

ASX: IMU

Developing Cancer Immunotherapies



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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)



2013 Paul Hopper founded Imugene. Licensed HER-Vaxx from the **Medical University** of Vienna

2017 HER-Vaxx enters the

clinic

Licensed CF33 oncolytic virus platform from City of Hope invented by Dr Yuman Fong

2019

2021

Licensed on CARIvtics from City of Hope invented by Dr Y Fong, Dr S Priceman & Dr A Park

2021

CHECKvacc enters the clinic

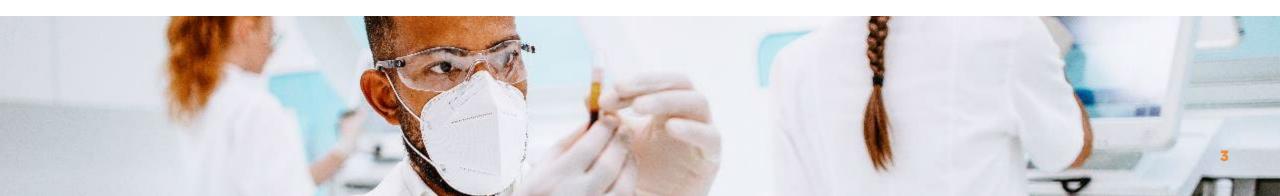
2021

HER-Vaxx Clinical Trial Supply Partnership with Merck KGaA & Pfizer 2021

Entered the S&P/ASX 200 Index

2022

HER-Vaxx Phase 2 Final OS



INVESTMENT HIGHLIGHTS



MARKET CAPITALISATION

9th March 2023

A\$835M

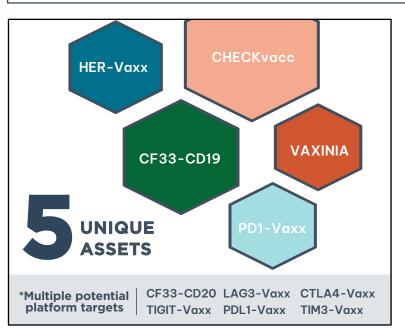


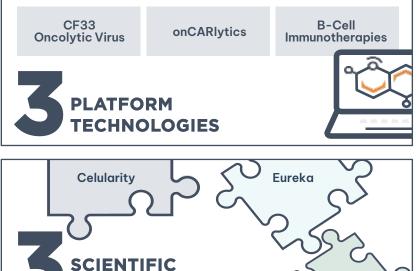
CASH AS OF 31st December 2022

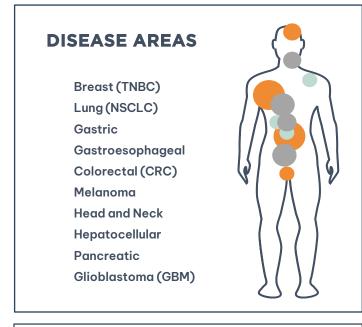
Arovella

A\$162M











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

COLLABORATIONS





Merck KGaA/Pfizer

Roche

THREE UNIQUE TECHNOLOGY PLATFORMS MAXIMIZE OPPORTUNITIES IN SOLID TUMORS

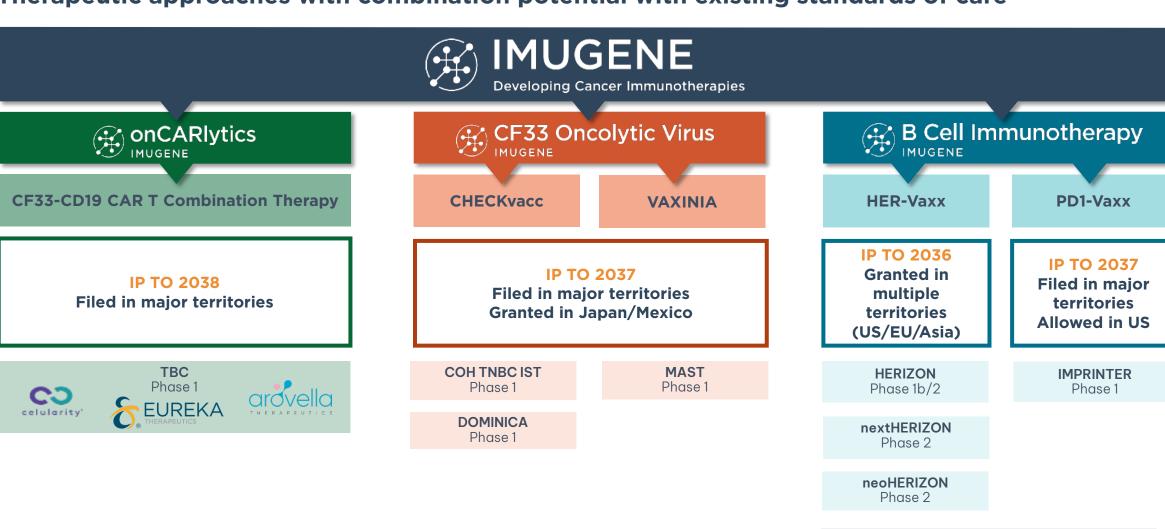
PLATFORM

TRIALS

CLINICAL



Therapeutic approaches with combination potential with existing standards of care



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



