



IMUGENE

Developing Cancer Immunotherapies

ASX: IMU

Developing Cancer Immunotherapies

**NWR Healthcare Conference
March 22, 2023**



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INTRODUCTION TO IMUGENE

Imugene is a biotech company headquartered in Australia and publicly traded on the Australian Securities Exchange (ASX:IMU)



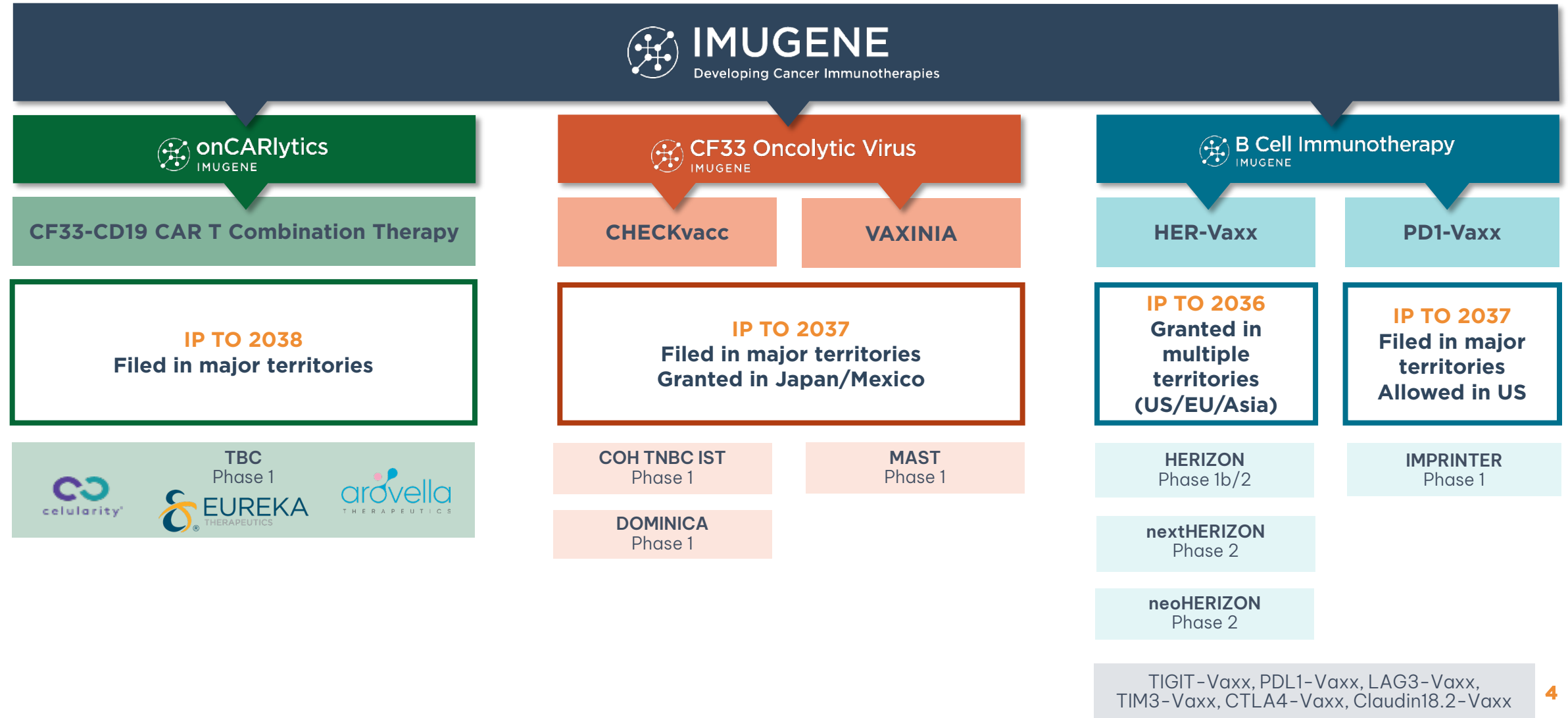
THREE UNIQUE TECHNOLOGY PLATFORMS MAXIMIZE OPPORTUNITIES IN SOLID TUMORS

Therapeutic approaches with combination potential with existing standards of care

