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

PREMIER SPONSORS

immatics · integral molecular · REFEYN WEIGHING MOLECULES WITH LIGHT · TWIST BIOSCIENCE

PEGSummitEurope.com

16th Annual

FINAL AGENDA

PEGS EUROPE

Protein & Antibody Engineering Summit

5 - 7 NOVEMBER 2024

Montjuic Palau de Congressos - Fira Barcelona
Barcelona, Spain + Virtual

SAVE €500!
Register by 28 June

PLENARY DEEP DIVE

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

MODERATOR:
Christian Klein, PhD, Roche Innovation Center

SPEAKERS:

Taruna Arora, PhD, Bristol Myers Squibb

Tomoyuki Igawa, PhD, Chugai Pharmabody Research

Hironori Matsunaga, PhD, Daiichi Sankyo

TABLE OF CONTENTS

Click to View

CONFERENCE AT-A-GLANCE

	MONDAY 4 November	TUESDAY 5 November	WEDNESDAY 6 November	THURSDAY 7 November
ENGINEERING	Pre-conference short courses*	Display of Biologics	Engineering Antibodies	Machine Learning: Part 2
TARGETS		Antibody-Based Therapies	Emerging Targets & Approaches	Membrane Protein Targets
BISPECIFICS		Safety and Efficacy of Bispecifics	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	Protein Process Development
MACHINE LEARNING		TS7A: Introduction to Machine Learning for Biologics Design	Machine Learning: Part 1	Machine Learning: Part 2
ONCOLOGY		Antibody-Based Therapies	Engineering Conjugates	Next-Gen Immunotherapies
Training SEMINARS By Cambridge Healthtech Institute		TS8A: Introduction to Multispecific Antibodies: History, Engineering, and Application TS9A: Current Applications of Host Expression Systems and Optimisation of the CEPA Workflow to Support Therapeutic Generation and Structural Biology TS10A: Introduction to Analytical Characterisation and Method Validation for Biological Products	TS9B: Label-Free Biosensor Tools in Biotherapeutic Discovery: SPR, BLI and KinExA	

**Separate registration required for short courses.*

> "The best biologics technology meeting in Europe. A must-attend conference for novel biologics."
>
> **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, 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, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

PANELISTS:

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

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

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

Present a Poster and SAVE €50

Cambridge Healthtech Institute encourages attendees to gain further exposure by presenting their work in the poster sessions. To secure an onsite poster board and/or ensure your poster is included in the conference materials, your full submission must be received, and your registration paid in full by 4 October 2024.

Register and indicate that you would like to present a poster. Once your registration has been fully processed, we will send an email with a unique link and instructions for submitting your materials. Please see below for more information.

REASONS YOU SHOULD PRESENT YOUR RESEARCH POSTER AT THIS CONFERENCE:

- **Your research will be seen by our international delegation, representing leaders from top pharmaceutical, biotech, academic, and government institutions**
- **Discuss your research and collaborate with other attendees**
- **Your poster will be published in our conference materials**
- **Receive €50 off your registration**

LEARN MORE

CURRENT SPONSORS

PREMIER SPONSORS

CORPORATE SPONSORS

CORPORATE SUPPORT SPONSORS

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 session provides clear definitions of the unwanted immune responses due immunogenic drugs, the workshop will cover how to appropriately collect, analyze, and report potential immunogenic adverse events; assessment and management strategies in alignment with regulatory agencies immunogenicity guidelines. Researchers and clinicians will effectively identify, evaluate, report, analyze, and manage potential immunogenic adverse events, ultimately ensuring the safety and well-being of individuals receiving the treatment.

**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

Henry C. Chiou, PhD, Senior Director General Manager, Biosciences, 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 (FACS, MSD and Gyrolab) methods.

11TH ANNUAL | BARCELONA, SPAIN

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 and Head of the Antibody Alliance Laboratory, 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

Michael R. Dyson, PhD, Vice President, Antibody Discovery & Engineering, Ichnos Glenmark Innovations

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, Director, Augmented Biologics Discovery & Design, Biologics Engineering, Oncology, AstraZeneca

Panelists:

Andrew R.M. Bradbury, MD, PhD, CSO, Specifica, Inc., a Q2 Solutions Company

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 Presentation to be Announced

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

DIFFICULT TARGETS

11:14 Chairperson's Remarks

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-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 to be Announced

12:30 Luncheon Presentation *(Sponsorship Opportunity Available)*

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 Age Loset, PhD, CEO, Nextera AS

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

Philipp Holliger, PhD, Program Leader, Protein & Nucleic Acid Chemistry, MRC Lab of Molecular Biology

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

DISPLAY OF BIOLOGICS

Leading the Way for New Classes of Therapy

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 Age Loset, PhD, CEO, 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 PROIMMUNE www.proimmune.com

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 Presentation to be Announced Q² Solutions

16:50 Sponsored Presentation *(Opportunity Available)*

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 Big Data, Bigger Discoveries: Shaping the Future of Antibody Discovery ENPICOM DECODING THE IMMUNE SYSTEM

Okan Aydin, Business Development Scientist, ENPICOM

Antibody discovery is evolving rapidly with advancements like Next-Generation Sequencing (NGS) and high-throughput screening. However, the sheer volume of data generated presents a formidable challenge in extracting meaningful insights. Join us for a discussion on how scalability, tailored tools, and machine learning converge to address this challenge. Discover how the IGX Platform empowers research teams to navigate complex datasets, accelerating discovery timelines. We'll also explore practical strategies for integrating machine learning into your research, ensuring you can leverage these innovations effectively.

