

Cartherics Pty Ltd BIO

Rearming the Immune System to Fight Cancer



June 2023

Alan Trounson CEO

Acknowledgement of Traditional Owners

In the spirit of reconciliation, Cartherics acknowledges the Traditional Custodians of country throughout Australia and their connections to land, sea and community. We pay our respect to their Elders past and present and extend that respect to all Aboriginal and Torres Strait Islander peoples today.



About us

Established to create a powerful allogeneic iPSC-derived cell therapy platform



Private Company

- Based in Melbourne, Australia
- Commenced operations Jan 2016
- Currently ~45 employees



Funding

- Raised >US\$35M in private investment and grants



Facilities

- Purpose-built, 18,600 sq ft R&D facility opened 2022
- Clean room capacity for clinical trial production

Products

Allogeneic platform

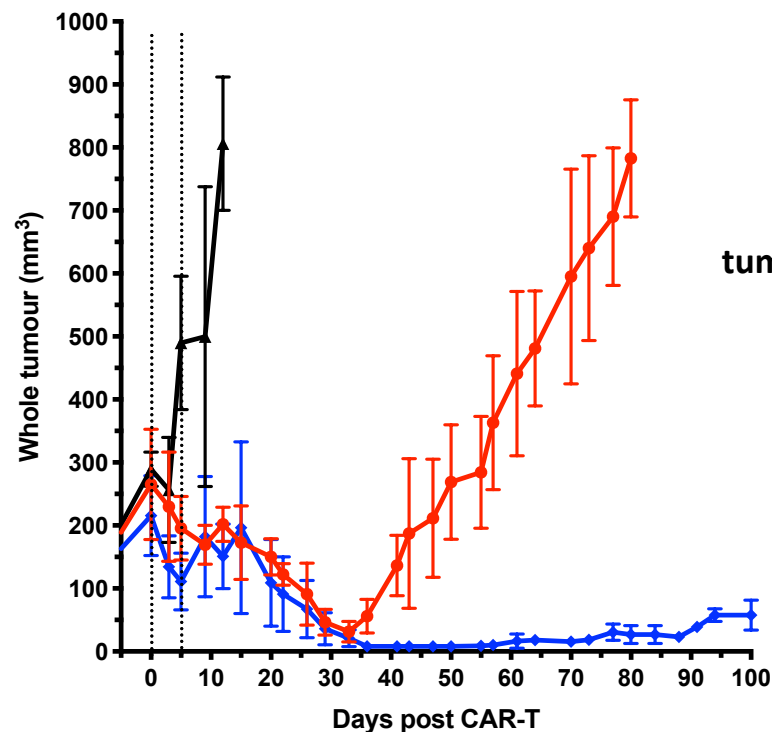
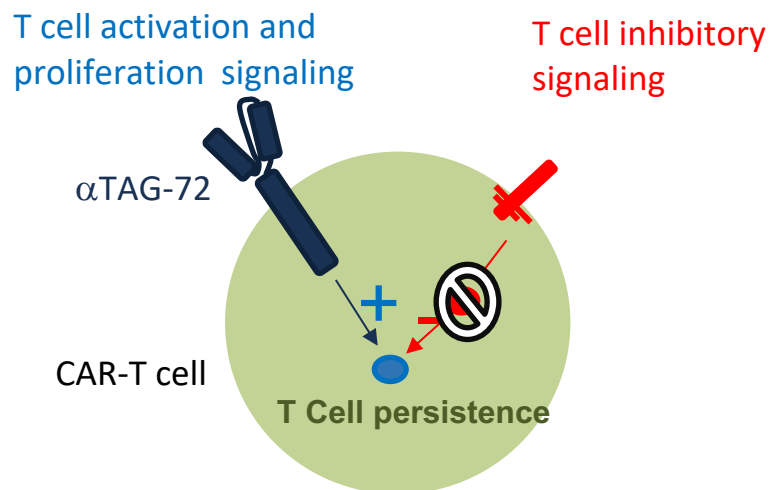
- Primary focus
- iPSC-derived cells
- Feeder-free differentiation
- First product to enter the clinic in 2025

An autologous CAR-T cell product

- Proof of concept for CAR constructs and gene edits
- Due to enter the clinic in 2024 via clinical collaborator

