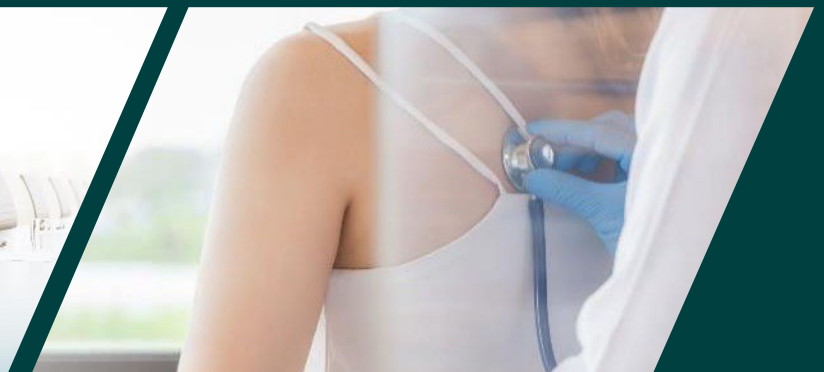

hVIVO

formerly Open Orphan plc

Company Presentation

January 2023

Ticker: HVO

Disclaimer

formerly Open Orphan plc

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Who we are

hVIVO

formerly Open Orphan plc

World leader *in* ***testing infectious & respiratory disease products*** *using human challenge trials addressing the* growing infectious disease market

11+

Challenge Study Models

70+

Completed Human Challenge Trials

3,750+

Volunteers Inoculated

Company Overview

hVIVO formerly Open Orphan plc

hVIVO

- World Leader in Human Challenge Trials with Onsite Virology Labs
- FluCamp: tech-enabled volunteer and patient recruitment platform

Venn Life Sciences
part of hVIVO

- Early Clinical Drug Development Services
- Biometric services

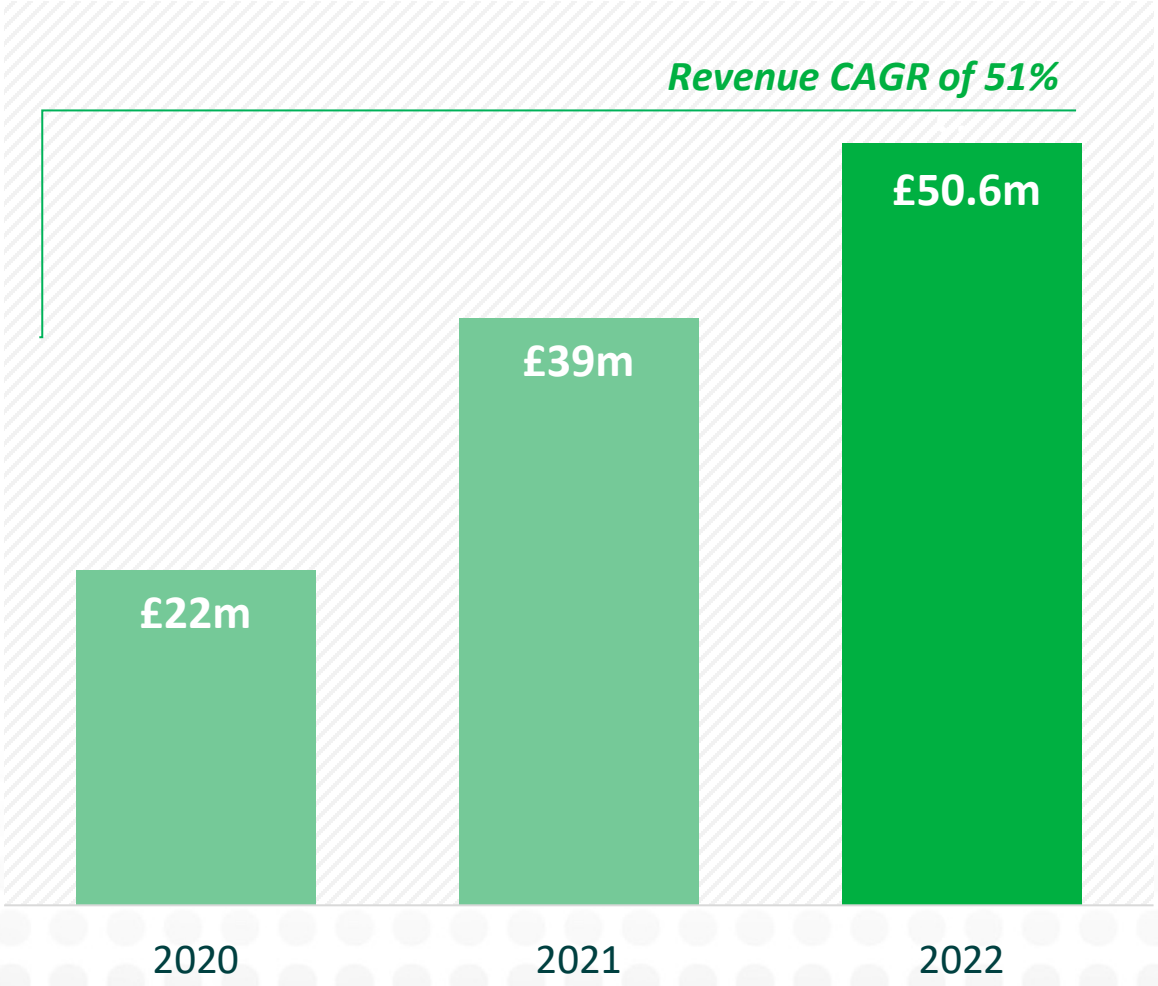
	Location	Facility
1	**Queen Mary's BioEnterprise Centre (QMB)**	Quarantine unit Virology Laboratory
2	**Whitechapel Clinic**	Quarantine Unit
3	**Plumbers Row**	FluCamp Volunteer Recruitment Phase I / II Site Facility Corporate Office
4	**Manchester**	FluCamp Volunteer Recruitment Vaccination Site

2022 – A Transformative Year

formerly Open Orphan plc

Strong Financial Performance	**£50.6M** FY22 Revenue	**c.17%** FY22 EBITDA Margin	**£28.4m** Cash Balance at 31 Dec 2022
Exceptional Operational Execution	**7** Challenge Trials in Quarantine in 2022	**413** Volunteer Inoculations in 2022	**120k** FluCamp Leads Generated in 2022
Building on Solid Foundations	**New Models** Influenza, Omicron and Malaria models	**New Revenue Streams** Expanded into Additional Areas	**New Premises** Relocation to Plumbers Row & FluCamp in Manchester
Well Positioned for Future Growth	**£76m +** Contracted Orderbook at 31 Dec 2022	**£55m +** FY23 Forecast Revenue	**95%** FY23 Revenue Contracted