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

ABLEXIS

AlivaMab BIOLOGICS

WEDNESDAY 6 NOVEMBER

7:30 Registration and Morning Coffee

TARGETED RADIOTHERAPIES

8:25 Chairperson's Remarks

Lars Linden, PhD, Vice President, Head, Biologics Research, Bayer AG

8:30 KEYNOTE PRESENTATION: Considerations for the Successful Development of Targeted Radiotherapies

Urs B. Hagemann, PhD, Head, Targeted Radiopharmaceuticals, Research & Early Development Oncology, Bayer AG

Targeted alpha therapies (TATs) are an emerging class of radiopharmaceuticals which systemically deliver high linear energy transfer alpha-emitters to tumours by coupling the radionuclide to tumour-targeting moieties. The mode of action of TATs relies on the induction of DNA double strand breaks. Therefore, TATs have the potential to overcome mechanisms of resistance and improve outcomes in patients with advanced disease. Considerations for the successful development of TATs will be presented.

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 Presentation to be Announced

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

TARGETED PROTEIN DEGRADERS

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 to be Announced

charles river

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, Distinguished Scientist, 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 Presentation to be Announced

evitria

15:05 Sponsored Presentation *(Opportunity Available)*

15:20 Transition to Plenary Keynote Session

PLENARY DEEP DIVE

15:30 Chairperson's Remarks

Christian Klein, PhD, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

15:35 Immunotherapy Highlights

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

15:45 Multispecific Antibody Highlights

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte 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, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

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, Vice President, Biotherapeutics, Bristol Myers Squibb

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

9TH ANNUAL | BARCELONA, SPAIN

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

ENGINEERING NOVEL ANTIBODIES

17:15 Sponsored Presentation *(Opportunity Available)*

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 Presentation to be Announced

19:30 Sponsored Presentation *(Opportunity Available)*

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

8:25 Chairperson's Remarks

Victor Greiff, PhD, Associate Professor, Immunology, University of Oslo

8:30 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.

9:00 Enhancing Antibody Language Models with Structural Information

Jinwoo Leem, PhD, Associate Director, Data Science, Alchemab Therapeutics

The central tenet of molecular biology is that a protein's amino acid sequence determines its three-dimensional structure, and thus its function. Here, we propose contrastive sequence-structure pre-training (CSSP) to amalgamate the representations of antibody sequences and structures in a mutual latent space. Integrating structural information leads both antibody and protein language models to produce sequence representations that better correspond with structural similarity, improved binding prediction accuracy, and data efficiency.

9:30 Sponsored Presentation *(Opportunity Available)*

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, Inc.

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 Deep Learning for Expression Construct Optimisation

Carlos Outeiral, PhD, Eric and Wendy Schmidt AI in Science Research Fellow, Department of Statistics, University of Oxford

Optimising the yield of protein expression experiments is a key challenge in increasing the efficiency of biologics manufacturing. In this talk, I will discuss some of the contributions that the Oxford Protein Informatics Group has made in building deep learning algorithms that can model and optimise protein expression yield.

11:45 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.

12:15 Luncheon Presentation *(Sponsorship Opportunity Available)*

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

Laura P. Spector, PhD, Associate Principal Scientist, Bioinformatics, Specifica Inc.

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

MACHINE LEARNING APPROACHES FOR PROTEIN ENGINEERING: PART 2

Demonstrating Value and Putting Theory into Practice

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.

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 Sponsored Presentation *(Opportunity Available)*

INTERACTIVE DISCUSSIONS

INTERACTIVE DISCUSSION: 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

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. Please visit the Interactive Discussions page on the conference website for a complete listing of topics and descriptions.

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

16:10 Sponsored Presentation *(Opportunity Available)*

16:40 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.

17:10 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.

17:40 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

18:10 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

Volker Schellenberger, PhD, President & CEO, Amunix

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 Tumour-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 Sponsored Presentation *(Opportunity Available)*

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, Associate 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.

12:15 Luncheon Presentation *(Sponsorship Opportunity Available)*

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.

2ND ANNUAL | BARCELONA, SPAIN

ANTIBODY-BASED CANCER THERAPIES

Driving Breathrough Therapies

14:20 Immune Cell Engaging Bispecific Antibodies: Optimising Human Dose and Dosing Regimen

Renu Singh, PhD, Director & Head, DMPK, Aurigene Oncology

The bispecific immune cell engaging antibodies have shown great promise both preclinically and clinically; however, finding right balance of efficacy and safety is very pivotal for clinical success of these bispecifics. Various considerations have to be taken into account for optimising clinical dose, particularly species differences in target expression, target cell population, target biology. The presentation will showcase challenges in optimisation of human dose of bispecific immune cell engager antibodies.

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

Celine Amara, 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.

15:20 Sponsored Presentation *(Opportunity Available)*

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

NOVEL TARGETS

16:35 Sponsored Presentation *(Opportunity Available)*

17:05 Fucosyl-GM1: A Versatile Target for SCLC Therapy

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

SCLC patients are faced with limited treatment options. T cell redirecting antibodies have shown great promise in liquid tumours while ADC modalities have already delivered therapeutic benefit, but careful target selection is warranted for both. The tumour selectivity of the SCLC-associated glycolipid fucosyl-GM1, its expression being virtually absent in normal tissues, combined with evidence of functionality across two modalities open the door additional targeted treatment options for SCLC patients.

17:35 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.

