lisa vr news

LIFE SCIENCE AUSTRIA → vienna region's newsletter 02/2010

Otto Bock: Mobility is key

High-tech prosthetics for the world market require a close-knit network of skilled and expert partners. Otto Bock's network consists of several hundred different contacts for R&D, design and manufacture worldwide, but more than 50% are located in Austria. Examples of trusted partners in Vienna are Merten, PIU-Printex and the Medical University.

Otto Bock is market leader in medical technology focusing on arm and leg prostheses. Its Viennese subsidiary, **Otto Bock Healthcare Products GmbH**, is one of the Group's most important research and development centres. Otto Bock's goal is to enhance the quality of life for people with disabilities by giving them improved mobility.

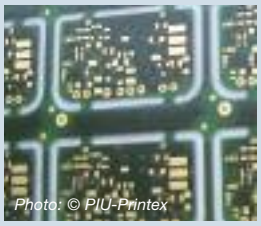

Photo: © PIU-Printex

Diseases, particularly narrowing of the blood vessels as a result of diabetes mellitus, together with serious accidents in all age groups still often lead to limb amputation. Otto Bock helps to ensure that the replacements are as natural as possible in function and appearance. This requires in-depth understanding of natural movement processes combined with specialist orthopaedic knowledge, the application of novel computer technologies and the use of modern materials such as carbon and silicon based substances.

Knee joint revolutionises leg prosthesis

Developed and produced in Vienna, the **C-Leg® knee joint** is controlled by microprocessors and is a milestone in leg prosthetics. Its users appreciate the closest approximation to a natural gait achieved so far. The application requires state-of-the-art sensors in the knee joint: printed circuit boards are the crucial core components of the electronic assemblies involved. Otto Bock's supplier in Vienna, **PIU-Printex GmbH**, has great technical experience and can be flexible in response to fluctuating demand, making it an ideal partner. Specially equipped circuit boards provide the electronic control and regulation for Otto Bock's arm and leg prostheses.

Photo: © Peter Merten

World class with myoelectrics

The myoelectric **DynamicArm® elbow system** was developed in Vienna. Its processes are very similar to natural movements. Muscle impulses are transmitted by sophisticated electronics to the parts of the prosthesis to be moved. Another special feature of the elbow joint is its strength: it can lift up to 6 kilograms and exert some 60 kilograms of tractive force. A milled highly durable aluminium component produced by **Peter Merten GmbH**, a Viennese company with a long tradition of high precision machining, is of key importance. The part supplied by Merten ensures that the quality and reliability of the DynamicArm® will be sufficient to meet the strains and stresses of everyday life.

What the future holds in store

The **Vienna General Hospital** is one of Europe's biggest hospitals and a leader in the field of neuromuscular reconstruction. Working closely with Professor Manfred Frey, who heads the Clinical Department for Plastic and Reconstructive Surgery of the **Medical University of Vienna**, Otto Bock has developed a **mind-controlled arm prosthesis.** For the

© Otto Bock

novel arm prosthesis to be controlled by the nerves originally responsible for moving the arm, the remaining nerves have to be transferred from the residual limb onto the chest. Prof. Manfred Frey and Prof. Oskar Aszmann are the only surgeons outside the USA who are capable of this selective nerve transfer. A young Styrian is the first and so far only user of the intelligent arm outside the USA. The most recent innovation from Otto Bock is the continuing development of this approach into the touch-sensitive hand. Microsensors on the index finger register temperature, vibration and pressure, and a microchip translates the results into interpretable signals that can be felt as physical sensations.

- *www.ottobock.at*
- *www.piu-printex.at*
- *www.merten.at*
- *www.meduniwien.ac.at* *

Otto Bock in Austria

:: Financial 2009: Sales revenues of EUR 80 million, 22% invested in R&D
:: Exports totalling more than 90%
:: More than 440 employees, with over a third in R&D

: editorial

Dear Readers,

We are pleased to announce that LISA VR's long-term board member and mentor **Sonja Hammerschmid** will become Rector of the University of Veterinary Medicine in Vienna. We congratulate her on this major event and thank her for her enthusiasm and commitment towards the advancement of the life sciences in Austria over the last 12 years. Her new home is the only academic and research institution in Austria that focuses on the veterinary sciences. Around 1,000 employees and 2,300 students work on the university campus that also houses various spin-off enterprises and branches of business partners. We very much look forward to Sonja's presidency and the new spirit it is sure to bring.

This newsletter includes an update on the **trade fairs** we will be attending in the coming months and we hope you enjoy reading the articles on networks contributing to the success of **Otto Bock**, production capacities at **Boehringer Ingelheim** in Vienna, **Polymun** and **IT transforming medical and home care**. In addition, our newsflash keeps you bang up to date by highlighting recent developments in the Vienna region.

