FORUM
Translational Medicine

Conference Guide
2018

bio-m.org/forumTransMed
From the original finding that CTLA-4 negatively regulates T-cell responses until the publication by James Allison et al. in 1996 that an anti-CTLA-4 antibody was able to reduce the tumor load in mice, it took only some years. But there was no "run" for this invention, in fact the involved scientists where turned down by every large pharma company they approached for the next two years.

The first company that adapted this idea used another technology (RNA-aptamer) to block this receptor – and did not succeed. It was the biotech company Medarex which finally could be convinced to take an antibody approach to block CTLA-4. Later-on Medarex was acquired by Bristol-Myers Squibb which then received the FDA approval in 2011 for what is now best known as the starting point of "immunotherapeutic intervention" in oncology – using the antibody drug Ipilimumab/ Yervoy. Eventually it took nearly 20 years from science to bedside!

How can we become faster in turning inventions in medical science into beneficial results for the patient? Today you are experiencing this inaugural conference where we have tried to combine excellent research in Bavaria with their international counterparts. Our aim is to accelerate biomedical innovations by bringing together international experts from the biotech and pharma industry with academic scientists and clinical physicians. This conference takes ‘translation’ seriously, it will highlight success stories and new examples of clinical research. It will showcase exciting technology developments pushing the boundaries of what is feasible – or at least imaginable today. We thank all our speakers who accepted our invitation, since every conference which is organized for the first time has no track record yet and has to be seen as an adventure in itself. We are, however, quite confident that you will enjoy the program.

BioM has built an extensive national and international network and supports Bavarian companies in their efforts to establish new business contacts. We initiate and promote interactions of our regional SMEs with companies, investors and other players from the rest of the world in the life science sector. As the first point of contact for international business partners, BioM provides comprehensive information and an overview as well as deep insights of the Bavarian life science sector. We offer a wide range of seminars and events to bring together players from academia and the biotech industry with the idea in mind to make innovation happen.

BioM, the networking organization for biotechnology in Munich and Bavaria, has organized the “1st FORUM Translational Medicine” and is excited to welcoming you in Würzburg.

Best regards,
Prof. Horst Domdey

Welcome

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Welcome
apceth Biopharma

apceth Biopharma is a pioneering company in cell therapies and regenerative medicine with an innovative portfolio of drug candidates for the treatment of inflammation, autoimmunity and solid tumors. apceth Biopharma is also a leading and certified Contract Development and Manufacturing Organization for cell and gene therapeutics with a broad international customer base. www.apceth.com

Bayerische Forschungsallianz

The Bavarian Research Alliance (BayFOR) is a private organisation supporting and advising Bavarian scientists and stakeholders from the private sector on European Research & Innovation funds. BayFOR is a partner institution in the Bavarian Research and Innovation Agency and is supported by the Bavarian State Ministry of Science and the Arts. www.bayfor.org

BioM Biotech Cluster Development

BioM is the non-profit networking organisation for biotechnology in Munich and Bavaria. The cluster management brings together regional SMEs, industry partners, investors and other relevant stakeholders. BioM offers comprehensive support for founders in medical biotechnology as well as specialised coaching, training, and mentoring services and networking events. www.bio-m.org

BioPark Regensburg

BioPark Regensburg GmbH operates a Technology- and Start-up Centre for Biotechnology, Medical Engineering, Pharma, Analytics & Diagnostics and Health. BioRegio Regensburg is defined as a Cluster Region in East Bavaria in accordance with the European Cluster Excellence Initiative with currently 50 companies and 3,872 employees. BioPark offers 18,000 m² including state-of-the-art laboratories with a flexible leasehold concept, comprehensive technology and service options, excellent locations factors e.g. a freeway access or an inhouse daycare center. www.biopark-regensburg.de

Blood Donor BIOBANK

The Blood Donor BIOBANK and its collection of over >1.5 million blood samples is a unique and innovative resource for biomedical research. Numerous blood samples may be examined from one person, which were taken and stored before the diagnosis of a disease. This research approach is especially suitable for investigating markers associated with the onset and progression of disease. www.bio-bank.de
**Exhibitors**

**Bristol-Myers Squibb**
Bristol-Myers Squibb is a global biopharmaceutical company whose mission is to discover, develop and deliver innovative medicines that help patients prevail over serious diseases. Thus, the treatment of cancer remains a critical focus of our work. Our immuno-oncology portfolio plays a key role, establishing Opdivo as a foundational therapy. [www.bms-onkologie.de/immunonkologie/biomarker](http://www.bms-onkologie.de/immunonkologie/biomarker)

**Cell Signaling Technology**
Cell Signaling Technology (CST) is a private, family-owned company, founded by scientists and dedicated to providing high-quality research tools to the biomedical research community. Our employees operate worldwide from our U.S. headquarters in Massachusetts, and our offices in the Netherlands, China, and Japan. [www.cellsignal.de](http://www.cellsignal.de)

**Charles River**
With a global network of commercial breeding facilities, rigorous biosecurity and genetic standards, and research support services such as surgery and preconditioning, we can provide you with an animal model to meet your specific research needs. For further information please visit our stand or contact us via email (askcharles@crl.com) or visit our website. [www.criver.com](http://www.criver.com).

