ENGINEERING
- Display of Biologics
- Engineering Antibodies
- Machine Learning: Part 2

TARGETS
- Antibody-Based Therapies
- Emerging Targets & Approaches
- Membrane Protein Targets

BISPECIFICS
- Safety & Efficacy
- Advancing Multispecifics
- Engineering Bispecifics

IMMUNOTHERAPY
- Modulating the TME
- Innovative CAR T Therapy
- Next-Gen Immunotherapies

ANALYTICAL
- Optimisation & Developability
- Analytical Characterisation
- Protein Stability & Formulation

EXPRESSION
- Data Science & Engineering
- Optimising Expression
- Process Development

MACHINE LEARNING
- Intro to Machine Learning
- Machine Learning: Part 1
- Machine Learning: Part 2

ONCOLOGY
- Antibody-Based Therapies
- Engineering Conjugates
- Next-Gen Immunotherapies

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PLENARY DEEP DIVE

Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations

MODERATOR:
Christian Klein, PhD, Cure.Bio

SPEAKERS:

Taruna Arora, PhD, formerly Bristol Myers Squibb

Tomoyuki Igawa, PhD, Chugai Pharmabody Research

Hironori Matsunaga, PhD, Daiichi Sankyo

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BISPECIFICS		Safety and Efficacy of Bispecifics	Advancing Multispecifics	Engineering Bispecifics
IMMUNOTHERAPY		Modulating the TME	Innovative CAR T Therapy	Next-Gen Immunotherapies
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**Separate registration required for short courses.*

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>
> **Rakesh D., PhD**
> President & CEO, Bionavigen

PLENARY DEEP DIVE

6 NOVEMBER 2024 | 15:30-16:05

Multispecific Antibody Highlights

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte Ltd.

ADC Highlights

Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

Immunotherapy Highlights

Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb

PLENARY PANEL

6 NOVEMBER 2024 | 16:05-16:35

Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations

MODERATOR:

Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio

PANELISTS:

Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte Ltd.

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SHORT COURSES* | MONDAY, 4 NOVEMBER

All short courses will take place **in-person only** from 14:00 – 17:00 on 4 November. Our short courses are designed to be instructional, interactive, and provide in-depth information on a specific topic. They allow for one-on-one interaction between the participants and instructors to facilitate the explanation of the more technical aspects that would otherwise not be covered during our main presentations.

SC1: Developability of Bispecific Antibodies: Formats and Applications

Instructor:

Nimish Gera, PhD, Vice President, Biologics, Mythic Therapeutics

Bispecific antibodies are a rapidly growing and clinically validated class of antibodies with marketed drugs and multiple candidates in clinical trials. Targeting multiple antigens in a synergistic manner can confer enhanced therapeutic benefit and potentially uncover novel biological mechanisms. However, multiple formats and a tedious candidate selection process to select functional and developable bispecific antibodies makes such programs cumbersome. This short course highlights the rapid growth in the field, therapeutic applications, and focuses on challenges with discovery and development of bispecific antibodies. We will use an approved bispecific antibody as a case study to understand the varied aspects of discovery and development of bispecific antibody programs.

SC2: Advanced Applications of SPR & BLI Biosensors for Drug Discovery and Development

Instructor:

Vishal Kamat, PhD, Senior Director, Protein Sciences, Ampersand Biomedicines

The surface plasmon resonance (SPR) and bio-layer interferometry (BLI) biosensors stand as the cornerstone real-time label-free (RT-LF) platforms for characterizing protein-protein interactions. Traditionally used for determining critical antibody binding affinities in lead therapeutic molecule selection, these biosensors now face evolving demands. With advancements in protein engineering and regulatory agencies mandating deeper elucidation of mechanism of action, there is a continued need to design sophisticated SPR and BLI assays. This short course aims to unveil novel approaches in designing SPR/BLI assays that emulate biological processes on the chip, along with the challenges encountered in their development. Various assays instrumental in identifying multiple clinical molecules will be showcased, highlighting the importance of SPR/BLI assays. Innovative assays tailored specifically for assessing the mechanism of action of clinical candidates which has become an integral part of the IND filing process, will also be presented. Attendees will gain valuable insights into harnessing these cutting-edge techniques to bolster their research endeavors and regulatory submissions.

SC3: Tools for Cell Line Engineering and Development

Instructor:

Mario P. Pereira, PhD, Director of Technology & Business Development, ATUM

Where are we heading to? We are heading to the future of tools for Cell Line Engineering and Development. The first question we ask is "how early can we go to clinic"? Then, we move to look at landing pads—are they really the future? This course will also address genetic engineering and new biologics platforms.

SC4: In silico and Machine Learning Tools for Antibody Design and Developability Predictions

Instructors:

Rahmad Akbar, PhD, Senior Data Scientist, Antibody Design, Novo Nordisk

Philip M. Kim, PhD, Professor, Molecular Genetics & Computer Science, University of Toronto

Shipra Malhotra, PhD, Senior Scientist, Biologics, Computational Biology and Machine Learning, Takeda

In silico developability predictive platforms offer promising screening support to identify optimal properties of a candidate biotherapeutic at early stages. Predicting your biologic's developability can help avoid instability problems during later development and impede significant economic consequences.

SC5: Best Practices for Targeting GPCRs, Ion Channels, and Transporters with Monoclonal Antibodies

Instructor:

Ross Chambers, PhD, Vice President, Antibody Discovery, Integral Molecular, Inc.

Complex membrane proteins are important therapeutic targets and together represent the majority of protein classes addressed by therapeutic drugs. Significant opportunities exist for targeting complex membrane proteins with antibodies, but it has been challenging to discover therapeutic antibodies against them. This course will examine emerging technologies and strategies for enabling the isolation of specific and functional antibodies against GPCRs, ion channels, and transporters, and highlight progress via case studies.

SC6: Introduction to Immunogenicity of Biotherapeutics

Instructors:

Sophie Tourdot, PhD, Immunogenicity Sciences Lead, BioMedicine Design, Pfizer Inc.

Maria-Dolores Vazquez-Abad, PhD, Vice President, Clinical Immunogenicity, Pfizer Inc.

This short course aims to provide foundation knowledge of biotherapeutics immunogenicity and immunogenicity risk assessment in the context of biotherapeutic drug development, covering topics such as:

- What is Immunogenicity
- Why do we care
- Health Agencies expectations
- Major components of the Immunogenicity Risk Assessment
- Objective of assigning an overall immunogenicity risk to a program

**Separate registration required. See registration page for details.*

All training seminars will take place in-person only

TUESDAY, 5 NOVEMBER, 2024 08:25 - 18:35

TS7A: Introduction to Machine Learning for Biologics Design

Instructor:

Christopher R. Corbeil, PhD, Research Officer, Human Health Therapeutics, National Research Council Canada

This course offers an introduction to concepts, strategies, and machine learning methods used for biologics design. It includes presentations and demonstrations of the methods used in the field, covering techniques such as triaging sequences, modulating affinity, and designing antibody libraries, along with increasing manufacturability. The course is directed at scientists new to the field and protein engineers wanting an introduction to how machine learning can aid in guiding biologics design.

TS8A: Introduction to Multispecific Antibodies: History, Engineering, and Application

Instructor:

G. Jonah Rainey, PhD, Senior Director, Protein Engineering, Eli Lilly and Company

Introduction to Multispecific Antibodies will be organized as an informative and practical guide to getting up to speed on critical aspects of multispecific antibody therapeutics. Topics will include historical successes, failures, and lessons learned. Specific practical instruction will span mechanisms of action, engineering, developability, regulatory considerations, and translational guidelines. Perspectives on ideal implementation of multispecifics as targeted and immunomodulatory approaches will be discussed.

TS9A: Current Applications of Host Expression Systems and Optimisation of the CEPA Workflow to Support Therapeutic Generation and Structural Biology

Instructors:

Richard Altman, MS, Field Application Scientist, Life Science Solutions, Thermo Fisher Scientific

Dominic Esposito, PhD, Director, Protein Sciences, Frederick National Laboratory

Protein production is more complex than just the act of expressing the proteins. This training seminar will review the end-to-end protein production CEPA (Cloning, Expression, Purification, Analytics) workflow process and focus on how to increase its efficiency and productivity. The choice of a suitable host expression system depends mainly on the biological and biochemical properties of an individual protein. We will review the concepts and applications of the major host expression systems, then turn our focus to the insect and mammalian systems, which have shown the ability to express complex proteins for a wide variety of applications. This seminar will combine instruction and current case studies in an interactive environment. It is recommended for scientists of all experience levels interested in addressing the demand for increasingly complex proteins within ever decreasing timelines.

TS10A: Introduction to Analytical Characterisation and Method Validation for Biological Products

Instructor:

Kevin Zen, PhD, Senior Director, IGM Biosciences

This interactive training seminar introduces a full spectrum of analytical procedures and characterization methods in biotech, gene and cell therapy product development. The instructor will update the new ICH guidelines on how to develop analytical procedures (Q14, 2024) and validate test methods (Q2(R2), 2024) in the context of IMPD/IND regulatory filing. Attendees will learn the practical aspects of the commonly used analytical procedures to address product identity, purity and impurity, strength and potency, process-related impurities and contaminants. The extended characterization will elaborate structure elucidation by mass spectroscopy, primary and secondary structure, post-translational modification, glycan profiling, charge variant analysis, biophysical characterization of higher order structure and aggregation. The class is for academics, newcomers in industry, and veterans wanting an update on analytical technologies.

WEDNESDAY, 6 NOVEMBER, 2024 08:25 - 19:45

TS9B: Label-Free Biosensor Tools in Biotherapeutic Discovery: SPR, BLI and KinExA

Instructors:

Yasmina Abdiche, PhD, Vice President, Exploratory Research, OmniAb Inc.

Palaniswami (Swami) Rathanaswami, PhD, CEO, PRSwami AbDev Inc.

This training seminar will cover the main applications and guidelines for best practices of commonly used commercial label-free biosensors in the interaction analysis of therapeutic antibodies. We will primarily focus on Surface Plasmon Resonance (SPR) and Kinetic Exclusion Assay (KinExA) technologies but will also address other surface (BLI) and solution (MSD and Gyrolab) methods. We will first cover the fundamental concepts used to design a binding kinetic experiment for affinity determination, then do a 'deep dive' into epitope binning and explore solution affinity methods with an emphasis on expanding throughput. In addition, we will showcase the complementary use of surface and solution approaches for determining affinities across a broad range of values to highlight their unique strengths and limitations.

DISPLAY OF BIOLOGICS

Leading the Way for New Classes of Therapy

TUESDAY 5 NOVEMBER

7:30 Registration and Morning Coffee

FUTURE DISPLAY: AI Enabling Discovery Workflows

8:25 Chairperson's Remarks

Maria Groves, PhD, Director, AstraZeneca

8:30 Augmenting Antibody-Drug Discovery with Deep Screening and Machine Learning

Christopher Wassif, PhD, Director, Molecular Engineering & Antibody Technologies, AstraZeneca

This presentation will focus on the convergence of a new high throughput antibody discovery platform capable of screening hundreds of millions of antibodies with machine learning and artificial intelligence to accelerate the full discovery process. This work is resulting in the identification of high affinity, developable modalities fit for therapeutic use in accelerated time frames while generating significant amounts of data further refining our algorithms and models.

9:00 Mammalian Display Selection of Enriched Antibody Repertoires for AI/ML Optimisation

Jeremy Loyau, PhD, Associate Director, Antibody Discovery & Engineering, Ichnos Sciences

The design of potent multispecific immune cell engagers, based on the Ichnos BEAT platform, relies on the identification of diverse and developable Fabs incorporating a common light chain (cLC). We have developed a high-fidelity mammalian display system for enrichment of antibodies bespoke for the desired binder profiles. This enables NGS analysis of multi-dimensional FACS gated populations and the creation of rich datasets for antibody optimisation by AI/ML methods.

9:30 PANEL DISCUSSION: *In silico* Design of Antibodies, Present and Future Perspectives

Moderator: Rebecca Croasdale-Wood, PhD, Senior Director, Augmented Biologics Discovery & Design, Biologics Engineering, Oncology, AstraZeneca

Advancements in AI and computational modelling are changing the antibody design landscape for drug discovery, in this session industry experts will share their perspectives on *in silico* antibody design.- State-of-the-art *in silico* methods for antibody design and optimisation- Embedding *in silico* technologies into drug discovery workflows- Data requirements for next generation *in silico* design- Future state: *de novo* antibody design

Panelists:

Andrew R.M. Bradbury, MD, PhD, CSO, Specifica, an IQVIA business

Charlotte M. Deane, PhD, Professor, Structural Bioinformatics, Statistics, University of Oxford; Executive Chair, Engineering and Physical Sciences Research Council (EPSRC)

Andreas Evers, PhD, Associate Scientific Director, Antibody Discovery & Protein Engineering, Global Research & Development Discovery Technology, Merck Healthcare KGaA

10:00 Improved Antibody Discovery using High-Density Antigen Display with Engineered Virus-Like Particles

Lauri Peil, Key Account and Technology Officer, Icosagen

Provide an overview of key insights gained from the design of Virus-Like Particle (VLP) displayed antigens, highlighting essential quality control (QC) steps for validation.
Present the core attributes of our proprietary engineered VLP technology, designed for high-density antigen display.
Demonstrate how VLPs can be utilized effectively for antibody discovery, screening, and engineering, showcasing their versatility in research and therapeutic development

10:30 Grand Opening Coffee Break in the Exhibit Hall with Poster Viewing

DIFFICULT TARGETS

11:10 Chairperson's Remarks and Tribute to Garry Merry

Ahuva Nissim, PhD, Professor, Antibody and Therapeutic Engineering, William Harvey Research Institute, Queen Mary University of London

11:15 Computationally Designed Repertoires of Enzymes and Antibodies

Sarel J. Fleishman, PhD, Associate Professor, Biomolecular Sciences, Weizmann Institute of Science; Chief Scientist, Scala Biodesign

We present a new strategy that combines atomistic design calculations and machine learning to design repertoires of multipoint mutants highly enriched in stable, foldable, and functional variants. Applying high-throughput screening to designed libraries yields variants with large changes in activity profiles including orders of magnitude improvement in antibody affinity, catalytic activity, or specificity.

11:45 Chimeric Antigens Displaying GPR65 Extracellular Loops for Antibody Discovery

Cécile Galmiche, PhD, Senior Scientist, Antibody Discovery, UCB

GPR65 is a proton-sensing G-protein coupled receptor associated with multiple immune-mediated inflammatory diseases. To probe its biology, a phage display antibody discovery campaign was performed using soluble chimeric ApoE3 scaffolds to present the extracellular loops of GPR65. Loop-

DISPLAY OF BIOLOGICS

Leading the Way for New Classes of Therapy

specific antibodies were identified and their ability to bind the wild-type receptor generated confidence in the use of chimeric soluble proteins to act as efficient surrogates for membrane protein extracellular loop antigens.

12:15 LUNCHEON PRESENTATION: Discovery of Novel ScAbs from Immunized Camelids and Antibody Optimization using Yeast Display

Colby Souders, Chief Scientific Officer, Twist Bioscience

At Twist Biosciences, we are incorporating yeast display to complement and enhance our *in vivo* and *in vitro* workflows . We first describe a discovery workflow using yeast display and NGS to enable the robust discovery of scAbs isolated from immunized alpacas. In the second study, we describe how integrating yeast display with Twist's synthetic library design can enable expedited antibody affinity maturation. Together with our existing pipelines, yeast display adds to the diverse capabilities' set Twist has to offer to our partners to identify and improve therapeutic candidates.

12:45 Luncheon in the Exhibit Hall with Poster Viewing

ACCELERATING AND IMPROVING THERAPEUTIC PROTEIN DISCOVERY AGAINST COMPLEX TARGETS: Combining Combinatorial Platforms with Deep Sequencing and Computational Methods

13:45 Chairperson's Remarks

Geir Åge Løset, PhD, CEO and CSO, Nextera AS

13:50 Rapid Discovery of High-Affinity Antibodies by Deep Screening

Philipp Holliger, PhD, Program Leader, Joint Head of Protein & Nucleic Acid Chemistry (PNAC) Division, MRC Laboratory of Molecular Biology, Cambridge, UK

Deep screening leverages the Illumina HiSeq platform for massively parallel sequencing, display, and rapid affinity screening at the level of >10e8 individual antibody-antigen interactions. Deep screening enabled the discovery of mid- to high-picomolar single-chain Fv (scFv) antibody leads directly from unselected, synthetic scFv repertoires augmented by machine learning. Deep screening promises to accelerate antibody discovery for a wide range of targets.

14:20 Discovery of Broadly-Neutralising Antibodies and Other Binding Proteins for Treatment of Snakebite Envenoming

Anne Ljungars, PhD, Senior Scientist, Technical University of Denmark

Snakebite envenoming leads to over 100,000 fatalities annually, with additional victims suffering from long-term complications. Today, the only existing specific therapy against envenoming is polyclonal, plasma-derived antivenoms from immunized animals. While life-saving, these medicines come with the risk of causing adverse reactions. To address this, recombinant monoclonal antibodies and nanobodies that target medically relevant toxins in the snake venoms are being explored as therapeutic alternatives.

14:50 Optimised pIX Phage Display Discovery of Potent and Rare Therapeutic TCR-Like Antibody Candidates

Geir Åge Løset, PhD, CEO and CSO, Nextera AS

Targeting pHLA class I and II at therapeutic resolution has been largely restricted to approaches building on the native TCR ligand as biologics or cell therapy. We here show how the special pIX phage display system has been optimised and combined with *in silico* guidance and deep sequencing as a unique platform allowing TCR-Like antibodies to enter this stage beyond the current state of the art.

15:20 Mastering Immunogenicity Risk Assessment and Biologics Development

Jeremy Fry, Director of Sales, ProImmune Ltd.

This presentation will highlight integrated platforms to address the criticality of mitigating immunogenicity risk in drug development. Case studies highlight ProImmune's solutions: DC-T/T assays for lead optimization, MAPPS for antigen presentation, HLA-peptide assays for epitope characterization, and whole blood cytokine storm assays. Also introducing Ankyrons™, stable single-domain proteins that surpass current antibody limitations, showcasing their potential to revolutionize drug research.

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

CONDITIONAL ACTIVATION

16:34 Chairperson's Remarks

E. Sally Ward, PhD, Director, Translational Immunology; Professor, Molecular Immunology, Centre for Cancer Immunology, University of Southampton

16:35 Expanding Diversity for Synthetic Antibody Epitope and Affinity Prediction Using Multiple Round Enrichment Campaigns

Andrew Bradbury, CSO, Specifica VP & General Manager, Specifica

17:05 Discovery and Functional Validation of Anti-Idiotypic Binding Modules for Conditional Antibody Activation

Harald Kolmar, PhD, Professor and Head, Institute for Organic Chemistry and Biochemistry, Technische Universität Darmstadt

We use chicken immunisation in combination with yeast surface display and a competitive FACS screening for the isolation of single chain Fv fragments that functionally block a therapeutic antibody. N-terminal fusion with an MMP-9 cleavable linker results in variants with more than 1000-fold attenuated affinity, where proteolytic demasking enables regain of antibody function in the tumour microenvironment.

17:35 Engineering Scaffold Proteins for Conditional Targeting

Sophia Hober, PhD, Professor, School of Biotechnology, KTH Royal Institute of Technology

By using combinatorial protein engineering and protein library technologies, small protein scaffolds can be engineered and thereby equipped with various functions. To develop protein-based systems

for protein diagnostic and therapeutic purposes, we are utilising small, well characterised domains. To suit the intended use, the biodistribution, half-life as well as the cell internalisation can be manipulated. Here, the development, evaluation and use of these affinity domains will be discussed.

18:05 Harnessing AI/ML in Biologics Discovery: Overcoming Adoption Challenges

Nicola Bonzanni, Founder & Chief Executive Officer, ENPICOM

The rapid advancement of AI/ML technologies is transforming the pharmaceutical industry, especially in biologics discovery. AI/ML holds the promise of accelerating discovery cycles, reducing costs, and improving therapeutic outcomes. However, widespread adoption is hindered by challenges such as fragmented data, inefficient model integration, and complex workflows. In this presentation, we explore these obstacles and demonstrate how the ENPICOM Platform effectively addresses them.

18:35 Welcome Reception in the Exhibit Hall with Poster Viewing

19:35 Close of Display of Biologics Conference

9TH ANNUAL | BARCELONA, SPAIN

ENGINEERING ANTIBODIES & BEYOND

Designing the Next Best-in-Class Biologics

WEDNESDAY 6 NOVEMBER

7:30 Registration and Morning Coffee

DESIGNING NEXT-GENERATION BIOTHERAPEUTICS

8:55 Chairperson's Remarks

Lars Linden, PhD, Vice President, Therapeutic Antibodies, Bayer AG

9:00 Recent Advances in Developing Radio-DARPin Therapeutics

Andreas Bosshart, PhD, Senior Director, Oncology Research, Lead Generation, Molecular Partners AG

Designed Ankyrin Repeat Proteins (DARPins) offer distinct advantages for therapeutic drug design, including small size, thermostable architecture, and high target specificity and affinity. This presentation highlights recent advances of our Radio-DARPin Therapeutics (RDT) program. Through surface engineering and half-life tuning, we developed RDT candidates with minimal kidney accumulation and effective tumour uptake. Thereby, they exhibit biodistribution properties suitable for therapeutic applications and overcome nephrotoxicity-related limitations of other protein-based radiopharmaceutical approaches.

9:30 Development of ABY-271 and the ABY-025 Affibody Theranostic Pair for Patients with HER2-Expressing Disease

Fredrik Frejd, PhD, CSO, Affibody AB

HER2 is an oncogenic driver of several cancers. An affibody molecule specific for HER2 has been developed. Receptor expression levels in metastatic lesions in patients with spread disease can be determined using PET imaging. Tissue distribution profile has been optimised for therapy by protein engineering. Preclinical data show potential for therapeutic effect in combination with trastuzumab. ABY-271 is in preclinical development for molecular radiotherapy of patients with HER2-expressing disease.

10:00 Versatile AlivaMab® Platforms for Discovery and Engineering of Novel Biologics

Jane Seagal, VP Antibody Discovery, AlivaMab Biologics LLC

Novel biologic modalities merge innovative biology with unique functionalities. AlivaMab Biologics and Ablexis bring together flexible discovery and engineering platforms to enable versatile modalities and formats, including human single domain antibodies, common light chain BiSAbs, and T-cell engagers. Our holistic approaches and unique platforms for discovery and engineering yield molecules with the critical attributes necessary for successful drug development.

10:30 Coffee Break in the Exhibit Hall with Poster Viewing

11:15 EpiTACs Are a Novel Bispecific Antibody Platform to Degrade Disease-Driving Extracellular Targets

Shyra J. Gardai, PhD, CSO, EpiBiologics

Eliminating extracellular proteins is a compelling therapeutic modality. EpiTACs are bispecific antibodies in which one arm binds a target and the other arm leverages an EpiAtlas of tissue-enriched degrading receptors comprised of transmembrane ligases, cytokine/chemokine receptors, and internalising receptors resulting in selective degradation of membrane and soluble proteins. EpiTACs elicit robust *in vitro* and *in vivo* activity in a target-, tissue-, and disease-specific manner for a broad range of indications.

11:45 Beyond the Classical Payloads—Kinase Degraders as Antibody Armaments

Joost Uitdehaag, PhD, Head of Biology, Crossfire Oncology

Antibody Drug Conjugates (ADCs) have proven to be a very successful modality. Their therapeutic potential is, however, limited by off-tumour toxicity associated with the (free) payload. Recently, an innovative class of small molecules has drawn attention for use as novel payloads: heterobifunctional protein degraders. During this presentation we will show how the sophisticated design of these novel degrader-based payloads can overcome these challenges and improve the therapeutic window of ADCs.

12:15 LUNCHEON PRESENTATION: Antibody Discovery and Characterization for Advanced Modalities: ADCs, Bispecifics, and More

Omar Aziz, Scientific Business Director, Charles River Labs

Generating therapeutic antibody candidates in any format takes significant planning and development time, extending beyond your chosen platform for antibody discovery. Characterization and development requires a complete understanding of specificity, distribution, and functional implications in models to predict patient outcomes. We utilize the Retrogenix® platform, predictive functional readouts, PDX/CDX systems, and extensive safety expertise to deliver the best candidate to the clinic.

12:45 Luncheon in the Exhibit Hall with Poster Viewing

DESIGNING BRAIN SHUTTLE-ENABLED ANTIBODIES

13:45 Chairperson's Remarks

Pawel Stocki, PhD, Vice President Research, Ossianix

13:50 Novel Transferrin Receptor (TfR1) Brain Shuttles for Transforming the Treatment of CNS Diseases

Pawel Stocki, PhD, Vice President Research, Ossianix

Delivery of therapeutics to the brain remains a significant challenge. Ossianix developed TXP1, a brain shuttle based on a single-domain anti-TfR1 antibody, with reactivity to human and monkey. In NHPs, TXP1 exhibited >35-fold increase in brain penetration, distributed widely in the brain but without accumulation in other organs. TXP1 represents a technological leap forward in achieving high brain-penetration and specificity, holding promise for patients with CNS disorders.

ENGINEERING ANTIBODIES & BEYOND Designing the Next Best-in-Class Biologics

14:20 Rational Design of a Brain Delivery Platform

Per-Ola Freskgard, PhD, Vice President, Science &Technology, BioArctic AB

Brain uptake of therapeutic modalities such as antibodies and recombinant enzymes is severely limited by their size due to the blood brain barrier (BBB). To address this issue, we are developing technologies to actively transport these molecules across the BBB using receptor-mediated transcytosis. Our technology is engineered using structural data as guidance to engage with a BBB receptor in a preferable position, to improve treatment of various brain disorders.

14:50 Finding the Needle in the Bispecific Antibody Haystack

Stefan Schmidt, CEO, evitria AG

Bispecific antibodies are currently the fastest growing segment of the antibody market. Selecting the antibody for binding is no longer sufficient as other parameters such as avidity, geometry, flexibility or spatial distance of the binders have a huge impact on the biological function. Therefore, a huge variety of formats has been developed. In this presentation we describe the manufacturing and comparison of a range of different versions and discuss properties and advantages of these antibodies.

15:20 Transition to Plenary Keynote Session

PLENARY DEEP DIVE

15:30 Chairperson's Remarks

Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio

15:35 Immunotherapy Highlights

Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb

15:45 Multispecific Antibody Highlights

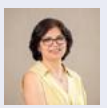
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd

15:55 ADC Highlights

Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

PLENARY PANEL

16:05 Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations

Moderator: Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio

In the past, the field of therapeutic antibodies was dominated by monoclonal antibodies. Similarly, today, antibody combinations have been approved and numerous antibody-based therapies are combined in clinical trials. In the Plenary Fireside Chat "Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations," renowned experts in the field will discuss major breakthroughs and how the field will evolve in the years to come.

Panelists:
Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd
Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

16:35 Refreshment Break in the Exhibit Hall with Poster Viewing

ENGINEERING NOVEL ANTIBODIES

17:15 DirectedLuck: Transposase Targeting and Transposon Design Push Expression beyond Limits

Thomas Rose, Head of Expression Systems, ProBioGen AG

Transposases have eased cell line development. Taking this concept to a new level, we equipped our hyperactive transposase with epigenetic readers that targets highly active genomic sites in the

ENGINEERING ANTIBODIES & BEYOND Designing the Next Best-in-Class Biologics

host cell line and designed advanced transposons with optimized ITRs for most efficient and clean integration. DirectedLuck delivers highly productive clones and bulk pools ready for manufacturing and is particularly suited for heterodimeric formats, polyclonal antibody cell lines and viral vector packaging cell lines.

17:30 Accelerating Drug Discovery Using Advanced Antibody Development Platforms

Yu-Chih Lin, Technical Specialist, Sino Biological

Sino Biological provides a full range of antibody services, including custom production, purification, and characterization of monoclonal, polyclonal, and recombinant antibodies. Leveraging cutting-edge technology and extensive expertise, the company ensures high-quality, reliable, and scalable solutions tailored to research and diagnostic needs. Whether for custom projects or catalog products, Sino Biological delivers efficient and timely antibody services to meet diverse scientific demands.

17:45 From DNA-Encoded Chemistry to Anti-Cancer Radio Ligand Therapeutics and Small Molecule-Drug Conjugates

Samuele Cazzamalli, PhD, Group Head—Senior Scientist, Philochem AG

Conventional cancer chemotherapy relies on the use of cytotoxic drugs, which are not capable of selective accumulation in neoplastic lesions. Conjugation to tumor-specific antibodies and small molecules has been proposed as a strategy to enhance the therapeutic index of potent cytotoxic payloads. In this talk, the successful application of DNA-encoded chemical libraries to develop anti-cancer small molecule-drug conjugates and radio-ligand therapeutics will be presented.

18:15 Exploring Non-Canonical Disulfide in Rabbit Antibody: Developability, Structure, and Engineering

Wei-Ching Liang, PhD, Staff Scientist, Antibody Engineering, Genentech, Inc.

The frequent occurrence of non-canonical disulfide bond found between CDRH1 (C35a) and CDRH2 (C50) of rabbit antibodies can pose challenges for therapeutic development, with stability being one of the primary concerns. In my presentation, I will delve into the topics of developability, functionality, structural insights, and engineering approaches coupled with sequence- and ML-guided optimisation for this disulfide bond in one of our newly-discovered cross-reactive anti-PD-1 rabbit antibodies.

18:45 Development of a Novel Antibody-Based Oral Factor VIII Mimetic Drug Candidate (Inno8)

Jais R. Bjelke, PhD, Principal Scientist, Global Research, Novo Nordisk AS

Introducing Inno8, a pioneering oral Factor VIII (FVIII)-mimetic haemophilia drug candidate based on VHH modality. Developed through innovative engineering, Inno8 offers unprecedented FVIII co-factor mimicking activity, with improved pharmacokinetics and oral bioavailability as a breakthrough invention. Thus, this first-in-class antibody-based oral drug modality presents a transformative approach, not only potentially reshaping the standard of care for haemophilia A patients, but also offering promise for a range of chronic diseases.

19:15 Streamlined Approaches for Accelerated Antibody Discovery

Crystal Richardson, Sr Business Partnership Manager, Azenta Life Sciences

Identifying top antibody candidates can be an inefficient process. Our end-to-end antibody screening solution integrates NGS and Sanger inputs with robust bioinformatics analysis and antibody production-optimizing tools, facilitating the identification of promising candidates.