At LISA VR we are currently investing a lot of energy in improving our position as a key **knowledge** provider. This cultivates LISA VR's role as a knowledge broker to contribute to the future advancement of the life sciences in the Vienna region. For example, we recently commissioned and published a shared core facilities report, which is discussed in more detail on the next page. Improved info packages like an extended booklet on medical technology and a new publication on production capacities, technologies and services in biotech and pharma in Vienna are also in the making.

Finally, we would like to invite you to join our Life Science Circle themed "Academia meets Business" on **September 27, 2010** at Muthgasse. This year, LISA VR's **Life Science Circle** takes place in the context of the Annual Meeting of the Austrian Association of Molecular Life Sciences and Biotechnology (ÖGMBT).

Eva Czernohorszky and Michaela Fritz
LISA VR Executive Board

▸ *www.lisavr.at*

What we offer:

:: **One-on-one consulting**
:: **International marketing**
:: **Training courses**
:: **Networking events**
:: **Knowledge brokering**

Life Science Austria Vienna Region (LISA VR) is your key professional partner in the Vienna Region when it comes to biotechnology, medical technology and pharmaceuticals. Whether you are an entrepreneur, an investor or a researcher, LISA VR provides you with essential services in Austria's largest life sciences location.

lisa | life science austria
vienna region

Media Package

New:
Until the end of this year, **PR&D - Public Relations für Forschung & Bildung** offers 25% discount on its standard rate for national and international press releases. A special offer for the first release commissioned by new customers in the Vienna region in order to support their internationalization efforts. www.prd.at

New:
meditec INTERNATIONAL grants 20% discount on advertisements until December 2010. In addition, for one month they offer a free 468x60 px web banner.

Details are provided at www.lisavr.at.

: Meet us abroad

CPhI Worldwide
Paris, October 5-7, 2010

Biotechnica
Hannover, October 5-7, 2010

AdvaMed
Washington, October 18-20, 2010

BIO-Europe
Munich, November 15-17, 2010

Medica
Düsseldorf, November 17-20, 2010

Arab Health
Dubai, January 24-27, 2011

BIO-Europe Spring
Milan, March 14-16, 2011

EXPOMED
Istanbul, March 31 – April 3, 2011

Bioforum
Lodz, May 11-13, 2011

BIO International Convention
Washington, June 27-30, 2011

: Career

Sonja Hammerschmid becomes Rector

The University of Veterinary Medicine, Vienna announced the election of Sonja Hammerschmid as new rector. She currently is the only woman to head a public university in Austria.

Her motto for her presidency: "Excellence in teaching, research and care to foster innovation"

Hammerschmid is co-founder of LISA VR and served on our executive board until she switched to our advisory board in 2006. She holds a PhD in molecular biology and spent several years as a researcher and in the biotech and pharma industry before establishing the Federal Ministry's Life Science Austria program at aws. Since 2003, Hammerschmid has been in charge of the technology & innovation division at aws and is responsible for supporting start-ups and funding innovative high-tech firms in Austria.

Sharing Research Equipment

LISA VR recently published a report on national and international models for shared core facilities in the life sciences. Order your free copy via e-mail: office@lisavr.at!

Life sciences research is increasingly dependent on up-to-date and often expensive equipment operated by specially trained experts. Economic pressures as well as a new focus on more interdisciplinary approaches have promoted bundling of the necessary competences and capacities in state-of-the-art core facilities to provide specialized services for multiple users. In the last few years an increasing number of these so called shared core facilities and technology platforms has been created worldwide. These offer a variety of specialized services such as high throughput sequencing, mass spectrometry, electron microscopy and animal housing.

To provide guidance for the strategic set-up of such facilities in Austria, LISA VR commissioned an analysis to compare selected shared core facilities in Europe. The aim was to highlight current developments and trends, and to identify the various configurations and service models adopted. A special focus was put on facilities and platforms to be used both for scientific and business purposes. There have been no such studies in Europe so far, and we are pleased to be breaking new ground and contributing significantly to this important area. Our sincere thanks go to all the experts who have shared their experiences with us. Below some key findings are presented.

Success factors identified:

- Quality of personnel and management
- Long term financing
- Clear need for what is offered
- Service orientation of the facility
- Uniqueness of service offered

Strategic issues all facilities under review struggle with:

- Organizational issue: To which extent should the facilities be integrated in or independent from university structures?
- Uniqueness: Which facilities are needed to support the research community at its best?
- Financing: How to secure financing for the facilities with a medium or long term perspective in order to attract the best employees? How to finance costs of acquisition, maintenance costs, personnel costs and contingent liability in case of low use of capacity?
- Pricing: Which user-fee model is used? How to set fair prices for students, scientists and industry users without provoking unfair competition with private companies that offer a similar service?
- Research: Do core facility managers run their own research projects in addition to the service jobs?
- Quality assurance: Necessity of ISO certification?
- IPR issues: Who patents what? Who publishes what?

