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Medical University of Graz

Innovative Science for Successful Business

2nd Partnering Day for Biomedical Research

November 03, 2005

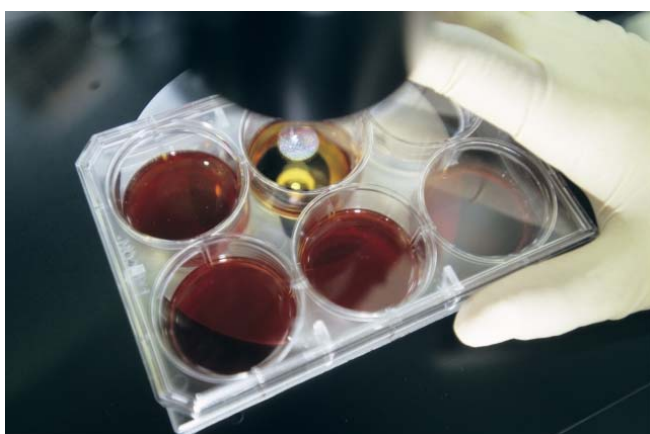
Abstractbook



Development and strengthening of cooperation between innovative companies and university scientists in the field of life sciences will be the focus of the 2nd international Partnering Day. This event is jointly organized by the Medical University of Graz, the Cluster Human.technology Styria and the Innovation Relay Centre Austria

The Partnering Day will offer the possibility, to present your technological know-how to regional and international enterprises in the sectors of biotechnology, pharmaceutical industry, medical and biomedical technology, medical and molecular diagnostics, medical informatics as well as implantation und transplantation technologies.

Scientists and companies will have the opportunity to establish contacts, to present scientific issues with industrial relevance and to identify new ways for cooperation.



Companies profit...

... from the technological know-how of the Medical University of Graz and of the life sciences department of other universities. You are welcome to establish contacts to scientists from all fields of medical research, in order to efficiently promote your development. Illustrate your expertise and communicate your requirements concerning research and technology. Present your possibilities to enter into research cooperation either during a short talk, on a poster or during a bilateral dialogue.

Broad technology platform

Researchers of the Medical University of Graz and of other life sciences universities as well as extramural research organisations are invited. This platform facilitates the discussion of a broad spectrum of biomedical topics. Furthermore the Partnering Day offers the possibility of networking between the attending enterprises.

Researchers profit...

... from the possibility to contact regional and international companies. Enterprises from all fields of biomedicine are invited. Your conceptions concerning research and development are sought-for. Benefit from the possibility to present your strengths to companies. Illustrate your requests to strong partners from industry. During individual discussions you will get into face-to-face contact with representatives from industry.

PROGRAM

9.00 - 9.15		Welcome
Key Note Lecture		
9.15 - 9.45	Dr. Paul Smit Philips Medical Systems	Healthcare - The next frontier
Chemistry/ Pharmaceuticals		
9.45 - 9.52	Univ.-Prof. Dr. Reingard Aigner Department of Radiology	Applications of open radioactive tracers in vivo und in vitro
9.52 - 9.59	Mag. Helmut Schmutz Sciotec Diagnostic Technologies GmbH	Diagnostic Systems and OTC pharmaceuticals for food intolerance/ Histamine Intolerance
9.59 - 10.06	Univ.-Prof. Dr. Johannes Khinast Inst. RNS	Pharmaceutical and biochemical engineering
10.06 - 10.13	Dr. Roland Weis BioCatalytics, Inc	Recombinantly expressed, animal-free, human Cytochrome P450 enzymes including reductase enzymes for profiling of drug metabolites by this
10.13 - 10.20	Dr. Georg Casari Oridis Biomed Forschungs- und Entwicklungs GmbH	Oridis Biomed - The Tissomics™ Company
Molecular Biology/Cell Biology		
10.20 - 10.27	Univ.-Doz. Dr. Dirk Strunk Stem Cell Cluster; Med. Uniklinik, Hämatologie	Stem Cell Research and Stem Cell Technology
10.27 - 10.34	Univ.-Prof. Dr. Igor Knez Universitätsklinik für Chirurgie; Abt. für Herzchirurgie	Acquisition of cardiovascular sample tissues for epigenomic testing for atherosclerotic diseases
10.34 - 10.41	Georg Steiner TissueGnostics GmbH	Automated Tissue Cytometry of single cells analog to Flow Cytometry but for Tissue
10.41 - 11.00	coffee break	
11.00 - 11.07	Prof. Dr. Kurt Zatloukal Institut für Pathologie	Tissue Banks for Biomedical Research and Drug Discovery - Experiences from the Genome Austria Tissue Bank
11.07 - 11.14	Prof. Dr. Sepp Kohlwein Institute of Molecular Biosciences	Lipidomics Research Center Graz
Medical Technology		
11.14 - 11.21	Prof. Dr. Uros Stanic University Clinic of Respiratory and Allergic Diseases	Respiratory and Allergic Diseases
11.21 - 11.28	Peter Göbel Pattern Recognition and Image Processing Group	Optimizing the Patient's Dose in Dental Ortho-Pantomographic X-ray by Noise Modelling and using Wavelet based Reconstruction.
11.28 - 11.35	DI Dr. Franz Graf JOANNEUM RESEARCH Forschungsgesellschaft mbH	Multichannel Recording and Classifying of Respiratory Sounds

11.35 - 11.42	DI Jürgen Fortin CNSystems Medizintechnik GmbH	The strength and core competence of CNSystems is the development of new non-invasive medical products. The Task Force® Monitor is a non-invasive, diagnosis aiding monitoring system
11.42 - 11.49	Dr. Werner Regittnig Medizinische Universitätsklinik	Porous Tissue Contactor - A Novel Indwelling Catheter for Delivery and Sampling of Substances
11.49 - 11.56	Univ.-Prof. Dr. Günter Brenn Institute of Fluid Mechanics and Heat Transfer; Work group "Flow measuring techniques and multiphase flows"	Flow measuring technique for medical diagnostics with body fluids
11.56 - 12.02	Univ.-Prof. Dr. Norbert Leitgeb Institute of Clinical Engineering and of PMG, Medical Devices European Notified Body 0636	Medical devices conformity assessment, risk analysis and marketing approval, technology assessment
Clinical Trials		
12.02 - 12.09	Univ.-Prof. Dr. Harald Mangge Klinisches Institut für Medizinische und Chemische Labordiagnostik	The STYrian Juvenile OBesity Study (STYJOBS)
Information Technology		
12.09 - 12.16	Dr. Wolfgang Krach CAE Simulation & Solutions	Simulation of bone-implant systems to improve implant design using realistic bone modelling
12.16 - 12.23	Ass.-Prof. Dr. Alois Schlögl Institute for Human-Computer Interfaces	BIOSIG - an open source software library for biomedical signal processing
12.23 - 12.30	Dr. Rudolf K. Fruhwirth Neuro Genetic Solutions GmbH	Neuro Genetic Solutions develops software based on neural network technology to find relations in our client's data for analysis, clustering, classification and prediction purposes.
12.30 - 14.00	lunch break	
14.00 - 17.00	bilateral meetings and poster exhibition	
17.00 - 19.00	podium discussion	
19.00	Styrian buffet	

POSTERS

Molecular Biol. / Cell Biology		
Poster 01	Dr. Christian Güllý Zentrum für Medizinische Grundlagenforschung	The core-facility molecular biology is a provider of molecular biology research techniques like full-genome microarrays and mutation analysis
Poster 02	Dr. Jolanta Paltauf-Doburzynska Zentrum für Medizinische Grundlagenforschung	Looking at the structure of cells and tissues - advanced visualisation and detection techniques
Poster 03	Dr. Heimo Strohmaier Zentrum für Medizinische Grundlagenforschung	Infrastructure in terms of lab space and equipment for biomedical research
Poster 04	Dr. Michaela Bayer Universitätsklinik für Blutgruppenserologie und Transfusionsmedizin	Technical Bio-Sciences and Medical Applications
Poster 05	Dr. Hans-Jürgen Gruber Klinisches Institut für Med. Chemische Labordiagnostik	In vitro cell culture atherosclerosis system
Poster 06	Univ.-Doz. Dr. Wilfried Renner Klinisches Institut für Med. Chemische Labordiagnostik	High-throughput genotyping, development of genotyping methods, genetic epidemiology
Poster 07	Univ.-Prof. Dr. Igor Knez Universitätsklinik für Chirurgie; Abt. für Herzchirurgie	Acquisition of cardiovascular sample tissues for epigenomic testing for atherosclerotic diseases
Poster 08	Univ.Prof. Dr. Brigitte Winklhofer-Roob Human Nutrition & Metabolism Research Center	Oxidative Stress Research (OSR) Core Facilities of the HN&MRC Graz
Poster 09	Univ.Prof. Dr. Brigitte Winklhofer-Roob Human Nutrition & Metabolism Research Center	The Human Nutrition & Metabolism Research and Training Center Graz is a University of Graz - based research and training center offering multidisciplinary collaborations for RTD projects with scientists and industry and postgraduate training
Poster 10	Sandra Abad Institut für Molekulare Biotechnologie	Human Protein Production in the Fission Yeast
Poster 11	Udo Schimmel RZPD Deutsches Ressourcenzentrum für Genomforschung GmbH	Service center for genome research
Imaging		
Poster 12	Univ.-Prof. Dr. Rudolf Stollberger Department of Radiology, Experimental MR- Research	Quantitative Magnetic Resonance Techniques
Poster 13	Univ.-Prof. Dr. Horst Bischof Institut für Maschinelles Sehen und Darstellen	Medical Visual Information (Computer Vision and Graphics)

Information Technology		
Poster 14	Sepp Steinlechner Neuro Genetic Solutions GmbH	Neuro Genetic Solutions develops software based on neural network technology to find relations in our client's data for analysis, clustering, classification and prediction purposes.
Poster 15	DI Univ.-Prof. Dr. Andrea Berghold Institut für Medizinische Informatik, Statistik und Dokumentation	Randomizer for Clinical Trials - www.randomizer.at
Poster 16	Dr. Manfred Hartbauer Institut für Zoologie	Multiagent Computersimulations for Biological, Medical and Engeneeing problems
Poster 17	Univ.-Doz. Dr. Marco Wiltgen Institute for Medical Informatics, Statistics and Documentation	Automatic discrimination of melanocytic skin tumors
Poster 18	Univ.-Doz. Dr. Marco Wiltgen Institute for Medical Informatics, Statistics and Documentation	Bioinformatics: Development of software for the analysis of protein interfaces
Medical Technology		
Poster 19	DI Michael Uhl NEUROTH AG	Noise Prevention
Poster 20	DI Jürgen Fortin CNSystems Medizintechnik GmbH	The strength and core competence of CNSystems is the development of new non-invasive medical products. The Task Force® Monitor is a non-invasive, diagnosis aiding monitoring system
Poster 21	Dr. Werner Regittnig Medizinische Universitätsklinik	Novel Glucose-Controlled Insulin Delivery System for the Treatment of Type 1 Diabetes
Clinical Trials		
Poster 22	Univ.-Prof. Dr. Reinhard Möller Institut für Physiologische Chemie	LIPOMETER: Evaluation of individual risk profiles in juvenile obesity by Subcutaneous Adipose Tissue Topography (SAT-Top)
Chemistry / Pharmaceuticals		
Poster 23	Andreas Krcal Univ. Klinik f. Nuklearmedizin, PET-Zentrum, AKH-Wien	Preparation of radiolabelled pharmaceuticals for positron emission tomography (PET)
Poster 24	Frank Sinner BioNanoNet i.G.	An Austrian Network in the Field of Drug Development
Poster 25	Mag. Helmut Schmutz Sciotec Diagnostic Technologies GmbH	Diagnostic Systems and OTC pharmaceuticals for food intolerance/ Histamine Intolerance
Poster 26	Dr. Harald Köfeler Zentrum für Medizinische Grundlagenforschung	Dual use of stable isotope labelled internal standards for quantitation and mass accuracy on FT-MS
Services		
Poster 27	Dr. Ulrich Zacherl Bank für Ärzte und Freie Berufe AG	Bank for the Medical Profession
Poster 28	Mag. Gert Wakonig Science Park Graz GmbH	Business incubator for academic spin-offs

LECTURES

L 02 Austria**Medical University of Graz, Dep. of Radiology**

Participant: Univ.-Prof. Dr. Reingard Aigner

Technology keywords: Medicine, Human Health; Care and Health Services; Biology / Biotechnology; Biochemistry/Biophysics; Cellular and Molecular Biology; Enzymology/Protein Engineering/Fermentation; In vitro Testing, Trials; Microbiology; Molecular design; Toxicology; Bioinformatics

Know-how/ expertise

KHE_AT_9444

Title: Applications of open radioactive tracers in vivo und in vitro

Detailed description: Nuklearmedizinische Diagnostik und Therapie beruht auf der Anwendung radioaktiver Stoffe und repräsentiert ein substantielles Wissensgebiet.

Die Klinische Abteilung für Nuklearmedizin besitzt ein breites Erfahrungspotential in der Entwicklung und Validierung neuer Untersuchungs- und Behandlungstechniken unter Verwendung von radioaktiven Stoffen. Dies setzt per se Erfahrungen in Radiopharmakologie, experimenteller Nuklearmedizin, Strahlenbiologie, Radiotoxikologie und Dosimetrie voraus.

Als Beispiel seien Untersuchungen an Versuchstieren und Zellkulturen mit radioaktiven Indikatoren sowie die Entwicklung neuer radioaktiver Indikatoren, die vergleichende Bewertung etablierter radioaktiver Indikatoren, Untersuchungen zur Wirkung der Strahlung auf lebende Materie (Strahlenbiologie) sowie die Verfahren der analytischen Radiochemie genannt.

Wir suchen: Neue Kooperationen hinsichtlich Konfiguration biochemischer Module – „detect – identify – characterize“ – u.a. diverse Syntheseverfahren und Strukturuntersuchungen.

Insgesamt steht dies unter dem zentralen Motto der Förderung von (1) wissenschaftlicher Erkenntnis, (2) Forschungsschwerpunkten, (3) volksgesundheitlichem Nutzen sowie (4) wechselweisen kommerziellen Nutzeffekten.

Innovative aspects / advantages: Bioverfügbarkeits- und Biodistributions-Untersuchungen diverser "biologischer Indikatoren"

Current state of development of the technology: Already on the market

Intellectual Property Rights: Others (registered design, plant variety right, etc)

Application Domains: Chemical industry; BIOLOGICAL SCIENCES; Medicine, health; Biotechnology; Veterinary; Pharmaceutical/Cosmetics

Comments about market applications: pharmaceutical industry, technical industry, chemical industry, human and veterinary medicine, molecular designing, peptide technology

Collaboration Details: Licence agreement: Technical co-operation: Joint Venture agreement: Commercial agreement with technical assistance: Manufacturing/ subcontracting agreement:

Type of partner sought: industry, academy, research organization

The specific area of activity of the partner: chemistry, pharmacology, pharmaceutical industry, (patho)physiology,

The tasks to be performed of the partner sought: to keep in store, procure, configuration and manufacturing of the carrier

L 03 Austria

Sciotec Diagnostic Technologies GmbH

Participant: Mag. Helmut Schmutz
 Sectors: diagnostics, OTC-pharmaceuticals
 Activities: First Histamine Intolerance Diagnostic kit; First Histamine degrading Products
 Technology keywords: Medicine, Human Health; Biochemistry/Biophysics; Enzymology/Protein Engineering/Fermentation; In vitro Testing, Trials

Technology

T_AT_8552

Title: Diagnostic Systems and OTC pharmaceuticals for food intolerance/ Histamine Intolerance

Detailed description: Request for worldwide distributing partner.
 Request for development/ financial partner for development of pharmaceutical out of existing OTC.

Innovative aspects / advantages: First Histamine Intolerance Test worldwide.
 First Histamine degrading products (capsule, gel) worldwide.

Current state of development of the technology: Already on the market

Intellectual Property Rights: Patent(s) granted
 Austrian Patent granted for diagnostic system and use of enzyme.
 PCT patent pending.

Application Domains: Medicine, health; Biotechnology
 Comments about market applications: Products already successfully entered into EU market. International roll out ongoing.

Collaboration Details: Licence agreement: Commercial agreement with technical assistance:
 Financial resources:

Type of partner sought: Pharmaceutical Industry
 Pharmaceutical Distributor
 Private Equity investor

The specific area of activity of the partner: Worldwide Distribution of Diagnostic Systems
 Worldwide Distribution of OTCs/pharmaceuticals
 Financial Partner for pharmaceutical development

The tasks to be performed of the partner sought: Worldwide distribution
 Co-Development of Pharmaceutical
 Financing of Pharmaceutical Development

L 04 Austria**Graz University of Technology, Inst. RNS**

Participant: Univ.-Prof. Dr. Johannes Khinast
 Technology keywords: Micro- and Nanotechnology related to Biological sciences

■ Know-how/ expertise

KHE_AT_9123

Title: Pharmaceutical and biochemical engineering

Detailed description: The expertise of the presenter are the areas of pharmaceutical and biotechnological process scale up, reactor design, reaction engineering, catalyst development, multi-scale simulation of pharmaceutical processes, particle technology and nano technology such as the efficient and straightforward functionalization of surfaces to make hybrid organic-inorganic materials.

Innovative aspects / advantages: The innovative aspects are the multiscale view of pharmaceutical and biotechnological process design. Instead of scaling processes based on trial and error, our approach allows a fundamental and coherent development of processes by providing a predictive understanding of the phenomena on the microscale.

Current state of development of the technology: Available for demonstration – field tested

Intellectual Property Rights: Others (registered design, plant variety right, etc)

Application Domains: Chemical industry; Biotechnology; Pharmaceutical/Cosmetics

Collaboration Details: Manufacturing/ subcontracting agreement: Financial resources:

Type of partner sought: Industry

The specific area of activity of the partner: Pharmaceutics, cosmetics, biotechnology, nutraceuticals, agrochemical product suppliers

L 05 Austria**BioCatalytics, Inc**

Participant: Dr. Roland Weis
 Sectors: Molecular Biotechnology, Organic Chemistry
 Activities: Human Cytochromes for Metabolite Production, Biocatalytic Production of Pharmaceutical intermediates
 Technology keywords: Biology / Biotechnology; Cellular and Molecular Biology; Enzymology/Protein Engineering/Fermentation; Genetic Engineering; In vitro Testing, Trials; Toxicology

■ Technology Offer

TO_AT_9365

Title: Recombinantly expressed, animal-free, human Cytochrome P450 enzymes including reductase enzymes for profiling of drug metabolites by this

Detailed description: All 6 major human liver cytochrome P450 enzymes are deliverable as easy, ready-

to-use screening kits, thereby representing the first synthetic human liver method to screen for drug metabolization as it might happen in the human liver. Only water and the drug to be metabolized need to be added. Using human cytochrome biocatalysts as synthetic tools, human drug metabolites can be produced in a single step in just one day. BioCatalytics also offers the following services:
 Custom Metabolite Production: For the rapid production of drug metabolites on the milligram to multi-gram scale.
 Screening Services for the rapid identification of the human cytochromes involved in metabolism of a specific drug.
 Process Development of biocatalytic processes to produce drugs, key intermediates, or metabolites.

Innovative aspects / advantages:

Cytochromes of human origin are expensive and not readily available in sufficient quantities.
 Animal liver extracts are used (rats, dogs) to approximate the human liver, but do not accurately predict the effects of drug metabolites—the actual human liver cytochromes are still needed.
 Synthesis is often difficult and can require many steps, leading to low overall yields resulting in a high cost in time and materials.

Current state of development of the technology:

Already on the market

Intellectual Property Rights:

Patent(s) granted

Although patents are granted, there are no restrictions for the use of the human cytochrome P450 biocatalysts. The price for these unique biocatalysts includes the exclusive rights to do research as well as industrial conversions without the need to license.

Application Domains:

Chemical industry; BIOLOGICAL SCIENCES; Medicine, health; Pharmaceutical/Cosmetics

Comments about market applications:

A large number of potential drug candidates fail in later stages of drug development because they are readily degraded or since they interfere with the metabolism of other therapeutics by human cytochrome P450 (CYP) isozymes. An early assessment of drug/drug interactions and isozyme-specific CYP450 induction or inhibition is an essential part of the modern drug discovery process.