1. Cartherics Autologous T Cell Products

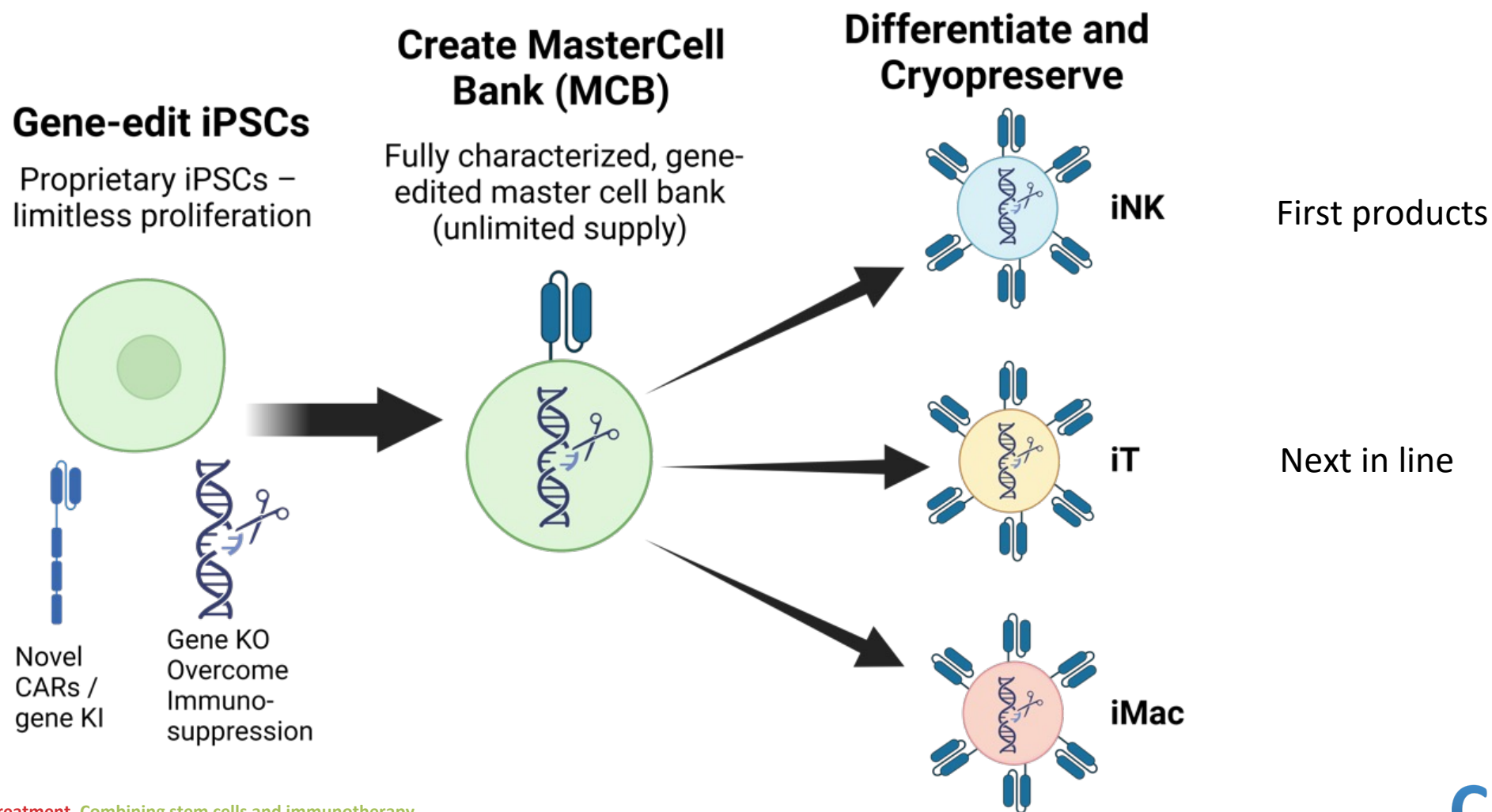
CTH-004 for Ovarian Cancer: Entering Clinical Trials, Melbourne and China



