



# HARNESSING B-CELLS FOR CANCER IMMUNOTHERAPY

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Leslie Chong

Managing Director & Chief Executive Officer  
AGM November. 2018



**IMUGENE**

Developing  
Cancer  
Immunotherapies

# EXECUTIVE SUMMARY



## Experienced Management & Board

- Meeting milestones
- Successful M&A activity
- Appointment of Dr. Mark Marino to C.M.O.
- Strengthening S.A.B. members

## Imugene B-cell Vaccine Pipeline

Broadened and strengthened clinical programs globally, including U.S. and European centres (**2 trials in patients**)

- HER-Vaxx milestones of **Phase 1b completed; Phase 2 activity commenced**
- B-Vaxx Phase 2 ongoing
- KEY-Vaxx pre-clinical work started

## Synergistic Technology Licensed from Ohio State University and The Mayo Clinic

Full spectrum of indications and targets to choose from, including checkpoint inhibitors and combination therapies

## A TEAM WITH A TRACK RECORD IN DRUG DEVELOPMENT



**Leslie Chong (Sydney, Australia)**  
**Managing Director & Chief Executive Officer**

- Over 20 years of oncology experience in Phase I – III of clinical program development
- Leadership role involvement in two marketed oncology products
- Previously Senior Clinical Program Lead at Genentech, Inc., in San Francisco



**Paul Hopper (Sydney, Australia)**  
**Executive Chairman**

- International & ASX biotech capital markets experience particularly in immuno-oncology & vaccines
- **Former** Chairman of Viralytics, Founder & Director of Prescient, Founder of Imugene & Polynoma LLC, former Director pSivida, Somnomed & Fibrocell Science



**Dr Axel Hoos (Philadelphia, U.S.A.)**  
**Non-Executive Director**

- Senior Vice President and Head of Oncology at GSK
- Former Medical Lead for Yervoy, the first survival improving medicine in Immuno-Oncology
- Chairman of the BoD of the Sabin Vaccine Institute
- Co-Chair of the Cancer Immunotherapy Consortium Think-Tank



**Mr. Charles Walker (Brisbane, Australia)**  
**Non-Executive Director**

- Experienced listed biotech CEO and CFO (ASX:ACL and ASX:IMU)
- Experienced in financial markets including executing 55 international tech corporate transactions
- Clinical experience includes managing pipeline of drugs in all stages from discovery, through to Phase III to launched products



**Dr Mark Marino (California, U.S.A.)**  
**Chief Medical Officer**

- Over 28 years of experience in drug development
- Former CMO of Cytari, Head of Clinical Pharmacology at Eisai and Roche, Head of Research and Early Development at Mannkind, VP Clinical Development at Daiichi



**Dr Nick Ede (Melbourne, Australia)**  
**Chief Technology Officer**

- Over 25 years peptide vaccine and drug development
- Former CEO Adistem, CEO Mimotopes
- VP Chemistry Chiron (now Novartis), Research Fellow CRC Vaccine Technology



**Dr Anthony Good (Sydney, Australia)**  
**Vice President of Clinical Research**

- Over 20 years global clinical development experience.
- Integral to the development of significant new medicines including Viagra, Revatio, Lipitor, and Somavert.
- Ex Pfizer Global Research and Development, Ex Covance Clinical Services.

# IMUGENE SCIENTIFIC ADVISORY BOARD



**Prof Pravin Kaumaya**  
**Ohio State University, U.S.A.**

- Prof of Medicine Department of Obstetric Gynecology at Ohio State University
- Research focus in tumour immunology, mechanisms of tumour cell-immune cell interactions, and immune mechanisms
- Research focus on fields of vaccine with emphasis on peptide vaccines for cancer



**Prof Peter Schmid**  
**Barts Cancer Institute, Queen Mary University of London**

- Medical Oncologist
- Expertise in breast and lung cancer, cancer immunotherapy and early drug development
- Leads the Centre of Experimental Medicine at Barts Cancer Institute



