Final Agenda

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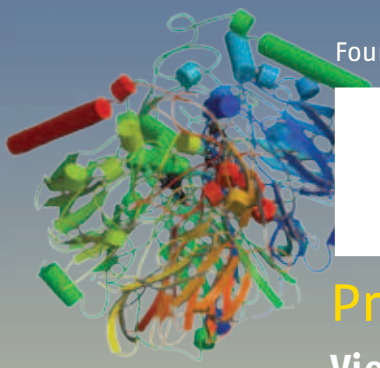

Fourth Annual

PEGS EUROPE

6-8 November 2012

Protein & Antibody Engineering Summit

Vienna InterContinental Hotel | Vienna, Austria

Keynote Presentations

Blocking Cell Signaling with Recombinant Antibodies
John McCafferty, Ph.D., University of Cambridge

BiTE Antibodies in Cancer Therapy
Roman Kischel, M.D., Amgen Research (Munich) GmbH

Protein Expression in Drug Discovery – New Challenges, New Solutions
Lorenz M. Mayr, Ph.D., Novartis Pharma

Nanobody Stabilization of G Protein-Coupled Receptor Conformational States: Implications for Expression
Jan Steyaert, Ph.D., Vrije Universiteit Brussel

Novel Antibody Constructs and Alternative Scaffolds

- **Creative Engineering, Delivery Technologies and Targeting**
  6-7 November
- **Enhanced Product Properties and Therapeutic Application**
  7-8 November

Protein Expression

- **Enhancing Expression and Achieving Higher Throughput**
  6-7 November
- **Solving Difficult Protein Problems**
  7-8 November

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We understand that you have many choices when making your travel arrangements, and may ultimately decide to stay at another hotel. Please understand that reserving your room in the CHI room block allows you to take full advantage of the conference sessions, events and networking opportunities, and ensures that our staff will be available to help should you have any issues with your accommodations.

Pre-Conference Short Courses

Monday, 5 November 2012

SC1: From Understanding of Aggregation to Devising of Prevention Strategies*

9:00 – 10:00 Short Course Registration

10:00 – 13:00 Short Course

Course Instructors:
Tudor Arvinte, Ph.D., CEO, Therapeomic, Inc.

Attend this half-day workshop to gain a critical overview of the available techniques for detection of aggregation and impurities (leachables) and how these methods can be applied. Delegates will learn about strategies for combining analytical methods (e.g. fluorescence spectroscopy and use of fluorescent dyes, field flow fractionation, Nanosight, flow imaging) to ensure detection of aggregates across a range of particle sizes. High throughput analysis (HTA) and high throughput formulation (HTF) platforms will be presented. Using case-studies, potential causes of aggregation and prevention strategies will be discussed.

- Causes and avoidance of impurities and aggregates
- Impact of impurities and leachables
- New technologies for characterization
- Prevention strategies
- Discussion to include experiences regarding aggregation of the participants.

SC2: Measures to Enhance Half-Life and Stability*

13:00 – 14:00 Short Course Registration

14:00 – 17:00 Short Course

Course Instructors:
Arne Skerra, Ph.D., Professor, Chair of Biological Chemistry, Technical University Munich; CEO, XL-protein GmbH
Florian Rueker, Ph.D., Professor, Biotechnology, University of Natural Resources and Life Sciences, Vienna; Co-Founder, f-star

This half-day workshop will provide an overview on the current state of the art in protein engineering, targeted at the improvement of half-life and stability of proteins, which are key points to consider in the development of biopharmaceuticals. Current technologies to prolong the circulation of biologics, such as PEGylation, fusion with biological polymers (PASylation etc.) and others will be covered and discussed. A range of strategies is available today to engineer the stability of proteins, including targeted mutations and *in vitro* directed evolution. Depending on the fold characteristics (helix-bundles, beta-barrels and the like), single or combined point mutations or additional disulfide bridges can be applied. Experimental methods to identify, engineer and characterize stabilized proteins will be presented in the workshop.

- Management of short plasma half-life, a problem of most biopharmaceuticals
- Current technologies to prolong the circulation of biologics
- PEGylation versus biological polymers (PASylation etc.)
- Aspects of protein scaffold stability (helix-bundles, beta-barrels etc.)

SC3: Engineering of Bi-Specific Antibodies*

13:00 – 14:00 Short Course Registration

14:00 – 17:00 Short Course

Course Instructors:
Julian Bertschinger, Ph.D., CEO, Covagen AG
Francois Rousseau, Head, Antibody Engineering, NovImmune SA

By attending this interactive workshop, you will learn about the various approaches used for the engineering of bi-specific therapeutic antibodies and scaffold-based binding proteins. The different technologies will be compared, and examples for applications of bi-specific antibodies in drug development will be presented with a focus on bi-specific antibodies that are currently evaluated in clinical trials. Opportunities and challenges in the field of bi-specific antibodies will be discussed.

- Overview on bi-specific antibody technologies
- Past and current challenges for bi-specific antibody development
- Alternative scaffold-based bi-specifics
- Case studies of bi-specific antibodies in clinical development
- Discussion of applications and opportunities for bi-specific antibodies

**Separate Registration Required*

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Part One: Creative Engineering, Delivery Technologies and Targeting

6–7 November 2012

TUESDAY, 6 NOVEMBER

7:30 Registration and Morning Coffee

8:30 Chairperson's Opening Remarks
Dana Ault-Riché, Ph.D., CEO, Reflexion Pharmaceuticals, Inc.

Creative Engineering

8:35 Engineering Bi-Specific Fynomer-Antibody Fusions for Therapeutic Applications
Julian Bertschinger, Ph.D., CEO, Covagen AG
Fynomers are small binding proteins derived from the human Fyn SH3 domain. Here, we describe the engineering and characterization of bi-specific Fynomer-antibody fusions targeting two different epitopes on HER2. These Fynomer-antibody fusions prevent effectively proliferation of HER2 positive tumor cells *in vitro* and *in vivo*. Engineered Fynomer-antibody fusion proteins have optimal physico-chemical and *in vivo* half-life properties, making them attractive as drug candidates to be brought into pre-clinical and clinical development.

9:05 High-Throughput Generation of scFv-Fc Antibodies to Novel, Modified and Difficult Targets
Stefan Dübel, Ph.D., Professor, Biotechnology, Technical University of Braunschweig
Today, the control of the biochemical conditions during a recombinant antibody selection process makes possible the production of human antibodies specific for single post-translational modifications or to antigens in complex membrane preparations. With the technology for the generation of human targeting domains being matured now, it is evident that identification of disease related antigens becomes the limiting factor. Our high-throughput pipeline for the generation of scFv-Fc antibodies can provide lead substances right from the target discovery process.

