Open Orphan plc

Investor Presentation
January 2020

Private & Confidential

Disclaimer

- The contents of this presentation and the information which you are given at the time of the presentation have not been approved by an authorised person within the meaning of the Financial Services and Markets Act 2000 (the "Act"). Reliance on this presentation for the purpose of engaging in investment activity may expose an individual to a significant risk of losing all of the property or other assets invested. This presentation does not constitute or form part of any offer for sale or subscription or solicitation of any offer to buy or subscribe for any securities in Open Orphan plc (the "Company") nor shall it form the basis of or be relied on in connection with any contract or commitment whatsoever. No reliance may be placed for any purpose whatsoever on the information contained in this presentation and/or opinions therein. This presentation is exempt from the general restriction (in section 21 of the Act) on the communication of invitations or inducements to engage in investment activity on the grounds that it is made to: (a) persons who have professional experience in matters relating to investments who fall within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the "Order"); or (b) high net worth entities and other persons to whom it may otherwise lawfully be communicated, falling within Article 49(2)(a) to (d) of the Order (all such persons together being referred to as "relevant persons"). Any person (whether a relevant person or otherwise) is recommended to seek their own independent financial advice from a person authorised for the purposes of the Act before engaging in any investment activity involving the Company's securities. Any recipient who is not a relevant person should return this presentation to the Company's registered office and should not act upon it. By accepting this presentation and not immediately returning it, each recipient warrants, represents, acknowledges and agrees that it is a relevant person.
- This presentation does not constitute or form part of any offer or invitation or inducement to sell, issue, purchase or subscribe for (or any solicitation of any offer to purchase or subscribe for) the Company's securities in the UK, US or any other jurisdiction and its distribution does not form the basis of, and should not be relied on in connection with, any contract or investment decision in relation thereto nor does it constitute a recommendation regarding the Company's securities by the Company or its advisers and agents. Nothing in the presentation shall form the basis of any contract or commitment whatsoever. The distribution of this presentation outside the UK may be restricted by law and therefore persons outside the UK into whose possession this presentation comes should inform themselves about and observe any such restrictions as to the distribution of this presentation. The Company has not registered, and does not intend to register, any securities under the US Securities Act of 1933, as amended or to conduct a public offering of any securities in the US.
- This presentation contains "forward-looking" statements, beliefs, estimates, forecasts and opinions, including statements with respect to the business, financial condition, results of operations and plans of the Company and its group ("Group"). These forward-looking statements involve known and unknown risks and uncertainties, many of which are beyond the Company's control and all of which are based on the current beliefs and expectations of the directors about future events. Recipients should note that past performance is not necessarily an indication of future performance and no assurance can be given that they will be attained. Forward-looking statements are sometimes identified by the use of forward-looking terminology such as "believes", "expects", "may", "will", "could", "should", "shall", "risk", "intends", "estimates", "aims", "plans", "predicts", "continues", "assumes", "positioned" or "anticipates" or the negative thereof, other variations thereon or comparable terminology or by discussions of strategy, plans, objectives, goals, future events or intentions. These forward-looking statements may and often do differ materially from actual results.
- The significant risks related to the Company's business which could cause the Company's actual results and developments to differ materially from those forward-looking statements are discussed in the Company's Annual Report and other filings. They appear in a number of places throughout this presentation and include statements regarding the intentions, beliefs or current expectations of the directors of the Company with respect to future events and are subject to risks relating to future events and other risks, uncertainties and assumptions relating to the Group's business, concerning, amongst other things, the results of operations, financial condition, prospects, growth and strategies of the Group and the industry in which it operates. No one will publicly update or revise any forward-looking statements or any other information contained herein, either as a result of new information, future events or otherwise.
- In considering the performance information contained herein, recipients should bear in mind that past performance is not necessarily indicative of future results, and there can be no assurance unrealised return projections will be met. Certain of the past performance information presented herein may not be representative of all transactions of a given type. Actual events could differ materially from those projected herein and depend on a number of factors, including the success of the Group's development strategies, the successful and timely completion of clinical studies, securing satisfactory licensing agreements for products, the ability of the Group to obtain additional financing for its operations and the market conditions affecting the availability and terms of such finances.
- The Company reports under IFRS. Where foreign currency equivalents have been provided for convenience in this presentation, the exchange rates applied are those used in the relevant financial statements from which the figures have been extracted. This presentation is confidential and is being supplied to each recipient of it solely for its information. While this presentation has been prepared in good faith, no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by the Company or by its officers, employees or agents in relation to the adequacy, accuracy, completeness or reasonableness of this presentation, or of any other information (whether written or oral), notice or document supplied or otherwise made available to any recipient. This presentation has been prepared to assist a recipient make its own evaluations and does not purport to be all-inclusive or contain all of the information a recipient may desire.

