hogeschool Arnhem Nijmegen (HAN), the BioCentre is a contract-research organisation and expertise centre for SMEs, in the field of 'Biotechnology & Analysis'. Here, biodiscovery is a research area of importance, on which a lot of expertise has already been built up. It concerns the discovery, analysis and production of substances and molecules that can be applied to food, health, agriculture and commercial horticulture. Biodiscovery is linked to developments within the leading sectors of life sciences & health, agro-food, chemistry and energy, and especially to bio-based economy.

Interview

Dr. Christien Lokman is the director of the HAN BioCentre and lector in Industrial Microbiology. She previously worked as a researcher at TNO, and since 2003 has been working at the HAN, where amongst other things she set up the masters programme 'Molecular Life Sciences'. "I was surprised that although the HAN had excellent laboratory facilities at its disposal, they were hardly ever used for contract research outside the educational setting. Smaller biotech companies also have a need for facilities they can turn to with applied research questions. HAN BioCentre aims to offer a solution. Our biodiscovery research focuses on the entire chain of discovery, purification, analysis and production of biomolecules."

The research done at the Lectorate Industrial Microbiology/HAN BioCentre is carried out by a regular team of researchers and analysts, in cooperation with students and teachers wherever possible. In this way, the BioCentre's research results contribute to the educational development at the HAN Institute of Applied Sciences. Dr. Pedro Hermkens recently took office as director of the HAN's Institute of Applied Sciences, and a process is currently in motion to appoint him as Honorary Professor of Sustainable Chemistry at the RU Nijmegen.

"The main goal of biodiscovery is the connecting factor between research, education and the business community, which guarantees that we train our students in the necessary multidisciplinary knowledge and skills. Disciplines such as microbiology, molecular biology, (bio)chemistry and bioinformatics all are equally available as separate bachelor courses. Next to this, fermentation technology and downstream processing are presented as a minor programme for students. Our application-oriented masters programme 'Molecular Life Sciences' was created in cooperation with the HAN BioCentre, teachers from our institute and the business community."

Cooperation

In the field of biodiscovery, public authorities, the business community and leading knowledge-based institutions in Gelderland and Overijssel have joined forces to combine knowledge and opportunities within the three subject fields: Food Valley, Health Valley and Technology Valley.

Christien Lokman continues: "As was already mentioned, the Han BioCentre also discovers substances of its own accord. We discovered, for example, that a particular yeast strain produces an useful amount of microbial oil. Paint manufacturers are now researching the possibilities of producing sustainable paint with the help of this oil. Other companies, such as asphalt manufacturers and a producer of marmoleum floors, are interested in implementing this oil in their products. From a collaboration project with paper mill Parenco, it turned out that the yeast can also grow on waste flows, meaning that the oil can be produced using bio-based methods. During a research project to fight moulds prevalent in mushroom cultivation, we discovered bacterial strains that could slow down or destroy the root cause. We undertake these kind of projects in cooperation with university groups and the business community in order to support each other."

Innovation hub

According to Lokman, the HAN BioCentre just about managing to cope with the amount of research questions. "BioCentre collaborates with local companies such as NYtor and BasidioFactory, but we also carry out work for multinationals like Unilever, Danone and Shell. The BioCentre and the Institute of Applied Sciences participate in various networks with (international) universities, colleges, the busi-

ness community and organisations such as the Centre for Biobased Economy (CBBE), the Centre of Expertise Analytical Sciences (CEAS) and 'Gelderland Valoriseert!'. Aside from research, our goal is to provide traineeships and graduate positions as well as teacher exchanges. The HAN/Institute for Applied Sciences are currently looking into the possibilities of setting up a joint innovation hub with the Novio Tech Campus. In this context, we are also in talks with SMB Life Sciences; SMB director Jan Schalken is also a member of the HAN BioCentre advisory council."

Not only can companies pose a research question at any stage of the biodiscovery chain, employees can also go the HAN for a masters education and associated courses. What's more, the HAN BioCentre offers its well-equipped laboratories for facility-sharing, which a very appealing prospect for start-up companies. A new development is the possibility of the lending away of employees as an added service, meaning that companies can more easily respond to temporary shortages of qualified personnel (such as in fermentation technology and DSP). Companies will also be able to introduce multidisciplinary projects. A good example is the development of new fermentation equipment, which requires not only a knowledge of this specific field, but also of measurement and control technology, electro technology, information technology and industrial design.

The HAN has all these disciplines at its disposal, and the BioCentre coordinates the multidisciplinary questions found at the intersection of technique and the life sciences, approaching them in collaboration with students, teachers and lectors from various disciplines. This multidisciplinary approach leads to exciting innovations in the business community, and combined with excellent education, it also contributes to the 'green growth' of the economy.

Dr. Pedro Hermkens and Dr. Christien Lokman

Biodiscovery

The focus of our research is on biodiscovery: the discovery, analysis and manufacture of biomolecules with the help of biological production methods. This process results in new commercially applicable substances in food, medication, agriculture, horticulture and sustainable energy, as well as alternative production methods for existing substances, replacing chemical production methods.