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

INDUSTRY LEADER & NON-EXECUTIVE DIRECTOR





DR.
Jakob Dupont

Head of Global R&D at Atara (Nasdaq: ATRA)



Dr. Dupont is a renowned expert in the fields of cell therapy and oncology, with long-standing and deep experience in developing therapies and programs dedicated to addressing high unmet medical needs. Dr. Dupont serves as Global Head of Research & Development (R&D) including Medical and Regulatory Affairs. Prior to joining Atara, he served as the Chief Medical Officer at Gossamer Bio, overseeing global development, regulatory, and quality activities for the company, and advancing therapeutics in the disease areas of immunology, inflammation, and oncology. Dr. Dupont is committed to bringing transformative therapies to patients.

Prior to his role at Gossamer Bio, he served as Vice President and Global Head of Breast and Gynecologic Cancer Development for Genentech/Roche, where he was responsible for the global development of Herceptin® (trastuzumab), Perjeta® (pertuzumab), Kadcyla® (ado-trastuzumab emtansine), and Tecentriq® (atezolizumab), among others. Prior to that, Dr. Dupont was Chief Medical Officer and Senior Vice President of OncoMed Pharmaceuticals, Inc., where he oversaw the successful submissions of eight investigational new drug applications (INDs) and 26 clinical trial initiations.

