AGENDA

DAY 1 — WED MAY 7

8:30–9:30	**REGISTRATION**
9:30–9:40	Opening Remarks **Daniel Christ** *Garvan Institute*
9:40–10:30	**KEYNOTE: Greg Winter** *Cambridge University*
10:30–11:00	**Adam Clarke** *AbCellera*
11:00–11:20	**MORNING TEA**

Session 1: Antibodies in Cardiology

PRESENTED BY ThermoFisher SCIENTIFIC

11:20–11:30	Platinum Sponsor Talk
11:30–12:00	**Karlheinz Peters** *Melbourne University*
12:00–12:30	**Christoph Hagemeyer** *Monash University*

Session 2: Antibodies in Oncology

PRESENTED BY sysmex

12:30–13:00	**Jason Gill** *Teva Pharmaceuticals*
13:00–13:50	**LUNCH**
13:50–14:20	**Ben Kiefel** *Myrio Tx*
14:20–14:50	**Peter Janes** *Olivia Newton-John Cancer Research Institute*
14:50–15:00	Platinum Sponsor Talk
15:00–15:30	**Ross Dickens** *Monash University*
15:30–16:00	**Brad Walsh** *GlyTherix*
16:00–16:20	**AFTERNOON TEA**

Session 3: New Targets

PRESENTED BY GenScript

16:20–16:30	Platinum Sponsor Talk
16:30–17:00	**Alvin Chew** *GenScript*
17:00–17:30	**Lisa Williams** *Alkira Bio*
17:30–18:00	**Remy Robert** *Monash University*
18:00–20:00	**MIXER EVENT**

DAY 2 — THU MAY 8

8:30–9:30	**LIGHT BREAKFAST**
9:30–9:40	Platinum Sponsor Talk
9:40–10:30	**KEYNOTE: Juliet Gerrard** *Aukland University* PRESENTED BY cytiva
10:30–11:00	**Daniel Christ** *Garvan Institute*
11:00–11:20	**MORNING TEA**

Session 4: Antibody IP and Capital Landscape

PRESENTED BY IDT INTEGRATED DNA TECHNOLOGIES

11:20–11:30	Platinum Sponsor Talk
11:30–12:00	**Steve Gledhill** *FB Rice*
12:00–12:30	**Chris Smith** *Brandon Capital*

Session 5: Short Presentations

PRESENTED BY THERAPEUTIC INNOVATION AUSTRALIA

12:30–12:35	**Ben Hughes** *Therapeutic Innovation Australia*
12:35–12:45	**Sacha Zinn** *Garvan Institute*
12:45–12:55	**Kailash Kumar Vinu** *Actimo Labs*
12:55–13:05	**Maggie Ma** *Promega*
13:05–13:15	**Hayley Ramshaw** *Monash University*
13:15–13:50	**LUNCH**

Session 6: Antibody Engineering for Function

PRESENTED BY decode science TWIST BIOSCIENCE

13:50–14:00	Platinum Sponsor Talk
14:00–14:50	**KEYNOTE: Sally Ward** *University of Southhampton*
14:50–15:20	**Clarissa Whitehead** *Burnett Institute*
15:20–15:50	**Colby Souders** *Twist Bioscience*
15:50–16:00	Closing Remarks **Daniel Christ** *Garvan Institute*
16:00–16:45	**AFTERNOON TEA**

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THERAPEUTIC INNOVATION AUSTRALIA

THANK YOU!

ABSTRACTS

DAY 1 - WED MAY 7

Greg Winter
Cambridge University

A tale of two antibodies

Abstract: In recent years we have seen a revolution in the development of monoclonal antibodies as pharmaceutical drugs. As one of its ringleaders, I shall relate how the revolution unfolded in the development of two antibodies, alemtuzumab and adalimumab, including the interplay of technology, intellectual property, business and politics.

Bio: Greg developed technologies that led to several blockbuster antibody drugs, including Humira, Keytruda, Avastin, and Herceptin, and for his work on antibody phage display shared the Nobel Prize in Chemistry in 2018.

In parallel with his research, he immersed himself in commercial matters, including the filing of patents, the development of licensing strategies and the founding of start-up companies.

Greg serves as Director of Immutrin Ltd, which he founded for the development of transformative antibody treatments to remove harmful amyloid deposits in patients with systemic and local amyloidosis.

Adam Clarke
AbCellera

AbCellera's TCE platform

Abstract: T-cell engager (TCE) function is determined by the complex interplay between multiple immune synapse parameters that are difficult to optimize in isolation. To address this challenge, AbCellera's approach is to empirically test diverse TCEs with varying binding affinities, geometries, epitopes, and formats to identify molecules with high potency and acceptable cytokine profiles. Preclinical data on our PSMA x CD3 program illustrate application of our platform, leading to identification of molecules with potent and sustained *in vitro* tumor-cell killing and significant *in vivo* tumor growth inhibition in a xenograft model. We further show that combining these molecules with costimulatory PSMA x CD28 bispecifics could enhance anti-tumor activity.