Discovery / Screening

The HAN BioCentre screens micro-organisms, natural substances, and plant extracts for bioactivity for the purpose of a particular application. An example is the screening for anti-microbial substances to contribute to the fight against antibiotic resistance, or the screening for molecules or substances that play a part in slowing down obesity.

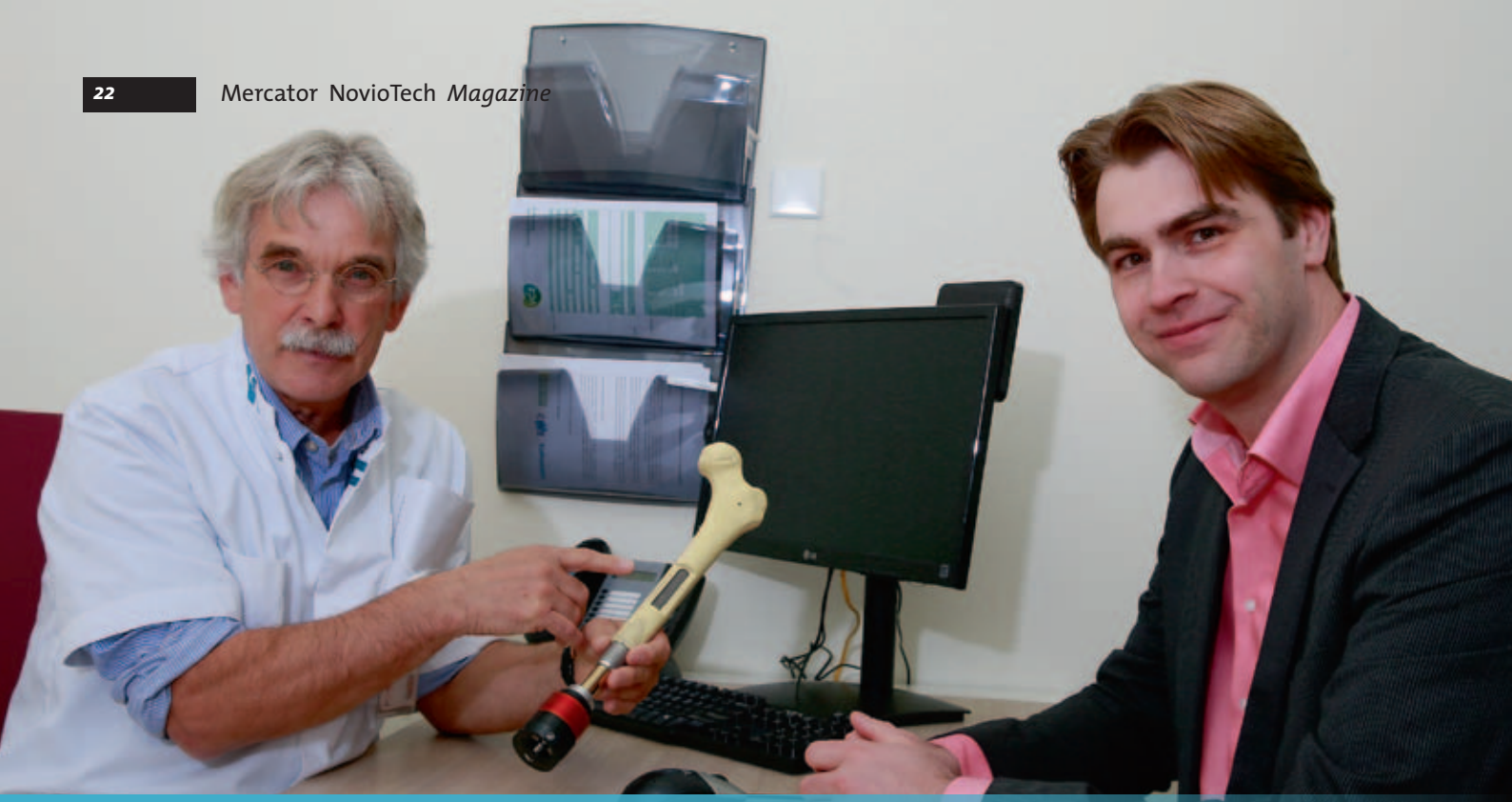
Purification and analysis

When activity is found, the active substance is identified, purified and analysed. The analysis of its effect upon animals and humans (drug testing) at the Han BioCentre is carried out according to models such as the C.elegans model (nematodes). The most up-to-date (bio)chemical techniques are available for purification and analysis, next to a very large expertise in the field of bioinformatics.

Production

The BioCentre focuses on producing proteins, metabolites, virus epitopes, antibodies and the like as efficiently as possible with the help of micro-organisms. Genetic modification of the production organism is sometimes required for optimal process.