Genentech









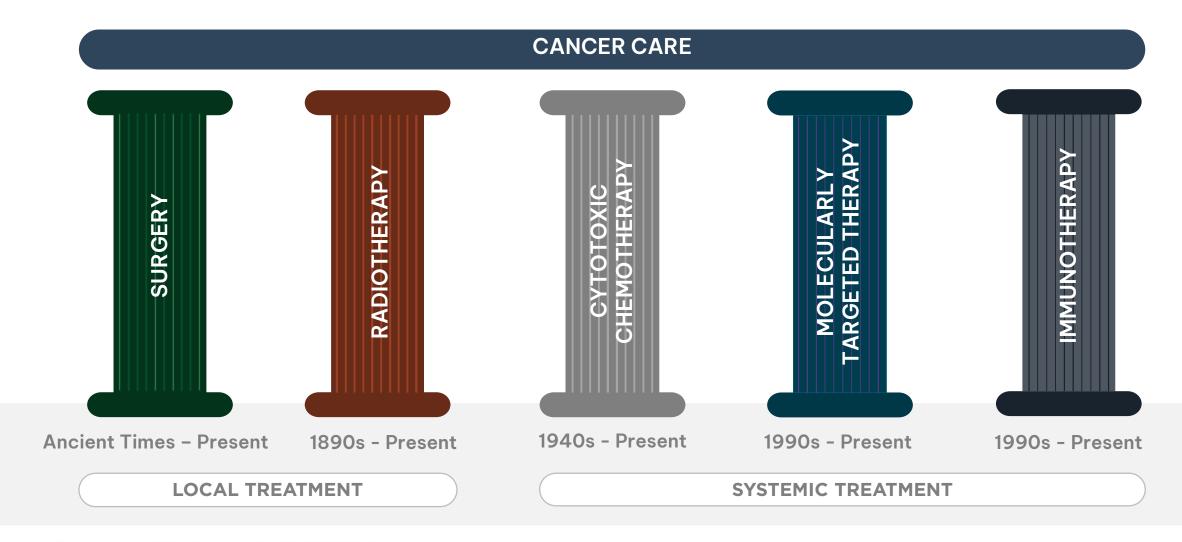


Dr. Dupont has been involved in tumor immunology research and clinical investigations for more than 25 years, ranging from cellular therapy to tumor vaccine therapy and immune checkpoints. Dr. Dupont has received numerous grants and awards, and has coauthored 47 peer-reviewed publications, has 30 patents, and has also served as a faculty member and laboratory researcher at Memorial Sloan Kettering Cancer Center (MSK) and adjunct clinical faculty in medical oncology at Stanford University.

IMMUNOTHERAPY IS A PILLAR IN CANCER CARE

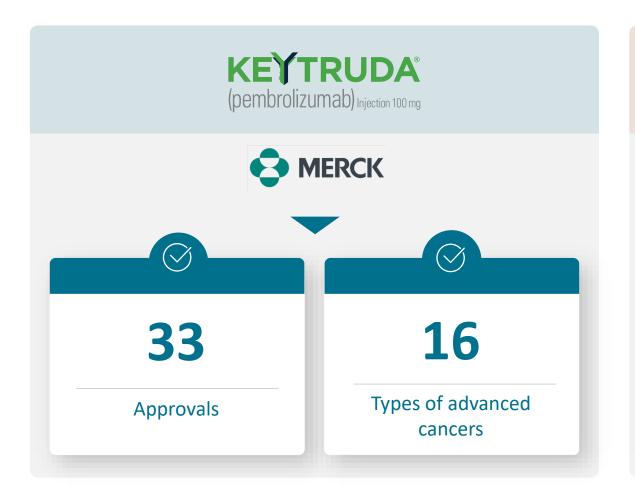


Immunotherapy stimulates a patient's own immune system to fight cancer



FIRST IMMUNE CHECKPOINT INHIBITORS WERE APPROVED IN 2014 FOR THE TREATMENT OF MELANOMA







While highly successful in some patients, not all respond to immune checkpoint therapy

IMMUNOTHERAPY UNLEASHES THE IMMUNE SYSTEM TO FIGHT CANCER





Cellular Therapy

Transfer of human cells to find and fight cancer (CAR-T) or replace diseased cells



Immunomodulators

Medications that regulate and boost part of the immune system (ex, immune checkpoint inhibitors)



Oncolytic Viruses

Modified viruses that infect and kill cancer cells but do not harm healthy cells



Monoclonal Antibodies

Synthetic proteins that bind a specific part of a cancer cell to block or target for destruction by immune cells



Cancer Vaccines

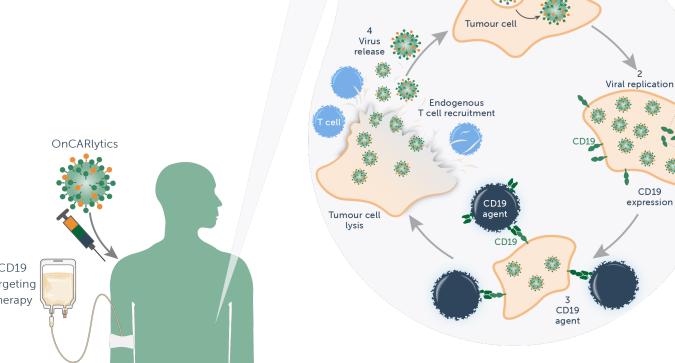
Medicines that train the immune system to recognize and destroy cancer cells

