A LentiVector® Company, and a leader in gene and cell therapy

Annual General Meeting
7 June 2016

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Overview - a gene and cell therapy company with a leading lentiviral vector delivery platform (LentiVector®)

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1
- **Gene and cell therapy is predicted to grow into a multi-billion US$ sector over the next 5-10 years[1]**
  - 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.
  - Several *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

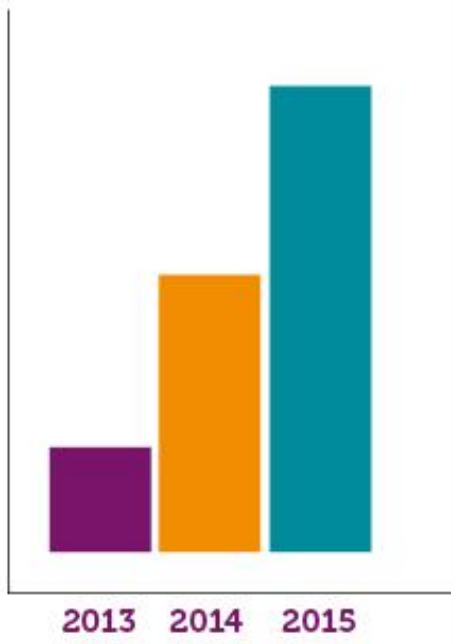
3
- **OXB's sought-after LentiVector® gene delivery platform**
  - Can be used for both *in vivo* and *ex vivo* lentiviral vector products
  - Founded on 20 years' experience of delivering lentiviruses *in vivo*
  - Integrated combination of our IP, employees' expertise and bioprocessing and laboratory 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 programme targeting solid tumours
  - Economic interest in partners' products: Sanofi (SAR422459/SAR421869); Novartis (CTL019 and other undisclosed CAR-T programme); Immune Design (LV305) and GSK (two undisclosed rare orphan products)

[1] Clive Glover, GE Healthcare "Sales of cell and gene therapy will reach $10 billion by 2021", October 2015.

2015/2016 key achievements (1/2)

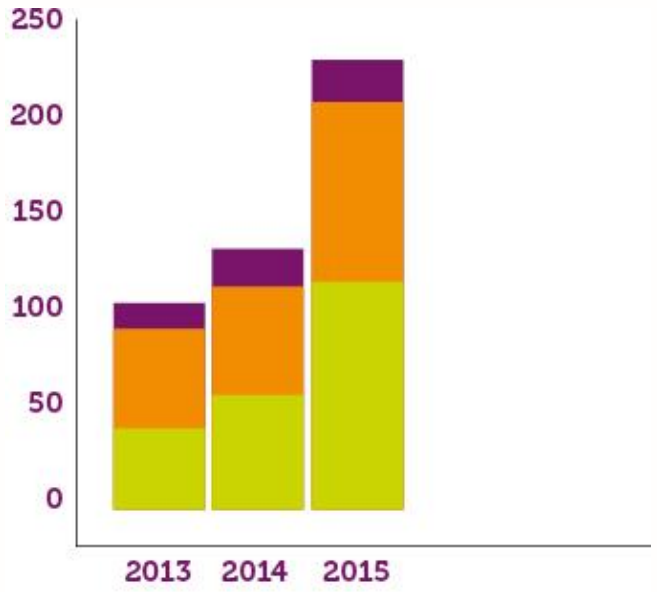
- **Strong progress from LentiVector® delivery platform**
  - Portfolio review in Q1 2016: focus on OXB-102, OXB-202 and OXB-302
  - OXB-102: Phase I/II study in Parkinson's disease approved by MHRA
  - OXB-202: Preparations for Phase I/II study in corneal graft rejection continue; CTA filing planned for 2016
  - OXB-302: pre-clinical data demonstrates efficacy in tumour challenge model (CAR-T 5T4)
  - LentiVector® platform evidence of long-term duration
- **2015 lentiviral vector production volumes increased by 72% over 2014**



Vector harvest volumes
Litres

2015/2016 key achievements (2/2)

