

IMUGENE

ASX:IMU

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# CAPITAL RAISING PRESENTATION

Leslie Chong | Chief Executive Officer  
November/2017

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## CAPITAL RAISING

# CAPITAL RAISING SUMMARY

- Imugene is conducting a \$8.7m capital raising to fully fund its HER-Vaxx Ph1b/2 program and provide working capital
- Offer price of A\$0.018 per share represents a 21.7% discount to last close and a 20.9% discount to 15 day VWAP (**Offer Price**)

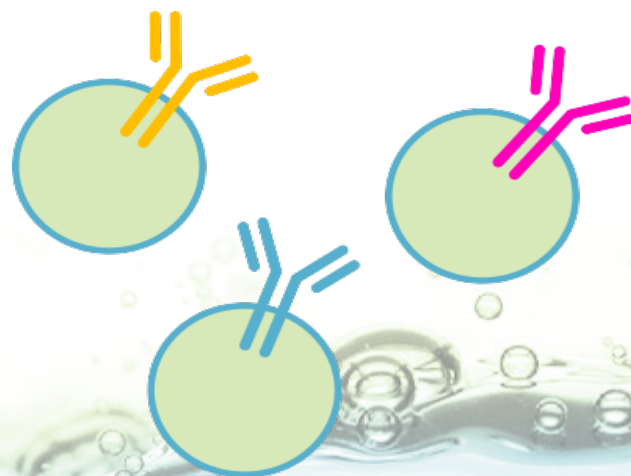
## Capital raising structure

- A\$6.7m Placement to Sophisticated and Professional investors (**Placement**)
- A\$2.0m 1 for 21 Entitlement Offer to existing shareholders with registered addresses in Australia and New Zealand (**Entitlement Offer**)
- Participants will also receive 1 free option for every 2 Placement or Entitlement Offer share subscribed for (**Option**)
- Options will be listed on the ASX, with a 30 November 2020 expiry at strike price of A\$0.026
- Shares issued under the Placement will not be eligible to participate in the Entitlement Offer.

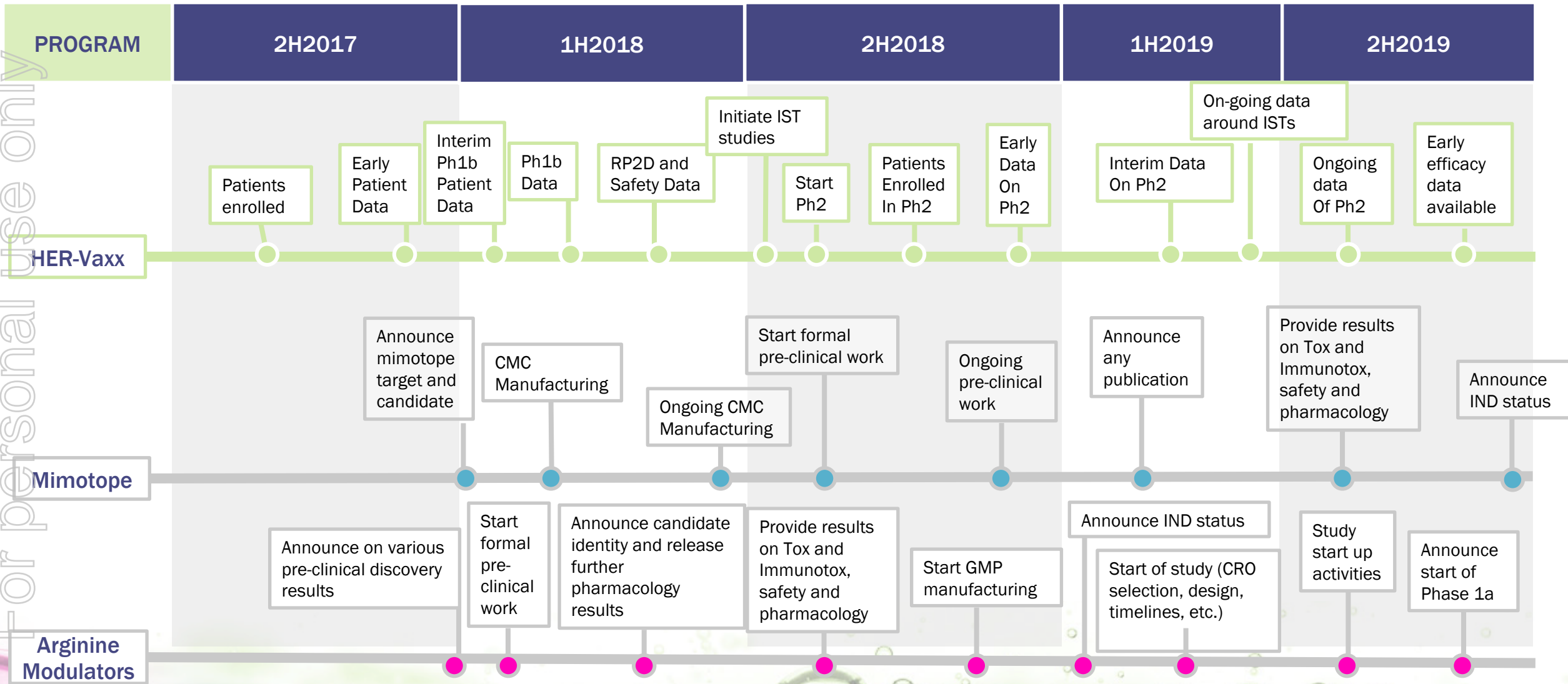
# USE OF FUNDS

Capital raising of A\$8.7m will allow:

- Completion of HER-Vaxx Phase 1b/2 clinical trial
- Completion of at least 2 investigator sponsored studies (collaboration with institutional centers)
- Mimotope candidates Identified and development
- Mimotope IP secured
- Provide working capital



# TIMELINE



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# INDICATIVE TIMETABLE

Company in trading halt,	Tuesday, 21 November 2017
Closing date for receipt of firm and irrevocable bids in Placement	Tuesday, 21 November 2017
Offer announced, lodge Entitlement Offer Prospectus with ASX and company resumes trading	Thursday, 23 November 2017
“Ex” date for Entitlement Offer	Tuesday, 28 November 2017
Record date for Entitlement Offer	Wednesday, 29 November 2017
Dispatch of Entitlement Offer booklet	Monday, 4 December 2017
Allotment of Placement shares	Wednesday, 6 December 2017
Closing date of Entitlement Offer	Monday, 18 December 2017
Entitlement Offer shortfall notification	Tuesday, 19 December 2017
Allotment of Entitlement Offer shares	Wednesday, 22 December 2017

Timetable is indicative only and may be varied by the Company subject to the ASX Listing Rules



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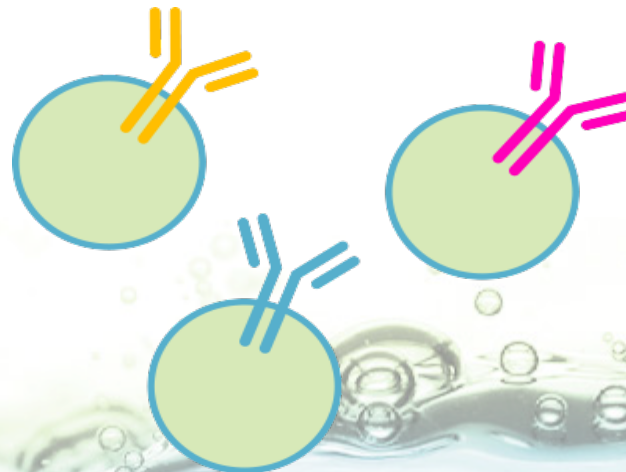
## COMPANY OVERVIEW

## WHAT DOES IMUGENE DO?

Imugene's technology can induce a patient's body to make its own specific antibodies that target cancer.

# COMPANY OVERVIEW

- Experienced management & board
- Novel oncology platforms: Mimotopes: B cell peptide vaccines – IP protected to 2036
- Lead mimotope: HER-Vaxx Phase 1b/2 mimotope study in Her2+ gastric cancer (large unmet medical need by current existing therapies)
  - POC demonstrated in Phase 1 Her-2+ breast cancer study – safety & immunogenicity established
- Discovery Pipeline: Mimotope candidate selection and Arginine modulators in pre-clinical development
- Numerous milestone announcements & valuation inflection points over next 12-18 months
- Summary of key risks



# A TEAM WITH TRACK RECORD IN DRUG DEVELOPMENT

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**Leslie Chong (Sydney, Australia)**

Chief Executive Officer

- Over 19 years of oncology experience in Phase I - III of clinical program development
- Leadership role involvement in 2 marketed oncology products
- Previously Senior Clinical Program Lead at Genentech, Inc., in San Francisco



**Prof Ursula Wiedermann (Vienna, Austria)**

Chief Scientific Officer

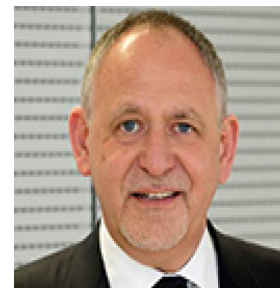
- Co-inventor of HER-Vaxx;
- Professor of Vaccinology at Medical University of Vienna



**Dr Axel Hoos (Philadelphia, U.S.A.)**

Non-Executive Director

- Senior Vice President Oncology R&D at GlaxoSmithKline
- Previously Clinical Lead on Ipilimumab at Bristol-Myers Squibb
- Co-Director of the think-tank Cancer Immunotherapy Consortium