CAR-T THERAPY SUCCESSES IN HEMATOLOGICAL MALIGNANCIES



BRAND	COMPANY	FIRST FDA APPROVAL	APPROVED CANCERS	OVERALL RESPONSE RATE
(tisagenlecleucel) Dispersion for IV infusion	U NOVARTIS	2017	3	53-86%
YESCARTA® (axicabtagene ciloleucel) for IV infusion	Kite A GILEAD Company	2017	3	72-91%
TECARTUS® (brexucabtagene autoleucel) Suspension (brexucabtagene autoleucel) for IV infusion	Kite A GILEAD Company	2020	2	65*-87%
Breyanzi (lisocabtagene maraleucel) PROPERTY MARIAGION	ullı Bristol Myers Squibb [™]	2021	1	73-87%
Abecma (idecabtagene vicleucel) survivision	ullu Bristol Myers Squibb™	2021	1	72%
CARVYKTI (ciltacabtagene autoleucel) Surproise	Janssen Oncology PHARMACEUTICAL COMPANIES OF Johnson ONCOLOGY BIOTECH	2022	1	98%

MECHANISM OF ACTION: HOW DOES IT WORK?



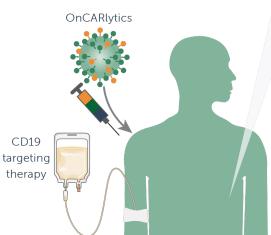
Solid tumour

Viral

infection



- 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 reinitiate virus infection of surrounding Tumor cells.



THE INVENTOR & CITY OF HOPE





Professor Yuman Fong



A pioneer both in the operating room and in the laboratory, Yuman Fong, M.D., The Sangiacomo Family Chair of The City of Hope Dept of Surgery is an internationally recognized expert in liver and pancreatic cancer. He has developed many new surgical techniques and instruments. He has also led research efforts to use genetically modified viruses and cells to destroy cancer cells.

Dr. Fong joined City of Hope after three decades at the renowned Memorial Sloan-Kettering Cancer Center

Dr. Fong is both an *author and innovator*. He has written and edited over 1000 scholarly articles as well as 22 textbooks. He is currently the Editor-in-Chief of *Molecular Therapy Oncolytics* (Cell Press).

Dr. Fong has had leadership roles in regulatory aspects of gene therapy, including serving as Chair or the Recombinant DNA Advisory Committee of the National Institutes of Health of the United States.

Dr. Fong has been inducted into the American Institute of Medical and Biologic Engineering and the National Academy of Medicine.

City of Hope, in Los Angeles, is a leading research and treatment center for cancer, diabetes and other life-threatening diseases. Founded in 1913, it is designated as a comprehensive cancer center, the highest recognition bestowed by the National Cancer Institute. City of Hope is also a founding member of the National Comprehensive Cancer Network, with research and treatment protocols that advance care throughout the US.

City of Hope has been ranked as one of the nation's "Best Hospitals" in cancer by *U.S. News & World Report* for over 10 years.

City of Hope has GMP facilities that produces clinical trials materials for many academic centers and is the alpha clinic trials site for CIRM.

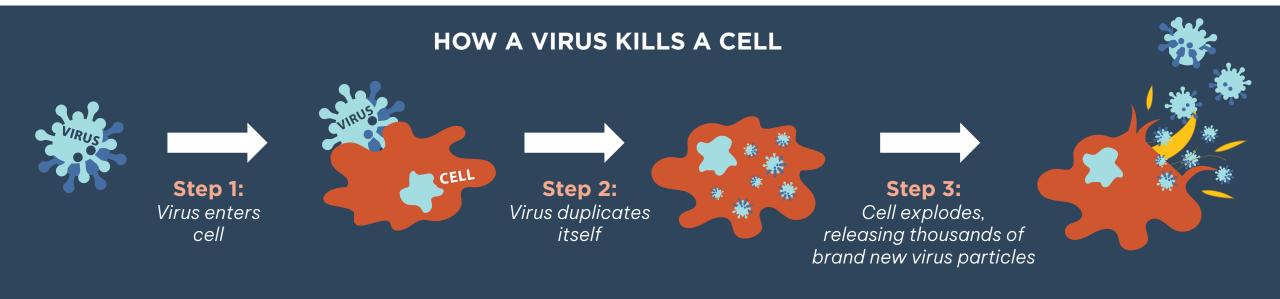


CF33 Oncolytic Virus



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





Engineering enhancements

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

Multiple ways to kill cancer cells

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

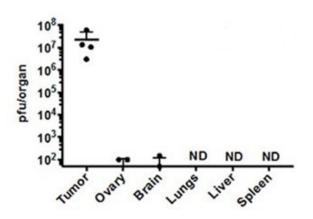
Precedent for approval

- 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)