**Dr Neil Segal**  
**Memorial Sloan Kettering Cancer Center, U.S.A.**

- Medical Oncologist
- Expertise in GI, Colon, Pancreatic cancers
- Active clinical immuno-oncology researcher
- Clinical lead in several trials using PD-L1 inhibitors



**Prof Tanios Bekail Saab**  
**Mayo Clinic, U.S.A.**

- Professor of College of Medicine and Science
- Program Co-Leader, GI Cancer, Mayo Clinic Cancer Center
- Medical Director, Cancer Clinical Research Office (CCRO)
- Senior Associate Consultant, Mayo Clinic AZ



**Prof. Ursula Wiedermann-Schmidt**  
**Medical University of Vienna, Austria**

- Co-inventor of HER-Vaxx
- Professor of Vaccinology at Medical University of Vienna



**Prof. Josep Tabernero**  
**Vall d'Hebron, Barcelona, Spain**

- President of European Society for Medical Oncology (ESMO)
- President of the Medical Oncology Department at the Vall d'Hebron
- Director of the Vall d'Hebron Institute of Oncology (VHIO)



**Dr Yelina Janjigian**  
**Memorial Sloan Kettering Cancer Center, U.S.A.**

- Medical Oncologist
- Expertise in esophageal and stomach (gastric) cancer
- Active in GI clinical trials testing combinations of Her-2 and checkpoint inhibitor therapies

## A BETTER WAY TO MAKE ANTIBODIES TO TREAT CANCER?



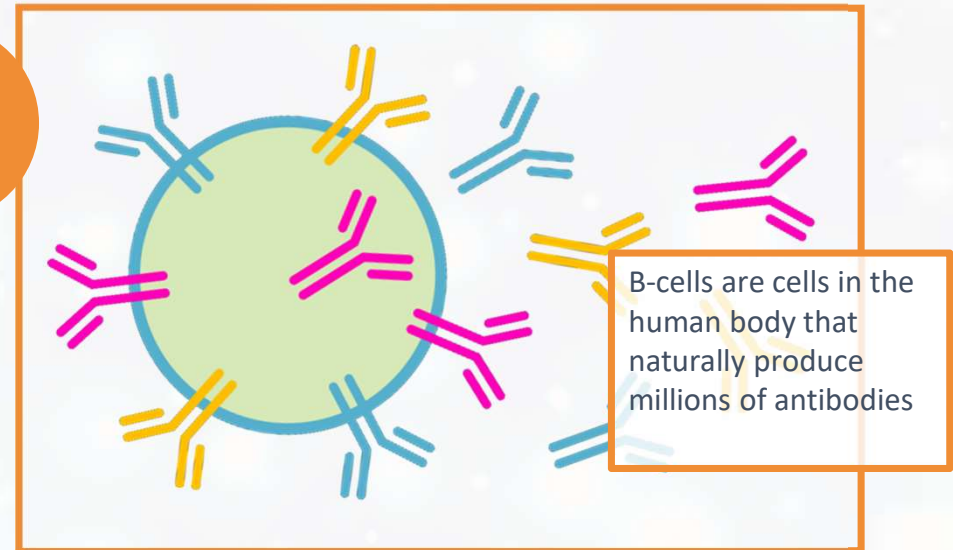
In a facility:



