

# An innovation-led CDMO focused on life saving cell & gene therapies

## Investor Presentation

JP Morgan Global Healthcare Conference

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# Oxford Biomedica: A leading CDMO serving as a global viral vector partner for cell and gene therapy companies

## 1 OXB is well positioned to solve our partners' manufacturing challenges

- *Innovation-led CDMO of choice, with proprietary technologies and a rich history in Viral Vector (VV) manufacturing*
- *Well invested capacity and technological capabilities continue to attract and retain partners*

## 2 Viral Vectors play a critical role in cell and gene therapy

- *Strong double digit growth forecasted for each of Adeno-Associated Vector (AAV) and Lentiviral Vector (LV) outsourced supply market<sup>1</sup>*
- *High quality, cost effective and commercially viable VV are critical for the success of C&GT*

## 3 Cell and gene therapies are bringing a new wave of breakthroughs in medicine

- *Over 500 biotechs and majority of Big Pharma active in the space<sup>2</sup>*
- *C&GT products account for 12% of the industry's clinical pipeline and at least 16% of the preclinical pipeline<sup>1</sup>*

## 4 Proven track record of high quality vector manufactured at pace

- *Leading expertise in delivery for clients from early stage through commercial*
- *Large-scale commercial manufacture of the adenovirus-based Oxford AstraZeneca COVID-19 vaccine*
- *Long-term relationship with Novartis as its sole global supplier of lentiviral vector for Kymriah®*

## 5 OXB has capabilities across all key vector types

- *Lentiviral vector, Adenovirus and AAV platform (through Oxford Biomedica Solutions)*
- *Strong foundations for continued high growth and path to sustained profitability*

<sup>1</sup> Source: Company data and third party research. Lentiviral and  $\gamma$ -retrovirus global vector supply market (outsourced) expected to grow at 17% CAGR and AAV at 25% CAGR ('20-'26)

<sup>2</sup> McKinsey & Company, 2020

# Strong business evolution over the last 5 years

	As at 31 December 2017	As of Today
<b>Revenue</b>	£37.6m	c.£130m (FY 2022E)
<b>Viral Vector Partners</b>	6 – All Lenti 	17 – across Lenti, AAV and Adeno 
<b>Kymriah Sales</b>	\$76m reported to Dec 2018	\$540m to Sept. 2022
<b>Size of Viral Vector Markets Positioned to Target</b>	\$200m bioprocessing opportunity in Lenti in 2017 growing to \$800m by 2026	\$2.8 billion by 2026 across adenoviral, AAV and integrating vectors (including Lenti)
<b>Proprietary Products</b>	All in house with plans to spin out or out-license	Expected to be externally funded with OXB retaining an economic interest
<b>Facilities/Capacity</b>	Three facilities in Oxford running at close to full capacity, Windrush Courts, Harrow House & Chancery Gate, Yarnton	Six UK-based facilities + US (Boston) facility Oxbox, Windrush Court, Windrush Innovation Centre, Yarnton, Harrow House & Chancery Gate, Patriots Park (US)

# Fast growing addressable markets for viral vectors

	2026 TAM <sup>(1)</sup> , '20-'26 CAGR, (# of Pipeline Assets)	Select Viral Vector Based Products (Phase <sup>(2)</sup> ), Peak Sales	OXB Growth Opportunity	OXB Offering
<b>AAV</b> 	<b>c. \$2.2bn, +25%</b> (362)	 <b>NOVARTIS</b> <i>Zolgensma (M), \$2.8bn</i>  <b>BiOMARIN</b> <i>Roctavian (M), \$2.0bn</i>  <b>bridgebio</b> <i>BBP-631 (P3), \$3.4bn</i>		<ul style="list-style-type: none"> <li>• End-to-end capabilities spanning early vector design, clinical trials and scalability for commercial supply</li> <li>• GMP manufacturing, quality control, stability testing and CMC support</li> <li>• Suite of analytical methods that have cleared CMC for 3 approved AAV based IND applications to initiate Phase 1 trials</li> </ul>
<b>Integrating (Lentivirus and <math>\gamma</math>-retroviral)</b> 	<b>c. \$0.5bn, +17%</b> (45)	 <b>NOVARTIS</b> <i>Kymriah (M), \$0.8bn</i>  <b>Johnson &amp; Johnson</b> <i>Carvykti (M), \$5.0bn</i>  <b>Bristol Myers Squibb</b> <i>Breyanzi (M), \$2.4bn</i>		<ul style="list-style-type: none"> <li>• Proprietary LentiVector® platform, the 1<sup>st</sup> commercially approved Lentiviral based gene delivery system</li> </ul>
<b>Adenovirus</b> 	<b>c. \$&lt;0.5bn, -25%</b> (23)	 <b>AstraZeneca</b> <i>Vaxzevria (M), \$4.0bn</i>  <b>Theriva</b> <b>BIOLOGICS</b> <i>VCN-01 (P2)<sup>(3)</sup>, \$0.7bn</i>		<ul style="list-style-type: none"> <li>• Trusted adenovirus manufacturer with a versatile platform that has proven scalability at speed for large-scale commercial manufacturing of adenovirus vector-based therapies</li> </ul>