PLATFORM

IP

CLINICAL TRIALS

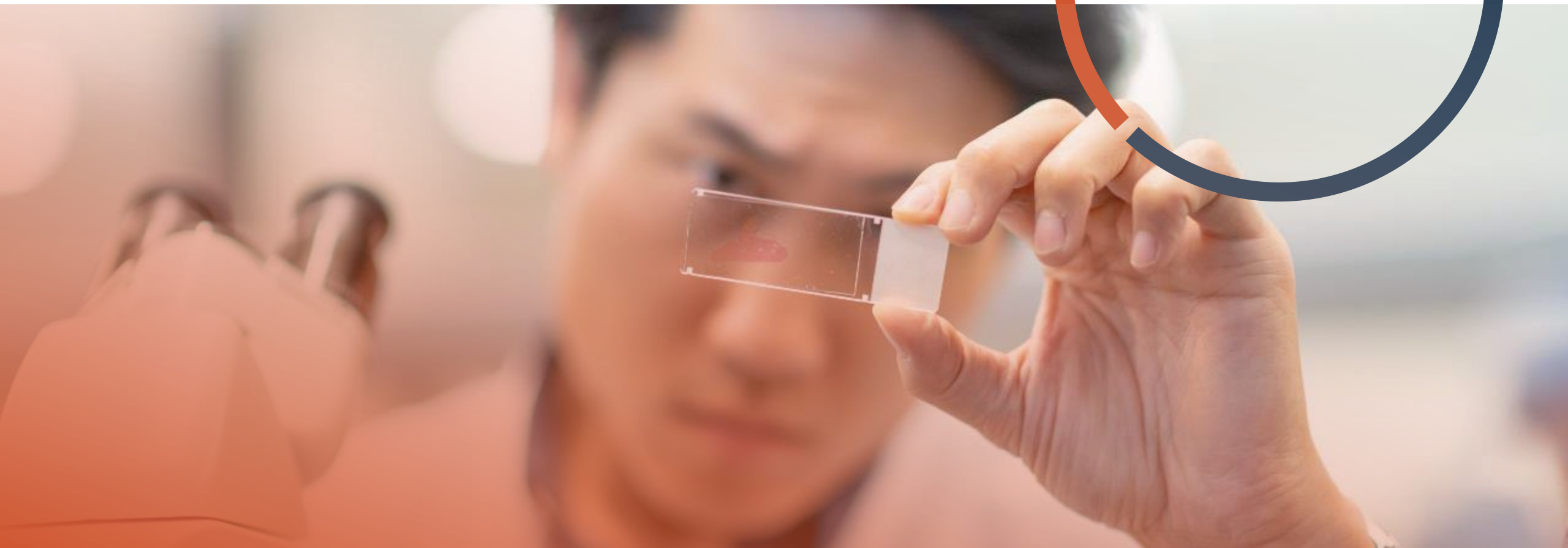


IMUGENE'S DEEP IMMUNOTHERAPY PIPELINE FOR THE TREATMENT OF SOLID TUMORS



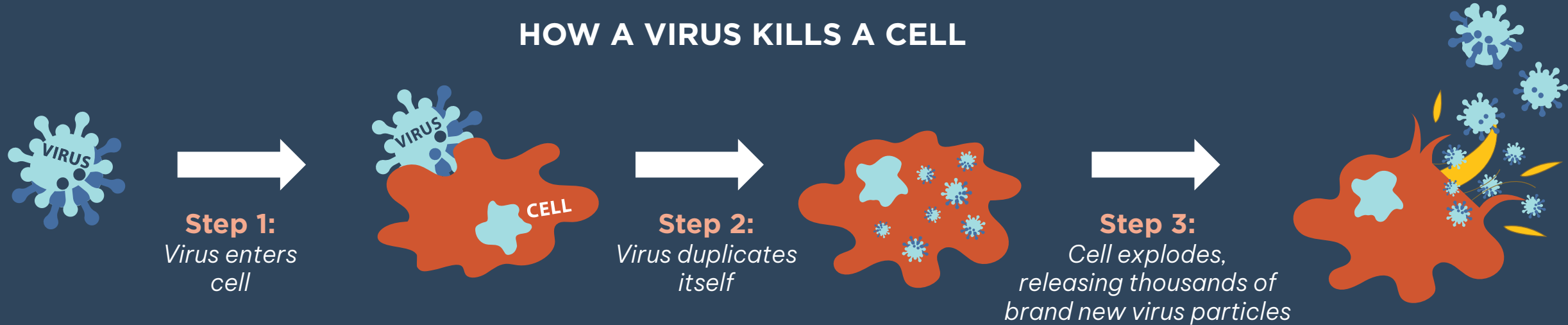
PLATFORM	PROGRAM/ TARGET	COMBINATION APPROACH	INDICATION	FDA IND	PRECLINICAL	IND	PHASE 1	PHASE 2	2023 EXPECTED MILESTONES
onCARlytics IMUGENE	onCARlytics (CF33-CD19)	CD19 targeted therapies	Metastatic Solid Tumors		PHASE 1				FDA IND
CF33 Oncolytic Virus IMUGENE	VAXINIA (CF33)	Pembrolizumab	Metastatic Solid Tumors	✓	MAST				IV Cohort 2 Cleared Optimal Biological Dose Combination FPI IT and IV Combination OBD IV
	CHECKvacc (CF33-αPD- L1)	Checkpoint Inhibitors	Metastatic TNBC	✓	CHECKvacc IST				IT Cohort 3 Cleared Optimal Biological Dose
	CHECKvacc (CF33-αPD- L1)	Checkpoint Inhibitors	Solid Tumors		DOMINICA				FDA IND
B Cell Immunotherapy IMUGENE	HER-Vaxx (HER2)	Chemotherapy	First Line Gastric Cancer		HERIZON				Publication and Presentation (ASCO GI)
			Neoadjuvant Gastric Cancer		neoHERIZON				CTA Clearance FPI
		Checkpoint Inhibitors	Metastatic Gastric Cancer	✓	nextHERIZON				ASCO GI TiP Interim Data Readout
	PD1-Vaxx (PD1)	Chemotherapy	Metastatic NSCLC	✓	IMPRINTER				Combination FPI
		Atezolizumab	MSI High CRC		NeoPolem IST				CTA Clearance FPI

CF33 Oncolytic Virus



ONCOLYTIC VIRUSES OFFER A SELECTIVE IMMUNOGENIC APPROACH TO EFFECTIVELY KILL TUMOR CELLS

HOW A VIRUS KILLS A CELL



Engineering enhancements

- Infect and kill only cancer cells
- Carry additional payloads to augment killing (check point inhibitors, cytokines, anti-angiogenics)

Multiple ways to kill cancer cells

- Direct Lysis
- Immuno-activation
- Priming of TME to enhance checkpoint inhibitor response¹

Precedent for approval

- Tvec approved in the United States for melanoma (2015)
- Oncorine approved in China for head and neck cancer (2005)
- Delytact approved in Japan for malignant glioma (2021)

CF33-hNIS: TUMOR TRACKING AND TROPISM

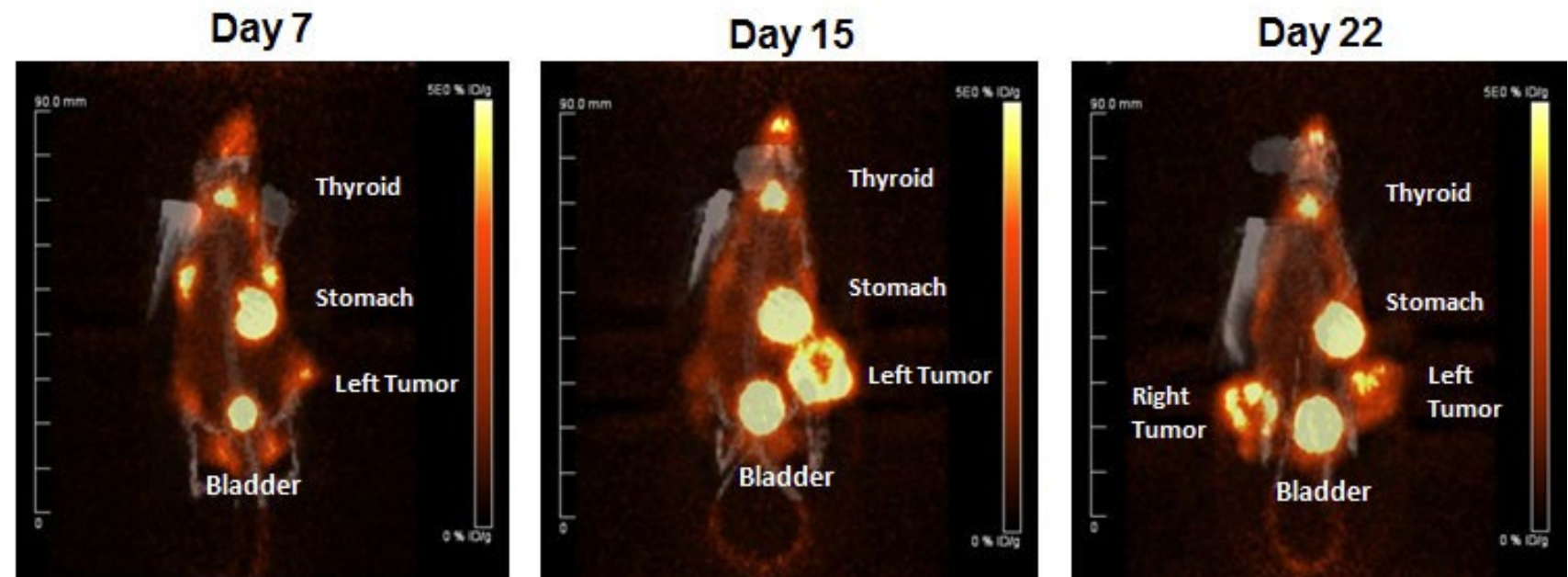
Genetic modification enables tumor tracking and tumor tropism

- hNIS (human sodium iodide symporter) protein is expressed on the tumor cell surface
- hNIS transgene inserted within J2R locus (Tk) to transport radioactive iodine for imaging

Tracked virus supports tumor specificity and systemic delivery

- Cross infection of tumors supported by ^{124}I uptake in right side on day 22 following injection on left side
- Physiologic uptake in thyroid, stomach and bladder

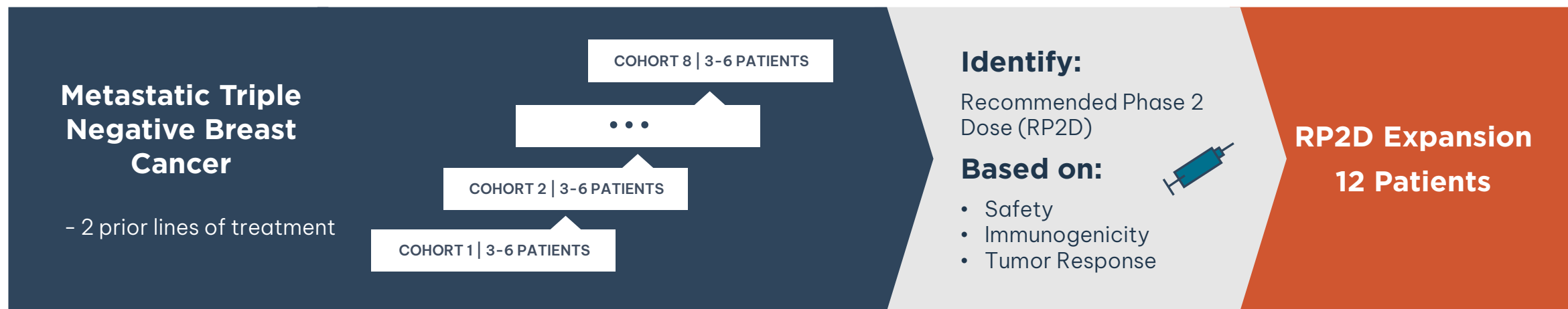
^{124}I PET Imaging of CF33-hNIS-infected HCT116 (colon cancer) from flank xenografts in nude mice over time