Interested by the activities at the HAN BioCentre? For more information, please visit:
www.hanbiocentre.nl
or mail to: info@hanbiocentre.nl



Unique Endo Exo Click Safety Adapter for wearers of prostheses

Harry Jansen, director of OTN, shows the bone pin with click-adaptor. Dr. Ir. Bart Jacobs, patent attorney at trademarks and patents firm Arnold + Siedsma(far right).

Orthopedic Technology Nijmegen (OTN) has developed the Endo Exo Click Safety Adaptor, an advanced click-security system with which a leg prosthesis can be attached to an intramedullary pin in the bone. For several years, OTN director Harry Jansen has worked as an orthotist prosthesis maker for several hospitals in the Arnhem-Nijmegen area. With his company OTN, he has combined his practical knowledge with extensive research, resulting in a new discovery for which he contacted Arnold + Siedsma in order to obtain a patent.

Presentation

"OTN was founded on the basis of a research and innovation idea. In the prosthetics practice, I encountered many patients who were inconvenienced by the way they had to wear their prosthesis," says Harry Jansen. "With a 'normal' prosthesis, use is made of a plastic socket that is put on over the stump. Aside from the inconvenience for the patient, the use of a stump socket often leads to skin problems, perspiration and other irritations. Pulling it on and off is impractical and the fixation also has room to be improved. I worked closely with Henk van de Meent, rehabilitation specialist at the Radboudumc. We came into contact with a surgeon in Germany who placed a pin in the bone of patients who had undergone a leg amputation, which could be used to attach the prosthesis to. Upon visiting the manufacturer of this system, we saw possible improvements. The downside to their system was, you see, that there was a homogeneous connection attached to the pin. Should the wearer fall or make an unexpected turning motion, those forces would be transferred directly to the bone and might then damage the bone structure."

Breaking point and bouncing

"With our system we implemented a number of improvements; central to our invention is the click-adaptor which consists of a male part and a female part. The orthotist assembling the system can adjust a rotation component. By loosening a cannulated screw, it is possible to turn the upper part by one to three degrees. Our system is continuously adjustable and flexible, but once it is clicked on there is a homogeneous connection. The click connection consists of a crown with bearings with two locking pins. In the casing is a breaking system that, in combination with the fixation, is less strong that the inserted bone pin. Should an unexpected movement or fall occur, the resulting forces will not be transferred to the bone, but instead be absorbed by the earlier breaking point of the adaptor system. We

had to design a click system without any flexibility. Even the smallest amount of tolerance would be transferred from the pin to the bone, resulting in a severe pounding sensation in the head. That is why we implemented a bouncing-element made of a special type of plastic, which eliminates the flexibility and simultaneously absorbs the shock. Traction and pressure are thus balanced with the help of this adjustable bouncing."

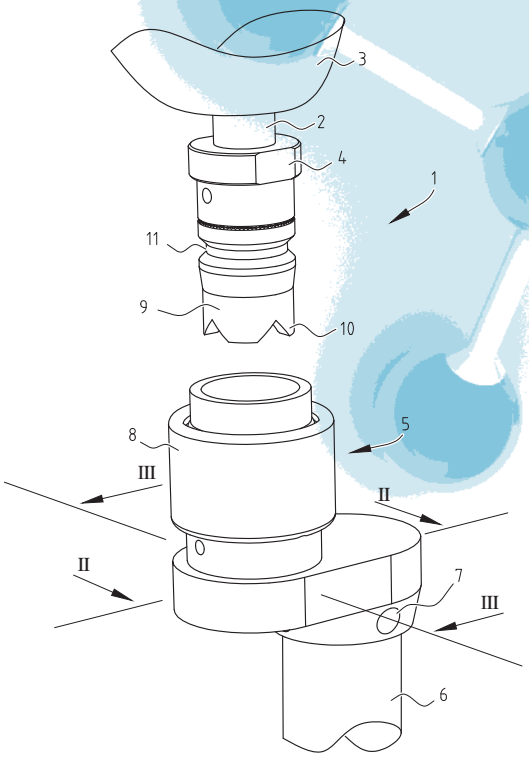
Patent protection

Harry Jansen was in talks with companies that showed an interest in his invention, and although a non-disclosure agreement was signed, the risk remained that someone might abscond with with his invention. A patent offers more protection. "I knew nothing about patents, so I started looking for a firm that was inclined to listen to my story before invoices were sent. Arnold + Siedsma were willing to do so, and an appointment with patent attorney Bart Jacobs was soon made."

Bart Jacobs: "An intake interview is our investment in a new client. As a patent attorney, you need to have good insight into the technical aspects of an invention before being able to judge its chances of a patent. Right now we are waiting for the search report from a patent application that has been filed, to see whether it makes sense to start the follow-up process. Should the search report reveal that the invention is already described in quite a few documents and that it is therefore not a new invention according to patent law, then it makes no sense to continue the process by applying for a European patent or a PCT application. A search report represents the opinion of a researcher at the Patent Council on whether something is or is not an invention. Sometimes this assessment can be too negative. As a patent attorney, it is therefore important to go over this report thoroughly and see if there are possible alternatives. That is, whether it is possible to emphasise those aspects of the invention that do make it new and innovative.