**Prof Christoph Zielinski (Vienna, Austria)**

Head of Scientific Advisory Board

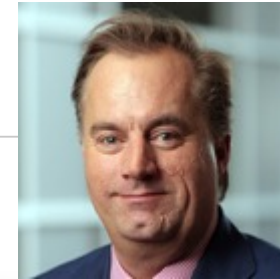
- Chairman of the Comprehensive Cancer Centre in Vienna
- Chairman of the Centre for Eastern EU Organisation for Research and the Treatment of Cancer (CEEORTC)
- Editor in Chief and President Nominee of European Society of Medical Oncology (ESMO)



**Paul Hopper (Sydney, Australia)**

Executive Chairman

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



**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

# A BETTER WAY TO MAKE ANTIBODIES TO TREAT CANCER?

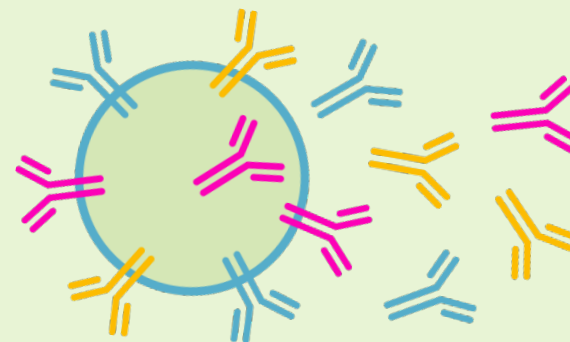
## IN A FACILITY



For example, Roche's Herceptin

VS

## USING B CELLS IN YOUR OWN BODY

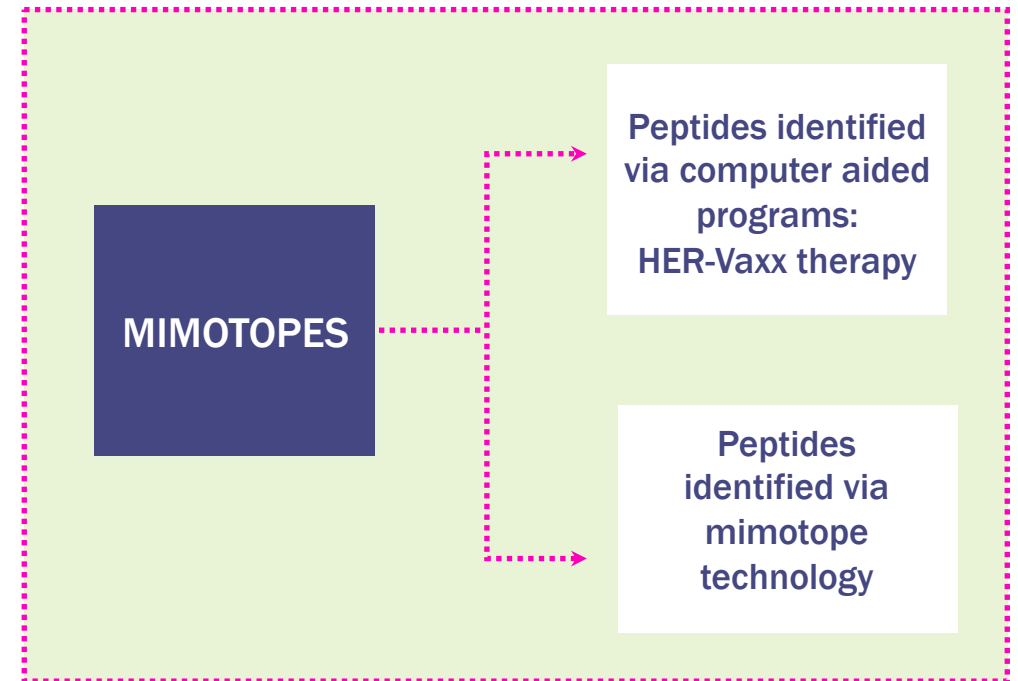


B Cells are cells in the human body that naturally produce millions of antibodies

Teaching B cells to make antibodies using peptide mimotopes

# NOVEL MIMOTOPE PEPTIDE PROGRAMS

- A mimotope is a small molecule, often a peptide, which mirrors the structure of an epitope, the specific target an antibody binds to
- Because of this property, the mimotope induces an antibody response similar to the one elicited by the epitope
- A mimotope causes your B cells to produce an antibody copy of the antibody you want to “mimic”
- Potential tool for selecting novel vaccine candidates against a variety of tumors
- Technology can be used to copy any approved antibody on the market today

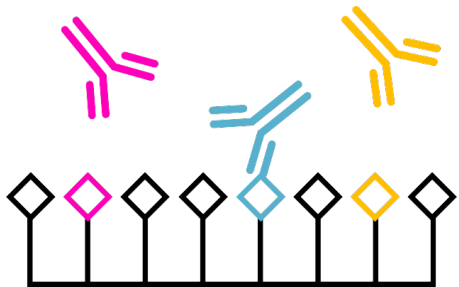


# MIMOTOPE: PLATFORM TECHNOLOGY

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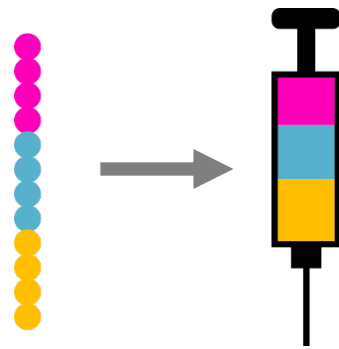
## SELECTION OF MIMOTOPES