- **Investment in people, facilities and plant**
  - Headcount increased from 134 to 231 during 2015, 250 at end May 2016
  - New Yarnton facility operational
  - Harrow House extension and Windrush Court laboratories currently being validated
- **Partnerships broadened**
  - Research collaboration in NK cells (CAR-NK) with Green Cross LabCell
  - Immune Design LV305 collaboration/new IP licence
  - Novartis 2nd CAR-T product
  - GSK acquired IP licence for 2 rare disease product candidates
- **Board strengthened**
  - Dr Lorenzo Tallarigo, Chairman
  - Stuart Henderson, Chair of Audit Committee



Strategic Review

Strategic review confirms Oxford BioMedica as leader in field

- Gene and cell therapy field set to grow into $ multi-billion sector over next 5-10 years. Several products, particularly *ex vivo*, likely to launch in next few years
- Lentiviral vectors are preferred choice for *ex vivo* therapies because they integrate into DNA of target cells with a genetic payload replicating when cells divide
- Increasing number of lentivirus clinical studies initiated in recent years
- Regulatory environment changes enabling faster progress through regulatory systems
- Oxford BioMedica has unique combination of patents, know how, expertise and facilities in lentiviral vectors – the LentiVector® platform

Initiated lentivirus clinical trials by year and phase

Source: Journal of Gene Medicine, July 2015

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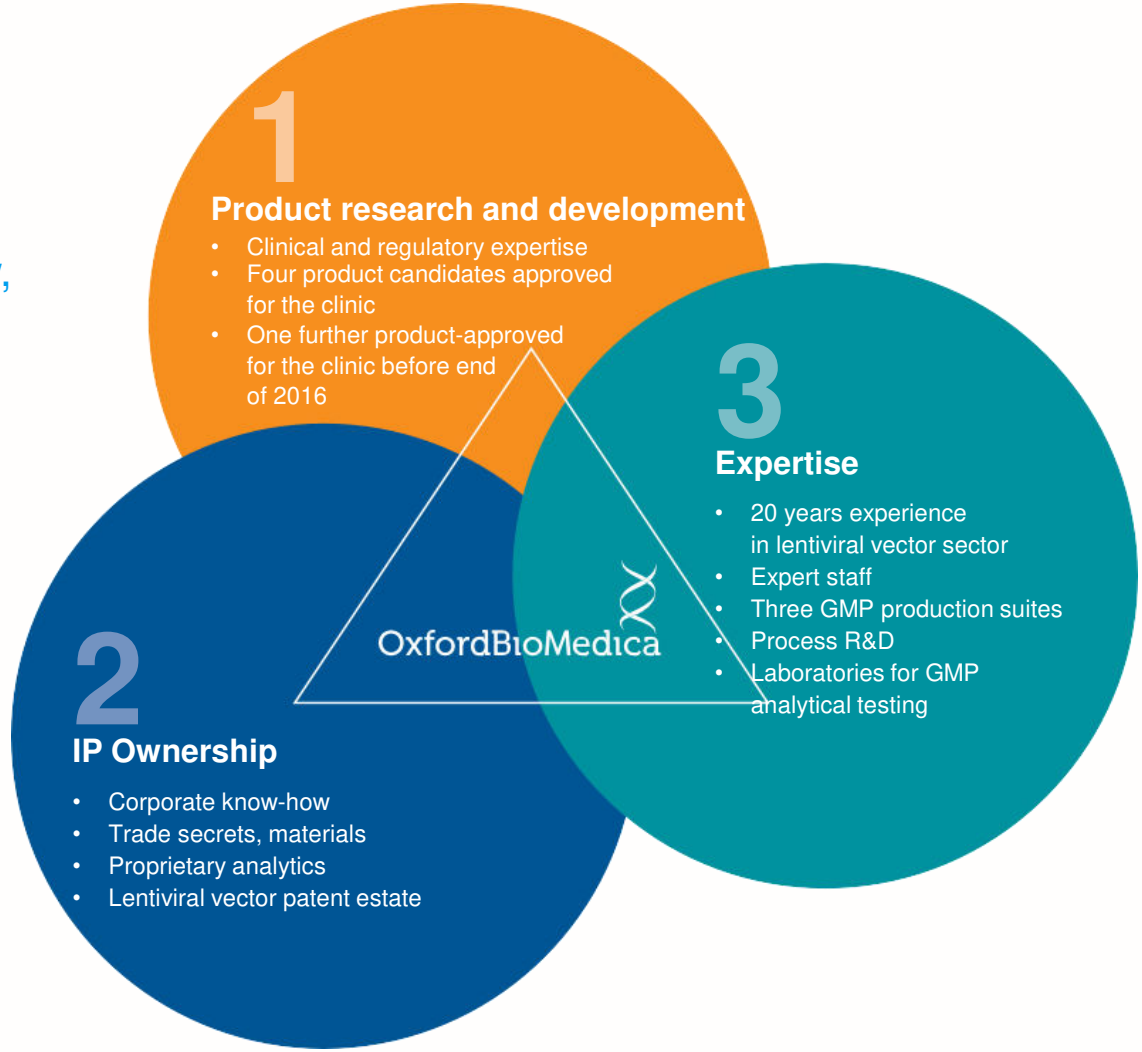
Management conclusions from strategic review