Bio: Adam Clarke is the Senior VP of Discovery at AbCellera. He leads a Discovery team that focuses on target identification through to development candidates. He has 20 years experience working in the pharma and biotech space including companies like Teva, Arana Therapeutics and Peptech. He specialises in antibody therapeutic development.

Session 1: Antibodies in Cardiology

PRESENTED BY **ThermoFisher**

Karlheinz Peters
Melbourne University

Single chain antibodies for theranostic approaches in cardiovascular diseases

Abstract: Targeting of membrane molecules that reflect biological functions of cells is highly attractive both for diagnostic and therapeutic (and the combination of both: theranostics). We focused on two such surface molecules, activated integrin GPIIb/IIIa (specific for activated platelets) and adhesion molecule VCAM-1 (specific for activated endothelial cells).

Bio: Prof Karlheinz Peter is Head of the Cardiometabolic Health Department at the University of Melbourne, Deputy Director, and Head of the Atherothrombosis & Vascular Biology Laboratory at the Baker Heart and Diabetes Institute. Prof Peter also works as an interventional cardiologist at the Alfred Hospital and holds an Investigator Level 3 NHMRC fellowship.

Prof Peter undertook medical and research training at the University of Freiburg & Heidelberg Germany, followed by further research and clinical training at the Johns Hopkins Medical School, Scripps Research Institute, and the University of North Carolina at Chapel Hill, USA. Prior to moving to the Baker Institute, Prof Peter was Director of the Cardiac Catheter Laboratory at the University of Freiburg.

Prof Peter's research is focused on the role of platelets, coagulation, and inflammation in the development of thrombosis, atherosclerosis, myocardial infarction and stroke. His work has led to the identification of novel biomarkers and molecular imaging strategies for thrombosis and unstable plaques as well as innovative, biotechnological anti-thrombotic and anti-inflammatory antibody-based therapies. He recently co-founded a Centre for mRNA therapy of cardiovascular diseases at the Baker Institute.

Prof Peter is also the founder and Chief Medical Officer of the biotech company NIRTEK, which is developing an intracoronary optical guide wire capable of identifying unstable rupture-prone atherosclerotic plaques.

Christoph Hagemeyer
Monash University

Conformation-Specific Antibodies for the Therapy of Vascular Disease

Abstract: Cardiovascular disease remains the leading cause of death worldwide, underscoring the urgent need for innovative therapeutics to and treat acute events such as myocardial infarction and stroke. Ideally, effective treatment should begin in the pre-hospital setting, for example, in ambulances, to minimise tissue damage. However, current therapies are often limited by significant challenges, including severe adverse effects such as bleeding complications.

Recombinant antibodies have emerged as a major focus in pharmaceutical research, demonstrating notable therapeutic success across a range of medical conditions. Platelets, which originate from megakaryocytes, are critical in haemostasis, thrombosis, and inflammation. While clinical drugs targeting the platelet receptor GPIIb/IIIa have been approved, these agents bind the receptor indiscriminately, regardless of its activation state,
thereby inhibiting all circulating platelets.

In contrast, we have developed conformation-specific single-chain antibodies against GPIIb/IIIa that selectively bind only to activated platelets. This specificity facilitates the safe delivery of thrombolytic agents. Our approach achieves therapeutic efficacy at significantly lower doses than non-targeted drugs, reducing the risk of adverse side effects.

Acute thrombosis is driven not only by thrombogenic stimuli such as collagen and tissue factor but also by complex hemodynamic conditions, including the high shear stress found in stenotic vessels that activates prothrombotic von Willebrand Factor (VWF). To address this, we have developed a conformation-specific single-chain antibody that selectively targets and blocks shear-sensitive epitopes of VWF. This strategy offers a novel and promising pathway to inhibit excessive thrombus formation with enhanced safety and efficacy compared to existing therapies.

In summary, conformation-specific antibodies represent a transformative advancement in the treatment of vascular disease, providing improved safety, efficacy, and precision.

Bio: Professor Hagemeyer serves as the Director of Monash Biomedical Imaging and the Head of the NanoBiotechnology Laboratory at the Australian Centre for Blood Diseases, Monash University. He began his academic journey studying Chemistry in Germany and earned his PhD in Biochemistry from the University of Freiburg. Early in his career, he made significant contributions to understanding Cytochrome P450 metabolism in the brain. He later transitioned to cardiovascular research, where he developed innovative anti-thrombotic fusion proteins and novel imaging probes. With a particular expertise in using small recombinant single-chain antibodies for molecular imaging and targeted drug delivery, Professor Hagemeyer now focuses on developing “bio-better” antibodies with enhanced functionality through the novel Sortase Bio Click technology pioneered in his laboratory. His extensive research portfolio, spanning vascular biology, recombinant antibodies, and nanotechnology, has been widely published in prestigious journals such as Circulation Research, Advanced Materials, and Angewandte Chemie. His work has consistently earned support from national and international fellowships and grants.