19:45 Close of Engineering Antibodies & Beyond Conference

MACHINE LEARNING APPROACHES FOR PROTEIN ENGINEERING: PART 2

Demonstrating Value and Putting Theory into Practice

THURSDAY 7 NOVEMBER

7:30 Registration and Morning Coffee

ADVANCED AI TECHNIQUES FOR ANTIBODY ENGINEERING & DEVELOPMENT

8:55 Chairperson's Remarks

Enkelejda Miho, PhD, Professor, University of Applied Sciences and Arts Northwestern Switzerland; Managing Director, aiNET

9:00 Artificial Intelligence Supports Antibody Discovery in Dengue

Enkelejda Miho, PhD, Professor, University of Applied Sciences and Arts Northwestern Switzerland; Managing Director, aiNET

Dengue virus poses a serious threat to global health and there is no specific therapeutic for it. The antibody response in dengue infection and immunisation can be deconvoluted with high-throughput sequencing and artificial intelligence methods. Machine learning applied to sequencing data identifies rare and underrepresented dengue-specific antibodies.

9:30 Using ML to Enable Patient-Led Antibody Discovery

Laura S. Mitchell, PhD, Principal Bioinformatician, Alchemab Therapeutics

Foundation models have had a transformative impact across many fields, through their ability to learn from large unstructured datasets, and to be fine-tuned for specific tasks. Here I introduce the Alchemab discovery platform, which blends computational and experimental approaches at every step. We leverage three foundation models trained on antibody sequences (AntiBERTa, AntiBERTa2-CSSP and FabCon), for making state-of-the-art predictions and to generate human-like, developable sequences.

10:00 Coffee Break in the Exhibit Hall with Poster Viewing

INNOVATIONS IN HIGH-THROUGHPUT SCREENING, OPTIMISATION, AND ML-DRIVEN SUCCESS PREDICTIONS

10:44 Chairperson's Remarks

M. Frank Erasmus, PhD, Head, Bioinformatics, Specifica, an IQVIA business

10:45 Multi-Modal Learning of Protein Properties

Tunca Dogan, PhD, Professor, Department of Computer Science and AI Engineering, Hacettepe University, Turkey

The identification of the specific functions of each protein is essential for understanding the underlying mechanisms of life and developing novel treatments against deadly diseases. Large language models (LLMs) have emerged as a reliable tool for uncovering hidden knowledge in sequence-based data. In this seminar, I'll present our work on protein foundation models, which employ LLMs and other deep-learning architectures to embed proteins in high-dimensional vector spaces.

11:15 Machine Learning–Driven Design and Optimisation of Antibodies

Lin Li, PhD, Senior Staff Member, Lincoln Laboratory, Massachusetts Institute of Technology

The design and discovery of early-stage antibody therapeutics is time- and cost-intensive. I will present an end-to-end machine learning-driven single-chain variable fragments (scFv) design framework that uniquely combines large language models, Bayesian optimisation, and high-throughput experimentation. The method enables rapid and cost-effective design of thousands of scFvs across all complementary determining regions. The designed antibodies exhibit strong binding affinities, at high levels of diversity, to a given antigen.

11:45 Talk Title to be Announced

Maria Wendt, PhD, Global Head and Vice President, Digital and Biologics Strategy and Innovation, Sanofi

12:15 Poster Highlight: IgBlend: Unifying 3D Structure and Sequence for Antibody LLMs

Cedric Malherbe, PhD, Senior AI Scientist, AstraZeneca

Large language models (LLMs) trained on antibody sequences have shown significant potential in the rapidly advancing field of machine learning-assisted antibody engineering and drug discovery. However, current antibody LLMs often overlook structural information, which could enable the model to more effectively learn the functional properties of antibodies. In response, we introduce IgBlend, a LLM which integrates both the 3D coordinates of the backbone and antibody sequences

12:45 Luncheon in the Exhibit Hall with Last Chance for Poster Viewing

13:55 Chairperson's Remarks

Maria Wendt, PhD, Global Head and Vice President, Digital and Biologics Strategy and Innovation, Sanofi

14:00 What Really Happens During a Discovery Campaign? And Can AI/ML Help?

M. Frank Erasmus, PhD, Head, Bioinformatics, Specifica, an IQVIA business

Robust datasets are essential for efficient training of machine learning algorithms, particularly in the context of affinity and epitope prediction. We have developed an iterative selection strategy for yeast equilibrium sorting paired with NGS that promotes recovery of antibody sequences with broad ranges of paratopes and affinities. Coupling these outputs with high-throughput functional screening assays has the potential to yield broadly distributed, validated sequences, ideal for model training.

MACHINE LEARNING APPROACHES FOR PROTEIN ENGINEERING: PART 2

Demonstrating Value and Putting Theory into Practice

CUTTING-EDGE DEVELOPMENTS IN *DE NOVO* DESIGN FROM SEQUENCE & STRUCTURE

14:30 Designing Protein with Language Models

Ali Madani, PhD, Founder and CEO, Profluent Bio

Large language models (LLMs) learn powerful representations of protein sequence and structural data. In this talk, we will dive into frontier LLMs that can generate whole gene editors in scratch and push the boundaries of generalisation in antibody design.

15:00 Modular Binding Proteins: Combining Machine Learning, Structural Biology, and Experimental Evolution

Andreas G. Plueckthun, PhD, Professor & Head, Biochemistry, University of Zurich

We challenge the paradigm of selection from large universal libraries to obtain binding proteins rapidly and efficiently. For linear epitopes, we found it to be possible to exploit the periodicity of peptide bonds and create a completely modular system, based on a binding protein design that shares the same periodicity. To reach selective and sequence-specific binding, we found it advantageous to combine machine learning, structural biology, and experimental evolution.

INTERACTIVE DISCUSSIONS

15:30 Interactive Discussions

Interactive Discussions are informal, moderated discussions, allowing participants to exchange ideas and experiences and develop future collaborations around a focused topic. Each discussion will be led by a facilitator who keeps the discussion on track and the group engaged. To get the most out of this format, please come prepared to share examples from your work, be a part of a collective, problem-solving session, and participate in active idea sharing.

TABLE 3: Machine Learning for MHC Peptide Presentation and Antibody Immunogenicity Prediction

Mojtaba Haghighatlari, PhD, Senior Machine Learning Scientist, Pfizer Inc.

- Novel deep learning approaches for predicting MHC antigen presentation and the modeling challenges
- Interpretability and explainability of the available deep learning models
- Best practices in data preparation for machine learning of peptidomics datasets
- Antibody design by transitioning from peptide presentation to protein screening

TABLE 4: Delivering on the AI Antibody Promise: the AIntibody Benchmarking Competition

Andrew R.M. Bradbury, MD, PhD, CSO, Specifica, an IQVIA business

M. Frank Erasmus, PhD, Head, Bioinformatics, Specifica, an IQVIA business

- AI promises in antibody discovery and optimization: will they really revolutionize the field? Or just another way of addressing solved problems?
- What can AI do now? And where are we seeing the greatest value relative to existing technologies?

CUTTING-EDGE DEVELOPMENTS IN *DE NOVO* DESIGN FROM SEQUENCE & STRUCTURE *(Cont.)*

16:10 Controllable Protein Design with Language Models

Noelia Ferruz Capapey, PhD, Group Leader, AI for Protein Design Group, Center for Genomic Regulation (CRG)

I will present the use of conditional language models for the à la carte design of proteins with specific functions. I will delve into ProtGPT2, ZymCTRL, and REXzyme protein language models for the generation of specific proteins with an increasing level of conditioning. These models have undergone experimental validation.

16:40 Improving Deep Learning Protein Complex Structure Prediction Using DEEPMSA2 with Huge Metagenomics Data

Yang Zhang, PhD, Professor, Department of Computer Science, Institute of Singapore; Department of Biochemistry, Yong Loo Lin School of Medicine, National University of Singapore

17:10 Close of PEGS Europe Summit

2ND ANNUAL | BARCELONA, SPAIN

ANTIBODY-BASED CANCER THERAPIES

Driving Breathrough Therapies

TUESDAY 5 NOVEMBER

7:30 Registration and Morning Coffee

CONDITIONALLY-ACTIVE BIOLOGICS

8:25 Chairperson's Remarks

Mireille Vankemmelbeke, PhD, Principal Scientist, Scancell, Ltd.

8:30 Azymetric Fc-Based Therapeutic Modalities Enabling Tumour-Restricted Immune Cell Activation and Engagement

Thomas Spreter Von Kreudenstein, Head, Protein Engineering, Zymeworks

The optimised design, protein engineering, mechanism of activation, and preclinical characterization of therapeutic strategies supporting (A) tumour localized cytokine activation (ex. ZW270, a conditionally-activated IL-12) and (B) conditional anti-tumour T cell engagers with simultaneous checkpoint inhibition (ex. PROTECT) will be presented.

9:00 Selectively Targeting VISTA in the Tumor-Microenvironment with SNS-101, a Conditionally Active Monoclonal Antibody

Edward van der Horst, PhD, CSO, Sensei Bio

SNS-101, a novel, conditionally-active antibody, specifically targets the VISTA checkpoint in the acidic tumor microenvironment to enhance anti-tumour immunity and overcome resistance to checkpoint inhibitors. It overcomes previous safety and PK challenges, showing potential in combating immune checkpoint inhibitor resistance, as evidenced in preclinical studies (Thisted *et al*. Nat. Comm 2024). Currently in Phase I (NCT05864144), SNS-101 has shown selectivity for active VISTA, mitigating TMDD and reducing CRS risks.

9:30 Chain-Exchange and Split-Protein Technologies for the Generation of Targeted Antibody and Cytokine Prodrugs

Vedran Vasic, PhD, Scientist, Pharma Research and Early Development (pRED), Roche

We have designed antibody chain-exchange and chain-complementation approaches that can be used to generate conditionally active antibody prodrugs. The underlying principle is based on antibody-mediated targeting of two separate inactive entities, which results in the generation of functional bi- or multi-specific antibody derivatives upon accumulation on target cells. Examples that will be presented include prodrug approaches for tumour-activated T cell engagers and conditionally active antibody-cytokine fusions.

10:00 Application of Humanized Mouse Model in Therapeutic Antibody Development

GemPharmatech

Eileen Xu, Project Leader, GemPharmatec Co., Ltd

We have developed a fully human antibody transgenic mouse model—NeoMab, in a BALB/c background. Three versions of NeoMab mice were created to meet different research needs: a standard version for whole IgG discovery, a heavy chain only model (NeoMab-HC) for single-domain antibody screening, and a common light chain model (NeoMab-CLC) for bispecific antibody development. With the application of the NeoMab platform, fully human antibodies against PD-1 with antagonist and agonist activities were screened with high binding affinity and functional activity.

10:15 Greet Your Neighbours

10:30 Grand Opening Coffee Break in the Exhibit Hall with Poster Viewing

ANTIBODY-BASED CELL THERAPIES

11:15 KEYNOTE PRESENTATION: Design and Engineering of TCR-Based Immune Cell Engagers for Solid Tumour Indications

Rodrigo Vazquez-Lombardi, PhD, Co-Founder & CSO, Engimmune Therapeutics AG

Soluble TCRs are a promising therapeutic modality combining intracellular antigen targeting with favourable infiltration of solid tumours and off-the-shelf use. Despite their therapeutic potential, the development of soluble TCR immune cell engagers is complicated by multiple challenges relating to affinity, specificity, molecular format, and stability. Here we describe AI-guided protein engineering as an effective approach to address soluble TCR development challenges and deliver potent and safe picomolar affinity clinical candidates.

11:45 Overcoming the Challenges with Raising Antibodies against STEAP2 Extracellular Domains for Targeted CAR T Cell Therapy

Dewald van Dyk, PhD, Director, Biologics Engineering, AstraZeneca Pharmaceuticals LP

Six-transmembrane epithelial antigen of prostate-2 (STEAP2) is a complex membrane protein that is highly expressed on prostate cancer cells with limited distal normal tissue expression. High species homology and small extracellular domains makes STEAP2 a very challenging protein to target. I will share reflections on the multifaceted discovery campaigns that enabled the isolation of STEAP2-specific antibodies for the development of an armored STEAP2 chimeric antigen receptor T cell therapy.

2ND ANNUAL | BARCELONA, SPAIN

ANTIBODY-BASED CANCER THERAPIES

Driving Breathrough Therapies

12:15 LUNCHEON PRESENTATION: Improving the Efficiency of Therapeutic Candidate Generation Through Multiple Discovery Pathways

John Kenney, President, Antibody Solutions

In this presentation, we compare the repertoires and affinities of antibodies obtained from our Cellestive™ platform against an oncology target, taking into account the impact of B-cell biology on different discovery routes. We describe the synergy of pursuing multiple discovery pathways in tandem, exploring how unique candidate antibodies were discovered via each pathway, and demonstrate the benefits of leveraging results from multiple pathways to improve the overall outcome.

12:45 Luncheon in the Exhibit Hall with Poster Viewing

OVERCOMING EFFICACY AND TOXICITY CHALLENGES

13:45 Chairperson's Remarks

Rodrigo Vazquez-Lombardi, PhD, Co-Founder & CSO, Engimmune Therapeutics AG

13:50 4-1BB T Cell Engaging BsAb (Grabody T) Activated T Cells Only in the Tumour Microenvironment and Demonstrated Superior Efficacy and Safety Profile

Sang Hoon Lee, PhD, CEO & Founder, ABL Bio Inc.

Stimulation of 4-1BB with agonistic antibodies is a promising strategy for immunotherapy. However, hepatotoxicity was observed in clinical trials with 4-1BB agonistic antibodies due to the activation of 4-1BB in liver cells. To avoid liver toxicity, we developed a novel BsAb, Grabody T by activating 4-1BB in the presence of TAA within the tumor microenvironment. We will present the preclinical and Phase 1 data of multiple Grabody T based BsAbs.

14:20 Remote Controlled Antibodies to Overcome Efficacy and Toxicity Problems of Immunotherapies

Yemi Onakunle, PhD, Co-Founder & CEO, MabSwitch Inc.

Despite the success of immunotherapies in cancer treatment, serious adverse events and potency-loss remain significant challenges, often linked to antibody binding-affinity. We developed a universal allosteric affinity-switch by incorporating engineered human-calmodulin linkers in antibody fragments, enabling remote-controlled adjustments to antibody affinity with a small ligand under physiological conditions, independent of the paratope. This approach offers a tunable strategy to enhance CAR T cell or T cell engager safety and efficacy in patients.

14:50 First-in-Human (FIH) Dose Selection for Biologic Modalities

Céline Amara, DMPK Project Expert, DMPK, Sanofi

First-in-Human Dose Selection is a key consideration in the drug development of new drug candidates. Such estimation is essential for the design of successful Phase 1 clinical trials. FIH dose is based on the Regulatory requirements, and the strategy differs depending on the modality. This presentation provides insights of challenges of the FIH dose estimation for 3 biologic molecules, i.e., a Monoclonal Ab, an Antibody-Drug Conjugate, and an innovative Multispecific.

SINGLE CELL PROFILING

15:20 Function Focused Drug Discovery at Single Cell Resolution

Paul Steinberg, CCO, Lightcast

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

NOVEL TARGETS

16:35 SC134-TCB Targeting Fucosyl-GM1, a T Cell–Engaging Antibody for Small Cell Lung Cancer

Mireille Vankemmelbeke, PhD, Principal Scientist, Scancell, Ltd.

SCLC patients are faced with limited treatment options. T cell redirecting antibodies (TCB) show great promise but careful target selection remains essential. The tumour selectivity of the SCLC-associated glycolipid Fucosyl-GM1, its expression being virtually absent in normal tissues, enables TCB development. SC134-TCB exhibits superb Fucosyl-GM1 specificity and T cell-mediated SCLC tumour control, representing an attractive development candidate for SCLC therapy.

17:05 The Identification of VNAR Theranostics Targeting Fibroblast Activation Protein

Aaron M. LeBeau, PhD, Associate Professor, Pathology & Lab Medicine, University of Wisconsin Madison

Through the direct immunization of a nurse shark, we identified a suite of VNARs that were able to image FAP-expressing cells *in vivo* by PET imaging and eliminate them when coupled to cytotoxins. Using NGS, we developed a phylogenetic tree that allowed us to identify candidate VNARs with favorable targeting properties. We also determined the cryo-EM structures of several VNARs bound to FAP that demonstrated novel modes of target engagement.

17:35 Development of a Bispecific HER3 Antibody for Enhanced Cancer Immunotherapy

Giuseppe Roscilli, PhD, CTO & Director, Drug Evaluation & Monoclonal Antibody, Takis Srl

This presentation explores the development and potential of a novel bispecific antibody targeting HER3, designed to enhance cancer immunotherapy. By bridging T cells directly to HER3-expressing tumor cells, this antibody promotes potent immune responses and demonstrates significant anti-tumor activity in preclinical models. We will discuss the innovative mechanism, efficacy results, and the promising pathway toward clinical trials, highlighting the potential for improved patient outcomes in cancer treatment.

ANTIBODY-BASED CANCER THERAPIES

Driving Breathrough Therapies

18:05 POSTER HIGHLIGHT: Development of TROP-2-Targeting Recombinant Antibody-PROTAC Conjugates for Triple-Negative Breast Cancer

Rafaela P Marimon, Researcher, Applied Microbiology, University of Lisbon

We are developing Degrader-Antibody Conjugates (DACs) that target TROP-2 to treat Triple-Negative Breast Cancer (TNBC), leveraging Feline Mammary Carcinoma (FMC) as a comparative oncology model. We are exploring our single-domain antibody platform to develop a highly specific and potent DAC molecule. By advancing this innovative approach, we aim to provide new therapeutic options for both human and feline patients affected by TROP-2-positive cancers.

18:35 Welcome Reception in the Exhibit Hall with Poster Viewing

19:35 Close of Antibody-Based Cancer Therapies Conference

8TH ANNUAL | BARCELONA, SPAIN

EMERGING TARGETS AND THERAPEUTIC APPROACHES

Hitting the Targets

WEDNESDAY 6 NOVEMBER

7:30 Registration and Morning Coffee

TARGETS OF ONCOLOGY IMMUNE RESPONSE

8:25 Chairperson's Remarks

Marie-Eve Beaulieu, PhD, Co-Founder & CSO, Drug Development, Peptomyc SL

8:30 A First-in-Class Therapeutic Approach to Induce Tertiary Lymphoid Structures (TLS) in Solid Tumours to Generate Powerful Anti-Tumour Immune Responses

Marta Lewandowska, Program Lead, Discovery, Mestag Therapeutics

Mestag is developing a first-in-class antibody-based therapeutic that conditionally induces TLS in solid tumours. The presence of TLS is strongly correlated with survival and response to treatment and have recently been recognized as important drivers of anti-tumour immunity. Acting as local lymph nodes, TLS are inducible immunological powerhouses that rapidly recruit, activate, and educate anti-tumour immune cells.

9:00 Myeloid vs. Lymphoid in Immuno-Oncology? IOMX-0675 Elegantly Unites Myeloid Repolarisation and T&NK Cell Activation

Simone Friedrich, PhD, Head, Antibody Discovery & Development, iOmx Therapeutics

IOMX-0675, a fully human, cross-specific antibody recognising both LILRB1 and LILRB2, was identified from iOmx's proprietary phage display library. Selective binding, with high affinity to the inhibitory receptors LILRB1 and LILRB2, while only weakly recognising the closely-related immune activating LILR family members LILRA1 and LILRA3, allows potent reprogramming of the immunosuppressive myeloid compartment and restoration of cytotoxic T cell activity in the tumour microenvironment.

9:30 Targeting Undruggable Targets and the Identifying of Potential Biomarkers

Marie-Eve Beaulieu, PhD, Co-Founder & CSO, Drug Development, Peptomyc SL

MYC has so far remained a most wanted but undruggable target in oncology. OMO-103 is the first intravenously delivered cell-penetrating mini-protein to have successfully overcome the challenges to drug MYC and completed a clinical trial in human patients showing safety and first signs of clinical activity, supported by molecular target engagement. Here, we present the preclinical development and results from this first-in-human clinical study.

10:00 Innovative Platforms for Producing Mini Proteins & T Cell Related Therapeutic Targets

WuXi Biologics Global Solution Provider

Jiansheng Wu, Vice President, WuXi Biologics USA LLC

Mini proteins and T cell-related proteins are getting more tractions as new modalities of biologic drug. We present two innovative platforms for their production. The Mini Protein Line innovates beyond traditional *E. coli* methods, utilizing high-titer CHO expression for enhanced HTP mammalian expression and extra-low endotoxin level. Our T Cell Mate efficiently produces challenging T-cell-related proteins like sTCR, TCR-Ab fusions, SCT, and RF-pMHC, ensuring high throughput and yields, critical for therapeutic protein advancement.

10:30 Coffee Break in the Exhibit Hall with Poster Viewing

TARGETS OF ONCOLOGY IMMUNE RESPONSE *(CONT.)*

11:15 KEYNOTE PRESENTATION: Aplitabart, an Anti-DR-5 IgM Antibody for Treatment of Colorectal Carcinoma

Bruce Keyt, PhD, CSO, R&D, IGM Biosciences, Inc.

This talk will discuss the importance of valency and epitope for mechanism of action. Significant synergy in combination with chemotherapy will be addressed. A case study of dose escalation and randomised clinical trials in colorectal carcinoma will also be discussed.

11:45 Developing Best-in-Class Antiviral Antibodies from Human Antibody Repertoires—Case Studies on BKV and CMV Lead Programs

Simone Schmitt, PhD, Vice President, Technology & Operations, Memo Therapeutics AG

In this presentation updates of the virological lead programs BKV and CMV are given. The Dropzylla technology employs a high-throughput microfluidic platform for the cloning of human cognate antibody repertoires. The recombinant repertoires were the basis for the selection of best-in-class neutralising antibodies against virological targets.

12:15 LUNCHEON PRESENTATION: Next-Generation Models to Predict the Clinical PK of Candidate Therapeutic Antibodies

The Jackson Laboratory

Elena Gonzalo Gil, Associate Director, Pre-Clinical Services • In Vivo Services, The Jackson Laboratory

To develop predictive *in vivo* models for antibody PK studies, The Jackson Laboratory created transgenic humanized mouse models by replacing the mouse FcRn with its human counterpart and incorporating additional genetic modifications. These models were validated for the assessment of the clinical half-life of WT and Fc-modified antibodies. This humanized platform is valuable for selecting promising leads and predicting the clinical PK parameters of therapeutic antibody candidates.

12:45 Luncheon in the Exhibit Hall with Poster Viewing

8TH ANNUAL | BARCELONA, SPAIN

EMERGING TARGETS AND THERAPEUTIC APPROACHES

Hitting the Targets

EMERGING TARGETS FOR THE TREATMENT OF DIABETES

13:45 Chairperson's Remarks

Ahuva Nissim, PhD, Professor, Antibody and Therapeutic Engineering, William Harvey Research Institute, Queen Mary University of London

13:50 Tolerogenic APC-Targeted Vaccibody Vaccines Treat Disease in Mouse Models of Experimental Autoimmune Encephalomyelitis and Non-Obese Diabetes

Louise Bjerkan, PhD, Senior Scientist, Discovery Project Leader, Nykode Therapeutics

Autoimmune diseases now affect about one in ten individuals and represent an increasing, unmet need. Nykode Therapeutics has developed an inverse vaccine platform that targets antigens directly to antigen presenting cells using a modular dimeric protein format known as a Vaccibody. Vaccibodies deliver a tolerogenic response toward disease-associated autoantigens which alleviate disease in the Experimental Autoimmune Encephalomyelitis model and in Non-Obese Diabetic mice either alone or combined with immune-modulatory proteins.

14:20 Exploring New Frontiers in Type 1 Diabetes: Advances in Diagnosis and Immune Therapy

Rocky Strollo, MD, PhD, Associate Professor, Endocrinology, San Raffaele University of Rome

The presentation aims to summarise the role of neoepitopes induced by oxidative post-translational modifications of insulin and other beta cell antigens in the pathogenesis of type 1 (autoimmune) diabetes. The relevance of beta cell neoantigens as therapeutic targets and the development of specific autoantibody biomarkers as diagnostic tools will be discussed.

14:50 T1D Diagnostic and Treatment Where We Are : Potential New Diagnostic and Treatment using Post-Translational Modified Insulin and Peptides Thereof

Ahuva Nissim, PhD, Professor, Antibody and Therapeutic Engineering, William Harvey Research Institute, Queen Mary University of London

15:20 Transition to Plenary Keynote Session

PLENARY DEEP DIVE

15:30 Chairperson's Remarks

Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio

15:35 Immunotherapy Highlights

Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb

15:45 Multispecific Antibody Highlights

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd

15:55 ADC Highlights

Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

PLENARY PANEL

8TH ANNUAL | BARCELONA, SPAIN

EMERGING TARGETS AND THERAPEUTIC APPROACHES

Hitting the Targets

16:05 Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations




Moderator: Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio

In the past, the field of therapeutic antibodies was dominated by monoclonal antibodies. Similarly, today, antibody combinations have been approved and numerous antibody-based therapies are combined in clinical trials. In the Plenary Fireside Chat "Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations," renowned experts in the field will discuss major breakthroughs and how the field will evolve in the years to come.

Panelists:
Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd
Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

16:35 Refreshment Break in the Exhibit Hall with Poster Viewing

EMERGING TARGETS FOR THE TREATMENT OF NON-ONCOLOGY DISEASES

17:15 Autoantibody Regulation of the DNA-Degrading Enzyme DNASE1L3 in Autoimmune Rheumatic Diseases

Gregory C. Ippolito, PhD, Associate Professor, Texas Biomedical Research Institute

DNASE1L3 is a critical gatekeeper of tolerance to self-DNA. Multiple human genetic studies have identified null mutations in DNASE1L3 in families with early-onset systemic lupus erythematosus (SLE). Antibodies that block DNASE1L3 activity represent a recently described and novel type of autoreactivity in severe SLE. Blocking anti-DNASE1L3 antibodies have also been reported in other autoimmune diseases, namely hidradenitis suppurativa (HS) and rheumatoid arthritis (RA), suggesting they may be relevant beyond SLE.

17:45 Pulmonary Infectious Disease and Emerging Targets—What Is New and Novel?

Mathieu Cinier, PhD, Scientific Director & CSO, Affilogic

The past five years have shown pressure on the development of therapeutic platforms enabling both rapid drug candidate generation and broad-spectrum activity to minimise treatment escape upon adaptation of the pathogens. We have been demonstrating that the Nanofitin alternative scaffold generation platform allows for the generation of therapeutic candidates of high neutralisation potential in roughly 100 days, and can be amenable to local treatment in the case of pulmonary diseases.

18:15 Treating Neurodegenerative Diseases with Antibodies Discovered from Resilient Individuals

David Yadin, PhD, Principal Scientist, Research, Alchemab Therapeutics

At Alchemab we are pursuing a unique patient-centred approach to the discovery of novel drug targets, with a focus on hard-to-treat neurodegenerative diseases. We have discovered protective auto-antibodies in patients resilient to disease that are now being developed into therapeutics. This presentation will highlight a case study from one of our lead programs, from antibody and target discovery through to development.

Think Tank: What Does the Future of Emerging Targets Look Like?

Julie Sullivan, Production, Cambridge Innovation Institute

19:15 Streamlined Approaches for Accelerated Antibody Discovery

AZENTA LIFE SCIENCES

Crystal Richardson, Sr Business Partnership Manager, Azenta Life Sciences

Identifying top antibody candidates can be an inefficient process. Our end-to-end antibody screening solution integrates NGS and Sanger inputs with robust bioinformatics analysis and antibody production-optimizing tools, facilitating the identification of promising candidates.

19:45 Close of Emerging Targets and Therapeutic Approaches Conference

3RD ANNUAL | BARCELONA, SPAIN

ANTIBODIES AGAINST MEMBRANE PROTEIN TARGETS

New Strategies and Technologies to Accelerate the Development of Biotherapeutics Against Complex GPCR and Ion Channel Targets

THURSDAY 7 NOVEMBER

7:30 Registration and Morning Coffee

EMERGING MODALITIES FOR MEMBRANE PROTEIN TARGETS

8:25 Chairperson's Remarks

Corey Smith, PhD, Principal Research Scientist, Global Biologics Protein Science, AbbVie

8:30 Targeted Degradation of Membrane Proteins Using SureTACs Technology

Madelon Maurice, PhD, Professor, Molecular Cell Biology, University of Utrecht; Scientific Founder and Scientific Lead, Laigo Bio

We have pioneered a novel technology using heterobifunctional antibodies (SureTACs: surface removal targeting chimeras) for the degradation of membrane proteins. SureTACs induce proximity of a transmembrane E3 ligase and a cell surface target protein, resulting in the ubiquitination and internalisation and lysosomal degradation of the target. Advantages of SureTAC technology compared to conventional antagonising antibodies include reduced off-target toxicity, improved tissue specificity, and the possibility to target currently undruggable proteins.

9:00 Selective Engagement of Insulin Receptor Isoforms with Synthetic Miniproteins

Benjamin J. Hackel, PhD, Professor, Chemical Engineering & Materials Science, University of Minnesota

Insulin receptor isoform A, uniquely expressed in tumours unlike the ubiquitously-expressed isoform B, is a compelling breast cancer target. Selective isoform engagement is challenged by homology and structural constraints resulting from epitope/membrane proximity. We leveraged our synthetic miniprotein platform—with efficient evolution of high-affinity, selective binding, robust developability, and a variety of topologies and paratope architectures to engage distinct epitopes—to engineer subnanomolar, isoform-selective binders.

9:30 Nanobodies Targeting GPCRs for Brain Diseases

Pierre-André Lafon, PhD, Postdoctoral Fellow, Institute of Functional Genomics, University of Montpellier

We have developed nanobodies targeting a class of glutamate receptors, the mGlu receptors, a family of GPCRs that control synaptic transmission. We show that nanobodies acting as allosteric modulators of the mGlu2 receptor can limit glutamate release at the synapse. A nanobody rescues the behavioral deficits in preclinical models of schizophrenia. It penetrates the brain after systemic injection and has a long-lasting effect in the brain after one dose.