A compelling strategic combination

UNLOCKS POTENTIAL FOR SUBSTANTIAL REVENUE GROWTH & PROFITABILITY

- Complementary CRO specialist services
- Strong combined pipeline
- Significant immediate cost and longer-term revenue synergies
- Management with strong M&A and operational track record
- Higher value and longer-term contracts
- New combined revenue growth model
- Broader customer base/wider range of services reduces impact of demand fluctuations
- Positioned for profitability

Creating a European full pharma services company

Management with strong M&A and operational track record

KEY MANAGEMENT

Cathal Friel Executive Chairman

- Established Raglan Capital in 2007 and co-founded Open Orphan in 2016
- Co-founder and remains significant shareholder in Amryt Pharma Plc, a leading publicly listed orphan drug company
- Founder and Chairman of Fastnet Oil & Gas plc which listed in 2012 and raised $50m in equity on the AIM market

Trevor Phillips Chief Executive Officer, Director

- Over 30 years of experience within pharmaceutical industry, including international drug development and corporate development responsibilities
- Previously COO & President of US Operations as well as Board Director at Vectura Group plc
- Served as CEO at Critical Therapeutics, Inc. leading the merger of the company with Cornerstone BioPharma Holdings

Tim Sharpington Chief Operating Officer

- More than 25 years experience in the life sciences sector with various pharma, biotech and pharma service companies in Europe and the US
- Has broad experience in drug development, product licensing, M&A, and fundraising
- Previous positions at Pfizer, ICON, Sequus Inc, Arakis, Vectura and NED at Ixico PLC

NON-EXEC. DIRECTORS

Michael Meade Non-Executive Director

- Spent the last 30 years working in investment banking in London with HSBC, UBS and Numis Securities respectively
- Specialised in advising small and mid-cap quoted companies with particular focus on healthcare sector

Mark Warne Non-Executive Director

- Has served as NED on the hVIVO Board since April 2016 and is a NED of Ixico Plc
- CEO of DeepMatter Group since 2018, and spent the previous 10 years at IP Group, leading the healthcare team and serving as partner

Prof Brendan Buckley Non-Executive Director

- Chief Medical Officer of ICON Plc from 2013-2017, and was as a member of ICON plc's Executive Leadership Team being actively involved in M&A
- Sold his previous business Firecrest Clinical to ICON Plc and has over 30 years' experience in clinical research

Creating a European full pharma services company

Open Orphan Plc

hVIVO services

- Viral challenge studies for:
  - Antivirals
  - Vaccines
  - Respiratory disease agents

Laboratory services – highly specialised virology, immunology & respiratory

Venn services

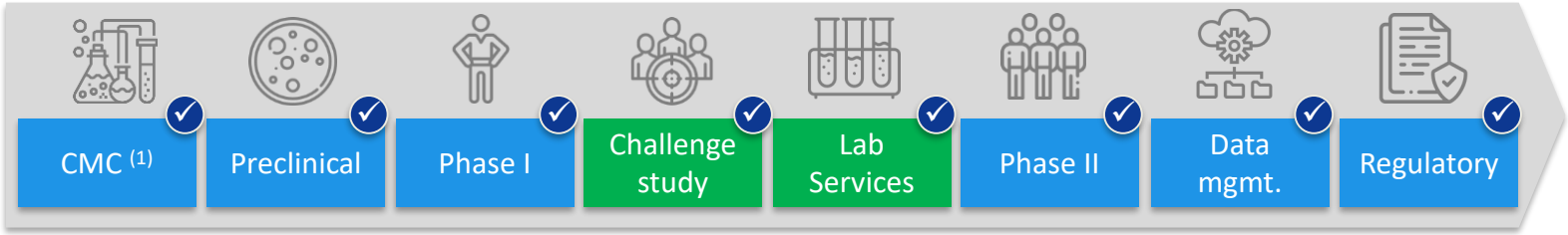
- Integrated drug development consultancy
- Offers CMC[1], preclinical, phase I & II clinical trials design and execution
- Also offers post trial data management and regulatory expertise

Open Orphan Data

- Orphan drug genomics data platform
- Captures valuable genetic data from patient populations with specific diseases with designated orphan drug status
- Incorporates AI tools
- Pharma companies already on board as clients
- Potential to utilise hVIVO patient data

Post merger capability

hVIVO capability Venn capability



Opportunity to gain revenue over the full-time course of the relationship development life cycle

Global CRO market forecast to reach $44bn in 2021, growing at 12% per annum(2)

Imutex Ltd

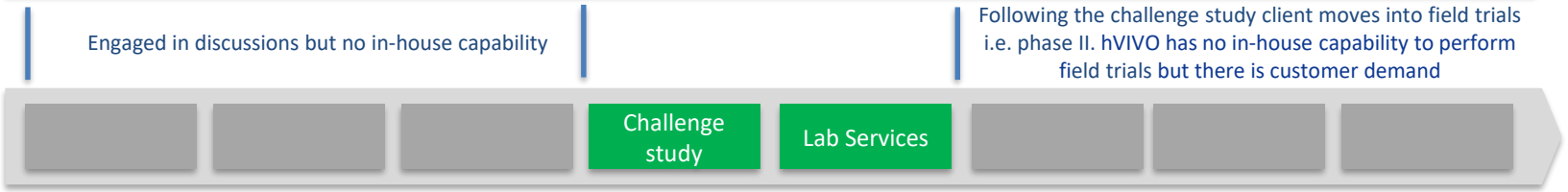
- 49% stake in Imutex Ltd JV
- Previous hVIVO management formed Imutex Ltd in a JV with the SEEK Group
- No further capital investment being made
- Development of vaccine candidates
- FLU-v, a phase III ready universal influenza vaccine candidate
- AGS-v, a phase I vaccine candidate for mosquito-borne diseases
- Open Orphan management team optimistic as to the potential to monetise these assets