**Innovations- und Gründerzentrum Würzburg IGZ**
The Innovation and Entrepreneurship Center (IGZ) Würzburg commenced its operations in 2001. As largest incubator of lower Franconia with a focus on the life sciences it offers approximately 2,500 m² of lab space and 3,000 m² of office space to technology-oriented start-ups. Additional offers encompass workshops, networking events and consulting services for founders. [www.igz.wuerzburg.de](http://www.igz.wuerzburg.de)

**MediTox s.r.o.**
MediTox is a GLP-certified preclinical CRO offering development services of human and veterinary drugs, vaccines, excipients, medical devices and food additives. We work with most of laboratory animals with strong expertise in non-rodent toxicology: Dog, Cat, Ferret, NHP. Our R&D models: Cardiovascular disorders, chronic glaucoma, antiviral, arthrosis, diabetes type II. [www.meditox.eu](http://www.meditox.eu)

**Paul-Ehrlich-Institut**
The Paul-Ehrlich-Institut (PEI) is the Federal Institute for Vaccines and Biomedicines in Germany. It is responsible for the approval of clinical trials, the processing of applications for marketing authorisation and applications of national and European procedures. The innovation office of the PEI provides regulatory and scientific advice during all phases of product development. [www.pei.de](http://www.pei.de)

**PeproTech**
PeproTech creates the building blocks of your life science research by manufacturing over 2,000 high-quality products. PeproTech has developed and refined innovative protocols to ensure quality, reliability and consistency. We offer: • Cytokines and Antibodies, • GMP Cytokines for Cell, Gene and Tissue Therapy, • Animal-Free Cytokines, • ELISA Development Kits, • Cell Culture Media Kits / Supplements. [www.peprotech.com](http://www.peprotech.com)

**Rudolf Virchow Center for Experimental Biomedicine/EFRE**
Around 100 international scientists work at the Rudolf Virchow Center for Experimental Biomedicine in the field of target proteins. Our research groups are studying the structure and function of these essential proteins to understand the causes of diseases. [www.uni-wuerzburg.de/en/rvz/](http://www.uni-wuerzburg.de/en/rvz/)

**Scomics**
Scomics is active in early-phase development and translation of novel diagnostics for precision medicine focussing on cancer and organ failure. Scomics offers protein expression, phosphorylation and ubiquitination status analyses for drug target, disease mechanism and biomarker research. The immuno-based scioDiscover analyses more than 1000 proteins and their modifications in a single assay. [www.scomics.de](http://www.scomics.de)

**Valicare**
Valicare GmbH is a subsidiary of Robert Bosch Packaging Technology GmbH and provides ISO and GMP compliance support to pharmaceutical and biotechnological industry and specifically for ATMP developer and manufacturer for over 15 years now. Our experts implement over 100 GMP international projects annually. Valicare’s headquarter is in Frankfurt am Main with a subsidiary in Trencin (Slovakia). [www.valicare.com](http://www.valicare.com)

**Zentrum Digitalisierung Bayern (Center Digitisation.Bavaria) ZD.B**
The Center Digitisation.Bavaria is a Germany-wide unique co-operation, research and foundation platform which works in whole Bavaria. Its objective is to further enhance Bavaria’s research expertise in the area of digitalization and to increase the speed of digital developments. [www.zentrum-digitalisierung.bayern](http://www.zentrum-digitalisierung.bayern)

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**Charles River**
With a global network of commercial breeding facilities, rigorous biosecurity and genetic standards, and research support services such as surgery and preconditioning, we can provide you with an animal model to meet your specific research needs. For further information please visit our stand or contact us via email (askcharles@crl.com) or visit our website. [www.criver.com](http://www.criver.com).

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OPSYON – Fusing tumor targeting and immune checkpoint blockade

OPSYON generates new and effective immuno-oncology therapeutics with reduced systemic toxicities. Our technology confines the benefits of immune checkpoint (IC) inhibition to tumor cells, thus providing cancer patients a long-term possibility for progression-free survival and low risk of side effects. To this end, we develop antibody-based therapeutics that specifically bind tumor cells and simultaneously inhibit innate or adaptive ICs. Our lead candidate focuses on the immune checkpoint CD47 in Acute Myeloid Leukemia (AML), an aggressive disease with limited treatment options and a high need for innovative therapies.