Total Addressable Market for outsourced viral vector supply is expected to be \$2.8bn by 2026 growing to \$4.8bn by 2030

# Strong foundations for continued high growth

What Partners Want		OXB Innovation
 <p><b>Expertise</b></p>	<ul style="list-style-type: none"> <li>• A CDMO that can advise them early in the development process and optimise the production process</li> <li>• Against a backdrop of escalating regulatory requirements, C&amp;GT players need a reliable partner with expertise and proven track record to navigate the space</li> </ul>	<p><b>1</b> <b>Efficacy.</b> Efficient delivery and integration to provide long term gene expression</p>
 <p><b>Flexibility and available capacity</b></p>	<ul style="list-style-type: none"> <li>• Shortened development timelines and expedited approval pathways has increased the requirement for reliable CDMOs with proven ability to scale up quickly</li> </ul>	<p><b>2</b> <b>Yield/Titre.</b> Improving quantity of virus produced through cell and vector engineering</p>
 <p><b>Technical capabilities</b></p>	<ul style="list-style-type: none"> <li>• Partners want a CDMO that has the technical expertise to de-risk the key challenges leading up to BLA submission and commercial launch</li> <li>• Strong track-record of success in terms of yield and regulatory</li> </ul>	<p><b>3</b> <b>Quality.</b> Improving purity and reducing toxicity of products. Generally reducing risk in production output</p>
		<p><b>4</b> <b>Feasibility.</b> Development of analytical and physical methods to enable viral vector processes to happen</p>
		<p><b>5</b> <b>Patient Safety.</b> Innovations in vector technology to reduce the chances of adverse effects related to vector administration</p>
		<p><b>6</b> <b>Viability.</b> Efficiency in production to reduce cost-of-goods components of treatment making gene therapy more accessible including to larger indications</p>

OXB has proven world-class capabilities from early-stage development through to commercialisation

# Oxford Biomedica's end-to-end capabilities enable us to be the chosen partner for companies from discovery to commercialisation

## Illustrative OXB Revenue Streams from Viral Vector Development Process

	Cell Line and Process Development	Pilot Scale Production	Early & Late Phase Clinical Supply	Process Characterisation & Validation	Commercial Supply & Fill / Finish
Potential Upfront	License Fee (\$ - \$\$\$)				
Development Revenues	\$	\$	-	\$\$\$	-
Size of Batches <sup>(1)</sup>	Up to 5 Litre	Up to 50 Litre	50 to 200 Litre	200 to 1,000 Litre	200 to 1,000 Litre
Bioprocessing Revenues	-	\$	\$ - \$\$	\$\$	\$\$\$
Milestone(s)	Development & Commercial Milestones (\$ - \$\$\$)				
Royalties					Low single digit royalties of sales