- **Successful companies will be those which own or have economic interests in gene and cell therapy products**
  - Oxford BioMedica is and will remain a product-focused company: we now focus on three priority programmes together with partnered programmes
- **A pure "in-house product only" approach is potentially very high reward but with commensurate high risk and cost, and**
  - Would depend on other providers to design and process vectors
- **Our proprietary LentiVector® vector gene delivery platform, built over 20 years and continuing to develop, positions Oxford BioMedica as the partner-of-choice:**
  - Partnering with companies helps them develop better gene and cell therapy products, more quickly. In exchange we obtain short- and long-term economic interest in partners' products through fees, royalties and other incentives
  - Relationships in place with Novartis, Sanofi, GSK, Immune Design, Green Cross LabCell. Discussions ongoing with further potential partners
- **Therefore exploiting the integrated LentiVector® delivery platform is our path to generating patient benefits and sustainable shareholder value**

Oxford BioMedica, an 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



Product Update

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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
CTL019	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

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

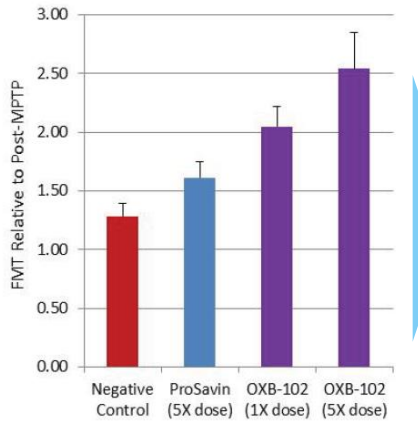
Market size

- **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 Q2 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
- Expect preliminary readout from first cohort towards the end of 2017