Notes: (1) Chemistry, manufacturing and controls
(2) The Business Research Company

Higher value and longer-term contracts

New combined revenue growth model

Existing hVIVO revenue model



Typical contract value	Customer relationship
£3-5m	2-3 year

Existing Open Orphan revenue model

Typical contract value	Customer relationship
£0.5-7m	1-8 year

NEW COMBINED REVENUE MODEL

- Broader customer base/wider range of services reduces impact of demand fluctuations
- Offers revenue generation from first engagement
- Generates substantial new revenues from areas where previously no capability in hVIVO i.e. phase II clinical trials
  - i.e. CMC, preclinical, phase I, phase II, data management, statistics consulting and support now all provided by Open Orphan
- Offer capability to continue relationship into phase II field trial support

Typical contract value	Customer relationship
£10-20m	3-8 year

New model should enable customer relationships to last 3-8 years, generating extra revenues over the entire duration and at significantly higher levels, up to £20m per customer if phase II trial work is gained

Open Orphan

Building a leading European rare/orphan disease focused pharma services company

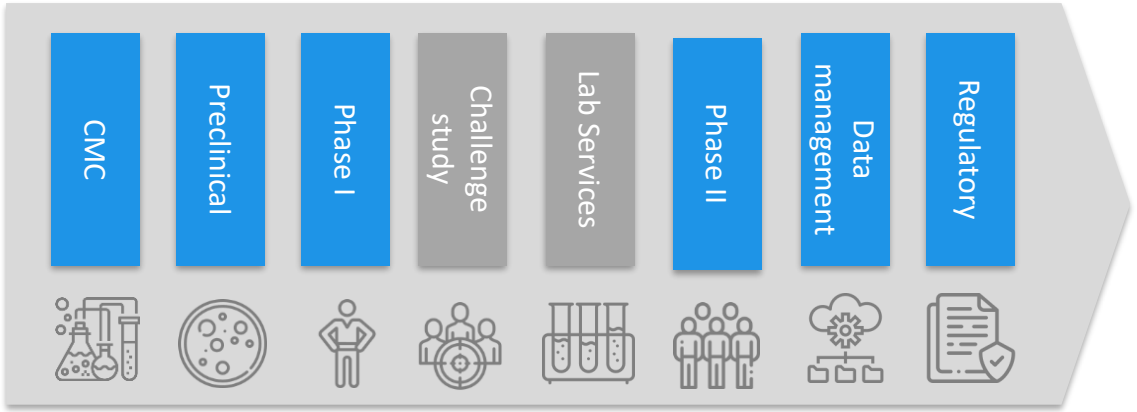
Overview

- Acquired AIM-listed Venn in June 2019 in RTO
- AIM & Euronext listed – ORPH
- Approx. 120 employees and dropping to 100 end Q1 , from 176 in 2018
- Revenue: €14.3m in 2018
- Offices in Dublin, Paris, Breda (Netherlands)
- Mgmt. own 19.5% pre-merger (post merger c. 7.8%) under a 3 year lock-up
- Over 400 studies completed in last 10 years, including 63 rare disease trials

Turnaround / Strategy

- Venn IPO'd 2012, acquired Cardinal Systems in Paris, 2014, and Kinesis Consulting in Netherlands in 2015, both established pharma consultancy companies for 25 years with deep relationships
- Substantial overhead reduction underway since RTO in June 2019 – reducing headcount from 176 to 100 end Q1 2020, removing up to £3.85m from annualised cost basis including 3 offices with a view to being profitable in 2020
- Successfully moving Venn away from short-term contracts to long term, 3-year contracts with recurring revenues, i.e. IPSEN (Nov '19), Carna Bioscience (Nov '19) German Tier One (Jan '20)
- Signed confirmed contracts of €10m for 2020, the highest in Venn's history