Major trends identified:

- Professionalization: Major research infrastructures tend to be organized as rather independent professional units
- Access for external users: Core facilities increasingly open their services to external academic and business users
- Diversity of organizational structure: Technological characteristics and historical factors shape organizational details, no single best practice model but a multitude of good practices

The study also revealed that shared core facilities make sense from a regional development perspective. Such facilities render the places where they are installed more attractive for top academic researchers. Shared usage makes new technological developments more accessible and therefore needs to be regarded as a boost for academic careers and top impact publications. It allows a larger number of researchers to keep pace with rapid technological progress. Facilities can be the basis for collaborative research and offer the opportunity for contract analysis. Provided that external non-academic users are accepted, such facilities also allow businesses like start-ups access to equipment and know-how that would not be affordable otherwise. *

aws PreSeed^{call} 2010

- EUR 3 million for new business ideas for innovative products and services based on technological developments
- Grants of up to EUR 150,000 per project for pre-formation phase
- Closing date for entries: 6 September 2010

For more information contact:
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h.schwetz@awsg.at

www.awsg.at/preseedcall

ZIT Call: ICT Vienna 2010

- EUR 1.5 million for business R&D projects
- ICT incl. electronic libraries, semantic and cognitive systems and data security
- Grants of up to EUR 500,000 per project
- Closing date for entries: 7 September 2010

For more information contact:
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www.zit.co.at

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AFFiRiS: Alzheimer's vaccine AD02 already in clinical phase II

Only five months after the completion of the corresponding phase I study, AFFiRiS AG's clinical Alzheimer's vaccine candidate AD02 has progressed to phase II clinical testing. It may therefore be possible to show the efficacy of the vaccine as early as 2012. The multicenter study is carried out in Austria with participating clinical centers in Germany, France, the Czech Republic, Slovakia and Croatia. AFFiRiS is currently developing prospective products in all stages of the development pipeline up to clinical phase II. The pipeline also comprises vaccines for treating atherosclerosis, hypertension and Parkinson's disease. Four further disease areas, tackled with the same approach, will not be disclosed at the moment.

Austrian Center for Industrial Biotechnology fosters team building

ACIB reports a big kick-off event to create fertile grounds for its transdisciplinary mission in industrial biotechnology. Researchers based at universities in Vienna, Graz and Innsbruck participated in the meeting. The goal of ACIB is to join academic and industrial forces to create the basis for new chemicals, materials and active biopharmaceutical ingredients and to make industrial production processes more knowledge-based endeavors. To achieve this goal, EUR 59,3 million have been made available. There are nineteen institutes and departments from 7 Austrian universities with know-how from multiple academic disciplines combined with business know-how from the 24 collaborating companies.

aws: Phase 1 of business plan competition "Best of Biotech" awards three Viennese business ideas

39 teams from 10 countries and 3 continents contested in phase 1 of the competition. 44% of the sumitted businss ideas belong to medical technology, 38% to red biotechnology and 15% to supply and services. A cash prize of EUR 1,500 each has been awarded to the following projects:

- AMBERwest, Andreas Kubin and Martina Zederbauer: peroxidase inhibitors for the treatment of chronic inflammatory and neu rodegenerative diseases
- Profem, Marion Noe: new therapy for the treatment of dermal and mucosal candidiasis
- Sorbus, Frank Sams-Dodd: novel treatments for complicated wounds, cancer and CNS disorders

BOB winners of phase 2 prizes sponsored by Baxter, Boehringer Ingelheim, AFFiRiS and LISA VR will be announced at the award ceremony on October 21, 2010.

BOKU to host the Annual Meeting of the Austrian Association of Molecular Life Sciences and Biotechnology

From September 27th to 29th, the Annual Meeting of the Austrian Association of Molecular Life Sciences and Biotechnology (ÖGMBT) will take place at Vienna's Muthgasse. For the first time there will be workshops solely dedicated to young researchers, including scientific writing, project management, and an overview of PhD programs in Austria. LISA VR's Life Science Circle

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"Academia Meets Business" is also tied to the event. Rector Martin Gerzabek will discuss his visions for the future of life sciences at the University of Natural Researches and Life Sciences (BOKU) in this context. Simone Thomsen, Eli Lilly Austria and President of the Association of the Research-Based Pharmaceutical Industry in Austria will talk about the importance of pharma R&D for Austria's universities.

