The LentiVector® Company, leader in gene and cell therapy

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Investment Proposition – a single investment in the success of a broad range of gene and cell therapy products from multiple companies

Oxford BioMedica is a gene and cell therapy company with the leading lentiviral vector delivery platform (LentiVector®)

OxfordBioMedica

1

- **Gene and cell therapy is set to grow into a multi-billion US$ sector over the next 5-10 years**
  - Several *ex vivo* products likely to reach the market within next 2-3 years
  - Multiple players in *ex vivo* cell therapy CAR-T, TCR, Stem Cells, NK cells, etc.
  - Many *in vivo* clinical studies, particularly in ophthalmology and CNS

2

- **Lentiviral vectors have advantages over other vector types**
  - *Ex vivo* cell therapies require integrating vectors – lentiviral vectors are the preferred choice
  - Lentiviral vectors beginning to demonstrate long-term efficacy which supports the "one-off" treatment hypothesis

3

- **OXB's highly sought-after LentiVector® gene delivery platform**
  - Can be used for both *in vivo* and *ex vivo* lentiviral vector products
  - Founded on 20 years' experience of delivering lentiviruses *in vivo*
  - Integrated combination of our IP, employees' expertise and bioprocessing and laboratory facilities

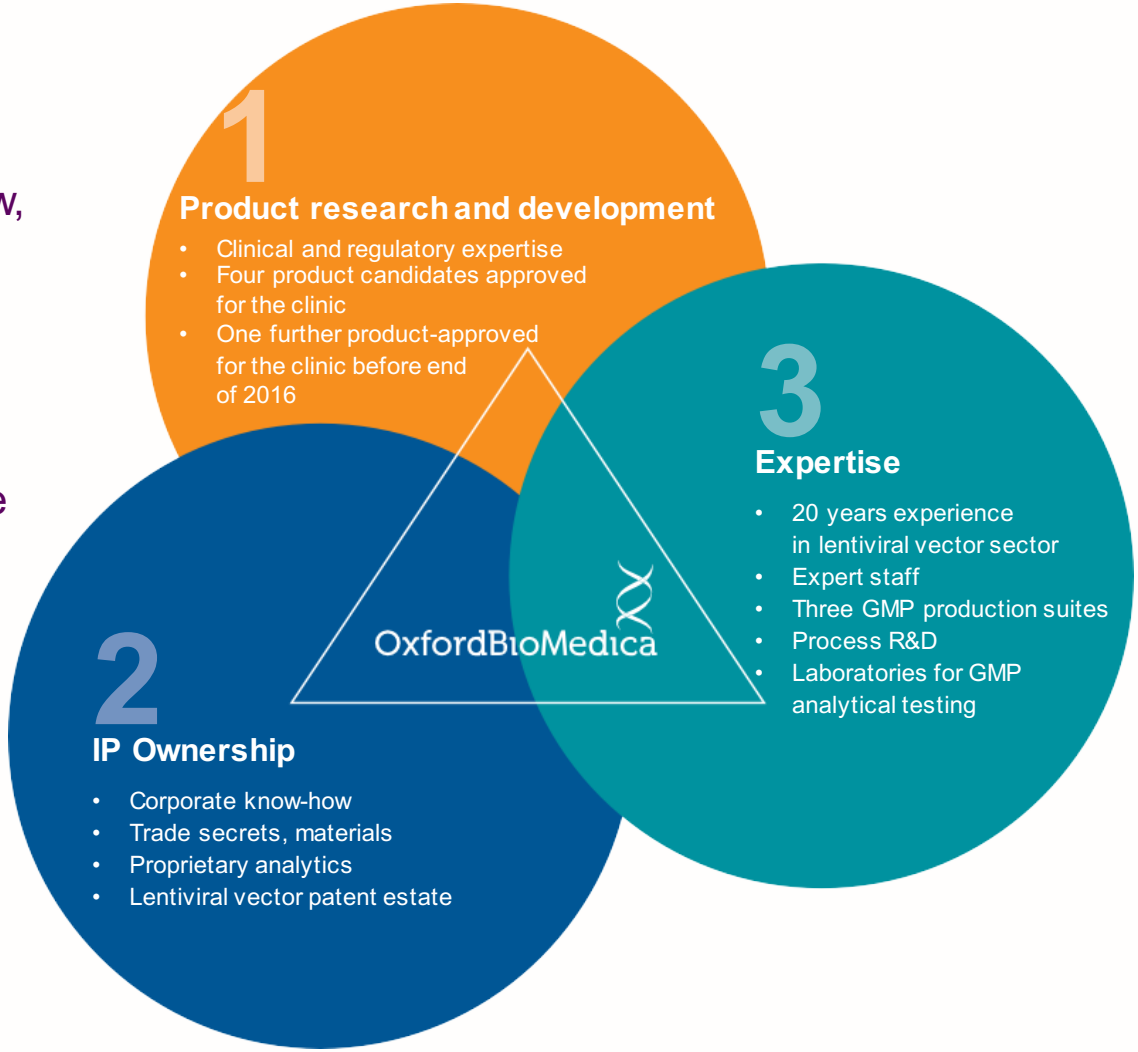
4

- **OXB's product interests**
  - Two in-house products to enter Phase I/II clinical studies in next 12 months and a CAR-T pre-clinical program targeting solid tumours
  - Economic interest in partners' products: Sanofi (SAR422459/SAR421869); Novartis (CTL-019 and other undisclosed CAR-T programme); Immune Design (LV305) and GSK (two undisclosed rare orphan products)

Oxford BioMedica, *the* integrated LentiVector® Company

Our USP is based on a unique combination of:

- intellectual property including patents and integrated know-how,
- expert staff
- bioprocessing and laboratory facilities
- product development experience
- clinical & regulatory expertise



Oxford BioMedica, *the* LentiVector® Company - at a glance

- 20 years' experience