New targets in Immunotherapy

T cell - tumor cell communication has many bi-directional consequences which are determined by multifold signaling pathways on both sides. Novel approaches in cancer immunotherapy aim to exploit these circuits to overcome T cell suppression and tumor cell resistance. In order to systematically unravel critical signaling cascades during tumor – T cell interactions we apply genome wide gene knock downs in various tumor types and assess their impact on tumor cell destruction by T cells. The obtained results suggest the existence of numerous genes and related pathways that induce immune modulation in T cells and immune resistance in tumor cells and represent novel targets for cancer immunotherapy.

AutoImmunity Modifying Biologicals (AIM Biologicals) use a newly discovered mechanism that selectively induces tolerance towards embryonic antigens during pregnancy. This mechanism has been adapted and optimized for therapeutic use in autoimmune diseases. The current aim of the project is to validate the efficacy of AIM Biologicals for multiple sclerosis and neuromyelitis optica and to prioritize candidate molecules for clinical development.

The Blinatumomab-Story and far beyond – the clinician perspective

Prof. Bargou’s major research focus is in the field of immune oncology and the development of so-called BiTE antibodies. Thus, Bargou was instrumental in the development of the bispecific antibody blinatumomab, for which he was awarded the “Paul Martini Prize” in 2009 and the 2016 “Investor of the Year Award”. Another key contribution of Bargou is in the development of targeted therapies for residual molecular disease in acute lymphoblastic leukemia.

Rescuing the lost in translation: SPARK Norway and the global SPARK Network

A small percentage of the life science discoveries made in academia are effectively translated into new treatments, diagnostics or improved clinical practice. To address this translational gap the SPARK Program was created at Stanford in 2006. It helps scientists to turn good ideas into great projects and solutions through education, mentoring and financing. The talk introduces the SPARK approach, and how it is being implemented in Norway as part of a growing international network.

The Good and the Bad of NER or the Double Edged Sword of DNA Repair

Our understanding of DNA repair mechanisms and the knowledge how to specifically interrupt these pathways may lead the way to develop new anti-cancer compounds. Nucleotide excision repair (NER) is the most versatile DNA repair mechanism and crucial for the repair of DNA damages induced by UV light. Several of the proteins involved in this pathway also play a crucial role in transcription. Our analysis of the NER pathway aims to dissect these functions with the goal to specifically interfere with the repair process without affecting transcription.

Detection, characterization and monitoring of early and advanced systemic cancer

For decades, primary tumors have been used to guide treatment decision for systemic cancer. Recent data have shown that (i) cancer cells disseminate long before diagnosis; (ii) evolve independently at distant sites and (iii) continue to change under therapy. Therefore, new concepts and technologies are needed that are specifically designed to the needs of systemic cancer.
Helping unlock the promise of cellular therapies and regenerative medicines

Speakers

Dr. Sebastian Kreß
Project Leader, Tissue Engineering und Regenerative Medizin, University Hospital Würzburg

*Biologically Vascularized Scaffold for Tissue Generation and Translation*
See poster abstract No. 1, page No. 19.

Prof. Christoph Maack
Director of Translational Research CHFC, Universitätsklinikum Würzburg

*Translational concepts in heart failure research and treatment*
The Comprehensive Heart Failure Center (CHFC) in Würzburg integrates basic research on the mechanisms of disease with advanced cardiac imaging and a clinical research unit under one roof with the goal to improve the prevention and treatment of heart failure.

Prof. Matthias Mack
Department of Internal Medicine II – Nephrology, Universitätsklinikum Regensburg

*IL-3 as therapeutic target in autoimmune diseases*
IL-3 is markedly over-expressed in patients with active SLE, rheumatoid arthritis and multiple sclerosis. Moreover, IL-3 expression correlates with disease activity and was not reduced by currently approved drugs, including biologicals. There is a high medical need for more effective treatments of SLE, beyond cytotoxic drugs and high dose steroids. Also in RA antibodies against single effector cytokines like TNF or IL-6 fail to induce good responses in a considerable percentage of patients. The broad immuno-regulatory properties make IL-3 a promising target for SLE and RA. We have generated a humanized monoclonal antibody that blocks IL-3 with high potency. This was also confirmed with primary IL-3 from patients with autoimmune diseases. Proposed next steps are GMP-production of the antibody and clinical studies in patients with SLE, including lupus nephritis and RA. First proof of concept in a clinical phase IIa study is estimated to cost about 12-13 Mio Euros and to take about 5 years.

