





# SCANCELL AGM presentation

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LSE: SCLP.L

A NEW FRONTIER IN IMMUNO-ONCOLOGY



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## **DEVELOPMENT PIPELINE**

## **IMMUNOBODY®**

- SCIB1: Targets malignant melanoma. Phase 2 trial in patients receiving immune checkpoint inhibitor
- SCIB2: Targets solid tumours. Phase 1/2 trial with immune checkpoint inhibitor to be funded and sponsored by Cancer Research UK (CRUK)

#### **MODITOPE®**

- Modi-1: Phase 1/2 trial including breast, ovarian, and head & neck cancer planned for 1H CY20
- Modi-2: Targets multiple solid tumours
- TCR collaboration: To clone and characterise T cell receptors (TCR) against Modi-1 specific epitopes

## AvidiMab<sup>™</sup> / TaG mAbs

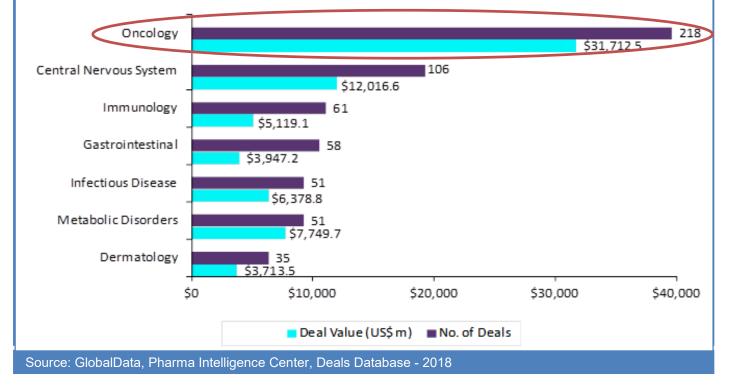
- Anti-glycan mAbs: Monoclonal antibodies (mAbs) targeting tumour associated glycans (TaGs)
- AvidiMab: Broad potential for enhanced potency of mAbs
- Research collaboration: Evaluation in other platform technologies/formats





- Drug development is inherently shaped and enabled by strategic partnerships
- > Strategic consolidations provide a significant source of new pipeline drugs for big pharma/biotech companies
- Pooling resources increase the chances of successfully developing promising candidates, while distributing risks
- Dedicated resources and processes for identifying strategic partners for licensing or co-development deals

- High level of deal-making activity in cancer immunotherapies:
  - Between 2006 and mid-2018 disclosed aggregate licensing/co-development deal value of US\$63.2 billion (circa 64% of deals not disclosed)\*
  - A high proportion of disclosed deals were valued at above US\$200m (37%)\*
  - US remains most active region for deal making in this sector

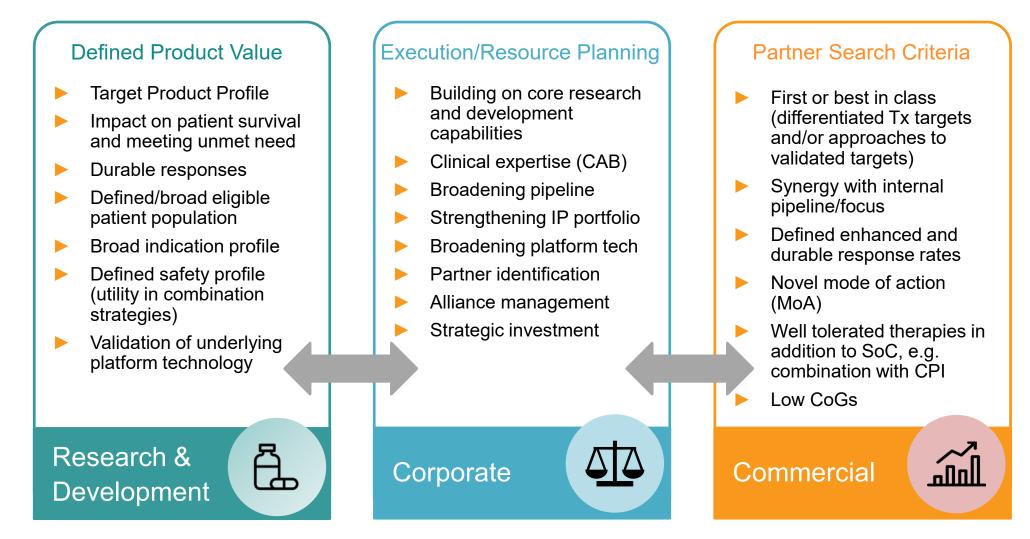


Global, Licensing Agreements, by Therapy Area, Number of Deals and Deal Values (US\$ m), 2018