Delivered Record Revenues



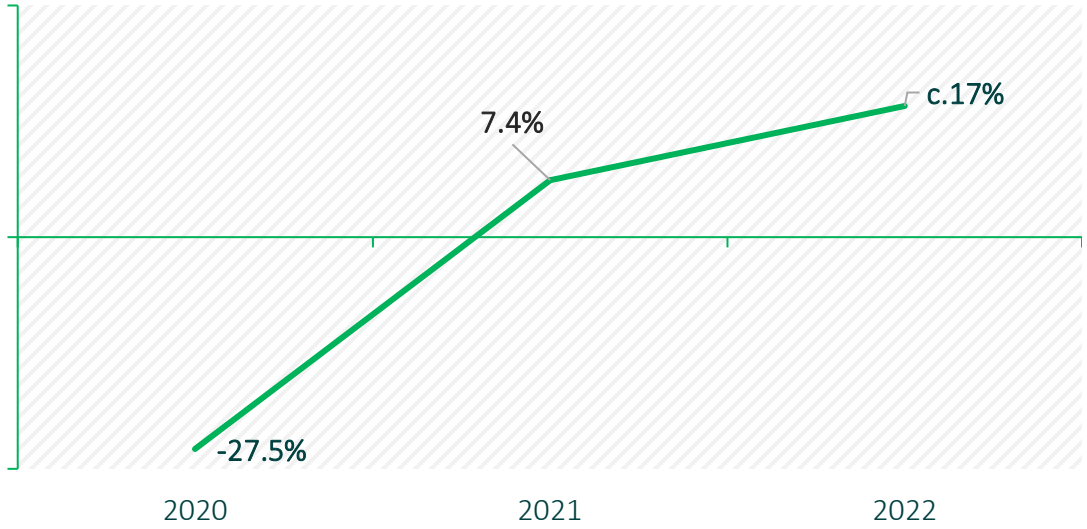
Revenue

- Delivered record revenues of £50.6m for 2022, in line with market guidance
- Revenue increase of 30% year-on-year
- More full-service human challenge contracts
- Increase in number of active studies
- Larger volunteer size per study
- Clear validation of long-term sustainable growth model and hVIVO's position as the world leader in human challenge studies

A Sustainably Profitable & Cash Generative Business

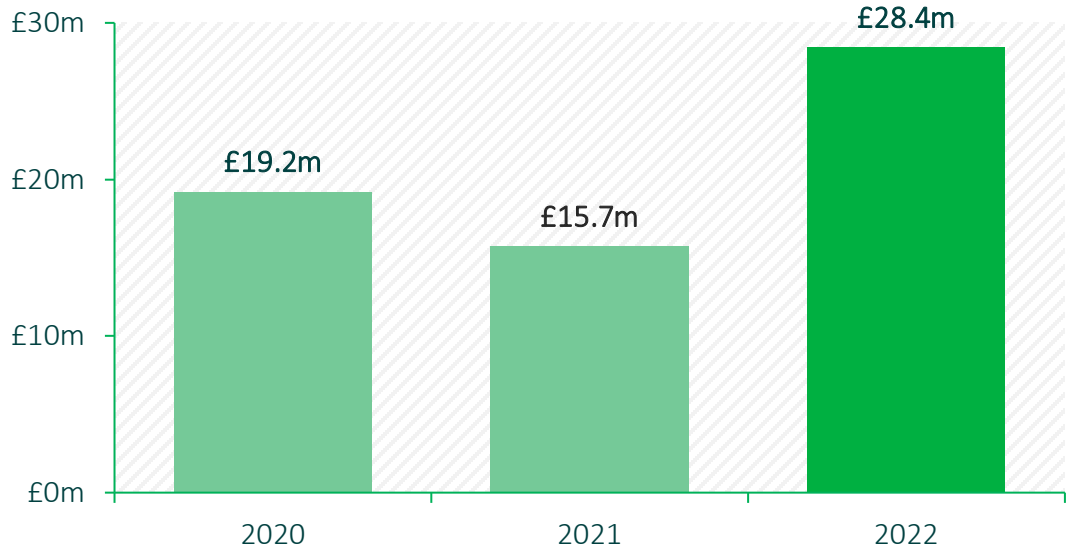
formerly Open Orphan plc

EBITDA Margin



- 2022 EBITDA Margin of not less than 17%
- Strong trading in H2 2022
- Significant operational efficiencies and improvements leveraged on the concurrent conduct of multiple challenge trials
- One-time positive impact from recognition of postponement and cancellation fees for an aggregate of over £1m