Type of partner sought:

Industrial as well as academic partners are invited to take profit of our technology. Moreover, innovative solutions could be found together.

The specific area of activity of the partner:

Pharmaceutical and general medical research, biocatalysis

The tasks to be performed of the partner sought:

Take advantage of BioCatalytics' technology and products, and in turn provide us with current or potential problems or bottlenecks, so that we can find solutions.

L 06 Austria**ofi Austrian Research Institute for Chemistry and Technology**

Participant:	Beatrix Wepner
Sectors:	Medical Devices, Applied Plastics Technology (Packaging, Pipes, Processing, Insulation Material), Surface Technology (Paints & Varnishes, Adhesives,..) Building & Construction Eco-Technology
Activities:	Technical Consulting, Material Testing and Characterisation, Research and Development, Expertise and Damage Assessment, Quality Assurance
Technology keywords:	Medicine, Human Health; Care and Health Services; Microbiology; Toxicology

Know-how/ expertise

KHE_AT_9770

Title:	ofi Austrian Research Institute for Chemistry and Technology
Detailed description:	<p>The department for medical and pharmaceutical products specialises in non-active medical products as well as in the packaging of medical and pharmaceutical products.</p> <p>The centre of our activity is the safety and quality of products and materials. Therefore, our clients comprise manufacturers as well as users.</p> <p>We offer:</p> <ul style="list-style-type: none"> - Analysis of chemical, physical, microbiological and toxicological properties of materials and products - Support with hygiene problems such as specific contamination, micro-organisms and disinfectant residues - Acceptance of current or periodic routine inspection responsibilities - Advice on questions of material processing and interconnections between product and packaging material as well as questions of material resistance in connection with sterilisation and employment of chemicals - Assessment according to national and international standards of conformity - Individual systems of quality assurance - Optimisation of products and processes (e.g. biocide material) - Method development and validation - Expert's opinions and damage assessments of packaging materials, packages and medical products
Innovative aspects / advantages:	<p>ofi (Austrian Research Institute for Chemistry and Technology) is one of the largest Austrian institutes for testing and research. Our customers are European companies from various economic sectors. ofi is a service enterprise for European industry in regard to applied research. Primarily, practical problems are tackled in close cooperation with companies and universities aimed at the development of new or improved products, methods and services. Thereby, the synergy between the customer's technology and our experience in R & D leads to optimal solutions.</p> <p>Our interdisciplinary approach leads to results that are directly applicable by our clients.</p> <p>ofi Technologie & Innovation GmbH is accredited as a testing centre according to ISO 17025 for more than 800 testing methods in various areas.</p>
Intellectual Property Rights:	Others (registered design, plant variety right, etc) various research topics, applied research in cooperation with companies
Application Domains:	Materials technology; Chemical industry; Automation/Robotics; INFORMATION TECHNOLOGY; Information processing, information systems; BIOLOGICAL SCIENCES; Medicine, health; Biotechnology; Veterinary; Pharmaceutical/Cosmetics
Comments about market applications:	Our customers are European companies from various economic sectors. ofi is a service enterprise for European industry in regard to applied research. Primarily,

practical problems are tackled in close cooperation with companies and universities aimed at the development of new or improved products, methods and services. Thereby, the synergy between the customer's technology and our experience in R & D leads to optimal solutions.

Our interdisciplinary approach leads to results that are directly applicable by our clients.

Research topics are for example:

- Development of biozide material
- Interaction between packaging material and pharmaceutical products

Collaboration Details: Technical co-operation:

Type of partner sought: Industry

The specific area of activity of the partner: Production of Medical devices

The tasks to be performed of the partner sought: Production

L07 Austria

Medical University of Graz, StemCellCluster, Dep. of Int. Med, Division of Hematology

Participant: Univ.-Doz. Dr. Dirk Strunk

Sectors: Stem Cell Research; Stem Cell Technology; Stem Cell Transplantation

Technology keywords: Medicine, Human Health; Cellular and Molecular Biology

Know-how/ expertise

KHE_AT_8353

Title: Stem Cell Research and Stem Cell Technology

Detailed description: Regenerative Stem cell (SC) therapy describes a new treatment modality aiming to revert organ dysfunction after ischemic, metabolic, or perhaps also toxic organ damage as well as immune regulation. Common target disease entities among others include acute myocardial infarction and chronic ischemic heart failure, as well as limb ischemia and, for additional types of progenitors and stem cells, liver damage and stroke. Treatment objectives are improved perfusion of ischemic areas and tissue repair, eventually leading to restoration of damaged organ function. The mechanisms underlying SC mediated tissue regeneration are not clear.

Blood and BONE MARROW (BM) are attractive easily accessible sources of SC for regenerative SCT. Both cell sources harbor various populations of candidate regenerative cells including hematopoietic progenitor cells (HPC)⁴ and hematopoietic SC, endothelial precursor cells (EPC), mesenchymal stem cells (MSC) and multipotent adult progenitor cells (MAPC). Contradictory findings regarding the regenerative potency of these cells are considered to be, at least in part, due to the heterogeneity of SC present in different sources and preparations. So far, neither the ideal source and type of SC nor the critical cell number and mode of application could be defined. Blood and BM transplants contain various types of attractive SC and are therefore considered to qualify as good sources of cells for regenerative SCT from a semantic point of view. However, concerns exist regarding limited efficiency of the only minute numbers of SC in small sample volumes of non-enriched blood and BM that can be applied locally (e.g., intra-

myocardial) and the unequivocal risk of artificial foreign tissue differentiation derived from local BM stroma cell injections. Systemic application of larger volumes of BM-MNC results in an immediate dilution of SC within the blood circulation. Cytokine mediated SC mobilization harbors the principle risk to trigger unwanted tumor vasculogenesis due to a systemic rise in progenitor and SC concentration. One established way to circumvent this dilemma is positive selection to concentrate SC for local application. CD34 and CD133 isolations have in common that they obviously deplete all cells which do not react with the selected marker molecule.

We have therefore developed a technology for the simultaneous enrichment of all so far known types of SC in blood and BM termed Lin-depletion to create SC products for clinical regenerative SCT which are enriched for CD34+ and CD34- SC without the risk of undersigned SC depletion. In a pre-clinical pilot study, Lin-depletion resulted in up to a 50-fold enrichment of CD34+ and CD34- SC with a potential for hematopoietic, endothelial and mesenchymal differentiation. In an NOD/SCID mouse model these SC preparations were found enriched for liver regenerating cells in the murine hepatic microenvironment (3/3 mice) indicating enrichment of regenerative cells by Lin-depletion.

Literatur:

Rohde E, Lanzer G, Linkesch W, Strunk D. Immunophenotypic analysis and preclinical GMP-grade production of human lineage-negative cells for regenerative stem cell therapy. *Blood*. 2003;102:463A.

Strunk D, Rohde E, Lanzer G, Linkesch W. Phenotypic characterization and preclinical production of human lineage-negative cells for regenerative stem cell therapy. *Transfusion*. 2005;45:315-326.

Strunk, D. Experimental Regenerative Stem Cell Therapy. *WMW Skriptum* 04/2005:19-21

Strunk, D. Embryonale Stammzellen. *Universum Innere Medizin* 05/2005:37-38

Rohde E, Malischnik C, Thaler D, Maierhofer T, Linkesch W, Lanzer G, Guelly C, Strunk D. Blood monocytes mimic endothelial progenitor cells. *Stem Cells* (2005 ; in press)

Innovative aspects / advantages:

The newly developed Lin-depletion technology under GMP conditions offers an alternative to CD34 and CD133 selections as a new universal SC enrichment tool that preserves CD34- or CD133- cells for regenerative therapies. Acquired technology and IPRs will built the basis to establish a competitive Stem Ce3ll Research and Development Institution in association with the Medical University of Graz.

Current state of development of the technology:

Development phase – laboratory tested

GMP tested

Intellectual Property Rights:

Patent(s) applied for
2 additional Patents in preparation; requests for research on demand filed

Application Domains:

Medicine, health

Collaboration Details:

Licence agreement: Financial resources:

Type of partner sought:

industry

The specific area of activity of the partner:

venture capitalist

The tasks to be performed of the partner sought:

support

L 08 Austria**Klinische Abteilung für Herzchirurgie,
Chirurgische Universitätsklinik, MUG**

Participant: Univ.Prof. Dr. Igor Knez

Sectors: Cardiovascular Surgery, biotechnology. Epigenomics

Technology keywords: Medicine, Human Health; Biostatistics, Epidemiology; Biology / Biotechnology; In vitro Testing, Trials; Genom Research; Bioinformatics; Gene Expression, Proteom Research; Population genetics; Micro- and Nanotechnology related to Biological sciences

Technology Request

TR_AT_9822

Title: Acquisition of cardiovascular sample tissues for epigenomic testing for atherosclerotic diseases

Detailed description: Wanted:
New partner in biotechnology for genomic testing and statistical evaluation of different cardiovascular diseases.

Current state of development of the technology: Development phase – laboratory tested

Intellectual Property Rights: Others (registered design, plant variety right, etc)

Application Domains: Biotechnology

Collaboration Details: Technical co-operation: Joint Venture agreement: Manufacturing/
subcontracting agreement: Financial resources:

Type of partner sought: industry, research organisation

L 09 Austria**TissueGnostics GmbH**

Participant: Georg Steiner

Sectors: Microscopy Image Processing Development & Antibody Production

Activities: Production of fully automatique microscopes & staining kits to analyse cells in tissue

Technology keywords: Medicine, Human Health; In vitro Testing, Trials; Bioinformatics; Micro- and Nanotechnology related to Biological sciences

Know-how/ expertise

KHE_AT_9713

Title: Automated Tissue Cytometry of single cells analog to Flow Cytometry but for Tissue

Detailed description: TG is an expert in software development, microscopy and antibody production. TG would like to work together in the field of antibody purification and conjugation, staining kit development, identification of Markers and microscopy. We offer expert knowledge in the field of Software development (image processing, GUI, hardware interaction, automation). We offer antibody production and testing.

Innovative aspects / advantages:	first TissueFAXS worldwide
Current state of development of the technology:	Already on the market
Intellectual Property Rights:	Patent(s) granted
Application Domains: Comments about market applications:	Automation/Robotics; Biotechnology Customers are clinicians in the field of Dermatology, Urology, Pathology and the pharmaceutical industry
Collaboration Details:	Licence agreement: Technical co-operation: Commercial agreement with technical assistance: Manufacturing/ subcontracting agreement:

L 11 Austria

Lipidomics Research Center Graz, Institute of Molecular Biosciences, University of Graz

Participant:	Prof. Dr. Sepp Kohlwein
Technology keywords:	Medicine, Human Health; Biostatistics, Epidemiology; Biochemistry/Biophysics; Cellular and Molecular Biology; Enzymology/Protein Engineering/Fermentation; Microbiology; Genom Research; Bioinformatics; Gene Expression, Proteom Research; Micro- and Nanotechnology related to Biological sciences

Know-how/ expertise

KHE_AT_9884

Title: Lipidomics Research Center Graz

Detailed description: The Lipidomics Research Center (LRC) Graz aims at integrating, focussing and promoting competitive Lipidomics research carried out at University of Graz, Medical University of Graz, Graz University of Technology, Joanneum Research and the Austrian Academy of Sciences. The field of Metabolomics, and Lipidomics in particular, is on the verge of a precipitous development due to the fact that techniques from Genomics and Proteomics can now be applied to these fields as well. Lipid research in Graz is characterized by the integration of wide range of technologies, including chemistry, biochemistry, biophysics, molecular and cell biology, clinical research, genomics and proteomics, and bioinformatics. A major goal of LRC is to develop strategies for concerted technology and infrastructure development.

LRC Graz is a node in the European Lipidomics Initiative (<http://www.lipidomics.net>), which also connects to the US-based LIPID-MAPS (a 35 Mio\$ research program), and a similar initiative in Japan.

Innovative aspects / advantages: Lipid-associated disorders are a major health problem in industrialized countries. The integration of various disciplines focussing on lipid research, as represented in the LRC Graz, provides an excellent platform for competitive research in the emerging field of lipidomics. LRC Graz aims at focused method and infrastructure development, advanced education and training, national and international networking and project applications, as a competent partner for industry and public information.

Current state of development of the technology: Development phase – laboratory tested

Intellectual Property Rights:	Others (registered design, plant variety right, etc)
Application Domains:	BIOLOGICAL SCIENCES; Medicine, health
Collaboration Details:	Technical co-operation:
Type of partner sought:	industry, academy
The specific area of activity of the partner:	technology development - lipid analytics specific scientific problems related to lipid metabolism and lipid-associated disorders
The tasks to be performed of the partner sought:	definition of lipid-relevant problems in biomedicine

L 12 Austria**Medical University of Graz, Department of Paediatrics and Adolescence Medicine, Division of Neonatology**

Participant:	Univ.-Prof. Dr. Berndt Urlesberger
Technology keywords:	Medicine, Human Health

Know-how/ expertise

KHE_AT_8437

Title:	Nearinfrared Spectroscopy is a noninvasive technique for measuring changes in oxygenation and perfusion of a certain tissue or body compound, using the relative transparency of tissues to light in the near infrared (700-900nm)
Detailed description:	<p>1.) Reduced forearm blood flow in children and adolescents with type I diabetes mellitus.</p> <p>AIM: The aim of this study was to measure forearm blood flow (FBF) to detect any possible changes that might indicate vascular disorders in children and adolescents with type I diabetes mellitus (DM). METHODS: FBF was measured by near infrared spectroscopy (NIRS), venous occlusion at rest, and after handgrip exercise. 40 children and adolescents with type I DM and 40 healthy children and adolescents (6-18 years) were matched for age and sex for comparison. RESULTS: In the diabetic group (age: 12.79±2.9 years, duration of diabetes: 51.5±36 months) FBF at rest was significantly lower (1.39±0.76 ml/100g muscle/minute) than in controls (age: 12.66±2.9 years; FBF at rest 1.90±1.20 ml/100g muscle/minute). After exercise, FBF increased significantly less in the diabetic group (0.70±0.82 ml/100g muscle/minute) compared to controls (1.15±1.05 ml/100g muscle/minute). CONCLUSION: FBF at rest decreased with increasing age in both groups. The change of FBF after exercise was independent of age in the diabetic group, and increased with increasing age in controls. FBF is reduced with impaired hyperaemic response after exercise in children and adolescents with type I DM. These data suggest vascular disorders in childhood that are detectable non-invasively by NIRS.</p> <p>2.) Age dependent changes of the peripheral oxygenation in healthy term neonates</p> <p>AIM: Aim of the present study was to analyse the influence of postnatal age on peripheral oxygenation in healthy term neonates during the first week of life. METHODS: Peripheral oxygenation was measured by means of near infrared spectroscopy (NIRS) in combination with the venous occlusion method. Measurements were performed by placing the NIRS optodes on the left forearm. Venous occlusions were obtained by a pneumatic cuff around the left upper arm.</p>

Central and peripheral temperatures were measured continuously, as well as by means of pulse oximetry heart rate and peripheral arterial oxygen saturation were measured continuously. Arterial blood pressure was measured before and after venous occlusions. Oxygen delivery (DO₂), oxygen consumption (VO₂), fractional oxygen extraction (FOE), and tissue oxygenation index (TOI) were analysed and compared to postnatal age. RESULTS: 131 measurements were performed in 90 term neonates. Gestational age was 39,5±1,1 weeks, birth weight 3364±435 g, and postnatal age 46±33 hours. Peripheral arterial oxygen saturation was 96,3±1,8 %, heart rate 114±11 /minute, mean arterial blood pressure 54,4±6,8 mmHg, central temperature 37±0,3 degree Celsius, and peripheral temperature 34,3±1 degree Celsius. DO₂ was 140±74 µmol/100ml/minute, VO₂ 46±23 µmol/100ml/minute, FOE 0,34±0,11 and TOI 65±6. DO₂ was independent of age. VO₂ and FOE increased with increasing age, whereas TOI decreased with increasing age. CONCLUSION: The present study in term neonates demonstrated changes in peripheral oxygenation in healthy term neonates during the first week of life. Reason for this observation seems to be changes in the peripheral muscular oxygen consumption. OFFERED: Know how and expertise in use with new noninvasive technology (tissue oximetry) REQUESTED: Technical help in automation of the whole measurement process. After initial preparations of nurse, the whole measurement could be done automatically, if all components would be fixed together. Processing steps: 1) measurement of blood pressure, 2) Inflation of cuff above diastolic pressure, 3) Measurement of NIRS curve, 4) Comparison to standard curve, 5) Deflation of cuff, 6) print of measurement result.

Innovative aspects / advantages:

New technology, new concept in management of diabetes (patient numbers with diabetes will increase in future)

Current state of development of the technology:

Available for demonstration – field tested

Intellectual Property Rights:

Others (registered design, plant variety right, etc)

Application Domains:

Automation/Robotics; Information processing, information systems; Medicine, health

Collaboration Details:

Technical co-operation:

Type of partner sought:

industry, research organisation

The tasks to be performed of the partner sought:

Automation of techniques applied, expertise in processing, knowledge in development of medical diagnostic tools.