Session 2: Antibodies in Oncology

PRESENTED BY **Sysmex**

Jason Gill
Teva Pharmaceuticals

Novel approaches to cancer immunotherapy: Next generation Immunocytokines

Abstract: Interleukin-2 (IL-2) is a cytokine shown to drive immune-related cytotoxic responses in cancer. Nevertheless, the clinical use of IL-2 is severely limited by significant systemic toxicity and a narrow therapeutic window. We have developed the next generation immunocytokine TEV-56278 to help overcome these limitations. TEV-56278 is an antibody-cytokine fusion protein composed of an anti-PD-1 antibody fused to a highly attenuated variant of IL-2 and was designed to deliver attenuated IL-2 specifically to PD-1-expressing effector T cells, while not inhibiting PD-1 receptor function. As tumor-infiltrating T-cells display elevated levels of PD-1 versus circulating and tissue-resident T-cells, PD-1 is an ideal target for selective delivery of IL-2 without causing severe treatment-related toxicities. In pre-clinical syngeneic mouse-tumor models TEV-56278 or its mouse surrogate antibody (mAnti-PD1-IL2) resulted in tumor regression, enhanced T-cell infiltration into the tumor, and establishment of durable immune memory. TEV-56278 has therefore been taken forward into first-in-human clinical trial as a monotherapy and in combination with the PD-1 antagonist pembrolizumab.

Bio: Jason Gill is Director of Biologics Discovery Immunology, at Teva Pharmaceuticals Australia. Jason received his Ph.D. in Immunology at Monash University and did his postdoctoral studies in Basel, Switzerland before joining the team at Teva in 2013. Jason is a translational research scientist, specialising in the fields of immunology and oncology with over 15 years of experience in drug discovery. He leads a cross-functional team, aiding the development of novel biologics and contributing to back-translational efforts from clinical studies. His team drives early preclinical pharmacology in vitro and in vivo studies and has longstanding experience in developing studies to evaluate drug mechanism of action. His teams work thus bridges early and late-stage projects.

Ben Kiefel
Myrio Tx

Retained Display (ReD)TM: Myrio Therapeutics' leading technology for discovery of peptide-HLA binders

Abstract: Many high profile cancer targets, such as common oncogenic driver mutations, are found intracellularly and are not normally appropriate targets for conventional antibodies. However, peptides derived from these proteins that are presented on the cell surface as peptide-HLA complexes may be targeted. Myrio Therapeutics has developed a unique antibody discovery platform, Retained Display (ReD)TM, enabling novel antibody-based immunotherapeutic approaches exploiting peptide-HLA targets for many disease indications.

Here, we describe the key features of the ReDTM that provide unprecedented screening success for this challenging target class. We also provide several examples of how we have successfully deployed ReDTM for the discovery of binders recognising diverse targets, including: (a) developmental regulators switched oI in adult cells, but remaining active and driving paediatric solid tumours, (b) neoantigens differing from wildtype by only a single amino acid, and (c) human endogenous retrovirus antigens associated with renal carcinoma. These programs leverage Myrio's unique capabilities around affinity maturation and 'breaking restriction'.

With rapid discovery and ease of conversion to various therapeutic formats, antibody-based technologies have many advantages over the T cell-receptor-based approach for peptide-HLA targeting. Therapeutics based on binders originating from Myrio's platform are now entering the clinic, providing new treatment options for patients in urgent need of transformative therapies.

Bio: Ben serves as Chief Operating Officer and co-founder of Myrio Therapeutics in 2009, Ben plays a pivotal role in driving the company's mission to develop innovative immuno-oncology therapies. Based in Melbourne, Australia, Ben is a key innovator within the company, holding the distinction of being co-inventor of the Retained Display (ReD) technology and holding numerous patents in novel protein display and compositions. Ben also leads Myrio's Maturation Team, overseeing the critical stages of therapeutic development.

Myrio Therapeutics specialises in discovering antibodies targeting peptide-MHC (pHLA) complexes to address challenging oncology targets using its proprietary ReD platform. Dedicated to designing HLA-targeted therapeutics for diverse global patient populations, Myrio aims to expand treatment options for all communities including those that are underserved.

Peter Janes
Olivia Newton-John Cancer Research Institute

Novel antibody drug conjugates targeting tumours and their microenvironment

Abstract: We are developing antibodies against active forms of the ADAM transmembrane metalloproteases, which are overexpressed in many types of tumours, and associated with a more aggressive phenotype and poor patient prognosis. We also target the cell guidance receptor EphA3, which is expressed in both tumour cells and the tumour microenvironment, but not in normal homeostatic tissues. We have validated tumour-promoting roles for these proteins in laboratory models and are now exploiting our tumour selective antibodies conjugated to cytotoxic drugs, to selectively kill tumour cells.