10:00 Coffee Break in the Exhibit Hall with Poster Viewing

ANTIGEN STRATEGIES

10:45 Comparative Evaluation of Antigen Format Performance with Different Antibody Platforms

Corey Smith, PhD, Principal Research Scientist, Global Biologics Protein Science, AbbVie

Generation of therapeutic antibodies to transmembrane protein targets in a properly folded and presented form can be very challenging. cDNA, soluble antigens (extracellular domains), as well as evolving platforms like virus-like particles and nanodiscs all have advantages and disadvantages for antigen presentation. In this talk, I will explore various methods for the generation of complex transmembrane proteins with a focus on the application of different antigen platforms for antibody discovery.

11:15 Optimising SMALP Selection for Membrane Protein Research

Tim Dafforn, PhD, Professor, Biotechnology, University of Birmingham

Maintaining membrane protein targets in their native state is a crucial part of any drug discovery campaign. The relatively recent development of extraction systems that protect and preserve the membrane environment around membrane proteins has gone a long way to supporting the native state. In this talk I will show an extensive study of the SMA-based extraction system showing a novel high-throughput method that accelerates SMA selection.

11:45 KEYNOTE PRESENTATION: Computational Design of Membrane Protein Structures, Functions, and Therapeutics

Patrick Barth, PhD, Associate Professor, Protein and Cell Engineering, EPFL

Membrane receptors trigger critical cellular functions upon sensing various extracellular stimuli and are associated with numerous diseases. We are developing computational approaches integrating protein design, molecular dynamics simulations, and deep-learning interpretation of protein motions to uncover the biophysical underpinnings of membrane protein functions. Using these techniques, we are reprogramming the functions of natural receptors and designing biosensors and ligands for basic, synthetic cell biology and therapeutic applications.

12:15 LUNCHEON PRESENTATION: A Fully Integrated Biologics Platform for the Discovery of Therapeutic Antibodies to Accelerate Early-Stage Translation

LifeArc

Dr Preeti Bakrania, Principal Business Development Manager, Therapeutic Platforms, LifeArc

LifeArc has provided antibody humanisation capabilities to academia and early-stage biotech's over 30 years and of the 94 mAbs we have humanised, 5 have been approved as medicines including the

ANTIBODIES AGAINST MEMBRANE PROTEIN TARGETS

New Strategies and Technologies to Accelerate the Development of Biotherapeutics Against Complex GPCR and Ion Channel Targets

top selling mAbs globally (Keytruda® (pembrolizumab) and Entivyo® (vedolizumab). Now we launch, LifeArc's fully human antibody discovery platform, offering partners access to our clinically validated transgenic mouse platform, innovative single B-cell based screening technologies and comprehensive developability assessment to produce fully human antibodies suitable for further preclinical development, providing new and innovative treatment options to patients.

12:45 Luncheon in the Exhibit Hall with Last Chance for Poster Viewing

DISCOVERY STRATEGIES FOR TARGETING TRANSMEMBRANE PROTEINS

13:55 Chairperson's Remarks

Jenny Mattsson, PhD, Principal Scientist, Preclinical Research, BioInvent International AB

14:00 Discovery and Engineering of Antibodies against Membrane Proteins

Noel T. Pauli, PhD, Group Leader, Antibody Engineering, Adimab LLC

Membrane proteins remain a major challenge for antibody-based drugs. We have developed an antibody discovery and optimisation platform that pairs immune diversities with a highly-engineered yeast to robustly target membrane proteins. We demonstrate the power of this platform through the identification and subsequent optimisation of an agonistic anti-CCR5 IgG. Additionally, we report on the isolation of novel T cell engaging anti-CD3 HCAbs and their subsequent validation in a bispecific format.

14:30 Creating Ion-Channel Modulating Antibodies by Fusing Cysteine-Rich Miniproteins into Antibody CDR Loops

John D. McCafferty, PhD, CTO and Founder, Maxion Therapeutics

Ion channels are an important target class which are underserved by biologics. Maxion have shown that small cys-rich peptides with ion-channel modulating activity can be inserted into antibody CDRs while retaining their function. The resulting molecules modulate ion-channel activity while benefitting from the optimal drug-like properties of antibodies. This presentation will illustrate the generation and optimisation of KnotBody inhibitors to therapeutically relevant ion-channel targets.

15:00 Structure, Function, and Use of P2X7-Blocking and Non-Blocking Nanobodies

Anna M. Mann, PhD, Postdoctoral Fellow, University Medical Center Hamburg-Eppendorf (UKE)

Blocking the ATP-gated P2X7 ion channel ameliorates inflammatory diseases and cancer in animal models. We generated nanobodies that modify P2X7 gating. Cryo-EM analysis revealed the mechanism-of-action of these robust single immunoglobulin domains. A single injection of nanobody-encoding AAV vectors blocks P2X7 for weeks, ameliorating colon cancer. We further used these nanobodies as targeting ligands by insertion into the AAV capsid to target P2X7-expressing endothelial cells in kidney inflammation.

INTERACTIVE DISCUSSIONS

15:30 Interactive Discussions

Interactive Discussions are informal, moderated discussions, allowing participants to exchange ideas and experiences and develop future collaborations around a focused topic. Each discussion will be led by a facilitator who keeps the discussion on track and the group engaged. To get the most out of this format, please come prepared to share examples from your work, be a part of a collective, problem-solving session, and participate in active idea sharing.

TABLE 1: Avoiding Roadblocks: Maneuvering the Challenges of Difficult Targets

Ross Chambers, PhD, Vice President, Antibody Discovery, Integral Molecular, Inc.

16:10 Discovery Strategies for Antibodies Targeting Complex Multi-Spanning Membrane Proteins

Trevor Wilkinson, PhD, Director, Biologics Engineering, AstraZeneca

Integral membrane proteins with complex multi-spanning topologies provide significant opportunities for development of therapeutic antibodies. Examples of these proteins include GPCRs, ion channels, transporters, adhesion molecules, and tumour-associated antigens. Whilst discovery of antibodies to these targets is regarded as challenging, strategies are emerging enabling antigen generation to drive discovery efforts. This presentation provides case studies highlighting discovery of antibodies to GPCRs, ion channels, and a tumour-associated antigen.

16:40 Identifying Novel Membrane Protein-Specific Antibodies by Prediction-Based Discovery

Jenny Mattsson, PhD, Principal Scientist, Preclinical Research, BioInvent International AB

To enable the identification of novel antibodies targeting cell membrane proteins, we used a combination of whole-cell panning, next-generation sequencing, and bioinformatics. Antibody sequences encoding specificity for membrane proteins were identified using mathematical modeling-based prediction of antibody enrichment during panning. Using this approach, we identified a diverse pool of membrane protein-targeting antibodies for phenotypic, function-first discovery.

17:10 Close of Antibodies Against Membrane Proteins Track

SAFETY AND EFFICACY OF MULTISPECIFIC ANTIBODIES, ADCs, AND COMBINATION THERAPIES

Enhancing Safety and Creating Synergies for Novel Therapeutic Modalities

TUESDAY 5 NOVEMBER

7:30 Registration and Morning Coffee

PRECLINICAL SAFETY AND EFFICACY OF BISPECIFIC ANTIBODIES

8:25 Chairperson's Remarks

Mark L. Chiu, PhD, CSO, Tavotek Biotherapeutics

8:30 Bispecific Antibody Immunocytokines to Recruit Neutrophils as Effector Cells in Cancer Therapy

Marjolein van Egmond, PhD, Professor, Oncology and Inflammation, Surgery/Molecular Cell Biology and Immunology, Amsterdam UMC

Antibody-based immunotherapy is a promising strategy in cancer treatment. IgG eliminates tumour cells through NK cell-mediated ADCC and macrophage-mediated antibody-dependent phagocytosis. Neutrophils have been largely overlooked as potential effector cells, because IgG ineffectively recruits neutrophils. Bispecific antibodies, which potently activate neutrophils and induce migration through FcaRI have been developed. Coupling of cytokines or chemokines further recruits neutrophils as effector cells, which will be discussed.

9:00 The Use of an *ex vivo* Human Blood Model (ID.Flow) to Instruct Selection and Perform Characterisation of Novel Protein Drug Formats

Sara M. Mangsbo, PhD, Professor, Pharmacy, Uppsala University

Human model systems are highly important in instructing the selection of antibody design for efficacy parameters and providing safety information. I will provide drug candidate examples of how the ID.Flow system, a system based on fresh human whole blood in circulation, can enable analyses of cellular biodistribution, target and off-target engagement, effector cell analyses, cytokine release risks, antibody uptake, and evaluation of interactions with complement and coagulation proteins.

9:30 Cis-targeted Immunocytokines: Engineered IL-15 Cytokine Muteins Fused to Anti-PD-1 Antibodies

Javier Chaparro-Riggers, PhD, Executive Director, BioMedicine Design, Pfizer Inc.

The use of cytokines for immunotherapy shows clinical efficacy but is frequently accompanied by severe adverse events caused by excessive and systemic immune activation. These challenges were addressed by engineering a fusion protein of a single, potency-reduced, IL15 mutein to a PD1-specific antibody. This cis-delivered cytokine allows for cell specific targeting and lead to CD8 T cell-dependent antitumor efficacy without exacerbating body weight loss in syngeneic tumor models.

10:00 Mechanisms of Resistance to Bispecific T Cell Engagers in Multiple Myeloma

Eric Letouzé, PhD, Team Leader, Integrated Cancer Genomics, INSERM

Bispecific T cell engagers (TCE) were recently approved for relapsed/refractory multiple myelomas. Yet, primary resistance occurs in one third of patients, and most responders eventually develop acquired resistance. Through a multi-omics single-cell characterization of resistant cases, we uncovered various mechanisms of resistance to TCE. Molecular analysis of target antigens will be key to select the most appropriate TCE for each patient, and to design combination and sequencing immunotherapy strategies.

10:30 Grand Opening Coffee Break in the Exhibit Hall with Poster Viewing

OPTIMISING EFFICACY OF T CELL ENGAGERS

11:15 Trispecific T Cell Engagers Incorporating Conditional CD28 Co-Stimulation (TriTCE Co-Stim) to Improve Treatment Responses in Oncology

Nina E. Weisser, PhD, Director, Multispecific Antibody Therapeutics, Zymeworks, Inc.

The optimised design and differentiated mechanism of action, enhanced antitumour activity, and safety of TriTCE Co-Stim antibodies compared to conventional bispecific T cell engagers will be presented.

11:45 Engineering TCR-Based Soluble Therapeutics: Case Study of IMC-R117C for the Treatment of Colorectal Cancer

Nicole Mai, PhD, Principal Research Scientist I, Protein Science, Immunocore

ImmTAC molecules are bispecific T cell engagers utilising engineered T cell receptors (TCRs) to target and kill tumour cells. Here, we present the development of IMC-R117C targeting a peptide from PIWIL1, a novel colorectal cancer target, presented on HLA-A2. Once the optimal wild-type TCR was identified, its specificity profile was determined and engineering approaches were applied to improve molecule affinity whilst minimising off-target binding, ensuring high ImmTAC efficacy and specificity.

12:15 LUNCHEON PRESENTATION: Advancing Antibody and CAR T Therapies towards IND: Specificity Profiling Using the Membrane Proteome Array

Rachel Fong, Director of Sales & Alliances, Integral Molecular

Assessment of off-target antibody reactivity is a regulatory requirement for clinical development; however, conventional screening methods are often ineffective in screening newer therapeutic modalities including cell therapies. We will present the Membrane Proteome Array (MPA), a 6,000-protein cell-array for specificity screening, that provides a comprehensive approach to rapidly identify off-target protein-protein interactions. We will present case studies describing its successful in regulatory filings and discuss its ongoing development as a qualified Drug Development Tool.

12:45 Luncheon in the Exhibit Hall with Poster Viewing

SAFETY AND EFFICACY OF MULTISPECIFIC ANTIBODIES, ADCs, AND COMBINATION THERAPIES

Enhancing Safety and Creating Synergies for Novel Therapeutic Modalities

SAFETY AND EFFICACY IN EARLY CLINICAL DEVELOPMENT

13:45 Chairperson's Remarks

Elisa Fontana, MD, PhD, Oncologist and Medical Director, Sarah Cannon Research Institute UK

13:50 KEYNOTE PRESENTATION: Understanding, Predicting, and Mitigating Toxicities with ADCs and Bispecifics

Elisa Fontana, MD, PhD, Oncologist and Medical Director, Sarah Cannon Research Institute UK

Bispecific antibodies, ADCs and bispecific ADCs are rapidly moving from clinical development to standard of care. Some expected toxicities related to antibody fragments and target epitopes are in common, some others are specifically related to payload in case of ADCs and direct immune-cell engagement in case of a sub-class of bispecifics. On-target and off-target toxicities, timelines of expected toxicities, and mitigation strategies will be reviewed.

14:20 Working Together Across the Cancer Cell Membrane: Combinations of Multispecific Antibodies With Chemotherapies

Mark L. Chiu, PhD, CSO, Tavotek Biotherapeutics

EGFR is frequently found to be mutated in non-small cell lung cancer. The combination of amivantamab binding EGFR and EGFR TKIs can target extracellular and intracellular catalytic domains of EGFR resulting in potent anti-tumor responses in mutant NSCLCs. We demonstrate how TAVO412, a trispecific cMET x EGFR x VEGF in combinations with standard of care treatments have potent anti-tumor responses in a variety of solid tumors.

14:50 Multispecific Antibodies and CAR T in Solid Tumours

Maria de Miguel, MD, PhD, Medical Oncologist, Clinical Investigator; Associate Director, START Early Phase Clinical Trial Program, Hospital Universitario HM Sanchinarro

Recent multispecific antibodies and CAR T are being designed to target multiple antigens simultaneously, and offer a promising approach to overcome tumour escape mechanisms and enhance anti-tumour efficacy. These molecules can bridge tumour cells and immune effector cells, thereby promoting a robust and targeted immune response. Moreover, multispecific antibodies may have a role improving tumour penetration and mitigating on-target, off-tumour toxicity.

15:20 Addressing Challenges in Antibody-Drug Conjugate Development

Hengshuo Liu, Technical Sales Specialist , ACROBiosystems

Antibody-drug conjugates (ADCs) are a cutting-edge class of targeted cancer therapies allowing for precise delivery of chemotherapy to cancer cells which show both significant promise and challenges. Join us to explore the latest advancements in ADC technology and strategies to overcome critical hurdles in drug development.

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

16:35 ADC Efficacy, Combinations With Novel Agents, and Mechanisms of Resistance

Antonio Marra, MD, Medical Oncologist, IEO Istituto Europeo di Oncologia

?Antibody-drug conjugates (ADCs) have shown remarkable clinical efficacy, resulting in improved outcomes for several tumours. Resistance to ADCs can arise through various mechanisms, necessitating the development of strategies to counteract these resistance pathways. Innovative approaches to overcoming resistance include optimising linker stability, developing next-generation ADCs with novel payloads, employing bispecific antibodies, and using combination therapies to target multiple pathways concurrently, thereby enhancing the therapeutic efficacy of ADCs.

17:05 Novel ADC Targets in Solid Tumours

Oriol Mirallas, MD, Medical Oncologist, Drug Development, Phase I Unit, Vall d'Hebron Institute of Oncology (VHIO)

Antibody-drug conjugates (ADCs) represent a rapidly evolving therapeutic modality in oncology, leveraging the specificity of monoclonal antibodies to deliver cytotoxic agents directly to tumour cells. By targeting tumour-specific antigens, ADCs aim to maximise efficacy while minimising off-target toxicity. Recent advancements in ADC technology, including novel linker chemistries and potent cytotoxic payloads, have improved therapeutic indices and broadened their applicability to various malignancies.

17:35 PANEL DISCUSSION: Recent Successes and Challenges of Bispecifics, ADCs, and Combination Therapies

Moderator: Elisa Fontana, MD, PhD, Oncologist and Medical Director, Sarah Cannon Research Institute UK

This panel discussion will review recent success and challenges of bispecific antibodies, ADCs, and combination therapies. The panelists will look at which ADCs and bispecifics met the standard of care or not, and some of the reasons why therapies failed Phase 3 trials after promising results in earlier phase studies.

Panelists:

Maria de Miguel, MD, PhD, Medical Oncologist, Clinical Investigator; Associate Director, START Early Phase Clinical Trial Program, Hospital Universitario HM Sanchinarro

Antonio Marra, MD, Medical Oncologist, IEO Istituto Europeo di Oncologia

Oriol Mirallas, MD, Medical Oncologist, Drug Development, Phase I Unit, Vall d'Hebron Institute of Oncology (VHIO)

SAFETY AND EFFICACY OF MULTISPECIFIC ANTIBODIES, ADCs, AND COMBINATION THERAPIES

Enhancing Safety and Creating Synergies for Novel Therapeutic Modalities

18:05 Investigating Purification Approaches for Bispecific Antibodies BIO-RAD

Artur Stanczak, Field Application Specialist EMEA, Bio Rad Laboratories

Learn about the latest advancements in purification workflows for bispecific antibodies (bsAbs). Downstream purification encounters a major obstacle because of the intricate composition of bsAbs. This session will showcase a series of case studies that focus on purification strategies utilizing mixed-mode chromatography. These studies will highlight the effectiveness of novel chromatographic resins in overcoming challenges such as heterogeneity, impurities, and aggregation in bsAbs purification.

18:35 Welcome Reception in the Exhibit Hall with Poster Viewing

19:35 Close of Safety and Efficacy of Multispecific Antibodies, ADCs, and Combination Therapies Conference

ADVANCING MULTISPECIFICS AND COMBINATION THERAPY TO THE CLINIC

Novel and Synergistic Combinations

WEDNESDAY 6 NOVEMBER

7:30 Registration and Morning Coffee

NEXT-GENERATION BI- AND MULTISPECIFIC ANTIBODIES

8:55 Chairperson's Remarks

Paul Parren, PhD, CSO, Gyes; Professor, Molecular Immunology, Leiden University Medical Center

9:00 Bispecific and Trispecific T Cell Engagers for the Treatment of Hematological Malignancies

Ulrike Philippar, PhD, Senior Director & Head, Oncology & Discovery Hematological Malignancies, Johnson & Johnson Innovative Medicine

Within the past decade, therapies that activate/engage T cells have changed the landscape of treatment of hematological malignancies. Successful T cell engaging antibodies target antigens selectively expressed on tumours with minimal/no expression in other tissues and are potent molecules that can eliminate malignant cells, a long-term benefit. Several bispecific T cell engagers have been approved in hematological malignancies. Recent research evaluates multispecific T cell engagers targeting several tumour-associated antigens.

9:30 Preclinical Development of DuoBody-CD3-H101GxB7H4, a Novel CD3 Bispecific Antibody for the Treatment of Solid Cancers

Marije Overdijk, PhD, Director, Team Lead Translational Research, Genmab

The choice of an appropriate tumour-specific target and CD3 affinity are important considerations for developing effective and safe CD3 bispecific antibodies (bsAbs). Immune checkpoint protein B7H4 shows high expression in various solid cancers, while expression is low or absent in normal tissues, making it an attractive target for CD3 bsAbs. This presentation will discuss the preclinical development of DuoBody-CD3-H101GxB7H4, which is currently being investigated in a first-in-human clinical trial (NCT05180474).

10:00 Bispecific T Cell-Engaging Receptor (TCER®) molecules for targeting of tumor-specific peptide antigens

Sebastian Bunk, Vice President TCR Engineering & Bispecifics, Immatics Biotechnologies GmbH

TCER are next-generation T cell receptor (TCR)-based T cell-engaging bispecifics targeting peptides presented by HLA-molecules on tumor cells. The use of a high-affinity TCR domain and a low-affinity T cell recruiter coupled to an Fc part for half-life extension has been shown in preclinical experiments to optimize efficacy, safety, and dosing schedule. Immatics is developing a broad pipeline of TCER addressing different indications and large patient populations.

10:30 Coffee Break in the Exhibit Hall with Poster Viewing

KEYNOTE FIRESIDE CHAT: The Science and Business of Bispecific Antibodies

11:15 Fireside Chat

Moderator: Janine Schuurman, PhD, Biotech Consultant, Lust for Life Science B.V.

In this fireside chat, Ton Logtenberg (formerly Merus) and Bassil Dahiiyat (Xencor) will share their vast experiences and insights in both the science and business of bi- and multi-specific, the field of multifunctional antibody creation and development, and how that impacts company creation. We'll explore both scientific and business perspectives, delving into the interface between innovation, pipeline strategy, and business acumen strategies for building successful companies.

Panelists:
Bassil I. Dahiyat, PhD, CEO, Xencor Inc.
Ton Logtenberg, PhD, CEO, Gyes BV

12:15 LUNCHEON PRESENTATION: OmnidAb®: Human single domain antibodies from an avian host

Phillip Leighton, Fellow, OmniAb

Single domain antibodies provide the potential for novel binding mechanisms, alternative formatting, and expanded applications given their stable, simplified structure compared to conventional antibodies. We have developed the OmnidAb® platform, a transgenic chicken expressing single domain antibodies with an optimized human framework and diversity engineered in the CDRs. These birds can be used to discover antigen-specific antibodies to soluble and membrane targets, with high affinities, diverse epitope coverage, and favorable developability profiles.

12:45 Luncheon in the Exhibit Hall with Poster Viewing

NOVEL APPLICATIONS OF BISPECIFIC ANTIBODIES

13:45 Chairperson's Remarks

Tariq Ghayur, PhD, Tariq Ghayur Consulting, LLC and Entrepreneur in Residence, FairJourney Biologics

ADVANCING MULTISPECIFICS AND COMBINATION THERAPY TO THE CLINIC

Novel and Synergistic Combinations

13:50 KEYNOTE PRESENTATION: Broadly-Reactive Antibody against Multiple Gluten Peptide, HLA-DQ2.5 Complexes for the Treatment of Celiac Disease

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd

HLA-DQ2.5 presenting gluten peptides to antigen-specific CD4+ T cells plays a critical role in pathogenicity of celiac disease. We have created a TCR-like, neutralizing antibody (DONQ52) that broadly and specifically recognizes more than twenty-five distinct gluten pHLA-DQ2.5. Identification, preclinical study, and structural analysis of DONQ52 will be presented.

14:20 High-Throughput Bispecific Antibody Production & Potential Applications within Discovery Workflows

Charlotte H. Coles, PhD, Team Leader, GSK

This presentation will review current and emerging strategies to facilitate high-throughput bispecific antibody production, before considering their potential application during a biopharmaceutical discovery campaign. Screening in bispecific format during earlier stages may: i. enable empirical screening to identify or prioritise target pairings during target validation stages, ii. widen protein design space to maximise chances of success, or iii. result in early screening data being more predictive of lead molecule properties.

14:50 Trispecific GPRC5D Antibodies with Potent Cell-Killing Activity against Multiple Myeloma

Ross Chambers, Vice President of Antibody Discovery, Integral Molecular

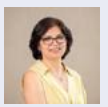
GPRC5D is a G protein-coupled receptor expressed on multiple myeloma cells but absent from most healthy tissues. Clinical combination data suggest a trispecific molecule targeting GPRC5D, BCMA, and T cells may offer substantial benefits. We leveraged DNA + lipoparticle immunisation, divergent species (chickens), and specificity assessment using the Membrane Proteome Array to generate potent and specific lead molecules. We will present *in vitro* and *in vivo* data for this program.

15:20 Transition to Plenary Keynote Session

PLENARY DEEP DIVE

15:30 Chairperson's Remarks

Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio



15:35 Immunotherapy Highlights

Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb

15:45 Multispecific Antibody Highlights

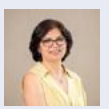
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd

15:55 ADC Highlights

Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

PLENARY PANEL

16:05 Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations

Moderator: Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio

In the past, the field of therapeutic antibodies was dominated by monoclonal antibodies. Similarly, today, antibody combinations have been approved and numerous antibody-based therapies are combined in clinical trials. In the Plenary Fireside Chat "Shaping the Next Stage of Antibody

ADVANCING MULTISPECIFICS AND COMBINATION THERAPY TO THE CLINIC

Novel and Synergistic Combinations

Development with Complex Modalities and Combinations," renowned experts in the field will discuss major breakthroughs and how the field will evolve in the years to come.

Panelists:
Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd
Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

16:35 Refreshment Break in the Exhibit Hall with Poster Viewing

17:15 Discovery and Development of a TGFβ Superfamily Receptor Bispecific Antibody Agonist Leveraging Experimental and Computational Methods

Melissa Geddie, PhD, Vice President Drug Discovery, Diagonal Therapeutics

Agonistic antibodies present a compelling approach to treating diseases driven by defective signaling pathways, but their discovery has been severely limited by the difficulty of identifying epitopes that successfully trigger receptor signaling. Using a combination of experimental and computational approaches, we successfully generated bispecific agonist antibodies that activate a heteromeric receptor complex with the objective to treat human vasculopathies. Our approach has shown to be applicable across diseases and targets.

17:45 Using Bispecific Antibodies to Achieve Targeted Complement Inhibition

Leendert A. Trouw, PhD, Professor, Department of Immunology, Leiden University Medical Center

Complement activation is playing a pathogenic role in several human diseases. The importance of complement in this process is underscored by the successful implementation of complement inhibitory therapies. However, all these therapies work systemically, while the complement activation is occurring only locally. Therefore with my team we are developing bispecific antibody based complement inhibitors that only inhibit locally and leave systemic complement intact to fight infections.

18:15 ATOR-4066: Translating Clinical Success into a 3rd Next-Generation CD40xCEACAM5 Agonistic Neo-X-Prime Bispecific Antibody

Peter Ellmark, PhD, CSO, Alligator Bioscience AB

Data from our Phase 2 clinical data with mitazalimab in first line pancreatic cancer show how CD40 targeting can be a game changer in immuno-oncology. The key learnings have been translated into the Neo-X-Prime platform with the lead compound ATOR-4066 targeting CD40 and CEACAM5 demonstrating superior anti-tumour activity and a unique mode of action.

18:45 Close of Advancing Multispecifics and Combination Therapy to the Clinic Conference

ENGINEERING THE NEXT GENERATION OF BISPECIFIC ANTIBODIES

Introducing Novel Functionality and Constructs

THURSDAY 7 NOVEMBER

7:30 Registration and Morning Coffee

OVERVIEW

8:25 Chairperson's Remarks

Stefan Zielonka, PhD, Senior Director, Global Head of Antibody Discovery & Protein Engineering (ADPE) Research & Development, Merck Healthcare KGaA; Professor, Biomolecular Immunotherapy, Technische Universität Darmstadt

8:30 KEYNOTE PRESENTATION: The Present and Future of Bispecific Antibodies for Cancer Therapy

Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio

An increasing number of bispecific antibodies has been approved for therapy, both for the treatment of cancer and for treatment of non-oncology indications. In this keynote lecture we will review the status and most prevalent mechanisms of action of bispecific antibodies and provide an outlook into emerging concepts.

NEXT-GENERATION IMMUNOTHERAPY

9:00 Advancing Cancer Immunotherapy: Next-Generation T Cell Engagers Targeting CLDN6 via CD3/CD137 Binding

Shinya Ishii, Senior Manager, Research Division, Chugai Pharmaceutical Co. Ltd.

In this study, we developed a novel T cell engager called Dual-Ig that enhances the efficacy of T cell bispecific antibodies by incorporating the co-stimulatory signal CD137. We applied Dual-Ig to an antibody successfully engineered to have high specificity for CLDN6, despite its similarity to other CLDNs. Promising preclinical data suggests that this approach may lead to significant therapeutic advances in the treatment of CLDN6-targeted cancers.

9:30 Seamless Concept to Candidate: GenScript's cutting-edge Technologies for Bispecific Development

GenScript

Amanda Grimm, Sr Segment Marketing Mgr, GenScript USA Inc

Bispecific antibody drug development is a complex process requiring careful consideration of target biology, mechanism of action, antibody format, and other critical factors. Leveraging advanced technologies and strategic planning can help navigate these challenges and lead to successful therapeutic outcomes. Join Amanda as she discusses GenScript's integrated technologies that will support your bispecific design, expression, and assess your developability.

10:00 Coffee Break in the Exhibit Hall with Poster Viewing

10:45 Bispecific Dendritic-T Cell Engagers

Rony Dahan, PhD, Principal Investigator, Immunology, Weizmann Institute of Science

This presentation discusses the pivotal role of dendritic-T cell crosstalk in driving anti-tumor immunity and enhancing immunotherapy. I will highlight our recent studies that led to the development of new immunotherapies, harnessing dendritic cell-T cell interactions for optimal efficacy.

11:15 Antibody-Mediated Delivery of Viral Epitopes to Redirect Virus-Specific CD8+ T Cells

Willemijn van der Wulp, PhD Student, Labs of Rob Hoeben (Department of Cell and Chemical Biology) and Mirjam Heemskerk (Department of Hematology), Leiden University Medical Center

The use of therapeutic antibody-epitope conjugates (AECs) is a new therapeutic strategy for delivery of immunogenic viral epitopes and redirecting virus-specific CD8+ T cell activity toward cancer cells. The AECs rely on proteolytic release of these epitopes close to the tumour cell surface for presentation on HLA Class I molecules. The presentation will cover how we evaluated the potential of these AECs and their capacity to redirect EBV-specific T cells.

11:45 Design Meets Biology—Engineering Multispecific Modalities with Potentially Improved TI

Yariv Mazor, PhD, Executive Director, R&D, Biologics Engineering, AstraZeneca

Multispecific antibodies are emerging as a leading class of biological therapeutics. Their capacity to simultaneously target two or more distinct disease pathways or bridge two different cells opens attractive new perspectives in terms of efficacy and selectivity that may potentially lead to better drug safety and an overall improved therapeutic index. We'll showcase several differentiated bispecific modalities that have advanced into clinical development.

12:15 LUNCHEON PRESENTATION: Advancing Bispecific Antibody Development: Overcoming Challenges with Innovative Solutions for Target Binding and Functional Assessment

SARTORIUS

Kathrin Dienst, , Field Application Scientist BioAnalytics

Bispecific antibodies (BsAbs) are therapeutic antibodies targeting different antigens or epitopes, enhancing potency and therapeutic effects. Various constructs, like single-chain variable fragments (scFv), Dual-Affinity Re-targeting Antibodies (DARTs), Triomabs, and bispecific T cell engagers (BiTEs), are in development for diseases like cancer. Structural constraints may affect binding and performance. Developers face challenges in assessing BsAbs' dual interactions, requiring innovative approaches beyond traditional monoclonal antibodies. Solutions for efficient characterization will be discussed.