Response of OVCAR-3 solid tumors in mice following CTH-004

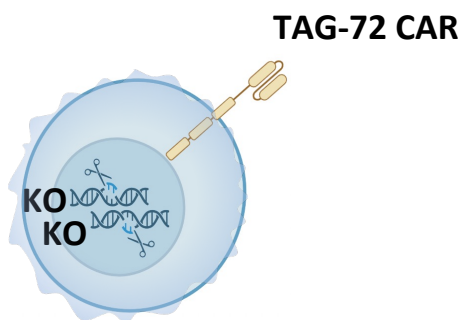
2. Cartherics Allogeneic Cell Therapy Platform

Provides ability to rapidly develop multiple products, multiple cell types



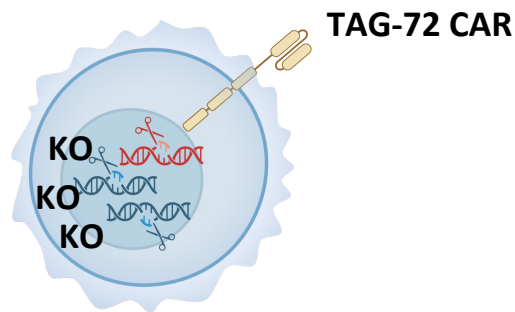
3. Product Pipeline

Allogeneic platform enables generation of multi-functional products, multiple cell types

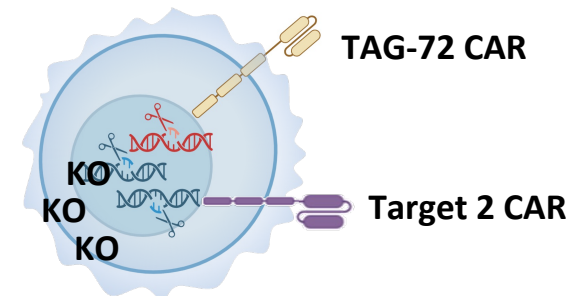


CTH-401 iNK

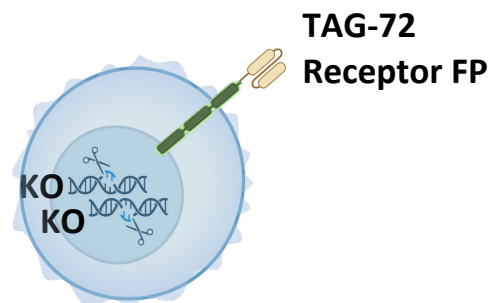
- IND and FIH in ovarian cancer target 2025
- Follow-on basket trial in TAG-72+ solid tumors



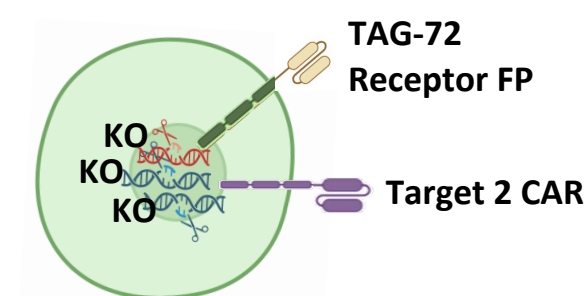
CTH-400 series iNK
(Complementary KOs)



CTH-600 series iNK
(Single / dual CARs + KOs)



CTH-500 series iNK
(Novel receptor fusion proteins)



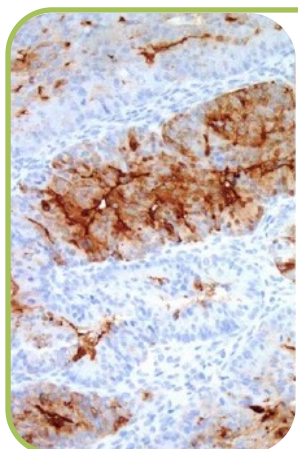
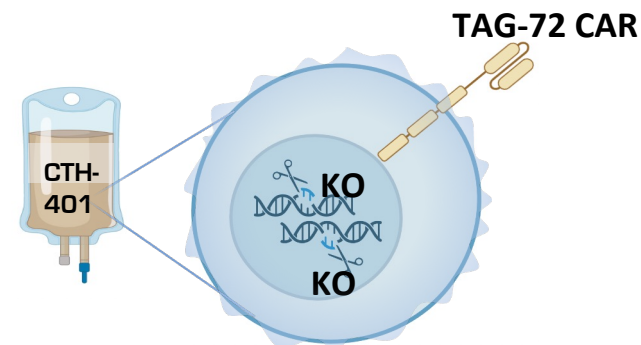
CTH-300 series iT cells
(Single / dual CARs + KOs)