Bio: After completing his PhD at the Garvan Institute, with Roger Daly, Peter undertook postdoctoral research at the National Institute for Medical Research in London and the Peter MacCallum Cancer Institute in Melbourne, followed by NHMRC research fellow positions with Martin Lackmann at Monash University, where he investigated the role of Eph receptors and ADAM metalloproteases in cancer. In 2018 he joined the Olivia Newton-John Cancer Research Institute as a lab head working with Andrew Scott, on developing therapeutic antibodies against these and other targets in tumours.

Ross Dickens
Monash University

Immunosuppressive biologics targeting the CD80:PD-L1 duplex

Abstract: Therapeutic blockade of the PD-L1/PD-1 checkpoint can induce T cell activation and anti-tumour immunity. Conversely, checkpoint agonist therapies are being developed for T cell mediated autoimmune and inflammatory conditions. Our laboratory has recently produced a novel immunosuppressive biologic targeting the antigen-presenting cell surface costimulatory ligand CD80. This antibody-based biologic blocks CD80-mediated T cell costimulation, and simultaneously releases PD-L1 from CD80 thereby triggering the inhibitory PD-L1/PD-1 checkpoint. This dual biophysical mechanism cooperatively shuts off T cell activity, and in primary human T cell assays and humanised mouse models of autoimmunity it outperforms the blockbuster therapy abatacept (CTLA4-Ig) and other PD-1 agonists. The multimodal inhibitory mechanism of this new anti-CD80 format has therapeutic potential in a range of autoimmune and inflammatory diseases.

Bio: Ross Dickins is an Associate Professor at the Australian Centre for Blood Diseases, Monash University. His laboratory uses genetic technologies and mouse models to investigate novel therapeutic strategies for acute leukaemia, and has also developed biologics that modulate T cell checkpoints in autoimmunity and cancer. In 2022 he co-founded Monash spinout company FLEX Immunotherapeutics.

Brad Walsh
GlyTherix

Development of a novel tumour targeting chimeric antibody - Miltuximab

Abstract: Glypican-1 (GPC-1) is a promising new cancer target as the GPC-1 protein is present at high levels on multiple solid tumours but is not present on normal tissue The Miltuximab antibody binds to GPC-1 and can deliver imaging or therapeutic radioisotopes to cancers. Miltuximab has already been shown to be well tolerated in a first in human clinical trial. The antibody has a long and fascinating development story and an exciting pathway ahead. The author will detail this story and why the target shows such great promise in cancer therapy.

Bio: Dr. Brad Walsh founded GlyTherix to advance an innovative antibody targeting solid tumors like prostate, bladder, glioblastoma, and others. He has driven the company's scientific and business growth, securing funding for successful completion of Miltuximab®'s First-in-Human safety study. GlyTherix is now preparing for a Phase 1 trial in Australia. With a background in protein chemistry and extensive leadership in biotechnology across government, academic, and hospital settings, Dr. Walsh co-established a national research facility and received a prestigious Eureka Prize for Interdisciplinary Research. He remains active in research with over 125 peer reviewed papers and mentoring in STEM.

Session 3: New Targets

PRESENTED BY **GenScript**

Alvin Chew
GenScript

Next-Gen Biologics Production: Case Studies from mAbs to Overcoming BsAb Challenges

Abstract: The convergence of artificial intelligence (AI)-driven protein design and advanced recombinant technologies has ushered unprecedented opportunities in biologics development, enabling the creation of highly complex bispecific antibodies (BsAbs) and production of antibody subtypes less explored. In this presentation, we review case studies that address both the challenges and solutions in next-generation biologics production. Focusing on BsAbs, we delve into the unique hurdles inherent in their development - from structural complexity and manufacturability to stability and scalability. Practical insights will be shared on optimizing expression systems, purification strategies, and analytical methods to overcome these barriers. Beyond conventional IgG1/2a subtypes, we also highlight the distinct production challenges of IgA, IgM, and IgE which are of increasing interest for novel therapeutic modalities.

Bio: Alvin Chew graduated with a PhD in Structural Biology from the Interdisciplinary Graduate School at Nanyang Technological University (NTU), Singapore, in January 2022. Subsequently, he received the Dean's Postdoctoral Fellowship from Lee Kong Chian School of Medicine (LKCMedicine), NTU, to pursue independent research on developing nanobodies for detection and biotherapeutic purposes. His technical expertise includes protein production, bioengineering, biophysical techniques, liquid chromatography, mass spectrometry, and the use of open-source lab automation. Alvin's recent first-author publications with his collaborators have provided structural insights on the physiological states of the secreted flavivirus NS1 structures during infection. He was recognized with a travel award and the 1st Prize in the Post-Doctoral Category at the 2024 International Conference on Antiviral Research (ICAR) held in Gold Coast, Australia. Additionally, he played an instrumental role in developing CapQuant, a systems-level mass spectrometry-based technique for accurate and sensitive quantification of the RNA cap epitranscriptome, which was published in Nature Protocols (2023) and Nucleic Acids Research (2019).