A library of mimotopes can be interrogated with any monoclonal antibody to identify the mimotopes to which it binds



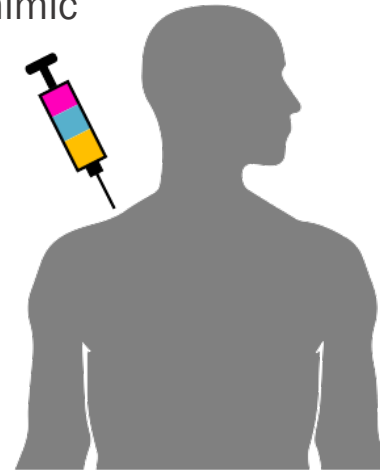
## CREATION OF A VACCINE

The selected mimotope or mimotopes can be used in isolation or combination to create a B-cell peptide therapy with the appropriate carrier system and adjuvant.



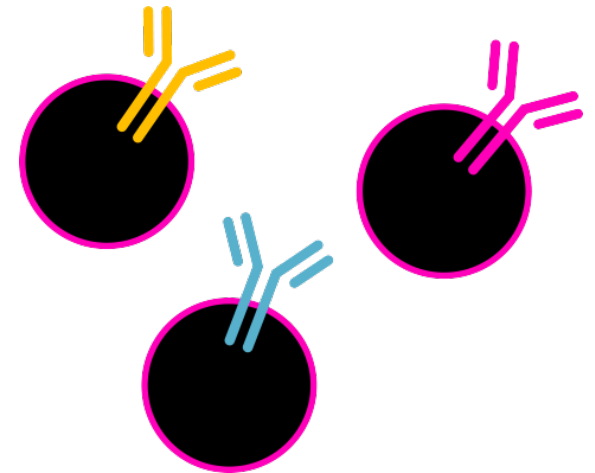
## IMMUNIZATION

Immunization with the peptide will lead to the patient's B-cells producing copies of the Ab you want to mimic



## ENDOGENOUS AB PRODUCTION

Successful delivery will result in endogenous Ab production with associated immune memory



The mimotope platform has the potential to be part of the next wave of immuno-oncology products. It makes multi-level therapies against a combination of targets achievable.

# ADVANTAGES OF MIMOTOPE INDUCED B-CELL BASED ANTIBODIES V. SYNTHETIC ANTIBODIES

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Issue	Natural B Cell Derived Antibodies	Monoclonal Antibodies
Safety	Stimulates the immune system to produce natural Abs, potentially safer, as demonstrated by HER-Vaxx	Synthetic Ab, with side effects (including ventricular dysfunction, CHF, anaphylaxis, immune mediation)
Efficacy	Polyclonal Ab response reduces risk of resistance and potentially increases efficacy	Monoclonal Ab - single shot
Durability	Antibodies continuously produced a lasting immune response to inhibit tumor recurrence	Half life up to 12 days sometimes less
Usability	Potentially low numbers of vaccinations required per year	Requires regular infusion
Cost	Low cost of production enables greater pricing flexibility facilitating combinations and opening up additional markets	Expensive course of treatment >USD100K per year in the US

**B-Cell Vaccines offer a unique opportunity to intervene at multiple points in the immune system and create immune memory which enhances durability of response.**



# THE MONOCLONAL ANTIBODY (mAb) MARKET

- Multiple antibody therapies are approved to treat cancer, for example:

Sales in 2016	
- Herceptin:	>US\$6.7 billion
- Perjeta:	>US\$1.8 billion
- Rituxan:	>US\$7.3 billion
- YERVOY®:	>US\$1.0 billion
- OPDIVO®:	>US\$3.7 billion
- KEYTRUDA:	>US\$1.4 billion