Current capabilities



Established Global customers and collaborations

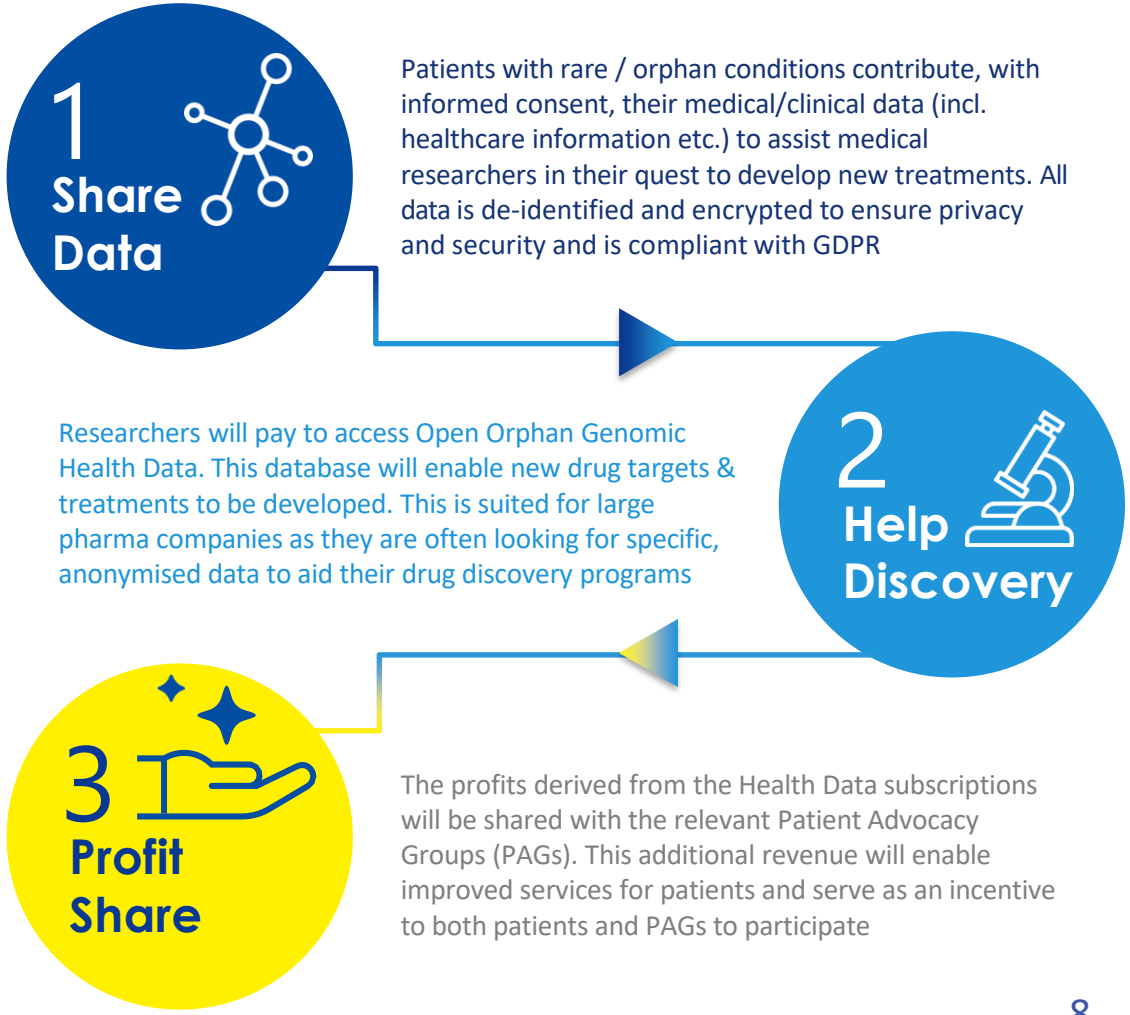
janssen
Boehringer Ingelheim
Galápagos
Promedior
Genmab
CARNA BIOSCIENCES
IPSEN
SERVIER
Pharming

Open Orphan's Genomic Health Data Platform capturing valuable genetic data incorporating AI tools

Genomic Health Data Platform

- Aiming to become a leading EU broker of rare disease patient data
- Platform is in the final phase of development prior to accepting first data
- A number of Early Adopters already signed up to the platform
- Low cost data collection model; the data already pre-exists and using GDPR rules to facilitate same
- Assists in drug discovery for genetic rare diseases and helps pharma companies identify patients for clinical trials
- In-house developed Artificial Intelligence tools allow us to scale platform rapidly
- Potential for hVIVO's existing respiratory patient data to be hosted and monetised on the platform

How the platform will work



hVIVO

Industry leading services provider in viral challenge studies and laboratory services

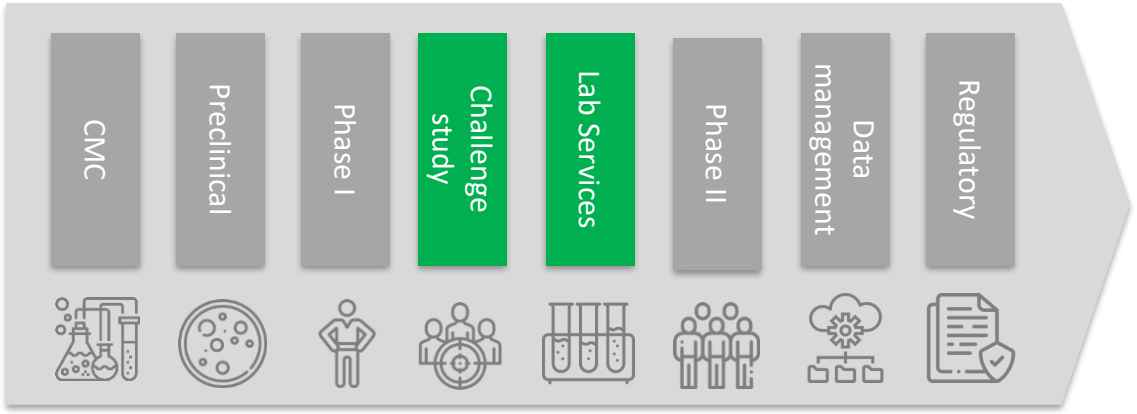
Overview

- Founded in 1989 – spin out Queen Mary University
- AIM listed 2012 – HVO
- Approx. 118 employees[(1)]
- Revenue: £13.3m[(2)] in 2018
- World leading portfolio - 2 FLU, 2 RSV, 1 HRV, 1 Asthma, 1 Cough and 1 COPD viral challenge models
- State of the art unit & laboratory, London
- A very extensive asset portfolio