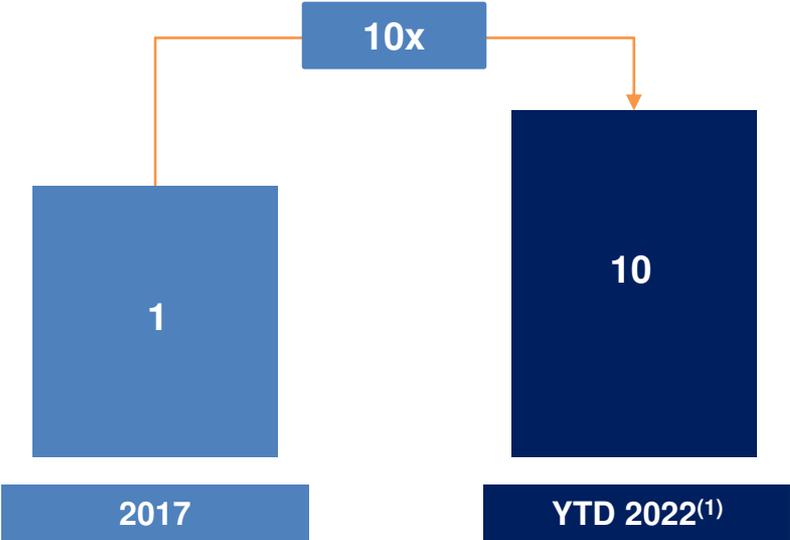
Source: Company data and third party research. Illustration of potential OXB revenue streams throughout the product development process. The timing of OXB revenue recognition from executed contracts will vary depending on agreements with partners

1) Batches dependent on type of therapeutic product and viral vector

# Strong momentum of delivering revenue growth through new agreements at both Oxford Biomedica and Oxford Biomedica Solutions