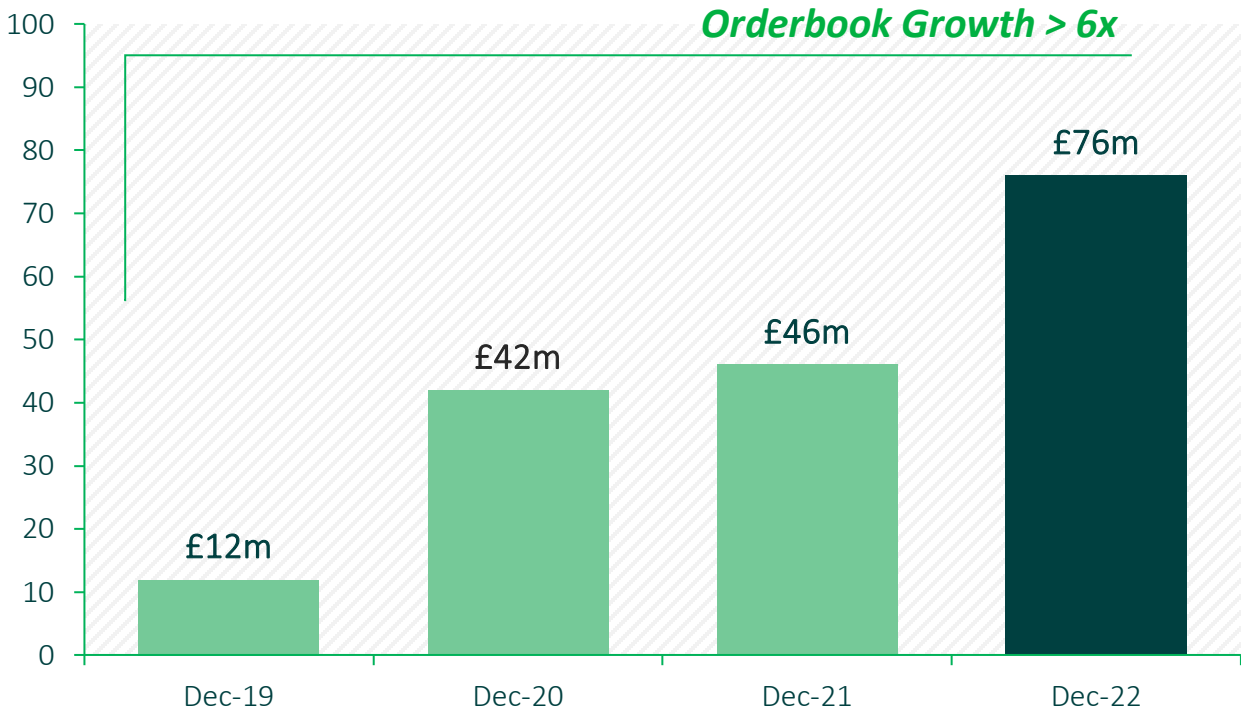
Cash



- Strong cash position with £28.4m as at 31 December 2022 and no debt
- Advanced fees from orderbook growth and efficient operational delivery are key drivers of the increase
- Robust net working capital position

Significantly ahead of market expectations

Record Contracted Orderbook



8	£74m	42%	60%
Challenge study wins in 2022	Value of 2022 new contracts	Orderbook is Big Pharma clients	Orderbook is repeat clients

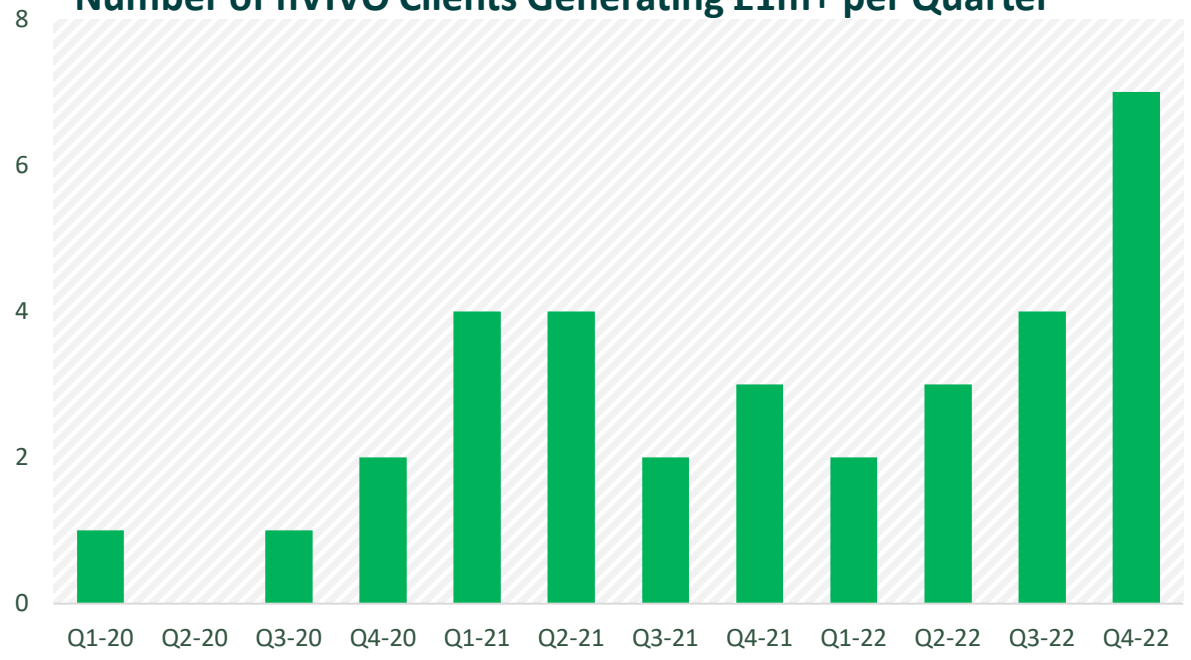
Significant contract wins in 2022 reinforcing contracted orderbook growth

- £14.7m (Influenza) - manufacture, characterisation and challenge study for top 5 global pharma client
- £13.6m (RSV) – challenge trial with US-based biopharmaceutical client
- £10.4m (Influenza) – manufacture and challenge trial for top 5 global pharma client
- (Omicron) – development of COVID-19 challenge model for Omicron challenge trial with Vaxart
- £7.3m (Influenza) – challenge trial with leading biotech
- £7.2m (RSV) – challenge trial with top 5 global pharma client