\*Source: GBI Research Global Cancer Immunotherapies Market to 2024 Report, published July 2018



## Three Pillars Supporting the Path to Commercial Success





## **IMMUNOBODY: SCIB1 / SCIB2**

#### **Defining Product Value**

- Phase 1/2 clinical data demonstrates safety and efficacy as monotherapy
- Phase2 study initiated (UK)
- Defined pt population in late stage melanoma
- Aiming for improved overall response in combination with CPI
- Durable responses

Clinical

 Define safety profile (utility in combination strategies)

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#### Enhanced Capabilities

- Manufacturing expertise
- Regulatory process
- Clinical network (CRUK)
- Project and alliance management
- Nano-particle delivery tech (SCIB2)
- Preparation for US based SCIB1 Phase 2 study sites
- Align assets with companies with existing CPI products

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#### Meeting Search Criteria

- Differentiated approach to known antigens
- Demonstrated MoA
- Defined durable response rates
- Well tolerated
- Potential low CoGs
- Improved overall response in combination with an anti PD-1

#### Announced deal:

 SCIB2 commercial option from CRUK at end of Phase I/2 study

Commercial



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#### **Defining Product Value**

- Modi-1 Phase 1/2 clinical study planned to define safety and efficacy as a monotherapy
- Identified patient population in multiple cancer indications
- Potential for combination with CPI or other treatment modalities
- Durable responses

Clinical

 Potential utility in Adoptive Cell Therapy (ACT)

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#### Enhanced Capabilities

- Manufacturing expertise
- Clinical Advisory Board (CAB)
- Project management
- Preclinical data to support MoA
- Toxicology/formulation studies
- Building internal expertise in TCR identification (BioNTech collaboration)
- Expanded IP portfolio
- Potential partner identification/awareness

Corporate

#### Meeting Search Criteria

- Novel targets (siPTM)
- Unique MoA (cytotoxic CD4 T-cell)
- Potential low CoGs
- Broad market potential
- Demonstrated and durable response rates
- Well tolerated
- Improved overall response in combination
- Added utility e.g. ACT

#### Announced deal:

Commercial option to BioNTech for identified TCRs

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Commercial



#### Defining Product Value

- Tumour associated glycans (TaGs) unique targets
- Direct cell killing properties
- AvidiMab technology for enhancing mAb potency
- Potential application in antibody–drug conjugates (ADC)
- Utility for bispecific antibodies

Preclinical

 Potential utility in Adoptive Cell Therapy (e.g. CAR-T)

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#### **Enhanced Capabilities**

- Legacy research capabilities (NUTAC)
- Know-how for generating mAbs against TAGs
- Minimal overhead costs
- Proposed partner funding and resources for future development
- Alliance management
- Expanded IP portfolio
- Identification of potential partners
  - Building on previous transaction experience (i.e. Scancell/Peptech)

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### Meeting Search Criteria

- Novel mAb targets
- Unique MoA
- Synergy with other antibody technologies
- Validated development path/market in oncology
- AvidiMab: enhanced potency technology applicable to any mAb

#### Partnering Activity:

 Evaluation research collaboration

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Commercial





A NEW FRONTIER IN IMMUNO-ONCOLOGY



- Key drivers for initial US vs UK decision
  - Visibility in US
  - Enthusiasm of US investigators and availability of patients
  - Reimbursement of Keytruda costs by US healthcare providers; no equivalent in UK
- Need open IND and UK approval to open a site under an IND in UK
  - Always intended at least one UK site to do immune response analysis in Scancell labs
  - Regulatory submissions made in UK to support this
- IND is only for the study drug (SCIB1); cross-refers to Master File for Ichor TDS-IM device
  - Different FDA divisions review IND (CBER) and MAF (CDRH)
  - SCIB1-related queries resolved
  - Ichor TriGrid device query resolution impeded by partial FDA shutdown and communication between CBER and CDRH
  - Discussions between Ichor and FDA privileged information







- UK regulatory submissions approved
  - MHRA clinical trials division for drug safety
  - MHRA devices division for TDS-IM device safety
  - HRA Health Research Authority for ethics and site approvals