18:05 Sponsored Presentation *(Opportunity Available)*

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, PhD, 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 Identifiying 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, VP, Protein Sciences, 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 *(Sponsorship Opportunity Available)*

12:45 Luncheon in the Exhibit Hall with Poster Viewing

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

Agnete Fredriksen, PhD, Chief Business Officer & Co-Founder, 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

EMERGING TARGETS AND THERAPEUTIC APPROACHES

Hitting the Targets

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 Post-Translationally Modified Insulin as Neoantigen and Therapeutic Target in Type 1 Diabetes

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.

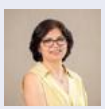
14:50 Sponsored Presentation *(Opportunity Available)*

15:20 Transition to Plenary Keynote Session

PLENARY DEEP DIVE

15:30 Chairperson's Remarks

Christian Klein, PhD, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED



15:35 Immunotherapy Highlights

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

15:45 Multispecific Antibody Highlights

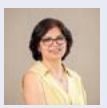
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte Ltd.

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, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

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, Vice President, Biotherapeutics, Bristol Myers Squibb

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

8TH ANNUAL | BARCELONA, SPAIN

EMERGING TARGETS AND THERAPEUTIC APPROACHES

Hitting the Targets

EMERGING TARGETS FOR THE TREATMENT OF NON-ONCOLOGY DISEASES

17:15 Sponsored Presentation *(Opportunity Available)*

17:45 Autoantibody Regulation of the DNA-Degrading Enzyme DNASE1L3 in Autoimmune Rheumatic Diseases

Gregory C. Ippolito, PhD, Associate Professor, Molecular Bioscience, University of Texas at Austin

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.

18:15 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.

18:45 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.

19:15 Sponsored Presentation *(Opportunity Available)*

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 Synthetic Antibodies as Sensors and Allosteric Modulators of GPCR Signaling

Arun K. Shukla, PhD, Assistant Professor, Biological Sciences & Bioengineering, Indian Institute of Technology, Kanpur

G protein–coupled receptors (GPCRs) constitute a large family of cell surface receptors with intricate roles in cellular physiology, and they represent a major class of drug targets. This presentation will be focused on our recent efforts to develop and characterise antibody-based sensors to elucidate novel paradigms of transducer-coupling and activation of GPCRs, and engineer intrabody-based allosteric modulators of downstream GPCR-signaling in cellular context with potential therapeutic relevance.

9:30 Sponsored Presentation *(Opportunity Available)*

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

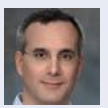
Corey Smith, PhD, Principal Research Scientist, Global Biologics Protein Science, AbbVie

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 *(Sponsorship Opportunity Available)*

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

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

DISCOVERY STRATEGIES FOR TARGETING TRANSMEMBRANE PROTEINS

13:55 Chairperson's Remarks

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

14:00 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.

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

John D. McCafferty, PhD, Scientific Advisor, IONTAS; CEO 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 Sponsored Presentation *(Opportunity Available)*

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. Please visit the Interactive Discussions page on the conference website for a complete listing of topics and descriptions.

16:10 Sponsored Presentation *(Opportunity Available)*

16:40 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.

17:10 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.

17:40 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.

18:10 Close of PEGS Europe Summit

2ND ANNUAL | BARCELONA, SPAIN

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

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

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 Antibody 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 An Engineered IL15 Cytokine Mutein Fused to an Anti-PD1 Improves Intratumoral T Cell Function and Antitumour Immunity

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 immune activation. We addressed these challenges by engineering a fusion protein of IL15 mutein and a PD1-specific antibody (anti-PD1-IL15m). Treatment of tumor-bearing mice with a mouse cross-reactive fusion demonstrated antitumor efficacy. Our findings showed that anti-PD1-IL15m exhibits a high translational promise with improved efficacy and safety of IL15 for cancer immunotherapy.

10:00 Sponsored Presentation *(Opportunity Available)*

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

OPTIMISING EFFICACY OF T CELL ENGAGERS

11:15 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.

11:45 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.

12:15 Luncheon Presentation to be Announced

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 use 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 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

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

Enhancing Safety and Creating Synergies for Novel Therapeutic Modalities

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 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.

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

15:20 Sponsored Presentation *(Opportunity Available)*

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

16:35 Sponsored Presentation *(Opportunity Available)*

17:05 Novel ADC Targets in Solid Tumours

Elena Garralda Cabanas, MD, Director, Early Drug Development, Vall dHebron Institute of Oncology; Director, Phase I Unit, NEXT Oncology

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

Elena Garralda Cabanas, MD, Director, Early Drug Development, Vall dHebron Institute of Oncology; Director, Phase I Unit, NEXT Oncology

18:05 Sponsored Presentation *(Opportunity Available)*

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

8:25 Chairperson's Remarks

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

8:30 Design and Engineering of Bispecific Antibodies: Insights and Practical Considerations

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

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 Presentation to be Announced

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

KEYNOTE FIRESIDE CHAT: The Science and Business of Bispecific Antibodies

11:15 PANEL DISCUSSION

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, Former CEO & Executive Director, Merus NV

12:15 Luncheon Presentation (Sponsorship Opportunity Available)

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

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 Pharmabody Research Pte 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.

ADVANCING MULTISPECIFICS AND COMBINATION THERAPY TO THE CLINIC

Novel and Synergistic Combinations

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

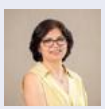
GPRC5D is a G protein-coupled receptor expressed on multiple myeloma cells but absent from most healthy tissues. Clinical combination data suggest a trispecific molecule targeting GPRC5D, BCMA, and T cells may offer substantial benefits. We leveraged DNA + lipoparticle immunisation, divergent species (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, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED



15:35 Immunotherapy Highlights

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

15:45 Multispecific Antibody Highlights

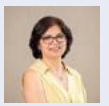
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte Ltd.