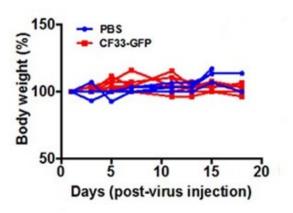
SAFELY DELIVERED ROUTES: IT, IP, IV ENABLES LARGE THERAPEUTIC INDEX IN PATIENTS



Tumor restricted viral delivery



No change in body weight



No toxicity across tumor models in over 1,000 mice until over 10⁹

VIRUS	MOUSE	# OF MICE	DOSE	DELIVERY	TOXICITY
CF33-NIS	Nude	73	1e3-1e5	IT	No findings
CF33-miR	Nude	41	1e3-1e5	IT	No findings
CF33-Luc	Nude NSG	48 8	1e3-2e5 1e6	IT, IV & IP IT	No findings
CF33-GFP	Nude NSG	18 8	1e3-2e7 1e6	IT IT	No findings
CF33-hNIS- αPDL1	Nude Black/6 BALB/c	52 67 31	1e4 1e5-1e8 1e7	IT IT & IV (1e6) IT & IV	No findings
CF33-hNIS- Δ14.5	Nude Black/6 BALB/c	36 16 16	1e4 1e6 – 1e8 1e7-3e7	IT IT IT & IV (2e7)	No findings
CF33-CD19	NSG	288	1e6-1e8	IT	No findings

Majority of mice cured with a single injection of 1000 pfu via IT, IV and IP delivery

CF33-hNIS: TUMOR TRACKING AND TROPISM



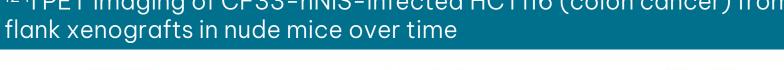
Genetic modification enables tumor tracking and tumor tropism

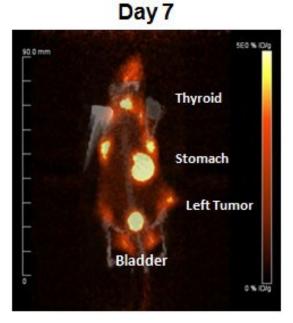
- hNIS (human sodium iodide symporter) protein is expressed on the tumor cell surface
- hNIS transgene inserted within J2R locus (Tk) to transport radioactive iodine for imaging

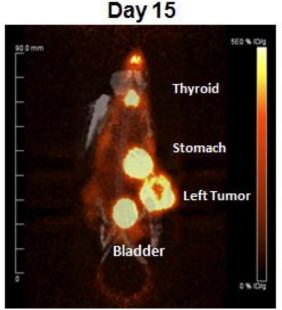
Tracked virus supports tumor specificity and systemic delivery

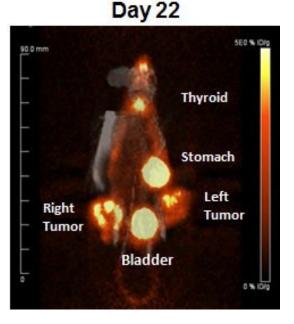
- Cross infection of tumors supported by 1241 uptake in right side on day 22 following injection on left side
- Physiologic uptake in thyroid, stomach and bladder

124 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

Identify: COHORT 8 | 3-6 PATIENTS **Metastatic Triple** Recommended Phase 2 **Negative Breast** • • • Dose (RP2D) **RP2D Expansion** Cancer Based on: 12 Patients COHORT 2 | 3-6 PATIENTS Safety - 2 prior lines of treatment Immunogenicity COHORT 1 | 3-6 PATIENTS • Tumor Response