Prof. Jochen Maas
Director Research & Development, Sanofi-Aventis Deutschland GmbH

*Sanofi’s model for R&D cooperation in Translational Medicine Projects*
Scientific collaboration between pharmaceutical industry and academia and/or biotech will become more and more important in the future. Patients will require no longer only drugs but individual solutions for their specific problems. Normally, the complete solution cannot be covered by one supplier alone with the consequence that co-operations will be mandatory. Those collaborations have to be built significantly different from the past to create win/win-situations for all stakeholders.

KeyNote

Meet us at our booth!
In Touch with Europe

Competent Support for Excellent Research in Bavaria, Europe and the World

Do you have an innovative idea in the field of Health Research or Biotechnology? Are you interested in participating in an EU project?

The Bavarian Research Alliance (BayFOR) supports and advises Bavarian scientists and private sector stakeholders on European R&I funds, especially on the “Horizon 2020” Framework Programme:

• We identify the right call for proposal for your project idea
• We help you to find relevant project partners from science and business
• We assist you with proposal drafting
• We contribute to a successful networking with SMEs, academia and politics

We can provide support if at least one consortium member is a Bavarian stakeholder.

Bavarian Research Alliance, Unit Health Research & Biotechnology
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E-Mail: antonkin@bayfor.org
www.bayfor.org/english

Speakers

Prof. Nisar Peter Malek
Chair Center for Personalised Medicine (ZPM), University Hospital Tübingen
New Therapies - Lost in Translation?
Prof. Malek is Chair of the Center for Personalised Medicine (ZPM). The ZPM was founded in the context of the Excellence Initiative of the Eberhard Karls University of Tübingen. It connects the diverse aspects of data production, data analysis, functional imaging, development of new therapies and their clinical trials to transfer the concept into clinical care.

PD Dr. Oliver Pullig
Head of Implants & GMP, Fraunhofer Institute for Silicate Research ISC, Würzburg
Innovative cell-based therapies in the treatment of cartilage defects
Cell based therapies are mainly initiated by academia in the anticipation to develop effective therapies where only unsatisfying therapeutic options exist. New products with different therapeutic strategies for cartilage regeneration are currently investigated in advanced clinical trials. These trials are representative for the upcoming participation from academics and small biotech companies in the translational field.

Prof. Harald H.H.W. Schmidt
Head of Department of Pharmacology & Personalised Medicine, Faculty of Health, Medicine & Life Science, Maastricht University
The end of medicine as we know it
Existing drugs fail to provide benefit for most patients. The efficacy of drug discovery is in a constant decline. This poor translational success of biomedical research is due to false incentives, lack of quality/reproducibility and publication bias. The most important reason, however, is our current concept of disease, i.e. mostly by organ or symptom, not by mechanism. Systems Medicine will lead to a mechanism-based redefinition of disease, precision diagnosis and therapy eliminating the need for drug discovery and a complete reorganization of how we teach, train and practice medicine.

Prof. Martin Ungerer
Cardiologist, advanceCOR GmbH
Antigen-specific therapy of hormone receptor-targeting autoimmune disease
Autoimmune antibodies have been recognized to cause heart failure. Some of these antibodies are directed against betal-adrenergic receptors. This mechanism leads to a chronic over-stimulation of the receptor. In disease models, cyclic peptides successfully reversed this auto-antibody-mediated propagation of heart failure. The cyclic peptides have already been tested in humans in a placebo-controlled trial, and were shown to be well tolerated - a Phase II study was carried out in patients with chronic heart failure (NCT01391507).

To be continued on page No. 17.
Agenda

Conference Reception, November 28, 2018
06:00 pm
Juliushospital-Zehntscheune, Würzburg
New Therapis - Lost in Translation?
Dr. Valentin Bruttel, Prof. Jochen Maas, Prof. Nisar Peter Malek, moderated by Dr. Alison Abbott (Nature, Germany)
Get together – music, drinks and food

Welcome note and conference opening, November 29, 2018
09:00 am
Chair: Prof. Horst Domdey
Managing Director, BioPark Regensburg GmbH

Prof. Caroline Kisker
Chair Rudolf Virchow Center for Experimental Biomedicine, University of Würzburg

KeyNote Talk
Prof. Jochen Maas
Director Research & Development, Sanofi-Aventis Deutschland GmbH
Sanofi’s model for R&D cooperation in Translational Medicine Projects

Session A: New Targets and Success Stories in Immunotherapy
10:00 am
Chair: Dr. Gerhard Frank
Project manager and start-up consultant, Innovations- und Gründerzentrum Würzburg