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, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

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, Vice President, Biotherapeutics, Bristol Myers Squibb

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte 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 Sponsored Presentation *(Opportunity Available)*

ADVANCING MULTISPECIFICS AND COMBINATION THERAPY TO THE CLINIC

Novel and Synergistic Combinations

17:45 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.

18:15 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.

18:45 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.

19:15 Sponsored Presentation *(Opportunity Available)*

19:45 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, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

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 Presentation to be Announced

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

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 Bispecific Dendritic-T Cell Engagers

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

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

Yariv Mazor, PhD, Senior 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 *(Sponsorship Opportunity Available)*

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

IMMUNOCYTOKINES & DEGRADERS

13:55 Chairperson's Remarks

Christian Klein, PhD, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

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.

ENGINEERING THE NEXT GENERATION OF BISPECIFIC ANTIBODIES

Introducing Novel Functionality and Constructs

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 Presentation to be Announced

FyoniBio

15:15 Sponsored Presentation *(Opportunity Available)*

INTERACTIVE DISCUSSIONS

INTERACTIVE DISCUSSION: 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?

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. Please visit the Interactive Discussions page on the conference website for a complete listing of topics and descriptions.

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 Sponsored Presentation *(Opportunity Available)*

16:40 Discovery of Therapeutic Grade TCRs for Bispecific T Cell Engagers Using a Novel Transgenic Mouse Approach Expressing Fully Human TCRs

Ruud de Wildt, PhD, Vice President, Pipeline Delivery, 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

17:10 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, 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.

17:40 Designing Potent TCR-Based Bispecifics Using Generative AI

Ross Robinson, PhD, Head, 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.

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, Roche

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 Sponsored Presentation *(Opportunity Available)*

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 Luncheon Presentation *(Sponsorship Opportunity Available)*

12:45 Luncheon in the Exhibit Hall with Poster Viewing

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, Assistant Professor, Molecular Cancer Research, University of 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.

7TH ANNUAL | BARCELONA, SPAIN

MODULATING THE TUMOUR MICROENVIRONMENT

Decoding the TME

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 Sponsored Presentation *(Opportunity Available)*

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

UNDERSTANDING AND TARGETING IMMUNE CELLS IN THE TME *(CONT.)*

16:35 Sponsored Presentation *(Opportunity Available)*

17:05 Harnessing Macrophages with Immunotherapy with 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.

17:35 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.

18:05 Harnessing CUE ImmunoSTAT Biologic Platform towards Targeted Depletion of B Cell in Autoimmunity Therapeutics

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.

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

7:30 Registration and Morning Coffee

TME TARGETS FOR EFFICIENT CAR T CELL THERAPY

8:25 Chairperson's Remarks

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

8:30 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.

9:00 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.

9:30 Overcoming Tumour Endothelial Cell Energy 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.

10:00 Presentation to be Announced

KACTUS

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

11:15 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. In this presentation 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.

11:45 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.

12:15 Luncheon Presentation *(Sponsorship Opportunity Available)*

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 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.

7TH ANNUAL | BARCELONA, SPAIN

INNOVATIVE CAR T THERAPY

Pioneering *in vivo* Cell and Gene Engineering

14:50 Sponsored Presentation *(Opportunity Available)*

15:20 Transition to Plenary Keynote Session

PLENARY DEEP DIVE

15:30 Chairperson's Remarks

Christian Klein, PhD, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

15:35 Immunotherapy Highlights

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

15:45 Multispecific Antibody Highlights

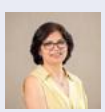
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte Ltd.

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, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

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, Vice President, Biotherapeutics, Bristol Myers Squibb

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte 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 Sponsored Presentation *(Opportunity Available)*

17:45 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.

18:15 Engineered Bacteria Direct the Tumour Specificity of CAR T Cells *in Situ*

Rosa Louise Vincent, PhD, Postdoc, McAllister Lab, MD Anderson

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.

7TH ANNUAL | BARCELONA, SPAIN

INNOVATIVE CAR T THERAPY

Pioneering *In vivo* Cell and Gene Engineering

18:45 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.

19:15 Sponsored Presentation *(Opportunity Available)*

19:45 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 Allogeneic Invariant Natural Killer T Cells—Update on MiNK's Clinical Programs and Next-Generation Pipeline

Marc A. van Dijk, PhD, CTO, MiNK Therapeutics, Inc.

MiNK Therapeutics has treated >80 patients to date with invariant natural killer T cells. We observed durable clinical responses in heavily pre-treated individuals in both solid tumour cancer and in ARDS secondary to viral infections, with a favourable safety profile (Nature Communications and Oncogene, 2024). We will provide an update on our clinical and translational results to date and an outlook on our next-generation CAR-iNKT program.

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 Sponsored Presentation *(Opportunity Available)*

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 to be Announced

WuXi Biologics
Global Solution Provider

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

NEXT-GEN ANTIBODIES 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.

2ND ANNUAL | BARCELONA, SPAIN

NEXT-GENERATION IMMUNOTHERAPIES

Improving Immunotherapy Safety & Efficacy

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

Alexey A. Lugovskoy, PhD, President & CEO, 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 Sponsored Presentation *(Opportunity Available)*

THERAPEUTIC VACCINES

15:30 Harnessing the Power of Combined Vaccine and T Cell Redirecting Bispecific Antibody to Maximise Anti-Tumour Immunity

Foram Dave, PhD, Research Scientist, R&D, Scancell Ltd.