Turnaround / Strategy

- New management team from 2018, focused on turning around the company
- Refocused the business model away from drug discovery and towards —CRO services
- Business turnaround with operational efficiency measures and headcount reductions implemented
- Annualised cost savings of £11m vs. 2017 – removed 43 roles to reduce costs by £4.4m, (incl. £3.5m [(3)] from the removal of 19 management roles)
- Further rationalisations in 2020

Current capabilities



Established global customers and collaborations

janssen
gsk
NIH
National Institutes of Health
Alios BioPharma
ENANTA Pharmaceuticals
VERTEX
DARPA
GILEAD
MERCK
ReViral
PULMOCIDE

Note [(1)]: Comprised of permanent/fixed-term contract and interim/bank staff. Note [(2)]: Includes Darpa revenue of £2.3m classed as Other Income . Note [(3)]: The net saving is £3.5m, allowing for replacement costs and salary increases post April 2018

hVIVO – a very extensive asset portfolio

c.£100m was raised which has been invested in hVIVO's state of the art labs and support its state of the art clinic, lab, challenge study models, and former drug discovery strategy

May-2012 IPO: £15m	June-2013: £26m	August-2014: £34m	November-2015: £21m
• Funding used to create state of the art unit and lab facilities • Establishing new challenge models in Flu and RSV • Some funds directed towards new drug discovery strategy	• Creation of airways disease viral exacerbation challenge model • Further investment in drug discovery division	• Investment in asthma and COPD challenge models • Enhancement of discovery platform for new Flu targets	• Investments into drug discovery (PrEP and Imutex) • 49% ownership of Imutex with no further capital commitment

…this has resulted in a high quality bespoke 24-bed quarantine clinic in London combined with a GLP analytical laboratory supporting human challenge studies and the worlds leading portfolio of 8 viral challenge models, pre-clinical & clinical trials

London unit



London lab




hVIVO today has a leading portfolio of 2 FLU, 2 RSV, 1 HRV, 1 Asthma, 1 cough and 1 COPD[1] viral challenge models
To replicate this portfolio would likely cost in excess of £25m and take a minimum of 6 years work
No other challenge study service provider has such a comprehensive portfolio

Note (1) :Chronic obstructive pulmonary disease

hVIVO - competitive position

Industry leading services provider in viral challenge studies and laboratory services

Dominant market position in viral challenge studies

- Largest range of viral challenge models and experience in GMP[1] virus manufacturing
  - Specialist know-how and insights invaluable to customers developing vaccine and antiviral products
- Three virus types available in 8 validated challenge models: FLU[2], RSV[3] and HRV[4]
- No other challenge study service provider in the world has a fraction of the 8 models that hVIVO has
- Purpose-built quarantine unit and laboratory with high levels of infection control allows multiple studies and virus-types to be used simultaneously

High barriers to entry limit competition

- Cost and complexity of virus manufacture and characterisation (8 viral models which would take in excess of £25m and many years to attempt to replicate by any competitor)
- Establishment of a single viral challenge model not straightforward - takes 6 years
- Need for specialist facilities, staff and experience
- Established one of the only validated RSV challenge models commercially available and developed additional older population model
- Established large volunteer pool - critical to source susceptible subjects to meet recruitment requirements
- Central London unit location attractive to volunteers
- Only one commercial competitor in flu challenge in Europe and one in US
- Other competition from academic groups and US government funded organisations have limited capability to deliver larger studies quickly as demanded by larger pharmaceutical companies

Notes: (1) Good manufacturing practice, (2) Influenza, (3) Respiratory Syncytial Virus, (4) Human Rhinoviruses

Complementary CRO specialist services

Cross-selling of hVIVO and Open Orphan Services already underway

December 2019 – 3 joint customer proposals were made

	Customer A	Customer B	Customer C
CMC	✓		
Phase I	✓		
Challenge study	✓	✓	
Phase II	✓	✓	✓
Lab support	✓	✓	✓
Data management	✓	✓	
Medical writing	✓	✓	✓

Comments

- For the first time in hVIVO's history, it is now pitching for both challenge studies and the natural, much higher value follow on phase II field trial study using the Venn expertise and capability
- hVIVO is now using Venn's Data Management, Medical Writing, and Statistical capability in all of its customer proposals
- This will be the catalyst for significant revenue growth and margin expansion within the business
- Venn now able to run its phase I studies in hVIVO's London clinic as opposed to renting other clinics at high cost
- Cross-selling of Phase I studies important near-term combined operational synergy