9:35 A Novel Ligation Technology for Site-Specific Engineering and Labeling of Proteins
Graham Cotton, Ph.D., Senior R&D Group Leader, Almac Group
Increasingly, protein engineering and labeling technologies are being used to develop biotherapeutics with improved performance and to enable new therapeutic approaches to be realized using protein-based drugs. To this end, we have developed a novel protein ligation methodology for the site-specific C-terminal modification of proteins. This high yielding, highly selective technology provides a facile approach for the C-terminal PEGylation of proteins, and has broad applicability for the labeling and engineering of proteins including the development of bi-specific protein therapeutics and molecular imaging agents.

» FEATURED PRESENTATION
10:05 Pre-Clinical Advances with PASylated Bi-Specific Combinations of Peptides, Antibody Fragments, and Anticalins
Arne Skerra, Ph.D., CEO, XL-protein GmbH
PASylation, the genetic fusion with conformationally disordered polypeptide sequences composed of the amino acids Pro, Ala, and Ser, allows the facile functional coupling of two different bioactive proteins or peptides. PASylation provides a solvated random chain with large hydrodynamic volume, thus slowing down kidney filtration by a factor 10 to 100 and paving the way to bi-specific drugs with extended plasma half-life. Compared with PEG, PASylation offers several advantages, in particular biodegradability and one-step biotechnological production.

10:35 Coffee Break in the Exhibit Hall with Poster Viewing

Alternative and Novel Deliveries

11:15 Exploiting the Biophysical Properties of Centyrins: New Therapeutic Targets, Novel Routes of Administration and Valuable Tools for Drug Discovery
Robert Hayes, Ph.D., Vice President and Venture Leader, Centyrex Venture, Janssen Research & Development
Alternative scaffolds represent an emerging class of protein therapeutics. We have designed novel consensus FN3 domains, called Centyrins, which have excellent biophysical properties. We are exploiting the robustness of this platform to develop a series of molecules aimed at broadening the therapeutic applications of biologics to areas such as bi-specific drugs, intracellular inhibitors, and alternative routes of drug delivery. By applying automation and high-throughput selections, these molecules are also being used as tools for large and small molecule drug discovery.

11:45 Topical/Local Administration of Single Chain Fv Antibody Fragments in Clinical Settings
Titus Kretzschmar, Ph.D., CSO, Delenex Therapeutics AG

12:15 Sponsored Presentation *(Opportunity available, please contact Carol Dinerstein, Dinerstein@healthtech.com)*

12:30 Luncheon Presentations or Lunch on Your Own
(Opportunities available, please contact Carol Dinerstein, Dinerstein@healthtech.com)

14:15 Chairperson's Remarks
Stefan Dübel, Ph.D., Professor, Biotechnology, Technical University of Braunschweig and John McCafferty, Ph.D., Research Director, Biochemistry, University of Cambridge

14:20 Engineering and Development of Tri-Specific Molecules with Long Plasma Half-Life for Subcutaneous Administration
Joachim Feldwisch,Ph.D., Director, Preclinical Discovery, Affibody AB
A practical obstacle for self-administered subcutaneous injections is the maximal volume that can be injected subcutaneously, as this limits the amount of drug that can be administered. Here we will present our technology for engineering of a minimal multispecific biological substance to increase the dose after subcutaneous administration, animal results of the use of our broad-species cross-reactivity half-life extension technology, and our work to address the challenge of finding a configuration that binds all three targets optimally.

14:50 Treating Ocular and Pulmonary Diseases with Therapeutic Mirror Proteins
Dana Ault-Riché, Ph.D., CEO, Reflexion Pharmaceuticals, Inc.
Mirror proteins are chemically produced entirely out of D-amino acids, making them highly stable, metabolically inert and non-immunogenic, while retaining antibody-like affinity and specificity. Reflexion uses this unique combination of properties to enable new ocular and pulmonary dosing strategies. Reflexion is developing a VEGF-A antagonist to treat wet age-related macular degeneration and diabetic macular edema by drops and an inhaled VEGF-D antagonist to treat a rare disease called lymphangioleimyomatosis (LAM), which primarily afflicts young women and currently has no effective treatment.

» FEATURED PRESENTATION

15:20 Transfer'rin Antibodies into the Brain
Mark S. Dennis, Ph.D., Principal Scientist, Antibody Engineering, Genentech, Inc.
Antibodies have a vast therapeutic potential for treatment of CNS diseases, but their passage into the brain is restricted by the blood-brain barrier (BBB). Our most recent efforts to harness receptor-mediated transcytosis pathways of brain endothelial cells in order to deliver a therapeutically relevant dose of antibody across the BBB will be discussed.

15:50 Refreshment Break in the Exhibit Hall with Poster Viewing

16:30 Sponsored Presentation *(Opportunities available, please contact Carol Dinerstein, Dinerstein@healthtech.com)*

17:00 Problem Solving Roundtable Discussions

Table 1: The Quest for New and Better Targets for Bispecifics
Moderator: Rebecca Ashfield, Ph.D., Portfolio and Collaborations Manager, Immunocore Ltd.

Table 2: Engineering of Bispecific Antibodies
Moderators: Julian Bertschinger, Ph.D., CEO, Covagen AG and Gregory Adams, Ph.D., Co-Leader, Developmental Therapeutics Program, Fox Chase Cancer Center

Table 3: Small Immunoglobulin Fragments vs. Alternative Scaffolds
Moderator: Christian Heinis, Ph.D., Laboratory of Therapeutic Proteins and Peptides, Institute of Chemical Sciences and Engineering, Ecole Polytechnique Fédérale de Lausanne (EPFL)

Table 4: Issues to do with Formulation and Delivery
Moderator: Dana Ault-Riché, Ph.D., CEO, Reflexion Pharmaceuticals, Inc.

Table 5: Challenges of Targeting Membrane Spanning Proteins
Moderator: Jonathan Belk, Ph.D., Senior Scientist II, Technology and Platform Development, Adimab, LLC.

Table 6: How to Get What You Want From Antibody Phage Display
Moderators: Stefan Dübel, Ph.D., Professor, Biotechnology, Technical University of Braunschweig and John McCafferty, Ph.D., Research Director, Biochemistry, University of Cambridge

18:00-19:00 Welcome Reception in the Exhibit Hall with Poster Viewing

WEDNESDAY, 7 NOVEMBER

7:30 Breakfast Presentation *(Sponsorship Opportunity Available)* **or Morning Coffee**

Focus on Targets and Targeting

8:30 Chairperson's Remarks
Christian Heinis, Ph.D., Laboratory of Therapeutic Proteins and Peptides, Institute of Chemical Sciences and Engineering, Ecole Polytechnique Fédérale de Lausanne (EPFL)

8:35 Breaking the Cage: Towards Protease HTRA1 Inhibition
Niklas Weber, Scientist, Organic Chemistry and Biochemistry, Technical University of Darmstadt

9:05 Overcoming the Challenges Associated with Developing Antibodies against the Müllerian Inhibiting Substance Type II Receptor - A Highly Conserved Ovarian Cancer Target
Gregory Adams, Ph.D., Co-Leader, Developmental Therapeutics Program, Fox Chase Cancer Center
We have used a variety of strategies to isolate antibodies against the Müllerian Inhibiting Substance Type II Receptor (MISIIR). However, as its ligand binding site is highly conserved, none mediate agonistic signaling and apoptosis. To overcome this, we are using rational design strategies based upon modeling the ligand/receptor interaction to design antibodies. This has resulted in lead antibodies that are focused on the ligand binding site. These rationally-designed antibodies and immunoconjugates based upon earlier phage display-derived antibodies will be discussed.