Prof. Christina Zielinski
Head of Cellular Immunoregulation lab, TranslaTUM, Technical University Munich
From cellular immunology to targeted therapies in dermatology

Prof. Philipp Beckhove
Director Center of Interventional Immunology RCI, University of Regensburg
New targets in immunotherapy

Prof. Ralf Bargou
Chair Translational Oncology, Director Comprehensive Cancer Center, Universitätsklinikum Würzburg
The Blinatumomab-Story and far beyond – the clinician perspective

11:00 am
Coffee break, exhibition and poster session

Session B: Pathways for New Therapies
11:30 am
Chair: Dr. Ulrike Kaltenhauser
Managing Director, BioSysNet

Prof. Caroline Kisker
Chair Rudolf Virchow Center for Experimental Biomedicine, University of Würzburg
The Good and the Bad of NER or the Double Edged Sword of DNA Repair

PD Dr. Oliver Pullig
Head of Implants & GMP, Fraunhofer Institute for Silicate Research ISC
Innovative cell-based therapies in the treatment of cartilage defects

Prof. Martin Unringer
Cardiologist, advanceCOR GmbH
Antigen-specific therapy of hormone receptor-targeting autoimmune disease

12:30 pm
Lunch break, exhibition walk and poster session

Break out Session: Hubs in Translational Medicine and Start up Pitches
02:00 pm
Chair: Dr. Georg Kääb
Managing Director Bavarian Biotech Cluster, BioP Biotech Cluster Development GmbH
Prof. Christoph Maack
Director of Translational Research CHF, Universitätsklinikum Regensburg
Translational concepts in heart failure research and treatment

02:15 pm
Pitch arena at FORUM Translational Medicine
Dr. Nadja Fenn
Gene Center and Department of Biochemistry, LMU München
OPSYON – Fusing tumor targeting and immune checkpoint blockade

Prof. Matthias Mack
Department of Internal Medicine I - Nephrology, Universitätsklinikum Regensburg
IL-3 as therapeutic target in autoimmune diseases

Dr. Valentin Bruttel
Project Leader, AIM Biologicals, Universitätsklinikum Würzburg
AIM Biologicals: rethinking targeted therapeutics for autoimmune diseases

Dr. Yelena Wainman
Project Leader, Targeted Cancer Chemotherapeutics, Department of Pharmacy, LMU Munich
Development of light-responsive cancer chemotherapeutics

Dr. Sebastian Kreß
Project Leader, Tissue Engineering und Regenerative Medizin, University Hospital Würzburg
Biologically Vascularized Scaffold for Tissue Generation and Translation

02:45 pm
Dr. Jutta Heix
Head of International Affairs, Oslo Cancer Cluster
Rescuing the lost in translation: SPARK Norway and the global SPARK Network

Session C: Enabling New Technologies for Therapies & Diagnostics
03:00 pm
Chair: Dr. Ilja Hagen
Project Manager Healthcare, BioPark Regensburg GmbH
Dr. Konstantin Zhermosekov
CDO / Managing Director ITM Oncologics, ITM Isotopen Technologien München AG
Theranostics - Targeted Radionuclide Diagnostics & Therapy for cancer treatment

Prof. Christoph Klein
Chair Experimental Medicine and Therapy Research, University Regensburg and Fraunhofer Center Regensburg
Detection, characterization and monitoring of early and advanced systemic cancer

Dr. Christine Günther
Chief Executive Officer, apothe Biospharma GmbH
Cell and Gene Therapy – from research to patients

04:00 pm
Final KeyNote
Prof. Harald Schmidt
Head of Department of Pharmacology and Personalised Medicine, Maastricht Universität Niederlande
The end of medicine as we know it

04:30 pm
Closing remarks
Dr. Georg Kääb
Managing Director Bavarian Biotech Cluster, BioP Biotech Cluster Development GmbH
Get together

Lunch break, exhibition walk and poster session
Continued from page No. 13.

This trial was terminated early and converted to a pilot study by the sponsor Janssen (J+J) for strategic, but not for medical reasons. Auto-antibodies may also be directed against thyroid stimulating hormone (TSH) receptors in the thyroid gland, which they activate like the naturally occurring hormone TSH (Graves’ disease). Novel cyclic peptides effectively treat the auto-antibody-mediated propagation of hyperthyroidism and cured eye symptoms (“auto-immune orbitopathy”) which are especially hard to treat.

Dr. Yelena Wainman
Project Leader, Targeted Cancer Chemotherapeutics, Department of Pharmacy, LMU Munich
Development of light-responsive cancer chemotherapeutics
See poster abstract No.15, page No. 25.