  - Formed out of Oxford University in 1996 – specialising in lentiviral products
  - 1st to administer a lentiviral vector *in vivo* (both the brain and the eye)
  - Over 60 patients treated in four Phase I/II studies, with encouraging indications of efficacy lasting up to four years and no significant safety issues
- Integrated LentiVector® gene delivery platform
  - IP – extensive IP comprising both patents and know-how
  - Facilities – state-of-the-art bioprocessing and laboratory facilities
  - Employees – Over 230 staff, many highly qualified and experienced
  - Quality – robust quality processes for lentiviral vector production
- In-house products – three priority programmes in Parkinson's Disease, corneal graft rejection and a CAR-T approach to solid tumours
- Partnerships/ licences – with Novartis, Sanofi, GSK and Immune Design, and ongoing discussions with several other potential partners
- Revenue growth – gross income £18.8m in 2015, with £12.4m from bioprocessing and process development up 72% since FY 2014

Products

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Products

Oxford BioMedica has an interest in many gene and cell therapy projects and our integrated platform technology is instrumental in the following wholly-owned and partnered / royalty-bearing programmes

Product	Indication	Research/ Pre-Clinical	Phase I	Phase I/II	Phase II	Phase III	Approval	
Priority programmes								
OXB-102	Parkinson's disease (Central Nervous System)							OxfordBioMedica
OXB-202	Corneal graft rejection (Ophthalmology)							OxfordBioMedica
OXB-302	Cancer (multiple) (Oncology)							OxfordBioMedica
Other candidates								
OXB-201	Wet AMD (Ophthalmology)							OxfordBioMedica
OXB-301	Cancer (multiple) (Oncology)							OxfordBioMedica
Partnered /IP enabled & royalty bearing products								
SAR422459	Stargardt disease (Ophthalmology)							SANOFI
SAR421869	Usher syndrome type 1B (Ophthalmology)							SANOFI
CTL-019	Cancer (multiple) (Oncology)							NOVARTIS
Undisclosed CAR-T	Cancer (multiple) (Oncology)							NOVARTIS
LV305	Cancer (multiple) (Oncology)							IMMUNE DESIGN
Undisclosed	Undisclosed							gsk GlaxoSmithKline
Undisclosed	Undisclosed							gsk GlaxoSmithKline