4. Lead Product Candidate: CTH-401

NK cell Exemplar of Cartherics' platform

iPSCs gene-edited using CRISPR/Cas9

- TAG-72 CAR Knock-in
 - Complements normal NK cell killing functions
- Immunosuppressive gene Knock-outs
 - Enhance anti-tumoral efficacy
- KI and KOs validated in autologous CAR-T cells



Tumor-associated glycoprotein-72 (TAG-72)

- Well-validated tumor target
- Found on many adenocarcinomas, including ovarian, gastric, colorectal, pancreatic cancers

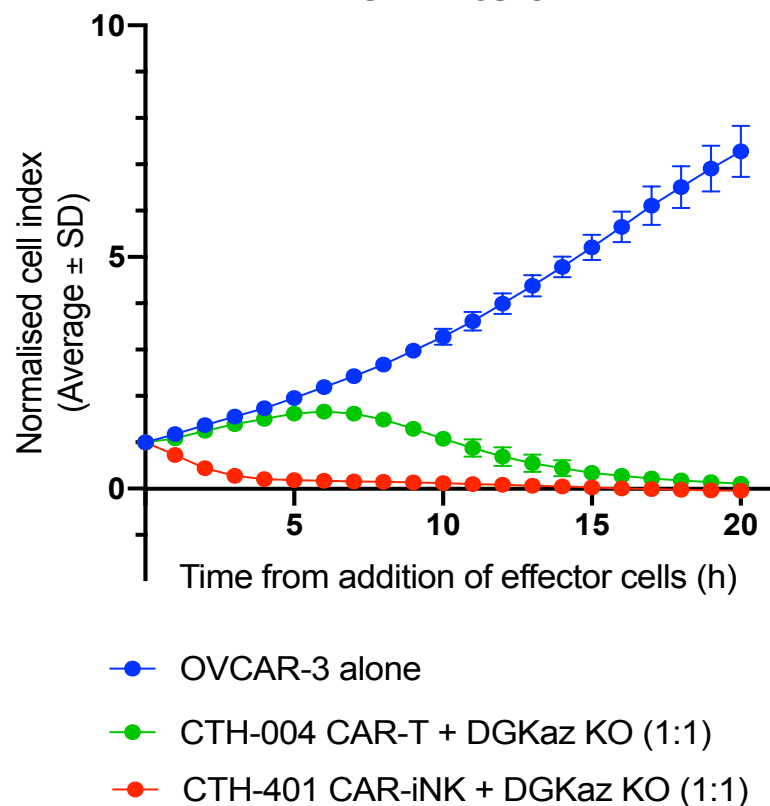
Image: Ovarian cancer biopsy with TAG-72 staining (brown) by immunohistochemistry