L 13 Austria

Vienna University of Technology/Fachhochschule fh-campuswien

Participant:

Peter Göbel

Sectors:

Pattern Recognition and Image Processing

Activities:

Noise Estimation and Reconstruction of Dental Panoramic X-ray

Technology keywords:

Medicine, Human Health; Care and Health Services

Know-how/ expertise

KHE_AT_9755

Title:	Optimizing the Patient's Dose in Dental Ortho-Pantomographic X-ray by Noise Modelling and using Wavelet based Reconstruction.
Detailed description:	<p>The reduction of the x-ray dose that offers higher safety for the patient reduces diagnostic image quality. Recently, we have shown appropriate methods for the auto computation of the noise-estimate [1] and for the reconstruction [2] of dental panoramic images. The noise-estimate is calculated by a semi-empirical scatter-glare model of the photon projection-process and a wavelet based method for the subtraction of the energy of the noise-estimate from the energy of the panoramic image.</p> <ol style="list-style-type: none"> 1. P. M. GOEBEL, A. N. BELBACHIR, M. TRUPPE, "Noise Estimation in Panoramic X-ray Images: An Application Approach," IEEE Workshop on Statistic Signal Processing, SSP05, July, 17-20, Bordeaux, France, (2005). 2. P. M. GOEBEL, A. N. BELBACHIR, M. TRUPPE, "Background Removal in Dental Panoramic X-ray Images by the À Trous Multiresolution Transform," IEEE 17th European Conference on Circuit Theory and Design, ECCTD05, 29. August–1. September, Cork, Ireland, (2005).
Innovative aspects / advantages:	<p>The enhanced image processing method as a combination of the results from a Monte Carlo photon scatter simulation and a wavelet subtraction enables the reduction of the dose for a factor of at least 4 up to 8, depending on the tube parameters.</p> <p>The analysis of the reconstruction results stemming from the processing of a database of 50 orthopantomographic images shows excellent improvement of contrast and detectability of diagnostic detail at reduced noise level.</p>
Current state of development of the technology:	<p>Other (please specify)</p> <p>Laboratory tested, currently planning a clinical study.</p>
Intellectual Property Rights:	Exclusive rights
Application Domains:	Automation/Robotics; Information processing, information systems; Medicine, health
Collaboration Details:	<p>Technical co-operation: Commercial agreement with technical assistance:</p> <p>Manufacturing/ subcontracting agreement:</p>
Type of partner sought:	academy or research organisation

L 14 Austria

JOANNEUM RESEARCH Forschungsgesellschaft mbH

Participant:	DI Dr. Franz Graf
Technology keywords:	Medicine, Human Health; Bioinformatics

Know-how/ expertise

KHE_AT_9826

Title:	Multichannel Recording and Classifying of Respiratory Sounds
Detailed description:	A recent research project run jointly by Joanneum Research Graz and the Pulmonary Day Care Center at the LKH-Graz-West hospital in Graz, Austria intended to develop a system similar to a medical expert system to help the general

	practitioner or specialist diagnose lung diseases quickly and clearly. The objective of the research project was to lay the foundation for the system by developing new sensors and the recording software as well as to do extensive physicals.
Innovative aspects / advantages:	Auscultation of the lungs with a stethoscope is an important and simple diagnostic method. It gives direct information about the structure (and function) of lung tissue that cannot be gathered by any other simple and non-invasive method. Changes in the quality of lung sounds are often directly correlated to pathological changes in the lungs. Particularly in practical medicine, auscultation is very important and considered a standard method of diagnosing and monitoring pulmonary diseases alongside lung function testing and chest x-rays. The multiplicity of lung sounds that can be observed makes it difficult even for a physician to arrive at a definite diagnosis.
Current state of development of the technology:	Development phase – laboratory tested
Intellectual Property Rights:	Others (registered design, plant variety right, etc)
Application Domains:	Information processing, information systems; Medicine, health
Collaboration Details:	Technical co-operation: Commercial agreement with technical assistance:
Type of partner sought:	industry, research organisation
The specific area of activity of the partner:	lung function diagnostics

L 15 Austria

CNSystems Medizintechnik GmbH

Participant:	DI Jürgen Fortin
Sectors:	medical technology
Activities:	development of new non-invasive medical products
Technology keywords:	Medicine, Human Health; Care and Health Services

Technology

T_AT_9782

Title:	The strength and core competence of CNSystems is the development of new non-invasive medical products. The Task Force® Monitor is a non-invasive, diagnosis aiding monitoring system
Detailed description:	The Task Force® Monitor is a non-invasive, diagnosis aiding monitoring system that records all relevant haemodynamic parameters, including heart rate (HR), stroke volume (SV), cardiac output (CO), blood pressure (BP), total peripheral resistance (TPRI), baroreceptor reflex sensitivity (BRRS), vagal and sympathetic tone etc., without discomfort for the patient. All parameters are recorded in real time and beat-to-beat and are displayed both as signals and numeric values. The system combines four measuring methods: * continuous (beat-to-beat) blood pressure measurement

- * impedance cardiography (for SV and CO measurement)
- * high resolution 3-channel-ECG display (6-channel display)
- * oscillometric blood pressure measurement

Innovative aspects / advantages:

- * continuous (beat-to-beat) blood pressure measurement
- * impedance cardiography (for SV and CO measurement)
- * high resolution 3-channel-ECG display (6-channel display)
- * oscillometric blood pressure measurement

Current state of development of the technology:

Already on the market

Intellectual Property Rights:

Patent(s) granted

Application Domains:

Automation/Robotics; INFORMATION TECHNOLOGY; Information processing, information systems; Medicine, health

Collaboration Details:

Technical co-operation: Joint Venture agreement:

Type of partner sought:

research organisation

L 16 Austria**Medical University of Graz, Department of of Internal Medicine, Diabetes and Metabolism**

Participant:

Dr. Werner Regittnig

Technology keywords:

Medicine, Human Health

Technology

T_AT_9339

Title:

Porous Tissue Contactor - A Novel Indwelling Catheter for Delivery and Sampling of Substances

Detailed description:

Known microdialysis, microperfusion, and ultrafiltration catheters are capable of both delivering therapeutic substances to, and sampling endogenous substances from, an interior body region. Unfortunately, the relatively large size and/or fragile nature of these catheters, make it difficult to insert them into the tissue. For this reason the self-insertion of the catheters by the patient is not possible.

The present invention, named Porous Tissue Contactor (PTC), is an indwelling catheter that can simultaneously sample and deliver substances to a body tissue, is amenable to miniaturization and low-cost mass-production, and has sufficient rigidity so that it can be easily positioned and operated by a patient.

The principal component of the PTC is a material that has a porous structure (e.g.: porous rod or porous tube made out of polyethylene). The PTC is placed into a selected tissue region in the way that the surface of the porous material is enclosed by this tissue region. Based upon the creation of a pressure differential by an external pumping system, fluid can then be drawn from the reservoir outside the body, into the inlet conduit, through the porous material, through the outlet conduit, and into a collector outside the body. During perfusion of the porous material, diffusional exchange (i.e., cross-diffusion) occurs between the perfusion fluid and the tissue fluid surrounding the porous material (e.g., interstitial fluid, blood, lymph, cerebro-spinal fluid, etc.), thereby allowing substances to be

	recovered from and/or to be administered to a body tissue.
Innovative aspects / advantages:	<ul style="list-style-type: none"> - High substance exchange efficiency - High rigidity - Small size - Self-insertion by the patient - Low-cost production
Current state of development of the technology:	Development phase – laboratory tested
Intellectual Property Rights:	Patent(s) applied for filed under the Patent Cooperation Treaty
Application Domains: Comments about market applications:	<p>Materials technology; Medicine, health</p> <p>A) Medical research field: The PTC can be used to investigate the organ and tissue metabolism in animals and humans</p> <p>B) Diabetes Therapy: The PTC can be used by type 1 diabetic patients both to deliver insulin to the subcutaneous tissue and to simultaneously sample subcutaneous interstitial fluid for the frequent or continuous measurement of glucose. Thus, the potential market of the PTC seems to be comparable to the market of insulin infusion sets. The annual worldwide insulin infusion set market is approximately 360 million dollar.</p>
Collaboration Details:	Technical co-operation: Joint Venture agreement:
Type of partner sought:	industrial
The specific area of activity of the partner:	The partner may be a manufacturer of porous materials (e.g.: porous plastics, porous metals, porous ceramics) and/or manufacturer of indwelling catheters
The tasks to be performed of the partner sought:	The partner should provide support in the manufacturing of the catheter

L 17 Austria**TU Graz, Institute of Fluid Mechanics and Heat Transfer**

Participant:

Univ.-Prof. Dr. Günter Brenn

Technology keywords:

Biochemistry/Biophysics; In vitro Testing, Trials

Technology Offer

TO_AT_9642

Title:

Flow measuring technique for medical diagnostics with body fluids

Detailed description:

Various diseases of humans induce or are accompanied by changes of properties of viscoelastic body fluids, such as, e.g., the synovial liquid in synovial joint problems. Another such disease is familial dysautonomia, a disease of the autonomous nervous system, which is accompanied by a change in the activities of the salivary glands. This has consequences for the composition of the saliva, another important viscoelastic body fluid. A simple flow measuring technique is presented and offered, which allows the viscoelasticity of these fluids to be characterised by the value of a relaxation time in elongational flow. The contribution and technology offer of the present group presents the measuring technology. Two applications of the technique, which may be useful for diagnostics, are demonstrated.

Innovative aspects / advantages:	The technology presented is a simple flow measuring technique with standard and cheap components. It provides insight into mechanically relevant properties of the fluids, from which diagnostic conclusions may immediately be drawn.
Current state of development of the technology:	Other (please specify) Tested with patients in familial dysautonomia
Intellectual Property Rights:	Others (registered design, plant variety right, etc) The technique is state-of-the-art, but not applied for medical purposes at present. So patenting is not possible. No patents are applied for.
Application Domains: Comments about market applications:	Materials technology The technology enables a characterization of viscoelastic body fluids and pharmaceutical products for their replacement. The characterisation is useful, e.g. for the purpose of diagnostics of the body fluids and for an optimization of the pharmaceuticals and is therefore relevant for medical diagnostics and treatment and for a part of the pharmaceutical market.
Collaboration Details:	Technical co-operation: Manufacturing/ subcontracting agreement:
Type of partner sought:	Academy (for research and development), industry (for technical cooperation and/or manufacturing agreement)
The specific area of activity of the partner:	Measuring techniques, medical diagnostics
The tasks to be performed of the partner sought:	Research on other fields of application of the device (academy), development of the measuring equipment for series production (industry)

L 18 Austria**TU Graz, Institute of Clinical Engineering and of PMG
Medical Devices European Notified Body 0636**

Participant:	Univ.-Prof. Dr. Norbert Leitgeb
Technology keywords:	Medicine, Human Health; Care and Health Services

Know-how/ expertise

KHE_AT_9788

Title:	Medical devices conformity assessment, risk analysis and marketing approval, technology assessment
Detailed description:	Offered is the full scope of assistance in regard to CE- testing., market approval and technology assessment. This comprises design evaluation, conformity testing, risk management evaluation (including risk analysis) to assist manufacturers in bringing medical products (medical devices and medical software) on the market. Besides this, device certification for approval to the European market is offered including EC quality verification and EC Type examination according to the European Medical Device Directive annex IV and III, respectively.
Innovative aspects / advantages:	High-level expertise of a testing and certification institute notified by the European Commission and entitled to test and certify according to the European Medical Device Directive. High problem-solving capacity due to great experience and

know-how in combination with the various possibilities offered by the close connection to other disciplines established at a high-level technical university. Short communication ways, problem.- and customer-oriented cooperation.

Current state of development of the technology:

Other (please specify)
European medical device test house with high reputation and expertise

Intellectual Property Rights:

Others (registered design, plant variety right, etc)
European medical device test house with high reputation and expertise.

Application Domains:

Materials technology; Automation/Robotics; Information processing, information systems; Medicine, health

Comments about market applications:

Target group comprises any designer/manufacturer that intends to bring medical products on the European market (= to make it available for the intended use)

Collaboration Details:

Technical co-operation: Commercial agreement with technical assistance:

Type of partner sought:

Any designer/manufacturer that intends to bring medical products on the European market (= to make it available for the intended use)

The specific area of activity of the partner:

Any designer/manufacturer that intends to bring medical products on the European market (= to make it available for the intended use)

The tasks to be performed of the partner sought:

Expertise and service is offered to the partners.

L 19 Austria

Medical University of Graz, Clinical Institute of Medical and Chemical Laboratory Diagnostics

Participant: Univ.-Prof. Dr. Harald Mangge

Know-how/ expertise

KHE_AT_8331

Title: The STYrian Juvenile OBesity Study (STYJOBS)

Detailed description: Harald Mangge, Karine Sargsyan, Stefan Pilz, #Renate Horejsi, #Reinhard Möller, Roumiana Dimitrova, Gisela Weihrauch, Gunter Almer, Hubert Scharnagl, Tatiana Stojakovic, +Martin Borkenstein, Winfried März

Clinical Institute for Medical and Chemical Laboratory Diagnosis, #Institute for Medical Chemistry, +Department of Pediatrics, Medical University of Graz, Austria.

Background: Obesity is dramatically increasing in the Western world, whereby juveniles are affected in particular. Atherosclerosis, a major consequence of obesity, starts early in life and results in cardiovascular disease and stroke, the main causes of mortality in industrialized countries. A prominent role of inflammation in atherosclerosis has been proposed. In contrast to adults, little information exists concerning immune-mediated inflammation, early vascular alteration, dyslipidemia, oxidative stress, genetic predisposition and incipient metabolic syndrome in juvenile obesity.

The STYrian Juvenile OBesity Study (STYJOBS) is a prospective study to improve the understanding of atherosclerosis and metabolic changes in obesity by

investigation of the “non-biased” early phase. Based on this information new strategies for early and effective intervention will be developed. Aims are as follows:

- Identification of “individual high risk patterns” by linking biomarkers, adipose tissue topography, life style habits, and carotis sonography (STYJOBS-Databank)
- Early intervention based on individual high risk patterns (STYJOBS-Intervention)
- Setup of a serum/plasma/DNA resource of obese kids and their parents for advanced research, especially molecular genetics, in juvenile obesity (STYJOBS-Biobanking).

So far we investigated 240 obese juveniles (age 13.1 + 4.3 years) and 215 normal weight, age matched healthy controls. We plan to enroll 500 obese juveniles and 500 age-matched controls. Currently, than 148 variables per study participant are available.

METHODS. Routine lab data (e.g. orale glucose tolerance test), biomarkers (ELISA, Luminex® Multiplex ELISA, HPLC), carotis sonography (carotis communis arteries, CCA: intima-media thickness, IMT, and diameter), and adipose tissue topography (Lipometer, EU patent EP 0516251).

RESULTS. Obese juveniles exhibit an increased IMT of CCA accompanied by a low grade inflammation. Furthermore, they exhibit dramatically reduced leptin sensitivity, and the IMT is significantly negatively correlated with adiponectin serum levels. Adiponectin correlates better with subcutaneous adipose tissue distribution than with percentage body fat. Dyslipidemia (decreased HDL-fractions and increased triglycerides, VLDL and free fatty acids) is associated with symptoms of oxidative stress as detected by increased lipid peroxidation, incipient type II diabetes, NASH and increased systolic blood pressure.

Prospects. At the early age of approx. 13 years obese juveniles are yet afflicted with preatherosclerosis and metabolic syndrome. Strategies for effective intervention are urgently needed.

Intellectual Property Rights:

Others (registered design, plant variety right, etc)

L 20 Austria

CAE Simulation & Solutions

Participant:

Dr. Wolfgang Krach

Sectors:

simulation implant development

Activities:

realistic bone modeling

Technology keywords:

Medicine, Human Health; Biology / Biotechnology

Technology Offer

TO_AT_9786

Title:

Simulation of bone-implant systems to improve implant design using realistic bone modeling

Detailed description:

We offer implant development using advanced finite element models to simulate the bone and implant behaviour in vivo. We do have preprepared models of femora, vertebrae, mandibula, ...

The specific feature is the realistic modeling of the human bone tissue using patientspecific inhomogenous and orthotropic material properties. This allows a realistic modeling of the bone tissue and accordingly realistic behaviour of implants.

The models use CT or MR based geometry and material distribution.

	flow simulation within arteries and venes; stent improvement
Innovative aspects / advantages:	orthotropic material proerties; CT based modeling
Current state of development of the technology:	Available for demonstration – field tested
Intellectual Property Rights:	Copyright protected
Application Domains:	Biotechnology
Collaboration Details:	Technical co-operation:
Type of partner sought:	industry, academy
The specific area of activity of the partner:	implant development
The tasks to be performed of the partner sought:	specify the goals for new implant designsstate clinical limitations within design development

L 21 Austria

University of Technology Graz, Institute for Human-Computer Interfaces

Participant:	Ass.-Prof. Dr. Alois Schlögl
Sectors:	EEG, neuroscience, medical informatics,
Technology keywords:	Medicine, Human Health; Biostatistics, Epidemiology; Care and Health Services

Know-how/ expertise

KHE_AT_9091

Title:	BIOSIG - an open source software library for biomedical signal processing
Detailed description:	Biomedical signals are used in several application areas (neurology, cardiology, psychiatry, pulmology, etc). BioSig is an Open Source Software library for processing of biomedical signals (e.g. EEG, ECG and others). BioSig provides a collaboration platform in the field of biomedical signal processing.
Innovative aspects / advantages:	<ul style="list-style-type: none"> - Supports over 40 data formats - this is more than any other project - support of artifact processing and quality control - it enables peer-reviewing of the analysis methods - provides cutting-edge technology - commitment to open source philosophy <p>Application areas are:</p> <ul style="list-style-type: none"> - EEG analysis (online and offline) - ECG analysis (including spectra of heart rate variability)
Current state of development of the technology:	Already on the market

Intellectual Property Rights:	Copyright protected
Application Domains: Comments about market applications:	Information processing, information systems; BIOLOGICAL SCIENCES BioSig is used mostly by researchers (engineering and clinical) in the field of biomedical signal processing
Collaboration Details:	Financial resources:
Type of partner sought:	industry for standardization efforts in the field clinical researchers for
The specific area of activity of the partner:	- clinicians: development of biosignal databases for interesting research questions - industry: biosignal acquisition and analysis devices
The tasks to be performed of the partner sought:	clinicians: development of EEG, ECG databases to address research questions of interest

L22 Austria**Neuro Genetic Solutions GmbH**

Participant:	Sepp Steinlechner
Sectors:	software
Activities:	software development and consulting

Technology Offer

TO_AT_9794

Title:	Neuro Genetic Solutions develops software based on neural network technology to find relations in our client's data for analysis, clustering, classification and prediction purposes.
Detailed description:	Vision Neural Network Software e.g. as Excel Plug-In - a latest technology, fully automatic and self-optimizing tool for modeling data - easy to understand and to use - can quickly be built-in to existing software - derives solutions where statistics fail Consulting for - data modeling - full solution application development - implementation projects
Innovative aspects / advantages:	- fully automatic neural network tool - self-developed latest technology - easy integration to existing software due to modular conception and simple interfacing - tested faster and more accurate against all competitors
Current state of development of the technology:	Already on the market
Intellectual Property Rights:	Copyright protected self-developed, world leading technology

Application Domains: Comments about market applications:	<ul style="list-style-type: none">- single user Excel plug-In for fast and apprehensive modeling as download available- ideal background technology where vast amounts of data need modeling
Collaboration Details:	Licence agreement: Technical co-operation: Financial resources:
Type of partner sought:	companies and research organisations from bio-technology, pharmaceutical industry, medical devices industry
The specific area of activity of the partner:	any area of activity where data is involved and statistical methods give non-satisfying results, e.g. analysis and prediction of measurments, DOE input optimization, medical studies evaluation, ...
The tasks to be performed of the partner sought:	<ul style="list-style-type: none">- clear definition of problems and or applications

POSTERS

P 01 Austria**Medical University of Graz, Center for Fundamental Clinical Research (ZMF I)**

Participant: Dr. Christian Gully

Technology keywords: Medicine, Human Health; Biology / Biotechnology; Biochemistry/Biophysics; Genom Research; Gene Expression, Proteom Research

■ Technology Offer

TO_AT_9885

Title: The core-facility molecular biology is a provider of molecular biology research techniques like full-genome microarrays and mutation analysis

Detailed description: The core-facility molecular biology is equipped with the most comprehensive tools currently available in the field of gene expression analysis. In addition to medium-throughput gene expression instruments like Light-Cycler and AB7900 TaqMan (96-well, 384-well and Low-Density Array module) a novel full-genome microarray gene expression tool covering more than 54,000 transcripts has been implemented recently. Compared to other microarray tools, this chemiluminescence-based system offers higher sensitivity and high reproducibility. In addition, locally stored databases provide a broad spectrum of the most current gene annotations enabling a deeper insight into functional gene expression data.

Innovative aspects / advantages: Generation of highly reproducible gene expression data and linkage with functional information.

Current state of development of the technology: Already on the market

Intellectual Property Rights: Others (registered design, plant variety right, etc)

Application Domains: BIOLOGICAL SCIENCES; Medicine, health; Biotechnology

Collaboration Details: Technical co-operation:

P 02 Austria**Medical University of Graz, Center for Fundamental Clinical Research (ZMF I)**

Participant: Dr. Jolanta Paltauf-Doburzynska

■ Know-how/ expertise

KHE_AT_8329

Title: Looking at the structure of cells and tissues - advanced visualisation and detection techniques

Detailed description: The Fluorescence Microscopy & FACS Core Facility offers a broad spectrum of advanced methods and experiments like 2D/3D visualization of intracellular compartments, measurements of intracellular ion concentrations, protein-protein interaction (laser scanning confocal microscope and fluorescence microscope with high speed camera) and observation of cell-cell communication, apoptosis and cell growth (cell observer). The cell observer is the first system, which makes possible to observe (inkl. digital documentation) intracellular processes like cell

growth and movement, intracellular reactions, protein interactions, changes of structure and co-localisation of intracellular compartments. Inside of the system-unit cover the pH-value, culture media and air humidity are adjustable.

The ScanScope T3 System manufactured by the USA-based company Aperio completes our offer. Scan Scope T3 System delivers powerful viewing, editing, annotating, sharing, workflow management, and analytical capabilities necessary for a broad range of pathology applications, including tissue microarrays, toxicologic pathology, telepathology and image analysis. Up to five slides can be loaded simultaneously and scanned fully automatically using easily interchangeable 20x or 40x objectives. With its unique 3D Revisit option it is a professional-grade slide scanning system for pathologists.

The facility offers also expertise in cell sorting and analysis (FACS). The BD FACSAria™ cell sorter sets a new standard for high-performance flow cytometry and is the first benchtop sorter that incorporates a fixed-alignment cuvette flow cell that can detect up to 13 colors, for a total of 15 parameters. BD™ LSR II is the first and only air cooled four-laser benchtop flow cytometer with the ability to acquire 10 or more colors. BD FACSCalibur is a multicolour benchtop flow cytometer system that is capable of both analyzing and sorting. This system can quickly perform routine tasks including immunophenotyping, absolute counting, residual white blood cell enumeration, stem cell analysis, DNA analysis, and isolation by sorting.