Strong Operational Delivery in 2022

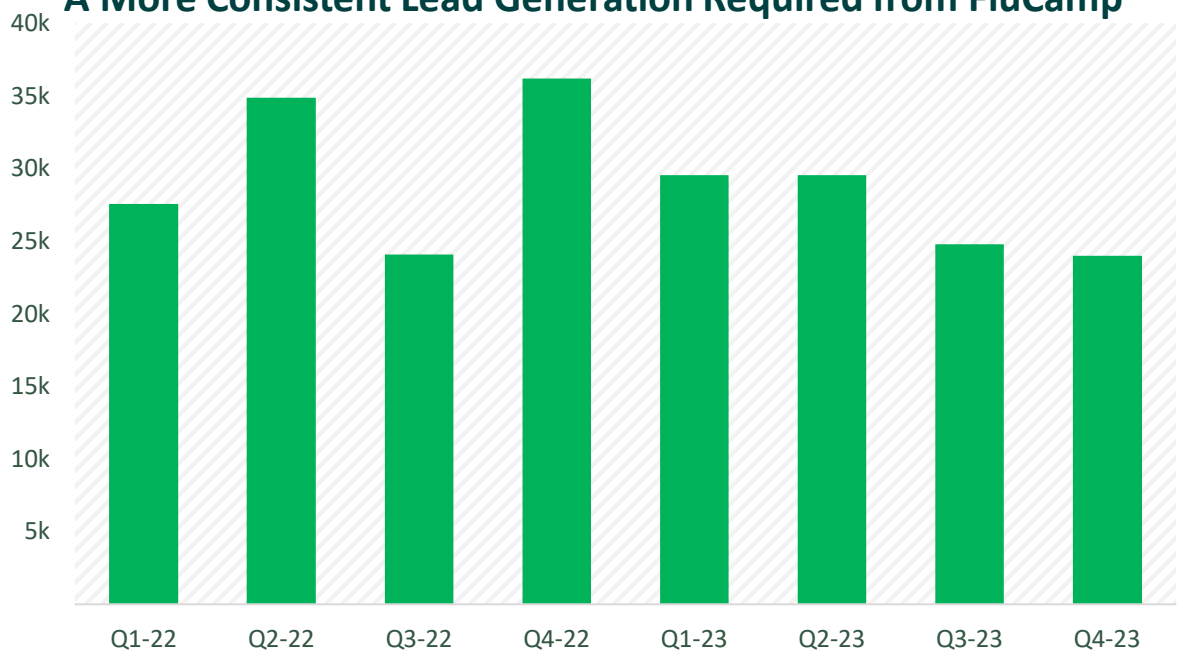
formerly Open Orphan plc

Number of hVIVO Clients Generating £1m+ per Quarter



- Diverse customer base
- 4 of top 10 Big Pharma are repeat clients
- New and repeat biotech customers
- Main client base: Europe and USA
- Concurrent conduct of multiple challenge studies
- Full service studies generating revenue across longer time period

A More Consistent Lead Generation Required from FluCamp

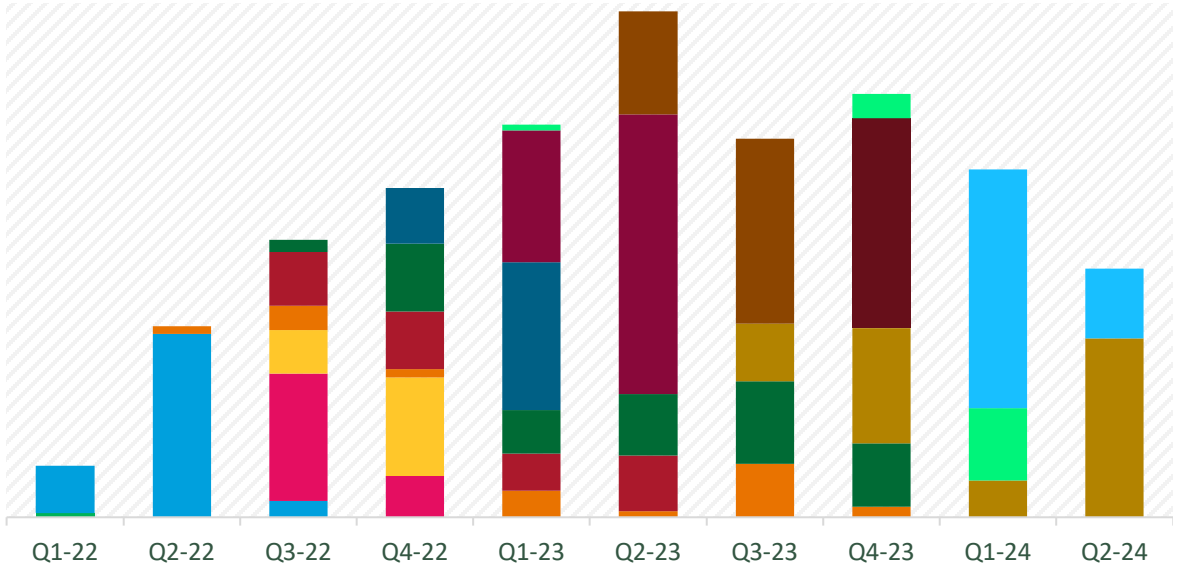


- Flucamp platform re-vamped with improved conversion rates
- Improved lead generation through new and existing marketing channels
- Technology improvements implemented (self-booking, new CRM)
- Volunteer experience improved
- Fully integrated call centre
- Ongoing screening 6 days per week

Customer and Challenge Agent Diversity in 2023

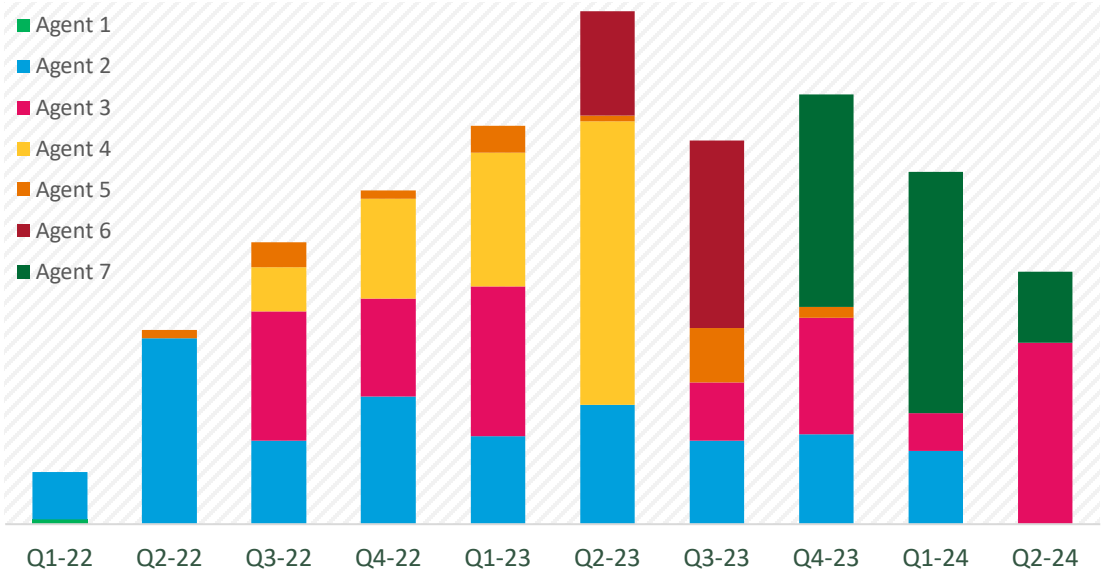
formerly Open Orphan plc

#Inoculations per Quarter per Customer (Contracted)



Each block above represents volunteer inoculations by customer

#Inoculations per Quarter per Challenge Agent (Contracted)



- 413 volunteer inoculations in 2022, a 32% increase on 2021
- Diverse range of clients in quarantine from H2-2022 onwards
- Strong visibility throughout 2023 and into 2024
- Quarterly slot assignments
- Volunteers / patients per study is increasing
- De-risks impact of potential cancellations / postponements

- Volunteers screened against multiple challenge agents
- Leverage efficiencies on improving delivery and profitability
- New models already generating revenue
- Consistent level of quarantine utilisation
- Customers looking to book studies 6-18 month ahead of start
- Provides certainty for operational planning, improving lead conversion rates and operational efficiencies