Within one year after filing the patent application, you must decide whether you want to pursue your patent application internationally. This can be done for individual countries, or it is possible to file a European application or PCT. With a PCT patent application, you file an option for 148 countries, postponing the final moment of choice for one or more countries to 30 months after the first patent application was filed.

A patent may be cited in the search report which describes and protects a general part of the invention. A new development of this general part is strictly speaking not allowed to be marketed, because that would be patent infringement. The owner of the originally patented invention, however, is not allowed to market the further development either, in case that development has been patented. In practice, the parties concerned often reach a settlement. In the case of the OTN adaptor, we believe the chances of a patent are very real. We draft as broad a patent application as possible to cover all possible variations. The risk of being forced back in the procedure is always there, but nothing ventured, nothing gained!"



Technical drawing

Advantages for patient and health insurance companies

In the Netherlands, Harry Jansen is looking to market his product himself, but for foreign markets he is looking for partners. "In the developmental stage, we were granted a subsidy from the Regionaal Nijmeegs Centrum voor Technologie (RNCT), an organisation that aims to stimulate innovation in the region and aims to connect local companies. We try to carry out production with local companies as much as possible. The OTN adaptor is as yet being produced in a small quantity. Through scaling up production and using alternative production methods, the price may be reduced. It will certainly result in cost savings for insurance companies.

Patients may need up to three stump sockets a year in order to stay mobile, especially shortly after an operation. Aside from high costs for the insurance company, this also means a lot of inconvenience for the patient. Our system is not only more sustainable but also safer and more user-friendly. At the moment, 46 patients are already wearing the OTN adaptor and all of them are extremely positive. The idea of my research was to come up with something that would make the daily life of prostheses wearers more comfortable. This has been achieved, and it feels great."

There are currently 46 patients walking with the aid of the OTN adaptor. The prosthesis is clicked onto the OTN adaptor with an intramedullary pin.

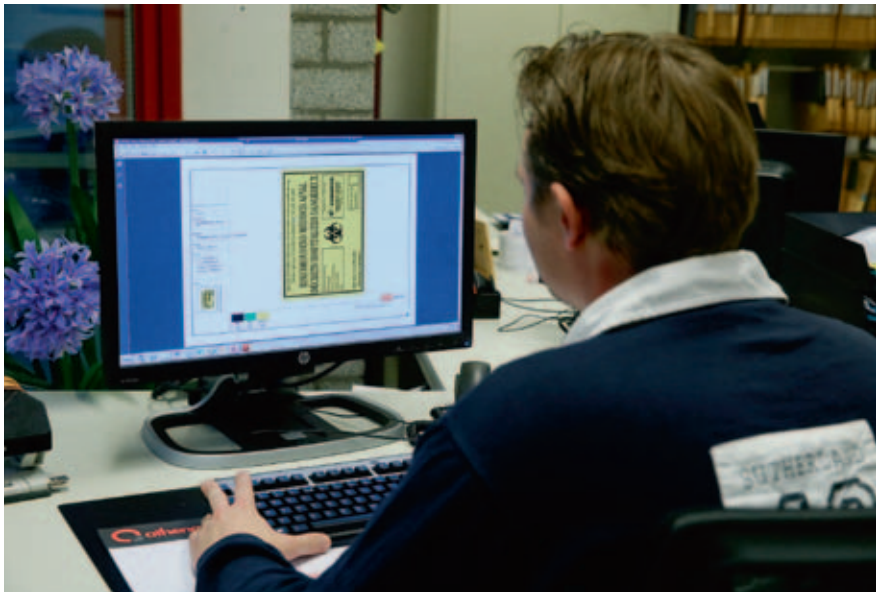
Herald Labels & Tags: specialists in high-standard labels

Herald Labels & Tags is a leading market player in the field of adhesive and non-adhesive labels. Their product range includes a wide variety of standard and custom-made labels, tags, transfer ribbons and special products for a range of applications in various branches and sectors. The company's specialities include the production of labels for the medical sector, laboratories, the pharmaceutical industry, the high-tech sector, nuclear energy and food technology. These all have special requirements and need to comply with strict regulations.

Herald Labels & Tags is a subsidiary of Geostick in Uithoorn, a large player with a leading market position in the field of adhesive labels. Geostick is also the owner of Wyt Gevaarsetiketten, based in Rotterdam. Jan-Pieter Brandwijk, location manager of Herald Labels & Tags, explains. "The production of labels is a unique graphic manufacturing process, relying on a high level of accuracy and expertise, and often requiring complex production cycles. We supply, for instance, special labels to hospitals like the Radboudumc and CWZ, where strict guidelines and specifications apply. An example are the labels for the patient administration, which have unique progressive numbers and barcodes. We also produce so-called 'packaging labels' used for waste disposal from operating theatres, syringes, cytostatic waste, medication residues, radioactive waste, disposables and the like. These labels must be printed with certain standard codes which provides each waste flow with its own classification number."