CHECKvacc PHASE 1 TNBC STUDY CF33+hNIS+aPD-L1 (“Armed” Virus)



Presented at SABC 2022



First Patient Enrolled October 2021

Disease of need

- 8-13 month survival for metastatic disease with few treatments

Potential target for immunotherapy

- Expresses PD1, PD-L1

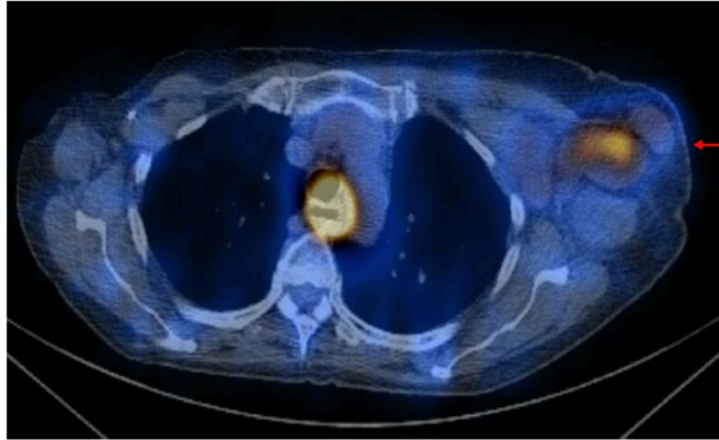
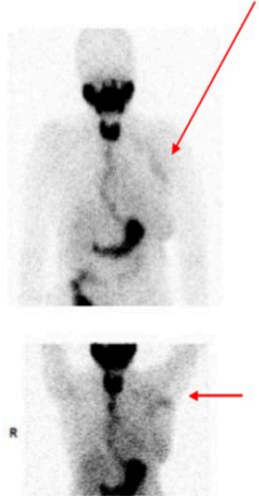
Treatment responses to Atezolizumab (JAMA Oncology, 5:74, 2019)

- 1st line: 24%; 2nd line: 6%
- Approved by FDA 8 March 2019

Potential for registration in well-designed, randomized P2 study

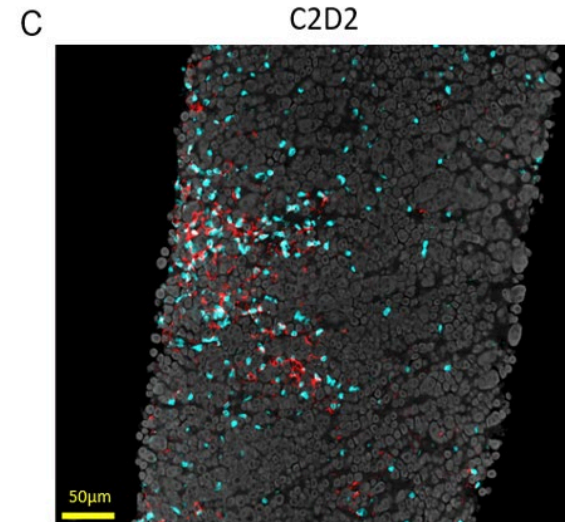
Indication	TNBC
FDA IND	CHECKvacc: CF33-hNIS-aPDL1
N	33-78
Location	Single Center: COH
Admin Route	Intratumoral (IT)

CHECKvacc (CF33-hNIS-antiPD-L1) TUMOR TRACKING

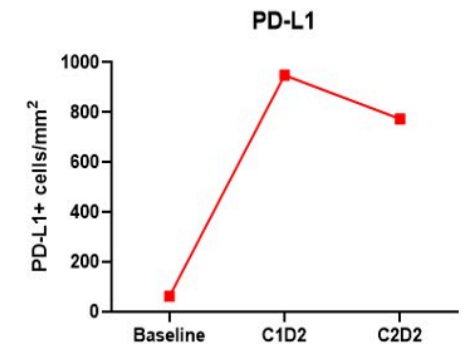


- hNIS 99m uptake in SPECT scan

SPECT imaging of patient using Technetium-99m (C1D8): Patient COH-004 received CHECKvacc at Dose Level 2 (3×10^5 PFU). Injected lesion was left axilla showed significant enhancement of injected lymph node.



- D
- Immune activation-increase in PD-L1



Multiplex immunofluorescence (mIF) of COH-004 tumor: C&D immune infiltrates shows increase density of PD-L1+ cells across patient tissue biopsies.

VAXINIA PHASE 1 MAST STUDY

(Metastatic Advanced Solid Tumors)

First Patient Enrolled for IT and IV combination in March, 2023

Dose Administration (Parallel Groups)

n=52-100

IT

IT Administration

Metastatic and
Advanced Solid
Tumors

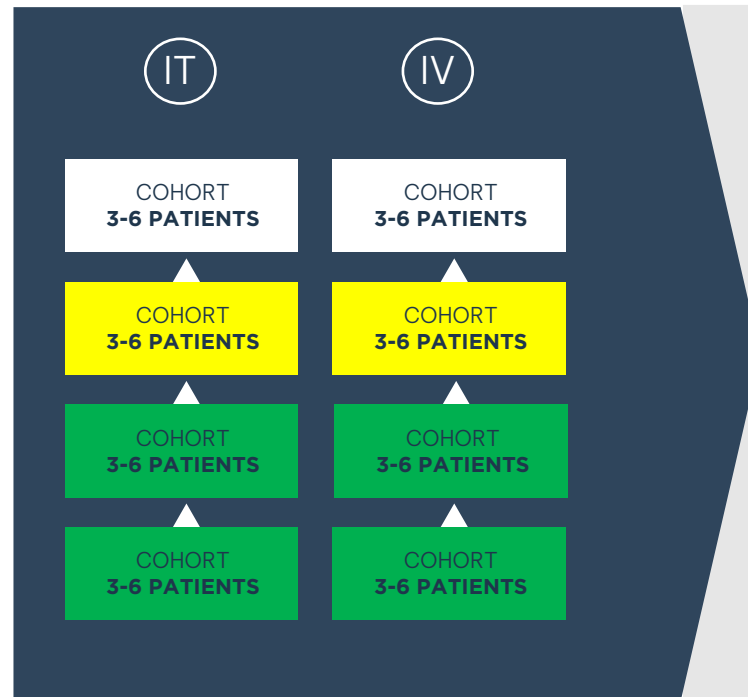
IV

IV Administration

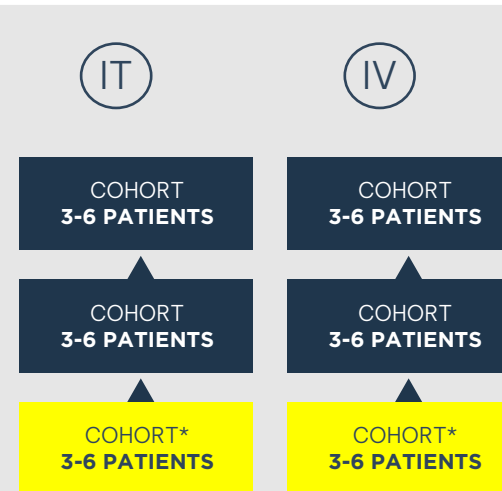
Metastatic and
Advanced Solid
Tumors

Site Location: USA,
AUS

VAXINIA Monotherapy Dose Escalation



VAXINIA + Pembrolizumab Combination Dose Escalation*



*Opens upon Cohort 2 (IT and IV
monotherapy) clearance

Cohort Expansion

RP2D Expansion
(N=10)