Goal: to develop in-house the priority programmes at least to proof of concept in humans; then consider strategic options available

Goal: to find ways of progressing requiring lower resources from OXB

Goals: to support these partners and products to give best chance of success and to use LentiVector® platform to establish more partnerships with economic interests in partners' products

OXB-102 for Parkinson's Disease

Overview

OXB-101 (ProSavin®)/OXB-102 aims to provide dopamine (DA) replacement to patients with Parkinson's disease

- Uses Lentiviral vector technology to deliver genes for 3 enzymes required for DA synthesis
- Administered locally to the striatum, where DA is normally released
- Converts non-dopaminergic cells to replacement of DA
- Evidence of at least 4 year duration emerging from OXB-101 patient follow-up

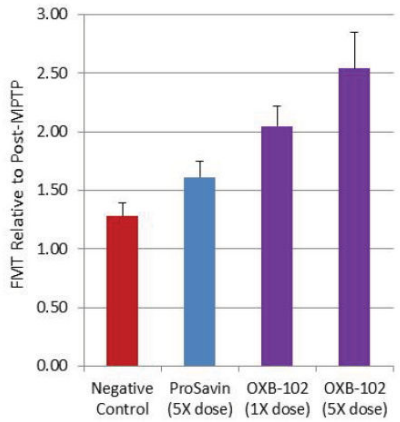
Market size

Parkinson's disease affects millions of people worldwide[1]

- Currently 1.7 million adults affected with PD in seven major markets (US, Japan, and EU 5)[1]
- This is expected to rise to 1 million in the US and 880 thousand in the EU by 2022 due to an aging population[1]

Programme Status

- Phase I/II regulatory approval submission underway
  - Study protocol approved by MHRA (UK authority) and submission Q3 2016 for ANSM (French authority)
- Same Cambridge and Paris sites to be used as for OXB-101 Phase I/II study, with potential for an extra site in UK
- 1st patient likely to be dosed during Q3 2016
- Dose escalation over three cohorts of six patients per cohort and dose confirmation cohort of 12 patients



PET analysis (with [18F] fluoro-L-m-tyrosine (FMT)

PET imaging indicates that OXB-102 gives rise to higher AADC activity than ProSavin® in the target putamen PET scans

[1] PharmaPoint Parkinson's Disease Global Forecast & Market Analysis to 2022, Global Data June 2015

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OXB-202 for Corneal Graft Rejection

Overview

OXB-202 is designed to prevent corneal graft rejection

- Despite one of the most successful tissue transplants, a significant number of grafts are rejected due to corneal vascularisation (NV)
- OXB-202 is a human donor cornea genetically modified with the same lentiviral vector as OXB-201 to secrete 2 anti-angiogenesis proteins, endostatin and angiostatin
- This *ex vivo* treatment of donor corneas prior to transplant inhibits NV and, consequently, graft rejection

Approximately 100,000 corneal grafts are performed every year worldwide[1]

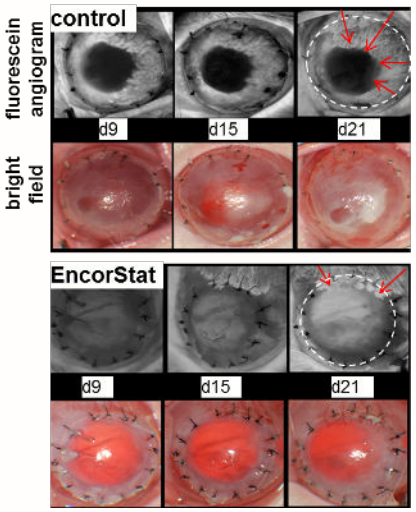
- This figure, representing only 1% all patients in need of a transplant, will increase significantly as countries develop their own eye banking infrastructure[2]
- Company estimates peak sales range of £120m to £415m