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%

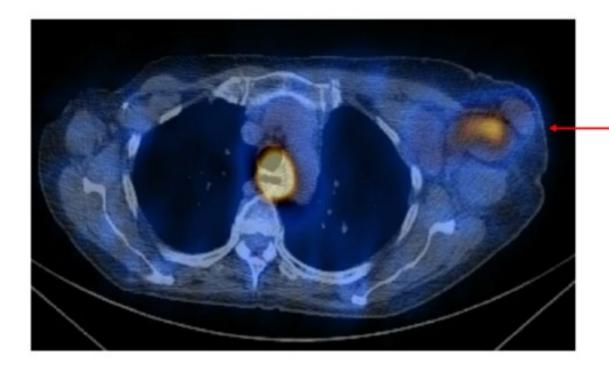
 Approved by FDA 8 March 2019 Potential for registration in well-designed, randomized P2 study

ndication	TNBC			
DA IND	CHECKvacc: CF33-hNIS-aPDL1			
١	33-78			
_ocation	Single Center: COH			
Admin Route Intratumoral (IT)				

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







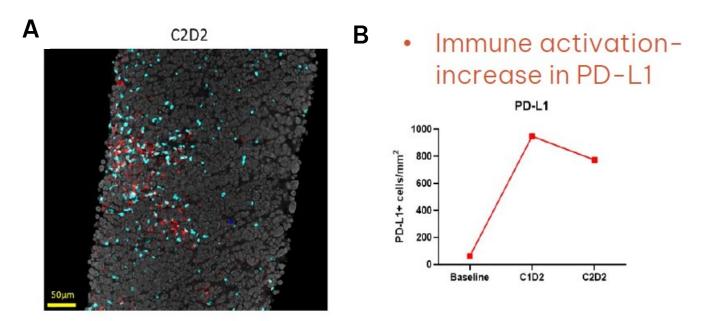
hNIS 99m uptake in SPECT scan

SPECT imaging of patient using Technetium-99m (C1D8): Patient COH-004 received CHECKvacc at Dose Level 2 (3x10⁵ PFU). Injected lesion was left axilla showed significant enhancement of injected lymph node.

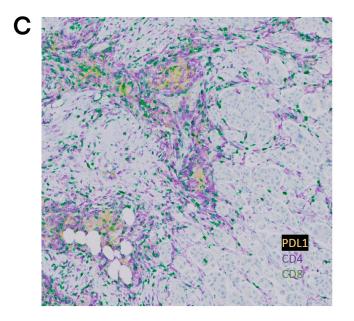


CHECKvacc (CF33-hNIS-antiPD-L1) INFECTION LEADS to ANTI-CANCER IMMUNOLOGIC CHANGES





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



Multi-color immunohistochemistry demonstrating not only expression of PD-L1, but also infiltration of CD8 lymphocytes

VAXINIA PHASE 1 MAST STUDY

(Metastatic Advanced Solid Tumors)



Dose Administration (Parallel Groups)

n=52-100



IT Administration

Metastatic and Advanced Solid Tumors



IV Administration

Metastatic and Advanced Solid Tumors

Site Location: USA, AUS

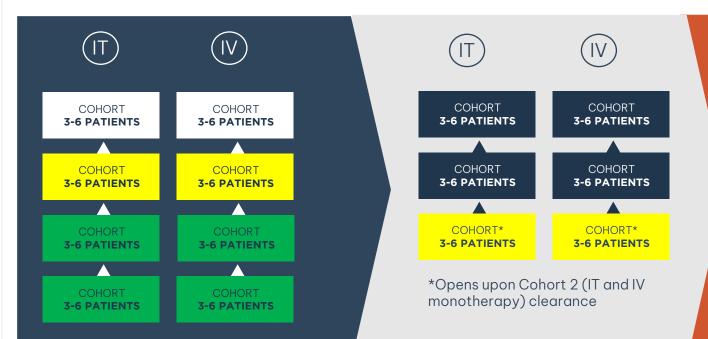
First Patient Enrolled for IT and IV combination in March 2023