**Tumor Types of
Interest**
(cleared cohorts)

Identify: Recommended Phase 2 Dose (RP2D) – Monotherapy and Combination
Based on: Safety, Immunogenicity, Tumor Response

CF33 oncolytic virus alone and in combination with pembrolizumab



CF33-CD19



THE CELL THERAPY SOLID TUMOR CHALLENGE & IMUGENE'S SOLUTION

Cell therapy, including Chimeric Antigen Receptor (CAR) T cell therapy, has had limited activity in solid tumors, largely due to a lack of selectively and highly expressed surface antigens, such as the blood B cell antigen CD19

CD19 Targeting domain

CD19 Targeting Cells

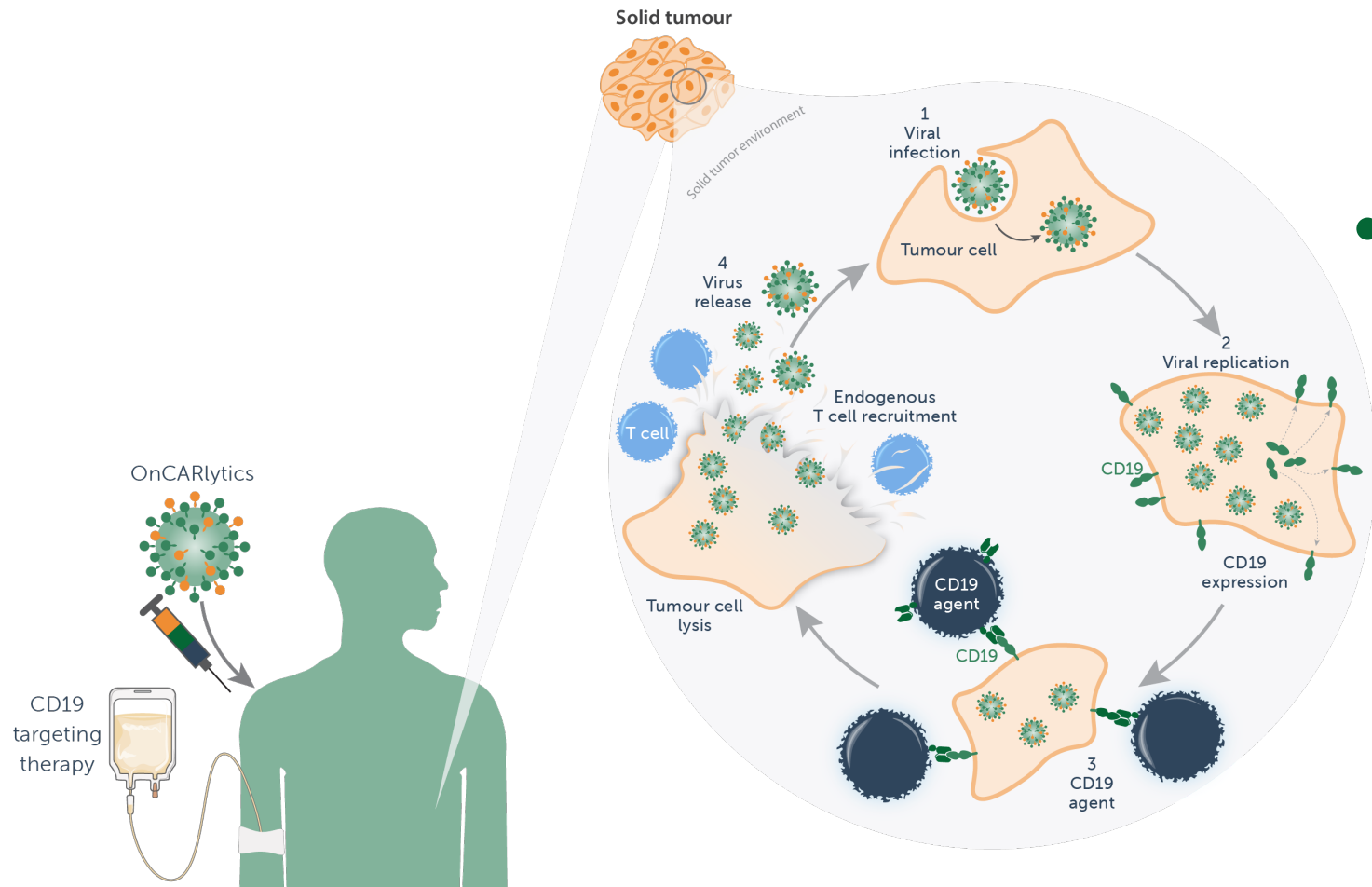
OV generated CD19

Solid Tumor

IMUGENE'S APPROACH

- Use onCARlytics (CF33-CD19) to express CD19 antigen on solid tumor cells
- Combine onCARlytics (CF33-CD19) with autologous or allogeneic CD19 CAR T cell therapies for the treatment of solid tumors

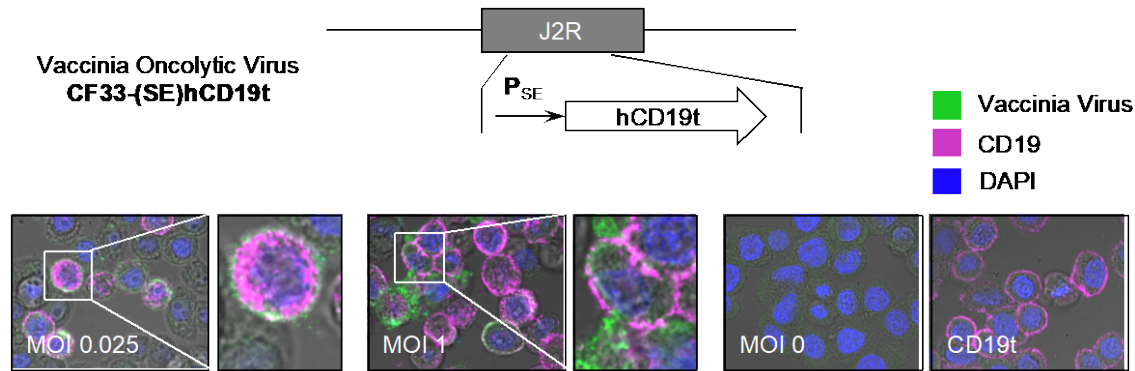
MECHANISM OF ACTION: HOW DOES IT WORK?



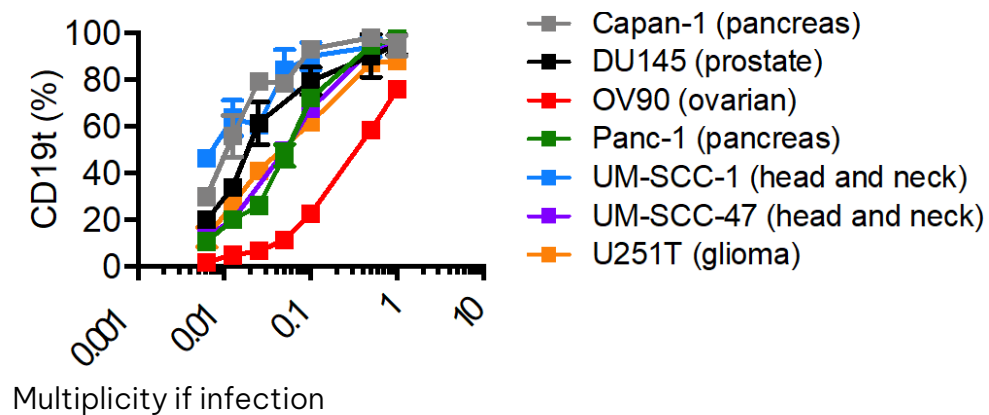
onCARlytics makes solid tumors “seen” by CD19 targeting therapies

1. OnCARlytics infects Tumor cells
2. Virus replication and production of CF33-CD19 on the cell surface enabling CD19 cell targeting
3. Tumor cell lysis leads to viral particle release and the combination promotes endogenous immune cell recruitment to Tumors
4. Released viral particles re-initiate virus infection of surrounding Tumor cells.