Lisa Williams
Alkira Bio

A LASEREDD focus on GPCR-targeting antibodies

Abstract: G protein-coupled receptors (GPCRs) are the largest class of drug targets, yet identifying and developing selective GPCR-targeting drugs is challenging. Biologics are emerging as superior modalities to achieve selective GPCR modulation compared to traditional small molecule approaches. Class A GPCRs comprise the largest family of drug targets, but present several challenges for novel biologics discovery. Typical GPCRs have limited extracellular accessible epitopes and are highly dynamic proteins hindering the identification of functionally active antibodies. We have developed a novel method called Lentiviral-Assisted Selection Enabling Receptor Engineering and Drug Discovery (LASEREDD) to overcome some of these challenges.

The LASEREDD® platform allows the identification of rare pharmacologically active anti-GPCR antibodies from diverse, immune libraries. Using the LASEREDD® platform, we have identified the first truly antagonistic anti-monoamine GPCR antibody, LtxNb004. LtxNb004 is a VHH, that binds to α 1A -adrenoceptor (α 1A -AR) with high affinity, selectivity, and shows rodent cross-reactivity. We have also solved a high-resolution cryo-electron microscopy structure of α 1A -AR in complex with LtxNb004, revealing unique molecular mechanisms of binding, selectivity, and antagonism, not achievable by small molecule approaches to date.

Bio: Lisa completed her PhD in Biochemistry at the University of Melbourne. Her work then contributed to the founding of biotechnology company Alkira bio, where she now works as an Associate Director of Discovery. Alkira bio uses its proprietary LASEREDD® technology platform to discover therapeutic antibodies directed against previously out of reach targets, pioneering new possibilities for drug discovery.

Remy Robert
Monash University

Antibody mediated depletion of pathogenic cells through their chemokine receptor signatures

Abstract: Activation of chemokine receptors orchestrates the trafficking of pathogenic immune cells to sites of inflammation, thus contributing to the development of numerous pathologies. Consequently, chemokine receptors have emerged as promising therapeutic targets. Despite the well documented involvement of chemokine receptors in many diseases, redundancy of the chemokine system has been thought to be a major reason for the failure of drug development in this area. We found that targeted depletion of pathogenic cells through their chemokine receptor signatures evokes a stronger therapeutic effect than just inhibition. We believe that such a strategy could overcome chemokine receptor redundancy.

Bio: A/Prof Remy Robert is a research fellow in the Department of Physiology (Monash University). His group specializes in therapeutic antibody development and antibody engineering. He did his PhD in which he developed new techniques to isolate antibodies in in vivo disease models using phage display technology. In 2007, he did his postdoc with Prof Pete Hudson at CSIRO in the area of protein and antibody engineering. In 2011, he joined the laboratory of Professor Charles Mackay at Monash University and then became group leader in 2017 (Therapeutic Antibody For Inflammation Lab). Remy's goal is to move academic science into translation in the form of new antibody therapies using cutting-edge protein engineering techniques and human receptor knock-in mice.

Juliet Gerrard
Auckland University

Science and science advice in New Zealand: a changing landscape

Abstract: In this talk I will reflect on lessons learned in my role as the Chief Science Advisor to three Prime Ministers of New Zealand during six years that included a terrorist attack, a volcanic eruption and a pandemic. I will also give an update on the latest in an ongoing series of changes in the scientific and health research landscape in New Zealand.

Bio: Juliet is a Professor at the University of Auckland across the School of Chemical Sciences, the School of Biological Sciences and the Department of Chemical and Materials Engineering. She has chaired the Marsden Council, served on the Board of Directors of Plant and Food Research, and is currently on the Board of Te Papa, the National Museum of New Zealand, and the New Zealand Food Waste Champions. During her 6 years as the Prime Minister's Chief Science Advisor (2018-2024), she supported the science community to provide advice to the PM, Ministers, and the public on a wide range of topics, including the response to the Whakaari | White Island eruption, the Covid-19 pandemic, rethinking plastics, commercial fishing, food waste, and antimicrobial resistance. Juliet has a keen interest in strengthening connectivity between researchers and policy across the research spectrum.

Daniel Christ
Garvan Institute

Targeting challenging antigens with monoclonal antibodies

Abstract: Monoclonal antibodies have revolutionised the treatment of cancer and many inflammatory conditions. However, challenges remain, and many antigen classes have remained largely undraggable by monoclonals. This includes the targeting of post-translationally modified proteins, systemic amyloid, structured nucleic acids and carbohydrates. Here we outline strategies to target such challenging antigens both in vitro and in vivo, and to characterise their binding modes by X-ray crystallography.