Dr. Konstantin Zhernosekov
CSO / Managing Director ITM Oncologics, ITM Isotopen Technologien München AG
Theranostics - Targeted Radionuclide Diagnostics & Therapy for cancer treatment
Targeted Radionuclide Therapy involves the use of very small amounts of radioactive compounds, called radiopharmaceuticals, to diagnose and treat diseases like cancer. Targeted radiopharmaceuticals contain a targeting molecule and a medical radioactive isotope. This radio-conjugate is injected into the patient’s body, where it accumulates in the affected organs or lesions. The targeting molecule binds to a tumor-specific receptor or antigen and is absorbed by the tumor cells. The targeting molecule can be used for both diagnosis and therapy – only the radioisotope must be changed.

Prof. Christina Zielinski
Head of Cellular Immunoregulation Lab – TranslaTUM, Technical University Munich
From cellular immunology to targeted therapies in dermatology
Prof. Christina Zielinski conducts research on the fundamental principles that govern the regulation of human memory T cell responses in health and disease. Through a better understanding of the molecular switches that shape T cell identities, tissue tropism and longevity as well as the T cell dialogue with the tissue microenvironment, she works towards strategies that will provide new diagnostic and therapeutic options for cancer, autoimmunity and chronic infections.
m⁴ Award
create the future of medicine

5. Ausschreibung des Pre-Seed Wettbewerbs für die Medizin der Zukunft

Einreichungstermine
Kurzbeschreibungen: 12. März 2019
Projektskizzen: 21. Mai 2019

New Technologies

1. Biologically Vascularized Scaffold for Tissue Generation and Translation into Clinical Application
Sebastian Kreß³, Heike Walle³, Joachim Nickel¹, Marco Metzger²
²Innovationsfördерstelle Würzburg, Lehrstuhl Tissue Engineering und Regenerative Medizin (TERM), Würzburg, Germany
This study demonstrates the capability to generate a vascularized platform technology based on decellularized segments of the rat intestine for a clinically applicable cell-based drug delivery system. The in vitro established mBioVaSc-TERM® indicated promising results in short term in vivo studies while revealing current limitations for the translation into clinical application.

2. TNFRSF antibody fusion proteins with targeting controlled agonistic activity independent of FcγRs
Juliane Medler¹, Johannes Nell¹, Daniela Weissenberger², Tim Steinbart³, Susanne Berr³, Thomas Hünig³, Andreas Beilhack², Harald Wajant¹
¹Division of Molecular Internal Medicine, Department of Internal Medicine II, University Hospital Würzburg, Germany
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We’ve developed anti-TNFRSF receptor antibody fusion proteins with targeting controlled, FcγR-independent agonistic activity. Our antibodies are fused with different cell surface anchoring domains for immobilization and unleash their agonistic potential. These anti-TNFRSF receptor antibody fusion proteins promise superior applicability to systemically active agonists when an anchoring target with localized, disease-associated expression can be addressed.

3. CD40- and CD95-specific antibody:scBaff fusion proteins display BaffR-/TACI-/BCMA-restricted agonism
Johannes Nell¹, Juliane Medler¹, Daniela Weissenberger², Andreas Beilhack², Harald Wajant¹
¹University Hospital Würzburg, Molecular Internal Medicine, Würzburg, Germany
²University Hospital Würzburg, Interdisciplinary Center for Clinical Research, Würzburg, Germany
By genetically fusing a scBaff anchoring domain to the Fc domain of anti-CD40 and anti-CD95 antibodies, the agonistic activity of such fusion proteins can be unleashed in a BaffR-/ BCMA-/ TACI-controlled FcγR-independent manner. In comparison to conventional agonists, these antibodies overcome FcγR binding-related systemic side effects and promise superior applicability when aimed at an anchoring target with localized disease-associated expression.
Sie testen nicht nur Biomarker. Sie erhehlen die Therapiewahl.


Wir nennen das Präzisions-I-O. Oder einfach nur: einleuchtend.

4. **A data-driven approach to discover novel biomarkers by investigating complex immune cell patterns**


   Definiens AG, Munich, Germany, Institute for Pathology, Hannover Medical School, Germany, Clinic for Gynecological Oncology, Hannover Medical School, Germany

   The distribution of immune cells, their relation to tumor cells and regulatory elements of the immune response carry a wealth of information with yet not fully exploited predictive potential. A novel data-driven approach is presented to interactively investigate whole slide images of immunohistochemically stained tissue samples of a triple negative breast cancer cohort by combining machine learning and data mining techniques with advanced visualization.