**Focused Efforts on Customer Acquisition Delivering Results**

## New agreements announced



**Established Organisational Structure to Win and Execute**

**132**  
AAV Technicians

**360**  
Lenti Technicians

**127**  
Operations

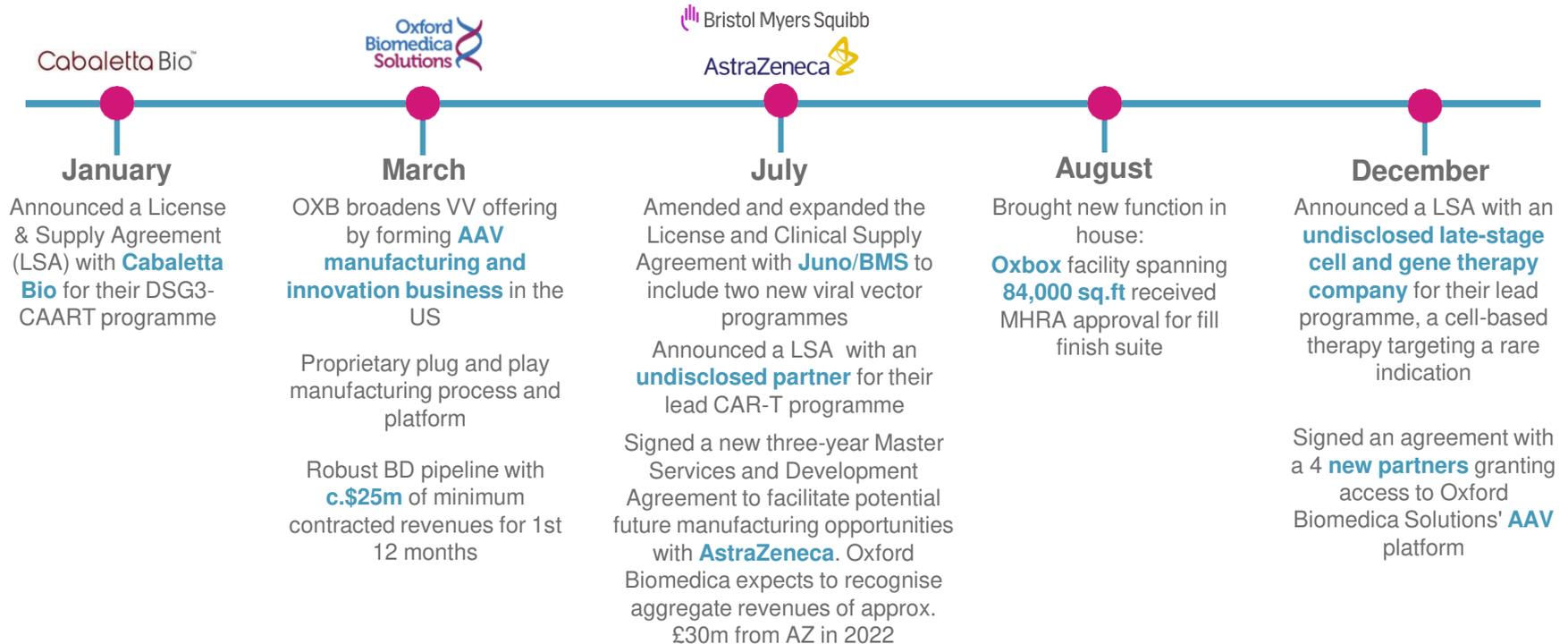
**159**  
Manufacturing

**18**  
Commercial

**28**  
Finance

Note: AAV: Adeno-Associated Virus, VV: Viral Vector  
(1) As of 31<sup>st</sup> December 2022 including expanded agreements

# 2022: Continued Progress in Delivering Innovative Services to C&GT Partners



OXB expanded its number of partners **by over 70%** (10 to 17) in the last 12 months<sup>(1)</sup>

Note: AAV: Adeno-Associated Virus, VV: Viral Vector

1) As of 31<sup>st</sup> December 2022

# Recent & Upcoming Newsflow

- Appointment of Frank Mathias as CEO announced
- Completion of **sale and leaseback** process for Windrush Court with £60m gross proceeds
- Positive momentum in **new agreements** announced in 2022
  - Revenue ramp for OXB Solutions driven by additional AAV agreements in 2023 and beyond
- Launch of **fourth generation lentiviral vectors** expected in 2023
  - Vectors that enable higher expression, have additional safety features and larger capacity to deliver greater amounts of DNA
- Therapeutics **product strategy to be executed** in 2023
  - Strategic options to externally fund an appropriate future pipeline of products and other novel opportunities
  - Maintaining economic interest with a potential material reduction in annual operating expenditure

# FY22 Operational & Financial Outlook

- Similar levels of revenues expected in H2 2022 as those in H1 2022; more than **90% of forecasted revenues for the second half of the year covered by existing binding purchase orders and rolling partner forecasts**
- **Continued growth in lentiviral vector and AAV manufacturing volumes**, with lower vaccine volumes anticipated
  - Aggregate revenues of c.£30m from AstraZeneca for FY 2022, with the bulk of revenues having been recognised in H1 2022
- **Cost-control initiatives** are in place, including right-sizing of headcount as the pandemic eases and taking a cautious approach to planning significant new projects
- Broadly break-even operating EBITDA<sup>1</sup> expected in H2 2022
- **Strong cash position**, cash at 30 June 2022 was £118.5 million and £115.8 million at 31 August 2022
  - Completion of the sale and leaseback bolstered cash position to in excess of £150 million
- Capex expected to be similar in H2 2022 to H1 2022

Long term target: A market leading position in the viral vector outsourced supply market across all key vector types, with long term revenue growth rates exceeding the broader market

## What is the opportunity for OXB?



Rapidly growing addressable market for outsourced viral vector supply



Proven expertise and track record in delivering development and commercial manufacturing at pace



Vector agnostic and investing in innovation to continue to deliver cutting edge solutions



Chosen partner with unique expertise for cell and gene therapy players



Internal reorganisation enhances focus on CDMO activities



Delivering attractive financial growth and returns for shareholders

Positioned to benefit from the increasing demand for high quality viral vectors

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## APPENDIX

# AAV Manufacturing: Integration Update

In March 2022, Oxford Biomedica broadened its leading viral vector offerings by incorporating Homology Medicines' established AAV capabilities into a newly formed AAV Manufacturing and Innovation Business in the US

## Announced

Announced transaction with Homology Medicines in January 2022

## Completed

Completed transaction, and established Oxford Biomedica Solutions in March 2022

## Integrated

Transfer of 124 technical operation employees completed

## Accretive

The transaction was immediately accretive to the Group's revenue growth

## c.\$25m (£21m) Contracted Revenues

Minimum contracted revenues in the first full twelve months from Homology Medicines