Initial indication: relapsed or refractory ovarian cancer

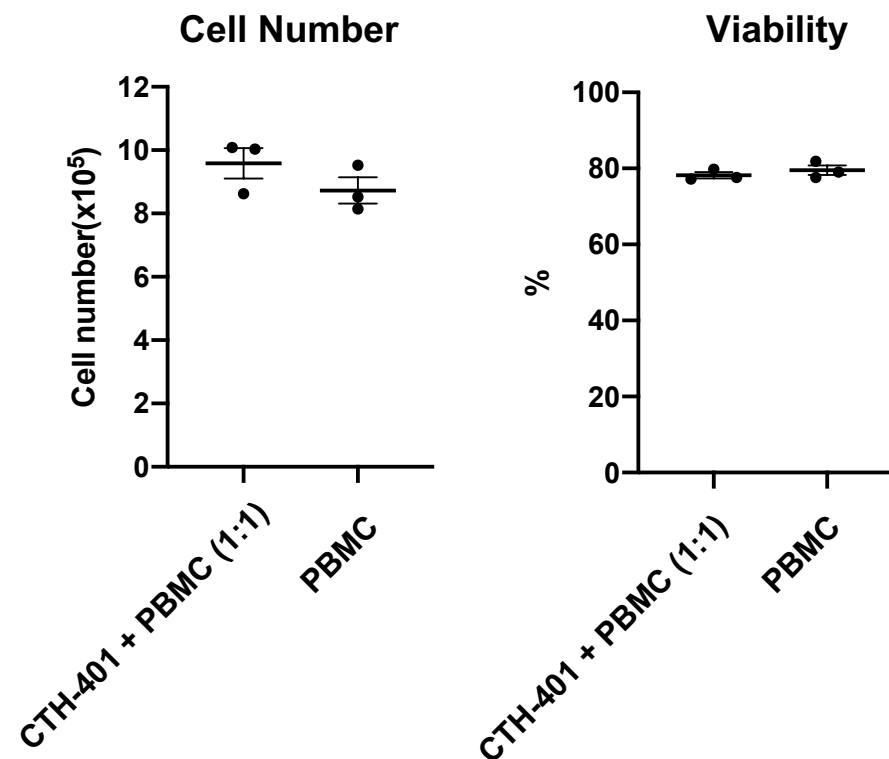
- Significant unmet need
- 90+% TAG-72+
- Potential for expansion into other TAG-72+ solid tumors

CTH-401 Kills Ovarian Cancer, but not Normal, Cells *in vitro*

CTH-401 iNK cell on-target cytotoxicity¹
against OVCAR-3 ovarian cancer cells compared to CTH-004
CAR-T cells²



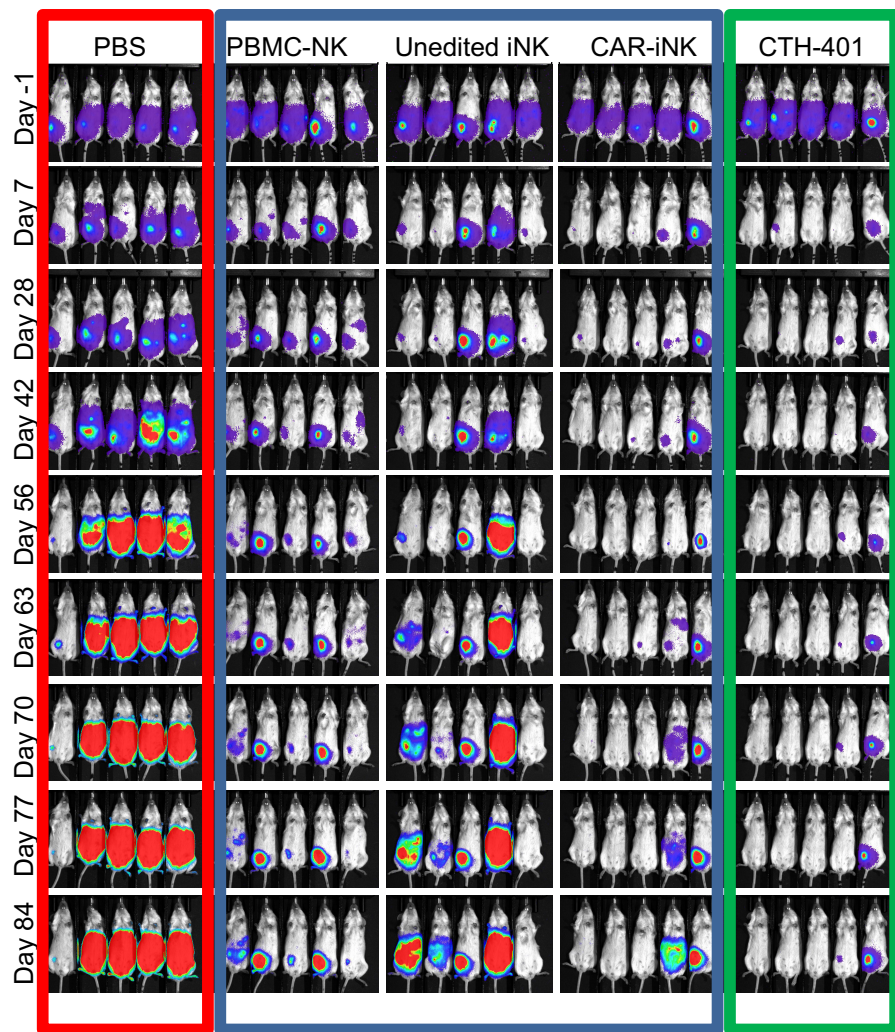
CTH-401 off-target safety
against healthy donor PBMCs