CeMM: Research groups united at new premises

After five years of renting lab space at several research locations in Vienna, CeMM research groups now come together to join forces in a dedicated lab building at the campus of the Medical University of Vienna (MUW) and the General Hospital (AKH). Eight floors with 5.620 m2, equipped with the latest instruments offers space for around 100 researchers, support staff and administration. The privileged location provides an ideal environment to achieve CeMM's mission in combining insights obtained from both basic and clinical research. The long time goal of CeMM is to work towards the predictive, preventive and personalized medicines of the future.

Cornerstone for extension of Vienna Biocenter laid

Mayor Michael Häupl and Vice Mayor Renate Brauner laid the cornerstone for the construction of additional lab and office space at the Campus Vienna Biocenter at Neu Marx in Vienna's third district. The following construction projects are planned:

- Marxbox building 1: to be completed in autumn this year, total rentable area of 6,244 m^2
- Marxbox building 2: construction work started and will be completed in 2012, total rentable area of 4,200 m^2
- VBC 4: start of construction work scheduled for 2012, total floor-space will amount to around 32,000 m^2

Eucodis Bioscience launches a high-performance beta-lactamase

LacBuster™ is an enzyme inactivating a broad spectrum of beta-lactam antibiotics including penicillins, cephalosporins up to the 5th generation, and carbapenems, which are the most widely prescribed group of antibiotics. This new enzyme has hydrolyzing activity significantly higher than those of other products currently on the market. Lactamases are an important tool in the manufacture of beta-lactam antibiotics, where they are used for sterility testing of bulk products. Beta-lactamase enzymes are also used by the diagnostics industry, and in other areas.

FWF: Launch of clinical research funding program

The Austrian Science Fund FWF launched an experimental call for proposals in the area of clinical research and clinical studies. The research efforts must be initiated by academic researchers, and business organizations must not have a direct commercial interest in the results. Projects must involve patients and aim to generate new scientific knowledge and insights in order to improve clinical practice and patient treatment. Projects should

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address potential innovations in diagnostics and/or therapy. Letters of interest should be submitted by September 30, 2010, and full proposals are due on January 31, 2011. Funding decisions are expected for June 2011. The total budget amounts to EUR 3 million.

IMBA: ERC Starting grant and FWF START prize for group leader Julius Brennecke

Julius Brennecke has been awarded one of the prestigious "Starting Independent Researcher Grants" by the European Research Council ERC. The grant is worth EUR 1.5 million and will be used for a complex research project on RNA interference over a period of five years. The project dubbed „DROSOpiRNAs" aims to elucidate the mechanisms and biological impact of the piRNA pathway in the Drosophila germline. This pathway, which was only discovered four years ago, acts as the key genome surveillance system that suppresses the activity of transposons and is essential for germ cell formation in animals. Julius Brennecke is IMBA's youngest group leader and the fourth to receive an ERC grant. He has also recently been awarded the prestigious START prize by the FWF.

Intercell acquires Cytos' antibody technology platform

Intercell AG announced the closing of the acquisition of Cytos' platform technology for monoclonal antibody discovery for EUR 15 million. The key scientists who developed the technology at Cytos are now employed by Intercell. The B-cell based technology complements Intercell's technology platform and opens up novel medically and commercially relevant applications for Intercell's Antigen Identification Program (AIP®). The AIP® has delivered promising vaccine candidates against Staphylococcus aureus (Phase II/III) and Pneumococcus (Phase I) infections, amongst others, and is the basis for partnerships with Merck & Co. and other global players. Investing in monoclonal antibody technology for infectious diseases has been neglected by the pharmaceutical industry for 30 years and only a single anti-infective antibody is on the market today. Intercell aims to tap the full potential of addressing infectious diseases with monoclonal antibodies. New anti-infective products are expected to move into clinical development within one or two years.

Malteser Care-Ring GmbH founded: case and care management to cover the whole of Austria

Around 80 percent of the 400,000 Austrians in need of care are looked after at home by relatives. The Knights of Malta and Care-Ring Pflegevermittlungs- und -dienstleistungs-gmbH have launched a new collaborative welfare enterprise to fill a gap in caring for people in their own homes. Malteser Care-Ring GmbH started its work in May 2010. The aim is better care, while at the same time reducing costs for the Austrian health system by avoiding unnecessary hospitalisation.

Marinomed signs collaboration agreement with Boehringer Ingelheim

The deal aims to further extend marketing of Marinomed's anti-viral nasal spray for the tre-

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atment of the common cold to all of Europe (except for Austria and UK which are not covered by the contract), Russia and CIS, South America, parts of Asia and Australia. This nasal spray is based on Marinomed's anti-viral respiratory technology platform mavirex. Marinomed Biotechnologie GmbH will receive an upfront payment in the million EUR range, in addition to payments upon the achievement of certain market entry milestones and royalties. Further financial details were not disclosed. Prior to the deal, Marinomed announced that it had been granted a European patent that protects the intellectual property for its anti-viral substance Carageenan.