Intellectual Property Rights:

Others (registered design, plant variety right, etc)

Application Domains: Collaboration Details:

Technical co-operation:

P 03 Austria

Medical University of Graz, Center for Fundamental Clinical Research (ZMF I)

Participant:

Dr. Heimo Strohmaier

Technology keywords:

Medicine, Human Health; Biology / Biotechnology; Biochemistry/Biophysics; Cellular and Molecular Biology; Microbiology

Know-how/ expertise

KHE_AT_9911

Title:

Infrastructure in terms of lab space and equipment for biomedical research

Detailed description:

The Department of Special Laboratory Facilities at the Center for Medical Research (ZMF) provides service and infrastructure to scientists to perform experiments that require special equipment and/or security measures in the following areas: Work with genetically modified organisms and/or microorganisms in biosafety levels S2 and S3. This involves experiments (cloning, cell based assays, etc.) using primary cells isolated from human tissues and/or established cell lines. In addition, work employing infectious viruses and microorganisms can also be conducted in high security labs secured by a air-lock system in order to protect the researchers and the environment.

Radioactive labs offer researchers the opportunity to perform experiments, such as radioimmune assays, blotting techniques, or in vivo labeling in cell culture, using radioactive isotopes or radioactively labeled compounds.

The animal facility at the ZMF allows researchers to keep small laboratory animals (mice, rats) under sterile conditions and provides adequate equipment to perform animal experiments in a standardized setting.

In the histology unit, cryo-preserved and paraffine-embedded tissue material is

processed and subsequently analyzed by various methods, such as immunohistochemistry, immunocytochemistry or FISH. DNA and RNA are extracted from cells or tissues and then analyzed by conventional PCR in the adjacent PCR facility.

Finally, the biophysics unit offers the perfect setting for investigations in various areas of medical biophysics, such as acoustics, optics, in vivo imaging, and high-frequency measurements.

Innovative aspects / advantages:	Multiple infrastructure available for interdisciplinary research under one roof.
Current state of development of the technology:	Already on the market
Intellectual Property Rights:	Others (registered design, plant variety right, etc)
Application Domains:	BIOLOGICAL SCIENCES; Medicine, health; Biotechnology
Collaboration Details:	Technical co-operation:
Type of partner sought:	All organisations involved in biomedical research
The specific area of activity of the partner:	Basic and translational biomedical research

P 04 Austria

Medical University of Graz, Department of Blood Group Serology and Transfusion

Participant:	Dr. Michaela Bayer
Technology keywords:	Medicine, Human Health; In vitro Testing, Trials; Microbiology

Technology Offer

TO_AT_8365

Title: Technical Bio-Sciences and Medical Applications

Detailed description: Routine tests in the blood donation screening:

a) Already available:
Serological infection diagnostics / clinical chemistry

- HIV 1/2-antibodies
- HCV-antibodies
- HBs-antigen
- neopterin
- Treponema pallidum-antibodies
- CMV-antibodies (fakultative)
- ALT

b) Already available:
Molecular diagnostics

- HCV-RNA
- HIV-RNA
- HBV-DNA
- HAV-RNA
- Parvovirus B19-DNA

	c) Development phase: Screening on bacterial contaminations! • especially of thrombocyte concentrates (storage at RT) • at present cultivation methods for routine (automated procedure, but minimum 48 hours) • „rapid methods“ (FACS, PCR) in development phase.
Current state of development of the technology:	Other (please specify) partially already available, partially development phase
Intellectual Property Rights:	Others (registered design, plant variety right, etc)
Application Domains:	Automation/Robotics; Medicine, health
Type of partner sought:	research organisation
The specific area of activity of the partner:	microbiology, molecular biology
The tasks to be performed of the partner sought:	diagnostic methods and automation in routine screening of bacterial contaminations Medicine

P 05 Austria**Medical University of Graz, Clinical Institute of Medical and Chemical Laboratory Diagnostics**

Participant:	Dr. Hans-Jürgen Gruber
Technology keywords:	Medicine, Human Health; Biology / Biotechnology; Biochemistry/Biophysics; Cellular and Molecular Biology; In vitro Testing, Trials

Technology

T_AT_9268

Title:	In vitro cell culture atherosclerosis system
Detailed description:	Complete set of cell types, primary cells as well as established cell lines, known to be involved in atherosclerosis, for cell- and molecular biology research.
Innovative aspects / advantages:	The cell culture atherosclerosis system is a powerful tool to investigate pathogenic mechanisms and new therapeutic targets in the field of atherosclerosis on a molecular level.
Current state of development of the technology:	Available for demonstration – field tested
Intellectual Property Rights:	Others (registered design, plant variety right, etc)
Application Domains:	Medicine, health; Pharmaceutical/Cosmetics
Collaboration Details:	Financial resources:
Type of partner sought:	industry

The specific area of activity of the partner:	Drug development in the field of metabolic and degenerative diseases, especially atherosclerosis and lipid metabolism.
The tasks to be performed of the partner sought:	Drug development and synthesis

P 06 Austria**Medical University of Graz, Clinical Institute of Medical and Chemical Laboratory Diagnostics**

Participant:	Univ. Doz. Dr. Wilfried Renner
Technology keywords:	Medicine, Human Health; Biostatistics, Epidemiology; Care and Health Services; Cellular and Molecular Biology; Genome Research; Bioinformatics; Population genetics

Technology Offer

TO_AT_9740

Title:	High-throughput genotyping, development of genotyping methods, genetic epidemiology
Detailed description:	<p>Established technologies:</p> <p>1) High-throughput genotyping (1000 - 5000 SNPs per day) using 2 robotic pipetting systems (EPmotion) and 8 thermal cyclers with 96- and 384-well formats.</p> <p>2) Determination of haplotypes (PHASE software)</p> <p>3) Availability of large cohorts for the analysis of genetic risk factors and biomarkers for cardiovascular and metabolic diseases, e.g. LURIC (3500 subjects, cross-sectional), www.luric.de SAPHIR (1700 subjects, prospective design, 2-year follow-up complete) SMOKING GENES (500 regular smokers) DETECT (>8000 subjects, cross-sectional), www.detect-studie.de</p>
Current state of development of the technology:	Development phase – laboratory tested
Intellectual Property Rights:	Others (registered design, plant variety right, etc)
Application Domains:	BIOLOGICAL SCIENCES; Medicine, health
Collaboration Details:	Licence agreement: Technical co-operation: Joint Venture agreement: Commercial agreement with technical assistance: Manufacturing/ subcontracting agreement: Financial resources:
Type of partner sought:	industry, research organisation
The specific area of activity of the partner:	pharmaceutical development and production, activities in the fields of cardiovascular and metabolic diseases
The tasks to be performed of the partner sought:	utilization of the technology; financing of contract research; joint research and development cooperation

P 07 Austria**Klinische Abteilung für Herzchirurgie, Chirurgische Universitätsklinik, MUG**

Participant: Univ.Prof. Dr. Igor Knez

Sectors: Cardiovascular Surgery, biotechnology. Epigenomics

Technology keywords: Medicine, Human Health; Biostatistics, Epidemiology; Biology / Biotechnology; In vitro Testing, Trials; Genom Research; Bioinformatics; Gene Expression, Proteom Research; Population genetics; Micro- and Nanotechnology related to Biological sciences

Technology Request

TR_AT_9822

Title: Acquisition of cardiovascular sample tissues for epigenomic testing for atherosclerotic diseases

Detailed description: Wanted:
New partner in biotechnology for genomic testing and statistical evaluation of different cardiovascular diseases.

Current state of development of the technology: Development phase – laboratory tested

Intellectual Property Rights: Others (registered design, plant variety right, etc)

Application Domains: Biotechnology

Collaboration Details: Technical co-operation: Joint Venture agreement: Manufacturing/
subcontracting agreement: Financial resources:

Type of partner sought: industry, research organisation

P 08 Austria**University of Graz, Human Nutrition & Metabolism Research Center**

Participant: Univ.Prof. Dr. Brigitte Winklhofer-Roob

Technology keywords: Medicine, Human Health; Care and Health Services; Biochemistry/Biophysics

Technology Offer

TO_AT_9630

Title: Oxidative Stress Research (OSR) Core Facilities of the HN&MRC Graz

Detailed description: The Oxidative Stress Research Core Facilities of the HNMRC Graz are the outgrowth of more than 10 years of successful collaborative research on biomarkers of oxidative stress that have been used in human as well as animal studies. The major players were members or collaborators of the former Institute of Biochemistry, now Institute of Molecular Biosciences (IMB), Karl-Franzens University, and the Clinical Institute of Medical and Chemical Laboratory Diagnostics, Medical University, who decided recently to join forces within the HNMRC Graz. The OSR Core Facilities of the HNMRC Graz have a longstanding tradition in excellence in OSR with a major focus on lipid peroxidation that was extended more recently to oxidative damage of proteins and DNA.

The technologies applied are mainly based on sophisticated HPLC methods, including determination of, for instance, the antioxidant vitamins E and C and carotenoids, the selenium-dependent enzymatic antioxidant glutathione peroxidase, the advanced glycation end-product pentosidine, as well as biomarkers of oxidative stress such as malondialdehyde (damage to lipids) and 8-hydroxydeoxyguanosine (damage to DNA). These methods have been validated and are ready for use even in large scale human studies. Vitamin E, carotenoids, and malondialdehyde have recently been measured in 3500 samples of the multi-center LURIC study.

An ex vivo model for testing the susceptibility of low-density lipoprotein to a defined oxidative stress ("Esterbauer model") has been developed at the IMB and is now being used worldwide. It has been successfully used in 700 samples of the VITAGE project of the 5th EU Framework Programme and can also be offered for human intervention studies. The same holds true for measuring 8-hydroxy-deoxyguanosine in 24 h-urine collections. Fatty acid patterns in plasma or lipoproteins have recently been measured by gas chromatography (GC) in 1400 samples of the VITAGE project. These methods will also be used in the upcoming PREDICTIONS project of the 6th EU Framework Programme focusing on predictive risk factors for the development of diabetic nephropathy.

Current work focuses on additional highly sophisticated methods and further methods could be established on demand for future collaborative studies.

Innovative aspects / advantages:

Development of sophisticated HPLC and GC methods for use in R&D projects.

Current state of development of the technology:

Other (please specify)

Intellectual Property Rights:

Others (registered design, plant variety right, etc)

Application Domains:

Medicine, health

Type of partner sought:

Potential partners of all sectors in need of sophisticated analytical expertise

The specific area of activity of the partner:

- Research focused on human nutrition and metabolism
- Research focused on prevention of degenerative diseases
- Identification of biomarkers and development of diagnostic tools
- Approaches to novel therapeutic strategies

P 09 Austria**University of Graz, Human Nutrition & Metabolism Research Center**

Participant: Univ.Prof. Dr. Brigitte Winklhofer-Roob
 Technology keywords: Medicine, Human Health; Biochemistry/Biophysics

Know-how/ expertise

KHE_AT_9628

Title: The Human Nutrition & Metabolism Research and Training Center Graz is a University of Graz - based research and training center offering multidisciplinary collaborations for RTD projects with scientists and industry and postgraduate training

Detailed description: The Human Nutrition & Metabolism Research and Training Center (HNMRC) Graz is a University of Graz-based institution funded by the Zukunftsfonds of the Government of Styria and associated with a professorship in Human Nutrition and Clinical Nutrition. It is built up of academic members of the three universities of Graz, KFUG, MUG, and TUG, and other universities and research institutions in Austria (Medical Universities of Salzburg and Vienna) and abroad (Charité Berlin; Linus Pauling Institute, Oregon State University; CRNH Clermont-Ferrand; HNRC on Ageing, Tufts University; Harvard University), as well as industrial partners (e.g., DSM Nutritional Products) and small and medium sized enterprises (SMEs). The mission of the HNMRC Graz is focused on three major areas, including research and development (R&D), translation and dissemination (T&D), and education and training (E&T).

The R&D sector's specific aims are (1) to bring together experts in human nutrition and metabolism to participate in a joint program of research and training, (2) to focus multidisciplinary research into the role of nutrients in promoting health and facilitating healthy ageing, (3) to foster an interdisciplinary approach to identifying and targeting major health care problems, (4) to develop novel therapeutic strategies, and (5) to improve diagnostic tools. Major areas of expertise in the research sector include biomarkers of antioxidant and oxidative stress, advanced glycation, and lipid metabolism, as well as targeted human intervention trials, which led to international reputation of the scientists of the HNMRC. The T&D sector is devoted (1) to conduct translational research for the best possible use of research outcomes, (2) to fully integrate scientists of industrial partners in the research and training program, (3) to establish an international network of excellence in human nutrition research, (4) to maintain shared core laboratories offering state-of-the-art technical support, training, and fee-for-service laboratory analyses, and (5) to disseminate information to health professionals and to the public. Major areas of expertise in the analytical sector include HPLC and gaschromatographic analysis of antioxidants, oxidative damage to proteins, lipids and DNA, advanced glycation, and fatty acids, as documented by participation for instance in large EUfunded RTD projects. The E&T sector's goals are (1) to foster nutrition research as a scientific career, (2) to offer a postgraduate master of science degree in "Human Nutrition & Health", (3) a Ph.D. and M.D./Ph.D. program in "Human Nutrition & Metabolism", (4) a series of single topic intensive Summer Schools with international faculty and participants, (5) an education programme in basic research tools to scientists of different disciplines, and (6) to establish an exchange

program for scientists. Major areas of previous teaching activities include human nutrition and metabolism at the graduate and postgraduate level and will concentrate on the activities described above which will start in winter term 2005/2006.

Innovative aspects / advantages:

The HNMRC has a high interest in novel preventive and therapeutic strategies and novel diagnostic tools and offers partnership in translational research programmes, including grant applications in the EU framework programmes, FWF translational research programme and FFF projects, as well as various types of other industrial collaborations. The HNMRC is committed to continuing education and offers research training courses and single topic intensive courses (Summer Schools) and is preparing a master of science programme in human nutrition and health. The HNMRC also offers advice and assistance in oxidative stress and antioxidant research.

Current state of development of the technology:

Other (please specify)

Intellectual Property Rights:

Others (registered design, plant variety right, etc)

Application Domains:

Medicine, health

Type of partner sought:

Potential partners of all sectors to actively join the HNMRC Graz

The specific area of activity of the partner:

Research focused on human nutrition and metabolism; Research focused on prevention of degenerative diseases; Identification of biomarkers and development of diagnostic tools; Approaches to novel therapeutic strategies

The tasks to be performed of the partner sought:

Input of industrial know-how and expertise; Identification of problem to be solved in translational research program; Interest in active participation in collaborative multidisciplinary research programme

P 10 Austria

Institut für Molekulare Biotechnologie, TU Graz

Participant:

Sandra Abad

Technology keywords:

Biology / Biotechnology; Enzymology/Protein Engineering/Fermentation; Genetic Engineering

Know-how/ expertise

KHE_AT_9877

Title:

Human Protein Production in the Fission Yeast

Detailed description:

We have established the *Schizosaccharomyces pombe* technology in our lab. This yeast is able to produce human proteins that have essentially native conformation, and as a consequence display the desired properties.

Innovative aspects / advantages:

Human protein expression using the fission yeast *Schizosaccharomyces pombe* as a host has only recently received attention. The advantages of this yeast, which is evolutionary closer to higher organisms than other types of yeast, but still has the advantages of a unicellular eukaryote, have been tested in our research group and became a standard method.

Current state of development of the technology:	Development phase – laboratory tested
Intellectual Property Rights:	Others (registered design, plant variety right, etc)
Application Domains:	BIOLOGICAL SCIENCES; Medicine, health; Biotechnology; Veterinary; Pharmaceutical/Cosmetics
Collaboration Details:	Technical co-operation: Financial resources:
Type of partner sought:	Research organization, industry, academy interested in human protein production or use of recombinant human proteins.
The specific area of activity of the partner:	Clinical research
The tasks to be performed of the partner sought:	Application of recombinant human proteins produced in <i>Schizosaccharomyces pombe</i> with therapeutic qualities.

P 11 Germany

RZPD Deutsches Ressourcenzentrum für Genomforschung GmbH

Participant:	Udo Schimmel
Technology keywords:	Medicine, Human Health; Cellular and Molecular Biology; Genom Research; Bioinformatics; Gene Expression, Proteome Research

Technology

T_DE_9823

Title:	Service center for genome research
Detailed description:	<p>RZPD Deutsches Ressourcenzentrum für Genomforschung is a non-for-profit service center for genomics and proteomics research. Based on one of the largest clone collections world-wide, it provides high quality research material, high throughput technology and automation solutions for academic institutions as well as for industry. Material and services that are available from RZPD include clones of genomic and cDNA libraries, high density colony, DNA, and protein arrays, genomic and cDNA pools, non-redundant cDNA collections, pre-defined and custom microarrays, custom screening, expression profiling, Affymetrix service, robotic services, large scale PCR amplification, and cDNA library generation.</p> <p>Furthermore, from 2006 RZPD Tissue Interface will offer access to a multitude of human tissue samples and clinical and pathological records for research. More Information by www.rzpd.de</p>
Innovative aspects / advantages:	Data produced with its material are integrated in RZPD's Primary Database and linked to additional data from public databases. That way, for the benefit of the researchers a multitude of data is linked to the clone material available at RZPD and multiplication of work is avoided.
Current state of development of the technology:	<p>Other (please specify)</p> <p>Certified service provider</p>

Intellectual Property Rights:	Others (registered design, plant variety right, etc) No intellectual property (IP) is claimed by RZPD for results derived from the use of its material. If in single cases IP is claimed by the originator of clone material provided to and distributed by RZPD, this is clearly stated and conditions are passed on by RZPD to the user.
Application Domains:	Automation/Robotics; INFORMATION TECHNOLOGY; Information processing, information systems; BIOLOGICAL SCIENCES; Medicine, health; Biotechnology; Pharmaceutical/Cosmetics
Collaboration Details:	Commercial agreement with technical assistance:
Type of partner sought:	Industry
The specific area of activity of the partner:	Target validation, diagnostics, biomarker development

P 12 Austria**Medical University of Graz, Dep. of Radiology**

Participant: Univ.-Prof. Dr. Rudolf Stollberger

Technology

T_AT_9883

Title: **Quantitative Magnetic Resonance Techniques**

Detailed description: Magnetic resonance imaging (MRI) is a unique tool to investigate the morphology, the microstructure and different physiological parameters of humans and animals. Magnetic resonance spectroscopy (MRS) is the only noninvasive imaging technique that can directly assess the living biochemistry. Advances in Magnetic Resonance have revolutionized the way in which cellular and physiological processes are being investigated. In contrast to other bio-imaging techniques the application to biological objects is neither limited by light scattering nor by considerations concerning ionizing radiation. The application of specific MR contrast agents allow the investigation of tracer transport and exchange processes. The Research Unit for MR-Physics of the Department of Radiology plays an active role in MRI based tracer kinetic studies. Techniques for dynamic scanning, image analysis and signal processing have been developed and implemented for quantitative evaluation based on different kinetic models. Additional fields of interest are microstructure analysis using diffusion tensor and quantitative magnetization transfer. In general the research unit can develop pulse sequences for specific applications and provide appropriated MR-signal models for analysis. Cell tracking and molecular imaging are recent developments which expect significant contributions from MRI. The MR scan and processing techniques applied for tracer kinetic studies are similar to that necessary in the field of cell tracking and molecular imaging. The Research Unit for MR-Physics is therefore interested to extend its research activities into this new field. We are seeking for research groups or companies working with stem cells or that developing molecular specific ('targeted') probes. Such a partner should also be able to label the cell or probe with magnetic nanoparticles or paramagnetic molecules.