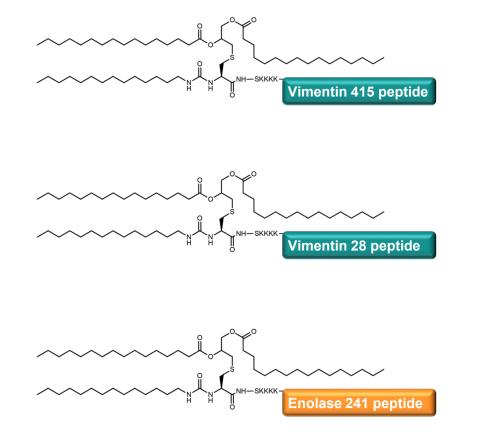
- Delay in FDA resolution of device issues led to re-evaluation of primary study location
  - UK approvals obtained (including device)
  - Agreement from Nottingham NHS Trust to reimburse Keytruda costs
- BUT couldn't open UK site without IND being open
  - Reluctantly withdrew IND to allow UK site to be activated
  - Plan to resubmit IND as soon as possible
  - Option to add US sites (via open IND) to UK trial

### SCIB1-002 trial opened for recruitment in UK and actively screening patients



## **MODI-1 DEVELOPMENT**

## THREE DRUG SUBSTANCES = MODI-1 DRUG PRODUCT



- Modi-1 conjugates novel cutting-edge products
- Hydrophobic peptides
  - Challenging synthetic properties
  - Manufacturing
  - Analytical development



- Polypeptide Group (PPL) selected as GMP manufacturer for Drug Substances
- AMRI selected as GMP manufacturer to formulate Drug Product





- Development batches of three Drug Substances completed
  - To supply material for preclinical toxicity and stability studies
  - Formulation and analytical work
- GMP manufacture of three Drug Substances ongoing
- Formulation development underway at AMRI
  - Soluble formulation identified for each conjugate
  - GMP manufacturing slot for formulated product secured
- Analytical assays developed
- Preclinical toxicity studies in progress
- Successful regulatory Scientific Advice meeting held at PEI (German equivalent of MHRA); preclinical 'Gold Standard'
- Request for MHRA Scientific Advice planned Q4 2019 as prelude to Clinical Trial Application for First-in-Human study
- Clinical Advisory Board meetings held to review and refine clinical trial protocol
- On target for H1 2020 start for clinical trial







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## RESEARCH

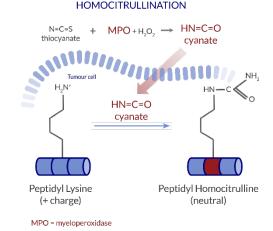
- Modi-2: homocitrullination of lysine residues PCT filed 9-9-19
  - Screened 18 peptides using new algorithm
  - 18 stimulated T cell responses
  - 5 gave strong anti-tumour responses

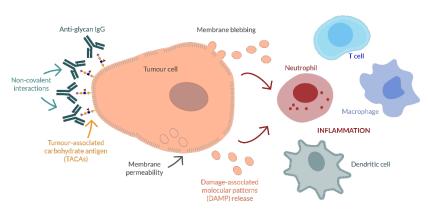
## TCR

- Project delayed due to requirement for Health and Safety Approval (HSE)
- Lenti-viral transduction of T cells now working in the lab
- 40 TCRs recognising citrullinated/homocitrullinated epitopes to screen

## Monoclonal antibodies

- Five anti-glycan mAbs and 2 patents in licensed from the University
- New platform AvidiMab<sup>™</sup> developed to improve the avidity (potency) of any mAb and the direct killing ability of anti-glycan mAbs
- Four new patents
- Out license to generate revenue for ImmunoBody® and Moditope® platforms