Venn - Continuing to Grow and Expand

Strong relationships with repeat customers

€3.2m

2-year contract announced with major global pharma client

Investment in ATMP – key growth area

Paris

Delivering key services to hVIVO's challenge studies

Cross-selling clients across group
- field trials / labs

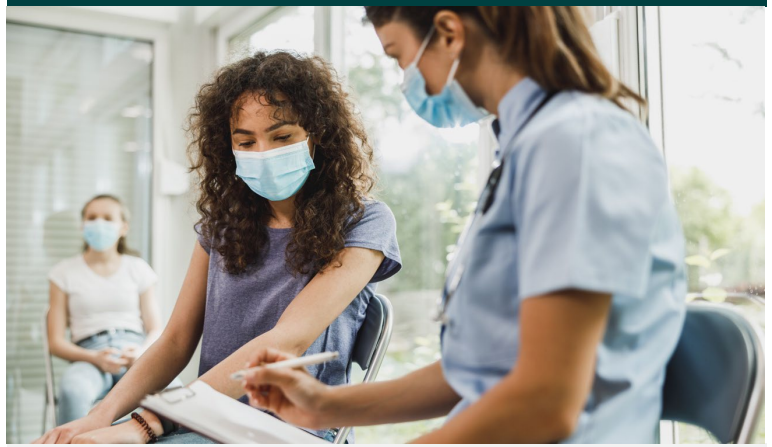
Cross-selling clients to hVIVO challenge studies

Diversifying our Services

formerly Open Orphan plc

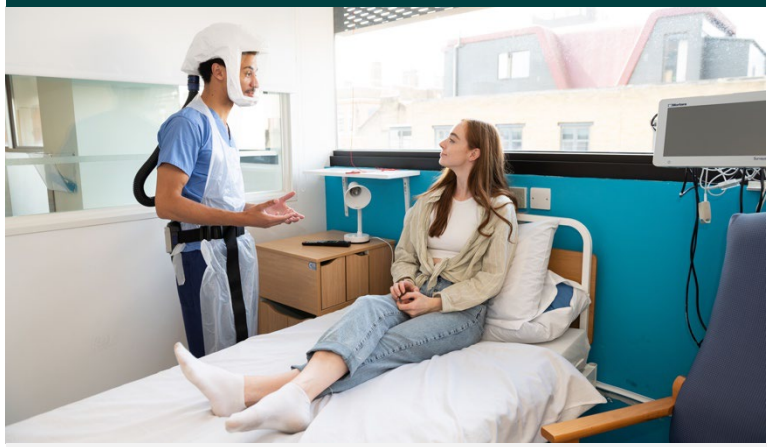
Continuing to develop new revenue streams to offer new and existing clients additional services

New Challenge Models



- Evaluating new infectious & respiratory disease challenge models
- Opportunity to expand to bacterial and new parasitic models
- Bespoke end-to-end human challenge trial service offering is a key attraction to both Big Pharma & biotech clients

Clinical Site Services



- Ability to leverage our upgraded infrastructure at Plumbers Row for use as a clinical site
- Allows us to maximise staff & facility utilisation
- First contract signed with Global Pharma company in 2022

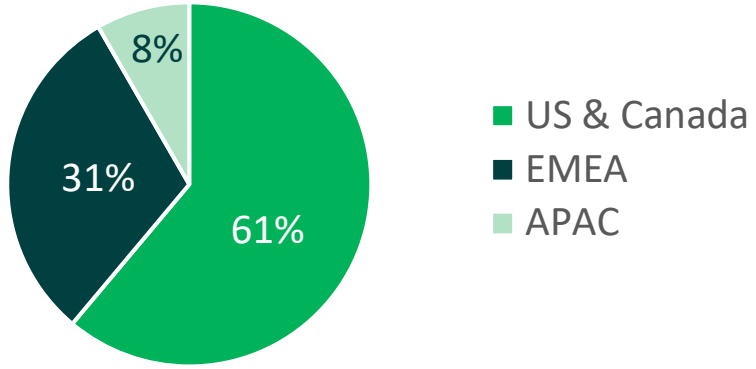
Expanding Lab Services

- Increased volume of lab services contracts with external clients
- Increased capacity from new facilities
- Received CAP accreditation, increasing the marketability of our lab services