Pre-clinical Data

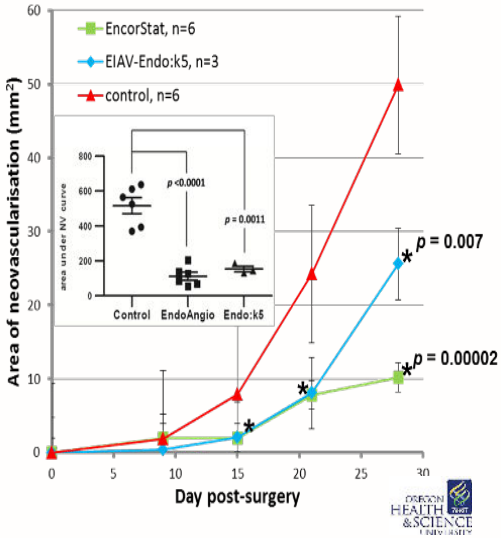
- OXB-202 program supported by extensive OXB-201 data (non-clinical and clinical)

Illustrative Results

Efficacy in rabbit model of rejection (aggressive)[3]



Reduction in corneal NV, opacity and immune infiltration in a rabbit PK model[5]



Programme Status

- Submit clinical trial application (CTA) by end of 2016 for Phase I/II clinical study
- Clinical trial may involve up to 40 patients, starting with severe patients and progressing to less severe
- Moorfield Eye Hospital is the UK site, with the potential for a US site

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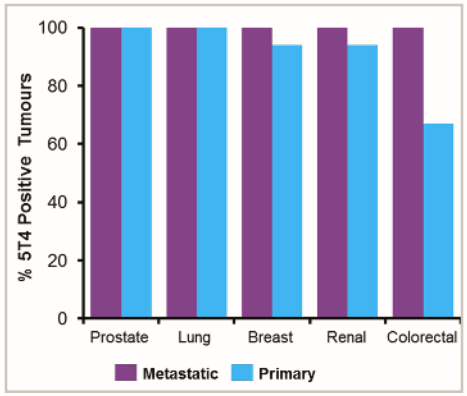
OXB-302 for Targeting Solid Cancer Tumours (CAR-T 5T4)

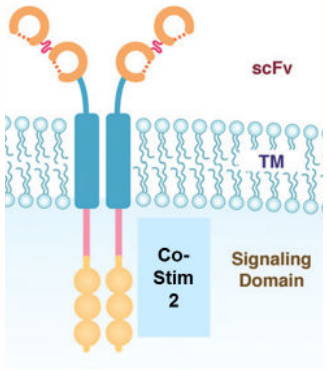
Overview

- Chimeric Antigen Receptors (CARs) enable the re-direction of a patient's T cells to target cancer cells expressing a specific tumour antigen
- OXB-302 is a combination of our LentiVector® and 5T4
- CAR-T 5T4 targets 5T4, an oncofoetal antigen expressed on the surface of most solid tumours and some haematological malignancies
- The restricted expression profile of 5T4 on normal tissues combined with its broad expression on tumour cells (including cancer stem cells) make 5T4 an attractive target for therapeutic intervention

Illustrative Results

Expression of 5T4 on primary and metastatic human tumours:





Pre-clinical Data

- 2 different OXB-302 Lentiviral based vectors have been produced
- Both OXB-302 vectors transduce human PBMCs
- CAR-5T4 transduced human T cells show good growth kinetics and secrete cytokines in response to "*in vitro* challenge" with a range of human tumor cell lines
- *In vivo* testing has demonstrated efficacy in an industry standard tumour challenge model

Programme Status

- End of pre-clinical studies expected by end of 2016
- Following demonstration of pre-clinical proof of concept, clinical planning for OXB-302 will be initiated

Other proprietary R&D activity

In-house Product Discovery/Research – providing a flow of new product opportunities