Innovative aspects / advantages: In-vivo characterization and measurement of biological processes at the cellular and molecular level, Integration of different information content into a single noninvasive imaging modality

Current state of development of the Other (please specify)

technology:	Ongoing development with specific applications in different stages
Intellectual Property Rights:	Secret know-how
Application Domains:	
Type of partner sought:	Academic, research organization or industry
The specific area of activity of the partner:	Stem cell applications, development of targeted probes
The tasks to be performed of the partner sought:	Delivery of MR-labeled probes

P 13 Austria**TU Graz, Institute for Computer Graphics and Vision**

Participant:	Univ.-Prof. Dr. Horst Bischof
Technology keywords:	Medicine, Human Health

Technology Offer

TO_AT_9104

Title: Medical Visual Information (Computer Vision and Graphics)

Detailed description: The Institute for Computer Graphics and Vision (TU Graz) is involved in several projects dealing with medical images analysis and interactive visualization systems like computer-aided surgical planning or guidance of minimally invasive procedures. Based on our broad expertise, we develop "one stop shop" solutions requiring (automated) analysis and visualization of medical data. In particular, our research is focused on image segmentation, registration, 3D visualization and 3D interaction. Various research projects will be presented at the meeting to demonstrate the opportunities arising from modern computer vision and graphics methods in the medical field.

*By combining the fields of medical image analysis and computer graphics, a Virtual Liver Surgery Planning System (VLSPS) was developed - in cooperation with the Medical University in Graz - that supports the radiologist's work and provides information to the surgeons. A VLSPS consists of image analysis and image visualization parts. In the case of liver resection, the image analysis identifies the liver, liver tumors, and defines liver segments. Interactive visualization facilitates the virtual liver resection planning. The achievable improvements associated with the use of VLSPS include objective, reproducible, and operator-independent results regarding segmentation and volume measurements, as well as exact identification of the involved liver segments. This approach yields an increased transparency and documents the surgical planning decisions.

* The EU project ARISER aims at developing new solutions for using Augmented Reality in minimally invasive surgery. The aim is to equip a surgeon with technologically enhanced "super vision". The main focus of TU-Graz in this project is to

provide 3D augmented reality visualization tools, in particular augmented video endoscopy.

* Image Analysis using Active Appearance Models to quantify Rheumatoid Arthritis in X-Ray images of the hand. The AAMIR project (www.aamir.at), funded by the FWF, aims at the development of a fully automated assessment of destructions caused to the bones by rheumatoid arthritis (RA), an incurable disease affecting predominantly the peripheral joints. RA is one of the leading causes for disability among persons aged 15 and older. The accurate and precise quantification of the disease progression is crucial for successful therapy and during clinical trials. Within the scope of AAMIR, methods applicable in clinical practice are developed and the potential and possible extensions to the active appearance model (AAM) concept are investigated.

* In a number of projects we are developing various methods for non-rigid registration. In particular we will present an approach based on 3D extension of the shape context which has been applied to sheep lung data for assessing breathing motion.

Innovative aspects / advantages:

Robust Active Appearance Models
Non rigid Registration
Augmented and Virtual Reality
Visualization and Computer Vision in a common framework

Current state of development of the technology:

Available for demonstration – field tested

Intellectual Property Rights:

Others (registered design, plant variety right, etc)

Application Domains:

Automation/Robotics; INFORMATION TECHNOLOGY; Information processing, information systems; Medicine, health

Collaboration Details:

Technical co-operation:

Type of partner sought:

Industry and Academia

The specific area of activity of the partner:

Industry for developing products out of our developments
Academia (especially medical partners) for further development.

P 14 Austria

Neuro Genetic Solutions GmbH

Participant:

Sepp Steinlechner

Sectors:

software

Activities:

software development and consulting

Technology Offer

TO_AT_9794

Title:

Neuro Genetic Solutions develops software based on neural network technology to find relations in our client's data for analysis, clustering, classification and prediction purposes.

Detailed description:	<p>Vision Neural Network Software e.g. as Excel Plug-In</p> <ul style="list-style-type: none"> - a latest technology, fully automatic and self-optimizing tool for modeling data - easy to understand and to use - can quickly be built-in to existing software - derives solutions where statistics fail <p>Consulting for</p> <ul style="list-style-type: none"> - data modelling - full solution application development - implementation projects
Innovative aspects / advantages:	<ul style="list-style-type: none"> - fully automatic neural network tool - self-developed latest technology - easy integration to existing software due to modular conception and simple interfacing - tested faster and more accurate against all competitors
Current state of development of the technology:	Already on the market
Intellectual Property Rights:	Copyright protected self-developed, world leading technology
Application Domains: Comments about market applications:	<ul style="list-style-type: none"> - single user Excel plug-In for fast and apprehensive modeling as download available - ideal background technology where vast amounts of data need modeling
Collaboration Details:	Licence agreement: Technical co-operation: Financial resources:
Type of partner sought:	companies and research organisations from bio-technology, pharmaceutical industry, medical devices industry
The specific area of activity of the partner:	any area of activity where data is involved and statistical methods give non-satisfying results, e.g. analysis and prediction of measurments, DOE input optimization, medical studies evaluation, ...
The tasks to be performed of the partner sought:	- clear definition of problems and or applications

P 15 Austria**Medical University of Graz, Institute for Medical Informatics, Statistics and**

Participant:	DI Univ.-Prof. Dr. Andrea Berghold
Technology keywords:	Medicine, Human Health; Biostatistics, Epidemiology

Technology Offer

TO_AT_8363

Title: Randomizer for Clinical Trials - www.randomizer.at

Detailed description: The Randomizer provides a self-serve, easy to use, secure and 24 hour-a-day randomization service for multi-centre clinical trials that is run entirely on the Internet.
Easy to Use:

Users of this application don't need to have any special computing skills. Investigators randomize patients with only a few clicks by simply completing an on-screen form with patient details and are then immediately notified of the treatment allocation. Mobile access - via WLAN or GSM, for example - is supported by a special web interface optimized for PDAs (Personal Digital Assistants).

Flexible:

Using a flexible role-based access control, trial coordinators can nominate investigators, biometricians, monitors and pharmacists. For multi-centre trials, user management can be delegated to participating centres. Trial coordinators can open or stop patient recruitment at any time. They can also choose to be notified via email on events such as randomization, emergency unblinding and others.

Comprehensive:

Many methods of dynamic randomization such as permuted blocks, biased coin, urn randomization, minimization and others are available. As an additional service for biometricians, the Randomizer provides a powerful simulation tool, which can be used to generate static randomization lists, to study the implemented randomization methods or to test a trial design. Trial designs can be copied from simulations or other trials in order to facilitate the setup of a new trial.

Secure:

All transactions are logged. The trial's audit trail and the list of randomizations can be downloaded and analyzed at any time by the trial monitor. Network traffic between the web-browser and the Randomizer is encrypted using SSL (Secure Sockets Layer) with strong (128 bit) encryption (signified by the gold padlock in the browser's status bar). SSL is the industry standard security technology for creating an encrypted link between a web server and a browser and is widely used for Internet banking and e-commerce.

<http://www.randomizer.at>

Innovative aspects / advantages:

In contrast to traditional paper-based or telephone-based randomization services, the RANDOMIZER offers immediate access to the randomization database and to the trial's audit trail, provides email notifications, reduces transcription errors as well as communication delays and expenses.

The following randomization methods are implemented:

Complete randomization, Biased coin, Big stick, Minimization, Permuted blocks randomization, Urn model.

Current state of Documentation

Already on the market

Intellectual Property Rights:

Others (registered design, plant variety right, etc)

Application Domains:

Information processing, information systems

Collaboration Details:

Licence agreement:

P 16 Austria

University of Graz, Institute of Zoology

Participant:

Dr. Manfred Hartbauer

Technology keywords:

Medicine, Human Health; Biostatistics, Epidemiology; Biology / Biotechnology

Know-how/ expertise

KHE_AT_9562

Title:

Multiagent Computersimulations for Biological, Medical and Engeneeing problems

Detailed description:

Many emergent patterns in the real world are based on simple behaviour of many

individuals acting at the same time. The resulting complex behaviour is often hard to describe using traditional mathematics. Our solution for realistic computer models of traffic, particle movements, foraging bees etc. is a definition of simple ruleset for individual agents and study the emergent pattern in a more or less complex environment. Multiagent models are individually designed to fulfill the requirements for many different real world problems. It is also possible to design the model on a stock and flow basis.

Innovative aspects / advantages:

Our individually designed simulation environments contain easy to handle parameters and provide realistic computer models for many different aspects of decentralised problems. The simultaneous action of many agents at the same time often leads to a complex patterns. Using multiagent models a quick identifications of the underlying parameters influencing different emergent patterns can be easily studied.

Current state of development of the technology:

Development phase – laboratory tested

Intellectual Property Rights:

Others (registered design, plant variety right, etc)

Application Domains:

BIOLOGICAL SCIENCES; Medicine, health

Type of partner sought:

industry and academy

The specific area of activity of the partner:

Traffic investigation, Psychological market investigations, Study of decentralised distributed processes.

The tasks to be performed of the partner sought:

Collaboration

P 17 Austria

Medical University of Graz, Institute for Medical Informatics, Statistics and Documentation

Participant:

Univ.-Doz. Dr. Marco Wiltgen

Know-how/ expertise

KHE_AT_8334

Title:

Automatic discrimination of melanocytic skin tumors

Detailed description:

The aim of this study was to check the applicability of tissue counter analysis (TCA) to the discrimination of benign common nevi and malignant melanoma lesions. TCA is based on the partition of the image into square elements of equal size where the features, are calculated out of each square element. The features, based on grey level histogram and co-occurrence matrix, allow the differentiation of homogeneous and high contrast tissue areas. 80 cases from microscopic views of benign common nevi and malignant melanoma were sampled. This study set was divided into a learning and test set. The classification was done by CART (Classification and Regression Trees) analysis. The features show for the benign common nevi a lower variance of the grey levels and the mean value lies in the range of higher grey levels than in the case of malignant melanoma. The distribution of the co-occurrence matrix elements is concentrated in the range of higher values with a lower variance than for the malignant melanoma. The results from classification show a clear-cut difference between common nevi and malignant melanoma. The classification correctly classified 94.7% of nevi elements

and 92.6% of melanoma elements in the learning set. In the test set, discriminant analysis based on the percentage of "malignant elements" showed a correct classification of all cases.

There is an increasing number of melanocytic tumors. The frequency of melanoma doubles every 20 years. At present there is a risk of 1:100 to fall sick with a melanoma. Reasons for the increasing number of melanocytic tumors are for example extreme sun exposure during sun-bathing. In the fight against skin cancer, researchers have high hopes in improved provisional screening methods, such as optimised computer aided diagnostic methods. Not every change of dermal tissue is dangerous. There are harmless cases too. Automatic analysis means, that the harmless (nevi) and malignant cases are discriminated by computer. This will optimise preventive medical checkups and early recognition of skin tumors. The detection of malignant changes of skin tissue in the early beginning will arise the success of the therapy. Most examinations are based on microscopic views of the tissue. To this purpose a biopsy of the tissue is prepared and stained using a fully automated device.

Automated image analysis of histological tissue is limited by the difficulty of recognizing special structures by computer. In contrast to isolated structures like blood cells, which can generally be well defined, the cells in histological tissues are arranged in various patterns showing variability in shape and appearance. The segmentation of different structures in histological tissues is therefore case dependent and cannot be done in a general approach. To avoid these problems, in tissue counter analysis (TCA) the images were dissected in square elements and the features were calculated for each element. In this way a priori definition and segmentation of the structures, which is the crucial point in automatic classification, was avoided.

The TCA consists of 3 steps, which are performed by different parts of the image analysis system: The feature extraction, the classification and the relocation. In feature extraction the images are dissected in square elements and the features, describing the tissue, are calculated inside each element. The classification is done by CART (Classification and Regression Trees) analysis, where the set of square elements are split into disjunctive nodes, representing different kinds of tissue. The relocation, that means the indication of the classified square elements superimposed to the image offers the possibility to evaluate the performance of the procedure. The software for image analysis was developed with the "Interactive Data Language" software tool (IDL Research Systems, Boulder, CO).

The aim of this study was to evaluate the possibilities of describing and discriminating common nevi and malignant melanoma tissue by the use of features extracted from histogram and co-occurrence matrix. 80 cases from microscopic views of benign common nevi and malignant melanoma were sampled. From this set 40 cases were randomly selected as learning set and the remaining 40 cases were used as test set. Each image was dissected in 256 square elements and 51 different features, describing histogram and co-occurrence matrix, were used. The tissue of benign common nevi appears faded rose red and homogeneous, the nuclei are small and spread out widely. The tissue of malignant melanoma appears dark with high contrast. The properties, enabling the discrimination between the different tissues, are described by the relevant features. The histogram skewness of the images of benign common nevi shows negative values, the variance is low and the mean value lies in the range of high grey levels. The distribution of the elements in the co-occurrence matrix is concentrated in the range of high values and the variance of the element distribution is low. The histogram skewness of the images of malignant melanoma shows positive values, the variance is higher than in the case of benign common nevi and the mean value lies in the range of low grey levels. The distribution of the elements in the co-occurrence matrix is concentrated in the range of lower grey values, the variance of the element distribution is high and the correlation low.

The results from classification show a clear-cut difference between common nevi and malignant melanoma. The classification correctly classified 94,7 % of nevi elements and 92,6% of melanoma elements in the learning set. Discriminant analysis based on the percentage of "malignant elements" facilitated a correct classification of all cases in the test set (sensitivity = 100 %, specificity = 100 %).

When the percentage of elements suggestive for malignancy in each case was evaluated, it turned out that a threshold level of 42% provides a correct classification of nevi and melanoma cases. The classification results were indicated in the original image in order to evaluate the performance of the procedure.

References

Wiltgen M, Gerger A, Smolle J.

Tissue counter analysis of benign common nevi and malignant melanoma. International Journal of Medical Informatics 2003; 69/1:17-28

M. Wiltgen, A. Gerger, C. Wagner, P. Bergthaler, J. Smolle.

Discrimination of benign common nevi and malignant melanoma lesions by use of features based on spectral properties of the wavelet transform.

Analytical and Quantitative Cytology and Histology Volume 25, Number 5/October 2003: pp 243-253

M. Wiltgen, A. Gerger, C. Wagner, P. Bergthaler, J. Smolle

Evaluation of the influence of image compression to the automatic discrimination of histological images of skin lesions

Methods Inf Med 2004 43: pp 141-9

Innovative Aspects

In conclusion, tissue counter analysis may be a useful method for the interpretation of melanocytic skin tumors.

Innovative aspects / advantages:

In conclusion, tissue counter analysis may be a useful method for the interpretation of melanocytic skin tumors.

Current state of development of the technology:

Current state of development of the technology
Development phase – laboratory tested

Intellectual Property Rights:

Others (registered design, plant variety right, etc)

Application Domains: Type of partner sought:

University, research organisation

The specific area of activity of the partner:

Medical image processing

The tasks to be performed of the partner sought:

Research cooperation

P 18 Austria

Medical University of Graz, Institute for Medical Informatics, Statistics and Documentation

Participant:

Univ.-Doz. Dr. Marco Wiltgen

Technology keywords:

Medicine, Human Health; Bioinformatics

Technology Offer

TO_AT_9269

Title:

Bioinformatics: Development of software for the analysis of protein interfaces

Detailed description:

Functional specificity of a protein is linked to its structure. A growing section of bioinformatics deals with the computation and visualization of protein 3D

structures. Protein structural information is publicly available at the protein database (PDB), an international repository for 3D structure files, which can be accessed through Internet.

The determination and visualization of molecular interfaces between proteins is of special importance for understanding biological processes and diseases at a molecular level. For example, in the immune system the shape of the antibodies must be complementary to the shape the antigens to initiate an immune response. Hence in this paper we concentrate our attention on the development of software for the analysis of macromolecular interfaces of protein complexes. The complexity of the protein-protein interface makes it necessary to choose simple representations, allowing the investigator to concentrate on the specific features of interest without being confused by the wealth of information. A large number of protein complexes are deposited in the PDB structure database. To demonstrate our method we selected protein complexes with two chains (not connected via covalent bonds). Starting from the amino acid chains, the identification of spatial narrow residues between the chains in the complex 3D structure and the additional representation of the pairwise interaction in an interface contact matrix, allows a suitable and easy to survey representation of the interface information.

The macromolecular interface can be defined by residues on both polypeptide chains which are close enough to form interactions. The considered contact distances, where at least one atom of the adjacent residues must fall in, ranges between 4 and 6 angstroms. First the distances between the residues of the two chains of a complex are calculated. The residues, with distances within the given range, between the two chains are identified and the interface contact matrix, a plot of adjacent residues between the two amino acid chains, is constructed (fig. 1). The residue name and number within each chain is plotted on the respective axis (horizontal and vertical axis) and a corresponding entry is done at the appropriate place in the matrix wherever two residues of each chain come into contact. The elements of the matrix are annotated with several physicochemical properties (like: hydrogen bonds, hydrophobicity etc.). The interface contact matrix enables the investigator an overview about the distribution of the involved residues, an evaluation of interfacial binding "hot spots" and an easy detection of common or similar patterns in different macromolecular interfaces (fig. 1). Of course for a realistic and adequate visualization of a macromolecular interface a 3D representation is necessary. Therefore the elements in the interface contact matrix are linked with the 3D structure in that way that mouse manipulations on the matrix elements display the corresponding region in the 3D structure, enabling an interactive visualization and further analysis of the residues involved in the interface (fig. 2). This connection of the two representations and the visualization reveal from a wealth of information the context and connections without overwhelming the investigator. Additionally the identified residues in the interface contact matrix are used to define the molecular surface at the interface (fig. 3). The resulting molecular surface (with projected physicochemical properties of the involved residues) can thereby aid exploration of molecular complementarities at the macromolecular interface. For illustration purposes, calculations were performed on several trypsin complexes.

The calculations were done by a special developed computer program, where the results are used as input by the Swiss-Pdb Viewer, which is actually one of the most sophisticated visualization tools for macromolecules. The program enables the identification of the residues involved in the interface between the two chains, the determination of hydrogen bonds between appropriate atoms of the interface residues, the calculation and printing of the interface contact matrix, the calculation of the molecular surfaces at the interface out of the elements in the interface contact matrix etc. Most calculations for identifying the residues at the protein-protein interface are done automatically by use of the atomic coordinates (from the PDB file). Interacting windows enables the relationship between the output data of the distance calculations and the corresponding parts of the protein

structure. The proprietary program, written in a script language (a kind of PERL derivate), is read in the script window of the Swiss-Pdb Viewer and the different analysis procedures are initiated interactively by the user via mouse clicking. The program runs on a PC with Microsoft Windows.

Innovative aspects / advantages:

Our approach offers the advantage of connecting the interface contact matrix with a 3D visualization of the complex interfaces. In the interface contact matrix the distribution of the involved residues of the macromolecular interface are determined and shown in an overview with annotated (complementary) physicochemical properties. Complexes of trypsin with several other proteins (inhibitors) are analysed and common patterns in the interface matrices are identified. The common patterns in the interface contact matrices allow a fast comparison of similar structures in different macromolecular interfaces (this can possibly also be used for the studying of effects of mutations). The visualization of the selected residues in a 3D view via interacting windows allows a realistic analysis of the macromolecular interface. The representation with molecular surfaces shows complementary shapes. These data give us the prerequisite for a broad scientific expansion namely the study of molecular interactions in modern diagnosis and therapy. Molecular medicine means the understanding of diseases at a molecular level. Examples are the analysis of immunocomplexes and receptor – anti receptor compounds used in experimental and clinical medicine. Infectious diseases, disturbed metabolic situations, incompatibilities in pharmacology are also examples to be attacked.

In conclusion we are going to develop a new system of single molecule interaction studies for an evidence based medicine of tomorrow.

Current state of development of the technology:

Development phase – laboratory tested

Intellectual Property Rights:

Others (registered design, plant variety right, etc)

Application Domains:

INFORMATION TECHNOLOGY; Information processing, information systems; Medicine, health

Type of partner sought:

University, research organisation

The specific area of activity of the partner:

Molecular biology, clinical immunology

The tasks to be performed of the partner sought:

Research cooperation

P 19 Austria

Neuroth AG

Participant:

DI Michael Uhl, DI Gerd Gross

Technology keywords:

Medicine, Human Health

Technology Offer

TO_AT_8416

Title:

Noise Prevention

Detailed description:

Hearing well is for most of us a certainty. Hearing forms the way we communicate and it influences our whole life. A conscious and careful treatment of our

sensitive ear will raise the quality of our life.