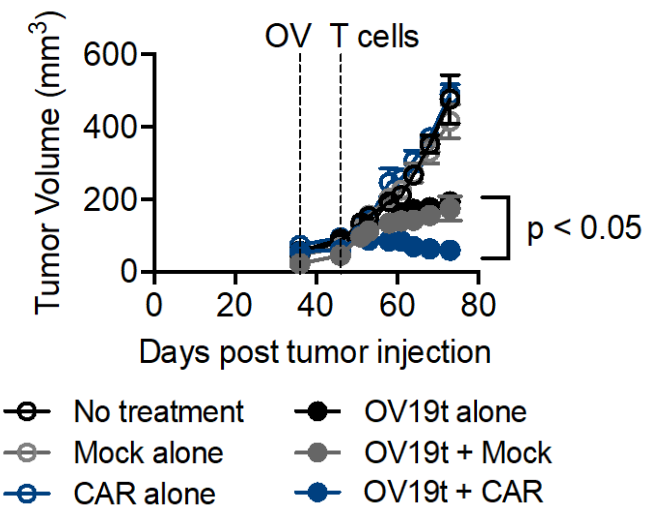
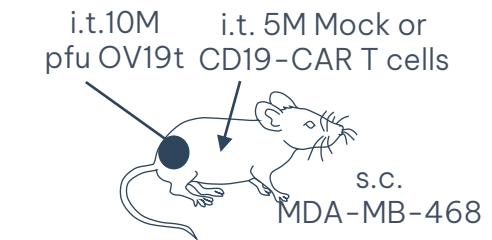
onCARLYTICS DELIVERS TARGETS TO “TARGETLESS” SOLID TUMORS



onCARlytics (CF33-CD19) infects a wide array of solid Tumor cell lines, with dose-dependent CD19 cell surface expression



Combination of onCARlytics (CF33-CD19) and CD19-CAR T cells promotes tumor regression in xenograft model of TNBC

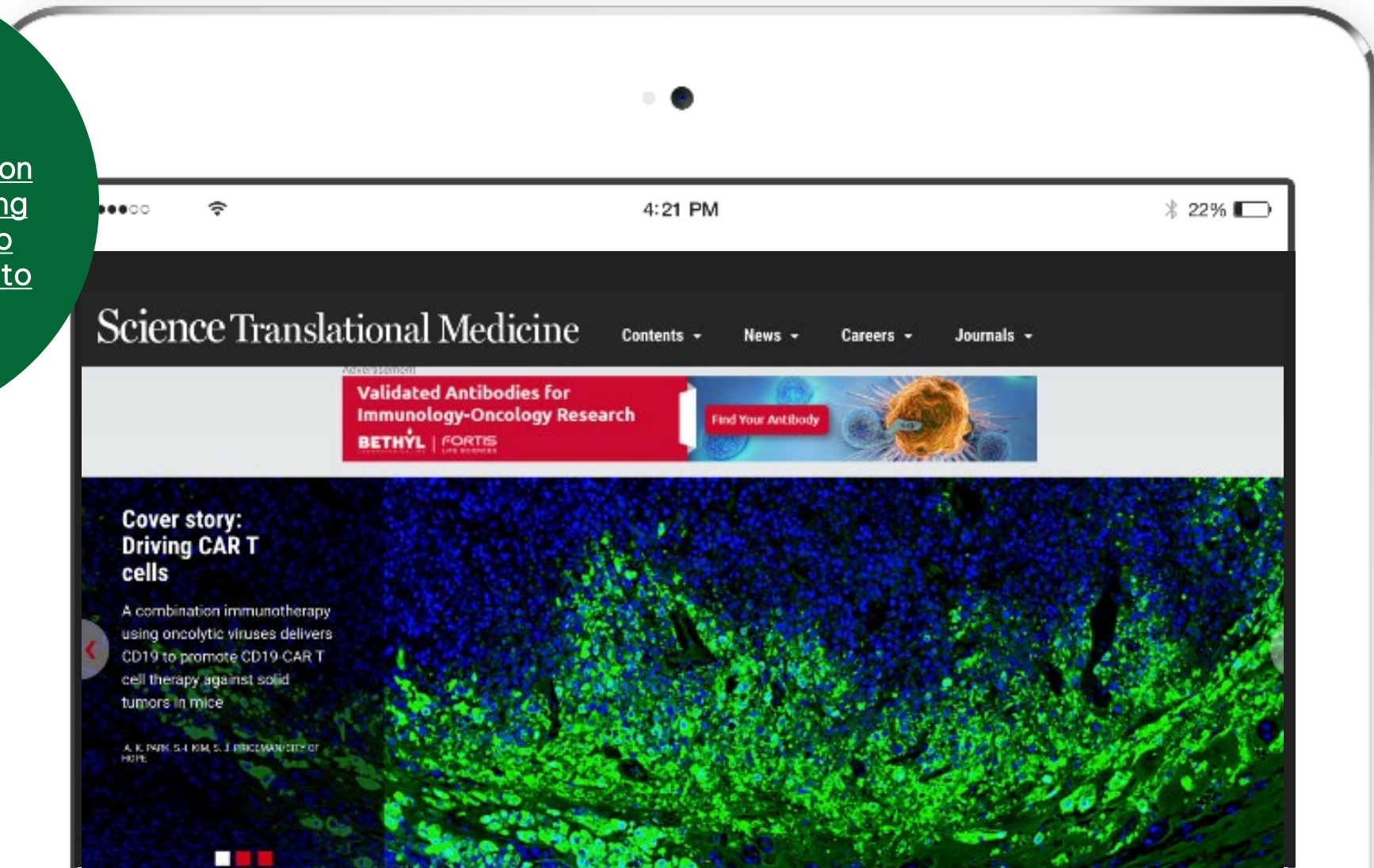


PUBLISHED FRONT COVER OF SCIENCE TRANSLATIONAL MEDICINE JOURNAL IN 2020



Effective combination
immunotherapy using
oncolytic viruses to
deliver CAR targets to
solid tumors

Park AK, Fong Y, Kim SI,
Yang J, Murad JP, Lu J,
Jeang B, Chang WC, Chen
NG, Thomas SH, Forman
SJ, Priceman SJ. Sci Transl
Med. 2020 Sep 2;12(559):
eaaz1863. doi:
10.1126/scitranslmed.aaz1
863.PMID: 32878978



onCARLYTICS COMBINATION WITH CD19 TARGETING THERAPIES



Collaboration with Celularity, Eureka and Arovella for combination with onCARlytics

AUG 2021
Strategic Partnership with Celularity



Allogeneic CyCART19® T cells

NOV 2021
Strategic Partnership with Eureka



Autologous ARTEMIS® T cells

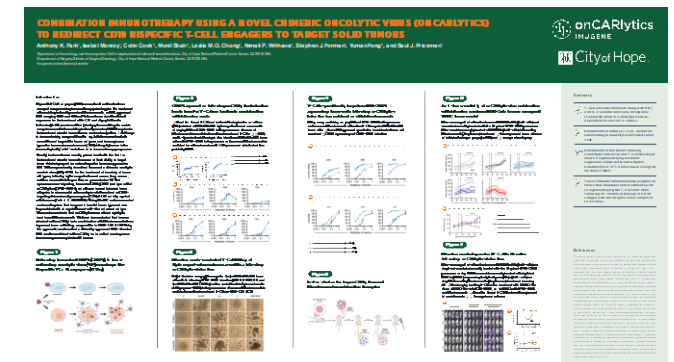
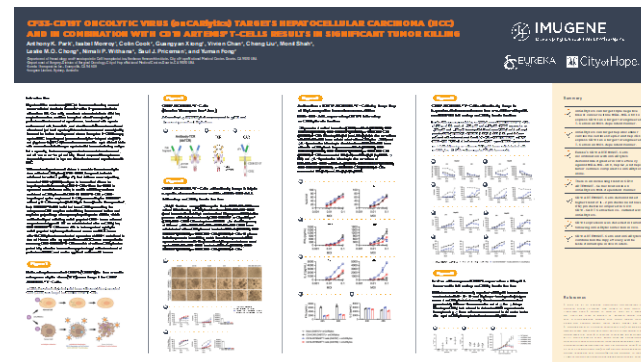
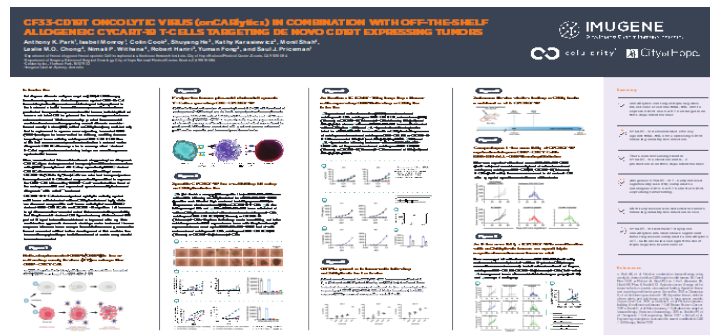
SEP 2022
Strategic Partnership with Arovella