- Several ocular orphan diseases programmes
- CNS orphan disease programme
- Respiratory orphan disease programme

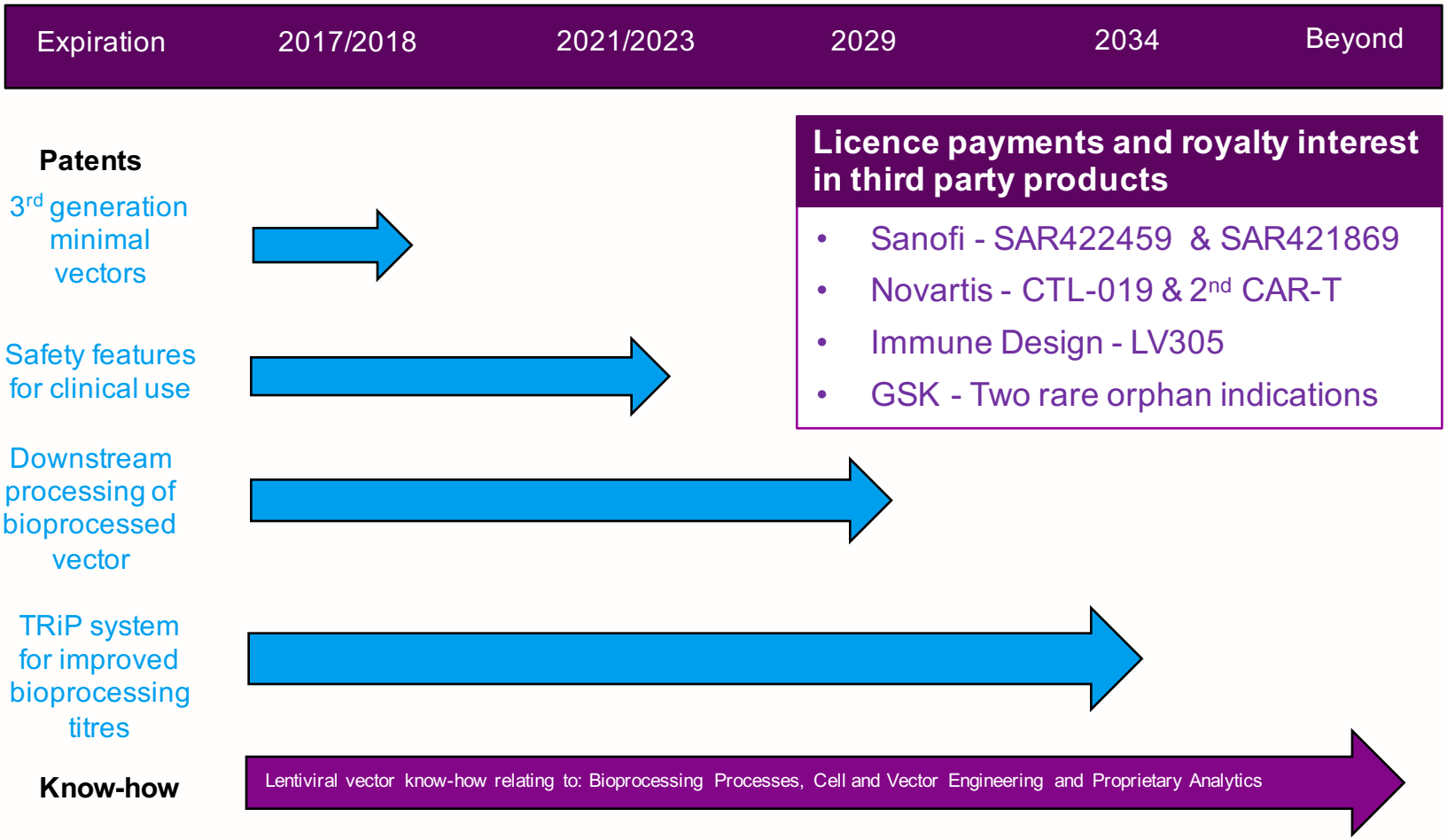
Technical developments – continuous improvement of the LentiVector® platform