9:35 Antibody-Like Molecules that Engage Multiple Targets
Peter Kiener, Ph.D., President & CEO, Zyngenia, Inc.
We have generated multi-specific antibodies, termed Zybodies, that are built around a core scaffold antibody and are able to engage five different targets simultaneously in a coordinated cognate manner. The Zybody format allows us generate new therapeutics with novel pharmacology to improve efficacy whilst still retaining all the desirable CMC, stability and production properties of mAbs.

10:05 Comprehensive Alanine Scanning and Analysis using High Throughput Flow Cytometry (HTFC)
Sponsored by intellicyt screening solutions for life
Joseph Rucker, Ph.D., Director, R&D, Integral Molecular
Our platform technology, Shotgun Mutagenesis, enables comprehensive alanine scanning mutagenesis where every residue is individually mutated, expressed, and assayed in human cells. Advanced automation and analysis methods, including IntelliCyt's HTFC® system, generate rapid results. Here we describe epitope mapping and protein engineering campaigns for membrane protein expression and solubility and antibody humanization.

10:20 Sponsored Presentation *(Opportunity available, please contact Carol Dinerstein, Dinerstein@healthtech.com)*

10:35 Coffee Break in the Exhibit Hall with Poster Viewing

» KEYNOTE PRESENTATION

11:05 Blocking Cell Signaling with Recombinant Antibodies
John McCafferty, Ph.D., Research Director, Biochemistry, University of Cambridge
Cell-based screening assays allow identification of functional antibodies which have utility in the treatment of cancer and autoimmune disease. We have used phage display in conjunction with cell-based assays to generate and epitope map human antibodies which block a number of important cell surface targets. Recombinant antibodies were identified which affect signaling in different ways including ligand neutralization, receptor blocking or inhibition of cell surface proteases.

Targeting Multiple Membrane Spanning Proteins

11:35 Selections with Cells and Membranes Using a Yeast-Based IgG Discovery Platform Enable Identification and Optimization of Human Antibodies against Integral Membrane Proteins
Piotr Bobrowicz, Ph.D., Director, Antibody Discovery, Adimab, LLC
Complex protein structure and intimate association with lipids represent some of the many technical challenges when working with recombinant forms of integral membrane proteins. Adimab has employed mammalian cells and membrane preparations to successfully develop efficient and reproducible methods for the yeast-based discovery and optimization of antibodies against membrane proteins.

12:05 A Mammalian Display Platform for High-Throughput Discovery of Well-Behaved Fully Human Antibodies – Novel Applications

Marc van Dijk, Ph.D., CTO, 4-Antibody AG

Our retrocyte display platform utilizes retroviral gene transfer of human antibody genes into mammalian pre-B cells to generate stable high diversity antibody display libraries of full length monoclonal human antibodies. These are screened by FACS to yield high quality, fully natural and well expressed antibodies against any target. Data will be presented on several targets and includes applications for targeted identification of antibodies directed to specific epitopes, cross-reactivity to specific species and more.

12:35 Close of Part One: Creative Engineering, Delivery Technologies & Targeting

Part Two: Enhanced Product Properties and Therapeutic Application

7–8 November 2012

WEDNESDAY, 7 NOVEMBER

12:30 – 14:00 Conference Registration for Part Two

14:00 Chairperson's Opening Remarks
John McCafferty, Ph.D., Research Director, Biochemistry, University of Cambridge

Measures to Improve the Properties of the Product

14:05 PK Modulation of Adnectins: Experiences from Bench to Clinic
Ray Camphausen, Associate Vice President, Protein Design, Adnexus, a Bristol-Myers Squibb R & D Company
Adnectins, derived from the highly stable fibronectin 10th Fn3 domain, are among the most advanced alternative scaffolds, with multiple therapeutics in the clinic. The highly engineerable Adnectin scaffold is amenable to a wide variety of approaches to fine tune functional, biophysical, developability, and pharmacokinetic properties in a therapeutic-dependent manner. Multiple approaches to modulate the pharmacokinetics of Adnectins have been explored focused on either increasing hydrodynamic volume and/or leveraging the FcRn recycling pathway. Data reflecting our observations will be presented.

14:35 Ang-2-VEGF Crossmab, a Novel Bi-Specific Human IgG1 Antibody Blocking VEGF-A and Ang-2 Function with Favorable Stability, Half-Life, and Efficacy
Markus Thomas, Ph.D., Senior Research Scientist, Pharma Research and Early Development (pRED), Discovery Oncology, Roche Diagnostics GmbH
VEGF-A blockade has been validated clinically as a treatment for human cancers. Angiopoietin-2 (Ang-2) expression has been shown to function as a key regulator of tumor angiogenesis. We have generated a bi-specific human IgG1 antibody (CrossMab) blocking VEGF-A and Ang-2 function simultaneously. Our data show that the CrossMab has very good stability, an IgG like half-life in cynomolgus monkey and a favorable safety profile. Additionally it shows favorable efficacy in pre-clinical tumor cancer models, thereby representing a promising therapeutic agent for the therapy of cancer patients.

15:05 Novel *in Silico* Prediction Algorithms for the Design of Stable Biologics *Sponsored by* accelrys®
Anne Goupil-Lamy, Principal Scientist, Accelrys
Understanding the effects of mutation on protein stability and protein binding affinity is an important component of successful protein design, especially in the area of protein therapeutics. *In silico* approaches to predict the effects of amino acid mutations can be used to guide experimental design and help reduce the cost of bringing therapeutics to market. We have implemented and validated several novel methods for fast computational mutagenesis of proteins to calculate the energy effect of mutation on protein stability, and on protein-protein binding affinity with an optional pH dependency calculation. We will present those methods and applications to antibody design.

15:35 Refreshment Break in the Exhibit Hall with Poster Viewing

16:15 Strategies to Extend the Half-Life of Small Recombinant Protein Therapeutics
Roland Kontermann, Ph.D., Professor, Biomedical Engineering, Institute of Cell Biology and Immunology, University of Stuttgart
Half-live extension strategies are becoming increasingly important to improve pharmacokinetic and pharmacodynamic properties. An overview of the various strategies to extend the half-life of recombinant antibodies as well as results from a comparative study including novel strategies utilizing binding to serum albumin and serum immunoglobulins are presented and discussed.