Bio: Professor Daniel Christ leads the Antibody Therapeutics Lab and directs the Centre for Targeted Therapy at Sydney's Garvan Institute of Medical Research. Educated at ETH Zurich and Cambridge University, he collaborated with Nobel Laureate Sir Gregory Winter on monoclonal antibody technologies, contributing to the development of single-domain antibodies and co-founding Domantis Ltd, later acquired by GSK, as well as more recently Solvanix and Immutrin. At Garvan since 2007, Christ focuses on engineering antibodies against challenging targets, including post-translationally modified proteins and structured nucleic acids.

Session 4: Antibody and IP Capital Landscape

PRESENTED BY **IDT DNA**

Steve Gledhill
FB Rice

Antibody patents – challenges and strategies

Abstract: This session will explore the evolving landscape of antibody patenting and examine recent case law developments and their implications for patent claim scope and Freedom to Operate.

We'll delve into strategic approaches to securing antibody patents in light of tightening legal standards and rapid technological advances, including in silico modelling of sequence variants.

We'll tackle the question of patent value, including issues such as claim scope, term of protection, and follow-on patents.

Finally, we'll also consider the potential upsides of judicial trends toward narrower patent claims—from stronger patents to reduced barriers to entry.

Bio: Steve Gledhill is a partner in the FB Rice biotechnology team and leads their broader Life Science team, providing an extensive range of intellectual property services. As well as being a registered Australian and New Zealand Patent Attorney, he has qualified as a UK and European Patent Attorney and has considerable international experience.

Chris Smith
Brandon Capital

The Antibody Therapeutics Landscape: An Australian VC Perspective

Abstract: Over the past two decades, antibodies have revolutionized the therapeutic landscape, now accounting for about 50% of the top 20 global drugs by sales. Australia's biotech community has a long history of innovation in this area. Dr. Smith will highlight the latest investment trends in the antibody space and what investors are seeing are pushing the boundaries of antibody therapies.

Bio: Dr Chris Smith PhD MBA is a Partner at Brandon Capital having joined the firm in 2012. Prior to this, Chris was a Business Development Manager with CSL, Australia's largest pharmaceutical company where he was responsible for identifying and reviewing opportunities for CSL's global R&D pipeline, and has extensive licensing and transaction experience in biotech. Chris has led investments across many modalities and therapeutic areas including biologics, and is currently a director of; Aravax, Denteric, Ena Respiratory, MycRx, Q-Sera and Axelia Oncology.

Session 5: Short Presentations

PRESENTED BY **Therapeutic Innovation Australia**

Sacha Zinn
Garvan Institute

Ab-juvants: Boosting humoral immunity with co-expressed mAbs

Abstract: Messenger RNA (mRNA) vaccines have proven to be a versatile platform well placed for investigating advanced immunisation strategies. Here, we explore how co-expressed monoclonal antibodies (mAbs) influence the development of humoral responses when delivered via the mRNA vaccine platform. Using a murine immunization model, we evaluated the impact of mRNA expressed immune-complexes on germinal centre formation and antibody production. Flow cytometric analysis of lymph nodes revealed strong cellular responses across all groups, while serological analysis via ELISA demonstrated significant increases in endogenous IgG1 production in mice immunized with immune-complexes. These findings suggest that co-expressed mAbs can act as “Ab-juvants,” enhancing the magnitude of antigen-specific antibody responses. This strategy may inform the next generation of vaccine designs aimed at improving durability and potency of protective immunity.

Bio: Sacha has worked in the Antibody Therapeutics Lab under Prof. Daniel Christ since 2021. Initially as an honours student and then a research assistant, he is now in the second year of his PhD. During that time he’s worked extensively in antibody engineering and mRNA vaccinology, seeking to combine and synergise these two powerful technologies.

Kailash Kumar Vinu
Actimo Labs

ActiMap – Advancing Epitope Mapping Through AI-Driven In-Silico

Abstract: Epitope mapping is crucial for understanding antibody-antigen interactions, yet current methods such as shotgun mutagenesis and mass spectrometry are costly, resource-intensive, and time-consuming. These challenges hinder high-throughput screening and slow the development of antibody-based therapeutics. While computational approaches for B-cell epitope prediction have been explored for decades, many exhibit significant limitations, particularly in accurately identifying allergenic epitopes, underscoring the need for more advanced solutions. To address this, we have developed ActiMap, an AI-driven in-silico platform that delivers accurate and computationally efficient epitope mapping. Leveraging a novel methodology, ActiMap predicts antigenic determinants with high precision, eliminating the need for extensive wet-lab validation. This significantly reduces both financial and time constraints, allowing researchers to rapidly characterize antibody binding profiles. In this presentation, we will discuss the overall technology, validation against experimental datasets, and comparative performance of ActiMap. We will explore its impact on therapeutic antibody development and rational vaccine design. By offering a scalable, cost-effective alternative to traditional mapping techniques, ActiMap represents a paradigm shift in antibody discovery, accelerating innovation in biotherapeutic research and development.