- Cell and vector engineering projects to improve bioprocessing yield – for example:
  - TRAP/TRiP system development
  - Packaging & producer cell lines
- Analytical methods improvements to improve efficiency and effectiveness of testing

Innovation and optimisation to build long-term value

Intellectual Property

LentiVector® Platform IP & Key Intellectual Property



Facilities

Oxford BioMedica Facilities in the UK

Harrow House & Chancery Gate
19, 375 sq.ft (1,800 sq.m)
- cGMP production facility
- GMP QC microbiology laboratories
- Raw material testing
- GMP cold chain warehouse & office space

Windrush Court (opening)
- Corporate HQ & Laboratories
  71,955 sq. ft (6,684 sq. m)
- GMP Warehouse Hub
  2,691 sq. ft (250 sq. m).

Yarnton
18,300 sq. ft (1,700 sq. m)
- cGMP production facility

Facilities less than 1 hour from London Heathrow Airport

Source: https://resources.oncourse.iu.edu/access/content/user/leema/profilepage/oxford.html

Specialist Bioprocessing Facilities (all located in Oxford, UK)

Two separate bioprocessing sites (total clean rooms 1,200m^2/12,919ft^2)

Laboratories (2,136m^2/22,992ft^2)

Harrow House

- Two independent GMP clean room suites (GMP1 and GMP2) totalling 640m2/6,889ft2
- GMP2 facility designed for up to two 200L single use bioreactors
- Potential for further expansion

Yarnton

- One independent GMP clean room suite (GMP4) of 560m2/6,030ft2
- Potential for use with 200L single use bioreactors

Windrush Court Laboratories

- Nine Tissue Culture Laboratories with 24 Microsafety Cabinets
- Two Analytical Services Group (ASG) Laboratories
- Cell Engineering Laboratory
- Three Bio Safety Laboratory Category 3 (BSL-C3) Laboratories
- Two Process Research and Development (PR&D) Laboratories
- One PCR suite
- Separate QC Chemistry and Microbiology Laboratories
- Clinical Analysis Laboratory
- Separate HPLC and FACS Suites

Future Vision and Summary

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2016/2017 Potential Newsflow

- In-house priority products
  - OXB-102 Phase I/II first patient dosed
  - OXB-202 Phase I/II study CTA filing in H2
  - OXB-302 pre-clinical study results
- Partners' products
  - Novartis CTL-019 study results
  - Novartis CTL-019 BLA submission
- LentiVector® delivery platform
  - Successful development of 200L bioreactor serum-free suspension process to produce lentiviral vectors
  - Further contracts with new partners giving us long-term economic interest in partners' product candidates

Vision of Oxford BioMedica, *the* LentiVector® Company – by end 2018

In-house

OXB-102
Phase I/II first three cohort data

OXB-202
Phase I/II first two cohort data

OXB-302
In Phase I/II clinical study

New product candidates emerging from research/discovery using the LentiVector® platform

Partnerships

Novartis

- CTL-019 launched
- Oxford BioMedica supplying commercial material
- Royalties from CTL-019
- Second CAR-T product into clinical development
- Further CAR-T programmes assumed

Sanofi

- SAR422459 in pivotal trial (Phase IIb/Phase III)

Immune Design

- LV305 progressing well in clinical development

Multiple further partnerships giving Oxford BioMedica economic interests in a range of gene and cell therapy products

Bioprocessing

Facilities operating at, or very near capacity

Summary: a world leading gene and cell therapy company

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1. • Gene and cell therapy is set to grow into a multi-billion US$ sector over the next 5-10 years
2. • Lentiviral vectors have advantages over other vector types
3. • OXB's highly sought-after LentiVector® gene delivery platform for both in vivo and ex vivo lentiviral vector products
4. • OXB's product interests include in-house focused clinical and preclinical pipeline and an economic interest in partners' products

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