VAXINIA Monotherapy

Dose Escalation

VAXINIA + Pembrolizumab
Combination Dose Escalation*

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

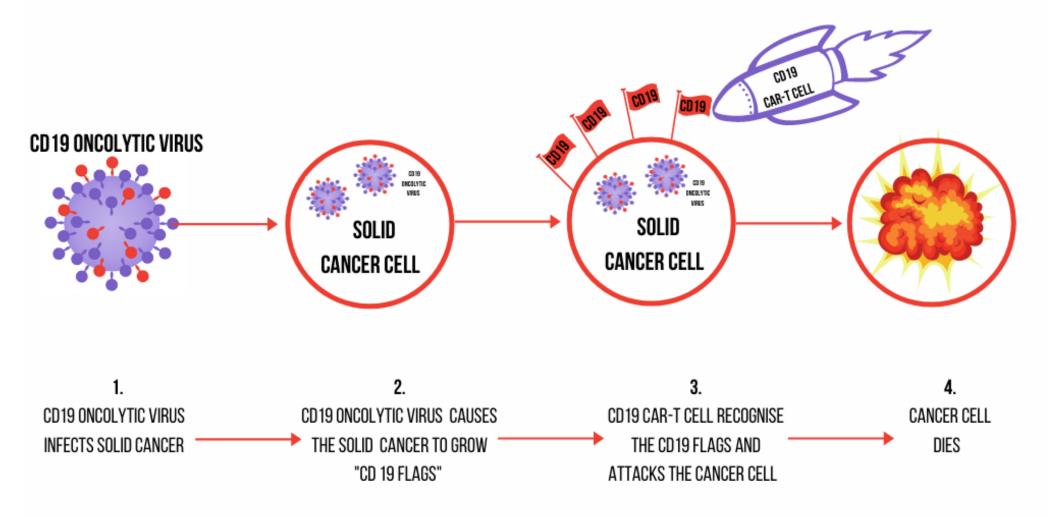


IMUGENE'S APPROACH

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

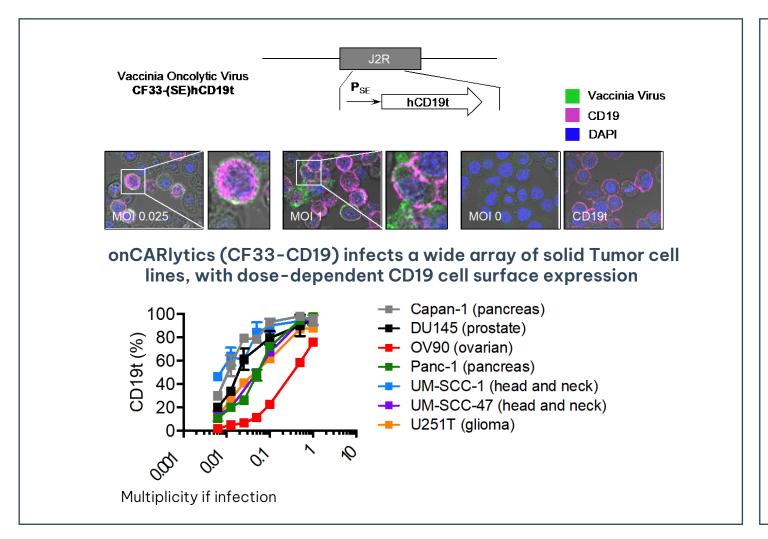


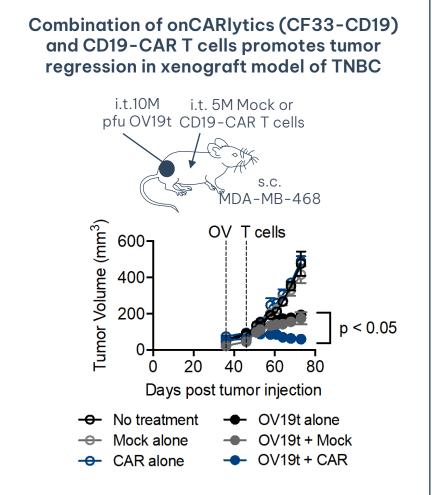
HOW DOES THE CD 19 ONCOLYTIC VIRUS WORK?