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



OXB-102 gives rise to higher AADC activity than ProSavin®

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

OXB-202 for Corneal Graft Rejection

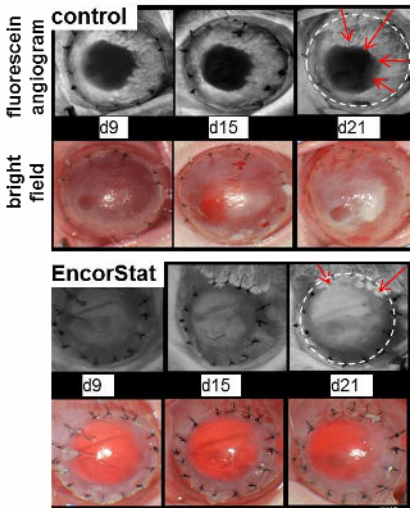
Overview

- **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

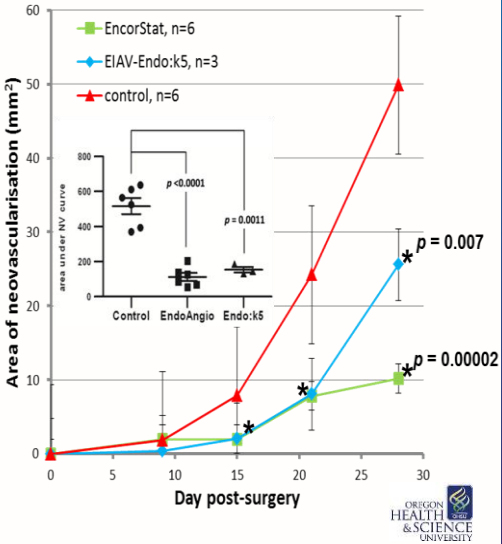
- **Approximately 100,000 corneal grafts are performed every year worldwide[1]**
- This figure, representing only 1% all patients in need of a transplant, will increase significantly as countries develop their own eye banking infrastructure[2]
- Company estimates peak sales range of £120m to £415m

Illustrative Results

Efficacy in pre-clinical model of rejection (aggressive)[3]



Reduction in corneal NV, opacity and immune infiltration in a pre-clinical PK model[4]



Pre-clinical Data

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

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

[1] Human organ and tissue transplantation. Report by the Secretariat. Executive Board EB112/5, 112th session, Provisional agenda item 4.3. World Health Organisation. May 2003
[2] Venkataraman, B. Countries make push to increase eye donors. The New York Times, July 15, 2008
[3] Parker et al. "Suppression of neovascularization of donor corneas by transduction with equine infectious anemia virus-based lentiviral…..". Human Gene Therapy 25 (5):408-18, 2014
[4] Scripps et al. European Society for Gene and Cell Therapy (ESGCT) Abstract# P283, October 2013

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

Overview

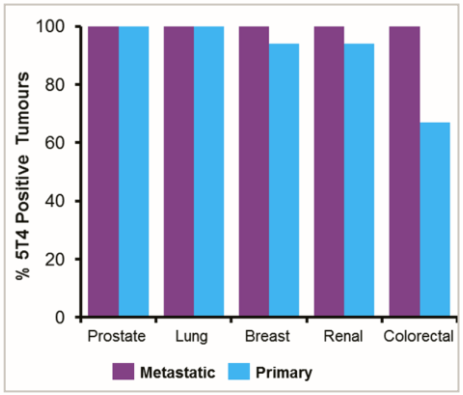
- Chimeric Antigen Receptors (CARs) enable the re-direction of a patient's T cells to target cancer cells expressing a specific tumour antigen
- OXB-302 is a combination of our LentiVector® and 5T4
- CAR-T 5T4 targets 5T4, an oncofoetal antigen expressed on the surface of most solid tumours and some 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

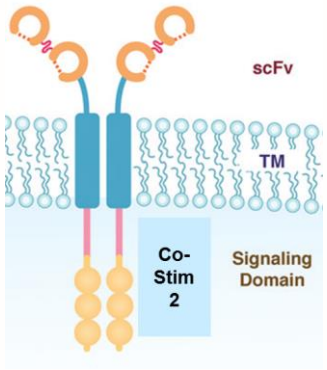
Pre-clinical Data

- 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

Illustrative Results

Expression of 5T4 on primary and metastatic human tumours:





- Targeting 5T4 expression on solid tumours with OXB-302 (CAR-T 5T4) leads to tumour killing in *in vivo* models

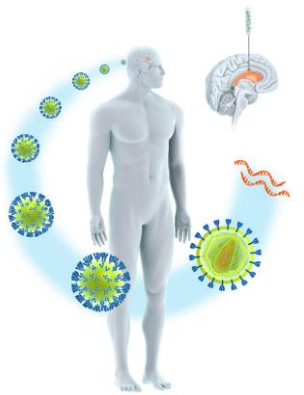
Programme Status

- 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

Product and delivery platform news 2015/2016 (1/2)

In-house priority products

- OXB-102 (Parkinson's disease) Phase I/II gained MHRA approval - clinical trial site initiation planned H1 2016
- OXB-202 (Corneal graft rejection) Phase I/II MHRA filing on track
- OXB-302 (in oncology) pre-clinical studies ongoing