Avoiding bacterial migration

"In certain cases the labels are treated with special coatings and glue, making them resistant to moisture, acids, heat or freezing cold. Labels meant for the freezing or cooling of material such as plasma bags have to be cold-resistant, and sometimes made of plastic to prevent bacterial migration. The glue and coating in particular play an important part as the printing and information have to stay visible, sometimes for years. We supply laboratories and research centres with labels for test tubes and suchlike, which have to have a proper adhesion, yet remain detachable. These labels can also be given special acid or moisture resistant coatings or dust-free backings, preventing bacterial migration. For pharmacy chain Mediq we produce labels on a dust-free backing for the labelling of medication. Besides this, we offer a range of special products, such as ID-wristbands for patients, or so-called 'luggage tags' for wheeled containers used for the internal transport of meals, linen or waste. For use in climate simulation and temperature cabinets, we supply labels that can endure temperatures up to 350 degrees Celsius whilst ensuring the information remains perfectly legible. For the meat processing industry where food safety is very important, we produce plastic labels that can be put directly onto the meat without transferring any glue or ink residues onto it."



Warning labels

Jan-Pieter Brandwijk continues: "We supply labels for the transport and storage of nuclear waste to the nuclear reactor in Petten. During the production process, the regulations for size, colour coding and imprint position are very strict as the labels are often read automatically at track & trace. One mistake resulting from a faulty label could have disastrous effects."

Herald itself produces various kinds of warning labels, but can also rely on the subsidiary Wyt. Wyt is specialised in warning labels for the transport and storage of dangerous substances, handling labels and GHS labels. (The 'Globally Harmonized System' for the classification and labelling of chemicals). "Sometimes we have to take into account the most extreme situations. For example, labels on packaging of chemicals need to be seawater resistant for the purpose of marine transport. If a container falls overboard during a storm, the dangerous contents of the packaging has to be identifiable and traceable if washed ashore. That requires specific material choices and finishing."

Jan-Pieter Brandwijk, location manager of Herald Labels & Tags

Security labels

"Should a client require safe transport of important documents or packaged goods, we can produce seal-labels both for professional sealing and as a visual check to see whether packaging has been opened. We also have resealable labels with non-permanent glue for resealing packaged bandages, for example. A unique safety measure is exemplified by the kind of labels that are irreparable after removal, so they cannot be replaced. These are the so-called 'destructables'. With special VOID-security labels, the word 'void' becomes visible on the adhesive area after removal. These vinyl labels are used for things such as sealing packaging. In the case of custom-made labels, the material and glue are adjusted to the practical application and the desired security level. Extra security measures such as safety slits, perforations, unique numberings, barcodes or varied glues and glue-free zones are all possible."

Herald also has a varied clientele in the high-tech industry. "We produce maintenance labels for companies such as Philips Lighting. For companies in the semiconductor or electronics industry, we produce special dust-free labels that are suitable for use in 'clean rooms'. We produce custom-made labels for ABB Benelux with picto-symbol encoding, which mechanics put on switch boxes. For machines in various industrial production processes, we make durable adhesive labels of metallised polyester for serial number and type indications or instructions."

Herald Labels & Tags supplies all regular labels, and stands out in the production of custom-made products that demand a lot from the material, glue and special finishes, both in terms of use and quality.

For information or an exploratory conversation:

Herald Labels & Tags
www.herald.nl
Tel. +31 24 358 6987

Combined consultancy: (L-R) Theo Vermeulen (VWGNijhof accountants & tax consultants), mr. Maud van Weersch (Hoge van Gerven Notaries) and Jerry Croes (Flavius Insurance and Finance)

Combined consultancy for successful growth!

Entrepreneurs want to grow and be successful. This is not only true for start-ups; entrepreneurs who have been active for years also want to keep on expanding. For successful growth, the expertise of service providers that can support you may be a valuable tool.
Henry Ford once said: "The secret of success begins from the first moment: being ready for it." Being fully prepared is therefore key. You want a good legal structure, the right insurance, a good understanding of the figures, and sufficient financial means, without paying too much tax. The goal is the have all of this, yet without losing focus on your core business.
Your expertise lies in your core business; our expertise is in creating the necessary framework for you.

Your growth ambition is our challenge

Next to our common practice as individual service providers, each with our own specialisation, we have combined forces to create a seamless services package. We offer joint scans to go over your company in a pragmatic and efficient way, thereby substantially saving money and reducing risk. We offer open sessions to start-ups at fixed times.
As a team, we possess a large network which enables us to find the exact advisers suitable for your specific growth ambition and challenges. Our only goal is to offer you the best quality, in order to help you to grow successfully.