Neuroth is the oldest family-owned enterprise of hearing aids in Austria. They have already received a “synonym” for prevention and aid concerning hearing loss. It is the dedicated goal of Neuroth to reintegrate people with hearing loss into the social life through qualified advice, sound services and close cooperation with ENT-doctors. Neuroth offers its broad range of services via more than 65 outlets in Austria as well as in Liechtenstein and Switzerland. About 300 employees take care of our customers and assure the service quality that we are known for.

Neuroth has successfully been active in the area of noise prevention for several years. Scientific research proves that noise does not only lead to irreversible hearing damage and loss - it also causes stress, high blood pressure, and heart diseases. The ability to concentrate declines and as a consequence the quality of work. Despite these facts, the carrying ratio of hearing protectors is often still below 50% because these devices are usually uncomfortable to wear. Guided by this fact, Neuroth developed a hearing protector that protects the ear and provides maximum convenience: Neuroth Antilärm®, individually moulded ear protectors for professionals in industry and trade.

Neuroth AG
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office@neuroth.at
www.neuroth.at

Innovative aspects / advantages:	handmade article, personal manufacture, individually adjustable, sure and comfortable
Current state of development of the technology:	Already on the market
Intellectual Property Rights:	Patent(s) applied for
Application Domains:	Medicine, health
Collaboration Details:	Licence agreement: Commercial agreement with technical assistance: Manufacturing/ subcontracting agreement:

P 20 Austria**CNSystems Medizintechnik GmbH**

Participant: DI Jürgen Fortin
 Sectors: medical technology
 Activities: development of new non-invasive medical products
 Technology keywords: Medicine, Human Health; Care and Health Services

Technology

T_AT_9782

Title: The strength and core competence of CNSystems is the development of new non-invasive medical products. The Task Force® Monitor is a non-invasive, diagnosis aiding monitoring system

Detailed description: The Task Force® Monitor is a non-invasive, diagnosis aiding monitoring system that records all relevant haemodynamic parameters, including heart rate (HR), stroke volume (SV), cardiac output (CO), blood pressure (BP), total peripheral resistance (TPRI), baroreceptor reflex sensitivity (BRRS), vagal and sympathetic tone etc., without discomfort for the patient. All parameters are recorded in real time and beat-to-beat and are displayed both as signals and numeric values. The system combines four measuring methods:
 * continuous (beat-to-beat) blood pressure measurement
 * impedance cardiography (for SV and CO measurement)
 * high resolution 3-channel-ECG display (6-channel display)
 * oscillometric blood pressure measurement

Innovative aspects / advantages:
 * continuous (beat-to-beat) blood pressure measurement
 * impedance cardiography (for SV and CO measurement)
 * high resolution 3-channel-ECG display (6-channel display)
 * oscillometric blood pressure measurement

Current state of development of the technology: Already on the market

Intellectual Property Rights: Patent(s) granted

Application Domains: Automation/Robotics; INFORMATION TECHNOLOGY; Information processing, information systems; Medicine, health

Collaboration Details: Technical co-operation: Joint Venture agreement:

Type of partner sought: research organisation

P 21 Austria**Medical University of Graz, Department of of Internal Medicine, Diabetes and Metabolism**

Participant: Dr. Werner Regittnig
 Technology keywords: Medicine, Human Health; Care and Health Services

Technology Offer

TO_AT_8651

Title: Novel Glucose-Controlled Insulin Delivery System for the Treatment of Type 1 Diabetes

Detailed description: Special indwelling catheters, like microdialysis (MD) probes, microperfusion (MP) probes or porous tissue contactors (PTC), are capable of delivering fluids to, and sampling fluids from, a body tissue (e.g., subcutaneous adipose tissue). The basic idea underlying this novel system for the treatment of diabetes is to use such a catheter both to deliver insulin to the subcutaneous tissue and to simultaneously sample subcutaneous interstitial fluid (ISF) for the frequent or continuous measurement of glucose.

The catheter for insulin delivery and simultaneous ISF sampling is inserted into the subcutaneous adipose tissue of the patient and then connected to an externally worn, pager-sized control unit using two thin, flexible tubes.

The control unit comprises two miniature pumps, a sensor unit, a controller, a battery, and a perfusate reservoir filled with perfusate fluid containing insulin at a high concentration (e.g., 100 U/ml). Pump 1 transports the perfusate fluid from the reservoir via the inlet tubing into the catheter, and pump 2 sucks the ISF from the catheter through the outlet tubing to the sensor flow chamber, which contains a conductivity and glucose sensor. The controller acquires data from the sensors and converts them into blood glucose readings. Based on the blood glucose readings, the controller calculates the appropriate insulin delivery rate. Subsequently, the insulin delivery rate is adjusted by altering the flow rate of pump 1 (e.g., between 0.5 and 5.0 microL/min). Depending on the sensor system used, the flow rate of pump 2 may be fixed to a value lower than that of pump 1 (e.g., 0.5 microL/min). Also, pump 2 may operate discontinuously.

Innovative aspects / advantages:

A glucose-controlled insulin delivery system ('artificial pancreas') utilizing such a catheter for insulin delivery and simultaneous ISF sampling may offer important advantages over those systems previously described.

First, this novel system possesses just one instead of two catheters, which would allow sensing, delivery and control components to be combined into one design to yield a fully integrated pager-sized device.

Second, preliminary experiments performed to explore the effect of insulin on the glucose concentration in the ISF of subcutaneous adipose tissue suggest that the high insulin concentrations present during insulin delivery in the tissue surrounding the catheters may lead to the development of a stable relationship between the blood glucose concentration and the glucose concentration in the ISF sampled by the catheters, thereby allowing an improved estimation of plasma glucose levels from measured local interstitial glucose concentrations.

Third, because a relatively large volume of ISF is exchanging solutes with the perfusion fluid of the catheter, the rate of insulin absorption from ISF into the bloodstream may be higher when insulin is delivered by such catheters as compared to subcutaneous insulin administration by conventional needles. This may be beneficial for the design of a control algorithm.

Current state of development of the technology:

Development phase – laboratory tested

Intellectual Property Rights:

Patent(s) applied for

Application Domains:	Medicine, health
Comments about market applications:	The potential market of this novel glucose-controlled insulin delivery device seems to be comparable to the market of insulin pumps. Insulin pumps are increasingly used by type 1 diabetic patients. Type 1 diabetes is currently affecting about 0.5% of the population in developed countries and, like type 2 diabetes, is increasing in incidence (3% per year). People with type 1 diabetes have to administer insulin from external sources for survival. Administration of exogenous insulin by means of the subcutaneous route provides the basis of the current insulin therapy. In the majority of the insulin-requiring diabetic patients, insulin is administered in the form of a bolus subcutaneous injection. However, an increasing number of patients is using external pumps to administer insulin in the form of a continuous subcutaneous infusion (insulin pump therapy). In the year 2000, there were more than 200 000 diabetic subjects worldwide treated with insulin pumps. In the USA, Germany and France there were about 100 000, 20000, and 4000 pump users, respectively. In the USA and Germany, the yearly increase rate in pump sales is approaching 40% and, in France, this rate is 17%. The cost for the insulin pump and the supplies needed to begin therapy averages about \$5000. The infusion set and catheters must be purchased regularly at a yearly cost of approx. \$1500. The annual worldwide insulin pump and infusion set market is approximately 1 billion dollar.
Collaboration Details:	Licence agreement: Technical co-operation: Joint Venture agreement:
Type of partner sought:	Industrial Partner
The specific area of activity of the partner:	The industrial partner may be a manufacturer of medical devices used in the management of diabetes (e.g.: insulin pump manufacturer, glucose meter manufacturer)
The tasks to be performed of the partner sought:	The industrial partner should provide support in the manufacturing, marketing, advertising and distribution of the system

P 22 Austria**Medical University of Graz, Institute of Physiological Chemistry**

Participant:	Univ.-Prof. Dr. Reinhard Möller
Technology keywords:	Medicine, Human Health; Biostatistics, Epidemiology; Care and Health Services

Technology Offer

TO_AT_9649

Title: LIPOMETER: Evaluation of individual risk profiles in juvenile obesity by Subcutaneous Adipose Tissue Topography (SAT-Top)

Detailed description: Reinhard Moeller*, Renate Horejsi*, Harald Mangge+,
*Institute for Physiological Chemistry, Harrachgasse 21/II, A-8010 Graz
+ Clinical Institute of Medical and Chemical Laboratory Diagnosis and Pediatric Rheumatology/Immunology, Auenbruggerplatz 30, A-8010 Graz

The optical device Lipometer (European Patent No. EP 0516251) enables the non-invasive, quick, safe and precise measurement of the thickness of subcutaneous adipose tissue (SAT). Fifteen anatomically well defined body sites from 1-neck to 15-calf characterises the SAT-topography of a person like an individual "fingerprint". SAT-topography was measured in 42 obese boys and 59 obese girls aged from 7 to 19 years and compared to 680 normal weight boys and 570 normal weight girls. Both female and male obese juveniles showed a trunk weighted increase of the adipose tissue (7-upper abdomen, 8-lower abdomen, 5-front chest, 6-lateral chest). Pubertal changes of the body silhouette and body fat

distribution as observed in the normal weight male and female juveniles did not occur in the obese. For visual comparison the 15- dimensional SAT-top information of the 15 body sites was condensed to a two dimensional plot by factor analysis. Independently of age and sex the obese juveniles showed a highly similar unfavourable body fat distribution with thick fat layers on their trunks ("apple types"). In the factor plot they were located near the area of adult patients with type 2 diabetes and polycystic ovary syndrome.

Innovative aspects / advantages:

Risk analysis possible in early stages in order to obtain a long-range prognosis concerning diseases related to obesity. This permits to prevent diseases, as an early intervention will be possible.

Current state of development of the technology:

Already on the market

Intellectual Property Rights:

Patent(s) granted

Application Domains:

Information processing, information systems; Medicine, health

Collaboration Details:

Technical co-operation:

Type of partner sought:

health care institutions; insurances

The specific area of activity of the partner:

prevention of diseases; institutions taking care of adipose juveniles

The tasks to be performed of the partner sought:

implementing technology for risk assessment

P 23 Austria

AKH Wien, Univ. Klinik f. Nuklearmedizin, PET-Zentrum

Participant:

Andreas Krcal

Sectors:

radiolabelling of pharmaceuticals

Activities:

labellings with carbon-11 and fluorine-18

Technology keywords:

Medicine, Human Health

Technology

T_AT_9693

Title:

Preparation of radiolabeled pharmaceuticals for positron emission tomography (PET)

Detailed description:

We develop ideas and principally possible radiosyntheses for the routine production of PET radiopharmaceuticals. We seek a partner in the industry that is able to automate these micro-scale synthetic procedures. Due to radiation safety regulations and quality assurance it is unavoidable to automate (and remote control) the preparations.

Technical assistance and partnership for the automation process, software development and component assembly is required.

Innovative aspects / advantages:

PET is a booming sector in human medicine. These technique is used for diagnostics in oncology, neurology and cardiology. We are able to label

pharmaceuticals with carbon-11 or fluorine-18 (carbon-11 labellings results in natural identical substances). Routinely we produce 12 different radiopharmacocons and there is an ongoing development of new syntheses.

Current state of development of the technology:

Other (please specify)
ideas waiting for prototypes

Intellectual Property Rights:

Others (registered design, plant variety right, etc)

Application Domains:

Medicine, health

Collaboration Details:

Licence agreement: Technical co-operation:

Type of partner sought:

Industry

The specific area of activity of the partner:

Manufacturing of automation devices and their components (Valves, counters, software, ...)

The tasks to be performed of the partner sought:

Manufacturing of automation devices and their components (Valves, counters, software, ...)

P 24 Austria

BioNanoNet i.G.

Participant:

Frank Sinner

Sectors:

drug development, bionanotechnology, nanomedicine, drug delivery, galenics, pharmacokinetics, toxicology, clinical studies, GMP / GLP / GCP, analytics

Technology keywords:

Medicine, Human Health; Biology / Biotechnology; Biochemistry/Biophysics; Cellular and Molecular Biology; In vitro Testing, Trials; Toxicology; Gene Expression, Proteom Research; Micro- and Nanotechnology related to Biological sciences

Know-how/ expertise

KHE_AT_9864

Title:

An Austrian Network in the Field of Drug Development

Detailed description:

BioNanoNet is a Network bringing together numerous experts in the field of drug development. BioNanoNet comprises leading companies, university and non-university research institutions.

BioNanoNet acts as a “one stop shop” for the pharmaceutical industry aimed at establishing efficient and targeted contacts between potential clients and consortium members. It combines expertise from leading scientists and private companies, thus acting as a competent source for mission oriented research covering one or several aspects of the value chain of drug development. The philosophy of BioNanoNet is to facilitate transdisciplinary research by providing dedicated interdisciplinary teams to fulfil customer requirements. The BioNanoNet members include all Austrian medical universities, all major Austrian universities as well as non-profit research organisations such as the Austrian Academy of Science or JOANNEUM RESEARCH, and various companies such as Fresenius Kabi Austria.

BioNanoNet offers its services in a stepwise approach. The first step consists in the detailed definition of requirements in collaboration with the client. This provides the basis for compiling the needed expertise in a task force led by one contractor. All further negotiations are carried out with the leading partner and the

consortium with the assistance of BioNanoNet. Any subsequent contracts are concluded exclusively between the client and one or several consortium members on a bilateral basis.

BioNanoNet can offer expertise ranging from investigation of the pathomechanisms, the search for adequate targets, the development of new agents and formulations, pre-clinical and clinical studies through to production. BioNanoNet is the ideal partner for industry and research organisations.

Innovative aspects / advantages:	The clinical driven applied research in the field of drug development and nanomedicine for drug targeting, delivery and imaging
Application Domains:	Medicine, health; Biotechnology; Pharmaceutical/Cosmetics
Collaboration Details:	Commercial agreement with technical assistance: Manufacturing/ subcontracting agreement:
Type of partner sought:	scientific partners for further investigations of nanoparticles for drug targeting, drug release and imaging industrial partners for applied research projects

P 25 Austria

Sciotec Diagnostic Technologies GmbH

Participant:	Mag. Helmut Schmutz
Sectors:	diagnostics, OTC-pharmaceuticals
Activities:	First Histamine Intolerance Diagnostic kit; First Histamine degrading Products
Technology keywords:	Medicine, Human Health; Biochemistry/Biophysics; Enzymology/Protein Engineering/Fermentation; In vitro Testing, Trials

Technology

T_AT_8552

Title:	Diagnostic Systems and OTC pharmaceuticals for food intolerance/ Histamine Intolerance
Detailed description:	Request for worldwide distributing partner. Request for development/ financial partner for development of pharmaceutical out of existing OTC.
Innovative aspects / advantages:	First Histamine Intolerance Test worldwide. First Histamine degrading products (capsule, gel) worldwide.
Current state of development of the technology:	Already on the market
Intellectual Property Rights:	Patent(s) granted Austrian Patent granted for diagnostic system and use of enzyme. PCT patent pending.
Application Domains:	Medicine, health; Biotechnology
Comments about market applications:	Products already successfully entered into EU market. International roll out ongoing.

Collaboration Details:	Licence agreement: Commercial agreement with technical assistance: Financial resources:
Type of partner sought:	Pharmaceutical Industry Pharmaceutical Distributor Private Equity investor
The specific area of activity of the partner:	Worldwide Distribution of Diagnostic Systems Worldwide Distribution of OTCs/pharmaceuticals Financial Partner for pharmaceutical development
The tasks to be performed of the partner sought:	Worldwide distribution; Co-Development of Pharmaceutical; Financing of Pharmaceutical Development

P 26 Austria**Medical University of Graz, Center for Fundamental Clinical Research (ZMF I)**

Participant:	Dr. Harald Köfeler
Technology keywords:	Medicine, Human Health; Biology / Biotechnology; Biochemistry/Biophysics

Technology Offer

TO_AT_9913

Title:	Dual use of stable isotope labelled internal standards for quantitation and mass accuracy on FT-MS
Detailed description:	<p>The Core Facility for Mass Spectrometry plans to adopt the above mentioned concept, which was originally established at a Q-ToF mass spectrometer, for FT-MS. By usage of a stable isotope labelled internal standard not only as a reference for quantitation, but also as internal calibrant for mass accuracy, it is possible to increase mass accuracy enormously on a Q-ToF instrument. The constraints on any type of ToF mass spectrometer are clearly non unity ratios in intensity. At this point mass accuracy starts to deteriorate quickly, because of dead time issues of the MCP. given the fact that FT-MS offers even higher resolution than ToF-MS with no signal distortion due to differences in intensity, we anticipate to successfully adopt and improve this concept on FT-MS.</p> <p>Once established, this methodology could be highly beneficial for mass spectrometric analytical problems demanding very high confidence levels. Especially when it comes to sensitivity issues it is sometimes no more possible to acquire MS/MS spectra in a sufficient way. In this case high mass accuracy in full scan mode would be very advantageous, because it could replace MS/MS as criterion for confidence. Thus the take home message must be clear: Highest achievable mass accuracy is only possible on FT-MS with internal calibration and gives the benefit of operating close at the limit of detection, but still with sufficient certainty and rock solid data in terms of identification.</p>
Innovative aspects / advantages:	Application of High Resolution Mass Spectrometry with traditional quantitative Mass Spectrometry
Current state of development of the technology:	Already on the market
Application Domains:	BIOLOGICAL SCIENCES; Medicine, health; Biotechnology

P 27 Austria **Bank für Ärzte und Freie Berufe AG**

Participant: Dr. Ulrich Zacherl

Sectors: Finance

■ Know-how/ expertise

KHE_AT_9881

Title: **Bank for the Medical Profession**

Detailed description: We, the Bank für Ärzte und Freie Berufe (The Bank for the Medical Profession), are embedded in the Volksbanken Group and are specialising in the health area. Our main activity is not the provision of risk capital (venture capital), but we want to accompany enterprises - doing research - in all lines of banking business - mainly in the financing with public coverage (e.g. AWS). We are looking for contacts in order to structure upcoming financial transactions together with you.

P 28 Austria **Science Park Graz GmbH**

Participant: Mag. Gert Wakonig

■ Know-how/ expertise

KHE_AT_9795

Title: **Business incubator for academic spin-offs**

Detailed description: The non-profit organization "Science Park Graz" is the university incubator in Graz run by the three universities (TU Graz, MUG, KFU) and the Steirische Wirtschaftsförderung. Scientists with an innovative business idea are supported with individual coaching during the development of a business plan and with entrepreneurship training courses. SPG offers excellent starting conditions for scientists who want to realize their business ideas on the market: coaching and mentoring, training, offices, R&D infrastructure, funding/grants.

Support for scientists interested in transferring their ideas to the market place and starting an own company:

- Evaluation of business model
- Business Development
- Entrepreneurship training
- Access to research facilities and university laboratories
- Subject-specific tutoring and coaching by SPG, academic mentors and business mentors
- Grants for research and development, and external consultants
- Interest free loans
- SPG-network (academia, industry)
- Cooperation with public funding agencies, private investors, venture capital firms
- international relationships

Intellectual Property Rights: Others (registered design, plant variety right, etc)

FURTHER COOPERATION PROFILES

Austria**ARC Seibersdorf research GmbH**

Participant:	Dr. Guenter Schreier
Sectors:	Biomedical Engineering
Activities:	development of software systems for biomedical research
Technology keywords:	Bioinformatics

**Know-how/ expertise**

KHE_AT_9735

Title:	Web-based IT platform to support transinstitutional and transdisciplinary biomedical research
Detailed description:	web-based Medical Research Network, i.e., a web-based software platform to link numerous investigators in trans-institutional and interdisciplinary biomedical research projects. The platform features: <ul style="list-style-type: none"> - central database - electronic data capture - medical image management / Telemedicine - mobile access - interfaces to external systems like clinical information systems - bioinformatics support (genomics, transcriptomics) - virtual biosamples databank
Innovative aspects / advantages:	comprehensive IT platform, specifically tailored to support complex biomedical research projects (e.g. EU funded projects), from genome to phenome
Current state of development of the technology:	Available for demonstration – field tested
Intellectual Property Rights:	Copyright protected
Application Domains: Comments about market applications:	INFORMATION TECHNOLOGY; Information processing, information systems Example of a reference installation: www.siopen-r-net.org
Collaboration Details:	Commercial agreement with technical assistance:
Type of partner sought:	Industry, research organisation
The specific area of activity of the partner:	all organisations active in biomedical research and development, management of biomedical research projects, coordination of EU-projects
The tasks to be performed of the partner sought:	Implementation of the IT-platform for performance of projects

Austria**Austria Wirtschaftsservice GmbH**

Participant: Dr. Martin Spatz
 Sectors: Corporate finance
 Activities: Preseed and seed investments for high tech Startups

Know-how/ expertise

KHE_AT_8914

Title: Austrian business promotion

Detailed description: The Austria Wirtschaftsservice Gesellschaft mbH (aws) is a customer-oriented bank specialized in Austrian business promotion. The aws accompanies enterprise growth, first with advice on financing and public funding, then with start-up co-financing (preseed and seed), following up to the point where an enterprise matures and goes public. "Life Science Austria" (LISA) is a focus program within the banks department of Technology & Innovation concentrating on Austria's emerging biotech sector. Life science companies or researchers who would like to startup a company are cordially invited to contact an aws representative.