Bio: Kailash is the Chief Executive Officer and Co-founder of Actimo Labs, where he leads product and business development for AI-powered tools that accelerate antibody drug discovery. He holds a bachelor's degree in biochemistry and human pathology from Monash University and completed honours research in regenerative medicine at the Australian Regenerative Medicine Institute.

Maggie Ma
Promega

Advancing Immunotherapy Development with Comprehensive Fc Effector Function Assays

Abstract: Immune system primary effector cells, such as macrophage and natural killer cells, are crucial in combating cancer and infectious disease through mechanisms such as antibody-dependent cellular phagocytosis (ADCP) and antibody-dependent cellular cytotoxicity (ADCC). Both ADCP and ADCC are key mechanisms in antibody-based cancer immunotherapies, beginning when antibodies bind to Fc gamma receptors (FcγRs) on the immune cells, triggering a cascade of events that lead to the downstream cellular response. In this context, we introduce an array of innovative luminescent technologies tailored to assess Fc effector functions through:

- Characterization of the antibody FcyR binding through Lumit immunoassays
- ADCC and ADCP are evaluated through reporter bioassays, leveraging expression of various
- FcγRs and integrating a luminescent reporter reliant on FcγR activation
- Directly detecting cell killing and cellular phagocytosis through HiBiT Target Cell Killing

Bioassays using primary cells such as PBMCs, T cells, and macrophage These bioassays are both robust and user-friendly and adhere to ICH guidelines with pre-qualification. Collectively, these innovative reporter bioassays furnish a sturdy, complete pipeline and toolkit to expedite the exploration and advancement of immunotherapies targeting Fc effector functions.

Bio: Dr. Maggie Ma has been the Field Applications Specialist for NSW and ACT in Australia at Promega Corporation since 2012. In this role, she partners with academic and industry teams to integrate Promega's suite of innovative technologies—spanning drug-discovery assays, clinical diagnostic tools, molecular-biology reagents and high-throughput screening and extraction solutions—into their research workflows. By blending strategic sales insight with hands-on technical expertise, Maggie delivers tailored support that maximises product performance and accelerates project timelines.

Dr Ma earned her PhD at the Children's Medical Research Institute (University of Sydney), where her thesis uncovered novel, non-endocytic functions of the sorting-nexin 9 subfamily during mitosis in cancer cells. Her work delineated critical membrane-remodelling events at the mitotic spindle and midbody—findings that continue to guide the search for new anti-proliferative cancer targets.

Hayley Ramshaw
Therapeutic Innovation Australia

Exciting Opportunities for Antibody Discovery Projects

Abstract: The Monash Antibody Discovery Platform (MADP) was established in 2008 as an automated facility generating antibodies using hybridoma technology. This approach was successful for many projects but there were always situations where we could not use fusion approaches in mice or rats to generate a mAb.

In 2022 we installed a Beacon Opto® B Discovery platform. This has revolutionised antibody discovery using high throughput single B cell screening. We can screen for reactivity to multiple antigens from a single B cell and conduct functional assays, including antigen specificity, cross-reactivity, cell-based functions, and blocking assays. A recent addition to the protocol is the measurement of antibody affinity for protein-based screens. This Opto® B Discovery Affinity Assay allows for the ranking of antibody hits based on relative affinity, resulting in the selection of top candidates early in the project.

We have shown the sensitivity of detection by the Beacon is far greater than a fusion project (see table below) and, perhaps more importantly, the range of host cells is vast. The versatility of the Beacon allows cells from mice, rats, rabbits, humans and camelids all to be used for antibody discovery.

Project	Successfully sequenced single cells from Beacon Run	Antibodies generated from Fusion project
MADP-546	63 (1 mouse)	2 (1 mouse)
MADP-547	72 (2 mice)	1 (1 mouse)

MADP is the only service facility in Australia offering antibody discovery projects using Beacon technology and we welcome projects from new and returning customers. Please contact me for information and pricing.

Bio: Hayley Ramshaw has been the manager of the Monash Antibody Discovery Platform (MADP) since March 2018. Here she runs a fee-for-service platform generating monoclonal antibodies for Monash University staff and students, external academic and commercial customers. Hayley's interest in antibodies started during her PhD at the University of Cambridge, UK, where she screened a fusion searching for a marker of malignant bone marrow stem cells. Following a post-doctoral position in Massachusetts, USA in which she investigated optimisation of engraftment of haematopoietic cells for bone marrow transplants, Hayley moved to Adelaide to the Cytokine Receptor Laboratory at SA Pathology. SA Pathology merged with University of South Australia to form the Centre for Cancer Biology where Hayley became a group leader developing therapies for patients with AML. In Adelaide Hayley was responsible for the development of an antibody that was taken to Phase II clinical trial for patients with leukaemia or myelodysplastic syndrome.