MFPL: Bojan Zagrovic wins START Award

Bojan Zagrovic started work at Max F. Perutz Laboratories as one of four new junior group leaders in early 2010 and studies protein interactions and folding using computational molecular dynamic simulations. His project on specific and general aspects of protein interactions won him the EUR 1.2 million START Prize from the Austrian Science Fund FWF. This is the most lucrative and prestigious long-term funding for young researchers in Austria, and supports the start up of an individual's research group.

Miracor selected as 'Hot Pick of the Month" by Clinica's Medtech Ventures

Clinica's Medtech Intelligence, the leading information service provider for the medtech industry, has chosen Miracor Medical Systems GmbH as the 'Hot Pick of the Month' in the June 2010 issue. Promising market opportunities, quality of investors, senior management background and other factors made it an easy choice for Clinica, commented editor Tina Tan.

MedUni Vienna opens Anna Spiegel Research Building

The Medical University of Vienna's first building solely dedicated to research is named in honor of Anna Simona Spiegel-Adolf, who was the second woman to obtain a postdoctorial lecture qualification at MedUni Vienna in the 1930s, and worked on applied medical and biophysical chemistry. The new premises are located next to the university clinics of the Vienna General Hospital, one of Europe's largest hospitals and offers room for research in oncology, cardiology, surgery, dermatology, medical-chemical laboratory diagnostics as well as pediatrics. Within the 8,000m² of the four-story building, three core facilities with state-of-the-art equipment have been established, providing top-quality services in imaging, flow cytometry and genomics.

Nabriva initiates Phase II of pleuromutilin antibiotic BC-3781

Nabriva Therapeutics AG announced that the first patients have been enrolled in a Phase II clinical trial of BC-3781 in acute bacterial skin and skin structure infections. BC-3781 is a pleuromutilin antibiotic being developed for the treatment of bacterial diseases such as skin and skin structure infections and pneumonia. The Phase II clinical study is a double blind study with two doses of BC-3781, using vancomycin as a comparator and is designed to establish safety, tolerability and efficacy of BC-3781. BC-3781 is being administered

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intravenously in this study, which is the first patient study with a systemic pleuromutilin.

Novartis: Dermatology moves to Vienna Life Sciences Centre Muthgasse

Novartis' dermatology research unit managed by Anton Stütz is the first tenant to arrive at the new BOKU Biotech 1 building at Muthgasse 11. The unit employs 25 specialists closely interacting with collaboration partners in the Novartis group located in Basel and Cambridge, MA, amongst others to reach the necessary critical mass for developing new drugs. Stütz has been a key figure in the research and development of some of Novartis' most successful products including Lamisil, discovered in 1980 and the gold standard for treatment of fungal skin and nail infections, and the topical calcineurin inhibitors including Elidel, which are the only registered alternatives to cortisone-based drugs for the treatment of atopic dermatitis. Anton Stütz is one of only a handful of Austrian scientists based in industry to receive the Erwin-Schrödinger Award. He closely collaborates with world-renowned dermatologists from the Medical University of Vienna, such as Georg Stingl.

Sanochemia concludes exclusive distribution agreement with Iberoinvesa Pharma SL

Iberoinvesa Pharma SL is a young Spanish drug company specializing exclusively in the distribution of radiological products (x-ray, CT and MRT imaging agents). This strategic partnership with Sanochemia Pharmazeutika AG not only paves the way for the fast-track development of markets for its entire radiological product portfolio in Spain and Portugal, but also for rapid access to selected markets in Latin America such as Columbia, Mexico and the Dominican Republic.

Themis Bioscience: EUR 1 million public funding attracted and new labs opened

Themis Bioscience GmbH, a Viennese start-up biotechnology company developing vaccines against tropical infectious diseases, announced two major milestones: Additional EUR 1 million public funds have been granted by the Austrian Research Promotion Agency (FFG).Themis Bioscience will use these funds to drive its vaccine projects forward, including their lead vaccine candidate against Dengue fever. Up to now, austria wirtschaftsservice (aws), FFG and the academic business incubator INiTS in total provided EUR 2.1 million to support Themis Bioscience. In addition, relocation to the new BOKU Biotech I building at the Vienna Life Sciences Centre Muthgasse will allow continuous growth and development for Themis Bioscience in the coming years.

University of Vienna: Thomas Rattei head of new Department of Computational Systems Biology

Thomas Rattei is the newly appointed professor for "In Silico Genomics" at the University of Vienna and will head the new Department of Computational Systems Biology. His research interests comprise microbial genomics, bioinformatics for metagenomics and metatranscriptomics, pathogen-host interactions, public resource computing for large-scale sequence analysis and structuring of protein sequence space.