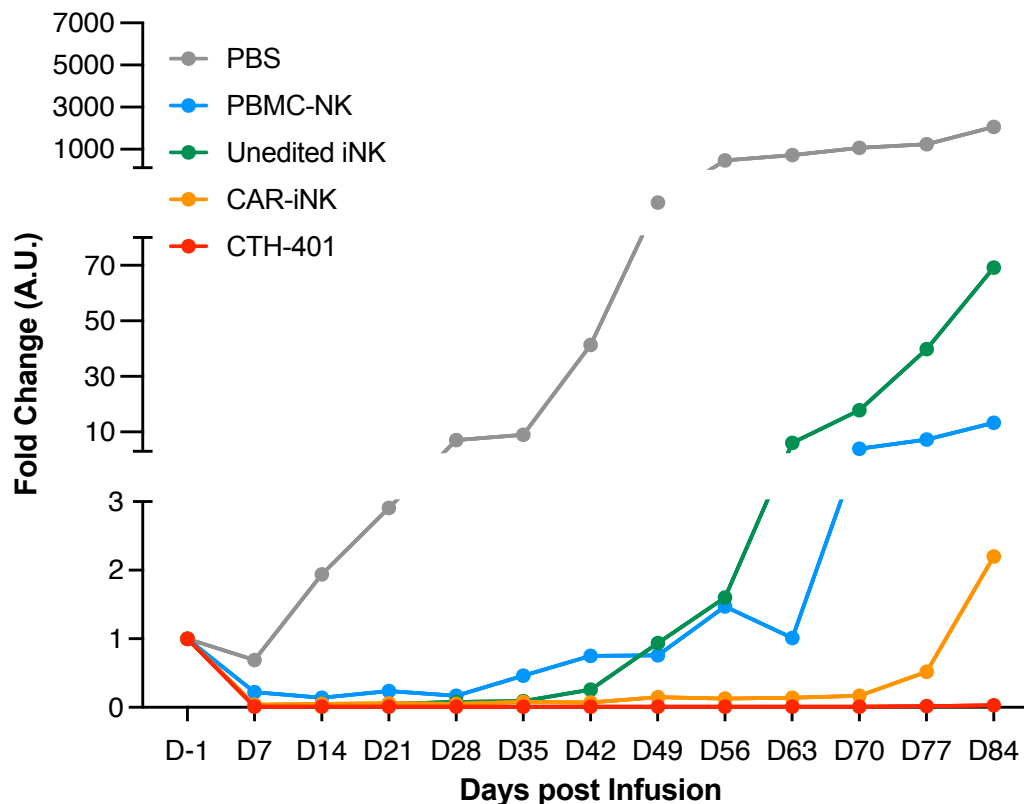
¹ xCELLigence *in vitro* cell killing assay – cell index is a measure of viable OVCAR-3 cells

² Autologous CAR-T cells carrying same CAR and gene KO as CTH-401

CTH-401 Kills Ovarian Cancer *in vivo**



TAG-72 CAR and gene KO in CTH-401 lead to enhanced and prolonged anti-tumor activity