Session 6: Antibody Engineering for Function

PRESENTED BY **Decode Science & Twist Bioscience**

Sally Ward
University of Southampton

Targeting FcRn for the therapy of autoimmunity

Abstract: The central role of FcRn in regulating IgG persistence and transport provides opportunities for targeting this receptor in multiple different diagnostic and therapeutic situations. The engineering of IgGs with higher affinity for FcRn can be used to produce antibodies with longer in vivo half-lives, but only if the low affinity of the IgG-FcRn interaction at near neutral pH is retained. Conversely, engineered IgGs or Fc fragments with increased affinity for FcRn at both acidic and near neutral pH act as potent inhibitors of FcRn. Consequently, such an engineered Fc fragment ('Abdeg', for antibody that enhances IgG degradation) can lower the levels of endogenous IgG and has been developed as efgartigimod (Vyvgart) by argenx to treat antibody-mediated autoimmune diseases. Recent studies related to targeting FcRn will be presented.

Bio: Sally Ward completed her Ph.D. research in the Department of Biochemistry at Cambridge University in 1985 under the mentorship of Professor David Ellar. She subsequently carried out research on antibody repertoire technology in Sir Greg Winter's laboratory at the MRC Laboratory of Molecular Biology in Cambridge. Through her career, she has worked at the University of Texas Southwestern Medical Center, Dallas, Texas A&M University Health Science Center, and in 2018 was appointed as Professor of Molecular Immunology and Director of Translational Immunology at the Centre for Cancer Immunology in Southampton, UK.

Her interdisciplinary research involves the use of a combination of fluorescence imaging, protein engineering and in vivo studies to develop antibody-based therapeutics to treat autoimmunity, cancer and infectious disease. This has led to several technologies (half-life extension and the FcRn antagonist, efgartigimod) that have been licensed to biopharma. She is past President of the Antibody Society (2022-2023) and was elected as a Fellow of the Royal Society in 2022.

Clarissa Whitehead
Burnett Institute

Stellabody® transforms the potency of antibody and Ig-like biologics.

Abstract: Stellabody® is a single point mutation in the CH3 region that facilitates the “on-target assembly” of antibody-based biologics after engaging with their intended target, transforming the killing or agonistic potency across multiple immune protein formats (mAbs, bispecific antibodies, Fc-fusions and novel scaffolds). Stellabody® biologics mediate greatly (10-100x) enhanced potency in head-to-head comparisons with the equivalent standard biologic, including standard-of-care mAbs in oncology on primary patient-derived clinical samples whereby ineffective mAbs are transformed into potent killers of target cells. Stellabody® thus provides a simple yet powerful and versatile approach to develop next-generation antibody-based therapeutics with enhanced potency that only become active upon binding to a specific target, with applications across a broad range of treatment indications including oncology, infection, and immunology.

Bio: Clarissa is a Senior Research Officer in the Immune Therapies Group at the Burnet Institute and a co-inventor of Stellabody® technology - an innovative antibody engineering platform that enhances therapeutic potency by promoting on-target antibody hexamer formation. Her research background spans both academic and commercial settings, from investigating disease progression in malignant glioma to leading antibody and exosome engineering projects supporting the development and commercialisation of novel therapeutics. With a strong focus on translational science that can shape the future of healthcare, Clarissa is passionate about advancing next-generation biologics to address unmet clinical needs and improve patient outcomes.

Colby Souders
Twist Bioscience

Leveraging De Novo Sequence Design and DNA Writing for Target-Specific in vitro Library Discovery

Abstract: Utilizing its proprietary DNA technology to write synthetic libraries, Twist Biopharma Solutions develops end-to-end antibody discovery platforms, including both (1) highly diverse synthetic naïve antibody phage display libraries, (2) in vivo animal immunization workflows (proprietary mouse, single B-cell cloning, llama VHH discovery). In this talk, Dr Colby Souders, CSO of Twist Biopharma Solutions, will discuss case studies highlighting the discovery and preclinical validation of antibody candidates using structure-guided de novo design and machine learning strategies. He will introduce our latest advancements in custom in vitro library design for phage and yeast display techniques.

Bio: Colby Souders earned his PhD in Cell and Molecular Biology from Texas A&M and previously held positions at BrickBio, Abveris, Kanyos Bio and MassBiologics, while contributing to multiple candidates currently in the clinic. At MassBiologics, he worked to advance monoclonal antibodies for the prevention, treatment or diagnosis of various infectious and endogenous diseases, as well as developed related platform technologies to advance and expand the MassBiologics pipeline. Later, he joined the Kanyos Bio Protein Engineering team to develop therapeutics based on a novel antigen-specific immune tolerance platform. Colby has served as Chief Scientific Officer at BrickBio to develop novel antibody drug conjugates and was CSO at Abveris prior to acquisition by Twist Bioscience. He now serves as the CSO of Twist Biopharma Solutions to guide the biologics discovery division of Twist Bioscience.