5. **Synthesis and Characterization of NIR Dye-Doped Nanoparticles for in vivo Medical Imaging**

   Christine Schneider, Sofia Dembski, Franziska Miller, Timon Reis, Jitinho Jose

   Department of Tissue Engineering and Regenerative Medicine (TERM), University Hospital Würzburg, Germany, Translational Center Regenerative Therapies (TCRT), Fraunhofer Institute for Silicate Research ISC, Würzburg, Germany, NANO-ID, Department Chemical Technology of Materials Synthesis, Julius-Maximilians-University Würzburg, Germany

   Here, we present our recent research activities in the field of medical diagnostics concerning the encapsulation of NIR dyes, e.g. Indocyanine Green (ICG) and IRDye® 800CW, into NPs for in vivo imaging. Our work is focused on the synthesis and characterization of NP carrier systems on the basis of e.g. amorphous silica and liposomes. The focus here was on the stability of the encapsulated NIR dyes under different storage and physiological conditions.

6. **Optimization of a novel TALEN targeting CCR5**

   Lea-Isabell Schwarze, Ursula Abramowski-Mock, Boris Feltey

   Research Dept. Cell and Gene Therapy, Dept. of Stem Cell Transplantation, University Medical Centre Hamburg-Eppendorf (UKE), Hamburg, Germany

   Genetic knockout of CCR5 has been proposed as a promising HIV gene therapy approach. Our lab recently developed a novel TAL effector nuclelease (CCRS-Uco-TALEN) that facilitates high CCR5 k.o. rates (> 60%) and low off-target rates in primary T cells. To maximize the safety of our CCR5-Uco-TALEN, we introduced an obligatory heterodimeric FokI cleavage domain, which reduces the number of possible off-targets drastically, while the on-target rates remain high.

7. **Breast cancer biobanking: results of the PATH Biobank and contributing to MESI-STRAT**

   Charlotte Singrün, Christiane Optitz, Kathrin Thiediek, Tobias Anzenminder

   PATH Biobank, Munich, Germany, German Cancer Research Center (DKFZ), Brain Cancer Metabolism Group, MESA-STRAT Clinical Trial Coordinators, Heidelberg, Germany

   Here, we present our recent research activities in the field of medical diagnostics concerning the encapsulation of NIR dyes, e.g. Indocyanine Green (ICG) and IRDye® 800CW, into NPs for in vivo imaging. Our work is focused on the synthesis and characterization of NP carrier systems on the basis of e.g. amorphous silica and liposomes. The focus here was on the stability of the encapsulated NIR dyes under different storage and physiological conditions.
New Targets

8. **50 Shades of Kinase Inhibition – Applications of the Target Landscape of Clinical Kinase Drugs**
   Stephanie Heinmeier1,2, Susan Kluger3,4, Mathias Wilhelm3, Maria Reinecke1,2, Guillaume Médard1, Bernd Kuster1,2
   1Chair of Proteomics and Bioanalytics, Technical University of Munich, 2German Cancer Consortium (DKTK), German Cancer Research Center (DKFZ)
   Hundreds of kinase inhibitors are currently evaluated in clinical trials. Most of them feature promiscuous target spectra, requiring selectivity profiling to understand their mode of action. We used a chemical proteomics approach to analyze 243 clinical kinase inhibitors. This dataset can be exploited to identify selective inhibitors, to inform individualized patient treatments, to improve clinical study design, or to guide medicinal chemistry efforts.

9. **The role of YB-1 in murine hematopoiesis**
   Viktória Kurz1, Katharina Bommert, Ralf C. Bargou1, Kurt Bommert1
   1University Hospital Würzburg, Department of Internal Medicine II, Translational Oncology, Würzburg, Germany
   The overexpression of multifunctional Y-box Binding Protein-1 (YB-1) is associated with poor prognosis in several types of cancer, including multiple myeloma (MM). YB-1 appears to be a promising target in MM therapy but its role in development and malignant transformation of plasma cells is still unclear. The focus of our research is to clarify YB-1 role during hematopoiesis and B cell development.

10. **Effects of p53 activity on therapy response against multiple myeloma**
    Umair Munawar1, Santiago Barrio2, Markus Roth1, Hermann Einsele1, Ralf Bargou1, Martin Kortüm2, Thorsten Stühmer1
    1Comprehensive Cancer Center Mainfranken, Würzburg, 2Department of Internal Medicine II, University Hospital Würzburg, Würzburg
    TP53 point mutation and/or deletion are shown to be associated with increase in the resistance to genotoxic drugs. This effect appears most pronounced in ‘double hit disease’, which in MM patients represents the constellation with the worst clinical prognosis. In keeping with other recently functionally validated point mutations in MM, our data supports the role of mutation screening in the diagnostic workup of MM.