For example, Merck's PD-1 inhibitor Keytruda

VS

Using B-cells in your body



Teaching B-cells to make antibodies using peptide antigens

## CURRENT PHASE 1B/2, IN GASTRIC CANCER

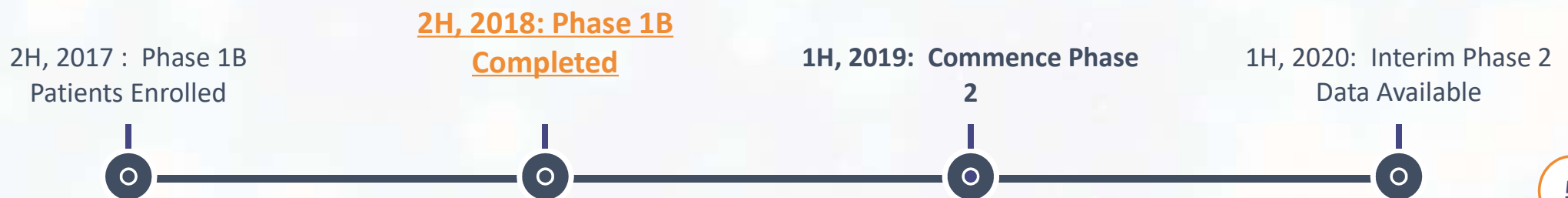


### Phase 1b Lead-in

- Open label
- ~Up to 18 patients in 3 cohorts of up to 6 pts per cohort
- Combination with chemo/cisplatin
- Endpoints:
  - Recommended Phase 2 Dose of HER-Vaxx
  - Safety: any HER-Vaxx toxicity
  - Immunogenicity (anti-HER-2 antibody titres)

### Phase 2

- Open label
- ~70 patients from sites in Asia
- Combination with chemo
- Randomized
- Primary Endpoints:
  - TBD PFS and/or OS
  - (cont. on Ph1b results)
- Secondary endpoint:
  - Immune response



## STRATEGIC ACQUISITION



THE OHIO STATE  
UNIVERSITY

### WORLDWIDE EXCLUSIVE LICENSE



Six patent  
families,  
22 patents

IND ready PD-1  
clinical trial  
(Phase 1)

Ongoing Her-2  
clinical trial  
(Phase 2)

Six additional  
clinical candidates  
Her-1, Her-2, Her-3,  
VEGF, IGF-1R CD28

Three year  
R&D contract with  
access to Ohio  
translational labs

Access to experience and expertise with Prof. Pravin  
Kaumaya and team

## Could precision-engineered peptide epitopes/vaccines be the key to a cancer cure?



**Pravin TP Kaumaya**

The Ohio State University, Department of Obstetrics & Gynecology, Suite 316 Medical Research Facility,  
420 W. 12th Ave., Columbus, OH 43210, USA ■ [kaumaya.1@osu.edu](mailto:kaumaya.1@osu.edu)

“Combination cancer vaccines with peptide mimics have the potential to treat existing cancer and prevent its recurrence.”



# IMUGENE PIPELINE



## CLINIC OR CLINIC READY

### PROGRAM

### PRE-CLINICAL

### CLINICAL DEVELOPMENT

#### PHASE 1

#### PHASE 2

HER-Vaxx (HER2)

B-Vaxx (HER2)

KEY-Vaxx (PD-1)

Her-2 & PD-1 Combo

## DISCOVERY PIPELINE

### PROGRAM

### DISCOVERY/PRE-CLINICAL

### ID OF CANDIDATE

Her-1 (EGFR)