Robust combined pipeline

HVIVO - SOLID PIPELINE

	Opportunity Name	Virus	Volunteers	Contract value
1	Client A: Pilot RSV Challenge	RSV	38	£2.4m
2	Client A: Main RSV Challenge	RSV	120	£7.2m
3	Client B: Universal FLU Vaccine	FLU	150	£6.3
4	Client C: RSV Attenuated Virus Vaccine	RSV	68	£4.5m
5	Client D: Flu Challenge	FLU	72	£3.4m
6	Client E: Diagnostic Device Exploratory Challenge	FLU/RSV	66	£2.8m
7-22	Other high-probability contracts	FLU/RSV/HRV	1,152	£54.6m
	TOTAL		**1,666**	**£81.2m**

- Solid pipeline of identified and pitched for contracts as at January 2020 is **£81.2m** significantly greater since new management implemented– January 2018: £37.8m, January 2019: £39.4m
- 46% of January 2018 high probability pipeline value converted into signed contracts during FY18 and similarly a 42% conversion in FY19(1)

Not all signed contract value is recognised as revenue in the year the contract was signed, often a proportion continues into the following year as contract delivered

Note: (1) Conversion to sales excluding cancellations

OPEN ORPHAN - BUILDING RECURRING REVENUES

- Venn moving away from short-term contracts to long term, 3-year contracts with recurring revenues
  - IPSEN, Carna Bioscience – signed (Nov '19)
  - German Tier One – signed (Jan '20)
  - Over €10.5m in confirmed backlog with an additional €4.0m at an advanced stage with clients under existing MSAs
  - Approx. €10.0m in budget proposals under review with clients

COMBINED PIPELINE EXPECTED TO DELIVER SIGNIFICANT GROWTH & PROFITABILITY

The Directors believe there is significant valuation uplift potential as the combined business demonstrates profitability, with profitable CROs trading at a revenue multiple of 2-3x (e.g. Ixico & Ergomed)

Immediate operational and longer-term revenue synergies

ESTIMATED OPERATIONAL SYNERGIES:

Elimination of subcontractor costs

- Proportion of the Phase I studies, including laboratory services, currently sub-contacted by Open Orphan being delivered by hVIVO utilising existing resources/spare capacity: **up to £1.7m in FY2020 increasing to £2.3m in FY2021**
- Data management, statistics, medical writing, regulatory and project management, which are currently sub-contracted either in part, or in full, by hVIVO being delivered by Open Orphan utilising existing resources/spare capacity: **up to £0.6m in FY2020 increasing to £0.8m in FY2021**

Rationalisation

- Rationalisation of duplicative IT and enterprise systems, reorganisation of management function/roles, duplicative public company costs and adviser fees: **up to £0.7m in FY20 increasing to £0.9m in FY2021**
- In addition to the already substantial headcount reductions in Venn and hVIVO there are further cost synergies in the finance function, back-office, staff, and office space - **up to £0.2m in FY20** [1] **increasing to £0.4m** in **FY2021**

ESTIMATED TOTAL OPERATIONAL SYNERGIES: £3.1M FY2020, INCREASING TO £4.4M IN FY2021

OPERATIONAL SYNERGIES AS % OF COMBINED STANDALONE OPERATING COSTS[2]: FY2020 – 10%, FY2021 – 12%

POTENTIAL FUTURE SIGNIFICANT REVENUE SYNERGIES:

Longer-term significant revenue synergies

- Extending hVIVO relationships - utilising Phase II capability of Open Orphan to gain contracts for Phase II execution and lab services as existing challenge customers migrate to field trials **– not yet valued**

Notes: [1] Excluding one-off estimated restructuring costs of £0.1m in FY 2020, [2] Operating costs affecting EBITDA

Ongoing cost reduction programmes

Open Orphan / Venn:

- Substantial overhead reduction underway since RTO in June 2019
- Headcount reduction in progress from 176 to 100 expected to complete Q1 2020
- Overall reduction of up to £3.85m from the annualised cost base, to be completed by end 2020

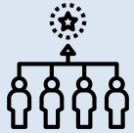
hVIVO:

- Significant reduction in administrative expenses driven by headcount reductions and process improvements, and R&D expenses due to discontinuation of discovery activities
- £11m removed from annual overhead since 2017
- 194 staff in 2017 reduced to 118 (all staff) in December 2019
- Further rationalisations in 2020

Note: (1) Open Orphan Plc costs converted from EUR at FX rate of 0.86

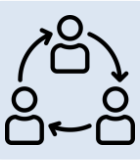
Aiming for substantial revenue growth & profitability

POSITIONED FOR PROFITABILITY



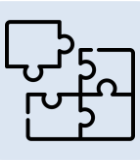
A platform of highly specialised differentiated service providers

- hVIVO's specialist services and expertise in respiratory and infectious diseases complement Open Orphan's focus on the rare and orphan drug consulting services platform
- European market is highly fragmented beyond the largest multinationals who focus on larger standardised clinical offerings, thus enabling Specialist CROs/service providers to hold significant market share within specialist areas



Cost synergies

- Data management services, rationalisation of duplicative IT and enterprise systems, reorganisation of management function/roles, duplicative public company costs and adviser fees
- Phase 1 studies, which are currently outsourced, delivered in-house using existing resources and capacity



Revenue growth opportunities

- The group will be able to provide clients with a more complete offering including: CMC, pre-clinical, phase I, phase II, challenge studies, lab services, data management and regulatory work
- Opportunity to gain revenue over the full-time course of the relationship