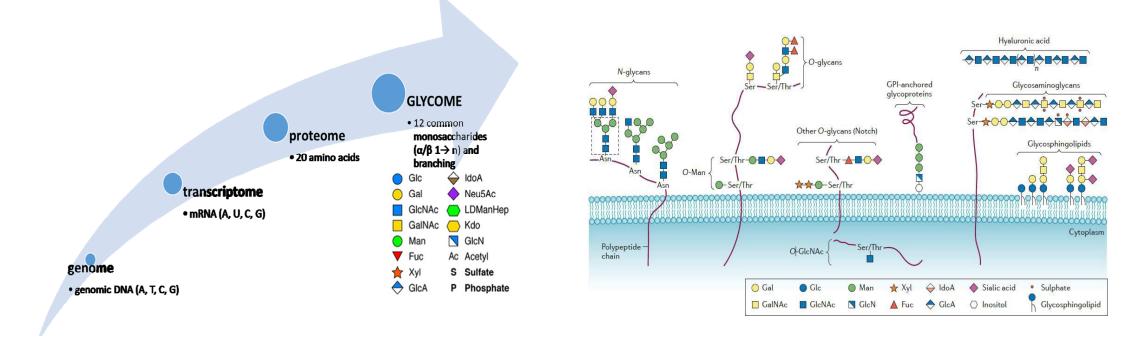




**ONCOTIC NECROSIS** 



## GLYCOME

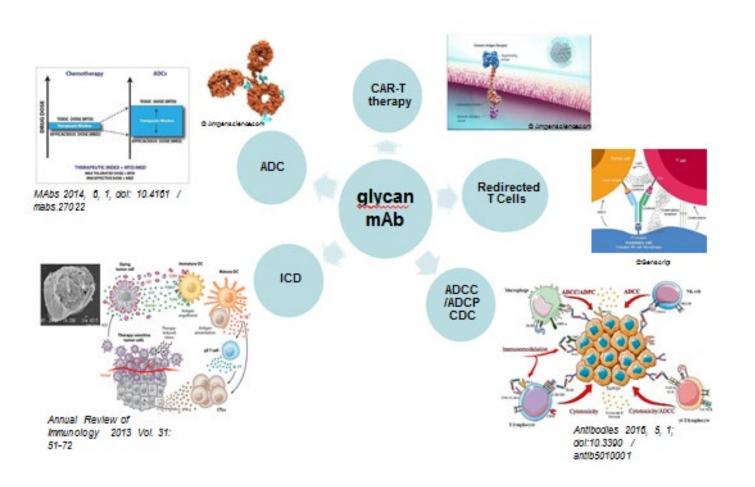


- Glycans are expressed on a wide variety of molecules
  - Multiple sugars which can be linked in any order to give a glycan
  - Sugars can be branched
  - Sugars are linked by glycosyltransferase enzymes
  - These enzymes can be up or down regulated in cancer creating unique targets
  - > The same glycan can be expressed on a variety of molecules, giving the mAbs that recognise them multi-functionality



## Five new anti-glycan antibodies

- IgG mAbs with sub-nanomolar functional affinity
- Ultraspecific to unique tumour-associated glycans (TaGs)
- Low expression on a limited number of normal tissues
- Can kill by direct membrane damage
- Can also induce potent ADCC/ADCP and CDC
- Can rapidly internalise and are good carriers for drugs
- Potential to be licensed for redirected T cell and CAR-T therapies

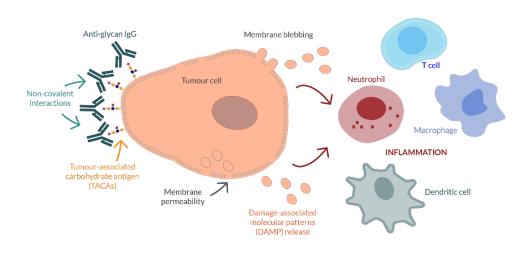


ADCC: antibody-dependent cellular cytotoxicity; ADCP: antibody-dependent cellular phagocytosis; CDC: complement-dependent cytotoxicity; ICD: immunogenic cell death; ADC: antibody drug conjugate; CAR-T: chimeric antigen receptor T-cell

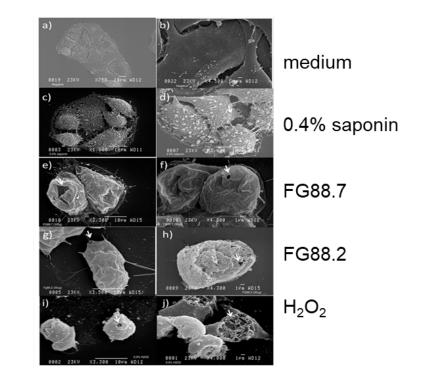


## Technology to enhance the avidity of any mAb

- Non-covalent association at the cell surface
- Induces direct killing with glycolipid targets
- Works on cold tumours (no immune response)
- Does not prevent ADCC/CDC
- Pharma/Biotechs could license the platform to enhance the potency of their own mAbs



#### ONCOTIC NECROSIS



Scanning electron microscope (SEM) analysis of C170 cells incubated with a-b) medium alone, c-d) 0.4% saponin, e-f) FG88.7 ( $30\mu g/ml$ ), g-h) FG88.2 ( $30\mu g/ml$ ) and i-j) 0.5% H<sub>2</sub>O<sub>2</sub> for 20hrs at  $37^{0}$ C. Magnifications are at x2000 (bar=  $10\mu m$ ) and x10,000 (bar=  $1\mu m$ ).