Her-3

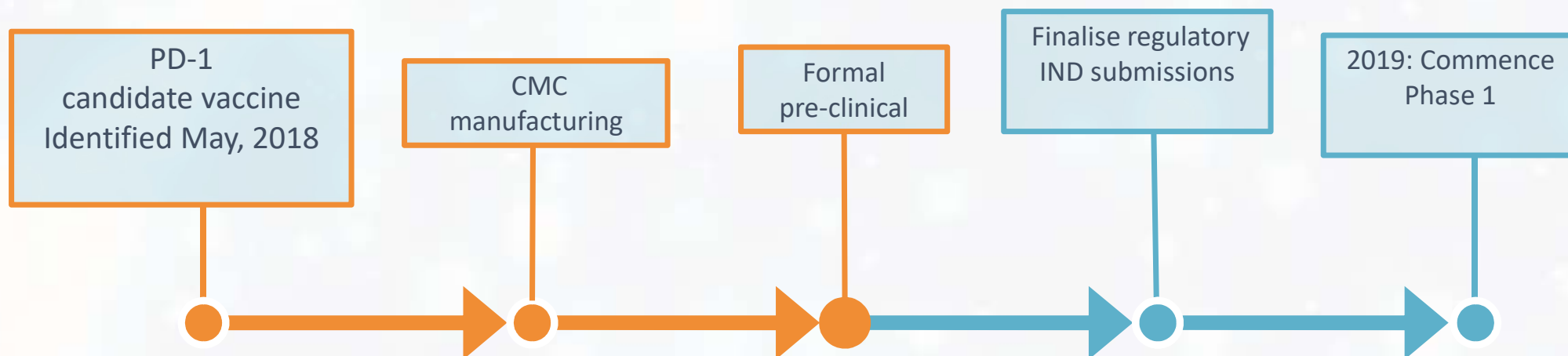
IGF-1R

VEGF

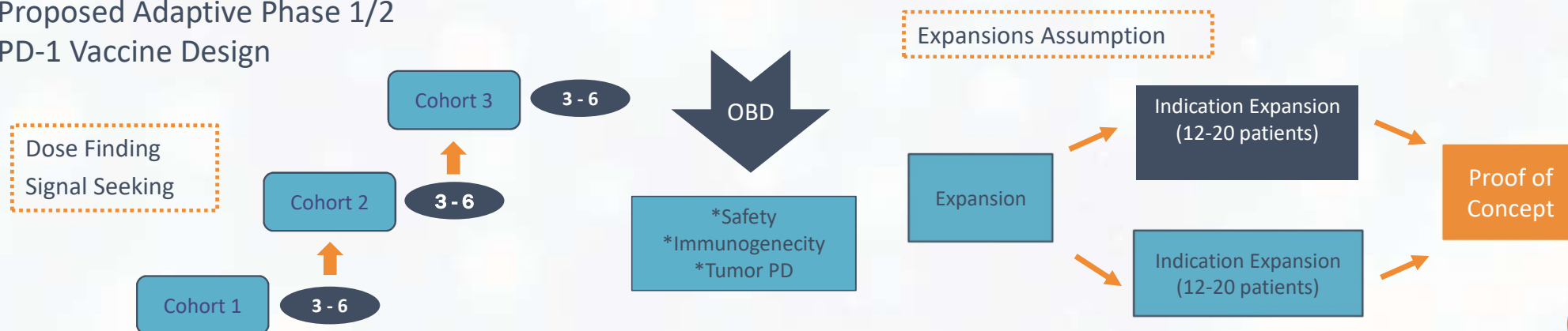
Combination (numerous)

PD-1/PD-L1

# PD-1 "KEY-VAXX" VACCINE PHASE 1 DEVELOPMENT PATH 2018-2019



## Proposed Adaptive Phase 1/2 PD-1 Vaccine Design



## FINANCIAL SUMMARY

Market Cap (Nov 18):	\$75.8M AUD, \$54.5M USD
Ordinary Shares:	3.610 billion
12 month price range:	1.3 cents – 4 cents AUD
Avg daily volume:	9M shares (August - November 2018)
Investment to Date:	~\$42.5M (public) ~\$ 5.5M (VC)
Cash & Equivalents:	\$23.83M (as at 30 Sep 2018)

## ASX:IMU

## Options on issue

	No. of options	Exercise Price	Expiry
Listed: (IMUOA)	242.5M	\$0.026	30/11/2020
Listed: (IMUOB)	248.3M	\$0.04	30/11/2021
Unlisted:	59.5M	\$0.0247*	09/03/2020*
Total:	550.3M	\$0.03*	02/01/2021*

\* Average

## Top 5 shareholders

	No. of Shares	% Capital
Private Portfolio Management	224,551,412	6.22%
Platinum Asset Management	119,490,971	3.31%
Dr. Nicholas Smith	86,000,000	2.38%
Paul Hopper Executive Chairman	75,678,722	2.10%
Sarah Cameron	60,000,000	1.66%

# Leslie Chong

Chief Executive Officer &  
Managing Director

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