Austria**AUSTRIANOVA Biotherapeutics GmbH; Univ for Veterinary Sciences; Christian Doppler Lab for Gene Therapeutic Vectors Research**

Participant: Dr. John Dangerfield
 Technology keywords: Medicine, Human Health; Biology / Biotechnology; Cellular and Molecular Biology; Micro- and Nanotechnology related to Biological sciences

Technology

T_AT_8744

Title: NOVEL ENCAPSULATED CELL CANCER THERAPIES FROM THE BIOTECH COMPANY AUSTRIANOVA AND OTHER RETROVIRAL BASED CANCER RESEARCH BEING UNDERTAKEN AT THE INSTITUTE OF VIROLOGY AND BIOMEDICINE

Detailed description: 1) AUSTRIANOVA BIOTECHNOLOGY GMBH

The company AUSTRIANOVA BIOTECHNOLOGY GMBH ranks among the leading Austrian Biotechnology companies together with Intercell and Igeneon. Its offices and laboratories are located at the University of Veterinary Medicine in Vienna, where it was founded in 2001 as the first university spin off.

The strategic and operative management of the company is still firmly in the hands of its founders, whilst its business area is the development of novel methods of tumour treatment based on cell- and gene- therapies. The aim is to dramatically enhance the effect of conventional chemotherapy whilst at the same time reducing the well known side effects. This should make it possible to treat solid tumours which to date could not effectively be addressed.

The Product

Austrianova's lead-product, NovaCaps®, is used for targeted treatment of pancreatic carcinoma. The product consists of a genetically modified cell line (allogeneic), which is able to activate a prodrug directly at the site of the tumour. The product can be used "off- the shelf" for all patients and mediates highly specific tumour growth inhibition with minimal drug induced side effects.

A fundamental step towards market authorisation of NovaCaps® (for the indication pancreatic carcinoma) was the orphan drug designation awarded to the company by the European Agency for the Evaluation of Medicinal Products (EMA) in 2003.

This brings with it a number of advantages such as assistance by the EMA during the design and execution of a pivotal clinical Phase III study (study for market authorisation using NovaCaps® in patients), accelerated market authorisation and above all a protected market position for up to ten years.

The company anticipates the market introduction of NovaCaps® for the indication pancreatic carcinoma in 2009. The achievable annual sales (annual peak sales) are estimated at 50 million Euro solely in Europe and subsequently 75 million Euro in North America and Asia.

Currently AUSTRIANOVA is preparing the European Phase-III study to begin end of 2006: by then the necessary regulatory authority approvals will be available and the large scale industrial production, subcontracted to Miltenyi Biotec GmbH, will have been established.

The Technology

An essential component of the NovaCaps®- technology is a newly developed method for the encapsulation of genetically modified live human cells. AUSTRIANOVA has developed this encapsulation technology especially for the treatment of cancer.

Currently, during conventional chemotherapy, an inactive chemotherapeutic is often administered via infusion, subsequently activated in the liver by the body's own enzymes and distributed around the body by the blood stream. This results in a relatively weak effect on the tumour, but is associated with debilitating side effects, e.g. affecting the nails, hair and the intestine.

AUSTRIANOVA's new therapy comprises encapsulated cells that have been genetically modified in order to produce an enzyme necessary for the activation of the prodrug. The capsules are placed at the site of the tumour via a catheter. The prodrug, which is administered by infusion, can enter the capsules through the porous outer membrane. Once inside the capsules, the prodrug is locally converted into its active form by the enzyme produced by the genetically modified cells. Subsequently the tumour cells are destroyed by the active drug released locally from the capsules thereby considerably reducing the side effects for the patient whilst increasing the specific anti-tumour activity.

Research and Development

AUSTRIANOVA's encapsulation technology is an extremely versatile platform that can be applied in diverse areas: research projects currently in progress are focused on the genetic modification of cells to convert them into virus producing cells (ViroCaps®). It is planned to use the viruses (NovaVir®) produced from these cells as gene transfer systems, which are able to target additional tumour types and metastases. This will enable delivery of the therapeutic gene to the surrounding cancer cells thereby increasing the effect of the previous suicide gene mediated cancer cell killing effect. Proof of principle for this has already been shown (Saller, et al., Encapsulated cells producing retroviral vectors for in vivo gene transfer, J Gene Med 2002, 4, 150-160).

2) RESEARCH PROJECTS AT THE INSTITUTE OF VIROLOGY AND BIOMEDICINE

Basic research concerning the molecular biology of mouse mammary tumour virus:

Transcription of viral genes, regulation of viral mRNA and especially the infection

of human cells and the implication for human breast cancer (Indik, et al., Mouse mammary tumour virus infects human cells, *Cancer Res* 2005, 65, 6651-6659).

Development of highly efficient replication competent retroviral vectors for gene delivery and cancer gene therapy:

Because in vivo infection using classic retroviral vectors is still ineffective, we are developing replication competent systems based on the viruses MLV, MMTV and RSV. We currently have MLV based vectors that can infect 100% of tumour tissue in vivo in an immune incompetent setting.

Enhancement of infection efficiency of classic retroviral vectors:

Obtaining permission to use replication competent retroviral vectors in humans in the near future is probably unrealistic due to safety concerns and so classic vectors may be the only option. Because classic vectors have already proved themselves as the most efficient and successful human gene delivery tool in an ex vivo setting, we are interested and have had some recent success concerning improving the efficiency recombinant vector production, which is the first step to increasing their efficiency in vivo (Hlavaty, et al., Multiple modifications allow high-titer production of retroviral vectors carrying heterologous regulatory elements, *J Virol* 2004, 78, 1384-1392; Hlavaty, et al., Effect of posttranscriptional regulatory elements on transgene expression and virus production in the context of retrovirus vectors, *Virology* 2005, In press).

Identification and testing of effective and novel therapeutic genes for use in retroviral vectors for cancer gene therapy:

We are currently especially interested in pancreatic cancer, breast cancer, liver cancer and neoblastoma and have developed an extensive SPF, L3 mouse facility containing, for example, a number of human and other mammalian tumour xenografts. In addition to that which is in clinical trails with Austrianova, we also have several other suicide gene systems and toxic genes which we are testing in a gene therapy setting. For example we have recently developed a novel toxic gene which is capable of killing tumours in vivo (Agu et al., The cytotoxic activity of the bacteriophage lambda-holin protein reduces tumour growth rates in modified cells for implantation into human or animal patients mammary cancer cell xenograft models, *J Gene Med* 2005, In press).

Due to their ability to infect non-dividing cells lentiviral vectors are also interesting for specific gene therapy applications. We are doing basic and developmental research on SIV and FIV for potential use as vector systems. Recently we have developed a stereotactical device for the injection of highly concentrated, viral vector containing aliquots into live mouse brains and could show infection of specific brain cells with a pseudotyped SIV vector.

Innovative aspects / advantages:

World first GLP compliant machine/process for encapsulation of genetically modified cells or implantation into human or animal patients.

Diverse classic and replication competent retroviral and lentiviral vector systems
Development of lentiviral vector systems for gene delivery: for gene delivery in vitro or in vivo in a research or clinical setting.

Current state of development of the technology:

dependent on technology: either clinical phase III trials or laboratory tested/testing

Intellectual Property Rights:

Others (registered design, plant variety right, etc)
all of the above are relevant depending on the technology in question

Application Domains:

Materials technology; BIOLOGICAL SCIENCES; Medicine, health; Biotechnology

Austria**CIS-Services - Eggenreich & Gschanes OEG**

Participant: Udo Eggenreich
 Sectors: Pharmaceutical Industry Consultant
 Activities: Clinical product development, regulatory activities, Pharmacovigilance, Training
 Technology keywords: Medicine, Human Health; Care and Health Services

**Know-how/ expertise**

KHE_AT_9585

Title: Support of Clinical Development

Detailed description: CIS-Services supports national and international pharmaceutical and biotechnology companies in all aspects of clinical product development including development plan setup, establishing and managing regulatory contacts, planning and operating clinical studies according to the applicable guidelines, as well as planning and implementing lean and effective quality systems. Furthermore CIS-Services focuses on training of key personnel.

Innovative aspects / advantages: Clinical development can be regarded as the one development step that is associated with both the highest costs and the highest risk for failure. Based on its extensive working experience of more than 15 years in the international pharmaceutical R&D projects CIS-Services is able provide clients with straightforward solutions that meet the specific project requirements regarding costs, timelines, and quality.

Application Domains: Chemical industry; Information processing, information systems; Medicine, health; Veterinary; Pharmaceutical/Cosmetics

Collaboration Details: Technical co-operation: Joint Venture agreement:

Type of partner sought: industry (established or startup)
 university
 private research institutes

The specific area of activity of the partner: veterinary and/or human therapeutics

Austria**Graz University of Technology, Department of Environmental Biotechnology**

Participant: Univ.-Prof. Dr. Georg Gübitz
 Sectors: Enzymology, Biotechnology
 Activities: Functionalisation of polymeric materials, controlled drug release
 Technology keywords: Enzymology/Protein Engineering/Fermentation

**Technology Offer**

TO_AT_9764

Title: Enzymatic surface functionalisation of polymeric materials

Detailed description:	A technology has been developed to specifically functionalize the surface of polymer materials to improve properties and widen the range of applications (medical textiles, implants etc). Enzymatic treatment can either lead to direct effects (e.g. increased hydrophilicity of polyesters, polyamides etc) or introduce anchor groups for further coating or functionalisation providing e.g. antimicrobial effects, biocompatibility etc.
Innovative aspects / advantages:	Polymeric materials can be specifically functionalised under mild reaction conditions
Current state of development of the technology:	Available for demonstration – field tested
Intellectual Property Rights:	Patent(s) granted
Application Domains:	Materials technology; Biotechnology
Collaboration Details:	Technical co-operation: Manufacturing/ subcontracting agreement:
Type of partner sought:	Industry or academic institution for further development of technology in special applications
The specific area of activity of the partner:	Material technology, implants, medical textiles
The tasks to be performed of the partner sought:	adapt technology for speciality applications

Ukrainia

Institute of Applied Problems of Physics&Biophysics, NAS of Ukraine

Participant:	Dr. Yuriy Babich
Sectors:	functional medical imaging
Activities:	development of original imaging technology of broad application< specifically early cancer diagnosis and controlled therapy, EMF-bioeffects, real-time assessment of individual sensitivity to various environmental and pharmaceutical factors etc.
Technology keywords:	Medicine, Human Health; Care and Health Services; Biology / Biotechnology; Biochemistry/Biophysics; Cellular and Molecular Biology; Enzymology/Protein Engineering/Fermentation; In vitro Testing, Trials; Molecular design; Toxicology



Technology Offer

TO_UA_9684

Title: THE SKIN MULTIPARAMETER ELECTROPHYSIOLOGICAL IMAGING (SMEI)

Detailed description: SMEI is a new functional& informational imaging modality of wide application. SMEI enables non-invasive high-resolution visualization/monitoring of the skin (and sub-skin tissues) in a set of electrical parameters and, thus, provides information on

metabolic and inter/intra-cellular processes.

With the aid of SMEI, novel class of spatio-temporal phenomena of the skin electrical landscape (SEL) have been in vivo discovered, specifically initial and EMF-induced wave-like and pulsating structures with a speed of calcium waves.

Innovative aspects / advantages:

SMEI differs from known systems of electrobioimpedance tomography by its uniquely high surface spatial resolution (<1mm), i.e. skin and sub-skin tissues, which enables unique capability of dynamic in vivo imaging/monitoring of processes of intercellular communication and metabolism.

Current state of development of the technology:

Available for demonstration – field tested

Intellectual Property Rights:

Secret know-how

Application Domains:

Chemical industry; BIOLOGICAL SCIENCES; Medicine, health; Biotechnology; Veterinary; Pharmaceutical/Cosmetics

Comments about market applications:

As novel functional/metabolic imaging modality SMEI has of very broad range application, e.g.: early tumor diagnosis (specifically melanoma and its invisible metastasis, breast- and prostate cancer); controlled therapy; dermatology/cosmetology/toxicology; environmental research, particularly of electromagnetic factors of any modes, frequencies and intensities (e.g. at such actual fast-developing fields as electroporation/electroperturbation and terahertz imaging).

Collaboration Details:

Licence agreement: Technical co-operation: Joint Venture agreement: Commercial agreement with technical assistance: Manufacturing/subcontracting agreement: Financial resources:

Type of partner sought:

Research organisation, investor, industry

The specific area of activity of the partner:

Cancer research; dermatology/cosmetics; environmental studies, specifically mobile phones and ELF-bioeffects, physiotherapy etc.

Austria

Ludwig Boltzmann Institute for Experimental and Clinical Traumatology

Participants:

Univ.-Prof. Dr. Heinz Redl, Dr. Gudrun Schmidt-Gann

Activities:

1. Direct organ damage, 2. Organ dysfunction after ischemia/reperfusion, shock and sepsis, 3. Hemostasis, Wound/Bone Healing

Technology keywords:

Medicine, Human Health; Care and Health Services; Biology / Biotechnology; Biochemistry/Biophysics



Know-how/ expertise

KHE_AT_9743

Title:

Preclinical Models

Detailed description:

Preclinical models in the field of ischemia/reperfusion, shock, inflammation, sepsis as well as hemostasis, wound/bone healing and tissue engineering with related analytical technology.

Innovative aspects / advantages:	Specialist in the trauma field with experience in FDA / European registration
Intellectual Property Rights:	Others (registered design, plant variety right, etc)
Application Domains:	BIOLOGICAL SCIENCES; Medicine, health
Collaboration Details:	Technical co-operation:
Type of partner sought:	Industry, academy, research organisation
The specific area of activity of the partner:	Pharma, biomaterial development, tissue engineering
The tasks to be performed of the partner sought:	Provide Technology, Clinical Development, Commercialization

Austria

Medical University of Graz, Department of Internal Medicine, Diabetes and Metabolism

Participant:	Dr. Werner Regittnig
Technology keywords:	Medicine, Human Health

■ Know-how/ expertise

KHE_AT_9857

Title: Healthsite Medical Research Graz: A Centre For Clinical and Preclinical Evaluation of Medical Devices And New Drugs

Detailed description:	<p>Healthsite Medical Research Graz is located at the Clinical Research Centre of the Medical University of Graz, Austria, offering a wide range of assured quality clinical and preclinical research services:</p> <ul style="list-style-type: none"> · Time and cost effective conduct of phase I-IV studies · Clinical and preclinical evaluation of medical devices · Pharmacodynamic and pharmacokinetic studies related to glucose-regulating drugs. Application of tracer and clamp techniques · Standard analyses using ELISA and enzymatic measurement methods, as well as novel coupling methods, such as nanoHPLC-MS-MS and GC-MS. Development and validation of analytical methods (GC-MS, HPLC-MSMS, MSMS), and GLP-compliant analysis · Quality assurance according to the World Medical Association Declaration of Helsinki, ÖNORM EN ISO 9001:2000, ICH-GCP guidelines, EU Directive 2002/20/EC · Design of clinical and preclinical studies
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- Subject and patient recruiting
- Preparation of clinical study protocols
- Design of case report forms (CRFs), information sheets for patients and investigators
- Administration of ethics committee applications and official notifications
- Analysing and summarising study data
- Preparation of publication manuscripts

Innovative aspects / advantages:

Healthsite Medical Research Graz is offering a unique service package consisting of

- "state of the art" experimental techniques,
- "state of the art" laboratory techniques and
- comprehensive data management

Current state of development of the technology:

Already on the market

Application Domains:

Medicine, health

Collaboration Details:

Technical co-operation: Financial resources:

Type of partner sought:

industry

The specific area of activity of the partner:

manufacturer of medical devices and/or developer of drugs

The tasks to be performed of the partner sought:

In order to characterize the medical device and/or drug, the Partner enters into cooperation with Healthsite Medical Research Graz

Austria**Medical University of Graz, Department of Internal Medicine, Division of Gastroenterology and Hepatology****Participant:**

Univ.-Prof. Dr. Michael Trauner

Technology keywords:

Medicine, Human Health; Biology / Biotechnology; Biochemistry/Biophysics; Cellular and Molecular Biology; Gene Expression, Proteome Research

**Know-how/ expertise**

KHE_AT_9792

Title:

Translational research - gene expression profiling (human liver disease, mouse models)

Detailed description:

Our studies aim is to understand the regulation of hepatobiliary transport and metabolism of endobiotics (e.g. bile acids,

cholesterol) and xenobiotics (e.g., drugs) at a molecular level in health and liver disease. We have established techniques for gene expression profiling of hepatobiliary transporters and enzymes as well as their regulatory nuclear receptors in human liver tissue from patients with liver diseases and transgenic/knockout mouse models for hepatobiliary diseases. Moreover we are interested in the molecular pathogenesis of hepatocellular cancer in metabolic and cholestatic liver diseases.

Innovative aspects / advantages: Drug development for cholestatic and metabolic liver diseases

Current state of development of the technology: Development phase – laboratory tested

Application Domains: BIOLOGICAL SCIENCES; Medicine, health; Biotechnology

Collaboration Details: Technical co-operation:

Type of partner sought: industry, research organisation

The specific area of activity of the partner: Liver diseases, metabolic disorders, mechanisms of cell death (apoptosis)molecular and cell biology

The tasks to be performed of the partner sought: Sharing technologies and know how, financial support

Austria

Medical University of Graz, Department of Internal Medicine, Evidence Based Review Center

Participants: Univ.-Doz. Dr. Andrea Siebenhofer-Kroitzsch, Dr. Karl Horvath

Technology keywords: Medicine, Human Health; Biostatistics, Epidemiology

■ Know-how/ expertise

KHE_AT_8840

Title: Creation of systematic reviews on a number of different medical topics using a validated evidence based medicine tool.

Detailed description: Evidence-based medicine (EBM) is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research.

The key elements describing the “evidence-based medicine paradigm” are: Wherever possible, doctors use information from systematic, reproducible and unbiased (that is, without systematic error) studies (external evidence), in order to increase their confidence in the usefulness of a diagnostic test, the prognosis as well as the effectiveness of a therapy. The understanding of elementary rules of evidence is necessary to understand the medical literature and adequately apply

the results found therein.

However, given the overwhelming quantity of biomedical literature available, applying the principles of evidence-based medicine to daily clinical practice is a task which cannot be performed by the average doctor providing patient care. He has neither the time, the resources, nor the know-how to carry out a search, evaluate the studies found and pool the data presented in them.

Our main activities are the creation of systematic reviews on a number of different medical topics, with a focus on issues related to chronic diseases.

One of our projects is comprised of four systematic reviews on aspects of diabetes mellitus: short acting insulin analogues in patients with type 1 diabetes mellitus, short acting insulin analogues in patients with type 2 diabetes mellitus, long acting insulin analogues in patients with type 1 diabetes mellitus and long acting insulin analogues in patients with type 2 diabetes mellitus.

In addition to diabetes, further systematic reviews are on topics related to hypertension. This choice of topics reflects the specialties of our university staff in their current clinical practice.