12:45 Luncheon in the Exhibit Hall with Last Chance for Poster Viewing

ENGINEERING THE NEXT GENERATION OF BISPECIFIC ANTIBODIES

Introducing Novel Functionality and Constructs

IMMUNOCYTOKINES & DEGRADERS

13:55 Chairperson's Remarks

Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio

14:00 Engineering of Single-Domain Antibody-Based Bi- & Multispecifics Mimicking Cytokine Functionalities

Stefan Zielonka, PhD, Senior Director, Global Head of Antibody Discovery & Protein Engineering (ADPE) Research & Development, Merck Healthcare KGaA; Professor, Biomolecular Immunotherapy, Technische Universität Darmstadt

Cytokines emerged as promising molecules for therapeutic intervention in order to modulate the immune response. However, their often pleiotropic nature, combined with their high potency when administered systemically, restricts their therapeutic applicability. We have generated cytokine mimetics with tailor-made mode-of-actions based on multifunctional antibody derivatives.

14:30 Degrader Antibody Conjugates—Reimagined ADCs for Oncology and Beyond

Bernhard H. Geierstanger, PhD, CTO, FireflyBio

Degrader antibody conjugates (DACs) combine the unique strengths of ADCs with selective protein degraders. Our state-of-the-art platform enables DACs broadly. Degraders with different mechanisms of action and diverse structures can be delivered in antigen-dependent manner opening exciting opportunities for this novel therapeutic modality.

15:00 Innovative Cell Line Development Approaches for the Next Generation of Bispecific and complex Antibody Formats FyoniBio

Lena Tholen, Dir Cell Line & Bioprocess Dev, FyoniBio

Illustrating the relevance of host cell selection in early development: Effect on product quality and process feasibility
How seamless and full blown CLD approaches can impact final results in complex antibody format production
Case studies for complex bispecific antibody project developed in FyoniBio's CHOnamite® [illegible]

15:15 High-Throughput Bispecific Antibody Optimization via Purification-Free Single-Molecule Fluorescence Imaging PROTEINA

Jihye Jo, Principal Scientist, PROTEINA Co., Ltd.

PROTEINA's platform addresses key challenges in bispecific antibody (bsAb) development by enabling high-throughput analysis of dissociation constants (KDs) and developability assessments without the need for purification. Using single-molecule fluorescence imaging, the platform processes 384 samples per run, generating sequence-affinity landscapes within CDRs to optimize dual-target binding affinity. It screens thousands of combinatorial variants and characterizes bsAb assembly efficiency, accelerating antibody optimization and development.

INTERACTIVE DISCUSSIONS

15:30 Interactive Discussions

Interactive Discussions are informal, moderated discussions, allowing participants to exchange ideas and experiences and develop future collaborations around a focused topic. Each discussion will be led by a facilitator who keeps the discussion on track and the group engaged. To get the most out of this format, please come prepared to share examples from your work, be a part of a collective, problem-solving session, and participate in active idea sharing.

TABLE 2: Advancement of Novel Format and Applications of Alternative Format Bispec and Multispec Antibodies

Yang Shen, PhD, Executive Director Antibody Engineering, Department of Bispecifics, Regeneron

- How can structural biology help with the design and screening?
- How/Why the alternative format antibodies can achieve unique MoA, higher specificity and better activity?
- What are current hurdles to advance these alternative format molecules into and develop them in clinic?

TCR-BASED MODALITIES

16:09 Chairperson's Remarks

Harald Kolmar, PhD, Professor and Head, Institute for Organic Chemistry and Biochemistry, Technische Universität Darmstadt

16:10 Discovery of Therapeutic Grade TCRs for Bispecific T Cell Engagers Using a Novel Transgenic Mouse Approach Expressing Fully Human TCRs

Luca Pellegrinet, PhD, Assistant Director, Preclinical Development, T-Therapeutics

We are at the dawn of a second wave of TCR-based biologics and cell therapies recognising peptide-MHC, which expands oncology target opportunities beyond traditional mAb targets. This talk will provide an update on the development of T-Therapeutics' OpTiMus platform which is a novel mouse transgenic platform for discovery of fully human therapeutic TCRs and bispecifics. It will cover our process with data on optimisation of our soluble bi-specific modality

16:40 T Cell Receptor β Chain-Directed Antibody Fusion Molecules: Next-Generation T Cell Immunotherapy for Solid Tumours

Andrew Bayliffe, PhD, CSO, Marengo Therapeutics

Whereas the T cell receptor (TCR) is generally considered an adaptive modality, αβ TCRs can also act as an innate receptor, engaging nonclonal ligands at germline-encoded sites. We designed a library of antibodies that target distinct germline-encoded variants of TCR variable β chain. In certain formats,

ENGINEERING THE NEXT GENERATION OF BISPECIFIC ANTIBODIES

Introducing Novel Functionality and Constructs

these anti-Vβ TCR antibodies agonize TCR and drive highly selective expansion and activation of Vβ T cell subsets with a novel memory-like effector phenotype.

17:10 Designing Potent TCR-Based Bispecifics Using Generative AI

Rachel Woolley, PhD, Principal Scientist, Protein Engineering, Etcembly Ltd

This talk will cover TCR discovery, computational selection, and affinity prediction. Results of *in silico* engineering success, reformatting into bispecific (ETCer) and T cell- killing assays will be shared.

DESIGN AND ENGINEERING OF BISPECIFIC ANTIBODIES: Insights and Practical Considerations

17:40 Bi- and Multispecific Antibody Design Aspects Through Understanding Paratope-Epitope Interactions

Steffen H.J. Goletz, PhD, Full Professor, Deputy Head, Vice Director, Biotechnology & Biomedicine, Danish Technical University

Learnings from computational analysis of > 850,000 atom-atom contacts from >1800 structurally elucidated antibody-antigen complexes and >11000 functional antibodies will be presented and their impact for bi-and multispecific antibody design and the generation of novel in-silico designed humanized single-domain antibody phage display libraries with maximal functional diversity for generating fusion partners.

18:10 Close of PEGS Europe Summit

7TH ANNUAL | BARCELONA, SPAIN

MODULATING THE TUMOUR MICROENVIRONMENT

Decoding the TME

TUESDAY 5 NOVEMBER

7:30 Registration and Morning Coffee

TARGETING THE TUMOUR STROMA

8:25 Chairperson's Remarks

Janine Schuurman, PhD, Biotech Consultant, Lust for Life Science B.V.

8:30 Characterising Fibroblast Subsets in Cancers: Opportunities for Immunotherapeutic Exploitation

Gareth J. Thomas, PhD, Professor, Experimental Pathology, School of Cancer Sciences, Faculty of Medicine, University of Southampton

Fibroblasts are sentinel cells that initiate, maintain, and suppress immune responses. Most cancer research focuses on myofibroblastic fibroblasts (myCAF); myCAF-rich tumours show poor prognosis and immunotherapy resistance. scRNASeq is identifying multiple CAF subtypes, some of which may support anti-tumour immunity. Given fibroblast plasticity, switching fibroblasts from immune-suppressive to immune-supportive phenotypes is an attractive therapeutic strategy. Here I discuss advances in understanding of CAF phenotype, function, and potential for therapeutic targeting.

9:00 Reinvigorating Exhausted T Cell and Modulating Cancer-Associated Fibroblast from Patients in TME in the Presence of CD96 Blockades

JiMin Lee, PhD, Professor, KAIST

Immune-checkpoint inhibitors (ICIs) have shown therapeutic efficacy in various solid tumours; however, ICIs have not shown clinical efficacy in hematological cancers such as AML and MM. Our findings suggest that combined blocking of previous ICIs with CD96 in T cells and controlling PRRX1 levels in CAF may be beneficial for therapy.

9:30 A FAP-Targeted LTBR-Agonistic Bispecific Antibody Modulating the Tumour Microenvironment to Induce the Formation of HEV-Rich Immune Niches and Enhance CPI Efficacy

Leo Kunz, PhD, Principal Scientist, Spatial Biology Lead, Roche Pharma Research & Early Development (pRED)

A FAP-targeted bispecific antibody agonizing the Lymphotoxin Beta receptor for the modulation of the tumour microenvironment to induce the formation of HEV-rich immune niches will be introduced. LTBR pathway activation enhances the expression of adhesion molecule and chemoattractants, induces high endothelial venule formation, and the build-up of immune cell niches up to tertiary lymphoid structures, thus enabling CPI's anti-tumour efficacy. The IND-enabling preclinical data package will be summarized.

10:00 Engineering Antibodies for Receptor Agonism in the Tumour Microenvironment

Mark S. Cragg, PhD, Professor, Experimental Cancer Biology, Antibody and Vaccine Group, School of Cancer Sciences, University of Southampton

Agonistic antibodies directed to immunostimulatory receptors are an untapped source for immunotherapy. Here we discuss the properties required to optimally agonise these receptors and describe potential strategies for leveraging them for immune activation and anti-tumour efficacy in the complicated environment of the tumour. Using TNFR superfamily receptors as a paradigm and IgSF members for comparison, we evaluate the multiple methods for delivering powerful receptor agonism.

10:30 Grand Opening Coffee Break in the Exhibit Hall with Poster Viewing

ROLE OF PROSTANOIDS AND NON-CODING GENOMES

11:15 Role of Prostanoids in Suppressing T Cell Responses in Cancer and Strategies to Overcome This Mechanism for Cellular Therapy

Sebastian Kobold, MD, Professor, Clinical Pharmacology, Klinikum der Universität München

Prostanoids have long been known as players suppressing tumour immunity, but their exact mode of action remained unknown. In fact, large trials have probed systemic synthesis inhibition for cancer prevention and therapy with mixed results. We could recently demonstrate that PGE2 suppresses CD8+T cells in the TME to curtail anti-tumour immunity, showcasing the need for tailored interventions. We will discuss and present novel approaches how this could be achieved.

11:45 KEYNOTE PRESENTATION: Uncovering the Role of Non-Coding Genome: A Revolution in Cancer Therapeutics and Human Health

Laszlo G. Radvanyi, PhD, President & Scientific Director, Ontario Institute for Cancer Research

We are at the cusp of a revolution in finally understanding the role of "non-coding" elements or the so-called "dark genome" in human health. These "non-coding" regions contain retro-transposable elements that regulate gene expression, tissue specification and differentiation, but also play a pathogenic role in many diseases. This talk will introduce the components of this "dark genome" and present new insights into its role in cancer initiation and immune modulation.

12:15 Attend Concurrent Track

12:45 Luncheon in the Exhibit Hall with Poster Viewing

7TH ANNUAL | BARCELONA, SPAIN

MODULATING THE TUMOUR MICROENVIRONMENT

Decoding the TME

UNDERSTANDING AND TARGETING IMMUNE CELLS IN THE TME

13:45 Chairperson's Remarks

Jeanette H.W. Leusen, PhD, Professor, Translational Immunology, Utrecht University

13:50 Spatial Analysis of the Tumour Microenvironment Reveals Immune Cell Players in Therapy Response

Yvonne Vercoulen, PhD, Associate Professor, Center for Molecular Medicine, University Medical Center Utrecht

Immune Checkpoint Inhibition (ICI) remains ineffective in a significant proportion of metastatic melanoma patients. Immune profiling of the melanoma Tumour Microenvironment pre-treatment using high-plex imaging and RNA sequencing revealed that monocyte-derived macrophage (MDM) and T cell recruitment associates with anti-PD1 therapy response and survival. This study provides important clues for future precision combination therapy strategies.

14:20 Emerging Role of Neutrophils in Anti-Tumour Immunity

Rajkumar Noubade, PhD, Director, Oncology, Gilead Sciences

This presentation will explore the emerging evidence on the role of neutrophils in anti-tumour immunity. It will discuss recent findings challenging the traditional view of neutrophils as bystanders or tumour-promoting cells. The focus will be on elucidating the multi-faceted functions of neutrophils in modulating the tumour microenvironment, mediating tumour cell killing, and regulating adaptive anti-tumour immune responses. Therapeutic strategies harnessing the anti-tumour potential of neutrophils will also be discussed.

14:50 How Neutrophils Are Activated by IgA to Kill Cancer Cells

Jeanette H.W. Leusen, PhD, Professor, Translational Immunology, Utrecht University

IgA has the unique capacity to activate neutrophils to kill cancer cells. In the presentation we will show how neutrophils can kill cancer cells, and why they do this much better than IgG antibodies. We engineered IgA for a better production, stability, and half-life. Block of myeloid checkpoints like CD47 will further enhance IgA activity. Effectivity of IgA in several pre-clinical models will be shown.

15:20 Lisata Therapeutics' Certepetide: Modifying the TME to Improve Outcomes in Patients with Solid Tumors

David J. Mazzo, PhD, President & CEO, Lisata Therapeutics

Certepetide, an internalising RGD peptide, is a novel investigational drug that selectively actuates the CendR active transport mechanism to optimise the penetration of anti-cancer drugs through the stroma of solid tumours. Importantly, certepetide also has profound tumour microenvironment modifying properties. It depletes intratumoural immunosuppressive cells, recruits cytotoxic T cells, and inhibits the metastatic cascade. Validating preclinical and clinical data in pancreatic ductal adenocarcinoma and other solid tumours will be presented.

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

16:35 Harnessing Macrophages with Immunotherapy: IgE Class Antibodies

Sophia N. Karagiannis, PhD, Professor, Translational Cancer Immunology & Immunotherapy, Kings College London

As the most prevalent immune cell within the tumour microenvironment (TME), macrophages are implicated in tumourigenesis and metastasis. However, these cells can be harnessed for cancer therapy. In this talk we will discuss the potential of IgE class antibodies directed to cancer cells can restrict tumour growth, promoting macrophage stimulation ad pro-inflammatory conditions in the TME.

17:05 Strategies to Overcome Resistance to Immune-Based Therapies

Taha Merghoub, PhD, MCC Deputy Director & Professor of Research, Pharmacology, Cornell University

We will be addressing the critical limitations, and mechanisms of resistance to immune-based cancer therapies. We will also discuss tumour microenvironmental factors and immune evasion strategies employed by tumours. We will highlight strategies to overcome resistance, such as combination approaches, novel targets, and strategies to modulate the tumour microenvironment.

17:35 A Novel MICA/B Based Tumor Centric Bispecific Antibody That Enhances NK Cell Activity in a Hostile Tumour Microenvironment

Hemanta Baruah, PhD, Founder & CEO, Aakha Biologics

Aakha Biologics is developing first-in-class MICA X TAA bispecific antibodies for solid tumours that combines multiple mechanism of action into a single agent, bringing synergy in NK cell activation and subset of T cells (gamma delta T cells, CD8 T cells, and NKT cells). The target MICA is selectively expressed on multiple solid and liquid tumours, making it an ideal target for pan cancer indications.

18:05 POSTER HIGHLIGHT: Imaging Mass Cytometry Reveals The Spatial Network Of Immune Cells In Neuroblastoma

Francisca Bergsma, Graduate Student, Prinses Maxima Center, Univ of Utrecht

The development of immunotherapeutic agents has transformed the treatment of neuroblastoma patients. Nevertheless, the efficacy of these immunotherapies is challenged by the highly immunosuppressive microenvironment, which hampers immune cell migration into tumor area. Here, we aim to identify targeted strategies to enhance immune cell infiltration, by mapping the tumor immune microenvironment (TIME) and cell-cell interactions in neuroblastoma using imaging mass cytometry (IMC).

18:35 Welcome Reception in the Exhibit Hall with Poster Viewing

19:35 Close of Modulating the Tumour Microenvironment Conference

7TH ANNUAL | BARCELONA, SPAIN

INNOVATIVE CAR T THERAPY

Pioneering *in vivo* Cell and Gene Engineering

WEDNESDAY 6 NOVEMBER

8:00 Registration and Morning Coffee

TME TARGETS FOR EFFICIENT CAR T CELL THERAPY

8:55 Chairperson's Remarks

Astero Klampatsa, PhD, Group Leader, Cancer Therapeutics, Institute of Cancer Research

9:00 Metabolic Engineering against the Arginine Microenvironment Enhances CAR T Cell Proliferation and Therapeutic Activity

Carmela De Santo, PhD, CRUK New Investigator Fellow, Immunology, University of Birmingham

Cancer cells catabolize the semi-essential amino acid arginine to drive cell proliferation. However, the resulting low-arginine microenvironment also impairs CAR T cell proliferation, limiting their efficacy in clinical trials. T cells are susceptible to the low arginine because of the low expression of ASS and OTC recycle enzyme. We demonstrate that T cells can be reengineered to express functional ASS or OTC to improve CAR T proliferation and function.

9:30 Co-Stimulation Drives Metabolic Regulation of CAR T Cells

Anna Schurich, PhD, Lecturer, Experimental Immunology, King's College London

Metabolic adaptation enables T cells to fuel their extraordinary functions. The co-stimulatory domains in chimeric antigen receptor (CAR)-constructs influence the T cell's metabolic profile. We find that this results in a differential ability of CAR T cells to function in nutrient-restricted environments *in vitro* and in patients *in vivo*, ultimately impacting treatment outcome.

10:00 Biopharma Industry Focus: Harnessing Major Histocompatibility Complexes (MHCs) and Multipass Transmembrane Proteins KACTUS

Manhee Suh, CTO, KACTUS

As part of our commitment to advancing therapeutic innovations, we've developed two key antigens for evolving biopharma needs. Our versatile MHC molecules support rapid neoantigen peptide loading, enhancing TCR-T cell therapy research. We've also expanded our multi-pass transmembrane portfolio, featuring tetraspanins, GPCRs, SLCs, and ion channels. Both VLP and nanodisc formats are available, utilizing detergent-free extraction methods.

10:15 Greet your Neighbours

10:30 Coffee Break in the Exhibit Hall with Poster Viewing

11:15 Overcoming Tumour Endothelial Cell Anergy and Improving Immunotherapy Outcomes

Judy van Beijnum, PhD, Senior Scientist and Project Leader, AUMC Amsterdam

The general inaccessibility of the tumour microenvironment hampers effectivity of CAR T cells for application in solid tumours. Direct targeting of the tumour endothelium is a highly effective way of inhibiting tumour growth, in part through alleviating immune suppression. Our strategy is to employ CAR T cells specifically targeting antigens ubiquitously overexpressed by tumour endothelial cells in multiple solid tumour types as a way to overcome these hurdles.

11:45 Optimising CAR T Cell Therapy through Understanding Tumour Microenvironment Dynamics

Juan José Lasarte, PhD, Professor, Director of Immunotherapy Program, Cima Universidad de Navarra

The tumour microenvironment (TME) presents physical, chemical, and cellular barriers hindering CAR T cell activity. Addressing collagen-rich matrix, acidic tumour interstitial fluid, and immunosuppressive cells is crucial to enhance CAR T cell efficacy. We will show that targeting specific antigens in the tumour matrix, equipping CAR T cells with transporters for nutrient sensing, or combining therapies with Treg cell inhibitors can overcome TME challenges and improve anti-tumour immune response.

12:15 Targeting the Tumour Stroma with Endosialin-Directed CAR T Cells

Sarah Ash, PhD, Postdoctoral Researcher, Department of Oncology, Ludwig Institute for Cancer Research, University of Lausanne

Targeting solid cancers with CAR T cells is limited by the lack of tumour-specific antigens and the immunosuppressive, desmoplastic tumour microenvironment. We hypothesized that targeting endosialin (CD248), expressed by tumour-associated pericytes, would circumvent these challenges. Endosialin-directed CAR T cells demonstrated specific activity *in vivo*, depleting target stromal cells, resulting in reduced tumour growth and substantial impairment of metastatic outgrowth, highlighting endosialin as an exciting antigen for CAR T cell therapy.

12:45 Luncheon in the Exhibit Hall with Poster Viewing

CO-ENGINEERING STRATEGIES TO IMPROVE FUNCTION OF CAR T CELLS

13:45 Chairperson's Remarks

Melita Irving, PhD, Group Leader, Ludwig Institute for Cancer Research, University of Lausanne

13:50 Logic Gating and Spatially Controlled CAR T Cell Function

Maria Themeli, PhD, Assistant Professor, Hematology, Vrije University Amsterdam

Despite the clinical success of therapy with chimeric antigen receptor–engineered T cells (CAR T) in hematology, a significant percentage of patients eventually relapses, and several challenges still hinder the application in solid tumours. Designing chimeric receptor systems using rationale combinations of

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targets, costimulatory signals, and logic-gating expression circuits can lead to the next-generation of CAR T cell therapy with broader applicability and improved efficacy and safety profile.

14:20 Development of Next-Generation Remotely Controlled CAR T Cells

Greta Giordano Attianese, PhD, Research Associate, Department of Oncology, Ludwig Institute for Cancer Research, University of Lausanne

Our group developed both ON- and OFF-switch CARs allowing the remote control of engineered T cells upon application of a clinically-approved small molecule. In addition, we optimised a lentiviral vector enabling constitutive expression of a CAR and independent activation-inducible production of immunomodulatory gene-cargo like cytokines or mIR-based shRNAs to knock-down inhibitory genes. Our engineering tools can be used to improve both the safety and function of CAR T cell therapy.

14:50 Combinatorial Strategies with Engineered Immune Cell Therapies for Malignant Glioma

Denis Migliorini, MD, Head, Neuro Oncology Unit, University Hospital of Geneva

The therapeutic use of chimeric antigen receptor T cells has achieved significant success in the treatment of B cells malignancies. Despite promising results in mouse tumour models, a similar outcome hasn't yet been observed in solid tumours. In glioblastoma (GBM), several clinical trials only showed a modest efficacy, partly due to the high tumour heterogeneity and immunosuppressive microenvironment. In this setting, we aim to develop "à-la-carte" CAR T cell strategy.

15:20 Transition to Plenary Keynote Session

PLENARY DEEP DIVE

15:30 Chairperson's Remarks

Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio

15:35 Immunotherapy Highlights

Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb

15:45 Multispecific Antibody Highlights

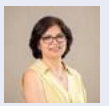
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd

15:55 ADC Highlights

Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

PLENARY PANEL

16:05 Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations

Moderator: Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio

In the past, the field of therapeutic antibodies was dominated by monoclonal antibodies. Similarly, today, antibody combinations have been approved and numerous antibody-based therapies are combined in clinical trials. In the Plenary Fireside Chat "Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations," renowned experts in the field will discuss major breakthroughs and how the field will evolve in the years to come.

Panelists:

Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd

Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

16:35 Refreshment Break in the Exhibit Hall with Poster Viewing

17:15 Engineered Bacteria Direct the Tumour Specificity of CAR T Cells *in Situ*

Rosa Louise Vincent, PhD, Postdoc, Rooney Lab, Baylor College of Medicine

To address the formidable challenges of antigen loss and tumour heterogeneity, we coupled the cytotoxicity of chimeric antigen receptor (CAR) T cells with the antigen-independent specificity of tumour-colonizing bacteria to create a platform of probiotic-guided CAR T cells (ProCARs). By engineering bacteria to release synthetic CAR targets *in situ*, we show effective and antigen-agnostic use of the ProCAR platform across multiple models of xenograft and syngeneic cancers.

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INNOVATIVE CAR T THERAPY

Pioneering *In vivo* Cell and Gene Engineering

17:45 Revitalising Exhausted T Cells with IL-10: A Journey from Lab Discovery to Clinical Application for Enhanced Cancer Immunotherapy

Li Tang, PhD, Associate Professor, Institute of Bioengineering (IBI) / Institute of Materials Science & Engineering (IMX), École polytechnique fédérale de Lausanne (EPFL)

In this talk, I will share our recent discovery of IL-10 as a metabolic reprogramming agent that reinvigorates terminally exhausted CD8+ tumour infiltrating lymphocytes. This strategy has been extended to develop metabolically armoured CAR T cells with IL-10 secretion to counter exhaustion-associated dysfunction in the tumour microenvironment for enhanced anticancer immunity. This new CAR T cell therapy, i.e. IL-10-secreting CAR T, has shown promise in several on-going IIT clinical trials.

18:15 Close of Innovative CAR T Therapy Conference

2ND ANNUAL | BARCELONA, SPAIN

NEXT-GENERATION IMMUNOTHERAPIES

Improving Immunotherapy Safety & Efficacy

THURSDAY 7 NOVEMBER

7:30 Registration and Morning Coffee

ADOPTIVE CELL THERAPIES

8:25 Chairperson's Remarks

Björn L. Frendeus, PhD, CSO, BioInvent International AB

8:30 Seamless Integration of a Universal Epitope into Recombinant TCRs for Tagging and Tracking of TCR-T Cells Expressing 3S TCRs

Kanuj Mishra, Team Lead & Lab Head, Innovation, Medigene Immunotherapies GmbH

UniTope & TraCR is a universal detection system for 3S recombinant TCRs in TCR-T cell therapies. The integrated epitope (UniTope) eliminates the need for extraneous gene tags, providing an unequivocal identity marker. The system facilitates efficient *in vitro* and *ex vivo* monitoring via a single TraCR antibody. UniTope integration preserves TCR structural and functional integrity, streamlining identification, quantification, and quality control of TCR-T cells expressing 3S rTCRs.

9:00 Advances in Gamma Delta T Cell-Targeting Bispecifics for the Treatment of Cancer

Pauline M. Van Helden, PhD, Director, Translational Research, Lava Therapeutics

Vγ9Vd2 T cells stand in between the innate- and adaptive-immune responses and constitute powerful immune effector-cell population amenable for cancer treatment. Bispecific T cell engagers (bsTCEs) binding the Vd2 T cell receptor (TCR) and tumor-associated antigens (TAA) effectively trigger Vγ9Vd2 T cells to lyse multiple type cancer cells, while sparing normal cells. Currently, a PSMA-targeting bsTCE is being evaluated in a phase 1/2a clinical trial in prostate cancer patients.

9:30 Leveraging the Therapeutic Immuno-STAT Platform for Targeted Depletion of B Cells in Autoimmune and Inflammatory Diseases

Simon Low, Senior Director, Biologics Discovery & Innovation, Cue Biopharma

B cells, critical to autoimmunity, have been identified as potential therapeutic targets in the treatment of autoimmune disorders. Our next-generation CUE-500 series Immuno-STATs are uniquely engineered Fc fusion molecules that redirect and activate cytotoxic T cells, targeting pathogenic B cells. Leveraging clinical efficacy and safety of our CUE-100 series Immuno-STATs, our novel autoimmune platform enables the redirection of Immuno-STATs towards pathogenic B cell depletion for the treatment of autoimmune diseases.

10:00 Coffee Break in the Exhibit Hall with Poster Viewing

T CELL-ENGAGERS

10:45 KEYNOTE PRESENTATION: HLA-Agnostic T Cell Receptor Recognition of Cancer

Andrew Sewell, PhD, Distinguished Research Professor and Wellcome Trust Senior Investigator, Division of Infection and Immunity, Cardiff University School of Medicine

T-cell receptors (TCRs) on conventional T-cells can successfully clear solid cancers in some patients but due to their human leukocyte antigen (HLA)-restriction any given TCR-T treatment is only applicable to a minority of patients. Fortunately, some cancer-specific TCRs are not HLA-restricted. We have been examining TCRs that recognise a wide range of cancers without requirement for a specific HLA. Do such TCRs provide hope for pan-cancer treatments in all patients?

11:15 MAIT T Cell Engagers: An Effective and Safer Modality for the Treatment of Solid Tumours

Simon Plyte, PhD, CSO, R&D, Biomunex Pharmaceuticals

Mucosal Associated Invariant T cells (MAITs) are an abundant, tissue/tumor resident, subset of cytotoxic non-conventional T cells. Bi-specific antibody-mediated redirection of MAIT cells leads to the elimination of cancer cells with a potency identical to that of classical CD3e T cell engagers. However, unlike CD3e engagers, MAIT engagers do not cause widespread cytokine release and regulatory T cell activation and afford a large therapeutic window, favouring treatment of solid tumors.

11:45 Targeting Dysregulated Metabolism of Tumours Using Affinity-Enhanced γ9δ2TCR Engineered T Cells and Bispecific T Cell Engagers

Dennis Beringer, PhD, Assistant Professor, Center of Translational Immunology, University Medical Center Utrecht

A wide range of tumour types can be recognized by γ9δ2T cells in *in vitro* experiments, however the low affinity of γ9δ2TCR for their tumour antigens, the phosphoantigen dependent BTN2A1-BTN3A complex, results in poor clinical outcomes. Using our γ9δ2TCR-antiCD3 TCE to screen for potency enhancing mutations resulted in affinity enhanced γ9δ2TCRs with significantly enhanced tumor control, both *in vitro* and *in vivo*, paving the way for next generation γ9δ2TCR-based immunotherapies.

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NEXT-GENERATION IMMUNOTHERAPIES

Improving Immunotherapy Safety & Efficacy

12:15 LUNCHEON PRESENTATION: Combining Primary, Secondary, and Tertiary Signals with Immune Cell Engagers to Supercharge Anti-Tumor Immunity

WuXi Biologics
Global Solution Provider

Jijie Gu, President of Global Biologics Research & CSO, WuXi Biologics

Tapping into the natural T cell activation pathways of TCRs, co-stim molecules, and cytokines, WuXi Biologics has developed 1) a clinical stage anti-CD3 antibody, whose binding kinetics balances remarkable efficacy with low cytokine release; 2) Co-stim engagers to overcome immune-suppression; and 3) cytokine muteins with improved PK and safety to sustainably expand the immune effector cell pool. With these complementary Immune Cell Engager platforms and pharmacology service excellence, we aim to enable clients to discover novel immune cell engagers with real clinical prospect

12:45 Luncheon in the Exhibit Hall with Last Chance for Poster Viewing

NEXT-GEN ANTIBODIES AND VACCINES FOR CANCER IMMUNOTHERAPIES

13:55 Chairperson's Remarks

Giuseppe Roscilli, PhD, CTO & Director, Drug Evaluation & Monoclonal Antibody, Takis Srl

14:00 Anti-TNFR2 for Cancer Immunotherapy

Björn L. Frendeus, PhD, CSO, BioInvent International AB

TNFR2 is a co-stimulatory receptor mediating pro- and anti-inflammatory activity in immune cells. This talk will discuss mechanisms by which anti-TNFR2 mAbs regress large inflamed tumours and synergize with anti-PD-1 to induce cures and robust antitumour CD8+ T cell immunity in syngeneic mouse tumour models. Compelling evidence that the first-in-class anti-TNFR2 mAb (BI-1808) can be safely administered and has single-agent anti-tumour activity in difficult-to-treat cancer, e.g., GIST, will also be shared.