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Vetmeduni Vienna celebrates its most sucessful staff members

The University of Veterinary Medicine in Vienna periodically evaluates its employees and awards outstanding performances. This year one female and eight males have been selected in the following categories:

Attracting grant money:

- Christian Schlötterer, Institute of Population Genetics (3 projects, in total EUR 2.7 million)
- Junior Award: Alistair McGregor, Institute of Population Genetics (EUR 1.2 millione)

Citations – clinics:

- Wolfgang Sipos, Clinic for Swine
- Junior Award: Dieter Liebhart, Clinic for Avian, Reptile and Fish Medicine

Citations - non-clinics:

- Thomas Rülicke, Institute of Laboratory Animal Science
- Junior Award: Georg Duscher, Institute of Parasitology

Best teacher:

- Josef Troxler, Institute of Animal Husbandry & Animal Welfare
- Junior Award: Katharina Hittmair, Department for Diagnostic Imaging

Best graduate:

- Konrad Raffl

Vienna University of Technology: Award-winning life sciences projects

Christian Hellmich from the Institute for Mechanics of Materials and Structures received an ERC Starting Grant for a research project entitled "Poro-Micromechanics of Bone Materials, with Links to Biology and Medicine". The project is expected to reveal new diagnostics and treatment for bone diseases in the medium-term.

Günter Allmaier, Institute of Chemical Technologies and Analytics, developed a special sample carrier for MALDI-MS, which can be applied to intact cell mass spectromentry for diagnostic purposes, proteomics-biomarker identification and molecular imaging, amongst others. It is produced by Sony DADC Austria, marketed worldwide by Shimadzu and won Allmaier third prize at the Houska Awards.

Claudia Dworak received the Hannspeter Winter Award for special achievements by women in research and technology for her PhD thesis at the Institute of Applied Synthetical Chemistry focusing on new concepts in catalytic photopolymerization. Her research can be applied to many different fields, including tissue engineering, dental fillings and rapid prototyping,

WWTF announces Linking Research and Patients' Needs Call 2011

In autumn 2010 WWTF will launch its second call for projects linking lab and clinical research. Projects need to be of excellent scientific quality in order to gain the support of international reviewers and jury members, as stiff competition is expected. A clear hypothesis is required and anticipated research results should lead to future economic and/ or social benefits. In case there will be more excellent projects identified by the jury than funding is available, projects with female or young researchers as principal investigators will be favored. The call will open in October 2010, deadline for submission of proposals will be at the end January 2011. In total EUR 5 million are dedicated to this call.

This list is not exhaustive
→ Lisavr.at

Boehringer Ingelheim in Vienna: Biopharmaceutical Manufacturing par excellence

High-performance production of biopharmaceuticals derived from microbial fermentation technology for clinical trials and worldwide market supply

Boehringer Ingelheim is the largest family owned pharmaceutical company worldwide. Headquarters are located in Ingelheim, Germany. Today, Boehringer runs 142 companies in 47 countries and employs 41,500 people, with 2,600 in Central and Eastern Europe. In 2009, the BI group posted net sales of EUR 12.7 billion.

Boehringer Ingelheim started off its first branch abroad in Vienna in 1948 in a small pharmacy. Today, the Viennese affiliate is a renowned seminal high-tech company and one of Austria's most important R&D firms. The group's Regional Center Vienna is responsible for more than 30 Central and Eastern European countries and for the coordination of clinical research conducted in 15 countries. Special attention is concentrated on the group's center for oncology research and the impressive biopharmaceutical production plant located in Vienna.

© Irene Schanda

The production facilities are specialized for manufacturing therapeutically active proteins, protein scaffolds, antibody fragments and plasmid DNA. These drugs are mainly produced for clients in the USA, Canada, Japan, Australia and Europe. One of the top twenty biopharmaceutical blockbusters is manufactured in Vienna.

Competence center for microbial fermentation of biopharmaceutical proteins

Boehringer Ingelheim has pioneered the microbial fermentation and purification of therapeutic proteins since the 1980s. Production capacities have been continuously extended until they were doubled in 2005 with Boehringer Ingelheim investing EUR 80 million in its facilities in Vienna. Today, the company operates state-of-the-art fermentation plants for *E. coli* and yeast technologies in Vienna ranging from 30 to 6,000 liters. Both high-yield batch and fed-batch fermentations are performed. The plants are approved "multi-product" facilities for the manufacture of products registered with the Austrian Health Authorities, the EMA and the FDA and are used both, for the group's own products and for contract manufacturing for international clients. For Japan, a Foreign Manufacturer Certification is available and approval of a first microbial derived biopharmaceutical product was granted in 2010.