We will introduce an innovative approach of combining vaccine with T cell redirecting bispecific antibody. The vaccine induces initial activation and influx of peripheral T cells, providing an initial boost for CD3 bispecific antibody engagement. Our presentation will include data demonstrating the beneficial effect of combining these two different in-house modalities to enhance anti-tumour immunity.

15:50 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.

16:10 Sponsored Presentation *(Opportunity Available)*

IMMUNOCYTOKINES

16:40 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

17:10 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.

17:40 Protein Engineering Using Novel Chemical Methods to Access PD1-Based Immunocytokines

Arnaud Goepfert, PhD, Associate Director Protein Sciences, 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.

18:10 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 Presentation to be Announced

UNCHAINED LABS

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, Protein Technologies, Ichnos Sciences Biotherapeutics SA

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 *(Sponsorship Opportunity Available)*

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

15TH ANNUAL | BARCELONA, SPAIN

OPTIMISATION AND DEVELOPABILITY

Improving Candidate Selection Leading to Clinical Success

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 Presentation to be Announced

absolute biotech

15:35 Sponsored Presentation *(Opportunity Available)*

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

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

ABZENA Moving medicine forward

Thomas Cornell, Senior Manager Protein Engineering, Protein Engineering, Abzena plc

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 Sponsored Presentation *(Opportunity Available)*

17:05 *In silico* Developability for Biologics

Isabelle Sermadiras, Associate Principal Scientist, AstraZeneca

AstraZeneca's novel Machine Learning–driven Antibody and Biologics discovery platform (MLAB) aims at greatly accelerating the discovery and development of biologics. MLAB integrates machine learning with high-throughput and data-rich experimental approaches, including deep-screening and developability assays. Thanks to bespoke experimental datasets, we have trained predictive ML models for a range of developability attributes which we use to filter out sequences with poor developability profiles early on in the discovery cascade.

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

Peyton Greenside, PhD, Co-Founder & CSO, 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 Sponsored Presentation *(Opportunity Available)*

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, Ghent University

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), Ireland

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 Presentation to be Announced

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, Principal Scientist, 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 Unlocking the Power of Data: AbbVie's Digital Transformation Journey into CMC Biologics Development

Dana I. Filoti, PhD, Associate Director of Scientific Architecture, Development Sciences Data and Digital Strategy, Abbvie

12:15 Luncheon Presentation to be Announced

Waters™

12:45 Luncheon in the Exhibit Hall with Poster Viewing

CHARACTERISATION OF NOVEL BIOTHERAPEUTICS

13:45 Chairperson's Remarks

Dan Bach Kristensen, PhD, Principal Scientist, 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 examples of tailored characterisation strategies.

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

ANALYTICAL CHARACTERISATION OF BIOTHERAPEUTICS

Expanding the Analytical Toolkit for New Modalities

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 Presentation to be Announced

FOx BIOSYSTEMS

15:05 Sponsored Presentation *(Opportunity Available)*

15:20 Transition to Plenary Keynote Session

PLENARY DEEP DIVE

15:30 Chairperson's Remarks

Christian Klein, PhD, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

15:35 Immunotherapy Highlights

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

15:45 Multispecific Antibody Highlights

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte 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, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

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, Vice President, Biotherapeutics, Bristol Myers Squibb

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte 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 Presentation to be Announced

RE•FEYN WEIGHING MOLECULES WITH LIGHT

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

Hristo Svilenov, PhD, Associate Professor, Ghent University

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

ANALYTICAL CHARACTERISATION OF BIOTHERAPEUTICS

Expanding the Analytical Toolkit for New Modalities

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 Pharma Services Inc.

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 Presentation to be Announced

halo labs

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

STABILITY EVALUATION AND PREDICTIONS

8:25 Chairperson's Remarks

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

8:30 A Universal Tool for Stability Predictions of Biotherapeutics

Heloise Quillay, PhD, Principal Scientist and Team Leader, 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.

9:00 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.

9:30 Sponsored Presentation *(Opportunity Available)*

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

AGGREGATION AND IMMUNOGENICITY RISKS

10:45 Aggrescan4D: Structure-Informed Analysis of pH-Dependent Protein Aggregation

Salvador Ventura, PhD, Full Professor, Institut de Biotecnologia i Biomedicina, Universitat Autonoma de 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.

11:15 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.

11:45 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.

12:15 Luncheon Presentation *(Sponsorship Opportunity Available)*

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

SURFACTANTS AND IMPACT ON STABILITY

13:55 Chairperson's Remarks

Heloise Quillay, PhD, Principal Scientist and Team Leader, 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.

PROTEIN STABILITY & FORMULATION

Improving Efficacy and Mitigating Immunogenicity Risks

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 Sponsored Presentation *(Opportunity Available)*

15:30 Networking Refreshment Break

HIGH-THROUGHPUT AND *IN SILICO* MODELING FOR FORMULATION DEVELOPMENT

15:40 Evaluating High-Concentration Solution Dynamics of Therapeutic Proteins in Biologics Research and Development

Benjamin Weiche, PhD, Senior Scientist, Large Molecule Research, Biochemical & Analytical Resaerch, 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.

16:10 Sponsored Presentation *(Opportunity Available)*

16:40 *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.

17:10 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.

17:40 Data Generation and Modelling in Combined Simulation and High-Throughput Screening for Biotherapeutic Formulation Development

Maurizio Baldassarre, PhD, Associate Director & Head, Early Phase Drug Product Development, Merck

Automation and robotics offer immense opportunities to accelerate formulation development of biologics at every clinical stage. While minimising hands-on effort and material demands, these approaches generate vast quantities of analytical and process data which must be correctly acquired, interpreted and modelled in order to successfully develop stable products. The presentation will focus on our latest workflows, which bring together simulations and experimental, high-throughput screening of biotherapeutics.