## Three Additional 500L Bioreactors

Expanded the Group's viral vector capabilities into the large and growing AAV segment

## New Customers

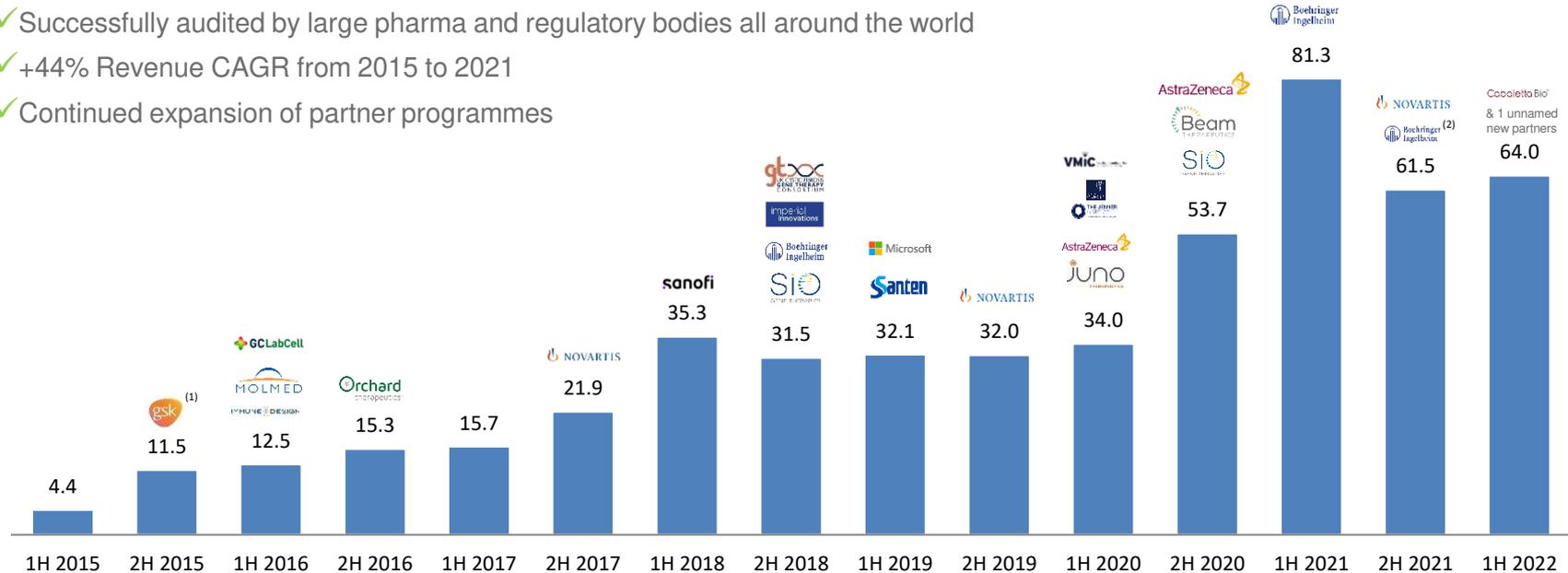
4 new agreement announced compared to the one agreement targeted for 2022

- Robust business development pipeline
- Additional c.23,000 sq ft of fallow area is being developed for analytical, office, warehouse and GMP space
- Looking to extend Process D manufacturing to AAV production
- Break-even EBITDA expected to be reached by H1 2025