16:45 Optimization of Bi-Specific DART Proteins for Oncology
Syd Johnson, Ph.D., Vice President, Antibody Engineering, MacroGenics, Inc.
The major challenges to development and effective clinical use of fragment-based bi-specific formats have been manufacturability, stability and pharmacokinetics. We have developed and optimized several formats of our stable dual-affinity retargeting (DART) format that address these issues with an emphasis on oncologic applications. Multiple examples will be presented of half-life extended DART proteins that redirect T-cells to tumor-associated antigens, including CMC strategies and *in vitro* and *in vivo* potency. Challenges of non-clinical toxicology for these highly potent molecules in relevant species will also be discussed.

17:15 Problem Solving Roundtable Discussions

Table 1: Engineering of Bispecific Antibodies
Moderator: Florian Rueker, Ph.D., Professor, Biotechnology, University of Natural Resources and Life Sciences, Vienna; Co-Founder, f-star

Table 2: Challenges of Targeting the Immune Response
Moderator: Rebecca Ashfield, Ph.D., Portfolio and Collaborations Manager, Immunocore Ltd.

Table 3: Targeting Tumor Antigens
Moderator: Gregory Adams, Ph.D., Co-Leader, Developmental Therapeutics Program, Fox Chase Cancer Center

Table 4: Measures to Increase Half-Life and Stability of the Product
Moderator: Roland Kontermann, Ph.D., Professor, Biomedical Engineering, Institute of Cell Biology and Immunology, University of Stuttgart

Table 5: Building Manufacturability into Novel Antibody Formats
Moderator: Hans de Haard, Ph.D., CSO, arGEN-X BV

Table 6: Bi/Multispecific Compound Specific Issues When Moving from Pre-Clinical to Clinical and Beyond
Guy Hermans, Ph.D., Principal Scientist, Ablynx NV

18:15 – 19:15 Reception in the Exhibit Hall with Poster Viewing

THURSDAY, 8 NOVEMBER

7:30 Breakfast Presentation *(Opportunity available, please contact Carol Dinerstein, Dinerstein@healthtech.com)* **or Morning Coffee**

8:30 Chairperson's Remarks
Gregory Adams, Ph.D., Co-Leader, Developmental Therapeutics Program, Fox Chase Cancer Center

Novel Products in Pre-Clinical Development

8:35 Therapeutic Potential of Bicyclic Peptides
Christian Heinis, Ph.D., Laboratory of Therapeutic Proteins and Peptides, Institute of Chemical Sciences and Engineering, Ecole Polytechnique Fédérale de Lausanne (EPFL)
My laboratory is generating bicyclic peptide ligands with high affinity and specificity for disease targets using a phage display-based approach that I had developed with Sir Greg Winter at the Laboratory of Molecular Biology (LMB) in Cambridge, UK. The bicyclic peptides combine the good binding properties of antibodies with favorable characteristics of small molecules. I will present examples of bicyclic peptides antagonists as well as first *in vivo* data.

9:05 Pre-Clinical Developments for Bi-Specific mAb2s with Optimal Target Selection
Florian Rueker, Ph.D., Professor, Department of Biotechnology, University of Natural Resources and Life Sciences, Vienna; Co-Founder, f-star
This talk will describe the established Fcab technology and outline the process for selection of bi-specific mAb2s of high affinity and the rationale behind the choice of bi-specific targets. Moreover it will discuss novel combinations that provide an effect that is more than additive and how this is achieved. *In vitro* and *in vivo* results will be presented.

9:35 Bispecific Immunotherapeutics Based on the RECRUIT Tandab platform
Uwe Reusch, Ph.D, Head, Cell Culture R&D, Affimed Therapeutics AG

10:05 From Antibody Sequence to Structure: Promising Results for *De Novo* Prediction of Hypervariable Loop Conformation
Sponsored by SCHRÖDINGER.
Jianxin Duan, Ph.D., Principal Applications Scientist, Applications Science, Schrödinger
The prediction of antibody H3 loops is an important and challenging problem for computational methods. We have developed and applied the BioLuminate/Prime *de novo* loop prediction method on a set of 53 benchmark antibody structures and obtained very promising results for the problematic H3 hypervariable loop predictions. We describe the method, results, and future directions in computational antibody structure prediction and design.

10:35 Coffee Break in the Exhibit Hall with Poster Viewing

11:05 CD70: A New Compelling Immune Modulatory Target for the Treatment of Cancer and Autoimmunity
Karen Silence, Ph.D., Research Fellow, Project leader ARGX-110, arGEN-X BV
Expression of CD70 is transient and restricted to activated B/T cells. Chronic expression on T cells was demonstrated in autoimmune indications. Overexpression of CD70 was documented in a variety of solid and hematological tumors, where it is plays a role in evasion of immune surveillance and tumor proliferation and survival. ARGX-110 is a defucosylated, germlined IgG1 monoclonal antibody that selectively targets and neutralizes CD70. Detailed characterization of ARGX-110 was carried out to support its clinical development for the treatment of cancer and autoimmune disease. ARGX-110 will enter a Phase I study in patients with CD70+ malignancies early in 2013.

» FEATURED PRESENTATION
11:35 Differentiating Biologics
H. Kaspar Binz, Ph.D., Vice President & Co-Founder, Lead Optimization, Molecular Partners AG
The powerful DARPin platform enables novel therapeutic concepts in which we can tailor efficacy, PK, and mechanism of action at will, allowing for best- and first-in-class products. Differentiation was the key driver for the generation of such powerful drugs for high medical need indications. We will present the latest clinical data on a best-in-class DARPin therapeutic, and highlight different pre-clinical programs including powerful first-in-class multi-specific drugs.

12:05 Generation of Fully Human Monoclonal Antibodies against G-Protein Coupled Receptors
Sergej M. Kiprijanov, Ph.D., Vice President, Discovery, Research & Preclinical Development, Affitech AS
Our technology has successfully generated antibodies against a number of different G-protein coupled receptors (GPCRs). GPCRs compose the largest family of known proteins, covering more than 2% of the human genome and are implicated in the pathology of both inflammatory conditions and cancers. Despite their validated role as drug targets, development of therapeutics has been very challenging due to their structural conformation and the lack of robust screening systems. *In vitro* and *in vivo* data showing applicability of Affitech's anti-GPCR antibodies for cancer treatment will be presented.