Total monoclonal antibody market is currently at US\$60 billion

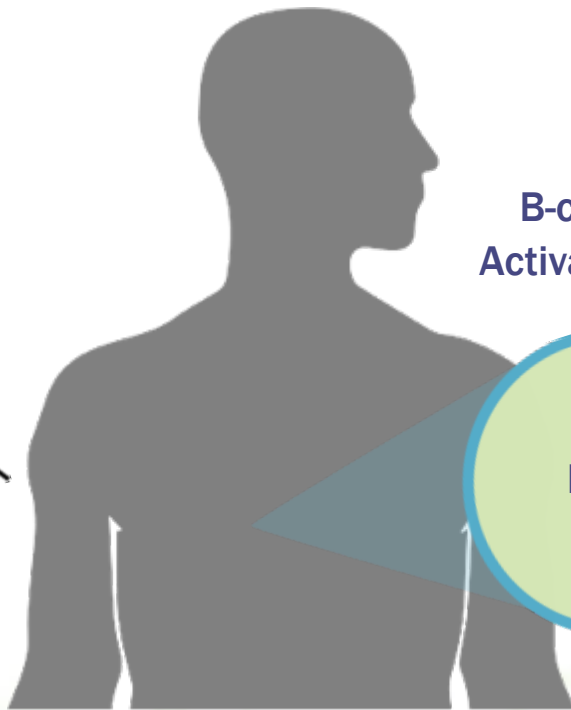
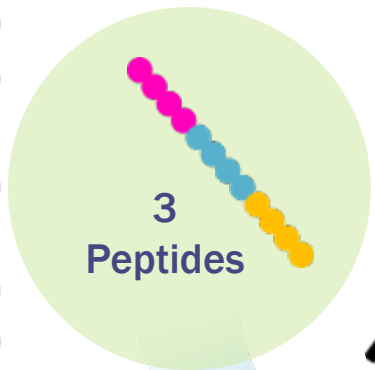
- All of these antibodies are manufactured in a facility.
- Instead of infusing patients with antibodies synthesized in a factory, what if we can induce the patient's own B-cells to make similar cancer-fighting antibodies using Imugene's mimotope technology?

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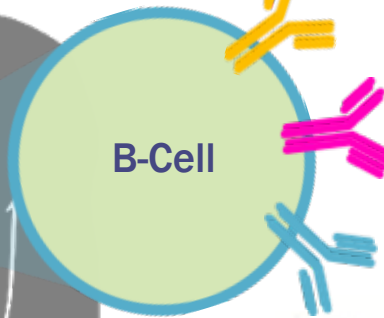
# HER-Vaxx MIMOTOPE: MECHANISM OF ACTION

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Peptides  
"mimic" the  
epitope



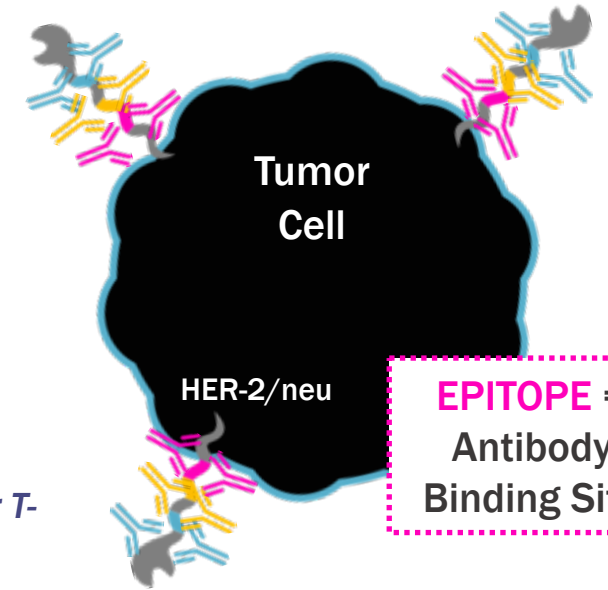
B-cell  
Activation



HER-Vaxx  
Antibody Secretion



Via helper T-  
cells



Tumor  
Cell

HER-2/neu

EPITOPE =  
Antibody  
Binding Site




HER-Vaxx attacks the  
same target as the  
the world's largest  
selling breast cancer  
drug Herceptin

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**HER-Vaxx IS A PHASE 1B/2 STAGE MIMOTOPE  
PEPTIDE THERAPY BEING DEVELOPED FOR  
HER2+ GASTRIC CANCER**

# PHASE 1 IN BREAST CANCER, COMPLETED AT MEDICAL UNIVERSITY OF VIENNA- SINGLE AGENT, NO CHEMO

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## DESIGN

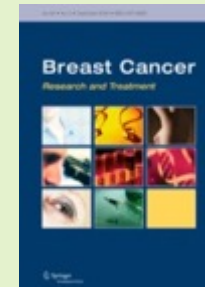
- 10 patients
- All late stage breast cancer patients
- HER-2 +/-
- Life expectancy > 4 months
- Conducted at Medical University of Vienna

## \*RESULTS

- Patients developed anti-HER-2 antibodies
- Induction of cytokines (Th1 biased; IFN $\gamma$ )
- Induction of memory T & B cells post vaccination
- Reduction in T reg cells post vaccination, indicating strong vaccine response
- Antibodies induced displayed potent anti-tumor activity
- Promising results - Patients were end stage and not primary target group
- Reviewed in peer publication

## CLINICAL ENDPOINTS

- 1 Safety and Tolerability
- 2 Immunogenicity: antibodies and cellular responses



\* Wiedermann et. al.,  
Breast Cancer Res Treat.  
2010 Feb;119(3):673-83.