A broad range of *E.coli, Pichia pastoris, Hansenula polymorpha* and *Saccharomyces cerevisiae* strains allows the selection of the best suitable production system in terms of economy, product quality and efficiency. A special purification plant for downstream processing provides nine separate purification suites. Explosion-proof areas allow for purification steps requiring organic solvents or large scale high performance liquid chromatography. Techniques such as affinity chromatography, size exclusion, hydrophobic interaction, ion exchange, reversed phase HPLC or protein crystallization are employed.

New and efficient process technology platforms are established to support the production of innovative, next generation molecules like antibody fragments, protein scaffolds and therapeutic fusion proteins on a flexible and fast timeline.

© Boehringer Ingelheim

Dr. L. Halmer, VP Biotech Operations: "In Biopharmaceuticals, we are highly committed to extend our technology leadership in process development and manufacture. The high-performance processes developed by Boehringer Ingelheim in Vienna set new standards in yield and purity. By optimizing production processes we could achieve a multiple increase in titres and yields over the last years."

Setting the standard for pDNA production

Today, numerous clinical studies are based on non-viral pDNA. Boehringer Ingelheim is one of the world's leading contract manufacturers of non-viral pDNA produced by microbial fermentation. Multi-gram to kilograms of pDNA with more than 99 % purity and up to 98 % supercoiled pDNA form can be produced in Vienna for gene therapy and DNA vaccine applications.

Plasmid DNA fermentation titers reach up to 3 g/L with a proprietary *E. coli* production strain growing in a synthetically defined culture medium. No animal-derived components or antibiotics are used during production. In addition, there are no detergents, organic solvents and enzymes employed in downstream processing.

www.boehringer-ingelheim.at *

Boehringer Ingelheim in Austria

:: 1,100 employees
:: EUR 596.8 million net sales generated in 2009
:: EUR 360 million invested in facilities in the last decade
:: Research Institute of Molecular Pathology (IMP) focusing on basic research located in Vienna

Hans Loibner (Apeiron Biologics AG), Sonja Hammerschmid (aws), Gerd Zettlmeissl (Intercell AG)

Michaela Fritz (LISA VR, aws), Dietmar Katinger (Polymun), Claus Hofer (ZIT)

APN01 returns to Vienna

An enzyme developed for the treatment of Acute Respiratory Distress Syndrome (ARDS) in Vienna continues to be manufactured here for clinical trials after being licensed to a UK-based GSK unit.

In February this year, the Viennese biotech company Apeiron Biologics AG announced a licensing deal worth EUR 235 million granting GlaxoSmithKline exclusive rights to its lead product APN01 (recombinant human Angiotensin Converting Enzyme 2, rhACE2). Clinical development started with GMP material manufactured in CHO cells by Polymun. GSK recently contracted the Austrian CMO Polymun Scientific Immunbiologische Forschung GmbH to further process development and manufacturing of supplies for clinical trials.

Milestones in the development of APN01

- Josef Penninger, today Director of the Institute for Molecular Biotechnology of the Austrian Academy of Sciences has a vision – turning research results from investigations of ACE2 into clinically usable products.
- The biotech company Apeiron Biologics AG is founded in Vienna in 2003 on the basis of this and two other product ideas.
- From the end of 2005 the enterprise begins to expand, and APN01 is developed under an experienced management team led by Hans Loibner in a joint venture with collaborating Austrian and international partners.
- Particularly worthy of note is the collaboration with the University of Innsbruck on the profiling of APN01 with ARDS, and the collaboration with the University of Alberta in Edmonton on its profiling with cardiovascular and kidney diseases.
- Apeiron awards the contract for development of GMP production of APN01 for toxicological studies and the first clinical tests to Polymun Scientific Immunbiologische Forschung GmbH in Vienna.
- The Phase I study is carried out by the University Clinic in Basel, with Apeiron doing the accompanying analytical investigations.
- At the start of 2010 after a year of intensive negotiations, GlaxoSmithKline takes a stake in Apeiron and takes over an exclusive licensing agreement for the further development of APN01. Business angles and public funding from aws, ZIT, FFG and FP6 have been very important to develop APN01 to this stage.
- In April 2010 Polymun receives a follow-up contract for the production of APN01 for clinical tests of its effectiveness (Phase II studies). *

Polymun Scientific Immunbiologische Forschung GmbH

Polymun is developing and manufacturing biopharmaceuticals and vaccine antigens on a contract basis and for its own R&D projects. Furthermore, Polymun offers the development and manufacturing of liposomal formulations with its patented technology. Polymun is a GMP-compliant manufacturer of pharmaceuticals under Austrian law thus fulfilling all relevant EMEA requirements. Over the years, Polymun has developed special expertise on the production of complex proteins including antibodies, hormones and enzymes.
Prime examples of Polymun's own products are a broadly neutralizing HIV-1 antibody produced in CHO cells as well as recombinant human and porcine trypsin produced in yeast.