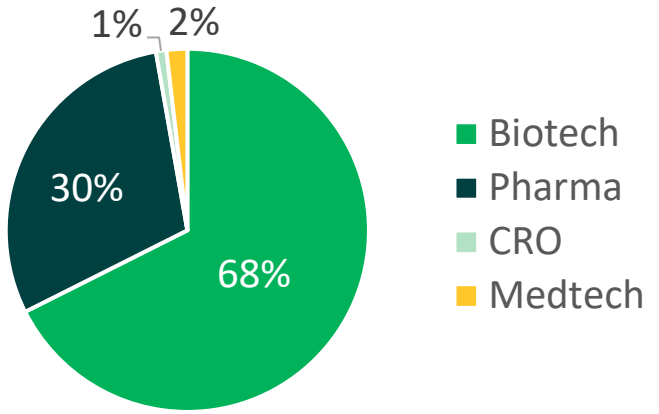
Diverse and Growing Sales Pipeline

formerly Open Orphan plc

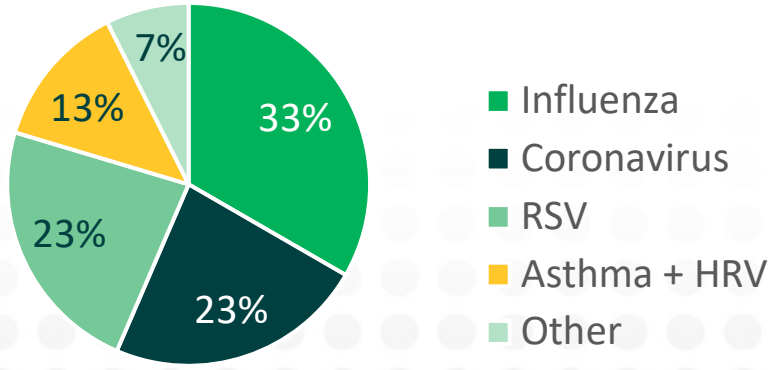
Pipeline distribution by region



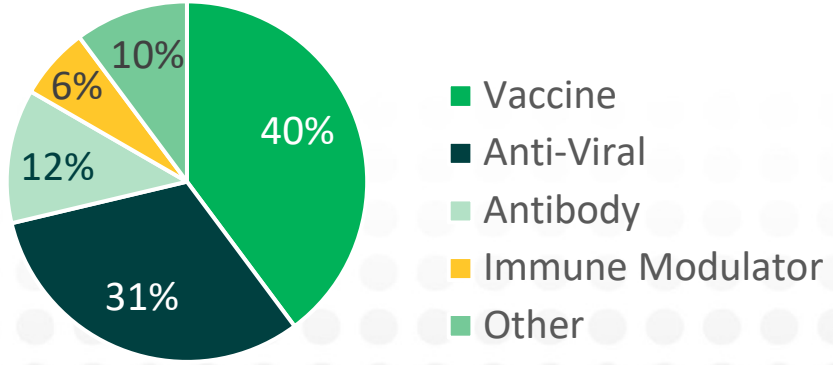
Pipeline distribution by client type



Pipeline distribution by model



Pipeline distribution by product type



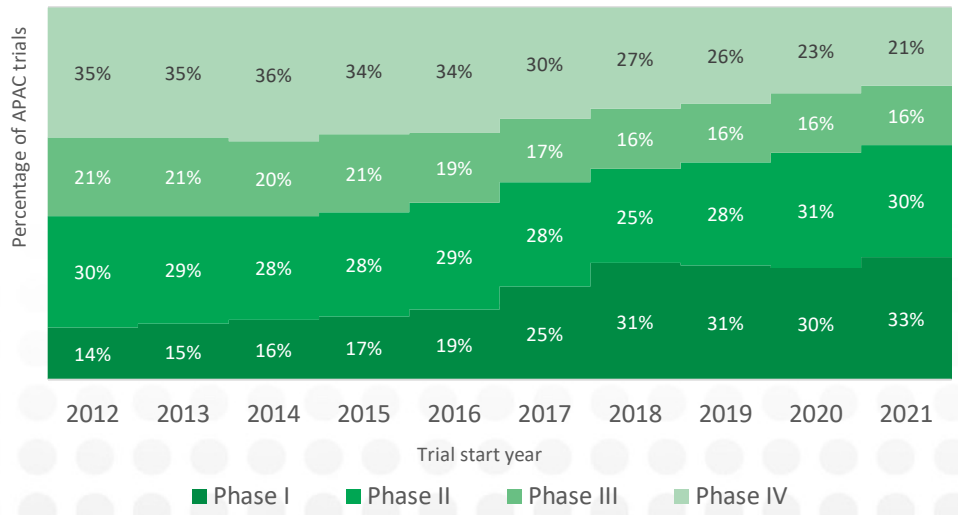
Key Long Term Market Focus - APAC

formerly Open Orphan plc

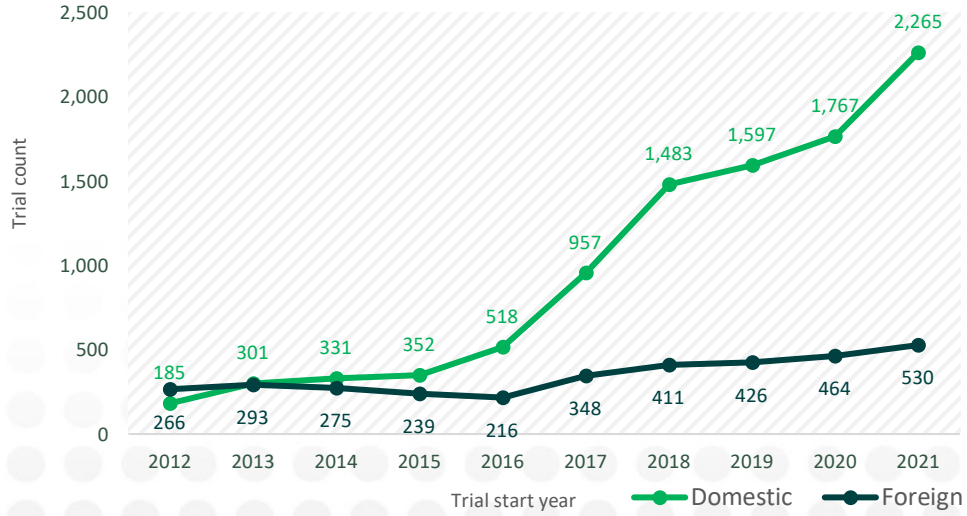
- The APAC clinical trial market is rapidly growing, particularly in China
- Almost 8,000 clinical trials started in APAC region in 2021
- Opportunity to conduct a bridging trial and challenge study under the same protocol to obtain FDA / EMA / MHRA approval

- Already signed one APAC client in 2023
- Key focus of our BD team with expectation that c. 20% of new contracts will come from APAC

Clinical trial starts in APAC, by phase, 2012-21



Industry sponsored trials in China, domestic or foreign



Benefits of Human Challenge: Big Pharma Case Study

hVIVO
formerly Open Orphan plc

Pfizer

Pfizer Granted FDA Breakthrough Therapy Designation for Respiratory Syncytial Virus Vaccine Candidate for the Prevention of RSV in Older Adults

Thursday, March 24, 2022

*"Primarily informed by the positive results of a proof-of-concept, Phase 2a study evaluating the safety, immunogenicity, and efficacy of a single dose of 120 µg RSVpreF in a **human viral challenge model** in healthy adults 18 to 50 years of age."*

50M
People affected globally each year

4M
Hospitalisations

60k
In-hospital deaths in children <5 years

The FDA is expected to make a final decision on whether to approve this as the world's first RSV vaccine by May 2023

Benefits of Human Challenge: Biotech Case Study

formerly Open Orphan plc

REVIRAL

The Challenge

To speed up the development process by achieving fast proof of efficacy to fast-track regulatory discussions

The Solution

Phase IIa, double-blinded, placebo-controlled human challenge

The Result

Significantly reduced viral load

Acquired for up to $525m

Pfizer

NEW YORK--(BUSINESS WIRE)-- Pfizer Inc. (NYSE: PFE)

"ReViral brings to Pfizer a portfolio of promising therapeutic candidates, including sisunatovir, an orally administered inhibitor designed to block fusion of the RSV virus to the host cell. Sisunatovir has been granted Fast Track designation by the U.S. Food and Drug Administration (FDA). **It significantly reduced viral load in a phase 2 RSV human challenge study in healthy adults** and is currently in phase 2 clinical development in infants."