14:30 Discovery of the IL-18 Receptor Antibody Agonist Biased to Immune Effector Cells

Melissa Geddie, PhD, Vice President Drug Discovery, Diagonal Therapeutics

While agonistic antibodies represent promising novel therapeutic avenues to treat human diseases, the lack of effective identification process has significantly hampered their discovery. Using the DIAGONAL platform comprising experimental and computational approaches, we generated bispecific agonist antibodies that activate IL-18 receptors directly, inducing IFN, while sparing myeloid cells, avoiding the tolerability issue associated with IL-18 and its muteins, thus offering an activity driven towards anti-tumour effects.

15:00 Optimisation of Neoantigen Targets for Shared and Personalised Anti-Cancer Vaccines

Michelle Krogsgaard, PhD, Associate Professor, Pathology and NYU Perlmutter Cancer Center, NYU Grossman School of Medicine and NYU Langone Health

Neoantigens are emerging as the main determinants of tumour immunogenicity and efficacy of immune checkpoint blockade, but their presence does not guarantee durable responses in patients with cancer. Here we developed a comprehensive structure-function approach to identify the main characteristics of neoantigens in melanoma and acute myeloid leukemia, originating from somatic mutations and from post-translational modifications, affecting the outcome of checkpoint blockade.

15:30 Interactive Breakout Discussions with Refreshments

Interactive Discussions are informal, moderated discussions, allowing participants to exchange ideas and experiences and develop future collaborations around a focused topic. Each discussion will be led by a facilitator who keeps the discussion on track and the group engaged. To get the most out of this format, please come prepared to share examples from your work, be a part of a collective, problem-solving session, and participate in active idea sharing.

TABLE 5: Personalized Neoantigen Vaccines - Challenges and Opportunities in Developing Truly Individualized Cancer Treatments

Michelle Krogsgaard, PhD, Associate Professor, Pathology and NYU Perlmutter Cancer Center, NYU Grossman School of Medicine and NYU Langone Health

IMMUNOCYTOKINES

16:10 Antibody-Cytokine Fusion Proteins for Cancer Therapy: Late-Stage Clinical Results

Dario Neri, PhD, CEO and CSO, Philogen; Professor, Chemistry and Applied Biosciences, ETH Zurich

Cytokines are proteins that are capable of potently modulating the activity of the immune system. The fusion of cytokines to tumour-homing antibodies has been shown to potently increase the therapeutic index of the cytokine payload in animal models of cancer. In this lecture, I will present examples of potent therapeutic activity mediated by certain antibody-cytokine fusions, developed by Philogen, which are now being studied in pivotal clinical trials

16:40 OSE-CYTOMASK: Cis-Demasking Cytokine Technology with Non-Cleavable Linker

Nicolas Poirier, PhD, CSO, OSE Immunotherapeutics

Masking cytokine technologies with enzymatic cleavable linkers allows activity on-demand at the right site but suffers from enzyme selectivity. Cis-delivery cytokine technologies allow redirection of activity on the right cells but require potent cytokine attenuation for optimal cell selectivity. OSE-Cytomask is a novel Cis-Demasking cytokine technology avoiding cytokine attenuation and cleavable linkers to unmask cytokines on-demand on selective immune cell subsets expressing the appropriate surface antigen.

2ND ANNUAL | BARCELONA, SPAIN

NEXT-GENERATION IMMUNOTHERAPIES

Improving Immunotherapy Safety & Efficacy

17:10 Protein Engineering Using Novel Chemical Methods to Access PD1-Based Immunocytokines

Arnaud Goepfert, PhD, Director, Protein Sciences, Bright Peak Therapeutics

Antibody-cytokine conjugates leverage orthogonal mechanisms-of-action (MoA) in one molecule to induce potent antitumour immune responses. At Bright Peak, we generate immunocytokines through site-specific chemical conjugation of cytokine to “off-the-shelf” human IgG antibodies. During the talk, I will focus on our PD-1-targeting conjugates and share compelling preclinical data supporting the future development of BPT567, a PD1-IL18 immunocytokine.

17:40 Close of PEGS Europe Summit

15TH ANNUAL | BARCELONA, SPAIN

OPTIMISATION AND DEVELOPABILITY

Improving Candidate Selection Leading to Clinical Success

TUESDAY 5 NOVEMBER

7:30 Registration and Morning Coffee

SCREENING AND ENGINEERING FOR DEVELOPABILITY AND BIOPHYSICAL PROPERTIES

8:25 Chairperson's Remarks

Mark Trautwein, PhD, Head of Immunoprofiling, Biologics Research, Bayer AG

8:30 Rationalising mAb Candidate Screening Using a Single Holistic Developability Parameter

David J. Brockwell, PhD, Professor, School of Molecular and Cellular Biology, University of Leeds

A framework for the rational selection of a minimal suite of non-degenerate developability assays (DAs) that maximise insight into candidate developability or storage stability is lacking. To address this, we have subjected a panel of test mAbs to a range of distinct DAs, and also assessed their long-term storage stability. We show that it is possible to identify a reduced set of key variables using orthogonal statistical methods.

9:00 Structure-Based Engineering of a Novel CD3e-Targeting Antibody for Reduced Polyreactivity

Michael B. Battles, PhD, Senior Scientist II, Adimab, LLC

Using insights from the structure of anti-Hu/Cy CD3 antibody ADI-26906 complexed with CD3-epsilon (CD3e) and engineering using a yeast-based platform, we derived high-affinity CD3 antibody variants with very low polyreactivity and significantly improved biophysical developability. Comparison with clinical CD3 antibodies (as part of bi or multispecifics) shows that affinity for CD3e is correlated with polyreactivity. Our engineered CD3 antibodies break this correlation, forming a broad affinity range with little polyreactivity.

9:30 De-Risking *in vivo* PK Attributes of Therapeutic Antibody Lead Panels Using High-Throughput *in vitro* Approaches as Part of Early Drug Discovery and Human Dose Prediction Strategy

Jennifer Drew, Principal Investigator, GlaxoSmithKline

Intrinsic biophysical properties can impact the pharmacokinetics of candidate therapeutic mAbs. We developed and embedded a high-throughput *in vitro* screen to test *in vivo* suitability of lead panels of candidate antibodies and this screen is now a critical piece of our new dose prediction strategy.

10:00 Blast through biologics screening with the right tools

UNCHAINED LABS

Andre Mueller, Market Mgr, Unchained Labs

Biologics are hugely popular and controlling their stability is a critical task. A recent focus on viscosity adds one more layer of complexity to formulation development. Unchained Labs' mission is to provide integrated solutions for finding out about quantity, quality, stability, and viscosity, while requiring small volumes and offering high throughputs. Join my talk to learn about our tailored solutions that help you blast through screening proteins, ADCs, and other biologics.

10:30 Grand Opening Coffee Break in the Exhibit Hall with Poster Viewing

OPTIMISING DEVEOPABILITY FOR MULTISPECIFICS AND ADCs

11:15 Assessing and Optimising Developability for Multispecifics and Antibody-Drug Conjugates

Andreas Evers, PhD, Associate Scientific Director, Antibody Discovery & Protein Engineering, Global Research & Development Discovery Technology, Merck Healthcare KGaA

Much progress has been made for the (developability) property prediction of antibodies using AI/ML methods, allowing the design of huge sets of sequences *in silico*. While these approaches are feasible for standard monospecific antibodies, they are often not applicable for more complex next-generation antibodies (including multispecifics and ADCs). This presentation will showcase lessons learned and specific applications of physico-chemical property prediction strategies to assess and even optimise bispecifics and ADCs.

11:45 A Developability Screening Cascade to Advance Multispecific Therapeutic Antibodies to the Clinic

Cyrille Dreyfus, PhD, Associate Director & Head, Antibody Engineering - Protein Sciences, Ichnos Glenmark Innovation

The flexible BEAT platform enables 5 or more functional modules to be combined into a single molecule. The biophysical properties of a complex multispecific immune-cell engager antibody can be quite different to the sum of its parts. Therefore, a developability screening cascade was developed starting from Fab or cytokine selection to multispecific lead candidate selection. This was applied to identify ISB2001, a CD3xBCMAxCD38 T cell engager now in the clinic.

12:15 LUNCHEON PRESENTATION: Speed up Antibody Variant Screening and Development for Faster, more Efficient Results.

cytiva

Julian Plaga, , Cytiva

Join our presentation on the emerging field of bispecific antibody therapeutics. Bispecific antibodies are a unique class of therapeutic proteins designed to target two different antigens or epitopes simultaneously. This dual-targeting ability enables bispecific antibodies to engage multiple pathways and precisely direct the immune system to specific targets, offering more effective treatments for

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complex diseases like cancer and autoimmune disorders. From discovery to clinical application, their development requires careful structural design and comprehensive functional assessment.

12:45 Luncheon in the Exhibit Hall with Poster Viewing

FROM COMPUTATIONAL TO MACHINE LEARNING APPROACHES

13:45 Chairperson's Remarks

David J. Brockwell, PhD, Professor, School of Molecular and Cellular Biology, University of Leeds

13:50 KEYNOTE PRESENTATION: Moving the Dial on Computational Antibody Design—Optimising beyond Affinity

Charlotte M. Deane, PhD, Professor, Structural Bioinformatics, Statistics, University of Oxford; Executive Chair, Engineering and Physical Sciences Research Council (EPSRC)

Antibodies are crucial to the immune system and vaccine response and have shown great promise as biotherapeutics. Computational methods, particularly machine learning, can increase the speed and reduce the cost of biotherapeutic development. In this talk I will describe novel computational tools and databases we are pioneering in biotherapeutics from accurate rapid structure prediction to the prediction of their properties, looking at both their promise and limitations.

14:20 Advancing Biotherapeutic Developability: Computational Strategies across Diverse Therapeutic Modalities

Goran Miličić, PhD, Senior Expert, Science & Technology, Novartis

Liability evaluation based on the 3D structures of biotherapeutics alone or in complex with their target provides critical insights. When experimental structural data are unavailable, computational modeling can aid in generating plausible structures. By combining these models with functional data, we can assess the criticality of the liabilities. Additionally, docking methods and other computational strategies can be employed for interface redesign, potentially enhancing stability and thereby improving development outcomes.

14:50 Molecular Stabilisation of Soluble TCRs for Enhanced Yield and Developability

Sarah Wehrle, PhD, Research Scientist, Engimmune Therapeutics

Native TCRs suffer from poor intrinsic stability when produced as soluble proteins. To increase their stability and recombinant expression yields, we developed a high-throughput platform, combining TCR yeast surface display with thermal cycling and deep sequencing followed by computational analysis. Using this approach, we were able to identify a minimal set of universal mutations that confer soluble TCRs with enhanced biophysical properties and expression yields in mammalian cells.

15:20 Comparing Potential Bispecific formats of Trastuzumab and a Humanized OKT3

Catherine Bladen, COO, Absolute Biotech

Not every antibody can be combined to produce well-behaved multi-specifics. The valency and geometry of each design can determine the production, target engagement and ultimately the requisite biological functions. In this case study, we selected two established antibody therapeutics, trastuzumab and a humanized OKT3 to produce 20 different bispecific formats to compare the feasibility of each format.

15:35 Talk Title to be Announced

Jannick Bendtsen, Head of PipeBio

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

16:35 Computational Tools to Enhance the Detection and Correcting of Antibody Imperfections

Christopher Sayer, Manager, Protein Engineering

Antibody imperfections can cause costly delays during clinical development. Motifs—such as glycosylation, isomerisation, and deamidation sites—have been routinely identified and removed during development by Abzena. However, additional considerations around overall surface chemistry must now be considered. Here, we present a new approach to the analysis and modification of surface chemistry with regards to overall charge and hydrophobicity. By managing these unfavorable properties, we can start to tailor characteristics like pK and viscosity—and to develop more clinically ready antibodies.

16:50 A novel toolbox of high throughput assays for early developability assessments in microplates

Sebastian Giehring, CEO, PAIA Biotech GmbH

PAIA Biotech has developed a portfolio of high throughput developability assay kits for its special microplate technology. This technology allows detection of the interaction of Mabs with beads carrying defined surface functionalization in a no-wash-assay format which is ideal to measure weak interactions. The technology is easy-to- automate and can replace slow techniques such as HIC, CEX and Heparin chromatography and ELISA-based polyreactivity assays.

17:05 *In silico* Developability for Biologics Drug Discovery

Isabelle Sermadiras, Associate Principal Scientist, AstraZeneca

With the rise of AI, Biologics drug discovery is evolving, opening up new possibilities for developability assessment. Our InSiDe (*in silico* developability) pipeline enables scoring of antibodies and nanobodies,

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facilitating the selection of more developable leads. We will introduce our "lab in the loop" strategy for developability, built on machine learning, high-throughput assays, and IT integration.

17:35 Functional and *in vivo* Validation of Next-Generation Antibodies Designed with a Machine Learning-Driven Synthetic Biology Platform

Noelle E Huskey Mullin, PhD, Principal Scientist, Translational Research, BigHat Biosciences

BigHat Biosciences has developed novel machine learning (ML) approaches that leverage our high speed, automated wet lab in order to rapidly and iteratively design over a thousand next generation therapeutic antibodies each week. Our algorithmic approach pairs with our automated wet lab to guide the search for better molecules by learning from each cycle of characterization across affinity, function, and developability measures of each antibody.

18:05 Beyond AI: Liquid Brain—How to Get Developability Insights in Minutes, Not Months!

ΛPOHΛ

Dr Shamit Shrivastava, Founder & CEO, Apoha

How much can you learn about an antibody with just 10 µg of material and a few minutes? Apoha's Liquid Brain combines novel principles of thermodynamics with advanced biophysics to generate multi-parameter data using an excitable substrate. This approach captures detailed biophysical properties from just 10 µg of material, offering early insights into developability risks. Our benchmark study of over 100 clinical-stage antibodies, demonstrates the Liquid Brain's ability to uncover insights beyond prevalent perspectives on screening. Join us to explore how this technology can enhance your early-stage antibody screening.

18:35 Welcome Reception in the Exhibit Hall with Poster Viewing

19:35 Close of Optimisation & Developability Conference

11TH ANNUAL | BARCELONA, SPAIN

ANALYTICAL CHARACTERISATION OF BIOTHERAPEUTICS

Expanding the Analytical Toolkit for New Modalities

WEDNESDAY 6 NOVEMBER

7:30 Registration and Morning Coffee

TECHNOLOGICAL ADVANCES AND INSIGHTS

8:25 Chairperson's Remarks

Hristo Svilenov, PhD, Associate Professor, TUM

8:30 Insights from MAM Implementation at Roche/Genentech

Alexander Buettner, PhD, Senior Scientist, Pharma Technical Development, Roche

The multi-attribute method (MAM) is gaining popularity in the analysis of biopharmaceuticals as it has the potential to replace traditional methods and address gaps in control systems. Roche/Genentech is currently implementing MAM for quality control, and the presentation will provide valuable insights, address challenges, and offer solutions related to IT system and instrumentation preparation, method development, suitability assessment, and validation.

9:00 Polarised Excitation Emission Matrix (pEEM) Spectroscopy for the Rapid, Non-Destructive Analysis of Biological Drug Product and Drug Substances

Alan G. Ryder, PhD, Professor, Nanoscale Biophotonics Laboratory, University of Galway

Polarised Excitation-Emission Matrix (pEEM) spectroscopy provides a detailed, informative, non-destructive measurement of proteins in solution. pEEM is a 4D measurement where polarisation provides information about particle content, protein size, and mobility. Parallel and perpendicular polarised EEMs can provide more sensitive monitoring of particle content or protein structure changes respectively. Here we discuss some examples such as protein conjugation (e.g., ADCs), liposome analysis, and mAb quality testing.

9:30 KEYNOTE PRESENTATION: Microheterogeneity Assessment of Biopharmaceuticals Using an Orbitrap Tribrid Mass Spectrometer

Jonathan Bones, PhD, Principal Investigator, Characterisation and Comparability Laboratory, National Institute for Bioprocessing Research and Training (NIBRT)

A concern with peptide-based characterisation strategies is the risk of sample preparation-induced modifications. Although it is possible to mitigate this risk through careful selection of sample preparation approaches, an alternative method is the use of intact mass analysis using ion activation and fragmentation using various methods to generate information-rich mass spectra. Here, we apply intact top-down LC-MS for the analysis of mAbs, bispecific antibodies, and Fc fusion proteins.

10:00 Single B Cell Antibody Discovery with Early Antibody Affinity Ranking

BRUKER

Tiago Santos, , BLI Europe International, LTD

A key challenge in antibody discovery is the restricted number of candidates assessed, due to throughput and cost of kinetics characterization. We will showcase how Bruker Cellular Analysis' Beacon platform enables same-day relative affinity ranking for every antigen-specific hit detected during single B cell screening, improving hit prioritization and data quality going into lead optimization. We'll also preview a new feature for screening camelid memory B cells for heavy chain-only antibodies.

10:30 Coffee Break in the Exhibit Hall with Poster Viewing

DATA INTEGRATION IN BIOTHERAPEUTICS ANALYTICS

11:15 Merging Automated Chromatographic Peak Fractionation with in-Depth Chemical and Biologic Characterisation in Biopharmaceutical Development—Case Studies and Lessons Learned

Dan Bach Kristensen, PhD, Scientific Director, Symphogen

A key objective for the analytical control strategy in biopharmaceutical development is to map product variants with altered safety and efficacy profiles. Here, learnings from the implementation of automated LC peak fractionation combined with chemical and biological characterisation workflows will be illustrated through case studies. Robustness, flexibility, and the ability to combine any LC separation technique with any characterisation workflow, including intact mass analysis and peptide mapping, will be discussed.

11:45 Benefits of Utilizing Lab Automation in Biologics Formulation Development, Lessons Learned After 10 Years

Michael Siedler, PhD, Section Head, NBE Formulation Sciences & Process Development, Abbvie Deutschland GmbH & Co. KG

Abbvie celebrates the 10th years anniversary of our high-throughput formulation development approach this year by expanding our capabilities and getting ready for the next decade. This presentation will provide a comprehensive overview of the advantages and difficulties in utilizing such an approach and how it is intertwined with some of the current trends in using AI.

12:15 LUNCHEON PRESENTATION: Connectivity in Analytical Characterization of Biotherapeutics with Streamlined LC-MS and MALS Workflows

Waters™

Nick Pittman, Global Marketing Mgr, Waters UK Ltd

Developing safe, efficacious biotherapeutics requires robust analytical measurement. LC-MS & multi-angle light scattering (MALS) are established tools for characterization & monitoring.
LC-MS generates structural data, giving insight to attributes throughout development & manufacture. MALS determines the size, aggregation, & conformation state of therapeutics. With digital integration of LC, it is ready to support work in regulated & non-regulated labs.

ANALYTICAL CHARACTERISATION OF BIOTHERAPEUTICS

Expanding the Analytical Toolkit for New Modalities

Both techniques enhance selectivity, resolution, & throughput, aiding analysis, with compliance-ready connectivity.

12:45 Luncheon in the Exhibit Hall with Poster Viewing

CHARACTERISATION OF NOVEL BIOTHERAPEUTICS

13:45 Chairperson's Remarks

Dan Bach Kristensen, PhD, Scientific Director, Symphogen

13:50 Analytical Characterisation in ADC Discovery: Challenges & Approaches

Elizabeth Love, PhD, Scientific Leader, Antibody Drug Conjugate Platform, GSK

Antibody-drug conjugates (ADCs) are inherently complex molecules which can be generated using a diverse range of payloads, linkers, and antibodies. Furthermore, established conjugation methodologies often result in heterogeneity with a distribution of species being observed. Analytical platform methods must therefore be flexible to accommodate a variety of molecules. Here, we consider ADC-specific critical quality attributes, analytical methods we employ for their determination, and our characterisation strategy in ADC discovery.

14:20 Using Biophysics for Characterisation of Novel Modes of Action and Modalities

David Moreno Delgado, Director Discovery Sciences, Galapagos NV

Recently, classical but also novel biophysical technologies have evolved to enable characterisation of covalent, complex protein-protein, or even cell-protein interactions. New modalities' expansion within the last years have strongly complexified hit characterisation and validation. The detection of some interactions has technical challenges, high residence time, protein-protein interaction, and conformational changes. Here, we will present some case studies containing technological proposals to solve these kinds of phenomena.

14:50 Rapid Kinetics Assessment Direct in Lysates, Pasma, or Blood

FOx BIOSYSTEMS

Kris Ver Donck, VP Marketing & Applications, FOx BIOSYSTEMS

Kinetic affinity analysis of biologicals directly in crude samples like cell lysates, plasma or blood can not only help you save resources on assay sample prep, but enhances early-stage drug discovery. The dip-in fiber-optic sensing method of WHITE FOx is designed for rapid and flexible real-time measurements across a range of sample types form single domain antibodies to VLP, exosomes and cells. It is easy to use and accessible at your own bench as demonstrated by use cases.

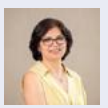
15:05 Greet Your Neighbours

15:20 Transition to Plenary Keynote Session

PLENARY DEEP DIVE

15:30 Chairperson's Remarks

Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio



15:35 Immunotherapy Highlights

Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb

15:45 Multispecific Antibody Highlights

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd

15:55 ADC Highlights

Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

PLENARY PANEL

ANALYTICAL CHARACTERISATION OF BIOTHERAPEUTICS

Expanding the Analytical Toolkit for New Modalities

16:05 Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations




Moderator: Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio

In the past, the field of therapeutic antibodies was dominated by monoclonal antibodies. Similarly, today, antibody combinations have been approved and numerous antibody-based therapies are combined in clinical trials. In the Plenary Fireside Chat "Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations," renowned experts in the field will discuss major breakthroughs and how the field will evolve in the years to come.

Panelists:

Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd

Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

16:35 Refreshment Break in the Exhibit Hall with Poster Viewing

CHARACTERISATION OF NOVEL BIOTHERAPEUTICS *(CONT.)*

17:15 Streamline antibody characterization in just 1-minute with Mass Photometry

Racha Majed, Technical Sales Specialist, Refeyn Ltd

Mass photometry is a single-molecule analytical technology that measures the masses of biomolecules in their native states, in solution. The Two MP mass photometer is an easy-to-use instrument that can measure masses of biomolecules between 30 kDa and 5 MDa and requires minimal sample for analysis. In this talk, we demonstrate the utility of the Two MP in a variety of contexts, including assessing sample quality of various antibodies modalities (mAbs, ADCs, Bispecifics), monitoring antibody-antigen interactions and much more.

17:45 Stability Convergence in Natural Antibodies with Ultra-Long Hypervariable Loops

Hristo Svilenov, PhD, Associate Professor, TUM

During this presentation, I will share our latest work on antibodies with ultra-long complementarity-determining regions (ulCDRs). We applied an array of orthogonal analytical techniques to explain a remarkable structural and stability conservation in antibodies that share the same framework but have very different ulCDRs and antigen specificity. The presentation is aimed at an audience interested in advanced analytical characterisation of antibodies and new therapeutic antibody modalities.

18:15 Development of Assay-Evaluating LINC Format of LINC-Ig

Shusuke Nambu, PhD, Analytical Development Department, Chugai Pharmaceutical Co. Ltd.

LINC-Ig, which has an extra disulfide bond between two CH1 domains of each heavy chain, is a unique molecule designed by Chugai. LINC format is functionally important to decrease toxicity and formed in a manufacturing process on purpose, therefore the analytical method is required as a QC test. An enzymatic activity specific for LINC format was discovered in the development of the analytical method.

18:45 Comparison of Biosimilars and Innovative Biologics from an Analytical Perspective

Sasa Vrhovec Hartman, PhD, Senior Expert, Science & Technology R&D, Novartis

Analytics represents a fundamental pillar in the development of biosimilars and innovative biologics. Although they are both biopharmaceuticals, the analytical strategies differ in terms of purpose, scope, analytical methods, and timelines. With extensive experience in developing both types of biologics, Novartis has recently shifted its focus entirely toward innovative medicine. This presentation highlights the critical distinctions between biosimilars and innovative biologics, emphasising scientific and organisational aspects of analytical development.

19:15 The Full Spectrum of Particle and Biophysical Analysis with Aura+

Paul Dyer, Field Application Scientist, Halo Labs

From the sub-visible to the visible, Aura+ particle analyzer not only provides the opportunity to count and size particles, but identify their origin and presence. So whether it is to determine particles within a protein, gene, or cell therapy, or a traditional small drug therapy, Aura+ can provide the solution all in a low-volume, high-throughput 96-well assay. With the recent addition of large volume capability (0.5mL) Aura+ can now provide a solution for product release assay. In this presentation, new data evaluating these capabilities will be presented.

19:45 Close of Analytical Characterisation of Biotherapeutics Conference

11TH ANNUAL | BARCELONA, SPAIN

PROTEIN STABILITY & FORMULATION

Improving Efficacy and Mitigating Immunogenicity Risks

THURSDAY 7 NOVEMBER

7:30 Registration and Morning Coffee

AGGREGATION & STABILITY PREDICTIONS

8:25 Chairperson's Remarks

Anette Henriksen, PhD, Principal Scientist, Biophysics and Injectable Formulation, Novo Nordisk AS

8:30 Aggrescan4D: Structure-Informed Analysis of pH-Dependent Protein Aggregation

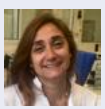
Salvador Ventura, PhD, Full Professor, Biochemistry and Molecular Biology, Autonomous University of Barcelona

Protein aggregation impacts industrial protein production and formulation. Aggrescan3D (A3D) was developed to aid in understanding and engineering aggregation in globular proteins, becoming one of the most employed structure-based predictors of aggregation to assist in aggregation study and protein redesign. Here we present Aggrescan4D (A4D), which largely extends A3D's functionality by incorporating pH-dependent aggregation prediction, and an evolutionary-informed automatic mutation protocol to engineer protein solubility.

9:00 A Universal Tool for Stability Predictions of Biotherapeutics

Heloise Quillay, PhD, Principal Scientist and Team Leader, Early CMC Analytics, Sanofi

A key aspect of pharmaceutical development is to guarantee the stability of products during long-term storage and shipment. Advance kinetic modeling (AKM) is relying on short-term accelerated stability studies to generate Arrhenius-based kinetic models that can be used for stability forecasts. The AKM methodology was evaluated on key stability indicating attributes of different types of biotherapeutics and was demonstrated to be a universal and reliable tool for stability predictions.



9:30 KEYNOTE PRESENTATION: Role of Aggregation in Therapeutic Antibodies Immunogenicity: Initiation of Innate and Specific Immune Responses

Isabelle Turbica, PhD, Associate Professor, Biotechnology, School of Pharmacy, Paris-Saclay University, France

Immunogenicity due to aggregation of therapeutic antibodies represent a significant challenge. Our studies highlight the importance of evaluating the immune effect of nano-sized aggregates, as they can increase the probability of recruiting aggregate-recognizing CD4 T-cells. We present *in vitro* cell-based models for the assessment of aggregates immunogenicity, that can help in the screening of antibodies under development, but also gain insights into the cellular mechanisms of aggregates uptake.

10:00 Coffee Break in the Exhibit Hall with Poster Viewing

HIGH CONCENTRATION ANTIBODY FORMULATIONS

10:45 Real-Time Stability Screening of High-Concentration Antibody Formulations at Liquid Interfaces in a Microfluidic Device

Dominik Zürcher, Researcher, Biochemical Engineering, ETH Zurich, Switzerland

The interfacial aggregation of biologics poses significant challenges in drug development and delivery, enhanced by the need for high-concentration formulations. We present a microfluidic platform capable of capturing in real time protein particle formation upon application of an oil-water interface. We apply the device to analyse high-concentration protein solutions and design stabilisation strategies against interfacial aggregation beyond traditional surfactants.

11:15 Evaluating High-Concentration Solution Dynamics of Therapeutic Proteins in Biologics Research and Development

Benjamin Weiche, PhD, Senior Scientist, Large Molecule Research, Biochemical & Analytical Research, Roche Innovation Center Munich

Predicting the behavior of proteins at high concentrations and the associated risks like high viscosity or aggregation remains challenging - especially with growing complexity in molecular designs. We will present an early screening and selection process based on high throughput, low mass requiring assays that allows us to assess critical solution parameters and predict developability risks early in drug discovery and over a range of different molecule formats.

11:45 Design of a Microfluidic Platform to Study the Stability of Therapeutic Protein Formulations

Osvaldo Bortone, PhD, Associate Scientist, Global Drug Product Development, Merck Serono S.A.

Therapeutic protein formulations (TPFs) can face stability challenges due to external physical factors (e.g., heat or mechanical stress). A full understanding of formulation instability behaviour is limited by batchwise approaches that fail to replicate real-life stressors. An automated microfluidic platform is developed to analyze TPF stability under various stresses, revealing insights into molecular colloidal and structural changes. This can help improve formulation strategies to boost clinical outcomes and patient satisfaction.

12:15 LUNCHEON PRESENTATION: Advancing Protein Thermal and Colloidal Stability Analyses: Unlocking Deeper Insights with Multiplexing Optical Methods

Werner Streicher, CSO, NanoTemper Technologies GmbH

Understanding the thermal and colloidal stability of biotherapeutics is crucial during protein engineering, candidate selection, and developability. The Prometheus Panta offers precise, label-free biophysical characterization, using multiplex optical measurements to provide a comprehensive stability profile

PROTEIN STABILITY & FORMULATION

Improving Efficacy and Mitigating Immunogenicity Risks

under a range of conditions. Whether analyzing MAbs, ADCs, or peptides, the Prometheus Panta offers a powerful, all-in-one solution for protein stability research, particularly in the areas of Developability and pre-formulation.

12:45 Luncheon in the Exhibit Hall with Last Chance for Poster Viewing

EXCIPIENTS AND IMPACT ON STABILITY

13:55 Chairperson's Remarks

Heloise Quillay, PhD, Principal Scientist and Team Leader, Early CMC Analytics, Sanofi

14:00 The Protein-Stabilising Capability of Surfactants against Agitation- and Surface-Induced Stresses

Supriyadi Hafiz, Senior Scientist, Liquid Formulation R&D, Merck Life Science KGaA

The application of surfactants, mainly polysorbates, is a common practice to prevent surface- or agitation-induced protein aggregation in liquid formulation. However, polysorbates, despite their common application, bring along disadvantages including chemical and enzymatic instability. This presentation will provide an overview of the protein stabilising capability of surfactants against agitation- and interface-induced stresses and corresponding assays for its evaluation. Furthermore, a focus is set to alternative surfactants suitable to replace polysorbates.