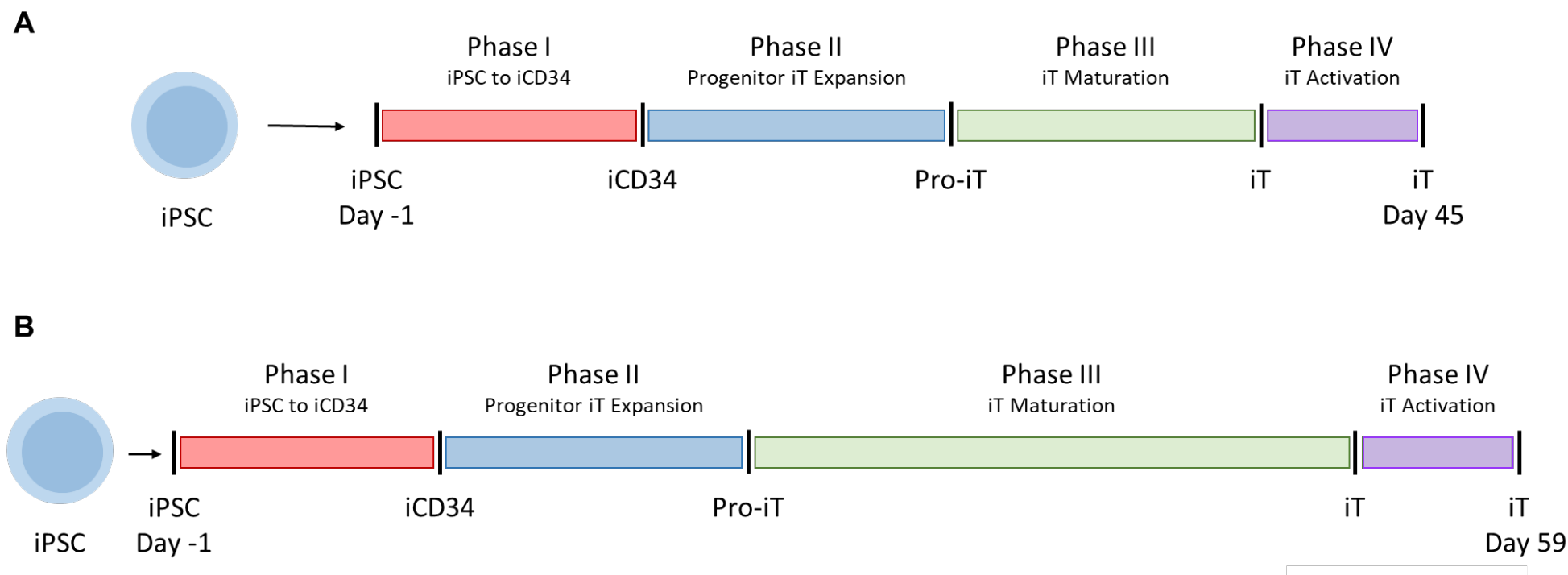


*Luciferase-labeled OVCAR-3 cells administered i/p on D-4; NK cells administered on D0 (E:T ratio 50:1); bioluminescence monitored weekly and normalized to D-1 signal; median fold-change in luminescence (Arbitrary Units) is shown through to study termination (D84).

5. R&D Pipeline

Product	Description	Indication	Status					
			Research	Preclinical	IND enabling	Phase I	Phase II	Phase III
CTH-401	iNK cells [TAG-72 CAR + gene KO]	Ovarian cancer						
CTH-401	iNK cells [TAG-72 CAR + gene KO]	Other TAG-72 ⁺ tumors						
CTH-400 series	CTH-401 + additional gene KOs	TAG-72 ⁺ tumors						
CTH-500 series	CAR iNK cells + novel receptor fusion proteins	Solid tumors						
CTH-600 series	iNK cells [other CAR targets / dual CARs]	Solid tumors						
CTH-300 series	iT cells [CARs +/- gene KOs]	Solid tumors						