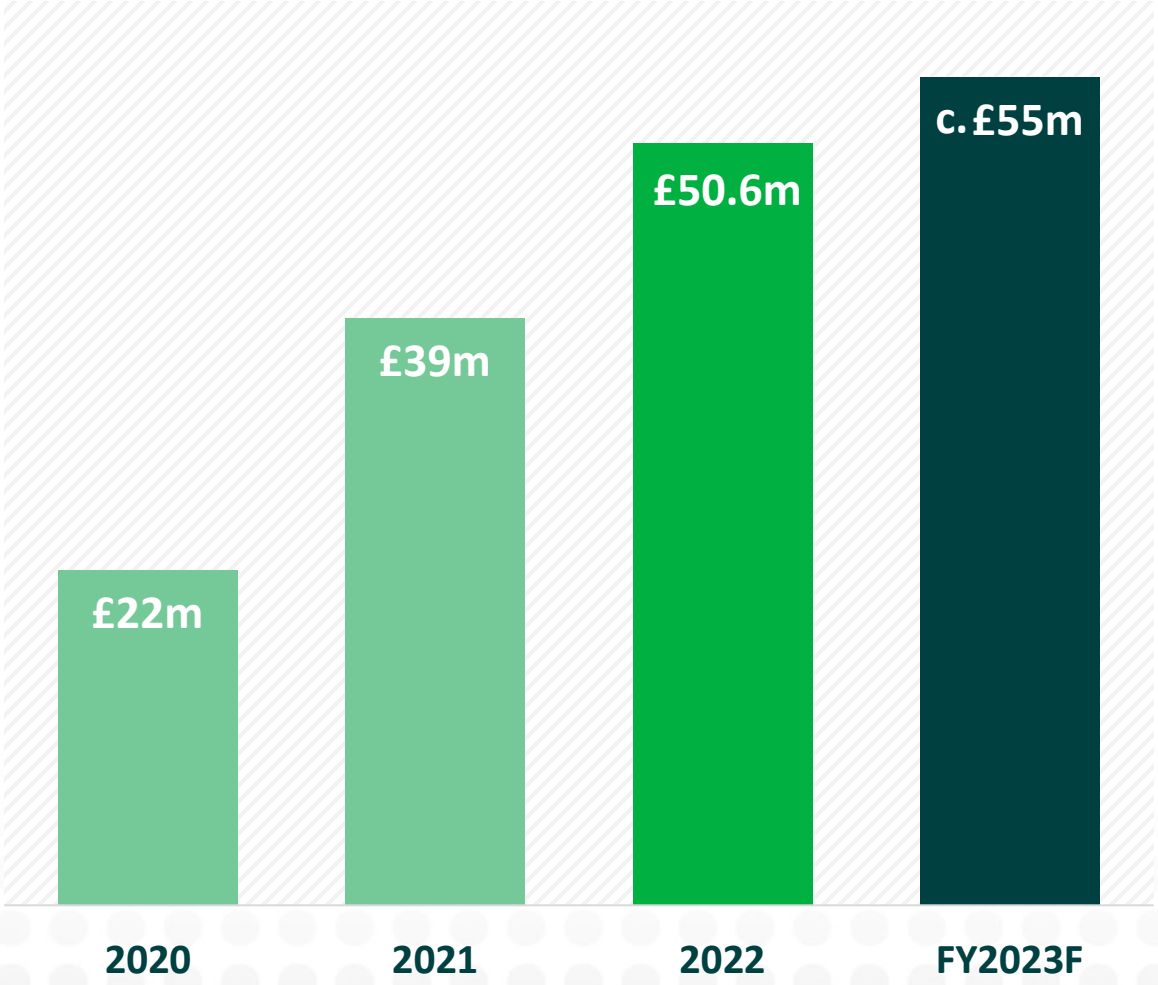
Rewarding our Shareholders

The Board intends to make a shareholder distribution in respect of the financial performance achieved in 2022

Details to be announced alongside publication of the audited results

The distribution reflects exceptional cash generation in addition to our robust balance sheet

Financial Outlook into 2023



Revenue

- Full year guidance of c.£55m revenue for 2023
- 95% of 2023 revenue contracted and revenue visibility growing into 2024
- Key focus – conversion of orderbook to revenue and operational improvements to continue profitable momentum

Investment Case

formerly Open Orphan plc

The Financials

- Record revenue and EBITDA delivered with a strong cash position

The Market

- Significant expansion in human challenge trials
- Human challenge trials now part of some biopharma's clinical development plans
- Tangible advantages of human challenge trials
- High hurdle to entry

The Company

- The only human challenge CRO
- Greatest depth and breadth of delivery
- A growing diverse and loyal client base across the biopharma spectrum
- Diversification of offerings

Outlook

- Full year guidance of c.£55m revenue for 2023
- 95% of 2023 revenue contracted and revenue visibility growing into 2024
- Opening of new markets

A long-term sustainable growth model

hVIVO

formerly Open Orphan plc

Appendix

Focusing on Sustainability

hVIVO play a vital role in making infectious and respiratory disease products available to patients faster than otherwise possible, using human challenge trials

- hVIVO has a long history of scientific research and discovery which has helped to advance global health
- Diverse workforce with 61% female employees
- Driving corporate social responsibility initiatives across the Group
- Increased focus on monitoring and reducing energy consumption. Implementation of measurable metrics & targets to minimise our carbon footprint
- QCA guidelines adopted by our diverse Board who are experts in their fields which includes 2 independent directors
- ESG committee to be established for initiating, progressing, and monitoring our ESG objectives

Commitment to ethical & compliant business practices

Advancing health & research

Commitment to volunteers & patients

Commitment to our staff

Operating sustainably

Governance

2022 Corporate Review

formerly Open Orphan plc

- Name change from Open Orphan to hVIVO
- New FluCamp facilities opened in London & Manchester
- Results from the world's first COVID-19 Challenge Study published
- Announced development of the world's first Omicron human challenge model
- First volunteers inoculated with Malaria human challenge agent
- hVIVO's clinical laboratories achieves CAP Accreditation
- FDA Breakthrough status for Clients RSV candidate

FluCamp Clinical Trials Recruitment

nature medicine

VAXART

CAP ACCREDITED COLLEGE of AMERICAN PATHOLOGISTS

BAVARIAN NORDIC

Appointment of **Yamin 'Mo' Khan** as **CEO**

Appointment of **Stephen Pinkerton** as **CFO**

Appointment of **Egle Pavyde** as **BD Director**

Appointment **of Martin Goldstone** as **NED**

hVIVO

CEO share purchase, **510,204 Ordinary Shares**

LIBERUM

Appointed as Nomad

New website launched

2022 in Numbers

15	Conferences	413	Media mentions
4	Scientific Publications	1	Capital Markets Day

RSV Human Challenge: A tool for a break-through designation

hVIVO
formerly Open Orphan plc

BAVARIAN NORDIC

The Challenge

To speed up the development process by achieving fast proof of efficacy to fast-track regulatory discussions

The Solution

Phase IIa, double-blinded, placebo-controlled human challenge

The Result

- 79% efficacy in preventing symptomatic infections
- Break-through designation
- De-risk Phase III clinical trials

47 days to obtain CA/EC approval

62 volunteers recruited on time

11 weeks to recruit volunteers with a 85% screen-failure rate

"I was really impressed by the professional and timely implementation of this trial, helping us to bring our RSV vaccine candidate into late-stage development. The collaboration with your team was really enjoyable, everyone in your team was highly supportive."