The results of our systematic reviews will then serve for health care providers, insurance companies and national health institutes as the basis for:

- the description and evaluation of the present standard of knowledge concerning diagnostic and therapeutic procedures of selected diseases,
- generation of scientific elaborations, expert opinion and comments on questions of quality and economic efficiency of benefits adducted by compulsory health insurances,
- evaluation of evidence based guidelines for the epidemiologically most important diseases,
- release of recommendations concerning Disease Management Programs (DMP)
- evaluation of the benefit of pharmaceuticals
- provision of general information concerning quality and efficiency of health care for all citizens.

LITERATURE

Sackett DL, Richardson WS, Rosenberg W, Haynes RB (1998) Evidence-based Medicine. How to practice and teach EBM. Churchill Livingstone; Edinburgh, London

Greenhalgh T (2000) Einführung in die Evidence-based Medicine. Kritische Beurteilung klinischer Studien als Basis einer rationalen Medizin. Verlag Hans Huber; Bern

Innovative aspects / advantages:

know how and experience in the applicability of EBM

Intellectual Property Rights:

Others (registered design, plant variety right, etc)

Application Domains:

Information processing, information systems; Medicine, health

Type of partner sought:

industry, research organisation, health care providers, national institutes of health, insurance companies

Austria

Medical University of Graz, Department of Otorhinolaryngology, Division of Neuro-Otology

Participant: Dr. Andreas Lackner

Technology keywords: Medicine, Human Health; Care and Health Services

Know-how/ expertise

KHE_AT_9820

Title: Different Aspects of Neuro-Otology

Detailed description: Acoustic and vestibular orientation: The influence of drugs, medication or tiredness on eye movements.

Orientation of the individual is provided by complex interactions between peripheral and central vestibular functions. The Investigation of the Vestibular Ocular Reflex (VOR) is most suitable to describe the condition of the peripheral vestibular organ.

Videonystagmography provides an objective instrumentation for detecting alterations of the VOR; in our vestibular laboratory we use the Eye link system.

Therefore we provide clinical investigations to evaluate the influence of drugs, medication or tiredness on the VOR, and therefore on the clinical status of the vestibular orientation of a patient and its consequences for daily life, e.g. restrictions for driving a car.

Innovative aspects / advantages:

Non invasive objective investigation.

Reliable statement on the safety and tolerance of different drugs. medication or e.g. shift working to the vestibular system and evaluation of possible consequences on all day situations e.g. car driving, etc..

Current state of development of the technology:

Development phase – laboratory tested

Intellectual Property Rights:

Others (registered design, plant variety right, etc)

Application Domains:

Medicine, health

Collaboration Details:

Technical co-operation:

Type of partner sought:

industry, research organisation

The specific area of activity of the partner:

physiologists, pharmaceuticals,

Austria

Medical University of Graz, Institute of Biophysics

Participant: Univ.-Prof. Dr. Herbert Windisch
 Technology keywords: Medicine, Human Health; Biochemistry/Biophysics

■ Know-how/ expertise

KHE_AT_9287

Title: Bioelectric fluorescence setups permit high resolution monitoring of electrical phenomena in cells and tissues

Detailed description: We have developed special fluorescence setups equipped with laser excitation sources and photodiode array detectors. Living cells and tissue preparations (mm-range) are investigated after the staining with a voltage sensitive dye. Electrical membrane potential changes can be monitored with high spatial and temporal resolution (up to 10 μm and 10 μs , respectively). At present defibrillation shocks in heart cells and tissues are investigated; guest investigators and companies may study electrical events in other preparations of interest.

For about two decades optical monitoring of membrane voltages has become a growing technology in disciplines like basic research in cardiology or neurology. The method is based on fluorescent potential sensitive dyes, which, when bound to cell membranes and optically excited, change their fluorescence light intensity in a linear relationship to membrane potential changes. Dyes of various properties are commercially available on the international market. In contrast, the experimental setups are usually not commercially available, are custom made, and designed and adapted to the individual needs of the investigators. Many setups have been designed for large scale preparations in the cm range, as e.g. whole hearts, and some for monitoring single cells or tissue cultures. Depending on the needs on spatial and temporal resolution and on the number of measuring spots, various types of light sources and detectors are used. In any case, such a setup with its special instrumentation, its hard- and software, needs much of investment, know how and developmental work.

We have developed two setups which are specially designed for measurements in living specimen, for single cells and cell cultures, and for larger mm-sized preparations, respectively. Both setups use continuous wave lasers in single mode operation, which offer a powerful, stable, and essentially noiseless excitation light at 532 nm. The matrix detector of the single cell setup, which is built around an inverted fluorescence microscope, consists of a 10 x 10 photodiode matrix with 100 individual amplifiers; the other setup is equipped with a 16 x 16 matrix detector with its amplifiers, and uses microscope objectives which tip into the tissue bath. Both setups with its specially designed electronic and mechanical parts allow the adaptation to various experimental situations; a set of microscope objectives allows to choose proper measuring areas. Data acquisition and analysis is performed on personal computers.

At present the setups are used to study the electrical responses of heart muscle cells and small heart muscle preparations to strong electrical pulses in *in vitro* defibrillation experiments.

It is our aim, to open our laboratory for guest researchers and companies, who want to study fast electrical events in cells or preparations of their own: in addition to heart muscle, neurons, ganglions, smooth muscle or skeleton muscle may be used as specimen. Spatial-temporal phenomena, as e.g. the spread of excitation, can be measured with very high resolution in time and space and can be visualized with our analysis software. The method may also become a necessary tool to complement gene manipulation experiments, revealing functional changes in excitable cells and tissues.

Innovative aspects / advantages:	Two setups, based on the same technology, allow to study relevant physiological questions at the level of single cells and tissues. The equipment, including the software, is a most flexible tool and can be adapted to various experiments. Guest researchers or companies can design experiments of their own samples without the need of building expensive and challenging equipments. Tentative experiments can be performed without the risk of imminent losses of funding and work. New research fields or new screening methods may be opened with a minimal investment.
Current state of development of the technology:	Available for demonstration – field tested
Application Domains:	Information processing, information systems; Medicine, health
Collaboration Details:	Technical co-operation: Commercial agreement with technical assistance: Financial resources:
Type of partner sought:	industry, research organisation, technology centres
The specific area of activity of the partner:	companies or researchers, who want to study fast electrical events in cells or preparations; e.g. cardiology or cell biology; the collaboration with any partner will be agreed in an individual contract.
The tasks to be performed of the partner sought:	cooperation; use of technology;

Austria

Medical University of Graz, Institute of Biophysics

Participant:	DI Dr. Gernot Plank
Technology keywords:	Medicine, Human Health; Biochemistry/Biophysics; Bioinformatics

■ Know-how/ expertise

KHE_AT_9546

Title: Computational Cardiac Electrophysiology


Detailed description: A cardiac arrhythmia is the deterioration of the heart's normally well organized electrical activity into increasingly disorganized activation patterns. This decreases the heart's capability to pump blood leading to severe disturbances or to sudden cardiac death. Given that cardiac arrhythmias are the most common cause of death in the industrialized world and thus therapies to either prevent the formation of arrhythmias or to restore the heart's normal rhythms by terminating an antiarrhythmic episode are urgently sought after. Complementary to clinical studies and experimental work, a computer model has been developed by our group within the framework of an international cooperation which allows the detailed simulation of the electrical activity of the heart. This computer model, the "Virtual Heart", can be used to test hypotheses regarding beneficial effects of drugs (identification of possible pharmacological targets and design of new drugs) or to optimize medical devices like implantable cardioverters/defibrillators (optimization of defibrillation pulse waveforms, electrode geometry and location, etc.).

Current state of development of the technology:	Development phase – laboratory tested
Intellectual Property Rights:	Secret know-how
Application Domains:	Information processing, information systems; Medicine, health
Collaboration Details:	Technical co-operation:
Type of partner sought:	industry
The specific area of activity of the partner:	drug design for antiarrhythmia therapy implantable devices manufacturer

Austria

Medical University of Graz, Institute of Molecular Biology and Biochemistry, Center for Molecular Medicine

Participants:	Univ.-Prof. Dr. Wolfgang Graier, Mag. Karin Osibow
Technology keywords:	Medicine, Human Health; Biology / Biotechnology; Biochemistry/Biophysics

 Know-how/ expertise	KHE_AT_9746
Title:	Molecular Pharmacology and Cellular (Patho-) Physiology
Detailed description:	The vascular cell biology laboratory concentrates on the molecular basis of vascular physiology and the impact of physiological and pathologically altered function of endothelial cells on cardiovascular biology. Main focus is put on the molecular mechanisms of the subcellular ion regulation (in particular the regulation of Ca ²⁺), the impact of organelles, the function of single ions as selective and specific second messengers for cell homeostasis and the discovery of new ion-sensitive proteins involved in ion-triggered signal transduction. New substances are tested for their potential benefit in the treatment of endothelial dysfunction and cardiovascular disorders. Moreover, endothelial signalling molecules and pathways are characterized as new putative targets for therapeutic intervention in endothelial dysfunction.
Innovative aspects / advantages:	The broad range of detection systems for various signalling events and physiological endothelial functions available offers widespread characterization of the targets and effects of putative new therapeutics as well as the potential to identify new putative target proteins. Additionally, fluorescent molecular sensors can be designed for specific applications on demand. The combined development of fluorescent biogenic sensors, microscopic devices and analysis programs within one laboratory allows for optimized adjustment of sensory molecules and technical equipment in relation to each other. Moreover, new inventions are evaluated and optimized directly in an established cellular model of endothelial physiology and dysfunction.
Intellectual Property Rights:	Others (registered design, plant variety right, etc)
Application Domains: Comments about market applications:	BIOLOGICAL SCIENCES; Medicine, health; Biotechnology pharmaceutical companies for the assessment of potentially beneficial new substances and the identification of new putative therapeutic targets

Collaboration Details:	Technical co-operation: Joint Venture agreement:
Type of partner sought:	Industry
The specific area of activity of the partner:	Pharmaceutical companies
The tasks to be performed of the partner sought:	Research and development collaboration; Appropriation of new putative therapeutics to be tested; Cooperation on the discovery of new putative therapeutic target proteins

Austria

Medical University of Graz, Institute of Molecular Biology and Biochemistry, Center for Molecular Medicine

Participants:	Univ.-Prof. Dr. Wolfgang Graier, Mag. Karin Osibow
Technology keywords:	Medicine, Human Health; Biology / Biotechnology; Biochemistry/Biophysics; Cellular and Molecular Biology

■ Know-how/ expertise

KHE_AT_9747

Title: Development of Analysis Programs and Devices for High Resolution Fluorescence (Laser Scanning) Microscopy

Detailed description: The vascular cell biology laboratory concentrates on the molecular basis of vascular physiology and the impact of physiological and pathologically altered function of endothelial cells on cardiovascular biology. Main focus is put on the molecular mechanisms of the subcellular ion regulation (in particular the regulation of Ca²⁺), the impact of organelles, the function of single ions as selective and specific second messengers for cell homeostasis and the discovery of new ion-sensitive proteins involved in ion-triggered signal transduction. For current applications in the field of cell physiology, analysis programs, new instruments and application tools for high resolution fluorescence microscopy are developed and existing microscopic devices optimized.

Innovative aspects / advantages: The combined development of fluorescent biogenic sensors, microscopic devices and analysis programs within one laboratory allows for optimized adjustment of sensory molecules and technical equipment in relation to each other. Moreover, new inventions are evaluated and optimized directly in an established cellular model of endothelial physiology and dysfunction.

Application Domains: BIOLOGICAL SCIENCES; Medicine, health; Biotechnology

Collaboration Details: Technical co-operation: Joint Venture agreement:

Type of partner sought: Industry
Research organisation

The specific area of activity of the partner: Producing and developing companies of fluorescent microscopes
Research organisations and groups in the field of fluorescence microscopy

The tasks to be performed of the partner sought: Research and development collaboration; Appropriation of new fluorescence microscopes and components to be tested and optimized in practise; Distribution of new analysis programs, optimization and devices

Austria**Medical University of Graz, Institute of Molecular Biology and Biochemistry, Center for Molecular Medicine**

Participants: Univ.-Prof. Dr. Wolfgang Graier, Mag. Karin Osibow

Technology keywords: Medicine, Human Health; Biology / Biotechnology; Biochemistry/Biophysics; Enzymology/Protein Engineering/Fermentation

Technology Offer

TO_AT_9745

Title: Development of Genetically Encoded Fluorescent Sensors

Detailed description: The vascular cell biology laboratory concentrates on the molecular basis of vascular physiology and the impact of physiological and pathologically altered function of endothelial cells on cardiovascular biology. Main focus is put on the molecular mechanisms of the subcellular ion regulation (in particular the regulation of Ca²⁺), the impact of organelles, the function of single ions as selective and specific second messengers for cell homeostasis and the discovery of new ion-sensitive proteins involved in ion-triggered signal transduction. Biogenic sensory proteins are designed and produced, which offer the possibility of fast survey of molecular processes with high temporal and spatial resolution in single living cells based on fluorescence and the so-called fluorescence resonance energy transfer (FRET), respectively. In addition to an optimized Ca²⁺-sensing probe for the endoplasmic reticulum, a new FRET-based sensor for Ca²⁺-dependent protein folding and, thus, indirect assessment of the Ca²⁺ concentration in that compartment was established (ApoK1-ER, patent pending).

Innovative aspects / advantages:

The combined development of fluorescent biogenic sensors, microscopic devices and analysis programs within one laboratory allows for optimized adjustment of sensory molecules and technical equipment in relation to each other. The first and only fluorescent probe for protein folding processes in the endoplasmic reticulum could be developed, which is non-invasive and does not harm the cell. Thus, protein folding in a subset of the endoplasmic reticulum in one given cell can be monitored using the biogenic sensor. Moreover, in contrast to other marker/sensor proteins for endoplasmic reticulum Ca²⁺ concentration, the novel fusion protein comprising kringle domains monitors the Ca²⁺ concentration without interfering in cellular processes and does not influence the intraluminal Ca²⁺ homeostasis. Therefore, dynamic regulation of protein folding can be assessed even under fast fluctuations of cellular/ER Ca²⁺ concentration.

Current state of development of the technology:

Development phase – laboratory tested

Intellectual Property Rights:

Patent(s) applied for

Patents pending, not yet published. The patent applications and a search report are available in English upon request, after execution of a Confidentiality Agreement (CDA). The owner – the Medical University of Graz, Austria – is willing to license/transfer its intellectual property rights in its filed patent applications as well as knowledge on an exclusive or non-exclusive, regional or world-wide basis. Furthermore, the research group at the Medical University of Graz is also interested to further develop the technology according to the needs of a possible licensee.

Application Domains: BIOLOGICAL SCIENCES; Medicine, health; Biotechnology

Collaboration Details: Licence agreement: Technical co-operation: Joint Venture agreement:

Type of partner sought:	Industry, Research organisation
The specific area of activity of the partner:	Biotech companies in the field of molecular sensor techniques, plasmid design, protein biochemistry Research organisations and groups in the field of fluorescence microscopy and / or vascular (patho-) physiology
The tasks to be performed of the partner sought:	licence agreement for the application and distribution of the protein folding sensor

Austria

Medical University of Graz, Institute of Physiological Chemistry

Participant: Univ.-Prof. Dr. Reinhard Möller

 Technology Offer

TO_AT_8339

Title: Measuring human body fat distribution by photon backscatter for detecting risks of metabolic disorders by analyses of body fat profiles

Detailed description: The use of of the novel and patented optical instrument called LIPOMETER (European patent No.: EP 0516251 B1 R. Moeller) enables the precise measurement of subcutaneous body fat distribution in humans, the so called Subcutaneous Adipose Tissue-Topography (SAT-Top). The SAT-Top profiles show characteristic deviations between the groups of healthy and diseased subjects and there is a significant relationship between typical fat profiles and various chronic diseases. Furthermore statistical analyses allow an almost certain classificaton into healthy and diseased and even a subclassification of the type of disorder.

The optical device LIPOMETER forms geometrically alternating light patterns in rapid succession and illuminates the selected SAT layer under the skin. A photo detector picks up the corresponding light intensities backscattered, which are amplified, digitized and calculated into absolute values (mm) of SAT thickness. Calibration of the LIPOMETER was performed by using Computed Tomography (CT) as reference. Thus the LIPOMETER renders an exact description of the individual SAT-Top for the whole body by means of anatomically standardised body sites (1-neck,... 15-calf). Until now there were measured more than 13.000 healthy individuals and patients in the age range of 7 to 70 yrs. By comparison of the individual SAT-Top with the data of healthy subjects of the same gender and age, discrepancies will be statistically recorded. Deviations from normal body fat distribution can be detected in chronic metabolic disorders such as type 2diabetes mellitus (typ2 DM), coronary heart disease (CHD) or the Poly Cystic Ovary Syndrome (PCOS) - the most frequent fertility disorder in women and male infertility in obese men. Correct classification between these various distribution classes of the different diseases can be done with probabilities of more than 90%.

Innovative aspects / advantages: It is evident that there is much more information and discriminating power in body fat distribution than in simple declaration of total body fat mass or total body fat percentage of a subject. Great lead in knowledge and statistical methods, large data base of healthy and diseased individuals.

Current state of development of the technology: Other (please specify)
prototype available

Intellectual Property Rights: Patent(s) granted

Application Domains: Collaboration Details:	Licence agreement:
Type of partner sought:	Industry
The specific area of activity of the partner:	medical and/or wellness-fitness equipment
The tasks to be performed of the partner sought:	production, sale

Austria

Medical University of Vienna, research support, patent and IPR consulting

Participant:	Dr. Christiane Galhaup
Technology keywords:	Medicine, Human Health; Biology / Biotechnology; Biochemistry/Biophysics

Technology Offer

TO_AT_9796

Title: The use of stilbene analogues as anticancer compounds

Detailed description: Melanoma is one of the most aggressive and devastating neoplasms in man, and it is the leading cause of death among patients suffering from skin cancer. The only so far FDA approved chemotherapeutic for patients at advanced stage of disease is Dacarbazine (DTIC). However, response rates of melanoma to DTIC are low and no survival benefit for DTIC treatment of melanoma compared to best supportive care could be demonstrated in clinical trials. Therefore, there is still a clear need for more effective treatment options for malignant melanoma.

A number of naturally occurring compounds such as flavonoids or various phenolic compounds were shown to prevent from diseases and to be effective in the treatment of various conditions, such as cancers or blood vessel diseases for instance. Resveratrol (3,5,4' trihydroxystilbene) is the most extensively studied polyphenolic compound. It is produced by grapes and is a constituent of wine. Resveratrol was shown to inhibit cancer cells. In order to further improve the anti-tumor activity of resveratrol we synthesized several higher hydroxylated stilbene analogues and tested them for their anti-tumor activity in vitro.

Among these, the 3,3',4,4',5,5'-hexahydroxystilbene (M8) exerted a more than three-fold higher cytostatic activity compared to resveratrol in HL-60 leukemia cells. In addition, we examined the effects of various analogues on human HT-29 colon tumor cells and human prostate carcinoma cells. In all cases, the Hexahydroxylstilbene- compound yielded the lowest IC50 values in the low micromolar range and caused dose dependent induction of apoptosis.

We have shown that DTIC, when combined with the novel stilbene analogue Hexahydroxystilbene is most efficient in treating melanoma.

The anti-tumor activity of Hexahydroxystilbene M8 alone as well as in combination with DTIC was shown in human melanoma cell lines and SCID mice, respectively.

Innovative aspects / advantages:

The combination constitutes a novel therapy for melanoma. The anti-tumor effects are conformed in melanoma animal models. The combination treatment of M8 and DTIC was well tolerated, no signs of toxicity were observed. Single agent tumor activity for M8 was in the range of 40% tumor growth reduction; but when treated with the combination 50% of mice tested were tumor free at the end of the

observation period and the remaining 50% of the animals displayed only minimal residual tumors.

Current state of development of the technology:

Development phase – laboratory tested

Intellectual Property

Patent(s) applied for

Application Domains:

Medicine, health; Pharmaceutical/Cosmetics

Collaboration Details:

Licence agreement:

Type of partner sought:

Industry- development of anticancer drugs

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