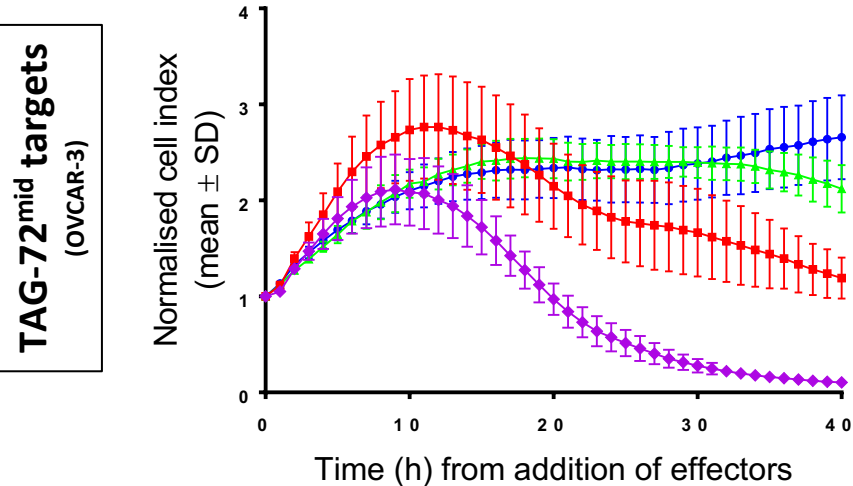
6. iT Cell Differentiation Program



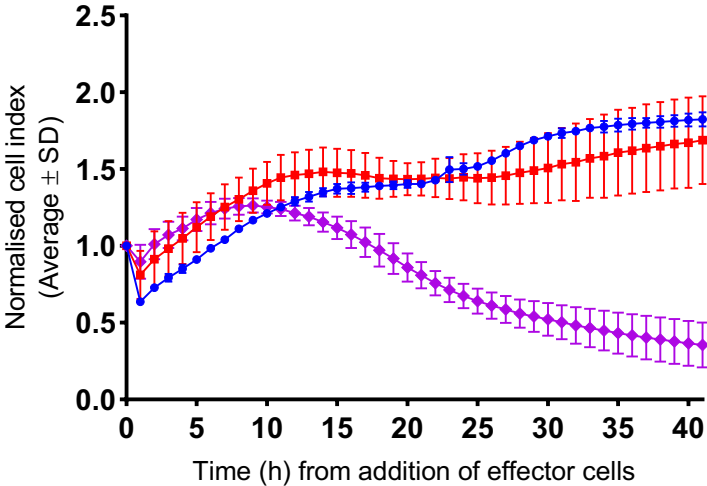
- Two methods developed to differentiate T cells from iPSCs
- 'Short Protocol' (A) primarily generates TCR $\gamma\delta$ iT cells
- 'Extended Protocol' (B) primarily generates TCR $\alpha\beta$ iT cells

Gene-edited iT cells – *in vitro* function

Short protocol



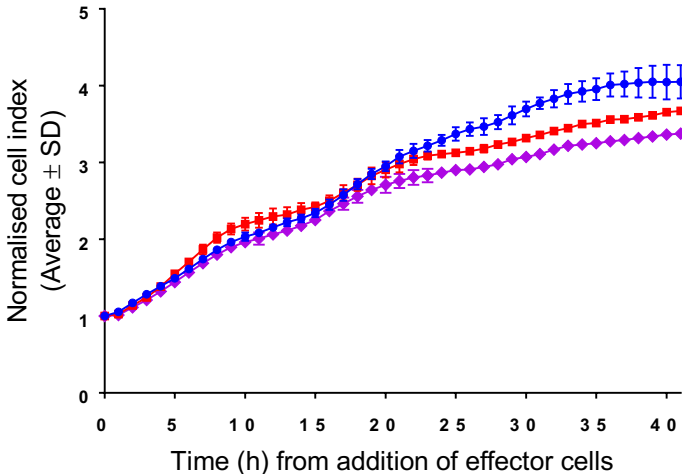
Extended protocol



Effector : Target ratio = 1:5

- Target cells alone (Activation media)
- PBMC T cells (1:5)
- Unedited iT cells (1:5)
- CTH-301 iT cells (1:5)

Gene-edited iT cells show enhanced, on-target *in vitro* cytotoxicity



Forward Plan

Cartherics is poised for anew and medium term growth and value creation

Cartherics plans to raise US\$20M in 2023/24 to fund activities to 2025/26

New funds will be used for:

- Additional resources for FIH product manufacture
- Production of clinical trial batches
- CTH-401 IND-enabling studies
- Filing of CTH-401 IND (2025 target)
- FIH clinical trial in ovarian cancer
- Expansion and advancement of R&D pipeline

Partnering Opportunity

Platform enables rapid product development of multiple gene-edited iPSCs

- Source of NK and other immune cell products (T cells, macrophages)
- Homozygous HLA haplotype iPSC cell banks enable transplant compatibility
- TAG-72 CAR - validated target, pan adenocarcinoma
- Portfolio of proprietary immune cell inhibitor gene KOs to enhance function
- Proprietary, feeder-free differentiation process

Exclusive focus on solid tumors

- Greatest unmet need and commercial potential

We are seeking global or regional partnering opportunities

- R&D collaboration
- Co-development of lead products
- Out-licensing of autologous assets

Interested in investing or partnering ?

Further information available from:

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