14:30 PS80 Oxidation Case Study: Impact of Tubing Material on Stability and Filling Accuracy of Biologic Drug Product

Heloise Audat, Head, Formulation and Development Laboratory, Biologics Drug Product Development, Sanofi

Laetitia Poumarede, Drug Product Process Development Engineer, Sanofi

We present Polysorbate 80 (PS80) oxidation in biologics drug product when exposed to long contact time (~ 1 h) in platinum-cured silicon tubing during the filling; phenomenon observed in presence of iron traces, but not in absence of iron or in presence of a chelator. Alternative filling sets made of ThermoPlastic Elastomer (TPE) showed no PS80 degradation but bad filing capabilities. Remediation plan will be proposed.

15:00 Understanding the Behaviour of Endotoxin in Pharmaceutical Formulations to Prevent Drug-Induced Septic Shock in Patients

Amy Gorman, PhD Student, Chemistry, University of Manchester

The presence of endotoxin must be reliably detected in pharmaceutical formulations to ensure patient safety and reduce the risk of drug-induced septic shock. However, recent phenomena have demonstrated that particular formulation excipients, over time, can mask endotoxin from gold-standard detection assays (i.e., LAL assays). The current work presents recent data that aims to identify the underlying mechanism of masking.

15:30 Interactive Breakout Discussions with Refreshments

Interactive Discussions are informal, moderated discussions, allowing participants to exchange ideas and experiences and develop future collaborations around a focused topic. Each discussion will be led by a facilitator who keeps the discussion on track and the group engaged. To get the most out of this format, please come prepared to share examples from your work, be a part of a collective, problem-solving session, and participate in active idea sharing.

TABLE 6: Strategies for Improving Protein Stability During DP Processes

Heloise Audat, Head, Formulation and Development Laboratory, Biologics Drug Product Development, Sanofi

Laetitia Poumarede, Drug Product Process Development Engineer, Sanofi

- How far formulation and DP processes are interdependant?
- Exploring the formulation-process interactions all along the DP process form the thawing, mixing, filtration to the filling, lyophilization, and even up to the patient administration.

TABLE 7: AI/Machine Learning Approaches for Formulation Development

Laila Sakhnini, PhD, Senior Research Scientist, Biophysics & Injectable Formulation, Novo Nordisk AS

AUTOMATION AND IN SILICO MODELLING FOR FORMULATION DEVELOPMENT

16:10 *In silico* Formulation Development for Protein-Based Therapeutics

Giuseppe L. Licari, PhD, Lead Scientist, Computational Structural Biology, Global Drug Product Development—BDC, Merck Serono SA

Advances in molecular format complexity and the need for higher protein concentrations in biotherapeutics present significant formulation challenges. Our *in silico* pipeline streamlines the development of stable liquid formulations, saving time and cost. By employing physics-based simulations, we predict protein behaviour in diverse conditions, facilitating the pre-selection of optimal excipients and conditions for specific active pharmaceutical ingredients, thereby enhancing the success of formulation development.

16:40 Learning from the Past: Use of *in silico* Models to Predict Physico-Chemical Profiles of Biotherapeutics

Kannan Sankar, PhD, Senior Expert I, Data Science & Bioinformatics, Novartis Institutes for Biomedical Research Inc.

Computational approaches have gained popularity over the last decade for the screening of biologics molecules. We will present how *in silico* models trained on legacy data using sequence, structure, and/or deep learning derived features perform at predicting various physicochemical properties of candidates and how these help in improving the overall quality of the biotherapeutic pipeline.

17:10 Close of PEGS Europe Summit

7TH ANNUAL | BARCELONA, SPAIN

USING DATA SCIENCE TO MAXIMISE PROTEIN PRODUCTION

Advancing the Protein Expression and Production Toolbox

TUESDAY 5 NOVEMBER

7:30 Registration and Morning Coffee

LEVERAGING DATA AND MODELS TO KNOW YOUR PROTEIN

8:25 Chairperson's Remarks

Rivka Isaacson, PhD, Professor of Molecular Biophysics, Department of Chemistry, King's College London

8:30 FEATURED PRESENTATION: Target 2035: The Goal to Develop a Pharmacological Modulator for Every Human Protein

Nicola Burgess-Brown, PhD, COO and Consultant, Protein Sciences, Structural Genomics Consortium; Visiting Scientist, University College London

The SGC, a global public-private partnership, uncovers novel human biology through structural genomics and chemical biology approaches. Target 2035 aims to develop tool molecules for every human protein by creating massive open datasets of high-quality protein-small molecule binding data, using DNA-encoded libraries and affinity selection mass spectrometry platforms. Models built from these data will allow prediction of new and more drug-like small molecule binders, which will be tested experimentally.

9:00 Picking the Right Proteins: Model-Derived Physicochemical Properties Can Predict Behaviour of Proteins *in Vivo*

Christopher Wood, PhD, Lecturer in Biotechnology, School of Biological Sciences, University of Edinburgh

In recent years, there have been huge advances in protein structure prediction methods, which have given us access to vast amounts of highly accurate structural data for previously intractable targets. We have found that properties derived from these models can be used to identify antibody designs that were highly produced in cells and discovered systematic variations in the properties of proteins that might have implications for protein engineering and design.

9:30 Product-Specific Solutions: Unlocking the Potential of Synthetic Signal Peptides

Adam J. Brown, PhD, CTO, SynGenSys Ltd.; Associate Professor, Chemical & Biological Engineering, University of Sheffield

Selection and/or design of signal peptide components is complicated by their product-specific functionality. This talk will introduce our signal peptide design platform, which can forward engineer-optimised, synthetic solutions for any new protein of interest. Underpinned by data from a wide range of cellular and molecular contexts, this tool enables precise, predictable control of product translocation rates, facilitating significant increases in recombinant protein titers.

10:00 From Screening to Large-Scale Purification: Versatility of Strep-TactinXT Magnetic Beads

Fabian Mohr, Chief Scientific Officer, IBA Lifesciences

MagStrep beads address the evolving laborious and time-consuming change challenges in protein purification by enabling a rapid and efficient purification process that also makes automation and scalability feasible. With their high binding capacity and specificity, these beads ensure superior purity and yield. MagStrep Beads are a cutting-edge solution, providing unmatched efficiency, convenience, and performance in protein purification.

10:15 Selected Poster Presentation: Optimizing a Mammalian Cell-Free Expression System Using Design of Experiments

Maximilian Goertz, Graduate Student, Biology, RWTH Aachen University

Cell-free expression (CFE) platforms with an eukaryotic origin commonly suffer from low protein yield. The performance relies on the function of numerous enzymes involved in the molecular pathways of protein synthesis. We describe the development and optimisation of a Chinese hamster ovary cell (CHO) derived CFE system. The optimised CFE system reaches the yields of commercially available HeLa based lysates and represents a considerable advancement in CHO cell-based lysate systems.

10:30 Grand Opening Coffee Break in the Exhibit Hall with Poster Viewing

APPLYING DATA SCIENCE FOR CONSTRUCT DESIGN

11:15 Bioinformatics and AI Approaches in Construct Design towards Soluble (and Crystallisable) Proteins

Christopher Cooper, PhD, Director and Head of Protein Sciences, CHARM Therapeutics

Construct design towards soluble protein fragments for biochemical, biophysical, and structural analyses has been greatly facilitated by algorithms predicting features such as domains, disorder, and secondary elements. The recent advent of AI tools such as AlphaFold2, however, has transformed *in silico* structural biology. Here we present practical tips for using bioinformatics and AI tools in construct design to help users improve the likelihood of obtaining functional proteins for their needs.

11:45 Biophysical Characterisation of Proteostasis Machinery

Rivka Isaacson, PhD, Professor of Molecular Biophysics, Department of Chemistry, King's College London

Within the crowded environment of the cell, quality control machinery is vital for correct spatial and temporal protein distribution. I will discuss the optimisation of design and production for a variety of protein constructs that have allowed us to investigate these mechanisms and understand some of their roles in health and disease.

12:15 Attend Concurrent Track

12:45 Luncheon in the Exhibit Hall with Poster Viewing

7TH ANNUAL | BARCELONA, SPAIN

USING DATA SCIENCE TO MAXIMISE PROTEIN PRODUCTION

Advancing the Protein Expression and Production Toolbox

APPLYING DATA SCIENCE TO ENHANCE PROTEIN EXPRESSION AND PRODUCTION

13:45 Chairperson's Remarks

Nicola Burgess-Brown, PhD, COO and Consultant, Protein Sciences, Structural Genomics Consortium; Visiting Scientist, University College London

13:50 Using Machine Learning to Predict Recombinant Protein Expression

Bradley Peter, PhD, Senior Research Scientist, Protein, Structure & Biophysics, AstraZeneca R&D

Identification of domain boundaries for optimal expression of proteins is essential for early drug discovery. We have developed and implemented a machine learning model to predict protein expression. The model was coupled to an *in silico* screening procedure that systematically designs and assesses thousands of constructs in a high-throughput manner. We will share how this is being used within our protein production platforms at AstraZeneca and some of the challenges faced.

14:20 Co-Presentation: A Deep-Learning Approach to Predict Optical Density at 600 Nanometers

Giovanna Scaramuzzino, Software Technical Department Engineer, HSG Engineering

Riccardo Vannacci, Managing Director, Operation, HSG Engineering

Optimising production of recombinant proteins is challenging due to the interaction of many process parameters. Expensive and time-consuming multivariable experiments are necessary to study the relationships between process variables. Therefore, in our work, we explore a deep-learning approach using recurrent neural networks to predict both real-time optical density at 600 nanometers (OD600nm—a key indicator of protein production) values.

14:50 Leveraging Heterogenous Datasets for Modelling Recombinant Protein Production

Evgeny Tankhilevich, Scientist, Andrew Leach Group, Chemical Biology Services, EMBL EBI

We have developed a machine learning model to predict recombinant protein expression, using a combination of in-house experiment results and publicly available data sets from SGC. Heterogeneity of these data sets presented a challenge during model development. Using a tailored model architecture and training algorithm has yielded an improvement in Area Under ROC Curve of X%. The model was experimentally validated on a carefully selected set of proteins.

15:20 Engineering mAb-Like Molecules From Leads to Drugs

ATUM

Claes Gustafsson, Chief Commercial Officer & Co Founder, ATUM

The classic drug development funnel for mAb-like protein therapeutics starts with thousands of binders derived from a discovery engine, and each subsequent developability assay reduces the lead pipeline until only a handful winners (hopefully) are left standing. Instead, ATUM's developability engineering approach relies on utilizing information-rich multidimensional testing of a modest number of lead variants. Systematic design of the variants enable the identification and characterization of causal vs simply correlating sequence-function information. The resulting data not only dictates the 'best' solution in the searched space, but also provides boundaries for developability attributes.

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

16:35 Employing Machine Learning for Cell Culture Optimisation

Bei-Wen Ying, PhD, Associate Professor, Life & Environmental Sciences, University of Tsukuba

Machine learning (ML) is an emerging technology with practical applications in improving cell culture in biotechnology such as protein production. Our research delves into the integration of ML techniques to enhance cell culture, demonstrating that ML can efficiently optimise culture media for bacterial or mammalian cells to increase cell growth and production. These success stories serve as compelling evidence of ML's potential to drive innovation in industry and research.

17:05 Optimizing Expression of Complex Proteins using Shallow and Deep Learning Approaches

eleva

Benjamin Fode, eleva GmbH

To predict optimal expression conditions, we adapted a miniaturized screening platform based on transient expression in a microtiter plate format. Using this platform, we screened for optimal combinations of regulatory elements in a design-of-experiments model. Moreover, set-up of a convolutional layer-based neural network for the moss-based production process enabled prediction of protein expression and comparison of such predictions with the transient expression data.

17:35 PANEL DISCUSSION: Speaking the Same Language: Insights from Protein and Data Scientists

Moderator: Nicola Burgess-Brown, PhD, COO and Consultant, Protein Sciences, Structural Genomics Consortium; Visiting Scientist, University College London

- Can we enhance protein production using machine learning?
- What are the main challenges?
- What data to capture, in what format, and for what purpose?
- How do we simplify data capture to encourage data entry and consistency?
- How do we reduce the need to curate, "clean up" the data before applying ML?
- What is enough data for protein production to apply ML algorithms?
- The importance of including negative data!

Panelists:

Christopher Cooper, PhD, Director and Head of Protein Sciences, CHARM Therapeutics

Peter Schmidt, Director Protein Biochemistry, CSL Research, Melbourne, Australia

Evgeny Tankhilevich, Scientist, Andrew Leach Group, Chemical Biology Services, EMBL EBI

Bei-Wen Ying, PhD, Associate Professor, Life & Environmental Sciences, University of Tsukuba

7TH ANNUAL | BARCELONA, SPAIN

USING DATA SCIENCE TO MAXIMISE PROTEIN PRODUCTION

Advancing the Protein Expression and Production Toolbox

18:35 Welcome Reception in the Exhibit Hall with Poster Viewing

19:35 Close of Using Data Science to Maximise Protein Production Conference

17TH ANNUAL | BARCELONA, SPAIN

OPTIMISING EXPRESSION PLATFORMS Employing Cell Factories for the Enhanced Production of Recombinant Proteins

WEDNESDAY 6 NOVEMBER

7:30 Registration and Morning Coffee

SELECTING, ENGINEERING, AND OPTIMISING HOSTS AND EXPRESSION PLATFORMS

8:25 Chairperson's Remarks

David Ausländer, PhD, Associate Director & Group Head, Biologics Research Center, Novartis AG

8:30 FEATURED PRESENTATION: Optimisation Step 1—Choosing a Suitable Gene Expression System for Your Recombinant Protein Production

Nick Berrow, PhD, Manager, Protein Expression Core Facility, Institute for Research in Biomedicine IRB Barcelona, Barcelona Institute of Science and Technology (BIST)

Producing recombinant proteins allows researchers to control the costs, availability, and quality of the reagents used in their experiments. However, the expression system that is most widely used in the local environment is often the first system of choice, without regard to its suitability for particular proteins. Here we evaluate the key characteristics of the most commonly used systems to enable researchers to choose the most appropriate for their proteins.

9:00 Non-Canonical Amino Acid Integration in Mammalian Cells with Genomically Integrated Genetic Code Expansion Machinery

Birthe Meineke, PhD, Project Leader, SciLifeLab

We have developed a modular toolbox for genetic code expansion in mammalian cells. With noncanonical amino acids as synthetic building blocks in protein expression, we have applied these tools for dual-color live cell fluorescence labeling. We generate cell lines for efficient expression of noncanonical amino acid labeled proteins, an approach with great potential for protein engineering beyond the standard genetic code.

9:30 Tailor-Made CHO Manufacturing Cell Lines Using Artificial Intronic miRNAs

David Ausländer, PhD, Associate Director & Group Head, Biologics Research Center, Novartis AG

During biomanufacturing, unwanted host cell protein (HCP) expression can affect both yield and quality of drug substances. Our newly developed artificial intronic miRNA technology allows for targeted gene silencing, significantly reducing HCP contamination. This technology facilitates the creation of complex miRNA clusters, enabling simultaneous knockdown of multiple genes. This versatile approach enables one-step cell-line development and engineering and presents a robust solution to various technical development challenges.

10:00 Accelerating Drug Discovery: Rapid Expression of a Soluble and Active Transcription Factor containing an Intrinsic Disordered Region

Manoj Saxena, PhD, University of London

The expression and purification of proteins with intrinsically disordered regions (IDRs) pose significant challenges in drug discovery, often leading to aggregation. This case study examines IDR-containing Homeobox transcription factors (TFs) to illustrate how advancements in digital microfluidics and cell-free technology enable the rapid identification of optimal conditions for producing active, soluble proteins. These TFs play a key role in tissue development and differentiation, therefore this work lays the foundation for future studies investigating the role of TFs in gene regulation.

10:30 Coffee Break in the Exhibit Hall with Poster Viewing

ADVANCING EXPRESSION AND PRODUCTION OF ANTIBODIES

11:15 Mammalian Expression of Difficult-to-Express Proteins: Insights into BiTE Molecule Production Bottlenecks

Benedikt Greck, Graduate Student, Large Molecular Discovery & Research Data Science, Amgen Research Munich GmbH

Recombinant protein expression is a highly regulated process consisting of transcription, translation, and protein folding. CHO-based expression often stays challenging for artificial therapeutic proteins, like Bispecific T cell Engagers (BiTE), due to reduced productivity compared to mAbs. Investigation of relevant protein production steps unveiled the transcription rate as a root cause. Therefore, we demonstrate quantitative *in vitro* transcription as a powerful and evolving method for further exploration of this bottleneck.

11:45 Customisable Protein Expression

Marina Fedorova, PhD, Scientific Investigator, Protein and Cellular Science, GSK

Drug discovery faces a rising number of projects that demand the generation of cellular reagents with controlled or lower target protein expression. Here, we have tested and optimised several techniques that can be utilised to tune protein expression: stop codon suppression methods, an addition of IRES elements prior to the target sequence, and a panel of weak promoters and construct modifications. These methods can be combined and applied widely.

12:15 LUNCHEON PRESENTATION: Engineering T-cell engagers with complete killing selectivity through the closed-loop integration of ML and high-throughput experimentation

James Field, PhD, CEO, LabGenius

T-cell engagers (TCEs) promise breakthroughs in the treatment of solid tumours but their progression in the clinic has been limited by on-target, off-tumour toxicity. In this talk, we describe how LabGenius' platform combines high-throughput cell-based functional assays with ML to identify highly potent TCEs

OPTIMISING EXPRESSION PLATFORMS Employing Cell Factories for the Enhanced Production of Recombinant Proteins

with switch-like killing selectivity for tumour cells. We also highlight how GenScript has supported LabGenius' lead discovery process via the expression of mono-VHH parts that feed into the company's lead optimisation platform.

12:45 Luncheon in the Exhibit Hall with Poster Viewing

CHO CELL LINE ENGINEERING & DEVELOPMENT

13:45 Chairperson's Remarks

Bjørn Voldborg, MSc, Head, National Biologics Facility, DTU Bioengineering, Technical University of Denmark

13:50 Streamlining CHO Clone Characterisation Workflows: Omics Signatures of Multispecific Antibodies Mispairing

Patrícia Gomes-Alves, PhD, Lab Head, Animal Cell Technology Unit, Instituto de Biologia Experimental Tecnologica (iBET)

Multispecific antibodies have therapeutic potential for various conditions. However, during production, incorrect chain assembly and co-production of mispaired species impair biological activity. Omics analyses of CHO clones producing trispecific antibodies revealed that high mispairing clones experience ER stress, while low mispairing clones exhibit profiles indicative of activated protein translation, enhanced endocytosis, and target protein degradation. A panel of biomarker genes was tested for detecting high mispairing during early bioprocess development.

14:20 Harnessing the Power of dPCR and NGS-Based Tools for Advanced Genetic Screening in Cell-Line Development

Daniel Heinzelmann, Process Expert, Cell Line Development, Boehringer Ingelheim Pharma GmbH & Co. KG

The development of multispecific and asymmetric antibodies often requires the simultaneous expression of two or more polypeptide chains. Moreover, such molecules can be challenging to express and assemble correctly in CHO cells. Genetic screening during cell line development has the potential to guide early clone selection by quantifying and screening for favourable mRNA ratios, gene expression patterns, or genomic liabilities of cell lines.

14:50 Rebuilding Expression System and its Applications for R&D of Biologics

GeneFrontier

Takashi Ebihara, COO, GeneFrontier Corporation

PURExpress is our unique rebuilt cell-free protein expression system. It's easy to customize for various applications, and useful for high throughput screening of various kinds of biologics, difficult-to-express protein or novel modalities having the synergy with the AI/ML platform.

15:05 High-Throughput Signal Peptide Optimization to Modulate Protein Biogenesis and Boost Production

AVENUE BIOSCIENCES

Tero-Pekka Alastalo, CEO, Avenue Biosciences

Protein production is a challenge in biotechnology. We introduce a novel approach to modulating protein biogenesis, leading to robust improvements in yield and quality. With latest advances and machine learning, it is now possible to simultaneously screen thousands of signal peptides for any target protein to identify novel molecular sequences that outperform industry standards. Our results demonstrate the potential to finetune any mammalian protein production system with precision and speed.

15:20 Transition to Plenary Keynote Session

PLENARY DEEP DIVE

15:30 Chairperson's Remarks

Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio

OPTIMISING EXPRESSION PLATFORMS Employing Cell Factories for the Enhanced Production of Recombinant Proteins

15:35 Immunotherapy Highlights

Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb

15:45 Multispecific Antibody Highlights

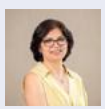
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd

15:55 ADC Highlights

Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

PLENARY PANEL

16:05 Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations

Moderator: Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio

In the past, the field of therapeutic antibodies was dominated by monoclonal antibodies. Similarly, today, antibody combinations have been approved and numerous antibody-based therapies are combined in clinical trials. In the Plenary Fireside Chat "Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations," renowned experts in the field will discuss major breakthroughs and how the field will evolve in the years to come.

Panelists:
Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd
Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

16:35 Refreshment Break in the Exhibit Hall with Poster Viewing

OVERCOMING EXPRESSION AND PRODUCTION CHALLENGES OF UNIQUE PROTEINS

17:15 Simplified and Humanized: Empowering Humanized Antibody Discovery with AbDrop™ Solution BIOINTRON

Lei Shi, SVP R&D, Biointron Biological Inc

This topic explores the revolutionary potential of the genome-edited mouse, where endogenous VH and VL genes are replaced by fully human VH and VL genes *in situ*, enabling the generation of fully human antibody molecules. When combined with Biointron's AbDrop™ microfluidic technology-enhanced single B cell screening, this approach allows for the high-throughput and efficient discovery of antibody drug molecules.

17:45 Proteomic and Transcriptomic Landscape upon Expression of rAAV Components in CHO Cells

Jesús Lavado García, PhD, Postdoctoral Researcher, Co-PI of Mammalian Cell and Bioprocess Engineering Group, Novo Nordisk Foundation Center for Biosustainability

Recombinant adeno-associated viruses (rAAVs) are preferred vectors for gene therapy but face production challenges in HEK293 cells due to scalability issues and high costs. Currently, CHO cells do not support rAAV production. Our study investigates the proteomic and transcriptomic responses of CHO cells to the expression of AAV elements, aiming to identify and address bottlenecks to enhance rAAV manufacturing.

OPTIMISING EXPRESSION PLATFORMS Employing Cell Factories for the Enhanced Production of Recombinant Proteins

18:15 Expanding the Boundaries of *E. coli* Disulfide-Rich Protein Nanoparticles That Selectively Destroy Cancer-Associated Fibroblasts

Eric Voltà Durán, PhD, Postdoctoral Investigator, Institut de Biotecnologia i Biomedicina, Universitat Autònoma de Barcelona

The selection of proper bacterial strains is required when producing recombinant proteins, particularly when dealing with complex protein domains. This is the case for the human platelet-derived growth factor D (PDGFD), a disulfide-rich domain that has been successfully incorporated in recombinant protein nanoparticles that selectively destroy CAFs *in vitro* and *in vivo*. Exploiting *Escherichia coli*, a promising tool for targeted drug delivery in the tumour microenvironment has been validated.

18:45 Ferritin Vaccine Platform for Multiple Displays of IHNV Glycoprotein

Sohrab Ahmadivand, PhD, Faculty of Veterinary Medicine, Ludwig Maximilians University of Munich

Multiple displays on the surface of self-assembling protein nanocages is a novel vaccine approach to improve antigen stability and immunogenicity, ideal for enveloped viruses. While the glycoprotein alone was insoluble, using the ferritin platform we developed an IHNV nanovaccine in *E. coli* system that is soluble at the size range ideal for cellular uptake and B-cell activation, biocompatible and stable under harsh GI conditions, and induces antiviral immunity in macrophages.

19:15 The Full Spectrum of Particle and Biophysical Analysis with Aura+

halo labs

Paul Dyer, Field Application Scientist, Halo Labs

From the sub-visible to the visible, Aura+ particle analyzer not only provides the opportunity to count and size particles, but identify their origin and presence. So whether it is to determine particles within a protein, gene, or cell therapy, or a traditional small drug therapy, Aura+ can provide the solution all in a low-volume, high-throughput 96-well assay. With the recent addition of large volume capability (0.5mL) Aura+ can now provide a solution for product release assay. In this presentation, new data evaluating these capabilities will be presented.

19:45 Close of Optimising Expression Platforms Conference

9TH ANNUAL | BARCELONA, SPAIN

PROTEIN PROCESS DEVELOPMENT Enhancing Workflows to Streamline Bioproduction from Benchtop to Development

THURSDAY 7 NOVEMBER

7:30 Registration and Morning Coffee

PROCESS IMPROVEMENTS: STREAMLINING PURIFICATION AND CHARACTERISATION WORKFLOWS

8:25 Chairperson's Remarks

Mercedes Márquez Martínez, PhD, Technical Coordinator & Acting Scientific Director, Protein Production Platform (PPP)—Nanbiosis, Autonomous University of Barcelona (UAB)

8:30 Characterisation of mAbs Attributes and HCP Clearance by Advanced Mass Spectrometry-Based Bioanalytics

Sofia B. Carvalho, PhD, Senior Scientist, Animal Cell Technology, Instituto de Biologia Experimental Tecnologica (iBET)

Evolving biologics complexity and regulatory demands dictate using advanced bioanalytics for product and bioprocesses characterisation. We developed an MS-based Multiple Attribute Method (MAM) strategy for assessing PTMs of CHO-derived mAbs and established an HCP profiling workflow by SWATH-MS. Key PTMs like glycosylation, oxidation, and deamidation were profiled, and targeted high-risk HCPs were quantified. These results defined the best design space, maximising product quality and purification performance of our polishing platform.

9:00 Streamlined Processes for Isolating Recombinant HPV16 E6 Protein from *Escherichia coli* Extracts

Angela Sousa, PhD, Assistant Researcher, CICS UBI, Health Sciences Research Centre, University of Beira Interior

The recombinant dual-tagged-E6 protein (His6-MBP-E6) was expressed from *Escherichia coli* cultures and successfully extracted by sonication/ice cycles. The isolation/capture step was obtained by affinity chromatography using MBPtrap column. The purification/polishing step was explored by applying anionic exchange (QSepharose), size exclusion (Superdex), or immobilised-metal affinity chromatography (HisTrap). The combination of MBPtrap with HisTrap obtained 94±3% of highly pure His6-MBP-E6, preserving its secondary structure and allowing its application for biointeraction studies.

9:30 Accelerated and Robust Cell Line Development in HEK293 Cells for Increased Protein Yields and Improved Protein Quality

ExcellGene EXPECT GREAT SCIENCE

Danijel Svec, Senior Cell Line Development Associate, ExcellGene SA

HEK293 cells have emerged as a vital platform for producing recombinant therapeutic proteins, primarily due to their ability to closely replicate human post-translational modifications (PTMs). This results in biologically active proteins that are more human-like, offering distinct advantages over alternative production systems. ExcellGene's HEKExpress-based cell lines distinguish themselves with their fast growth, robust characteristics, and high protein yield and functionality, making them an attractive choice for large-scale industrial applications. In this presentation, we will delve into key experiments that have been crucial in optimizing the process and development of HEKExpress-based cell lines, covering transfection, stable pool selection, and the generation and assessment of stable clones. We will also present case studies that highlight the benefits of utilizing the HEKExpress-based cell line development platform at ExcellGene.

9:45 Selected Poster Presentation: Development of Single-Domain Antibodies with Fluorescent and Luminescent Properties Using the *Pichia pastoris* Expression System

Aina Garcia Garcia, PhD, Assistant Professor, Nutrition & Food Science, University Complutense de Madrid

The diagnosis potential of single domain antibodies (sdAb) has prompted their use in several research and biotechnological applications. This work describes the production in *Pichia pastoris* of two gluten-specific sdAbs fused to Lucia luciferase and two red fluorescent proteins (DsRed-Express2 and mCherry). The results evidenced the high applicability of this expression system for this goal, with mCherry fusions exhibiting the highest production yields due to their effective release into the supernatant.

10:00 Coffee Break in the Exhibit Hall with Poster Viewing

PROCESS IMPROVEMENTS: INCREASING PRODUCTIVITY AND YIELD

10:45 Production of Vault-Like Nanoparticles in a Prokaryotic Expression System

Jose Luis Corchero-Nieto, PhD, Senior Scientist, Nanobiotechnology Group, University Autonoma de Barcelona

Vaults (eukaryotic protein nanoparticles, absent in prokaryotic cells) show potential as drug-delivery systems (DDS). Recombinant vaults are produced in insect cells and purified by ultracentrifugation, tedious and time-consuming strategies. We propose a protocol to produce vault-like nanoparticles in *Escherichia coli* cells, which allows the spontaneous formation of vault-like nanoparticles and their loading with cargo proteins. This approach paves the way to faster and easier engineering and production of vault-based DDSs.

11:15 Using Stable Producer Cell Lines for Manufacturing of Lentiviral Vectors

Jessica Vogel, Associate Scientist, BPD VVPD, CSL Innovation GmbH

To facilitate clinical grade lentiviral vector production, we are presenting a novel state of the art platform for LV production using HEK293T-based stable packaging cell lines in both adherent and suspension modalities. We developed an optimised perfusion process resulting in high Lentivirus (LV) titer and ensuring that high viability of cells during LV production is ensured. We also designed an efficient tailor-made DSP process to purify and sterile filter LVs.

9TH ANNUAL | BARCELONA, SPAIN

PROTEIN PROCESS DEVELOPMENT Enhancing Workflows to Streamline Bioproduction from Benchtop to Development

11:45 Extracellular Vesicle Depletion and UGCG Overexpression Mitigate the Cell Density Effect in HEK293 Cell Culture Transfection

Laura Cervera, PhD, Serra-Hunter Lecturer Professor, Departament d'Enginyeria Química, Biològica i Ambiental, Universitat Autònoma de Barcelona

The reduction of cell-specific productivity in transient gene expression (TGE) at high cell density (HCD) is known as the cell density effect (CDE). This study investigates the CDE through the production of HIV-1 Gag virus-like particles (VLPs) via transient transfection in HEK293 cells. Combining EV depletion and UGCG overexpression improved transfection efficiency by ~45% at 12 × 10^6 cells/mL also enhancing VLP budding and improving production by 60%.