18:10 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 Presentation to be Announced

10:15 Talk Title to be Announced

Maryam Ahmadi, Director of Cell and Molecular Biology at Sphere Fluidics, Sphere Fluidics Ltd.

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 Luncheon Presentation *(Sponsorship Opportunity Available)*

12:45 Luncheon in the Exhibit Hall with Poster Viewing

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

Sarah Caswell, PhD, Associate Principal Scientist, AstraZeneca

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.

7TH ANNUAL | BARCELONA, SPAIN

USING DATA SCIENCE TO MAXIMISE PROTEIN PRODUCTION

Advancing the Protein Expression and Production Toolbox

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 and final 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 Sponsored Presentation *(Opportunity Available)*

17:05 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.

17:35 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!

18:05 Sponsored Presentation *(Opportunity Available)*

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, Senior Principal Scientist & 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, Senior Principal Scientist & 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 Presentation to be Announced

nuclera

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 ADCs or RITs—How Can We Effectively Design and Manufacture Activity-Enhanced Antibody Formats?

Johannes Felix Buyel, PhD, Head, Institute for Biochemical Engineering, University of Natural Resources and Life Sciences (BOKU)

Antibody-drug conjugates (ADCs) can improve therapeutic indices compared to plain monoclonal antibodies (mAbs). However, recombinant immunotoxins (RITs) that contain a protein-based toxin instead of a small molecule drug can be easier to manufacture yet may require alternative expression hosts. Plants can be such a host as they are capable of the post-translational modifications needed for functional antibodies and can express even highly toxic proteins.

12:15 Luncheon Presentation to be Announced

GenScript

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

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

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.

14:10 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.

14:30 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 Sponsored Presentation *(Opportunity Available)*

15:20 Transition to Plenary Keynote Session

PLENARY DEEP DIVE

15:30 Chairperson's Remarks

Christian Klein, PhD, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

15:35 Immunotherapy Highlights

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

15:45 Multispecific Antibody Highlights

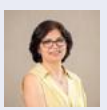
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte Ltd.

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, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

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

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

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, Vice President, Biotherapeutics, Bristol Myers Squibb

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte 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 Presentation to be Announced

BIOINTRON

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.

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 Presentation to be Announced

bioNEER your trusted life science partner

ExcellGene EXPECT GREAT SCIENCE

19:30 Presentation to be Announced

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 Sponsored Presentation *(Opportunity Available)*

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

PROCESS IMPROVEMENTS: INCREASING PRODUCTIVITY AND YIELD

10:45 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%.

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.

11:45 Production of Vault-Like Nanoparticles in a Prokaryotic Expression System

Jose Luis Corchero-Nieto, PhD, Senior Scientist, Nanobiotechnology Group, CIBER-BBN & 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.

12:15 Luncheon Presentation *(Sponsorship Opportunity Available)*

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

9TH ANNUAL | BARCELONA, SPAIN

PROTEIN PROCESS DEVELOPMENT Enhancing Workflows to Streamline Bioproduction from Benchtop to Development

14:00 Spreadsheet DoE: A Tool for Optimising Protein Production and Characterisation

Elliott J. Stollar, PhD, 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, Associate Director, Antibody Discovery & Protein Engineering, Merck Healthcare KGaA

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 Sponsored Presentation *(Opportunity Available)*

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. Please visit the Interactive Discussions page on the conference website for a complete listing of topics and descriptions.

PROCESS IMPROVEMENTS: INSTRUMENTATION AND AUTOMATION *(Cont.)*

16:10 Sponsored Presentation *(Opportunity Available)*

16:40 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.

17:10 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.

17:40 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 IBM Collaboration to Advance Generative AI and Foundation Models for Therapeutic Antibody Development

Kausheek Nandy, Digital Transformation-Research, Boehringer Ingelheim Pharmaceuticals Inc.

In an innovative leap forward, Boehringer Ingelheim and IBM announced a collaboration that aims to transform the antibody discovery process through *in silico* methods utilising sequence, structure, and molecular profile information of disease-relevant targets. Boehringer Ingelheim's commitment to building a leading digital ecosystem for drug discovery and development is complemented by IBM's desire to use generative AI and foundation models to accelerate the discovery of new biologics and small molecules.

10:00 Talk Title to be Announced

BioMap

Per Greisen, President, BioMap

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.

12:15 LUNCHEON PRESENTATION: Cutting Through the Hype: Real-World Applications of AI in Antibody Discovery and Engineering

XtalPi

Mary Ann Pohl, Director of Alliance Management, Biologics Discovery, 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.

13:50 Antibody CDR Design by Ensembling Inverse Folding with Protein Language Models

Diego Del Alamo, PhD, Computational Biologist, 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

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

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, Director, 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.

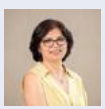
14:50 Sponsored Presentation *(Opportunity Available)*

15:20 Transition to Plenary Keynote Session

PLENARY DEEP DIVE

15:30 Chairperson's Remarks

Christian Klein, PhD, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED



15:35 Immunotherapy Highlights

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

15:45 Multispecific Antibody Highlights

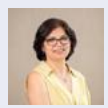
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte Ltd.

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, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

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, Vice President, Biotherapeutics, Bristol Myers Squibb

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte 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 Sponsored Presentation *(Opportunity Available)*

PROGRAM UPDATES FROM AI-CENTRIC BIOPHARMAS

17:45 *In vivo* Differentiated Trastuzumab Variants Designed Using Generative AI

Amir P. Shanehsazzadeh, Artificial Intelligence Scientist, Absci Corp.