11. **Biosensing of labile glycoprotein-lipid complexes from serum as biomarkers for metabolic state**
    Günter A. Müller1, Andreas Herling2, Kerstin Stemmer1, Andreas Lechner3, Matthias Tschöp1
    1Institute for Diabetes and Obesity, Helmholtz Diabetes Center (HDC), Helmholtz Zentrum München
    2Sanofi Deutschland GmbH, Diabetes Research Division, Frankfurt am Main, Germany
    3Ludwig-Maximilians-Universität, Diabetes Research Group, Medical Center, München, Germany
    A chip- and microfluidic channel-based sensor was introduced for the specific detection and biophysical characterization of glycosylphosphatidylinositol-anchored proteins (GPI-AP) equipped with the complete anchor in rat and human serum as assessed by capturing via their anchor glycan and interaction of annexin-V with their anchor phospholipid. Phase shifts and amplitude reductions of surface acoustic waves propagated across the chip surface enabled differentiation according to either genotype or body weight of the donors.
12. A novel chimeric oncolytic virus vector for improved safety and efficacy as a cancer vivo-immunotherapy
Sarah Abdullahi1, Melanie Jäkel1, Sabine Behrend1, Katja Steiger1, Teresa Krabbe1, Roland Schmid1, Oliver Ebert1, Jennifer Altomonte1
1Department of Internal Medicine II, Klinikum rechts der Isar, Technische Universität München

Oncolytic viruses (OVs) are an emerging class of cancer therapeutics, due to their ability to directly kill tumor cells, as well as to induce immune antitumor responses. We have engineered a novel hybrid OV vector, named rVSV-NDV, which was designed to minimize off-target replication and mediate a potent and immunogenic tumor cell death through a unique mechanism of intratumoral spread via cell-cell fusion. This vector is under development for clinical translation.

13. Orthotic devices for oncologic and neuromuscular rehabilitation
João Miguel Quintino Guerreiro1, Ricardo Veiga2, Ana Ferreira3, Andriy Stets3, Pedro Ferreira4, Mariana Maia3, Adriana Cavaco1
1University of Algarve (Faro, Portugal) - School of Health - Prosthetics and Orthotics Department, 2University of Algarve (Faro, Portugal) - Electronic Engineering Researcher, 3University of Algarve (Faro, Portugal) - School of Health - Prosthetics and Orthotics Student, 4University of Algarve (Faro, Portugal) - Mechanical Engineering Student

Ankle-foot-orthosis (AFO) or spine braces (SB) are orthotics used in physical rehabilitation (PR), but do not adjust in demanding rehabilitation process like ALS or bone cancer metastasis (1-4). It is our objective to develop active orthotics (AFO and SB) for new demands in PR. We developed an AFO for ALS and a SB for bone metastasis. The prototypes are being finished and combine thermoplastics, pneumatic action and electronic control.

14. A novel strategy to treat advanced, late-stage tumors with Real-Time Tumor Vaccination
Piotr Jachimczak1, Andreas Mitsch2, Achim Aigner3
1RealTVac, Würzburg, Germany, 2Jose-Carreras-Centrum für Somatische Zelltumorerkrankungen, University of Regensburg, Regensburg, Germany, 3Rudolf-Brehm-Institute for Pharmacology and Toxicology, University of Leipzig, Germany

RealTVac® is a novel anti-cancer immune therapy for metastatic late-stage tumors. The RealTVac® approach seeks to overcome “tumor immune escape” by intratumoral inhibition of TGF-beta signaling combined with potent stimulation of T cells and Dendritic Cells. RealTVac® enables the host immune system to scan in real-time the patient specific mutanome in its complete heterogeneity. Thus, RealTVac® provides a continuous in vivo update of the evolving tumor thereby enabling the immune system to respond dynamically to the changing and heterogeneous tumor mutanome. The proprietary RealTVac® technology offers a quality of life-adapted, highly individualized and safe (local) therapeutic strategy for malignant tumors with high unmet medical need.

15. Development of light-responsive cancer chemotherapeutics
Dr. Yelena Wainman1,2, Doris Mangelberger1, Oliver Thorn-Seehold1, Malgorzata Borowiak3
1CytoSwitch EXIST funded Spin-off Project, 2LMU Munich, Department Pharmacy, Munich, Germany, 3University of Leipzig, Germany

Our light-responsive chemotherapeutics can be specifically activated to their cytotoxic potential in areas irradiated with blue light. We will present data confirming their cytotoxic potential in vitro as well as preliminary in vivo data. With this light „switching“ principle, we are developing these light controlled targeted chemotherapeutics towards the clinic, that would have reduced side-effects to healthy organs compared to conventional chemotherapy.
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