12:15 LUNCHEON PRESENTATION: Data Driven Toolbox Solutions for Downstream Development of New Molecular Format Protein Biologics Lonza

Cintia Carreira, Associate Principal Scientist, Purification Development, Lonza Biologics

The diversity in the structures and physiochemical properties of New Molecular Format (NMF) molecules continues to drive innovation within downstream development that necessitates the use of a toolbox approach relying heavily on data-driven decision making. Here, the background of Lonza's experience and offerings for different NMFs will be summarized, followed by two detailed NMF case-studies where unique non-platform approaches were utilized to solve interesting development challenges.

12:45 Luncheon in the Exhibit Hall with Last Chance for Poster Viewing

PROCESS IMPROVEMENTS: INSTRUMENTATION AND AUTOMATION

13:55 Chairperson's Remarks

Peter Schmidt, Director Protein Biochemistry, CSL Research, Melbourne, Australia

14:00 Spreadsheet DoE: A Tool for Optimising Protein Production and Characterisation

Elliott J. Stollar, PhD, Senior Lecturer, Biochemistry, University of Liverpool

Biochemical research often necessitates the optimisation of conditions to maximise product yield. However, Design of Experiments (DoE) approaches for rapid process optimisation present a challenge due to statistical complexities and high software costs. To address this, we introduce "Spreadsheet DoE," a user-friendly tool for non-statisticians. In conjunction with high-throughput protein purification methods developed in our lab, Spreadsheet DoE has optimised various biochemical processes along the protein production and characterisation pipeline.

14:30 A Generic Approach for Miniaturised Unbiased Bispecific Antibody Screening via Automated Intein- or cFAE-Based Workflows

Achim Doerner, PhD, Scientific Director, Antibody Discovery & Protein Engineering, Merck Healthcare KGaA, Darmstadt

For novel bispecific antibodies, methods exist for low-throughput large-scale production but combinatorial screens often still represent the bottleneck for the identification of the best possible bispecific antibody. This presentation will share insights into two robust and miniaturised heterodimerisation workflows based on inteins or controlled Fab-arm exchange (cFAE), discuss advantages and pitfalls, and show its compatibility with high-throughput functional screens of biparatopic antibodies and ADCs.

15:00 Unleashing the Power of Automation for High Throughput Antibody Synthesis ThermoFisher SCIENTIFIC

Rebecca Moschall, Scientist III, Thermo Fisher Scientific

The discovery and optimization of antibodies, whether through traditional methods or with the assistance of artificial intelligence, necessitates rapid and reliable data generation. Here we introduce a high-throughput semi-automated platform for synthesizing microgram amounts of monoclonal antibodies. Our platform seamlessly integrates DNA normalization, transfection, antibody purification, and buffer exchange within our Manufacturing Execution System (MES), ensuring comprehensive traceability throughout the entire workflow.

15:30 Networking Refreshment Break

PROCESS IMPROVEMENTS: INSTRUMENTATION AND AUTOMATION *(Cont.)*

15:40 Accelerating Drug Discovery: High-Throughput Semi-Automated Expression Platform for Antibody Lead Generation

Lucy Holt, PhD, Director, Large Molecule Discovery, GSK

We report the development of a semi-automated platform to express panels of antibodies in high-throughput at mid-scale for developability and functional assays whilst minimising hands-on lab work. Our platform enables parallel production of 30 mg of material for 96 clones, keeping the discovery funnel wide for longer. We have created digital workflows for sample and data tracking enabling data reuse and driving refinement of AI/ML models.

16:10 Accelerating Drug Development: Introducing 2nd Generation Cyto-Mine– Automated Multi-Laser Droplet Microfluidic Platform sphere FLUIDICS

Maryam Ahmadi, Director of Cell and Molecular Biology at Sphere Fluidics, Sphere Fluidics Ltd.

Sphere Fluidics' Cyto-Mine, automated microfluidic system, addresses the challenges of antibody therapeutic development. It increases cell processing, reduces costs, and accelerates timelines. The

second-generation Cyto-Mine enables the use of more fluorophores, allowing selection based on productivity, specificity, markers, and viability. These enhancements make Cyto-Mine a powerful tool for faster, more efficient antibody development.

16:25 High-Throughput Analytics: Shaping Data-Driven Decisions in Biopharmaceutical Development

Giulia Lambiase, PhD, Senior Scientist, Biopharmaceutical Development, AstraZeneca

High-throughput (HT) analysis has emerged as a powerful asset for advancing drug discovery and process development in the biopharmaceutical industry. Leveraging automation, scaled-down processes, and advanced data analytics, it enables rapid screening of numerous samples, yielding valuable insights within shorter timeframes. This talk highlights how HT analysis facilitates informed decisions in the early stages of biopharmaceutical development, particularly benefiting the understanding of complex protein scaffolds and new drug modalities.

16:55 FEATURED PANEL DISCUSSION: Higher Throughput Protein Production Challenges: Methodologies, Strategies, and the Art of Managing Multiple Projects

Moderator: Richard Altman, MS, Field Application Scientist, Life Science Solutions, Thermo Fisher Scientific

Protein expression laboratories provide crucial support to drug discovery efforts. This panel discussion will focus on the concepts, technologies, and strategies necessary to meet the ever-increasing need for recombinant proteins.

- Know your protein
- Strategies on how to manage multiple “top priority” projects
- Total workflow efficiency
- The importance of tech development to long term success
- Troubleshooting strategies or how much time should be spent before moving to the next option?

Panelists:
Nicola Burgess-Brown, PhD, COO and Consultant, Protein Sciences, Structural Genomics Consortium; Visiting Scientist, University College London
Dominic Esposito, PhD, Director, Protein Sciences, Frederick National Laboratory
Peter Schmidt, Director Protein Biochemistry, CSL Research, Melbourne, Australia
Bjørn Voldborg, MSc, Head, National Biologics Facility, DTU Bioengineering, Technical University of Denmark

18:10 Close of PEGS Europe Summit

Training SEMINARS
By Cambridge Healthtech Institute

INTRODUCTION TO MACHINE LEARNING FOR BIOLOGICS DESIGN

INSTRUCTOR:
Christopher R. Corbeil, PhD, Research Officer, Human Health Therapeutics, National Research Council Canada

This course offers an introduction to concepts, strategies, and machine learning methods used for biologics design. It includes presentations and demonstrations of the methods used in the field, covering techniques such as triaging sequences, modulating affinity, and designing antibody libraries, along with increasing manufacturability. The course is directed at scientists new to the field and protein engineers wanting an introduction to how machine learning can aid in guiding biologics design.

SEMINAR HIGHLIGHTS:

- Basics of machine learning and where it fits into drug discovery
- Machine learning: a historical view of its application in the field of drug discovery
- How machine learning revolutionized homology modeling
- Applying machine learning to structure-based biologics design
- Guiding the design of display libraries using machine learning

Christopher R. Corbeil, PhD
Research Officer, Human Health Therapeutics, National Research Council Canada

Dr. Christopher Corbeil is a research officer at the National Research Council Canada (NRC) who specializes in the development and application of computational tools for biotherapeutic design and optimization. He is also an associate member of the McGill Biochemistry Department and teaches classes in Structure-Based Drug Design at McGill University. After receiving his PhD from McGill University, he joined the NRC as a Research Associate investigating the basics of protein-binding affinity. Following his time at the NRC he joined Chemical Computing Group as a research scientist developing tools for protein design, structure prediction, and binding affinity prediction. He then decided to leave private industry and rejoin NRC with a focus on antibody engineering. Dr. Corbeil has authored over 30 scientific articles and is the main developer of multiple software programs.

3RD ANNUAL | BARCELONA, SPAIN

MACHINE LEARNING FOR PROTEIN ENGINEERING: PART 1

Strategies and Best Practices for Training Data, Out of Set Predictions and R&D Workflows

WEDNESDAY 6 NOVEMBER

7:30 Registration and Morning Coffee

DATA STRATEGIES

8:25 Chairperson's Remarks

Enkelejda Miho, PhD, Professor, University of Applied Sciences and Arts Northwestern Switzerland; Managing Director, aiNET

8:30 Scalable Active Learning for Therapeutic Antibody Design

Nathan Frey, PhD, Senior Machine Learning Scientist, Prescient Design, a Genentech Company

We will discuss our approach and general considerations for implementing active learning and design of experiments to iteratively optimise therapeutic antibody candidates. Our active learning framework is underpinned by both algorithmic innovations and robust data pipelines. We achieve improvements across binding affinity, expression yield, and developability properties via orthogonal optimisation approaches, analogous to the multitude of affinity maturation pathways observed in immune responses.

9:00 Expanding Open-Source Structure Prediction with OpenFold

Jennifer Wei, PhD, Machine Learning Software Engineer, OpenFold

The OpenFold Consortium brings together academic and industrial teams to build state-of-the-art protein structure and co-folding prediction models optimised for use on commercial computational hardware. We develop fully open-sourced models and support creation of new experimental datasets, aiming to build more powerful models that can accurately predict complex systems of significance to life sciences. In my presentation, I will present the latest modelling and software developments from the consortium.

9:30 Key Insights from Boehringer Ingelheim's Digital Transformation Journey

Kausheek Nandy, Digital Transformation-Research, Boehringer Ingelheim Pharmaceuticals Inc.

Boehringer Ingelheim's digital transformation journey began in 2023, focusing on three key areas. Firstly, empower scientists by liberating them from routine tasks, allowing them to concentrate on high-value work. Second, create a hub for innovation by building an in-house digital portal, a scientist-driven mechanism to formalize and standardize *in silico* protocols. Lastly, emphasize digital data capture FAIR and APIs, setting the stage for leveraging AI/ML in future.

10:00 AI-Driven *De Novo* Design of High-Affinity VHH for GPCR Targeting

BioMap

Per Greisen, President, BioMap

The development of targeted biologics is often hindered by the challenges of identifying and engineering antibodies against specific epitopes. AI-powered *de novo* antibody design offers a promising solution, enabling precise epitope selection and sequence optimization. Here, we leverage a synergistic combination of structural sampling diffusion models and our proprietary large language model (xTrimo) to design VHH antibodies against a functional GPCR epitope.

10:30 Coffee Break in the Exhibit Hall with Poster Viewing

11:15 Pioneering Data-Driven Strategies in *de novo* Nanobody Design

Roberto Spreafico, PhD, Director, Discovery Data Science, Genmab

AI's potential to create antibodies from scratch is promising but hampered by poor hit rates and binding strengths, rooted in insufficient training data. We have addressed this issue by using computational simulations to determine data requirements such as modality, amount, and diversity. Simulations have been guiding our ongoing experimental data generation work, marking a shift towards a data-centric strategy that complements recent algorithmic progress, aiming to overcome current challenges.

11:45 KEYNOTE PRESENTATION: Generating Data and Labels to Train AI Models for the Design of Better Therapeutic Antibodies

Yanay Ofran, PhD, Founder, CEO, Biolojic Design Ltd.

This presentation focuses on the challenges in obtaining large and well-labeled datasets for training effective AI models. High-throughput data is often not sufficiently labeled to allow for the training of good models. I will review current approaches to coping with this challenge and propose a path to generating and labeling data to train models that design better antibodies that do things that traditionally discovered antibodies are unlikely to do.

Ailux

12:15 LUNCHEON PRESENTATION: Cutting through the Hype: Real-World Applications of AI in Antibody Discovery and Engineering

Mary Ann Pohl, Director of Alliance Management, XtalPi Inc.

Artificial intelligence (AI) is transforming antibody discovery and engineering. Ailux's platform synergistically combines the best of wet lab and AI. We will explore a series of case studies that exemplify the applications of our AI-driven approach for tackling difficult GPCR targets, designing next-gen display libraries, predicting Ab-Ag complex structures and engineering challenging molecules. This presentation provides a realistic and evidence-based perspective on AI's impact on the industry.

12:45 Luncheon in the Exhibit Hall with Poster Viewing

INVERSE FOLDING MODELS

13:45 Chairperson's Remarks

Amir P. Shanehsazzadeh, Artificial Intelligence Scientist, Absci Corp.

3RD ANNUAL | BARCELONA, SPAIN

MACHINE LEARNING FOR PROTEIN ENGINEERING: PART 1

Strategies and Best Practices for Training Data, Out of Set Predictions and R&D Workflows

13:50 Antibody CDR Design by Ensembling Inverse Folding with Protein Language Models

Rahel Frick, PhD, Investigator, GSK

Antibody design is a multi-parameter optimisation problem that integrates data from multiple sources, such as high-resolution structures and sequence libraries. Here we show that predictions from multiple independently-trained machine learning models (e.g., ProteinMPNN, ESM, AbLang) can be easily and effectively combined when redesigning antibodies, and that doing so retains the strengths but not the weaknesses of each ML method in isolation.

14:20 Improved Antibody-Antigen Interaction Prediction Using Inverse Folding Latent Representations

Paolo Marcatili, PhD, Head, Antibody Design, Novo Nordisk

Inverse folding (IF) and protein large language models (pLLMs) have become useful tools for antibody variant generation, with generally good performance, but limited ability to find mutations that enhance the binding to the antigen. Here, we show how IF models can be used to predict B cell epitopes, and how to extend this approach to estimate antibody-antigen interaction energy and to find mutations that increase affinity.

14:50 Scalable, Robust and easy to use Generative AI for engineering Novel Biologics

Cradle

Stef Van Grieken, Co founder & CEO, Cradle

Generative machine learning methods can accelerate development timelines for novel biologics. At Cradle we have developed a software platform for biologics that any scientist without knowledge of machine learning can use across hit-identification, hit-to-lead and lead-optimisation. The platform enables multi-property optimization for various modalities and effectively leverages wet lab data to continuously improve outcomes (i.e. lab-in-the-loop).

Using several real-world antibody and vaccine development case studies, this talk will highlight Cradle's approach and discuss which limitations we overcame to develop a robust, scalable and easy-to-use generative system for protein design that is used across dozens of campaigns at companies like Johnson & Johnson, Novo Nordisk and Grifols.

15:05 Featured Poster Presentation: Interpretable Prediction of Antibody Binding Affinity Exploiting Normal Modes and Deep Learning

Kevin Michalewicz, PhD, Research Postgraduate, Mathematics, Imperial College London

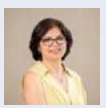
The high binding affinity of antibodies towards their cognate targets is key to eliciting effective immune responses. We propose ANTIPASTI, a Machine Learning approach that achieves state-of-the-art performance in the prediction of antibody binding affinity using as input Normal Mode correlation maps. The learnt representations are interpretable: they reveal similarities of binding patterns among antibodies and can be used to quantify the importance of antibody regions contributing to binding affinity.

15:20 Transition to Plenary Keynote Session

PLENARY DEEP DIVE

15:30 Chairperson's Remarks

Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio



15:35 Immunotherapy Highlights

Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb

15:45 Multispecific Antibody Highlights

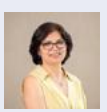
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd

15:55 ADC Highlights

Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

PLENARY PANEL

16:05 Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations

3RD ANNUAL | BARCELONA, SPAIN

MACHINE LEARNING FOR PROTEIN ENGINEERING: PART 1

Strategies and Best Practices for Training Data, Out of Set Predictions and R&D Workflows

Moderator: Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio

In the past, the field of therapeutic antibodies was dominated by monoclonal antibodies. Similarly, today, antibody combinations have been approved and numerous antibody-based therapies are combined in clinical trials. In the Plenary Fireside Chat "Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations," renowned experts in the field will discuss major breakthroughs and how the field will evolve in the years to come.

Panelists:
Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd
Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

16:35 Refreshment Break in the Exhibit Hall with Poster Viewing

PROGRAM UPDATES FROM AI-CENTRIC BIOPHARMAS

17:15 Development of ABS-101: A Potential Best-in-Class Anti-TL1A Antibody for the Treatment of Inflammatory Bowel Disease

Douglas Ganini da Silva, PhD, Director, Purification & Analytics, Absci Corp

We describe the development of ABS-101, a potential best-in-class anti-TL1A antibody for the treatment of inflammatory bowel disease. Generative AI models were leveraged to design antibodies against desired epitopes to achieve reduced immunogenicity risk and binding to both monomeric and trimeric TL1A. AI-guided lead optimization then produced several high-affinity candidates with high cellular potency, desirable developability properties, and cross-reactivity to non-human primate (NHP) species.

17:45 *De novo* Design of Miniprotein-Based NK Cell Engagers

Mireia Solà Colom, PhD, Investigator and Head, Immunotherapeutics, AI Proteins

Bi-specific immune cell engagers have emerged as a highly effective new therapeutic modality for oncology. Current engagers are limited by their reliance on immunoglobulin proteins, which restricts the valency, geometry of binding, developability, and speed of engineering. We solved these challenges by leveraging *de novo*-designed miniproteins, which enabled us to rapidly create and optimise highly potent NK cell engagers for AML that control tumour growth using xenograft models.

18:15 Method Development and Application of Machine Learning to Rapidly Reduce the Immunogenicity of Bacterial Proteases That Degrade Pathogenic Immunoglobulins

Ryan Peckner, PhD, Director, Machine Learning, Seismic Therapeutic

We develop and apply machine learning models to optimise in parallel multiple drug-like properties of the bacterial enzyme IdeS, to design a therapeutic for chronic autoantibody-mediated diseases, while minimising its immunogenicity and other liabilities. The success of this approach is demonstrated via *in vivo* and *in vitro* assays, and we illustrate its generalizability by engineering non-immunogenic bacterial cysteine proteases with a variety of immunoglobulin isotype specificities.

18:45 Close of Machine Learning for Protein Engineering: Part 1 Conference

3RD ANNUAL | BARCELONA, SPAIN

MACHINE LEARNING FOR PROTEIN ENGINEERING: PART 2

Demonstrating Value and Putting Theory into Practice

THURSDAY 7 NOVEMBER

7:30 Registration and Morning Coffee

ADVANCED AI TECHNIQUES FOR ANTIBODY ENGINEERING & DEVELOPMENT

8:55 Chairperson's Remarks

Enkelejda Miho, PhD, Professor, University of Applied Sciences and Arts Northwestern Switzerland; Managing Director, aiNET

9:00 Artificial Intelligence Supports Antibody Discovery in Dengue

Enkelejda Miho, PhD, Professor, University of Applied Sciences and Arts Northwestern Switzerland; Managing Director, aiNET

Dengue virus poses a serious threat to global health and there is no specific therapeutic for it. The antibody response in dengue infection and immunisation can be deconvoluted with high-throughput sequencing and artificial intelligence methods. Machine learning applied to sequencing data identifies rare and underrepresented dengue-specific antibodies.

9:30 Using ML to Enable Patient-Led Antibody Discovery

Laura S. Mitchell, PhD, Principal Bioinformatician, Alchemab Therapeutics

Foundation models have had a transformative impact across many fields, through their ability to learn from large unstructured datasets, and to be fine-tuned for specific tasks. Here I introduce the Alchemab discovery platform, which blends computational and experimental approaches at every step. We leverage three foundation models trained on antibody sequences (AntiBERTa, AntiBERTa2-CSSP and FabCon), for making state-of-the-art predictions and to generate human-like, developable sequences.

10:00 Coffee Break in the Exhibit Hall with Poster Viewing

INNOVATIONS IN HIGH-THROUGHPUT SCREENING, OPTIMISATION, AND ML-DRIVEN SUCCESS PREDICTIONS

10:44 Chairperson's Remarks

M. Frank Erasmus, PhD, Head, Bioinformatics, Specifica, an IQVIA business

10:45 Multi-Modal Learning of Protein Properties

Tunca Dogan, PhD, Professor, Department of Computer Science and AI Engineering, Hacettepe University, Turkey

The identification of the specific functions of each protein is essential for understanding the underlying mechanisms of life and developing novel treatments against deadly diseases. Large language models (LLMs) have emerged as a reliable tool for uncovering hidden knowledge in sequence-based data. In this seminar, I'll present our work on protein foundation models, which employ LLMs and other deep-learning architectures to embed proteins in high-dimensional vector spaces.

11:15 Machine Learning–Driven Design and Optimisation of Antibodies

Lin Li, PhD, Senior Staff Member, Lincoln Laboratory, Massachusetts Institute of Technology

The design and discovery of early-stage antibody therapeutics is time- and cost-intensive. I will present an end-to-end machine learning-driven single-chain variable fragments (scFv) design framework that uniquely combines large language models, Bayesian optimisation, and high-throughput experimentation. The method enables rapid and cost-effective design of thousands of scFvs across all complementary determining regions. The designed antibodies exhibit strong binding affinities, at high levels of diversity, to a given antigen.

11:45 Talk Title to be Announced

Maria Wendt, PhD, Global Head and Vice President, Digital and Biologics Strategy and Innovation, Sanofi

12:15 Poster Highlight: IgBlend: Unifying 3D Structure and Sequence for Antibody LLMs

Cedric Malherbe, PhD, Senior AI Scientist, AstraZeneca

Large language models (LLMs) trained on antibody sequences have shown significant potential in the rapidly advancing field of machine learning-assisted antibody engineering and drug discovery. However, current antibody LLMs often overlook structural information, which could enable the model to more effectively learn the functional properties of antibodies. In response, we introduce IgBlend, a LLM which integrates both the 3D coordinates of the backbone and antibody sequences

12:45 Luncheon in the Exhibit Hall with Last Chance for Poster Viewing

13:55 Chairperson's Remarks

Maria Wendt, PhD, Global Head and Vice President, Digital and Biologics Strategy and Innovation, Sanofi

14:00 What Really Happens During a Discovery Campaign? And Can AI/ML Help?

M. Frank Erasmus, PhD, Head, Bioinformatics, Specifica, an IQVIA business

Robust datasets are essential for efficient training of machine learning algorithms, particularly in the context of affinity and epitope prediction. We have developed an iterative selection strategy for yeast equilibrium sorting paired with NGS that promotes recovery of antibody sequences with broad ranges of paratopes and affinities. Coupling these outputs with high-throughput functional screening assays has the potential to yield broadly distributed, validated sequences, ideal for model training.

3RD ANNUAL | BARCELONA, SPAIN

MACHINE LEARNING FOR PROTEIN ENGINEERING: PART 2

Demonstrating Value and Putting Theory into Practice

CUTTING-EDGE DEVELOPMENTS IN *DE NOVO* DESIGN FROM SEQUENCE & STRUCTURE

14:30 Designing Protein with Language Models

Ali Madani, PhD, Founder and CEO, Profluent Bio

Large language models (LLMs) learn powerful representations of protein sequence and structural data. In this talk, we will dive into frontier LLMs that can generate whole gene editors in scratch and push the boundaries of generalisation in antibody design.

15:00 Modular Binding Proteins: Combining Machine Learning, Structural Biology, and Experimental Evolution

Andreas G. Plueckthun, PhD, Professor & Head, Biochemistry, University of Zurich

We challenge the paradigm of selection from large universal libraries to obtain binding proteins rapidly and efficiently. For linear epitopes, we found it to be possible to exploit the periodicity of peptide bonds and create a completely modular system, based on a binding protein design that shares the same periodicity. To reach selective and sequence-specific binding, we found it advantageous to combine machine learning, structural biology, and experimental evolution.

INTERACTIVE DISCUSSIONS

15:30 Interactive Discussions

Interactive Discussions are informal, moderated discussions, allowing participants to exchange ideas and experiences and develop future collaborations around a focused topic. Each discussion will be led by a facilitator who keeps the discussion on track and the group engaged. To get the most out of this format, please come prepared to share examples from your work, be a part of a collective, problem-solving session, and participate in active idea sharing.

TABLE 3: Machine Learning for MHC Peptide Presentation and Antibody Immunogenicity Prediction

Mojtaba Haghighatlari, PhD, Senior Machine Learning Scientist, Pfizer Inc.

- Novel deep learning approaches for predicting MHC antigen presentation and the modeling challenges
- Interpretability and explainability of the available deep learning models
- Best practices in data preparation for machine learning of peptidomics datasets
- Antibody design by transitioning from peptide presentation to protein screening

TABLE 4: Delivering on the AI Antibody Promise: the AIntibody Benchmarking Competition

Andrew R.M. Bradbury, MD, PhD, CSO, Specifica, an IQVIA business

M. Frank Erasmus, PhD, Head, Bioinformatics, Specifica, an IQVIA business

- AI promises in antibody discovery and optimization: will they really revolutionize the field? Or just another way of addressing solved problems?
- What can AI do now? And where are we seeing the greatest value relative to existing technologies?

CUTTING-EDGE DEVELOPMENTS IN *DE NOVO* DESIGN FROM SEQUENCE & STRUCTURE *(Cont.)*

16:10 Controllable Protein Design with Language Models

Noelia Ferruz Capapey, PhD, Group Leader, AI for Protein Design Group, Center for Genomic Regulation (CRG)

I will present the use of conditional language models for the à la carte design of proteins with specific functions. I will delve into ProtGPT2, ZymCTRL, and REXzyme protein language models for the generation of specific proteins with an increasing level of conditioning. These models have undergone experimental validation.

16:40 Improving Deep Learning Protein Complex Structure Prediction Using DEEPMSA2 with Huge Metagenomics Data

Yang Zhang, PhD, Professor, Department of Computer Science, Institute of Singapore; Department of Biochemistry, Yong Loo Lin School of Medicine, National University of Singapore

17:10 Close of PEGS Europe Summit

2ND ANNUAL | BARCELONA, SPAIN

ANTIBODY-BASED CANCER THERAPIES

Driving Breakthrough Therapies

TUESDAY 5 NOVEMBER

7:30 Registration and Morning Coffee

CONDITIONALLY-ACTIVE BIOLOGICS

8:25 Chairperson's Remarks

Mireille Vankemmelbeke, PhD, Principal Scientist, Scancell, Ltd.

8:30 Azymetric Fc-Based Therapeutic Modalities Enabling Tumour-Restricted Immune Cell Activation and Engagement

Thomas Spreter Von Kreudenstein, Head, Protein Engineering, Zymeworks

The optimised design, protein engineering, mechanism of activation, and preclinical characterization of therapeutic strategies supporting (A) tumour localized cytokine activation (ex. ZW270, a conditionally-activated IL-12) and (B) conditional anti-tumour T cell engagers with simultaneous checkpoint inhibition (ex. PROTECT) will be presented.

9:00 Selectively Targeting VISTA in the Tumor-Microenvironment with SNS-101, a Conditionally Active Monoclonal Antibody

Edward van der Horst, PhD, CSO, Sensei Bio

SNS-101, a novel, conditionally-active antibody, specifically targets the VISTA checkpoint in the acidic tumor microenvironment to enhance anti-tumour immunity and overcome resistance to checkpoint inhibitors. It overcomes previous safety and PK challenges, showing potential in combating immune checkpoint inhibitor resistance, as evidenced in preclinical studies (Thisted *et al*. Nat. Comm 2024). Currently in Phase I (NCT05864144), SNS-101 has shown selectivity for active VISTA, mitigating TMDD and reducing CRS risks.

9:30 Chain-Exchange and Split-Protein Technologies for the Generation of Targeted Antibody and Cytokine Prodrugs

Vedran Vasic, PhD, Scientist, Pharma Research and Early Development (pRED), Roche

We have designed antibody chain-exchange and chain-complementation approaches that can be used to generate conditionally active antibody prodrugs. The underlying principle is based on antibody-mediated targeting of two separate inactive entities, which results in the generation of functional bi- or multi-specific antibody derivatives upon accumulation on target cells. Examples that will be presented include prodrug approaches for tumour-activated T cell engagers and conditionally active antibody-cytokine fusions.

10:00 Application of Humanized Mouse Model in Therapeutic Antibody Development

GemPharmatech

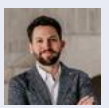
Eileen Xu, Project Leader, GemPharmatec Co., Ltd

We have developed a fully human antibody transgenic mouse model—NeoMab, in a BALB/c background. Three versions of NeoMab mice were created to meet different research needs: a standard version for whole IgG discovery, a heavy chain only model (NeoMab-HC) for single-domain antibody screening, and a common light chain model (NeoMab-CLC) for bispecific antibody development. With the application of the NeoMab platform, fully human antibodies against PD-1 with antagonist and agonist activities were screened with high binding affinity and functional activity.

10:15 Greet Your Neighbours

10:30 Grand Opening Coffee Break in the Exhibit Hall with Poster Viewing

ANTIBODY-BASED CELL THERAPIES



11:15 KEYNOTE PRESENTATION: Design and Engineering of TCR-Based Immune Cell Engagers for Solid Tumour Indications

Rodrigo Vazquez-Lombardi, PhD, Co-Founder & CSO, Engimmune Therapeutics AG

Soluble TCRs are a promising therapeutic modality combining intracellular antigen targeting with favourable infiltration of solid tumours and off-the-shelf use. Despite their therapeutic potential, the development of soluble TCR immune cell engagers is complicated by multiple challenges relating to affinity, specificity, molecular format, and stability. Here we describe AI-guided protein engineering as an effective approach to address soluble TCR development challenges and deliver potent and safe picomolar affinity clinical candidates.

11:45 Overcoming the Challenges with Raising Antibodies against STEAP2 Extracellular Domains for Targeted CAR T Cell Therapy

Dewald van Dyk, PhD, Director, Biologics Engineering, AstraZeneca Pharmaceuticals LP

Six-transmembrane epithelial antigen of prostate-2 (STEAP2) is a complex membrane protein that is highly expressed on prostate cancer cells with limited distal normal tissue expression. High species homology and small extracellular domains makes STEAP2 a very challenging protein to target. I will share reflections on the multifaceted discovery campaigns that enabled the isolation of STEAP2-specific antibodies for the development of an armored STEAP2 chimeric antigen receptor T cell therapy.

2ND ANNUAL | BARCELONA, SPAIN

ANTIBODY-BASED CANCER THERAPIES

Driving Breakthrough Therapies

12:15 LUNCHEON PRESENTATION: Improving the Efficiency of Therapeutic Candidate Generation Through Multiple Discovery Pathways

Antibody Solutions

John Kenney, President, Antibody Solutions

In this presentation, we compare the repertoires and affinities of antibodies obtained from our Cellestive™ platform against an oncology target, taking into account the impact of B-cell biology on different discovery routes. We describe the synergy of pursuing multiple discovery pathways in tandem, exploring how unique candidate antibodies were discovered via each pathway, and demonstrate the benefits of leveraging results from multiple pathways to improve the overall outcome.