Enhanced Leadership team track record

- Leadership team of hVIVO have a track record of restructuring and re-positioning for profitability, having implemented operational and headcount reductions providing significant cost savings going forward
- Annualised cost savings of £11 million vs. 2017 – removed 43 roles to reduce costs by £4.4m, (incl. £3.5m from the removal of 19 management roles[(1)])

Note: [(1)] The net saving is £3.5m, allowing for replacement costs and salary increases post April 2018

Appendix – Additional information on hVIVO plc

Refocussing the business model

New management team
Significant restructuring – almost entire senior management replaced
Reskilled business necessary to perform services & added staff and capability to enhance existing CRO team

hVIVO

Prioritised services business model
Discontinued discovery activities, reducing R&D costs significantly

2018 was a transitional year and the beginning of the turnaround

Cost reduction and operational efficiency programme commenced
Multiple actions taken to reduce cost including headcount, processes, premises and systems

Sales & Marketing refocus and positioning
Adapted messaging to reinforce perception as leading customer-focussed challenge services business with strong track record in Flu and RSV and competitive pricing

Expanded and diversified service offering
Developed new models to offer broader range of services and more consistent revenue streams

2019 positioning for profitability

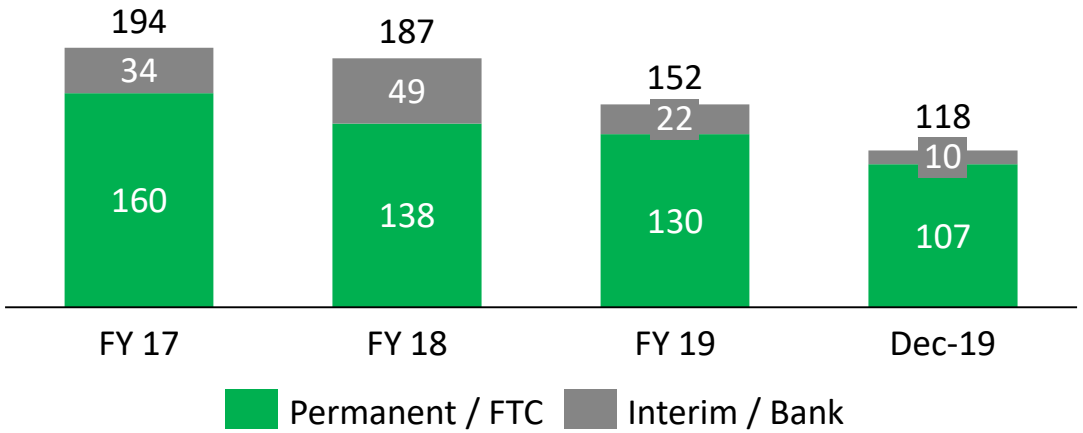
- Significant cost reductions and operational efficiencies implemented since FY2018 expected to drive FY2020 operating costs down by £11m compared to FY2017
- Strong pipeline of contract opportunities for 2020

Restructuring to date

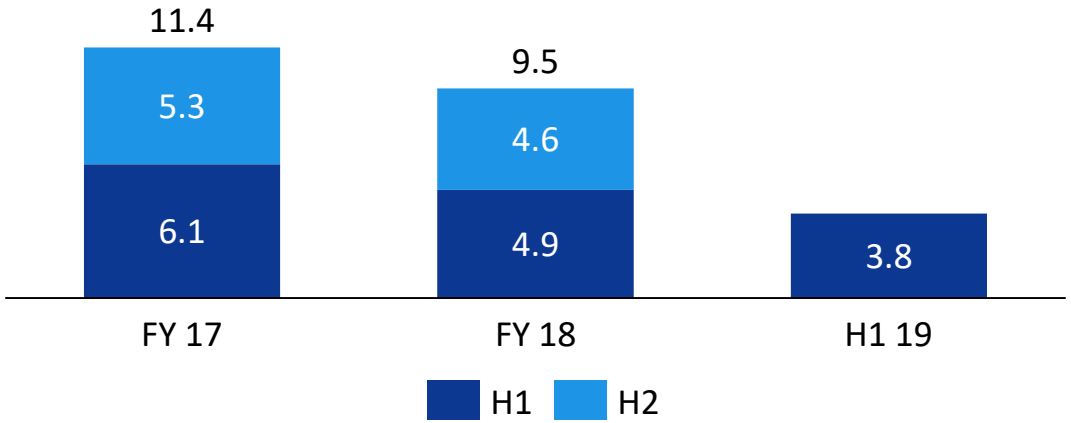
The new management team has made a number of changes

- Refocused the business model away from drug discovery and towards the provision of human challenge study services
- The shift in business model has led to a significant reduction in administrative expenses driven by headcount reductions and process improvements, and R&D expenses
- Annualised cost savings of £11 million vs. 2017 – removed 43 roles to reduce costs by £4.4m, (incl. £3.5m from the removal of 19 management roles[2]

