

TECHNOLOGY OVERVIEW

March 2014

Dr Michael D Leek (Chief Executive)

BACKGROUND:

- **TC BioPharm aims to build a sustainable drug development product pipeline, with multiple opportunities for value uplift and liquidity which include:**
 - collaborative partnerships
 - outward licensing
 - direct sales
 - IPO and/or acquisition
- **Incorporated late 2013, founding team have extensive, proven commercial capability, having previously taken over 10 therapies to clinic, raising over £20m in equity/grant finance.**
- **The Company has secured £1.4m funding to date and is seeking an additional cash to enable clinical studies.**



BACKGROUND:

- **The lead product is a novel anti-cancer immunotherapy with potential to treat ALL tumour types.**
- **Core technology is based on proprietary methods for delivery of therapeutic autologous $\gamma\delta$ T lymphocytes to the patient.**
- **Proposed UK in-man trials will treat myeloma patients and individuals with melanoma (scheduled Q1, 2015).**



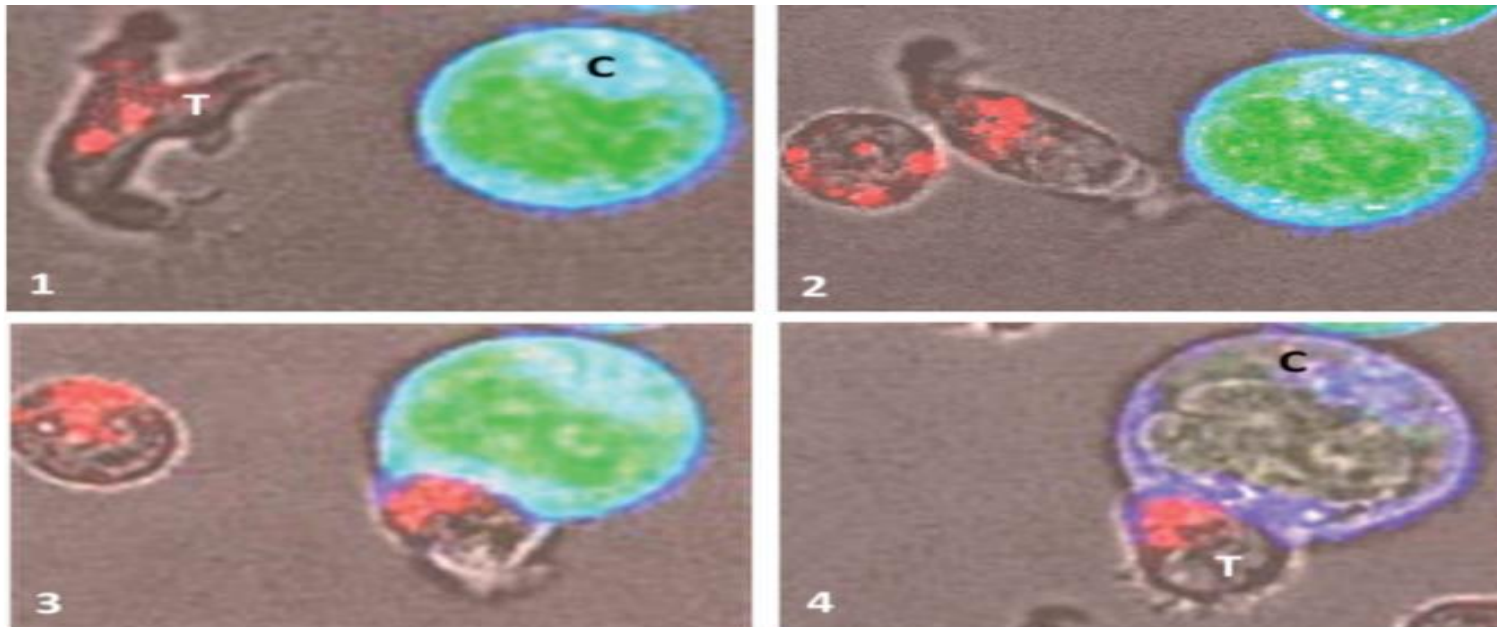
THE PRODUCT - $\gamma\delta$ T LYMPHOCYTES:

- $\gamma\delta$ T lymphocytes are known to destroy cancer cells...
- Patients own $\gamma\delta$ T lymphocytes expanded in tissue culture
- **Proprietary 2.4 litre closed (bag) expansion system**
- Patient given six doses of 1×10^7 – 1×10^9 viable $\gamma\delta$ T lymphocytes
- **Stratified approach based on unique (miRNA) biomarkers**



WHAT ARE $\gamma\delta$ T LYMPHOCYTES ?

- Present as 5% of circulating white blood cells
- Cytotoxic to cancer cells...



(1) A human $\gamma\delta$ T lymphocyte (T) identifies and (2) scans the surface of a cancer cell (C). On contact with the cancer cell (3) the T lymphocyte releases perforin granules (stained red) into the cancer cell, rupturing its membrane destroying the cancer cell (4).

Adapted from - [Enc Life Sci, Jul-2007](#)



THE BUSINESS:

- **Commercial competencies include:**
 - new product development
 - GMP manufacture of MHRA/FDA regulated therapies
 - UK/EU/US regulatory affairs
 - UK/EU/US clinical trials to market authorisation

- **The business objectives are to:**
 - launch a novel cancer therapy within 5 years
 - build a sustainable 'biologics' product pipeline
 - become a major force in personalised/stratified medicine
 - generate significant uplift in Company valuation
 - provide an exit for investors within 4-6 years



USP's and DIFFERENTIATION:

- **First mover advantage with a GMP compliant $\gamma\delta$ T cell therapy**
- **$\gamma\delta$ T lymphocytes have a unique biological 'mode of action'**
- **Single product is applicable to a wide range of cancer types**
- **Attractive to Pharma (as part of a stratified medicine pipeline)**
- **Barriers to entry include patents and GMP infrastructure**



CLINICAL and REGULATORY:

- **MHRA Scientific Advice meeting held Q4, 2013**
- **No additional pre-clinical safety data required**
- **Endorsed the stratified approach to recruitment and treatment**
- **Classified trial design as 'adaptive'**
- **Conventional phase I/II/III not applicable**
- **QP and MHRA review of GMP cleanroom design ongoing**