12:45 Luncheon in the Exhibit Hall with Poster Viewing

OVERCOMING EFFICACY AND TOXICITY CHALLENGES

13:45 Chairperson's Remarks

Rodrigo Vazquez-Lombardi, PhD, Co-Founder & CSO, Engimmune Therapeutics AG

13:50 4-1BB T Cell Engaging BsAb (Grabody T) Activated T Cells Only in the Tumour Microenvironment and Demonstrated Superior Efficacy and Safety Profile

Sang Hoon Lee, PhD, CEO & Founder, ABL Bio Inc.

Stimulation of 4-1BB with agonistic antibodies is a promising strategy for immunotherapy. However, hepatotoxicity was observed in clinical trials with 4-1BB agonistic antibodies due to the activation of 4-1BB in liver cells. To avoid liver toxicity, we developed a novel BsAb, Grabody T by activating 4-1BB in the presence of TAA within the tumor microenvironment. We will present the preclinical and Phase 1 data of multiple Grabody T based BsAbs.

14:20 Remote Controlled Antibodies to Overcome Efficacy and Toxicity Problems of Immunotherapies

Yemi Onakunle, PhD, Co-Founder & CEO, MabSwitch Inc.

Despite the success of immunotherapies in cancer treatment, serious adverse events and potency-loss remain significant challenges, often linked to antibody binding-affinity. We developed a universal allosteric affinity-switch by incorporating engineered human-calmodulin linkers in antibody fragments, enabling remote-controlled adjustments to antibody affinity with a small ligand under physiological conditions, independent of the paratope. This approach offers a tunable strategy to enhance CAR T cell or T cell engager safety and efficacy in patients.

14:50 First-in-Human (FIH) Dose Selection for Biologic Modalities

Céline Amara, DMPK Project Expert, DMPK, Sanofi

First-in-Human Dose Selection is a key consideration in the drug development of new drug candidates. Such estimation is essential for the design of successful Phase 1 clinical trials. FIH dose is based on the Regulatory requirements, and the strategy differs depending on the modality. This presentation provides insights of challenges of the FIH dose estimation for 3 biologic molecules, i.e., a Monoclonal Ab, an Antibody-Drug Conjugate, and an innovative Multispecific.

SINGLE CELL PROFILING

15:20 Function Focused Drug Discovery at Single Cell Resolution

lightcast

Paul Steinberg, CCO, Lightcast

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

NOVEL TARGETS

16:35 SC134-TCB Targeting Fucosyl-GM1, a T Cell–Engaging Antibody for Small Cell Lung Cancer

Mireille Vankemmelbeke, PhD, Principal Scientist, Scancell, Ltd.

SCLC patients are faced with limited treatment options. T cell redirecting antibodies (TCB) show great promise but careful target selection remains essential. The tumour selectivity of the SCLC-associated glycolipid Fucosyl-GM1, its expression being virtually absent in normal tissues, enables TCB development. SC134-TCB exhibits superb Fucosyl-GM1 specificity and T cell-mediated SCLC tumour control, representing an attractive development candidate for SCLC therapy.

17:05 The Identification of VNAR Theranostics Targeting Fibroblast Activation Protein

Aaron M. LeBeau, PhD, Associate Professor, Pathology & Lab Medicine, University of Wisconsin Madison

Through the direct immunization of a nurse shark, we identified a suite of VNARs that were able to image FAP-expressing cells *in vivo* by PET imaging and eliminate them when coupled to cytotoxins. Using NGS, we developed a phylogenetic tree that allowed us to identify candidate VNARs with favorable targeting properties. We also determined the cryo-EM structures of several VNARs bound to FAP that demonstrated novel modes of target engagement.

17:35 Development of a Bispecific HER3 Antibody for Enhanced Cancer Immunotherapy

Giuseppe Roscilli, PhD, CTO & Director, Drug Evaluation & Monoclonal Antibody, Takis Srl

This presentation explores the development and potential of a novel bispecific antibody targeting HER3, designed to enhance cancer immunotherapy. By bridging T cells directly to HER3-expressing tumor cells, this antibody promotes potent immune responses and demonstrates significant anti-tumor activity in preclinical models. We will discuss the innovative mechanism, efficacy results, and the promising pathway toward clinical trials, highlighting the potential for improved patient outcomes in cancer treatment.

ANTIBODY-BASED CANCER THERAPIES

Driving Breakthrough Therapies

18:05 POSTER HIGHLIGHT: Development of TROP-2-Targeting Recombinant Antibody-PROTAC Conjugates for Triple-Negative Breast Cancer

Rafaela P Marimon, Researcher, Applied Microbiology, University of Lisbon

We are developing Degrader-Antibody Conjugates (DACs) that target TROP-2 to treat Triple-Negative Breast Cancer (TNBC), leveraging Feline Mammary Carcinoma (FMC) as a comparative oncology model. We are exploring our single-domain antibody platform to develop a highly specific and potent DAC molecule. By advancing this innovative approach, we aim to provide new therapeutic options for both human and feline patients affected by TROP-2-positive cancers.

18:35 Welcome Reception in the Exhibit Hall with Poster Viewing

19:35 Close of Antibody-Based Cancer Therapies Conference

INAUGURAL | BARCELONA, SPAIN

ENGINEERING CONJUGATES

Designing the Magic Bullet

WEDNESDAY 6 NOVEMBER

7:30 Registration and Morning Coffee

ENHANCING PAYLOAD DELIVERY AND IMPROVING THERAPEUTIC INDEX

8:25 Chairperson's Remarks

Mahendra P. Deonarain, PhD, Chief Executive & Science Officer, Antikor Biopharma Ltd.

8:30 Srategies in ADC Development to Improve the Therapeutic Index

Justyna Mysliwy, PhD, Senior Director Research, Research, Iksuda Therapeutics

The number of ADCs showing promising outcomes in clinical trials is rapidly growing, offering exciting opportunities for cancer patients. This presentation will outline the strategies for optimising key components of ADC design to further enhance the efficacy and tolerability of ADCs. Novel linker designs, payload selection, and DAR optimisation will be discussed.

9:00 MYTX-011: An Anti-cMET Antibody-Drug Conjugate Designed for Enhanced Payload Delivery to cMET Expressing Tumour Cells

Nimish Gera, PhD, Vice President, Biologics, Mythic Therapeutics

Attempts to improve the clinical utility of ADCs have focused on linker-payload, such as novel payload classes, increased DARs, and altering payload potency. However, limited efforts have been made to enhance payload delivery via antibody engineering. We demonstrate that incorporation of pH-dependent binding in an anti-cMET ADC can overcome the requirement for high cMET expression and potentially benefit a broader population of cancer patients with lower cMET levels.

9:30 Preclinical Efficacy and Safety of a Novel Anti-CEA TOPO1i ADC M9140

Min Shan, PhD, Medicinal Chemist, Targeted Therapeutics, Merck KGaA

10:00 Streamlined Antibody and Therapeutic Development Using The Pfenex Expression Technology® Platform

primrose bio

Diane Retallack, Primrose Bio

Primrose Bio's Pfenex Expression Technology® platform, based on P. fluorescens, is proven as a versatile and scalable system for recombinant protein production, with six commercial products approved and marketed. This presentation will highlight case studies showcasing how Pfenex's extensive toolbox of genetic elements and host strains, in conjunction with automated workflows, can optimize protein production. Examples to be highlighted include Fab production, and VHH molecules engineered for site-specific chemical modification usedas antibody-drug conjugates, with 15g/L of modified VHH achieved in high cell density fermentation. Key takeaways include how the Pfenex platform drives innovation in biologics development, from research through commercialization, of challenging protein therapeutics.

10:30 Coffee Break in the Exhibit Hall with Poster Viewing

11:15 A Next-Generation ADC for Nectin-4 Expressing Tumours: Preclinical Characterisation of IPH45, a Novel and Differentiated Exatecan-Based ADC Targeting Nectin-4

Caroline Soulas, PhD, Senior Project Manager, CMC, Innate Pharma

IPH45 is a novel exatecan-based anti-Nectin-4 ADC. Its hydrophilic profile, high DAR, and strong bystander effect translate into better efficacy in low Nectin-4 expressing-tumour preclinical models and a longer half-life than enfortumab vedotin (EV), an approved anti-Nectin-4 MMAE-based ADC. IPH45 has the potential to have a broader therapeutic index than EV, improved safety and dosing regimen, and the ability to overcome resistance to EV or MMAE-based ADCs.

11:45 CEACAM5C, a Novel Topoisomerase I Inhibitor Antibody-Drug Conjugate Targeting CEACAM5 with High Preclinical Anti-Tumour Activity in CRC, PDAC, GC, and Lung Cancer Tumour Models

Yves Baudat, Senior Scientist, Immuno Oncology, Sanofi

CEACAM5 is a GPI glycoprotein expressed with a high prevalence on the cell surface of several tumoural indications while normal tissue expression is limited. We developed a novel CEACAM5 topoisomerase I inhibitor antibody-drug conjugate with a DAR of 8 which is stable in circulation in SCID mice and display an impressive overall response rate in single mouse trials of CRC, GC, and NSCLC PDX models.

12:15 Incorporation of an Ugi MCR as a Site-Selective Bioconjugation Method for Protein Modification

Ilias Koutsopetras, PhD, Postdoctoral Researcher, BioFunctional Chemistry Lab, University Of Strasbourg

Through an in-depth mechanistic methodology work supported by peptide mapping studies, we managed to develop a set of conditions allowing the highly selective modification of antibodies bearing N-terminal glutamate and aspartate residues. We demonstrated that this strategy did not alter their affinity toward their target antigen and produced an antibody-drug conjugate with subnanomolar potency and a bispecific antibody with the unprecedented 2:1 valency.

12:45 Luncheon in the Exhibit Hall with Poster Viewing

NEXT-GENERATION ADC FORMATS

13:45 Chairperson's Remarks

Horacio G. Nastri, PhD, Vice President, Protein Science and Technology, Incyte Corporation

INAUGURAL | BARCELONA, SPAIN

ENGINEERING CONJUGATES

Designing the Magic Bullet

13:50 Format Matters for ADCs: Generation of Binder-Format-Payload Conjugate Matrices by Antibody Chain Exchange

Ulrich Brinkmann, PhD, Expert Scientist, Pharma Research & Early Development, Roche Innovation Center, Munich

Chain exchange approaches based on engineered domain interfaces generates binder-format matrices for bispecific antibodies. Optimal bsAbs require combinations of compatible binders, optimised stoichiometries and formats. Chain-exchange can also generate ADC matrices that combine binders, formats, attachment-positions, and payloads. Analyses of a Her2-binding ADC matrix with payloads attached in different formats, positions and stoichiometries reveals that 'format-defines-function' applies not only to bsAbs but also to ADCs.

14:20 KEYNOTE PRESENTATION: Novel Multi-Payload ADCs Assembled in One Step from Native Antibodies that Show Excellent Biophysical Properties and High Efficacy *in vivo*

Philipp Spycher, PhD, CSO, Araris Biotech AG

A novel conjugation approach will be introduced that enables the site-specific attachment of multiple payloads in one-step onto native antibodies at flexible DAR without the need of antibody engineering or reduction step. The resulting ADCs show excellent biophysical properties with mAb-like PK *in vivo* and high anti-tumour efficacy. With the presented approach, multiple payloads can be delivered with the goal to improve efficacy and address tumour drug resistance.

14:50 The in-vitro 3D BioSPHEER™ platform for ADC-drug testing

Kim Holmstroem, Principal Scientist, Bioneer AS

In vitro 3D tumor modeling is essential to simulate solid tumors for pre-clinical drug testing including ADC's. We introduce the 3D BioSPHEER™ technology platform for fibroblast-mediated spheroid formation enabling the creation of TME-like extracellular matrices, known to affect therapeutic efficiency. Whole transcriptome analysis of 3D BioSPHEER™s reveal stimulation of cancer pathways and matrix formation, depending on the cancer cell. We will demonstrate the testing of ADC-drugs in 3D BioSPHEER™s using various read-outs and indicating potential bystander effects.

15:05 Biophysical Characterization of Antibody-Drug Conjugates: Advancing Precision Engineering in Drug Discovery

Ralf Strasser, COO, Dynamic Biosensors GmbH

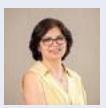
Antibody-drug conjugates (ADCs) offer a targeted approach to cancer therapy by using monoclonal antibodies to deliver cytotoxic agents to tumor cells. However, their complexity poses challenges in optimizing pharmacokinetics, efficacy, and safety. We present three biophysical tools to enhance ADC development: high-throughput SPR for candidate ranking, switchSENSE for analyzing avidity and conformational changes, and scIC for real-time kinetics on cells. These techniques accelerate drug discovery with precise biophysical profiling.

15:20 Transition to Plenary Keynote Session

PLENARY DEEP DIVE

15:30 Chairperson's Remarks

Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio



15:35 Immunotherapy Highlights

Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb

15:45 Multispecific Antibody Highlights

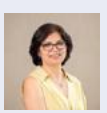
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd

15:55 ADC Highlights

Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

PLENARY PANEL

16:05 Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations

INAUGURAL | BARCELONA, SPAIN

ENGINEERING CONJUGATES

Designing the Magic Bullet

Moderator: Christian Klein, PhD, CXO in Residence & Drug Hunter, Curie.Bio

In the past, the field of therapeutic antibodies was dominated by monoclonal antibodies. Similarly, today, antibody combinations have been approved and numerous antibody-based therapies are combined in clinical trials. In the Plenary Fireside Chat "Shaping the Next Stage of Antibody Development with Complex Modalities and Combinations," renowned experts in the field will discuss major breakthroughs and how the field will evolve in the years to come.

Panelists:

Taruna Arora, PhD, Formerly Vice President, Biotherapeutics, Bristol Myers Squibb

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmaceutical Co.,Ltd

Hironori Matsunaga, PhD, Scientist, Discovery Research Lab I Group II, Daiichi Sankyo Co., Ltd.

16:35 Refreshment Break in the Exhibit Hall with Poster Viewing

NEXT-GENERATION ADC FORMATS

17:15 Antibody Fragment Drug Conjugates (FDCs): The Ideal Format to Target cMET-Expressing Solid Tumours?

Mahendra P. Deonarain, PhD, Chief Executive & Science Officer, Antikor Biopharma Ltd.

FDCs promise advantages over ADCs including tumour penetration and faster clearance. ANT-045 is a solid tumour cMET-targeted FDC demonstrating superior tumour cure efficacy and tolerability compared to the leading competitor ADC, in multiple models with supporting quantitative biodistribution, micro-distribution imaging, stability, and toxicology data. In a non-GLP NHP study, ANT-045 was well tolerated with a predicted human half-life ~12h supporting a viable clinical dosing strategy and a wide therapeutic window.

17:45 Potential of Bicycle Toxin Conjugates for the Treatment of Solid Tumours

Sandra Uhlenbroich, PhD, Director, Research & Innovation, Bicycle Therapeutics

Bicyclic peptides (Bicycle molecules) offer a differentiated and innovative modality for targeted delivery of cytotoxic payloads into tumours. Bicycle molecules exhibit high potency and selectivity and may confer advantages over existing modalities, particularly their small size and favourable pharmacokinetics profile. Bicycle Therapeutics is conducting clinical evaluation of BT8009, a Bicycle Toxin Conjugate (BTC) targeting Nectin-4, and BT5528 targeting EphA2. Data demonstrating the potential of these molecules will be presented.

BISPECIFIC ADCs

18:15 Development of a Bispecific Antibody Format Allowing for Drug Cargo Loading via a Strong Affinity (pM) scFv-Peptide Tag Interaction

Sara M. Mangsbo, PhD, Professor, Pharmacy, Uppsala University

We have developed an antibody format allowing for an instant cargo loading by incorporation of an scFv that binds to a tag with high affinity. Mixing the bispecific antibody with tagged cargo leads to a stable antibody-drug conjugate formation with a DAR=2. The tag loading enables antibody-mediated uptake of drug cargo into cells. Using an antibody format targeting CD40, we demonstrate cargo delivery, immune activation and cargo-dependent pharmacodynamic responses.

18:45 Target-Guided Site-Specific Delivery of a First-in-Class soloMER Drug Conjugate in Autoimmune Inflammation Disease

Obinna C. Ubah, PhD, Principal Scientist & Future Leaders Fellow (UKRI), Autoimmune Inflammatory Diseases Drug (Biologics) Discovery & Development, Elasmogen Ltd.

This presentation explores the development and engineering of soloMERs, a novel type of drug conjugate, and its potential for therapeutic applications outside cancer treatment.

19:15 Streamlined Approaches for Accelerated Antibody Discovery

AZENTA LIFE SCIENCES

Crystal Richardson, Sr Business Partnership Manager, Azenta Life Sciences

Identifying top antibody candidates can be an inefficient process. Our end-to-end antibody screening solution integrates NGS and Sanger inputs with robust bioinformatics analysis and antibody production-optimizing tools, facilitating the identification of promising candidates.

19:45 Close of Engineering Conjugates Conference

2ND ANNUAL | BARCELONA, SPAIN

NEXT-GENERATION IMMUNOTHERAPIES

Improving Immunotherapy Safety & Efficacy

THURSDAY 7 NOVEMBER

7:30 Registration and Morning Coffee

ADOPTIVE CELL THERAPIES

8:25 Chairperson's Remarks

Björn L. Frendeus, PhD, CSO, BioInvent International AB

8:30 Seamless Integration of a Universal Epitope into Recombinant TCRs for Tagging and Tracking of TCR-T Cells Expressing 3S TCRs

Kanuj Mishra, Team Lead & Lab Head, Innovation, Medigene Immunotherapies GmbH

UniTope & TraCR is a universal detection system for 3S recombinant TCRs in TCR-T cell therapies. The integrated epitope (UniTope) eliminates the need for extraneous gene tags, providing an unequivocal identity marker. The system facilitates efficient *in vitro* and *ex vivo* monitoring via a single TraCR antibody. UniTope integration preserves TCR structural and functional integrity, streamlining identification, quantification, and quality control of TCR-T cells expressing 3S rTCRs.

9:00 Advances in Gamma Delta T Cell-Targeting Bispecifics for the Treatment of Cancer

Pauline M. Van Helden, PhD, Director, Translational Research, Lava Therapeutics

Vγ9Vd2 T cells stand in between the innate- and adaptive-immune responses and constitute powerful immune effector-cell population amenable for cancer treatment. Bispecific T cell engagers (bsTCEs) binding the Vd2 T cell receptor (TCR) and tumor-associated antigens (TAA) effectively trigger Vγ9Vd2 T cells to lyse multiple type cancer cells, while sparing normal cells. Currently, a PSMA-targeting bsTCE is being evaluated in a phase 1/2a clinical trial in prostate cancer patients.

9:30 Leveraging the Therapeutic Immuno-STAT Platform for Targeted Depletion of B Cells in Autoimmune and Inflammatory Diseases

Simon Low, Senior Director, Biologics Discovery & Innovation, Cue Biopharma

B cells, critical to autoimmunity, have been identified as potential therapeutic targets in the treatment of autoimmune disorders. Our next-generation CUE-500 series Immuno-STATs are uniquely engineered Fc fusion molecules that redirect and activate cytotoxic T cells, targeting pathogenic B cells. Leveraging clinical efficacy and safety of our CUE-100 series Immuno-STATs, our novel autoimmune platform enables the redirection of Immuno-STATs towards pathogenic B cell depletion for the treatment of autoimmune diseases.

10:00 Coffee Break in the Exhibit Hall with Poster Viewing

T CELL-ENGAGERS

10:45 KEYNOTE PRESENTATION: HLA-Agnostic T Cell Receptor Recognition of Cancer

Andrew Sewell, PhD, Distinguished Research Professor and Wellcome Trust Senior Investigator, Division of Infection and Immunity, Cardiff University School of Medicine

T-cell receptors (TCRs) on conventional T-cells can successfully clear solid cancers in some patients but due to their human leukocyte antigen (HLA)-restriction any given TCR-T treatment is only applicable to a minority of patients. Fortunately, some cancer-specific TCRs are not HLA-restricted. We have been examining TCRs that recognise a wide range of cancers without requirement for a specific HLA. Do such TCRs provide hope for pan-cancer treatments in all patients?

11:15 MAIT T Cell Engagers: An Effective and Safer Modality for the Treatment of Solid Tumours

Simon Plyte, PhD, CSO, R&D, Biomunex Pharmaceuticals

Mucosal Associated Invariant T cells (MAITs) are an abundant, tissue/tumor resident, subset of cytotoxic non-conventional T cells. Bi-specific antibody-mediated redirection of MAIT cells leads to the elimination of cancer cells with a potency identical to that of classical CD3e T cell engagers. However, unlike CD3e engagers, MAIT engagers do not cause widespread cytokine release and regulatory T cell activation and afford a large therapeutic window, favouring treatment of solid tumors.

11:45 Targeting Dysregulated Metabolism of Tumours Using Affinity-Enhanced γ9δ2TCR Engineered T Cells and Bispecific T Cell Engagers

Dennis Beringer, PhD, Assistant Professor, Center of Translational Immunology, University Medical Center Utrecht

A wide range of tumour types can be recognized by γ9δ2T cells in *in vitro* experiments, however the low affinity of γ9δ2TCR for their tumour antigens, the phosphoantigen dependent BTN2A1-BTN3A complex, results in poor clinical outcomes. Using our γ9δ2TCR-antiCD3 TCE to screen for potency enhancing mutations resulted in affinity enhanced γ9δ2TCRs with significantly enhanced tumor control, both *in vitro* and *in vivo*, paving the way for next generation γ9δ2TCR-based immunotherapies.

12:15 LUNCHEON PRESENTATION: Combining Primary, Secondary, and Tertiary Signals with Immune Cell Engagers to Supercharge Anti-Tumor Immunity

WuXi Biologics Global Solution Provider

Jijie Gu, President of Global Biologics Research & CSO, WuXi Biologics

Tapping into the natural T cell activation pathways of TCRs, co-stim molecules, and cytokines, WuXi Biologics has developed 1) a clinical stage anti-CD3 antibody, whose binding kinetics balances

2ND ANNUAL | BARCELONA, SPAIN

NEXT-GENERATION IMMUNOTHERAPIES

Improving Immunotherapy Safety & Efficacy

remarkable efficacy with low cytokine release; 2) Co-stim engagers to overcome immune-suppression; and 3) cytokine muteins with improved PK and safety to sustainably expand the immune effector cell pool. With these complementary Immune Cell Engager platforms and pharmacology service excellence, we aim to enable clients to discover novel immune cell engagers with real clinical prospect

12:45 Luncheon in the Exhibit Hall with Last Chance for Poster Viewing

NEXT-GEN ANTIBODIES AND VACCINES FOR CANCER IMMUNOTHERAPIES

13:55 Chairperson's Remarks

Giuseppe Roscilli, PhD, CTO & Director, Drug Evaluation & Monoclonal Antibody, Takis Srl

14:00 Anti-TNFR2 for Cancer Immunotherapy

Björn L. Frendeus, PhD, CSO, BioInvent International AB

TNFR2 is a co-stimulatory receptor mediating pro- and anti-inflammatory activity in immune cells. This talk will discuss mechanisms by which anti-TNFR2 mAbs regress large inflamed tumours and synergize with anti-PD-1 to induce cures and robust antitumour CD8+ T cell immunity in syngeneic mouse tumour models. Compelling evidence that the first-in-class anti-TNFR2 mAb (BI-1808) can be safely administered and has single-agent anti-tumour activity in difficult-to-treat cancer, e.g., GIST, will also be shared.

14:30 Discovery of the IL-18 Receptor Antibody Agonist Biased to Immune Effector Cells

Melissa Geddie, PhD, Vice President Drug Discovery, Diagonal Therapeutics

While agonistic antibodies represent promising novel therapeutic avenues to treat human diseases, the lack of effective identification process has significantly hampered their discovery. Using the DIAGONAL platform comprising experimental and computational approaches, we generated bispecific agonist antibodies that activate IL-18 receptors directly, inducing IFN, while sparing myeloid cells, avoiding the tolerability issue associated with IL-18 and its muteins, thus offering an activity driven towards anti-tumour effects.

15:00 Optimisation of Neoantigen Targets for Shared and Personalised Anti-Cancer Vaccines

Michelle Krogsgaard, PhD, Associate Professor, Pathology and NYU Perlmutter Cancer Center, NYU Grossman School of Medicine and NYU Langone Health

Neoantigens are emerging as the main determinants of tumour immunogenicity and efficacy of immune checkpoint blockade, but their presence does not guarantee durable responses in patients with cancer. Here we developed a comprehensive structure-function approach to identify the main characteristics of neoantigens in melanoma and acute myeloid leukemia, originating from somatic mutations and from post-translational modifications, affecting the outcome of checkpoint blockade.

15:30 Interactive Breakout Discussions with Refreshments

Interactive Discussions are informal, moderated discussions, allowing participants to exchange ideas and experiences and develop future collaborations around a focused topic. Each discussion will be led by a facilitator who keeps the discussion on track and the group engaged. To get the most out of this format, please come prepared to share examples from your work, be a part of a collective, problem-solving session, and participate in active idea sharing.

TABLE 5: Personalized Neoantigen Vaccines - Challenges and Opportunities in Developing Truly Individualized Cancer Treatments

Michelle Krogsgaard, PhD, Associate Professor, Pathology and NYU Perlmutter Cancer Center, NYU Grossman School of Medicine and NYU Langone Health

IMMUNOCYTOKINES

16:10 Antibody-Cytokine Fusion Proteins for Cancer Therapy: Late-Stage Clinical Results

Dario Neri, PhD, CEO and CSO, Philogen; Professor, Chemistry and Applied Biosciences, ETH Zurich

Cytokines are proteins that are capable of potently modulating the activity of the immune system. The fusion of cytokines to tumour-homing antibodies has been shown to potently increase the therapeutic index of the cytokine payload in animal models of cancer. In this lecture, I will present examples of potent therapeutic activity mediated by certain antibody-cytokine fusions, developed by Philogen, which are now being studied in pivotal clinical trials

16:40 OSE-CYTOMASK: Cis-Demasking Cytokine Technology with Non-Cleavable Linker

Nicolas Poirier, PhD, CSO, OSE Immunotherapeutics

Masking cytokine technologies with enzymatic cleavable linkers allows activity on-demand at the right site but suffers from enzyme selectivity. Cis-delivery cytokine technologies allow redirection of activity on the right cells but require potent cytokine attenuation for optimal cell selectivity. OSE-Cytomask is a novel Cis-Demasking cytokine technology avoiding cytokine attenuation and cleavable linkers to unmask cytokines on-demand on selective immune cell subsets expressing the appropriate surface antigen.

17:10 Protein Engineering Using Novel Chemical Methods to Access PD1-Based Immunocytokines

Arnaud Goepfert, PhD, Director, Protein Sciences, Bright Peak Therapeutics

Antibody-cytokine conjugates leverage orthogonal mechanisms-of-action (MoA) in one molecule to induce potent antitumour immune responses. At Bright Peak, we generate immunocytokines through site-specific chemical conjugation of cytokine to "off-the-shelf" human IgG antibodies. During the talk, I will focus on our PD-1-targeting conjugates and share compelling preclinical data supporting the future development of BPT567, a PD1-IL18 immunocytokine.

17:40 Close of PEGS Europe Summit

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Monday, 4 November 14:00 – 17:00	
SC1: Developability of Bispecific Antibodies: Formats and Applications	SC4: *In silico* and Machine Learning Tools for Antibody Design and Developability Predictions
SC2: Advanced Applications of SPR & BLI Biosensors for Drug Discovery and Development	SC5: Best Practices for Targeting GPCRs, Ion Channels, and Transporters with Monoclonal Antibodies
SC3: Tools for Cell Line Engineering and Development	SC6: Introduction to Immunogenicity of Biotherapeutics

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	Tuesday 5 November	Wednesday 6 November	Thursday 7 November
ENGINEERING	C1A: Display of Biologics	C1B: Engineering Antibodies & Beyond	C1C: Machine Learning for Protein Engineering: Part 2
TARGETS	C2A: Antibody-Based Cancer Therapies	C2B: Emerging Targets and Therapeutic Approaches	C2C: Antibodies Against Membrane Protein Targets
BISPECIFICS	C3A: Safety and Efficacy of Multispecific Antibodies, ADCs, and Combination Therapies	C3B: Advancing Multispecifics and Combination Therapy to the Clinic	C3C: Engineering the Next Generation of Bispecific Antibodies
IMMUNOTHERAPY	C4A: Modulating the Tumour Microenvironment	C4B: Innovative CAR T Therapy	C4C: Next-Generation Immunotherapies
ANALYTICAL	C5A: Optimisation & Developability	C5B: Analytical Characterisation of Biotherapeutics	C5C: Protein Stability & Formulation
EXPRESSION	C6A: Using Data Science to Maximise Protein Production	C6B: Optimising Expression Platforms	C6C: Protein Process Development
MACHINE LEARNING	TS7A: IN PERSON ONLY: Introduction to Machine Learning for Biologics Design	C7B: Machine Learning for Protein Engineering: Part 1	C7C: Machine Learning for Protein Engineering: Part 2
ONCOLOGY	C2A: Antibody-Based Cancer Therapies	C8B: Engineering Conjugates	C4C: Next-Generation Immunotherapies
TRAINING SEMINARS	TS8A: Introduction to Multispecific Antibodies: History, Engineering, and Application OR TS9A: Current Applications of Host Expression Systems and Optimisation of the CEPA Workflow to Support Therapeutic Generation and Structural Biology OR TS10A: Introduction to Analytical Characterisation and Method Validation for Biological Products	TS9B: Label-Free Biosensor Tools in Biotherapeutic Discovery: SPR, BLI, and KinExA	

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**Alumni, Group, Protein Society or Antibody Society Membership, X, LinkedIn, Facebook, or any other promotional discounts cannot be combined. Discounts not applicable on Event Short Courses.*

VIDEO AND/OR AUDIO RECORDING OF ANY KIND IS PROHIBITED ONSITE AT ALL CHI EVENTS.

How to Register:
PEGSummitEurope.com
reg@healthtech.com
P: (+1) 781.972.5400
or Toll-free in the U.S.
888.999.6288
Please use keycode PGEF when registering