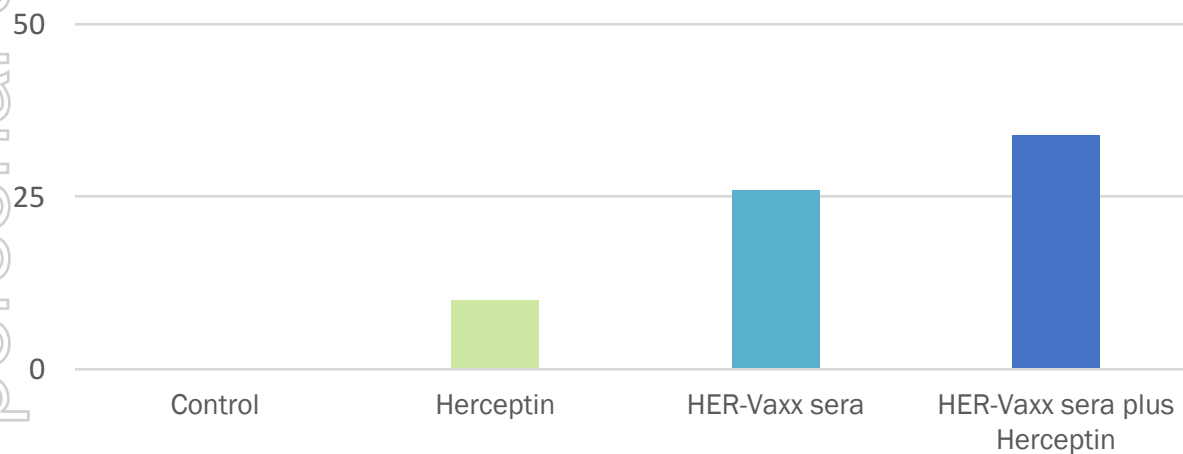
Safety, Efficacy, Durability, Usability, Cost

\* Data Available in Science Booklet

# HER-VAXX INHIBITS HER-2 EXPRESSING CELLS

HER-Vaxx antibodies demonstrate anti-tumour effect by inhibiting validated HER-2+ gastric cell line

Percentage of Inhibition on NCI-N87 gastric cancer cell growth (c/w control)

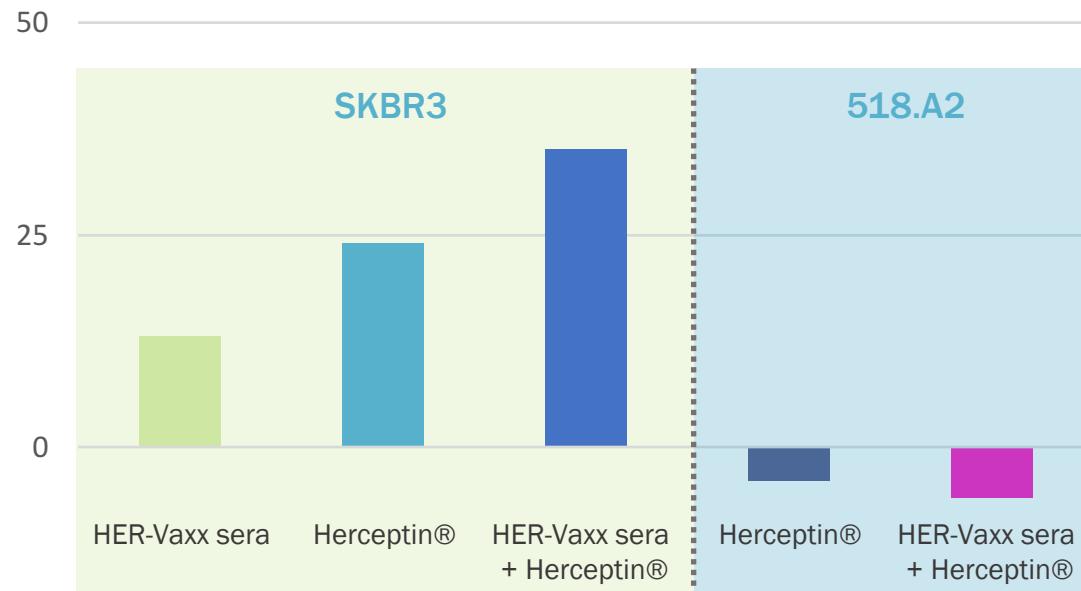


HER-2+ gastric cancer cells\*

\*Collaboration with US company 2017

Combination with Herceptin shows significantly higher inhibition than Herceptin alone.