12:35 Luncheon Presentations or Lunch on Your Own
(Opportunities available, please contact Carol Dinerstein, Dinerstein@healthtech.com)

14:00 Chairperson's Remarks
Florian Rueker, Ph.D., Professor, Department of Biotechnology, University of Natural Resources and Life Sciences, Vienna; Co-Founder, f-star

Novel Products in the Clinic

» KEYNOTE PRESENTATION
14:05 BiTE Antibodies in Cancer Therapy
Roman Kischel, M.D., Principal Scientist, BiTE Technology, Amgen Research (Munich) GmbH

14:35 IMCgp100: A Bi-Specific TCR Anti-CD3 Fusion for the Treatment of Malignant Melanoma
Milos Aleksic, Ph.D. , Senior Scientist, Immunocore, Ltd.
ImmTACs are soluble, high affinity T cell Receptors fused to an anti-CD3 scFv domain for re-directed T cell killing of tumors. A key differentiating factor of this technology is the ability to target HLA presented epitopes, allowing selection of tumor specific targets which are not expressed on normal cells. ImmTACs have pico-molar potency and recognise very low levels of target antigen, overcoming HLA down-regulation. The presentation will include preliminary data from Phase I/IIa testing of IMCgp100 in malignant melanoma.

15:05 Antibody Mixtures: From Bench to Clinic
Ivan Horak, M.D., CSO/CMO, Symphogen
Over the last decade we have learned more about primary and acquired resistance to targeted therapies. Targeting two non-overlapping epitopes provide a unique opportunity to eliminate key components of oncogenic addiction. A novel mechanism of action has been documented in the preclinical models and ongoing clinical studies will assess the safety and clinical benefit of antibody mixtures.

15:35 Refreshment Break in the Exhibit Hall with Poster Viewing

16:00 Anticalins: Next Generation Clinical Stage Technology with Applications across Multiple Disease Areas and Targets
Marlon J. Hinner, Ph.D., Head, Molecular Biology and Protein Engineering, Pieris AG
We will provide an overview of the Anticalin drug platform and present pre-clinical and clinical data including favorable results of a first in human Phase I study of PRS-050 (anti-VEGF-A). We discuss how we generate potent, stable Anticalins with drug-like properties and significantly lower COGs compared to mAbs. We will also illustrate the benefits of straightforward Anticalin engineering to identify multi-specific Anticalins across therapeutic areas.

16:30 Nanobodies: Proteins Based on the Smallest Functional Fragments of Heavy Chain Antibodies, in the Clinic
Guy Hermans, Ph.D. Principal Scientist, Ablynx NV
Nanobodies are therapeutic proteins based on the smallest functional fragments of heavy chain antibodies, naturally occurring in Camelidae. The modularity of this technology allows for exquisite control over valency, *in vivo* half-life and effector function, and provides a platform for both single- and multi-specific compounds. Examples spanning preclinical up to end of phase II stages across highly diverse indications will be used to illustrate the ease with which these different goals can be met, without compromising on CMC aspects or stability.

17:00 Close of Conference

Part One: Enhancing Expression and Achieving Higher Throughput 6–7 November 2012

TUESDAY, 6 NOVEMBER

7:30 Registration and Morning Coffee

8:30 Chairperson's Remarks

Solving Problems in Existing Systems

» KEYNOTE PRESENTATION

8:35 Protein Expression in Drug Discovery – New Challenges, New Solutions

Lorenz M. Mayr, Ph.D., Executive Director, Unit Head Biology, Protease Platform, Novartis Pharma

Whereas protein expression has long been viewed as a mature science with no need for further improvement, current trends in drug discovery show an increased demand for fast & efficient production systems for recombinant proteins and protein complexes to cope with the demands for protein in sufficient amounts needed for modern hit discovery (HTS, FBS, structure) and lead optimization in discovery research.

9:05 FreEcoli™: A New Series of *Escherichia coli* Strains for Endotoxin-Free Production of Recombinant Proteins and Plasmid DNA

Uwe Mamat, Ph.D., Research Scientist, Structural Biochemistry, Research Center Borstel

We present here the FreE coli™ set of non-conditional *E. coli* derivatives that lack all outer membrane agonists for hTLR4/MD-2 activation. The FreE coli™ strains entirely lack LPS, yet remain viable despite exclusively elaborating the tetra-acylated, endotoxically inactive lipid A precursor lipid IVA. Consistent with the results that activation of hTLR4/MD-2 signaling by FreE coli™ cells was of several orders of magnitude lower compared with cells of the *E. coli* wild-type strain, heterologous proteins and monomeric, supercoiled plasmid DNAs prepared from different FreE coli™ strains were free of endotoxic activity.

9:35 Host Cell and Expression Engineering for Development of an *E. coli* Ketoreductase Catalyst: Enhancement of Formate Dehydrogenase Activity for Regeneration of NADH

Regina Kratzer, Ph.D., Researcher, Institute of Biotechnology and Biochemical Engineering, Graz University of Technology

An *E. coli* co-expressing Candida tenuis xylose reductase and Candida boidiniiformate dehydrogenase (FDH) was developed. Single expression of the FDH gave an enzyme activity of 400 units/gCDW. Co-expression, however, resulted in an 80% decline in FDH activity. Combined effects from increase in FDH gene copy number, supply of rare tRNAs and dampened expression of the ketoreductase brought up the FDH activity 3-fold.

10:05 Does Metabolism Limit Recombinant Protein Production?

Lars Blank, Ph.D., Chair of Applied Microbiology, RWTH Aachen University

The synthesis of proteins is one of the most energy consuming processes in the cell, with the result that cellular energy supply may become critical. We therefore quantified the impact of recombinant protein production on microbial metabolism. The insights into the operation of metabolism during recombinant protein production might guide the optimization of microbial hosts and fermentation conditions

10:35 Coffee Break in the Exhibit Hall with Poster Viewing

11:15 microRNAs in CHO Cell Culture Technology

Matthias Hackl, Ph.D., Research Assistant, Department of Biotechnology, University of Natural Resources and Applied Life Sciences, Vienna

The main impact of the now published genome, transcriptome and miRNome of CHO cells is that it enables researchers to begin to understand the molecular mechanisms of how these cells perform their tasks of efficient growth, high productivity and safe product quality. The focus of this presentation is how this information has improved our ability to use microRNAs for engineering of CHO cells.

11:45 Recombinant IgAs Expressed in CHO Cells: Bottlenecks of Recombinant Cell Lines and Improved Production Strategies

Renate Kunert, Ph.D., Professor, Department of Biotechnology, University of Natural Resources and Life Sciences, Vienna, Austria

Immunoglobulins of subtype A (IgA) mediate a key role in mucosal immunity and are promising new immunotherapeutic candidates. We established recombinant Chinese hamster ovary (CHO) cells which stably expressed two different IgA1 antibodies under serum-free conditions. In this study, we extensively characterized the low and the high producing cell lines in long-term culture and identified bottlenecks in polypeptide expression and assembly.

12:15 Sponsored Presentation *(Opportunity available, please contact Carol Dinerstein, Dinerstein@healthtech.com)*

12:30 "Open Sourcing" - Increasing Options to Meet the Challenges of Drug Development and Manufacturing

Sponsored by

Simon Boa, Ph.D., Director, Business Development & Marketing, Merck Millipore

We'll present a case study how a "open-sourcing" solutions based approach enabled the development of a clinical manufacturing process for a new drug in parallel with the construction of a new clinical manufacturing facility.