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NovoLanguage combines technology, language and creativity

NovoLanguage is a young spin-off company in the field of language and speech technology. The company was founded in 2013 and is located in the Mercator 1 building at Mercator Technology & Science Park. NovoLanguage uses language training products aimed at their target groups of those learning new languages, and people with communication disorders. It works in close cooperation with the The Centre for Language and Speech Technology (CLST) at the RU and Radboud in'to Languages.

Helmer Strik is CSO at NovoLanguage. For around twenty years he and a team at CLST researched the use of language and speech technology in (inter)national e-learning and e-health projects. "Non-native speakers and those with a communication disorder, for instance due to a brain disorder, often have atypical speech," he explains. "Automatic recognition of this atypical speech and identifying mistakes in it is very complex. Based on the technology for speech recognition that has been developed and patented by CLST and the didactic expertise of Radboud in'to Languages, we have developed applications with which these language learners can train and improve their language skills at different levels. Its unique feature is that this technology enables personal feedback on speech, on the levels of both grammar and sound. The availability of practice with a language trainer or a speech therapist may be limited due to costs and other practical considerations. Our language-training applications are cheaper and can be used 24/7."

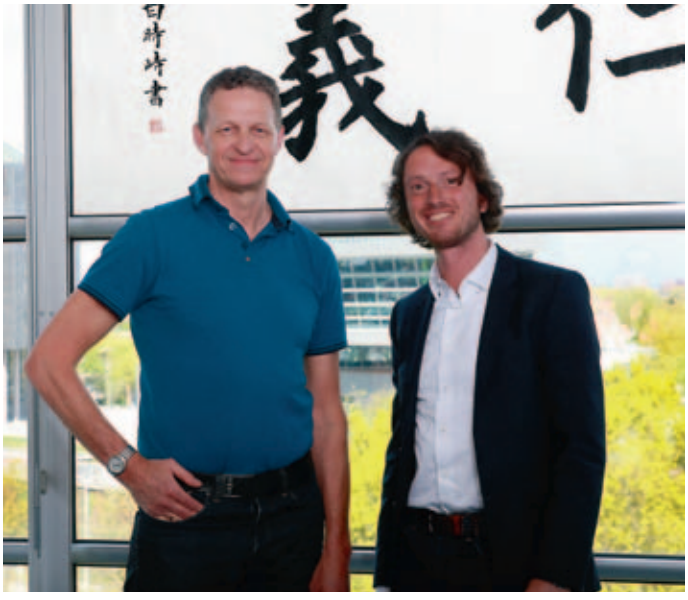
STW Valorisation Grant

Strik is frequently asked by publishers if they could use the same technology for language-training products. However, as university employee it is difficult to do business directly with commercial companies. For this reason, he decided to apply for a 'Valorisation Grant' from STW, granted both in phases one and two. STW stimulates the establishment of spin-off companies and the development of marketable products. In collaboration with Wilfried Reincke of MSO/KTTO (knowledge and technology transfer office) at the RU, Helmer Strik began work on this project, sowing the seeds for NovoLanguage.

Due to his background in business administration and his experience with high-tech start-ups, Martijn Enter was appointed CEO to give NovoLanguage a commercial boost. Amongst other things, Enter has written a book on 'best practices of high-tech entrepreneurship' in Silicon Valley, Cambridge and Leuven, and how these can also be applied to regional business concepts. He was also involved with the commercialisation of 'My Pronunciation Coach' (MPC), a computer programme that gives feedback on English pronunciation, which forms the basis of the subsequent NovoLanguage applications.

"We developed a scalable concept in collaboration with CLST and Radboud in'to Languages, also working with ArtEZ college. After all, language and speech technology is central to our business, in combination with language expertise and creativity. In short, 'TLC': technology, language and creativity. We are a knowledge-based company within the 'skin' of the RU, and we aim to express this with our offices on campus. Starting up a knowledge-based company is not without its risks, but we have received a lot of local support.

Mercator Incubator has given us good advice, and the Mercator building offers excellent facilities. In order to develop our products and prepare them for marketing, we received loans from Gelderland Valoriseert. To begin with, we will focus on the two target languages Dutch and English, later on expanding and adapting the applications to other languages. Besides the research institutions we mentioned before, we also maintain contact with speech therapy departments at the Radboudumc and the Sint Maartenskliniek in Nijmegen about their experiences with patients with communication disorders. We want to set up a virtual research lab where several parties can share their expertise and experience. It is quite a challenge to prepare the technology on a scale suitable for market purposes, adapting it for both server platforms and appealing game applications. We expect to market a few games by the end of this year," promises Martijn Enter.



Dr. Helmer Strik and Martijn Enter Msc, CSO and CEO at NovoLanguage respectively, in the modern Mercator 1 building.

Nijmegen Tuesday 17th of June 2014

INFORMED INNOVATION

A convention on innovation grants, protection of IE, the 'innovation box' and applying for a patent.