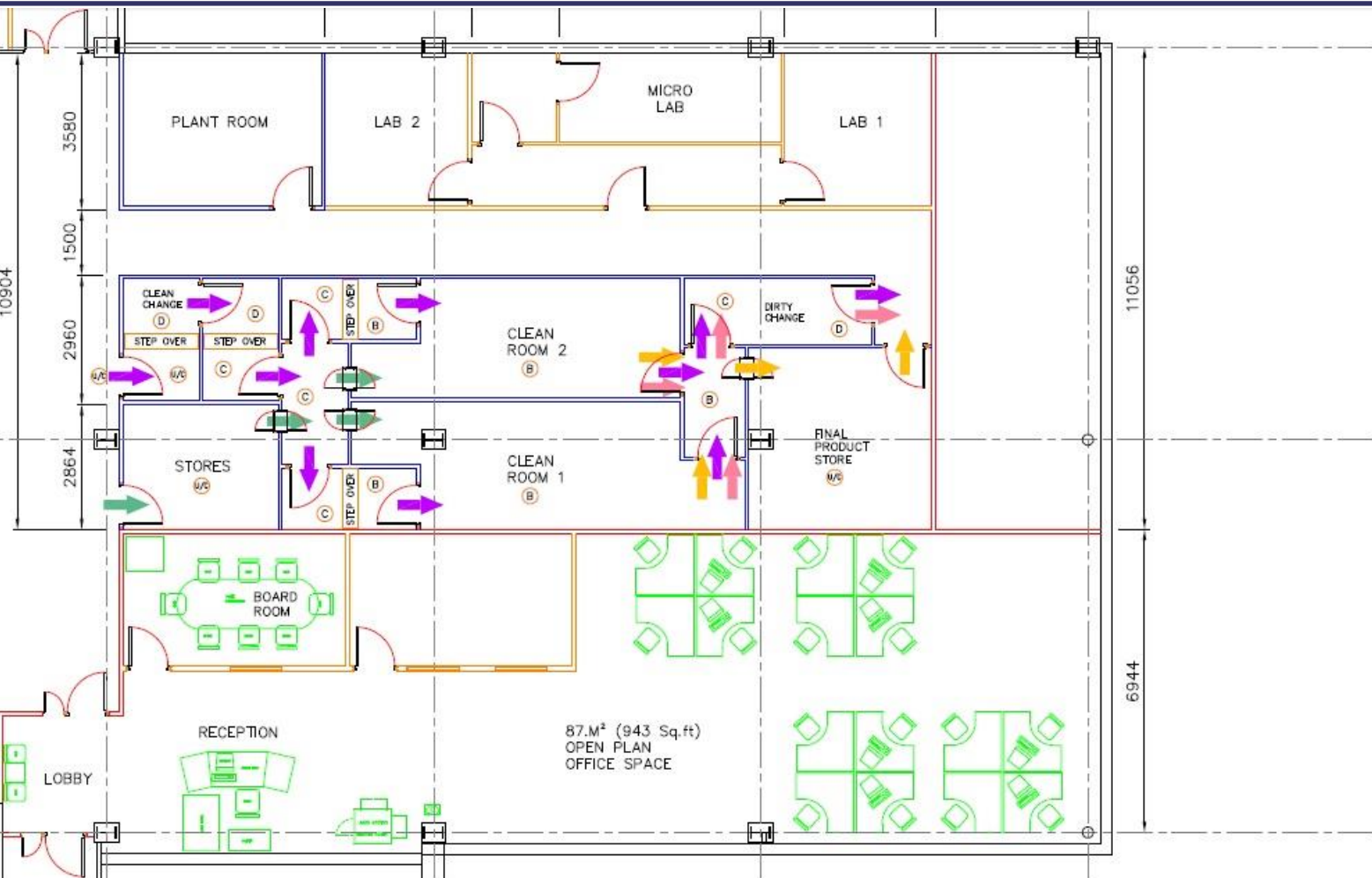


CAPABILITY and INFRASTRUCTURE (I):

- **Founding team:**
 - Dr Michael Leek (commercial cell therapy, fundraising)
 - Mr Kuni Suzuki (CEO - Medinet)
 - Dr Ryuji Maekawa (Head of R&D Division, GM of Medinet Med Inst)
 - Mrs Angela Scott (GMP manufacture)
- **Clinical Advisory Board:**
 - Prof Jeff Evans (CR-UK, Glasgow)
 - Prof Christian Ottensmeier (CR-UK, Southampton)
 - Prof Paul Shiels (Glasgow University)
- **GMP compliant facility based at Eurocentral (below)**
(Total = 7,500 sq ft; initial build = 5,000 sq ft ; cleanrooms = 500 sq ft)



CAPABILITY and INFRASTRUCTURE (II):



KEY

-  PERSONNEL
-  RAW MATERIALS
-  FINISHED GOODS
-  WASTE MATERIALS

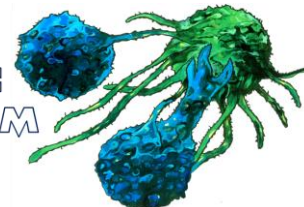
P1	DR	29/01/14	NEW ISSUE DRAWING
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DRAWING APPROVAL BOX



TC
BIOPHARM



SUMMARY:

- **Highly innovative cancer immunotherapy**
- **Clear market demand and route to revenue**
- **Measurable annual uplift in value**
- **Planned exit and liquidity within 5 years**
- **Places UK at forefront of therapeutic stratified medicine**
- **Potential to significantly improve patient QoL**



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