# Track record of growing partnerships to drive growth

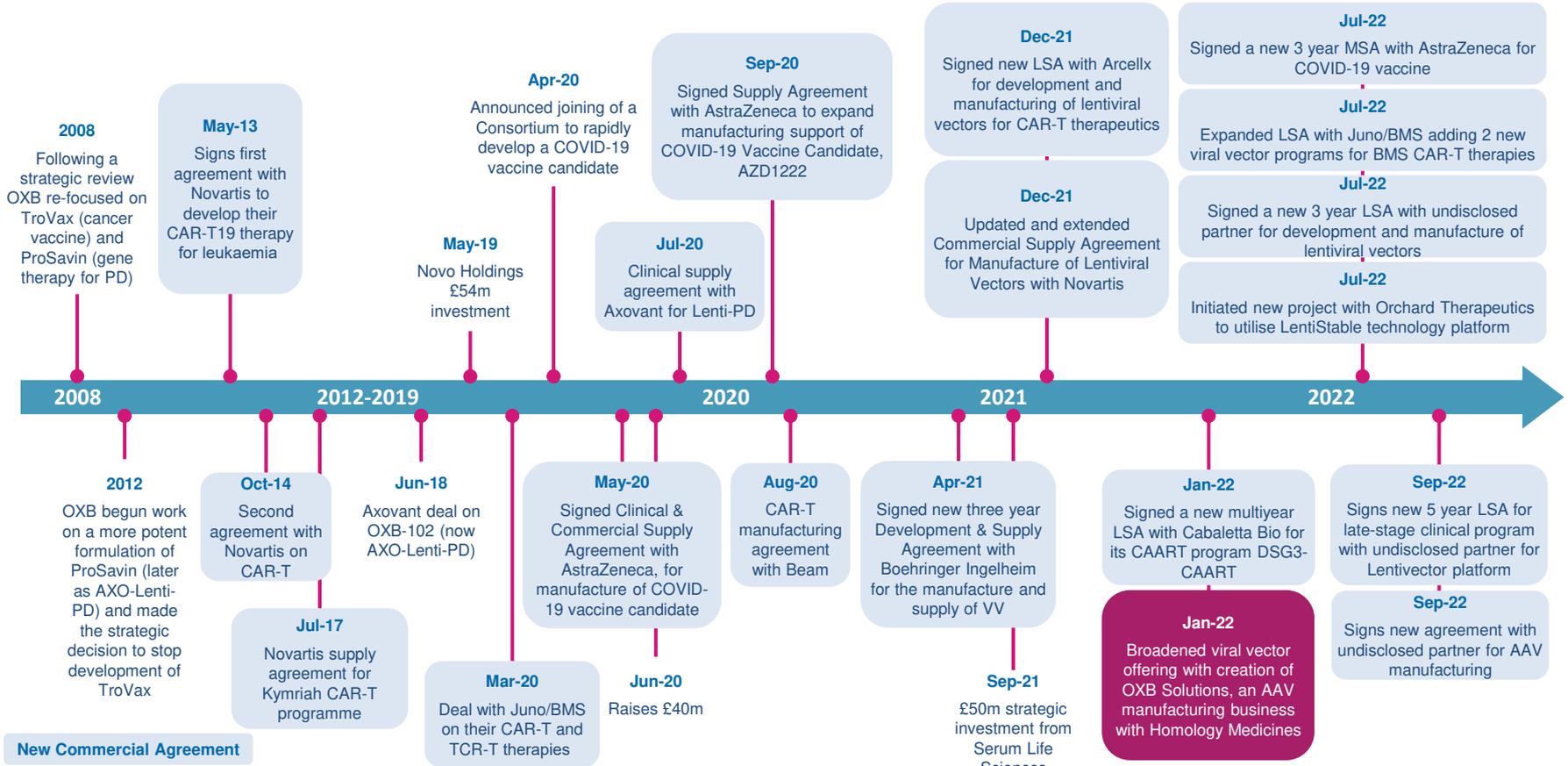
## Revenue Development (£m)

- ✓ Trusted partner to pharma with tested commercial scale capabilities
- ✓ Track-record of growing underlying business and winning new customers
- ✓ Dynamic and able to seize new opportunities
- ✓ Successfully audited by large pharma and regulatory bodies all around the world
- ✓ +44% Revenue CAGR from 2015 to 2021
- ✓ Continued expansion of partner programmes



(1) Exercised options in October 2015, following an agreement signed between GSK and the Group in December 2013. (2) Exercised options following agreement signed Boehringer Ingelheim and the Group in August 2018

# OXB's journey in becoming a leading Cell and Gene Therapy CDMO



**New Commercial Agreement**

Note: AAV: Adeno-Associated Virus, VV: Viral Vector, LSA: License & Supply Agreement, MSA: Manufacturing Service Agreement

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