13:00 Luncheon Presentation II *(Opportunity available, please contact Carol Dinerstein, Dinerstein@healthtech.com)*

14:15 Chairperson's Remarks

14:20 Improving Transient Gene Expression in Mammalian Cells: The Case of a Human Lysosomal Enzyme

José Luis Corchero, Ph.D., CIBER de Bioingeniería, Biomateriales y Nanomedicina (CIBER-BBN), Barcelona

Transient gene expression (TGE) is a useful, fast method to produce recombinant proteins. This work describes TGE-based production of a human enzyme. Several parameters (cells, vectors, and others influencing cell metabolism) were studied and optimized. The proposed protocol allows producing up to several mg/L of active enzyme (or engineered versions) to be tested *in vitro* or in pre-clinical trials.

14:50 CHO Genome Characterization and Engineering to Improve Protein Synthesis and Secretion

Nicolas Mermod, Ph.D., Professor, Laboratory of Molecular Biotechnology, University of Lausanne

We have determined the genome sequence of a CHO cell line used for pharmaceutical production and of derived producer clones. This allowed the characterization of the alterations of the genomic and transgene sequence of candidate cell lines for screening purposes

as well as cell engineering for increased protein secretion and modifications. This presentation will illustrate how a systematic and multi-level approach can be used to improve the expression of pharmaceutical proteins, including difficult-to-express ones.

15:20 Rational Engineering of *Escherichia coli* Strains for Plasmid Biopharmaceutical Manufacturing
Geisa Gonçalves, Ph.D., Researcher, Department of Bioengineering, Instituto Superior Técnico (IST), Lisbon, Portugal

15:50 Refreshment Break in the Exhibit Hall with Poster Viewing

16:30 Rapid Identification of High Affinity Monoclonal Antibodies Using the ForteBio Octet RED384 Instrument
Sponsored by
forteBIO A Division of Pall Life Sciences
Christian Frisch, Ph.D., Director, Research & Development, AbD Serotec, A division of MorphoSys AG
We present an off-rate screening method of crude *E. coli* lysates containing monovalent Fab fragments obtained after phage display of the HuCAL® antibody library. After antibody selection and ELISA-based primary screening, antibodies are ranked according to their kinetic off-rates on the ForteBio Octet RED384 instrument. The data show good correlation of kinetic parameters determined in lysates and in purified samples, thus enabling off-rate based ranking of unpurified antibodies at the screening stage.

17:00 Problem Solving Roundtable Discussions

Table 7: Expressing Protein Complexes for Drug Discovery
Moderator: Lorenz M. Mayr, Ph.D., Executive Director, Unit Head Biology,Protease Platform, Novartis Pharma

Table 8: Solving Expression Problems in CHO Cells
Moderator: Renate Kunert, Ph.D., Professor, Department of Biotechnology,University of Natural Resources and Life Sciences, Vienna, Austria

Table 9: Troubleshooting Transient Gene Expression in Mammalian Cell Lines
Moderator: José Luis Corchero, Ph.D., CIBER de Bioingeniería, Biomateriales yNanomedicina (CIBER-BBN), Barcelona

Table 10: Genome Engineering to Improve Expression
Moderator: Nicolas Mermod, Ph.D., Professor, Laboratory of Molecular Biotechnology, University of Lausanne

Table 11: Cell Free or Not Cell Free: Making the Decision/ Transition
Moderator to be Announced

18:00-19:00 Welcome Reception in the Exhibit Hall with Poster Viewing

WEDNESDAY, 7 NOVEMBER

7:30 Breakfast Presentation *(Opportunity available, please contact Carol Dinerstein, Dinerstein@healthtech.com)* **or Morning Coffee**

Novel Systems

8:30 Chairperson's Remarks

8:35 Production of Recombinant Proteoliposomes for Therapeutic Uses
Jean-Luc Lenormand, Ph.D., Team Leader, HumProTher Lab, Joseph Fourier University
One of the major challenges in human therapy is to develop delivery systems which are convenient and effective for tackling problems in disease treatments. The use of recombinant proteoliposomes containing therapeutic membrane proteins is a recently developed technology in our laboratory, allowing biologically active proteins to penetrate across the plasma membrane of eukaryotic cells. Cell-free protein synthesis emerged as one of the most efficient system for membrane protein expression. We have successfully expressed in mg amounts, bio-active proteoliposomes containing membrane proteins for different therapeutic uses such as vaccines against infectious diseases, pro-apoptotic membrane proteins for treating tumours, innovative biomimetic artificial membranes and the production of monoclonal antibodies.

9:05 Select Poster Presentations

9:35 Integrating High-Throughput Biotherapeutic and Protein Reagent Expression
David Lee, Ph.D., Principal Scientist, UCB Pharma
Maria Wendt, Ph.D., Scientific Consultant, Genedata
Recent advances in cell line development and automation technologies enable the parallel expression of large numbers of biomolecules. We present a novel data management and workflow support system based on Genedata BiologicsTM which captures production and characterization data for both biotherapeutics and tool proteins. The system is optimized for high-throughput processes, spanning molecular biology, expression, purification, and analytics workflows. We will present use cases with emphasis on antibody expression.

10:05 Secretory *E. Coli* Expression: An Innovative Technology for Novel Biopharmaceuticals
Sponsored by
WACKER
Julia Schuemann, Ph.D., Project Manager, Wacker Biotech GmbH
Antibody fragments and protein scaffolds are the current trend in the biotechnology industry, as they are significantly less complex than antibodies yet still retain high target specificity. Selected case studies will be presented on the use of Wacker's *E. coli*-based secretion technology for the expression of these novel classes of biopharmaceuticals. Our technology enables the easy recovery of native proteins from the culture medium in high yields, thus increasing the overall process efficiency while reducing cost of goods.

10:35 Coffee Break in the Exhibit Hall with Poster Viewing

Case Studies In Success

11:05 Diversity is Key: Approaches to Tackle the Expression and Purification of Complex Human Proteins to Drive Early Drug Discovery
Rene Assenberg, Ph.D., Investigator III, Expertise Platform Proteases (EPP), Novartis Pharma AG/NIBB
Production of complex, human proteins to support early drug discovery efforts remains a significant challenge. In our environment we routinely deal with proteins of a highly diverse nature ranging from cytosolic to membrane-bound to secreted protein, either in isolation or in complex with other proteins. To achieve the greatest chances of success, we utilize an equally diverse range of protein expression and purification tools, which will be the focus of this talk.

11:35 Recombinant Production in *E. coli* and Characterization of the Neurotrophic Growth Factor Artemin
Stefan Masure, Ph.D., Principal Research Scientist, Protein Production Group, Janssen Research & Development
A case study will be presented on the recombinant production and detailed characterization of Artemin, a neurotrophic growth factor from the GDNF-family considered as a possible therapeutic agent for neuropathic pain. Efficient *E. coli* expression and purification protocols were developed and the purified protein was characterized in terms of purity, cellular activity, dimerization and stability. The produced protein was suitable for *in vitro* and *in vivo* testing of Artemin's biological activity.