onCARLYTICS DELIVERS TARGETS TO "TARGETLESS" SOLID TUMORS







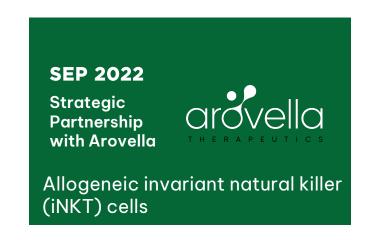
onCARLYTICS COMBINATION WITH **CD19 TARGETING THERAPIES**



Collaboration with Celularity, Eureka and Arovella for combination with onCARlytics





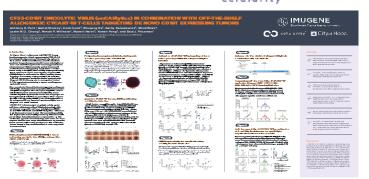




3 POSTERS PRESENTED AT SITC 2022

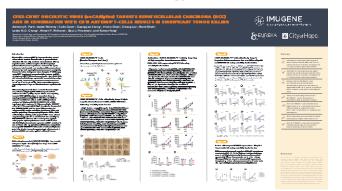




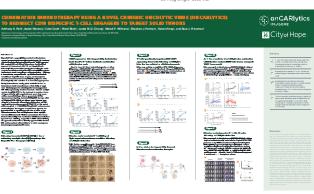












INVESTMENT HIGHLIGHTS



MARKET CAPITALISATION

9th March 2023

A\$835M



SCIENTIFIC

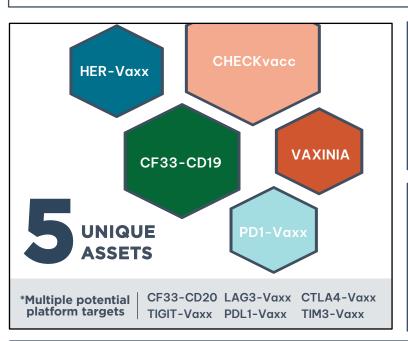
COLLABORATIONS

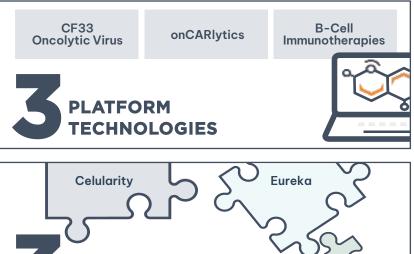
CASH AS OF 31st December 2022

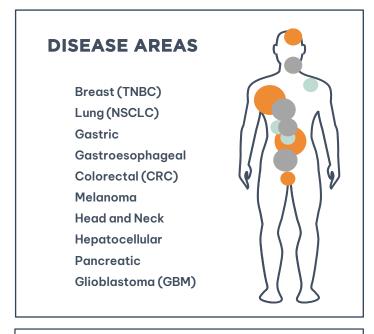
Arovella

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DOMINICA: Ph1 TNBC (FDA IND)

onCARlytics: Ph1 Solid Tumors (FDA IND)

neoPolem IST: Ph1 CRC





Merck KGaA/Pfizer

Roche

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(CRCIST)
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

INTERNATIONAL LEADERSHIP TEAM WITH EXTENSIVE COMMERCIALISATION EXPERTISE IN THE SECTOR

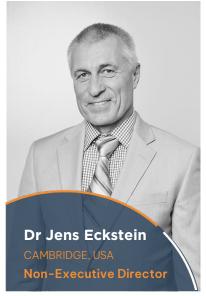














IMUGENE'S MANAGEMENT TEAM



Experienced management team with significant clinical development expertise











Mike Tonroe

Chief Financial Officer

& Company Secretary



















IMUGENE SCIENTIFIC ADVISORY BOARD





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Dr Rebecca Auer University of Ottawa, CAN



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