Allogeneic invariant natural killer (iNKT) cells



3 POSTERS PRESENTED AT SITC 2022







HER-Vaxx

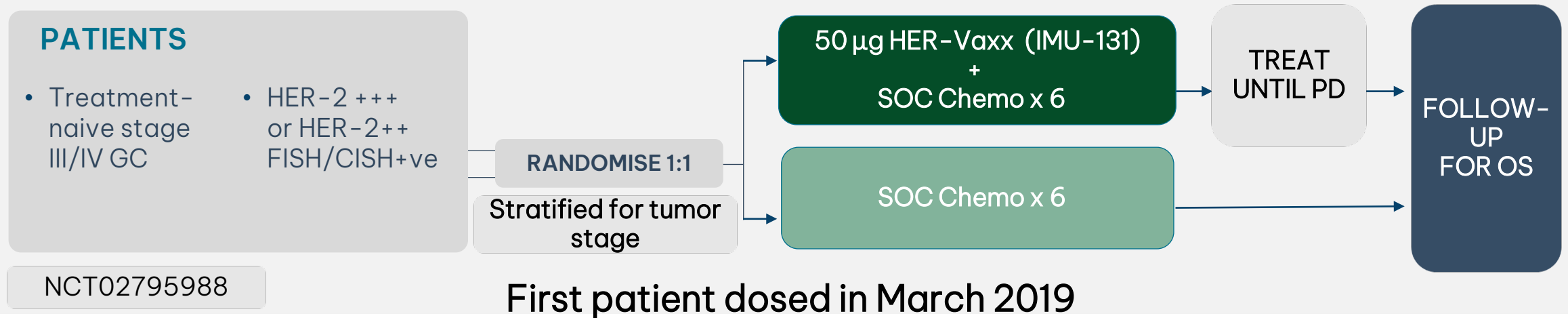


B CELL BASED ANTIBODIES HAVE DISTINCT COMPETITIVE ADVANTAGES TO EXISTING TREATMENTS

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.

	NATURAL B CELL DERIVED ANTIBODIES 	MONOCLONAL ANTIBODIES 
Safety	Stimulates the immune system to produce Abs, which may be potentially safer	Synthetic Ab, with side effects (including ventricular dysfunction, CHF, anaphylaxis, infusion reactions, immune mediation)
Efficacy	Polyclonal Ab response reduces risk of resistance and potentially increases efficacy	Monoclonal Ab – may develop anti-drug antibodies
Durability	Antibodies continuously produced with lasting immune response to potentially inhibit tumor recurrence	Half life necessitates recurrent dosing
Usability	After priming, low numbers of vaccinations required per year	Requires regular infusion
Cost	Low cost of production enables greater pricing flexibility facilitating combination	Expensive course of treatment >US\$100K per year

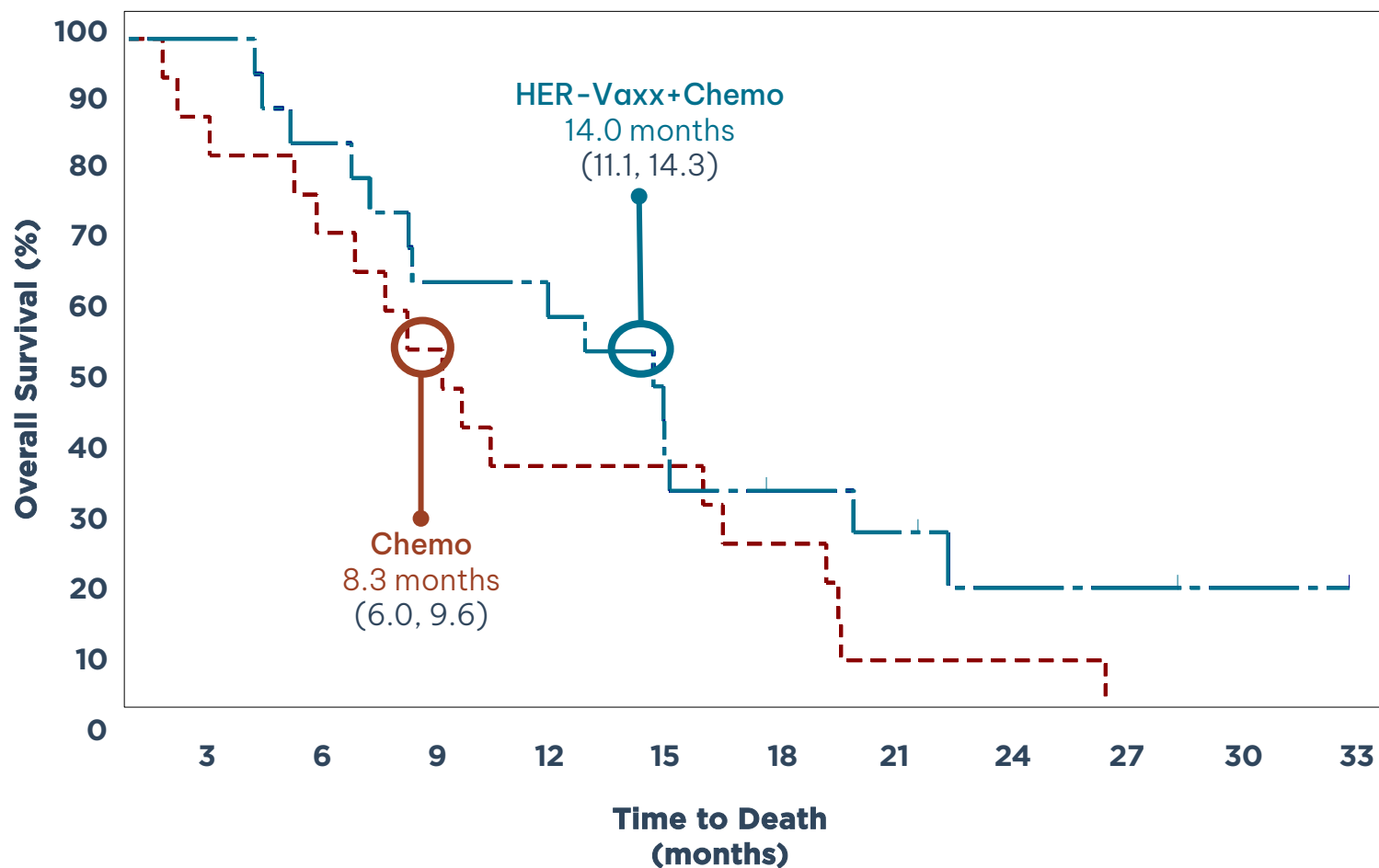
HERIZON PHASE 1B/2 OPEN LABEL, MULTICENTER STUDY



HER-Vaxx	C1D1, C3D1 then Q9 weeks till PD
Chemotherapy	6 cycles Q3 weeks (Cisplatin + 5FU or Capecitabine; Oxaliplatin + Capecitabine)

PRIMARY ENDPOINT	OS (pre-spec 1-sided alpha 0.10, power 90% with critical HR 0.6 and 24 events)	NO. OF PATIENTS	36
SECONDARY ENDPOINTS	PFS, Safety, Immune Response	SITE LOCATION	Eastern Europe, India

HER-Vaxx SIGNIFICANTLY PROLONGS OVERALL SURVIVAL IN 1L PATIENTS WITH HER-2+ GASTRIC CANCER



	HER-Vaxx + Chemotherapy	Chemotherapy
Sample Size	19	17
Events	15	17
Median OS (2-sided 80% CI)	14.0 months (11.1, 14.3)	8.3 months (6.0, 9.6)
Median Duration of Response	30 weeks	19 weeks
HR	0.558	
2-sided 80%CI	(0.362, 0.927)	
Log-rank Test (1-sided p- value) *	0.054 *	

*Significant, 1-sided $p < 0.10$

HERIZON IN THE NEWS !