Fermentation capacity at Polymun:
Mammalian cell culture (e.g. CHO, hybridoma):

- Stirred tank: 15 L, 200 L, 1750 L
- Fluidized bed: 30 L carrier volume
- Air lift: 550 L
- Ultrasonic cell retention can be implemented for up to 100 L continuous perfusion culture

Microbial cell culture (bacteria, yeast):

- Stirred tank: 50 L

www.polymun.com

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IT transforming Care

What do hospital logistics, cancer diagnostics, bone surgery, treatment of epilepsy and home care have in common? All these fields are advanced by Vienna-based firms using IT tools.

IT is transforming all parts of our lives including the medical field. Computer hardware and software and new communication devices contribute to the tremendous changes going on in the medical system. Day-to-day practices by medical doctors in hospitals but also in home care are becoming more and more IT-based. Below, a number of innovations in this area from Vienna-based firms are presented.

Software for optimized epilepsy therapy

Dr. Grossegger & Drbal GmbH / B.E.S.T. medical systems and the AIT Austrian Institute of Technology GmbH together developed a new system to allow optimizing epilepsy therapy for each affected individual. With the support of ZIT, a prototype of a new software package has been generated that allows highly specific analysis of EEG spikes. After refinements on the basis of clinical use tests, automatic spike analysis is expected to improve control of therapeutic efficiency of epilepsy and allow for optimizing therapeutic measures.

From image to analysis

The Viennese company TissueGnostics (TG) is expert in microscope automation and image processing. TG was founded by two researchers of the Medical University of Vienna with the help of the aws financing programs and Athena Wien Beteiligungen AG. TG product lines TissueFAXS® and HemoFAXS® combine state-of-the-art microscopy, advanced analysis capabilities and user friendliness. Customers all over the world appreciate TG systems for their effectiveness in getting more accurate and reliable analysis data in much less time. Its simplicity combined with incredible flexibility makes TG-products the ultimate microscope-based cell and tissue analysis tools. Currently TG, with support of ZIT, develops a new breast cancer analysis system that is expected to be available by 2012.

New applications for pneumatic delivery

Pneumatic tube systems are a core element in hospital logistics – in Vienna alone around 30% of all hospitals have been constructed with such systems. So far, though, the transport of small packages was neither automated nor completely documented. The potential of pneumatic delivery systems in transporting blood products and medicines is by no means exhausted. The Viennese firm Ing. Sumetzberger GmbH is therefore developing a new system with the support of ZIT that will guarantee the necessary complete traceability of all pneumatic deliveries in compliance with EU Directive 2002/98/EC. The new medical informatics system will be capable of integration with existing hospital-specific IT systems and quality assurance processes. The goods and the containers will be able to communicate directly with automated analysis systems and pharmacy robots. Safe receipt of samples ensured by RFID identification of both personnel and deliveries will be possible by the end of 2011.

3D bone models and implantable foils

The Laser-Gruppe-Materialbearbeitungs GmbH's medical technology division offers 3D bone models produced on the basis of individual CT or MR data. The transparent acrylic models allow for color coding of bone alterations. This enables the precise determination of bone segments affected by tumors and significantly improves tumor diagnosis. 3D bone models also allow for ex vivo arrangement in case of complicated bone fractures due to severe accidents, allowing for realistic surgery planning and training. Furthermore, implants can be tested before the actual surgery. 3D bone models considerably improve the outcome of complex bone surgeries and thus decrease costs for our health care system.
To overcome the limited usability window of classical implants, the company also develops individually formed, fully resorbable foils as implants guiding osteo-reconstruction. This project received support from ZIT.

IT-assisted case and care management

Despite Austria's high level of medical care, many people are left helpless where the responsibilities of different parts of the health care system fail to meet. This is particularly the case when older, chronically sick or palliative care patients are confronted with the long awaited return home after a stay in hospital. This is where Vienna's Care-Ring goes to work; it has now teamed up with the


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Knights of Malta to form Malteser-Care-Ring GmbH, a new welfare organisation that offers case and care management throughout Austria. With the help of careful planning and coordinated management and documentation, the aim is to make high-quality, needs-oriented care available at home, to the benefit of those needing care, their relatives and the relevant official organisations. With aid from ZIT, a new web-based documentation system has been developed which supports the process, contributes to quality assurance and makes cost savings on unnecessary hospital stays visible.

- *www.alpha-trace.at*
- *www.tissuegnostics.com*
- *www.sumetzberger.at*
- *www.lasergruppe.at*
- *www.care-ring.or.at*
- *www.malteser-care-ring.at*

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