We designed trastuzumab variants using generative AI with HER2 binding rates that are statistically superior to baselines. We characterized 421 binders using SPR, finding 71 with <10nM affinity. Eleven

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

binders were functionally equivalent or superior to trastuzumab, with most demonstrating suitable developability features. One binder showed ~3x higher cell-based potency compared to trastuzumab.

18:15 *De novo* Design of Miniprotein-Based NK Cell Engagers

Chris Bahl, President, CSO and Co-Founder, 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.

18:45 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.

19:15 Sponsored Presentation *(Opportunity Available)*

19:45 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

8:25 Chairperson's Remarks

Victor Greiff, PhD, Associate Professor, Immunology, University of Oslo

8:30 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.

9:00 Enhancing Antibody Language Models with Structural Information

Jinwoo Leem, PhD, Associate Director, Data Science, Alchemab Therapeutics

The central tenet of molecular biology is that a protein's amino acid sequence determines its three-dimensional structure, and thus its function. Here, we propose contrastive sequence-structure pre-training (CSSP) to amalgamate the representations of antibody sequences and structures in a mutual latent space. Integrating structural information leads both antibody and protein language models to produce sequence representations that better correspond with structural similarity, improved binding prediction accuracy, and data efficiency.

9:30 Sponsored Presentation *(Opportunity Available)*

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, Inc.

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 Deep Learning for Expression Construct Optimisation

Carlos Outeiral, PhD, Eric and Wendy Schmidt AI in Science Research Fellow, Department of Statistics, University of Oxford

Optimising the yield of protein expression experiments is a key challenge in increasing the efficiency of biologics manufacturing. In this talk, I will discuss some of the contributions that the Oxford Protein Informatics Group has made in building deep learning algorithms that can model and optimise protein expression yield.

11:45 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.

12:15 Luncheon Presentation *(Sponsorship Opportunity Available)*

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

Laura P. Spector, PhD, Associate Principal Scientist, Bioinformatics, Specifica Inc.

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

MACHINE LEARNING FOR PROTEIN ENGINEERING: PART 2

Demonstrating Value and Putting Theory into Practice

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.

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 Sponsored Presentation *(Opportunity Available)*

INTERACTIVE DISCUSSIONS

INTERACTIVE DISCUSSION: 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

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. Please visit the Interactive Discussions page on the conference website for a complete listing of topics and descriptions.

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

16:10 Sponsored Presentation *(Opportunity Available)*

16:40 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.

17:10 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.

17:40 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

18:10 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

Volker Schellenberger, PhD, President & CEO, Amunix

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 Tumour-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 Sponsored Presentation *(Opportunity Available)*

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, Associate 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.

12:15 Luncheon Presentation *(Sponsorship Opportunity Available)*

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.

ANTIBODY-BASED CANCER THERAPIES

Driving Breakthrough Therapies

14:20 Immune Cell Engaging Bispecific Antibodies: Optimising Human Dose and Dosing Regimen

Renu Singh, PhD, Director & Head, DMPK, Aurigene Oncology

The bispecific immune cell engaging antibodies have shown great promise both preclinically and clinically; however, finding right balance of efficacy and safety is very pivotal for clinical success of these bispecifics. Various considerations have to be taken into account for optimising clinical dose, particularly species differences in target expression, target cell population, target biology. The presentation will showcase challenges in optimisation of human dose of bispecific immune cell engager antibodies.

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

Celine Amara, 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.

15:20 Sponsored Presentation *(Opportunity Available)*

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

NOVEL TARGETS

16:35 Sponsored Presentation *(Opportunity Available)*

17:05 Fucosyl-GM1: A Versatile Target for SCLC Therapy

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

SCLC patients are faced with limited treatment options. T cell redirecting antibodies have shown great promise in liquid tumours while ADC modalities have already delivered therapeutic benefit, but careful target selection is warranted for both. The tumour selectivity of the SCLC-associated glycolipid fucosyl-GM1, its expression being virtually absent in normal tissues, combined with evidence of functionality across two modalities open the door additional targeted treatment options for SCLC patients.

17:35 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.

18:05 Sponsored Presentation *(Opportunity Available)*

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 Strategies 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 Sponsored Presentation *(Opportunity Available)*

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 Luncheon Presentation *(Sponsorship Opportunity Available)*

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

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 Dual-Payload ADCs That Show Excellent Biophysical Properties and High Efficacy *in Vivo*

Philipp Spycher, PhD, CEO, 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.

INAUGURAL | BARCELONA, SPAIN

ENGINEERING CONJUGATES

Designing the Magic Bullet

14:50 Sponsored Presentation *(Opportunity Available)*

15:20 Transition to Plenary Keynote Session

PLENARY DEEP DIVE

15:30 Chairperson's Remarks

Christian Klein, PhD, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

15:35 Immunotherapy Highlights

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

15:45 Multispecific Antibody Highlights

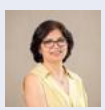
Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte Ltd.

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, Head, Oncology Programs and Department Head, Cancer Immunotherapy Discovery, Roche Innovation Center Zurich, Roche Pharma Research & Early Development, pRED

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, Vice President, Biotherapeutics, Bristol Myers Squibb

Tomoyuki Igawa, PhD, Vice President, Discovery Research Division, Chugai Pharmabody Research Pte 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, Associate Director, Biology, 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.

INAUGURAL | BARCELONA, SPAIN

ENGINEERING CONJUGATES

Designing the Magic Bullet

BISPECIFIC ADCs

18:15 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.