12:05 Reconstituted Nonribosomal Production of the Peptide Antibiotic Valinomycin in the Heterologous Host *Escherichia coli*
Peter Neubauer, Ph.D., Laboratory of Bioprocess Engineering, Department of Biotechnology, Technische Universität Berlin (TU Berlin)
Nonribosomal peptide synthetases (NRPSs) are multi-functional mega-enzymes that produce a wide range of pharmaceutically relevant peptides in bacteria and fungi. The heterologous expression of NRPSs in a robust host like *Escherichia coli* is a promising approach to make relevant NRPs more accessible. We conducted a rational expression screening in multi-well plates to produce the 655 kDa heterodimeric valinomycin synthetase (VlmSyn) from Streptomyces tsusimaensis in a soluble form in *E. coli*. VlmSyn was purified and its activity was confirmed *in vitro*. Finally, the biosynthesis of valinomycin, a cyclodepsipeptide with reported antifungal, antibacterial and antiviral activities could be fully reconstituted in an engineered *E. coli* strain with the Bacillus subtilis phosphopantetheinyltransferase gene sfp genomically integrated.

12:35 Close of Part One: Enhancing Expression and Achieving Higher Throughput

Part Two: Solving Difficult Protein Problems

7–8 November 2012

WEDNESDAY 7 NOVEMBER

12:30 – 14:00 Conference Registration for Part Two

14:00 Chairperson's Remarks

Membrane Proteins

» KEYNOTE PRESENTATION

14:05 Nanobodies as Tools for the Structural and Functional Investigation of GPCR Transmembrane Signaling

Jan Steyaert, Ph.D., Executive Director, Department of Molecular and Cellular Interactions, Vlaams Instituutvoor Biotechnologie & Structural Biology Brussels, Vrije Universiteit Brussel

We generated Nanobodies that stabilize transient functional conformations of the human β2 adrenergic receptor. Some Nanobodies that faithfully mimic G protein binding were used to crystallize active agonist-bound states of this GPCR. Other nanobodies that stabilize the β2AR•Gs complex were instrumental to purify and obtain the crystal structure of this complex, providing the first view of transmembrane signaling by a GPCR.

14:35 Optimization of Expression and Purification of the Feline and Primate Foamy Virus Transmembrane Envelope Proteins Using a 96 Deep Well Screen

Michael Mühle, Ph.D., Researcher, Robert Koch Institute

High level overexpression of a recombinant target protein in *E. coli* is a prerequisite to minimize efforts in subsequent large scale purification steps. We developed a 96 well based screening method for rapid detection of suitable expression conditions and applied it for the production of two viral transmembrane envelope proteins to quickly determine conditions for an about 20-fold increased production.

15:05 CaptureSelect: Unique Affinity Products for Purification and Detection of All Antibody Formats

Sponsored by

Frank Detmers, Ph.D., Director, Ligand Application, BAC BV

This presentation will focus on CaptureSelect IgG-CH1, a novel affinity resin, using a ligand directed towards the CH1 domain of antibodies and antibody fragments, offering a true platform for purification of all human IgG's and Fab fragments thereof, irrespective of subclass and without co-purification of free light chains. Analytical assays based on HPLC column formats and label free detection systems for QC will also be presented.

15:20 Sponsored Presentation *(Opportunity available, please contact Carol Dinerstein, Dinerstein@healthtech.com)*

15:35 Refreshment Break in the Exhibit Hall with Poster Viewing

16:15 Predictable Protein Expression in Mammalian Cells by Exploitation of Defined Chromosomal Loci

Dagmar Wirth, Ph.D., Department of Gene Regulation and Differentiation, HZI- Helmholtz Centre for Infection Research

The expression levels of transgenes in mammalian cells are affected by the impact of neighbouring chromosomal elements. To achieve predictable protein expression we exploited methods for targeting expression cassettes to specific chromosomal sites via recombinase mediated cassette exchange or employing bacterial artificial chromosomes, respectively. We show that defined combinations of integration sites and vector designs are required for rational exploitation of given chromosomal sites.

16:45 Improving Protein Stability and Function through Disulfide Engineering: A Computational Approach

Alan Dombkowski, Ph.D., Assistant Professor, Division of Clinical Pharmacology and Toxicology, Department of Pediatrics, Wayne State University School of Medicine

Protein stability and function can be enhanced in a wide range of biomedical and industrial applications through disulfide bond engineering. Computational methods have proven to be effective for designing strategically placed disulfides. We will discuss structural considerations for successful use of this technology, recent advances in our computational method for rational disulfide design, and applications.

17:15 Problem Solving Roundtable Discussions

Table 7: Nanobodies as Tools for Structural Studies of Membrane Proteins

Moderator: Jan Steyaert, Ph.D., Executive Director, Department of Molecular and Cellular Interactions, Vlaams Instituutvoor Biotechnologie & Structural Biology Brussels, Vrije Universiteit Brussel

Table 8: Predicting Protein Expression in Mammalian Cells Using Defined Chromosomal Loci

Moderator: Dagmar Wirth, Ph.D., Department of Gene Regulation and Differentiation, HZI- Helmholtz Centre for Infection Research

Table 9: Cell Free Expression of Mammalian Proteins: Strategies for Success

Moderator: Frank Bernhard, Ph.D., Centre for Biomolecular Magnetic Resonance, Institute for Biophysical Chemistry, University ofFrankfurt/Main

Table 10: Using Bacterial Artificial Chromosomes to Enhance Protein Expression in Mammalian Cell Lines

Moderator: Emilio Casanova, Ph.D., Researcher, Ludwig Boltzmann Institute for Cancer Research, Vienna

Table 11: Choosing the Right Host for Expression of Membrane Proteins

Moderator: Annie Barrand-Frelet, Ph.D., CNRS, CEA-France

18:15 – 19:15 Reception in the Exhibit Hall with Poster Viewing

THURSDAY, 8 NOVEMBER

7:30 Breakfast Presentation *(Opportunities available, please contact Carol Dinerstein, Dinerstein@healthtech.com)* **or Morning Coffee**

8:30 Chairperson's Remarks

M. Raafat El-Gewely, Ph.D. Professor, Institute of Medical Biology, University of Tromsø

Mammalian and Cell-Free Strategies

8:35 Strategies for the Cell-Free Expression of Membrane Proteins

Frank Bernhard, Ph.D., Centre for Biomolecular Magnetic Resonance, Institute for Biophysical Chemistry, University of Frankfurt/Main

9:05 Membrane Protein Synthesis with Batch-Mode Cell-Free Protein Synthesis: Facilitated Screening and Efficient Sample Production for NMR

Anders Pedersen, Ph.D., Swedish NMR Centre, University of Gothenburg

Batch-mode cell-free protein synthesis facilitates sample condition screening of membrane proteins, in particular detergent choice for co-translational solubilization. More than 90% of tested proteins can be expressed in solubilized form. After finding the optimal expression condition for a given membrane protein, isotopic labeling for NMR spectroscopy applications is straightforward and can be accomplished with unparalleled efficiency and specificity.