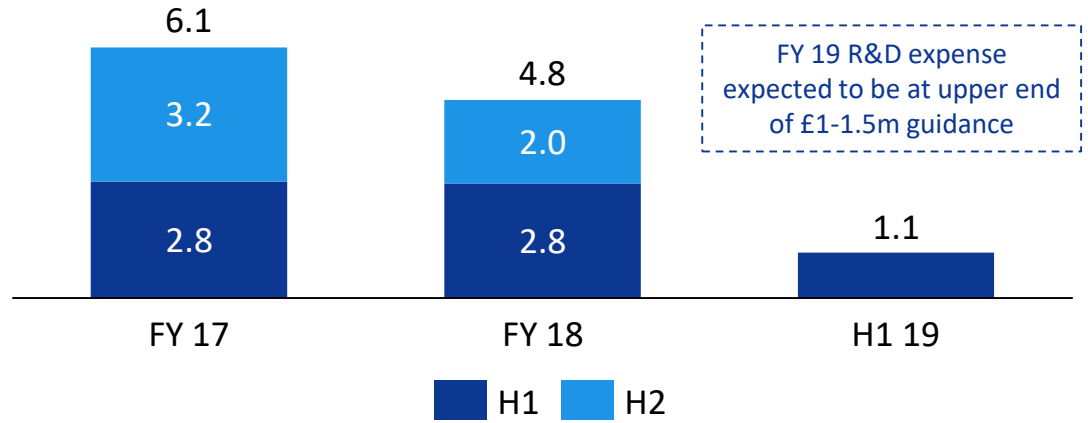
Headcount development[1]



Admin expense development (£m)



R&D expense development (£m)



FY 19 R&D expense expected to be at upper end of £1-1.5m guidance

Notes: [1] FY 17, FY 18 & FY 19 headcount is based on annual averages, Dec-19 is based on spot count as at 31 December 2019 [2] The net saving is £3.5m, allowing for replacement costs and salary increases post April 2018
Source: hVIVO annual reports

New service offerings by hVIVO

1. Phase I studies

- hVIVO Quarantine Unit well suited for Phase I Studies
- Company traditionally not conducted First Time in Man studies (FTIM)
  - Preferred to sub-contract to specialist Phase I units in London
- Now offering FTIM for products that will subsequently move into a challenge study
  - Potential for FTIM work as combined protocol incorporating PII challenge study
  - Reducing development timelines from preclinical to proof of concept
- Potential to add incremental revenue and greater visibility on pipeline status

2. Extended leading position in RSV

- hVIVO has established one of the only validated RSV challenge models commercially available
- Development of an older population model which is more reflective of a major part of the target population for therapies/vaccines – now available to potential customers
  - Pilot study completed – data will be subject of a peer review publication
- Further successful delivery of a customer study in healthy population
  - Enanta EDP-938 data clearly demonstrated efficacy and illustrates the benefit of good challenge data to companies developing novel products
  - Heightening awareness of the value of challenge studies in clinical development

3. Respiratory models

- Respiratory work offers new clinical and laboratory revenue potential
- **Asthma & COPD:** hVIVO challenge models deliver precise and dynamic measurement of asthma/COPD physiology
  - Utilising HRV challenge in asthma and COPD
  - Additional non-challenge study opportunities using respiratory specific endpoints - act as a study site for traditional asthma and COPD studies
- **Chronic / acute cough:** hVIVO challenge model provides a unique opportunity for positioning an efficacious drug against chronic and acute cough
  - Conducted first novel cough model study in H2-18

4. Laboratory services extended

- Highly specialised virology and immunology laboratory offering a suite of services to support drug and vaccine discovery and development
- Laboratory services extended to supporting samples generated from field studies
  - Utilising relationships established during servicing of in-house studies to capture sample analyses from subsequent field studies
  - Potential to extend to supporting preclinical activities
- Built on sampling expertise within unit to offer services supporting respiratory biomarker analyses

Development assets: Imutex

Open Orphan management team optimistic as to the potential to monetise these assets

Overview

- In April 2016, hVIVO formed Imutex Limited ("Imutex") with the SEEK Group to develop vaccines against influenza (FLU-v) and universal mosquito-borne diseases (AGS-v)
- hVIVO contributes management oversight over the future direction of the development of the vaccine candidates, but makes no capital investment to the ongoing development work undertaken
- The most advanced asset is FLU-v, a robust and differentiated advanced-stage influenza vaccine candidate. Imutex is also establishing schedules for meetings with key regulatory authorities, FDA and EMEA, where it hopes to gain further insight into some of the key areas of interest expressed by potential partners
- An additional early stage asset AGS-v, is an experimental vaccine designed to protect against many different mosquito-borne diseases
- hVIVO owns 49% of Imutex and both assets are wholly owned by Imutex

Assets

Candidate	Phase: Pre-clinical / I / II / III	Status
FLU-v *Influenza*		• Safety and immunogenicity endpoints met in Phase II field study (UNISEC Consortium in the EU) and efficacy endpoints met in a challenge study in collaboration with NIAID/NIH • Scheduling end of Phase II meetings with FDA & EMEA
AGS-v **AGS-v PLUS** *Mosquito-borne Diseases*		• **AGS-v** Phase Ib study completed by NIH – Preliminary results positive, complete results expected in due course • **AGS- PLUS** Second Phase I study commenced July 19 by NIH – additional peptide