Percentage of Inhibition (mean + SEM)



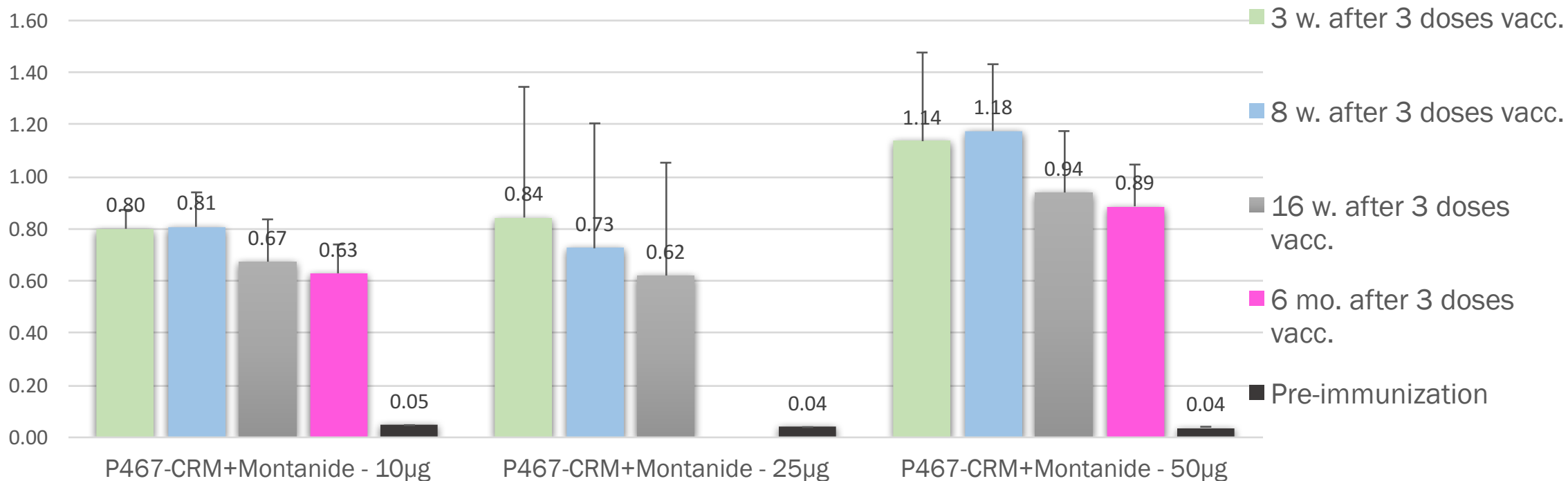
HER-2+ breast cancer cells\*

\*BMC Cancer2017, Wiedermann Feb. 2017

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# PHASE 1B/2 ENHANCED GASTRIC FORMULATION

Her-2/neu specific IgG kinetic, after last immunization



In the mouse model the new formulation sees circulating antibodies maintained for 6 months which equates to many years in humans.

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# PHASE 1B/2, IN GASTRIC CANCER

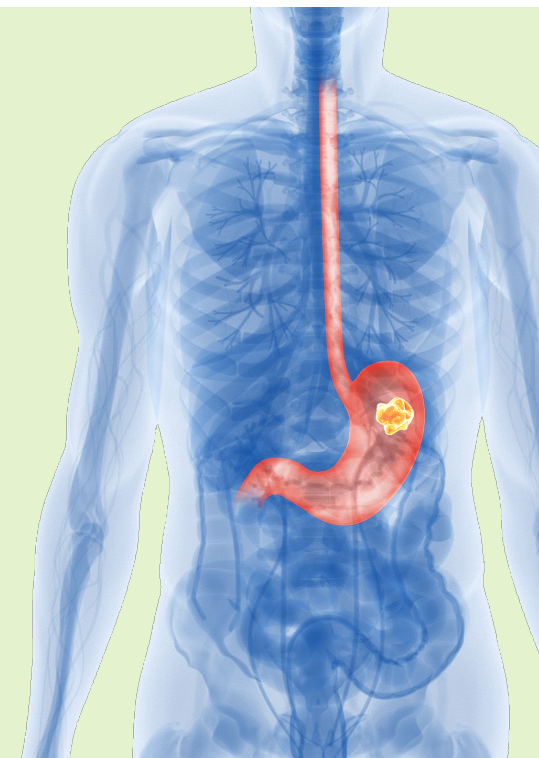
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## Phase 1b lead-in

- 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



2H, 2017 :  
Patients Enrolled

2H, 2017: Early Patient  
Data Available

2H, 2017: Interim Ph1b  
Patient Data Available

1H, 2018: Final Ph1b  
Patient Data Available



# OUR INVESTIGATORS AND STUDY CENTERS

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# GASTRIC MARKET OPPORTUNITY

- Asia is the largest market for gastric cancer globally
- Gastric cancer is the second leading cause of cancer mortality in the world & its management, especially in advanced stages, has evolved relatively little
- ~1 million gastric cancer cases per year; ~19% patients with metastatic gastric cancer are HER-2 positive
- Surgery, chemotherapy, radiation & Herceptin are the key treatments
- In many countries, particularly Asia, chemotherapy such as capecitabine and 5-FU, is the standard of care, not Herceptin



Chemotherapy



Monoclonal antibody

# MARKET OPPORTUNITY

Indications	Gastric Cancer	Breast Cancer
Incidence	1 million cases of newly diagnosed cases, ~190k are HER2+*	1.67m cases of newly diagnosed cases; ~418k are HER2+*
Prognosis	Poor. Median survival is 7-10 months	Varies in breast cancer type. 0.5m deaths per year
% of Patients HER2+ prevalence	~19%	~25%
Herceptin® cost	~3,500 per dose every 3 weeks = \$60,000 per year	~3,500 per dose every 1-2 weeks = 91,000-182,000
Herceptin® benefits (in conjunction with surgery and chemotherapy)	2.7 months OS (overall survival) improvement than chemo alone	Improves OS by 33%-52%. Varies with breast cancer type and line of disease.