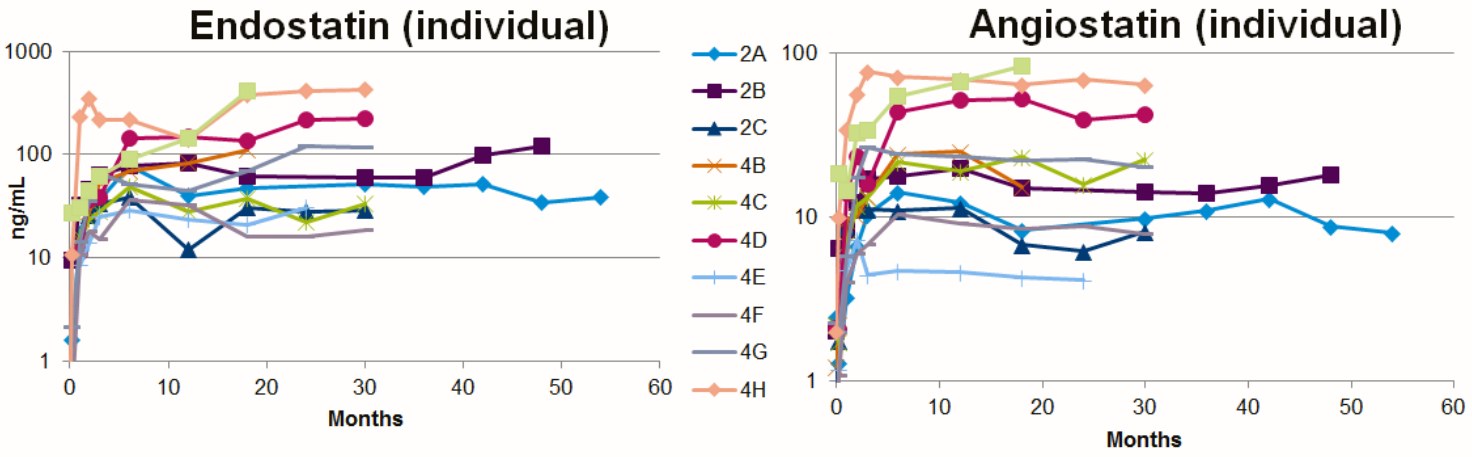
Partnerships

- **Novartis**
  - CTL019 study results expected H2 2016
  - Novartis 2nd CAR-T programme
- **Immune Design**
  - Clinical-stage immunotherapy company with next-generation in vivo T-cell approaches – expanded relationship with Oxford BioMedica
  - LV305 and CMB305 (combination of LV305 and G305 prime boost agent) in Phase 1/2 studies in cancers expressing NY-ESO-1 antigen
  - LV305 activates the immune system against a tumour by generating cytotoxic T cells (CTLs) against specific tumour-associated antigens
- **Green Cross LabCell**
  - Subsidiary of Green Cross Holdings, one of South Korea's leading biopharmaceutical companies
  - Research collaboration to focus on identifying and developing gene modified natural killer (NK) cell-based therapeutics for treatment of life-threatening diseases such as cancer

Product and delivery platform news (2/2)

LentiVector® gene delivery platform

- Ground breaking evidence of long-term duration of therapeutic expression in patients from four year long term follow up of OXB-101 (ProSavin®) and OXB-201 (RetinoStat®)
- Gene expression was dose- dependent and continued for more than four years in OXB-201 patients



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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
- Gene-modified NK cell therapeutics with Green Cross LabCell for cancer

Technical developments – continuous improvement of the LentiVector® platform

- Cell and vector engineering projects to improve bioprocessing yield – for example:
  - 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

Facilities

State-of-the-art Bioprocessing Facilities (all located in Oxford, UK)

Two separate bioprocessing sites (total clean rooms 1,200m^2/12,917ft^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 560m2/6,028ft2
- Potential for use with 200L single use bioreactors

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

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

Summary

Near-term catalysts

- **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 CTL019 study results
  - Novartis CTL019 BLA submission
- **LentiVector® delivery platform**
  - Successful development of 200L bioreactor serum-free suspension process to produce lentiviral vectors
  - Further contracts with new partners giving long-term economic interest in partners' product candidates

Summary: a leading gene and cell therapy company

1. Gene and cell therapy is predicted 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 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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