The theme of the convention 'INFORMED INNOVATION' aims to enable innovative entrepreneurs to create and produce in an informed way, and focuses on the recognition and prevention of common mistakes in the work practice, using a concrete case study. Speakers will examine common mistakes from their own professional expertise and experience, and how these could have been easily prevented with the proper advice.

Françoise Alsters
is an attorney at Poelmann van den Broek Attorneys in Nijmegen.

Leon Vogels
is the Dutch and European Patent Attorney.

Mirjam Leloux
has been working as self-employed advisor with Leloux Science & Business since 2005.

Patrick Dierks
works with Maas & Kleiberg.

Erik Jansen
works with Innovative Tax Ltd. in Nijmegen.

René den Boer
is a self-employed consultant, and connected to the Eindhoven Corporate Finance Group (EDFG) in Eindhoven.

NIJMEGEN

Tuesday 17th of June 2014

Poelmann van den Broek N.V.
St. Canisiussingel 19f
6511 TE NIJMEGEN

You are most cordially invited by Maas & Kleiberg, Poelmann/ van den Broek, Los & Stigter, Innovative Tax, ECFG and Leloux Science & Business.
The costs for participating in this event are €40 (ex VAT). You will receive an invoice.
Please register by sending an email to: info@mksubsidieadvies.nl with your name and number of participants. In case of cancellation within 24 hours of the start of the event, no costs can be reimbursed.

Leloux, Science & Business

dr. Mirjam Leloux

Leloux Science & Business Ltd. (LSB) has been actively involved with the marketing of early patented technological inventions for almost 10 years, in fields including the life sciences. Their clients are universities, knowledge institutions, techno-starters and individual inventors. A separate intake module for techno-starters has been developed, which first looks into the strengths and weaknesses of the current business model. Next follows advice on the patenting or business strategy to be followed. Leloux is especially skilled at creating a business development track and 'matchmaking'. "We have a large international network at our disposal, consisting of many partners and investors looking to collaborate," says Mirjam Leloux. "This substantially increases our chances of success." This activity subsequently results in closed deals, and extra revenue for the techno-starter.
LSB also assists the techno-starter with the search for a suitable investor. Working with an accountant, the intellectual ownership is valued in consideration of issuing shares. If desired, Leloux can also act as business coach or mediator in the case of collaborations struggling to move forward. "We can supply structure whilst only charging a small amount," says Leloux. "In some cases we are even prepared to share the risks. This is something our clients really appreciate."

Leloux, Science & Business

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www.scienceandbusiness.nl
info@scienceandbusiness.nl

Chancellor Angela Merkel, accompanied by Prime Minister Mark Rutte and Marc Hendrikse (CEO of the NTS-group and chairman of Brainport Industries), receives an orange tulip from a 'Frau Antje' robot. Henk Gerards, director of Business Cluster Semiconductors, with orange tie, and Guido Dierick director of NXP Nederland (far left) watch with close attention.

Hannover Messe

Event Impressions

The Netherlands was the 2014 partner country for Hannover Messe, the largest technology conventionin the world. Prime Minister Rutte and Chancellor Angela Merkel, also Honorary Doctor of the Radboud University, opened the Holland Pavillion. During the Messe, there were various presentations and discussions with scientists from various Dutch knowledge institutions, among whom the Nijmegen theoretical physicist Misha Katsnelson, the leading theoretician in the field of grapheme technology, and medical innovator Maroeska Rovers.
Gerard Meijer, chairman of the Radboud University Nijmegen, opened the Glass House at the Hannover Messe. He emphasised the importance of fundamental research for economic progress, and the role of universities as centres of innovation and industry.
At Hannover Messe, there was a joint stall of 'Business Cluster Semiconductors Nederland' with a number of companies and institutions from Nijmegen: NXP, Radboud University (High Field Magnetic Lab), EPR Technopower, Innoluce and the Novio Tech Campus. Also present were Q-micro and Bruco from the east of the country. The stall was especially busy, due to the Netherlands' status as 'partner country; for the event, drawing many interested visitors for the joint presentation.