18:45 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 a rapid DAR=2 cargo loading by incorporation of a scFv that binds to a tag with high affinity. Mixing the bispecific antibody with tagged cargo leads to instant drug preparation and a stable antibody-drug conjugate formation. The tag can steer drug cargo to the cytoplasm to optimise drug efficacy, so-called endosomal escape.

19:15 Target-Guided Site-Specific Delivery of a First-in-Class soloMER Drug Conjugate in Autoimmune Inflammation Disease

Obinna C. Ubah, PhD, Principal Scientist & Programme Lead, 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.

19:45 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 Allogeneic Invariant Natural Killer T Cells—Update on MiNK's Clinical Programs and Next-Generation Pipeline

Marc A. van Dijk, PhD, CTO, MiNK Therapeutics, Inc.

MiNK Therapeutics has treated >80 patients to date with invariant natural killer T cells. We observed durable clinical responses in heavily pre-treated individuals in both solid tumour cancer and in ARDS secondary to viral infections, with a favourable safety profile (Nature Communications and Oncogene, 2024). We will provide an update on our clinical and translational results to date and an outlook on our next-generation CAR-iNKT program.

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 Sponsored Presentation *(Opportunity Available)*

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 to be Announced

WuXi Biologics
Global Solution Provider

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

NEXT-GEN ANTIBODIES 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.

2ND ANNUAL | BARCELONA, SPAIN

NEXT-GENERATION IMMUNOTHERAPIES

Improving Immunotherapy Safety & Efficacy

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

Alexey A. Lugovskoy, PhD, President & CEO, 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 Sponsored Presentation *(Opportunity Available)*

THERAPEUTIC VACCINES

15:30 Harnessing the Power of Combined Vaccine and T Cell Redirecting Bispecific Antibody to Maximise Anti-Tumour Immunity

Foram Dave, PhD, Research Scientist, R&D, Scancell Ltd.

We will introduce an innovative approach of combining vaccine with T cell redirecting bispecific antibody. The vaccine induces initial activation and influx of peripheral T cells, providing an initial boost for CD3 bispecific antibody engagement. Our presentation will include data demonstrating the beneficial effect of combining these two different in-house modalities to enhance anti-tumour immunity.

15:50 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.

16:10 Sponsored Presentation *(Opportunity Available)*

IMMUNOCYTOKINES

16:40 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

17:10 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.

17:40 Protein Engineering Using Novel Chemical Methods to Access PD1-Based Immunocytokines

Arnaud Goepfert, PhD, Associate Director Protein Sciences, 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.

18:10 Close of PEGS Europe Summit

SPONSORSHIP OPPORTUNITIES

Comprehensive sponsorship packages allow you to achieve your objectives before, during, and long after the event. Signing on earlier will allow you to maximise exposure to hard-to-reach decision-makers.

PODIUM PRESENTATIONS - AVAILABLE WITHIN MAIN AGENDA!

Showcase your solutions to a guaranteed, targeted audience through a 15- or 30-minute presentation during a specific conference program. Package includes exhibit space, on-site branding, and access to cooperative marketing efforts by CHI. Presentations do sell out early.

ONE-ON-ONE MEETINGS

Work with us to identify your target prospects and we will schedule meetings for you. Think of us as your inside sales team with all your hottest leads in close reach. Opportunities sold on a very limited basis.

INVITATION-ONLY DINNER / HOSPITALITY SUITE

Sponsors will select their top prospects from the conference preregistration list for an evening of networking at the hotel or at a choice local venue. CHI will extend invitations, conduct follow-up, and confirm attendees. The evening will be customised to meet with your specific objectives.

EXHIBIT BOOTH SPACE (sold as part of sponsorship packages only)

Exhibitors will enjoy facilitated networking opportunities with over 1,500+ qualified delegates, making it the perfect opportunity to launch a new product, collect feedback, and generate new leads from around the world.

ADDITIONAL SPONSORSHIP & BRANDING OPPORTUNITIES INCLUDE:

- Hotel Room Keys
- Track Receptions
- Game Card
- Footprint Trails
- Conference Tote Bags
- Literature Distribution (Tote Bag Insert or Chair Drop)
- Padfolios
- Conference Material Advertisement

HOW SPONSORING PROMOTES & BENEFITS YOUR BUSINESS:

- Generate qualified leads consisting of actual decision-makers from within your focus area
- Network with over 1,500+ senior-level professionals and generate leads during dedicated exhibit hall hours, lunches, etc.
- Promote your company's participation in the conference materials
- Increase your brand awareness and drive organic traffic to your website through our various marketing campaigns
- Increase Dedicated Networking Time in the Exhibit Hall

FOR ADDITIONAL INFORMATION REGARDING SPONSORSHIP AVAILABILITY, PLEASE CONTACT:

COMPANIES A-K
Jason Gerardi
Sr. Manager, Business Development
781-972-5452 | jgerardi@healthtech.com

COMPANIES L-Z
Ashley Parsons
Manager, Business Development
781-972-1340 | ashleyparsons@healthtech.com

Hotel & Travel Information

CONFERENCE VENUE:

Montjuic Palau de
Congressos - Fira Barcelona
Av. de la Reina Maria
Cristina, s/n
08004 Barcelona, Spain

Please visit pegsummiteurope.com/travel for reserving hotel accommodations and for additional Information.

HOST HOTELS:

Expo Hotel Barcelona
C/Mallorca, 1-23
Barcelona 08014, Spain

Nobu Hotel Barcelona
Avenida de Roma 2-4
Barcelona, 08014, Spain