OncLive.com

@OncLive



Patients with HER2-overexpressing metastatic or advanced gastric/GEJ adenocarcinoma treated with HER-Vaxx + standard-of-care chemotherapy had a statistically significant survival benefit compared with those who received chemotherapy alone. [#oncology](#)
ow.ly/8YhO50MAxPT pic.twitter.com/1Vhly78Ld3

26/1/2023, 2:00 pm

Cancer Therapy Advisor

Home » News » Conference Coverage » ASCO GI 2023

January 20, 2023

HER-Vaxx Improves Survival in HER2+ Advanced Gastric/GEJ Cancer

Jen Smith

ASCO Daily News®

Clinical News From the American Society of Clinical Oncology

NEWS COMMENTARIES MEETINGS TOPICS PODCASTS ABOUT

Enter words / phrases / DOI / T

2023 ASCO GASTROINTESTINAL CANCERS SYMPOSIUM

Encouraging Results Seen With HER-Vaxx Plus Chemotherapy in Gastric/Gastroesophageal Junction Cancer

HER-Vaxx Studies



HER-Vaxx PHASE 2: nextHERIZON IN METASTATIC GASTRIC CANCER AFTER PROGRESSION ON TRASTUZUMAB

ASCO® Gastrointestinal
Cancers Symposium



TRIAL



PATIENTS



STUDY



ENDPOINTS

- Phase 2
- Open label
- USA, Australia, Asia
- Treat until progression/toxicity

- > 1L
- Advanced or metastatic Gastric Cancer
- HER-2/neu overexpressing
- Progressed on prior trastuzumab

- Non-Randomised
- HER-Vaxx in combination with paclitaxel + ramucirumab
OR
HER-Vaxx in combination with pembrolizumab

Primary

- Objective Response Rate
- Safety

Secondary

- Overall Survival
- Progression-free survival
- Duration of Response

First Patient Enrolled Sept 2022

mGC/GEJ cancer
HER-2/neu overexpressing
Progressed on or after trastuzumab &
previously received PD-1/PD-L1 treatment

Arm 1: HER-Vaxx + SOC Chemotherapy

mGC/GEJ cancer
HER-2/neu overexpressing
Progressed on or after trastuzumab

Arm 2: HER-Vaxx + pembrolizumab

PRIMARY ENDPOINTS:
ORR
Safety

SECONDARY ENDPOINTS:
OS
PFS
DoR

EXPLORATORY ENDPOINT:
Biomarker/Immune Response

HER-Vaxx PHASE 2: neoHERIZON IN RESECTABLE GASTRIC CANCER



TRIAL

- Phase 2
- Open label
- Randomised
- Germany



PATIENTS

- Neoadjuvant Gastric Cancer
- HER-2+++ / HER-2++ FISH/CISH +ve



STUDY

- Arm 1 – FLOT + HER-Vaxx
- Arm 2 – FLOT + Avelumab + HER-Vaxx



ENDPOINTS

Primary

- Pathological Complete Response

Secondary

- Safety
- Immune Response
- Duration of Response/Overall Survival





PD1-Vaxx



IMPRINTER: PD1-Vaxx NSCLC PHASE 1 STUDY DESIGN

Phase 1: PD1-Vaxx Monotherapy Dose Escalation & Expansion

2L+ NSCLC Progressed on/after ICI

Cohort 1
10 µg
PD1-Vaxx
n = 3-6

Cohort 2
50 µg
PD1-Vaxx
n = 3-6

Cohort 3
100 µg
PD1-Vaxx
n = 3-6

**MONOTHERAPY
OBD**

Expansion
mOBD
PD1-Vaxx
n = 10

Phase 1b: PD1-Vaxx NSCLC Combination Dose Escalation & Expansion

ARM 1: TPS/TC ≥ 50% or IC ≥ 10%

Cohort 1
10 µg
PD1-Vaxx +
atezolizumab
n = 3-6

Cohort 2
50 µg
PD1-Vaxx +
atezolizumab
n = 3-6

Cohort 3
100 µg
PD1-Vaxx +
atezolizumab
n = 3-6

COMBINATION OBD*

ARM 1: Progressed on/after ICI TPS/TC ≥ 50% or IC ≥ 10%

cOBD PD1-Vaxx + atezolizumab
n = 10

ARM 2: Naïve to ICI TPS/TC ≥ 50% or IC ≥ 10%

cOBD PD1-Vaxx + atezolizumab
n = 10

ARM 3: Naïve to ICI Any PD-L1 Level

cOBD PD1-Vaxx + atezolizumab +
chemotherapy
n = 10

ARM 2: Any PD-L1 Level

Cohort 1
10 µg
PD1-Vaxx +
atezolizumab +
chemotherapy
n = 3-6

Cohort 2
50 µg
PD1-Vaxx +
atezolizumab +
chemotherapy
n = 3-6

Cohort 3
100 µg
PD1-Vaxx +
atezolizumab +
chemotherapy
n = 3-6

mOBD = monotherapy optimal
biological dose
cOBD = combination optimal
biological dose
*cOBD will be determined per arm

VALUE INFLECTION POINTS EXPECTED IN THE NEXT 12 MONTHS

VAXINIA	MAST: Combination OBD IV
onCARlytics	FPI
HER - Vaxx	neoHERIZON: FPI
HER - Vaxx	nextHERIZON: Interim Data Readout
VAXINIA	MAST: Optimal Biological Dose (Mono IV and/or IT)
HER - Vaxx	neoHERIZON: CTA Clearance
CHECKvacc	DOMINICA: FDA IND
PD1 - Vaxx	neoPOLEM(CRC IST)
CHECKvacc	COHIST: Optimal Biological Dose
PD1 - Vaxx	IMPRINTER: Combination FPI
onCARlytics	FDA IND

RECENTLY ACHIEVED

✓	VAXINIA	MAST: Combination FPI IT and IV
✓	VAXINIA	MAST: IV Cohort 2 Cleared
✓	HER - Vaxx	HERIZON: Publication and Presentation (ASCO GI)
✓	HER - Vaxx	next HERIZON: Trial in Progress Poster (ASCO GI)
✓	VAXINIA	MAST: IV Cohort 1 Cleared
✓	onCARlytics	3 Presentation at SITC
✓	VAXINIA	MAST: IV Arm - 1st Patient Dosed
✓	HER-Vaxx	nextHERIZON: Phase 2 - 1st Patient Dosed
✓	HER-Vaxx	HERIZON: Phase 2 - Final OS readout

FINANCIAL SUMMARY

PUBLIC MARKET OVERVIEW (March 21, 2023)

Share Price	A\$0.13
52 week range	A\$0.12 - A\$0.32
Market Capitalisation ¹	A\$835M
Cash equivalents (31 December '22)	A\$162M
Enterprise Value	A\$673M

TOP 5 SHAREHOLDERS (as at March 21, 2023)