- **2017 Herceptin® sales total 6.7b in gastric and breast cancer**
- **Gastric cancer treatment market to grow at the rate of 14.6% annually to \$4.4 billion by 2024; The Asia-Pacific gastric cancer market is set to grow from its 2015 value of \$1.3 billion to \$2.7 billion by 2022**
- **HER-Vaxx could address not only relapsed patients, but patients in all stages of cancer progression.**
- **HER-Vaxx could have a significantly more convenient dosing regime over Herceptin®'s weekly and lengthy infusions.**

\*<http://globocan.iarc.fr/old/FactSheets/>

\*<https://www.thepharmaletter.com/article/gastric-cancer-treatment-market-to-grow-at-the-rate-of-14-6-annually-to-4-4-billion-by-2024-globaldata>

# IMUGENE PIPELINE

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HER-Vaxx (IMU-131)		Discovery	Pre-Clinical	Phase IB	Phase 2
Open Label Randomized, Controlled Study in Gastric Cancer	Chemotherapy + or - HER-Vaxx	[Blue bar spanning Discovery, Pre-Clinical, and Phase IB]			[Grey bar spanning Phase 2]
*Combination Study in breast cancer	HER-Vaxx + Herceptin	[Blue bar spanning Discovery and Pre-Clinical]			▲
*Herceptin Resistant/Failed Study	HER-Vaxx + Chemotherapy	[Blue bar in Discovery]	[Blue bar in Pre-Clinical]	▲	[Grey bar spanning Phase IB and Phase 2]
*HER2+ in bladder and ovarian, NSCLC etc.	HER-Vaxx + Chemotherapy	[Blue bar in Discovery]	[Blue bar in Pre-Clinical]	▲	[Grey bar spanning Phase IB and Phase 2]

\*(IST) Investigator Sponsored or Collaboration study

\*Christoph Zielinski, CECOG President, ESMO president nominee, engaged

▲ = Initiated upon RP2D



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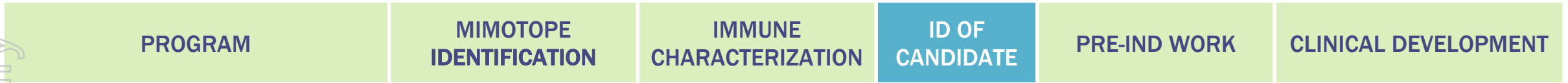
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## MIMOTOPE B-CELL PEPTIDE THERAPY

# IMUGENE DISCOVERY PIPELINE



HER-Vaxx /Her2 Combo



\*Mimotope #2



\*Mimotope #3



Her2 / \*Mimotope Combo



Combo #3?

TBD



Arginine Modulator



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# FINANCIAL SUMMARY

## ASX:IMU

<b>Market Cap (20/Nov/17)</b>	<b>\$54.5M AUD, \$41.1M USD</b>
Ordinary Shares	2.370 billion
12 month price range	0.7 cents – 2.8 cents AUD
Avg daily volume	2.7M shares (July-September 2017)
Investment to Date	~\$15.2 m (public) ~\$ 5.5 m (VC)
Cash & Equivalents	\$5.3M as of September 2017

## Top 5 shareholders (as at Sept. 2017)

	No. of Shares	% Capital
Platinum Asset Management	240,387,753	10.14%
National Nominees Limited	97,002,685	4.09%
Webinvest Pty Ltd	85,000,000	3.59%
Paul Hopper Executive Chairman	71,696,875	3.03%
Tisia Nominees	59,899,999	2.53%

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## Summary of Key Risk

- IMU's clinical trials may prove unsuccessful;
- IMU currently has no material revenues. IMU intends to raise additional funds from Australia and international strategic investors later in 2017, which will have a dilutive effect on existing shareholders;
- IMU is dependent on the performance of its partners and the retention of key consultants and personnel for its specialized business;
- IMU value may be impacted if its intellectual property is not able to be adequately protected; and
- IMU may face competition from better resourced industry participants.
- IMU may not obtain an industry partner and/or the regulatory approvals (such as the granting of FDA approval) that it requires for sale of its products or the reimbursement approvals required for sales growth, or such approvals may be subject to delay

# EXECUTIVE SUMMARY

- Experienced management & board
- Novel oncology platforms: Mimotopes: B cell peptide vaccines – IP protected to 2036
- Lead mimotope: HER-Vaxx Phase 1b/2 mimotope study in Her2+ gastric cancer (large unmet medical need by current existing therapies)
  - POC demonstrated in Phase 1 Her-2+ breast cancer study – safety & immunogenicity established
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- Capital Raise
- Summary of key risks