9:35 The Use of Bacterial Artificial Chromosomes for Recombinant Protein Production in Mammalian Cell Lines
Emilio Casanova, Ph.D., Researcher, Ludwig Boltzmann Institute for Cancer Research, Vienna
Bacterial Artificial Chromosomes (BACs) are vectors derived from the *E. coli* F factor with a cloning capacity of up to 400Kb. Due to their large cloning capacity, BACs can accommodate a whole mammalian locus including all the transcriptional regulatory elements. Expression from BACs-based vectors is not affected by the genomic integration site, BACs-based vectors confer copy-number dependent expression and expression is stable over time. Therefore, BACs should be useful as expression vectors in the field of recombinant protein production in mammalian cells lines.

10:05 Recent Advances in the Integrated Measurements of Protein Size, Structure and Formulation Viscosity
Sponsored by
Malvern
E. Neil Lewis, Ph.D., CTO, Malvern Instruments
The non-invasive and non-destructive determination of numerous physicochemical properties of protein therapeutics is critical for developing optimal formulation conditions to enhance product efficacy, stability and manufacturability. To meet this demand, analytical tools that rapidly measure formulation viscosity, protein structure and hydrodynamic size over formulation concentration ranges on sample volumes < 10 µl are required. In this talk, we describe recent innovations that enable integrated, automated measurements of protein therapeutic formulations on minimal sample volumes.

10:35 Coffee Break in the Exhibit Hall with Poster Viewing

Solubility, Aggregation and Immunogenicity

11:05 On the Role of Aggregates and Particles in Protein Immunogenicity
Wim Jiskoot, Ph.D., Professor, Drug Delivery Technology, University of Leiden
In this presentation I will discuss product-related risk factors for protein immunogenicity (in particular aggregates, submicron particles and subvisible particles), show clinical and preclinical data illustrating the impact of the formulation on protein immunogenicity, and the use of animal models to assess which of these factors do or do not affect immunogenicity.

11:35 Strategies for Bacterial Expression of Protein-Peptide Complexes: Application to Solubilization of Papillomavirus E6
Sebastian Charbonnier, Ph.D., Researcher, Equipe Oncoprotéines
The papillomavirus oncoprotein E6 induces cervical cancers and had resisted structural analysis for more than 20 years. By combining different strategies including production optimisation, mutagenesis, domain phasing, fusion to the highly soluble Maltose-Binding-Protein (MBP) and/or to E6-binding peptides, we ultimately managed to solve several high-resolution structures of E6 proteins in isolation or in complex with target proteins.

12:05 Increasing Yield, Biological Activity and Reducing Cost of Recombinant Protein Production Using Novel Conformases
M. Raafat El-Gewely, Ph.D. Professor, Institute of Medical Biology, University of Tromsø
I will discuss the fact that primary structure is not alone in affecting the proper tertiary structure and the functionality of proteins. Besides improving the environmental conditions for protein expression, we have improved the molecular and genetic environment in the host (initially *E. coli*) by our novel conformases / foldases (patents pending) which can help reduce the impact of the bottle-neck problems in the recombinant field and drug discovery. This technology has helped produce proteins that were not possible before and is suitably poised to be used in the biosimilar and biobetter field.

12:35 Luncheon Presentations or Lunch on Your Own
(Opportunities available, please contact Carol Dinerstein, Dinerstein@healthtech.com)

The Future of Expression: Advanced Technologies

14:00 Chairperson's Remarks
M. Raafat El-Gewely, Ph.D. Professor, Institute of Medical Biology, University of Tromsø

14:05 Heterologous Expression of Membrane Proteins: Choosing the Appropriate Host
Annie Barrand-Frelet, Ph.D., CNRS, CEA-France
The major bottleneck for characterization of a membrane protein is its overexpression. Expression of 20 membrane proteins of various origins, functions and topologies, has been tested in different prokaryotic and eukaryotic systems. First, genes were cloned using the Gateway technology. Finally, 17 of the 20 proteins were produced at adequate yields for functional and/or structural studies.

14:35 Select Poster Presentations

15:05 Native Source Protein Purification for Crystallography
Chloe Zubieta, Ph.D., European Molecular Biology Laboratory, Grenoble, France
With improvements in chromatographic methods, the advent of microfluidic technology, and the availability of high flux beamlines with smaller beam sizes, microgram quantities of purified protein can be used for successful crystallographic characterization. Strategies for protein fractionation and purification from native sources will be discussed with a focus on downstream crystallographic applications. Case studies in model and non-model systems will be presented.

15:35 Refreshment Break in the Exhibit Hall with Poster Viewing

16:00 Transient Gene Expression in HEK293 and Vero Cells Immobilised on Microcarriers
Lukas Fliedl, Ph.D., Junior Scientist, Institute of Applied Microbiology, Vienna, Austria
In this work HEK/EBNA cells were grown and transfected on microcarriers. Cell immobilisation allows easy media exchange after sedimentation. The transfection method was optimized regarding polyethylenimine (PEI) concentration, optimal DNA:PEI ratio, type of PEI, incubation time and polyplex formation time. Transfection efficiencies of up to 33% with pCEP4 and 98% with pMAX were reached. Additionally immobilisation on microcarriers was used to retain the cells during cultivation, thus allowing media replacement and prolonging cultivation time from one to two weeks with continuous expression of the recombinant protein.

16:30 Panel Discussion: Where Will We Be in 5 Years in Protein Expression?

17:00 Close of Conference

Pricing and Registration Information

SHORT COURSE PRICING

(Includes access to short course only)	Commercial	Academic, Government, Hospital-affiliated	Student
One short course	€625	€375	€125
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Monday, 5 November	
SC1: From Understanding of Aggregation to Devising of Prevention Strategies	SC3: Engineering of Bi-Specific Antibodies
SC2: Measures to Enhance Half-Life and Stability	

FULL EVENT PRICING BEST VALUE! 3 Days (6-8 November) (excluding short courses)

Registrations after 28 September and on-site	€2250	€1050	€495

1.5 DAY CONFERENCE PRICING (6-7 November or 7-8 November) (excluding short courses)

Registrations after 28 September and on-site	€1625	€795	€345

Schedule at a Glance

	Novel Antibody Constructs and Alternative Scaffolds	Protein Expression
6-7 November	Creative Engineering, Delivery Technologies and Targeting	Enhancing Expression and Achieving Higher Throughput
7-8 November	Enhanced Product Properties and Therapeutic Application	Solving Difficult Protein Problems

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