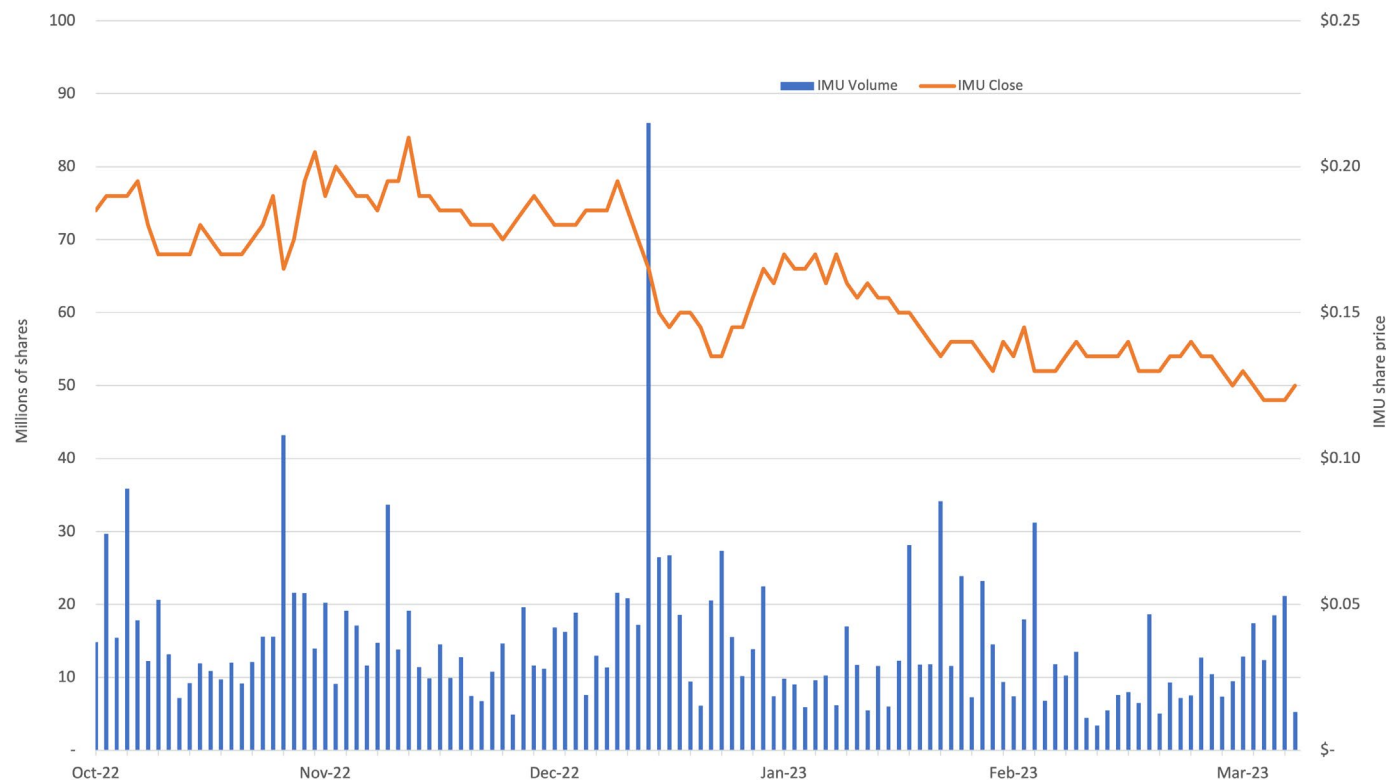
JP Morgan Nominees Australia Pty Limited	9.02%
HSBC Custody Nominees (Australia) Limited	5.51%
Paul Hopper	4.94%
Citicorp Nominees Pty Limited	4.65%
Mann Family	4.60%

Note:

1. Market capitalisation calculations based on ordinary shares (6.423 bn) only and excludes the dilutive impact of options outstanding (0.477 bn)

SHARE PRICE PERFORMANCE

IMU Share Price and Volume (3 Oct '22 to 21 Mar '23)



INVESTMENT HIGHLIGHTS

MARKET CAPITALISATION

21st March 2023

A\$835M



CASH AS OF

31st December 2022

A\$162M



5 UNIQUE
ASSETS

HER-Vaxx

CHECKvacc

CF33-CD19

VAXINIA

PD1-Vaxx

*Multiple potential
platform targets

CF33-CD20 LAG3-Vaxx CTLA4-Vaxx
TIGIT-Vaxx PDL1-Vaxx TIM3-Vaxx

CF33
Oncolytic Virus

onCARlytics

B-Cell
Immunotherapies

3 PLATFORM
TECHNOLOGIES



3 SCIENTIFIC
COLLABORATIONS

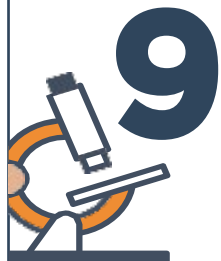
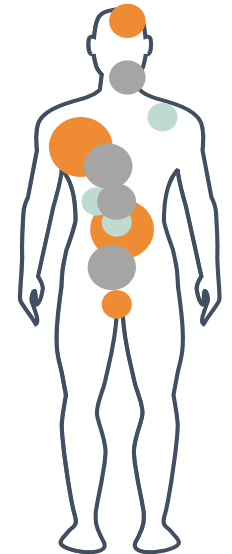
Celularity

Eureka

Arovella

DISEASE AREAS

Breast (TNBC)
Lung (NSCLC)
Gastric
Gastroesophageal
Colorectal (CRC)
Melanoma
Head and Neck
Hepatocellular
Pancreatic
Glioblastoma (GBM)



CLINICAL STUDIES

HERIZON: Ph1b/2 First line Gastric Cancer
IMPRINTER: Ph1 NSCLC (FDA IND)
CHECKvacc COH IST: Ph1 TNBC (FDA IND)
neoHERIZON: Ph 2 Neoadjuvant Gastric Cancer
nextHERIZON: Ph2 Metastatic Gastric Cancer (FDA IND)

MAST: Ph1 Solid Tumors (FDA IND)
DOMINICA: Ph1 TNBC (FDA IND)
onCARlytics: Ph1 Solid Tumors (FDA IND)
neoPolem IST: Ph1 CRC

2 SUPPLY
AGREEMENTS



Merck
KGaA/Pfizer

Roche

Contact

shareholderenquiries@imugene.com
www.imugene.com

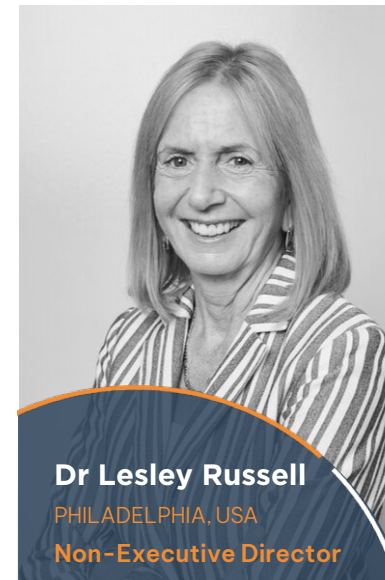


IMUGENE

Developing Cancer Immunotherapies

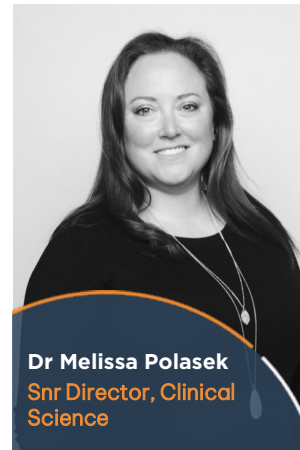
INTERNATIONAL LEADERSHIP TEAM WITH EXTENSIVE COMMERCIALISATION EXPERTISE IN THE SECTOR

Imugene has a team with oncology drug development experience



IMUGENE'S MANAGEMENT TEAM

Experienced management team with significant clinical development expertise



IMUGENE SCIENTIFIC ADVISORY BOARD



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Cancer Center, USA



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University of Ottawa, CAN



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Dr Saul Priceman
City of Hope, USA



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