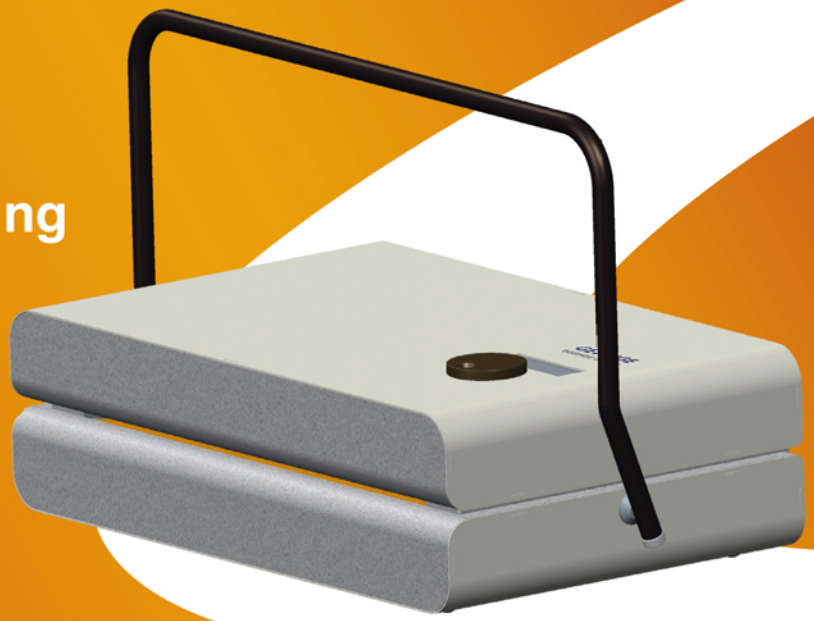
Gerard Meijer (right) opened the Glass House at the Hannover Messe on April the 7th.

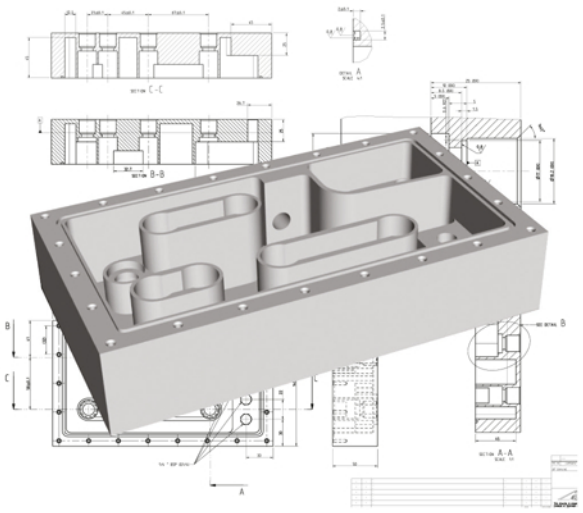
ICT Network Nijmegen

On the 17th of February 2014, both the ICT Network and the City Council of Nijmegen presented to the public the leading ICT professionals of the region in the Nijmegen City Hall: (L-R) Leon Pillich (Aia Software), Pierre Guelen (Planon), Prof. Frits Vaandrager (IT studies Radboud University)
and Paul Dirven (Aia Software). The IT Studies at Radboud University have again been judged the best in the Netherlands, and the companies Aia, GX and Planon have made it into the Magic Quadrant of Gartner, the American firm that analyses the world's best ICT companies.

Masters in Engineering!

Specialists in mechanical 3-D CAD and Electronic engineering





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Top-level Office Space

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technology & science park nijmegen

The Mercator Technology & Science Park offers a whole host of interesting accommodation options. Based on the wide range of requirements for knowledge based companies, there is room for start-ups, growing companies and larger businesses.

This means that office space can be rented in units ranging from 25 m2 to several floors at a time.
The principle of 'easy-in, easy-out' is reflected in the shorter leases specifically for starters in a full-service office environment. Mercator offers more than simple office space in its concept. The facilities for young companies, their mutual collaboration and the links to the university make Mercator so much more than just a park with the traditional multi-tenant office block.

The Mercator Technology & Science Park has a unique location at the edge of the university campus, in an area shared with large R&D orientated companies. Moreover, the presence of prominent knowledge based institutions makes it a handy meeting point for young talent. Research and enterprise go hand in hand, resulting in many economic innovations and external contacts.

BV Campus matches your accommodation needs with the possibilities at the Mercator Technology & Science Park, or elsewhere on the grounds of the Radboud University. Would you like to receive more information? Please contact us on +31 (0) 24 361 16 53.

Radboud University Nijmegen

NOVIO TECH CAMPUS

SMB
Facilities & Support in Life Sciences

Novio Tech Campus

for Life Sciences & High Tech Innovation

Knowledge and industry meet innovation at the Novio Tech Campus in Nijmegen. The campus offers 10,000m² of state-of-the-art research infrastructure and accommodation for entrepreneurs and researchers in the Life Sciences, Health and High-Tech sectors.

"Growing through shared knowledge. Where innovations work!"

This is the underlying philosophy of the collaboration between NXP Semiconductors, the Nijmegen City Council, the province of Gelderland, Kadans Biofacilities and SMB Life Sciences at the realisation of the Novio Tech Campus.
The Novio Tech Campus has sophisticated laboratories (ML 1, 2, 3), flex-labs that can be rented for any given period of time, clean-rooms, the NXP test laboratory and high quality operating supplies. It also has offices, meeting rooms and a modern 'meet & greet' room with all the necessary support and services. The campus organisation and SMB Life Sciences offer facility sharing, access to (inter)national company networks and universities, and can advise young companies on their way to complete professional entrepreneurship.

For more information please visit: www.noviotechcampus.com