Dr. Med. Heinz Weidenthaler (VP, Clinical Strategy)

Attractive Market Dynamics

formerly Open Orphan plc

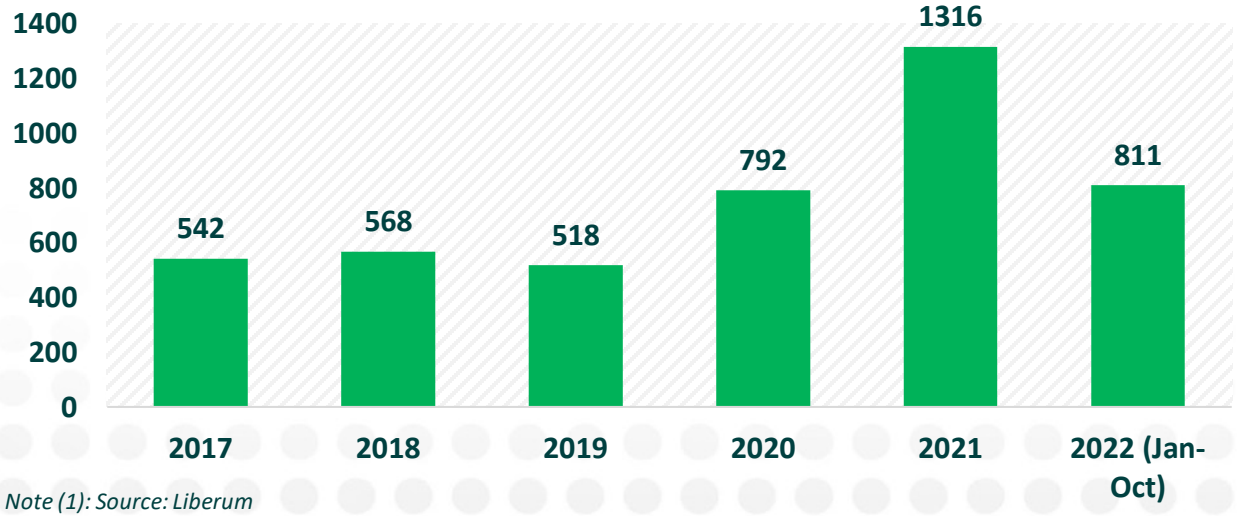
£700m+

The estimated market size for challenge study CRO services by 2028[1]

2,500+

Active vaccine, anti-viral and respiratory compounds currently in development – 86% increase from 2019 to 2021[2]

The number of vaccines studies is increasing every year…



hVIVO's portfolio of challenge models covers a large proportion of the most researched pathogens[3]

	Pathogen	# of clinical trials
1	**SARS CoV-2**	1364
2	**Influenza**	895
3	Bacterial Infections	741
4	HPV	394
5	HIV	360
6	Enterovirus	279
7	Hepatitis virus	266
8	**Malaria**	189
9	Poliovirus	132
10	Adenovirus	122
11	Herpes virus	118
12	**RSV**	89
13	Dengue virus	82
14	Ebola virus	77
15	Rabies virus	66
16	Rubella virus	42
17	Rotavirus	29

Note (1): Source: Liberum
Note (2): Sources: Pharmaprojects; Citeline
Note (3): Source: clinicaltrials.gov

History of hVIVO

formerly Open Orphan plc

1946
UK Government establishes the human challenge Common Cold Unit in Salisbury, UK.

1989
Common Cold Unit closes. Retroscreen Virology is founded by Prof John Oxford & Pat Meeking

2001
Retroscreen's first human challenge trial

2001-2007
Retroscreen recruits 800+ influenza volunteers

2008
Dedicated Volunteer recruitment platform

2011-2015
Major investment in facilities & challenge model development

2015
Retroscreen Virology rebrands as hVIVO

June 2019
Venn acquired by Open Orphan

Dec 2019
hVIVO acquired by Open Orphan

2020
hVIVO partner with UK Government to conduct world's first COVID-19 challenge trial

2021
Spin out of infectious disease product portfolio: Poolbeg Pharma plc

2022
Expanded facilities; increased lab offering and expanded clinical trial offering

Open Orphan plc rebranded to hVIVO plc

Continuing to expand offering to drive new streams of revenue

Facilities Overview

formerly Open Orphan plc

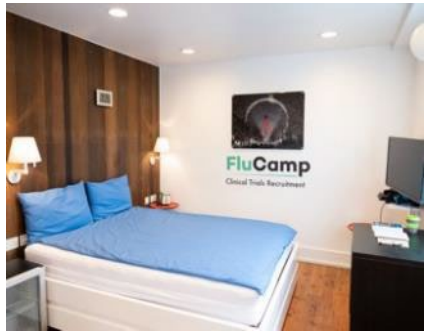
QMB Clinic

QMB Laboratories

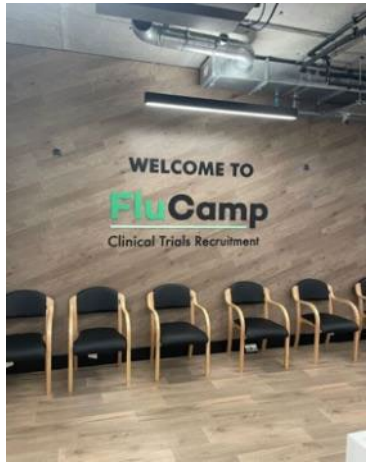
Facilities Overview

formerly Open Orphan plc

Whitechapel Clinic and Screening Centre



Plumbers' Row Corporate Office & Screening Facility



Manchester Screening Centre

Biobank

hVIVO

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Stay in touch

Ticker: HVO