Leading the development of Live Biotherapeutics

4D pharma plc

Pioneering a revolutionary class of medicines:

Live Biotherapeutic products

What we do

4D was established with the mission of leveraging the deep and varied interactions between the human body and the gut microbiome – the trillions of bacteria that colonise the human gastrointestinal tract – to develop an entirely novel class of drug: Live Biotherapeutics.

We are focussed on understanding how individual strains of bacteria function and how their interactions with the human host can be exploited to treat particular diseases, from cancer to asthma to conditions of the central nervous system.

4dpharmaplc.com

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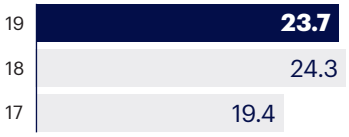
Highlights

Financial highlights

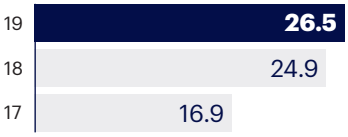
Loss for the year and total comprehensive income for the year (£m)

£23.7m



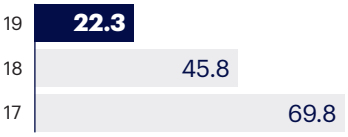
Expenditure on research and development (£m)

£26.5m



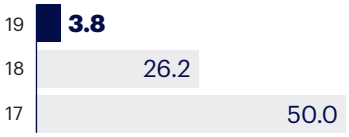
Total equity (£m)

£22.3m



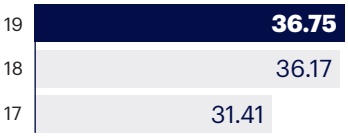
Cash, cash equivalents and cash on deposit (£m)

£3.8m



Loss per share* (pence)

36.75p



* See note 10.

Operational highlights

- First-in-class data in oncology – positive safety and preliminary clinical observations of lead immuno-oncology candidate MRx0518 in combination with Keytruda®
- Entered a research collaboration and option agreement with MSD to use the MicroRx® discovery platform to develop Live Biotherapeutics in the vaccines space, including an upfront payment and potential milestone payments totalling >$1 billion
- MSD collaboration included commitment to equity investment in 4D by MSD, triggered after period end
- Launched a Phase I/II trial of MRx-4DP0004 in partly controlled asthma – the first clinical trial of a single strain Live Biotherapeutic in this indication
- Expanded our Board of Directors, adding clinical and commercial expertise from both Europe and US

Since the period end

- In early January 2020 we launched our third trial of MRx0518, in pancreatic cancer in combination with radiotherapy
- In February 2020 4D completed a placing and subscription raising gross proceeds of £22 million
- In April 2020 we announced interim results from an ongoing Phase II trial of Blautix® in IBS-C or IBS-D
- In April 2020 we received expedited approval from the MHRA for a Phase II clinical trial of immunomodulatory Live Biotherapeutic MRx-4DP0004 to treat COVID-19 patients

Read about our business model on page 14

Read about our strategy on pages 16 and 17

Strategic report

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At a glance

Pioneering a new class of therapeutic

4D pharma is leading the development of a disruptive class of drug – Live Biotherapeutic products (LBPs) – leveraging the profound impact of the gut microbiome on human health and disease. By understanding how to unlock the unique properties of LBPs, 4D has the potential to revolutionise how many diseases are treated.

We have developed the expertise and infrastructure which have allowed us to generate an industry-leading pipeline of four clinical-stage LBPs producing promising signals of efficacy, followed by a suite of pre-clinical programmes with novel mechanisms in key therapeutic areas. 4D is leveraging an accelerated development path to bring new therapies from bench to bedside faster than traditional approaches.

What sets us apart

Focus on function

Bringing a new class of drug to market requires world-leading science. Understanding the mechanisms that underpin interactions between specific bacteria of the gut microbiome and human physiological systems is essential to convert novel science into treatments for patients. By focussing on single strain Live Biotherapeutics that can be characterised in extensive detail, 4D's discovery platform, MicroRx®, exploits the diverse functionality of gut commensal bacteria and to date has generated:

4

clinical-stage programmes, in oncology, respiratory and gastrointestinal disease

Read more about our development pipeline on page 4, and the MicroRx® platform on page 11

Integrated end-to-end company

The Group's unique in-house product development and Current Good Manufacturing Practice (cGMP) manufacturing capabilities are tightly integrated with both our early research and clinical development activities. This reduces early development risk, accelerates candidates into the clinic, and generates valuable know-how and IP.

In 2019, we continued to deliver across all stages of LBP development – from demonstrating pre-clinical efficacy of new candidates in oncology and CNS disease, through development and scale-up, and initiating clinical studies in oncology and asthma.

7

unique candidates successfully taken through development and optimisation to clinic-ready product

Read about our development and manufacturing capabilities on page 17

Taking the microbiome beyond the gut

Orally administered, gut-restricted Live Biotherapeutics can have profound impacts on various human systems, including immune, neuronal, metabolic and endocrine.

4D is leveraging this activity, leading the way in realising the potential of orally administered LBPs to treat diseases that manifest at sites anatomically removed from the gut.

Our development pipeline is focussed on providing potentially game-changing disease-modifying therapies for major indications with high unmet need. For more on our key markets see page 13.

Delivering on this potential, 4D has to date taken four different candidates into the clinic in oncology, gastrointestinal and respiratory disease.

The ability to induce strong systemic effects on the immune system has attracted an innovative research collaboration with MSD (Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA) in the vaccines space.

Read about our key programmes on pages 4 and 7 to 12

Our technologies

Live Biotherapeutics

4D's Live Biotherapeutics are single strains of human gut-derived commensal bacteria. These bacteria have co-evolved with their human host over millennia, showing highly adapted activity and minimal safety concerns.

Each strain is functionally characterised in depth and selected for its ability to modulate host physiological systems. Our drug candidates are taxonomically diverse and exhibit distinct mechanisms relevant to specific aspects of disease pathology.

LBPs have inherently favourable safety profiles, necessitating less extensive pre-clinical toxicology testing and allowing first-in-human studies in patients. As a result, we can typically generate meaningful clinical data much faster than traditional drug modalities such as small molecules or biologics.

4D's orally administered LBPs therefore offer a potentially effective, safe and patient-friendly therapeutic option, without the side effects associated with traditional pharmaceuticals.

MicroRx®

Our proprietary drug discovery platform combines multiple techniques across microbiology, immunology and bioinformatics to comprehensively characterise and interrogate our extensive library of bacterial isolates.

Our library represents comprehensive phylogenetic coverage of the genera of the human gut microbiome.

The power of MicroRx® derives from our ability to identify bacteria with specific functional signatures relevant to the disease of interest, with resolution to capture strain-level differences in activity. Importantly, the platform enables elucidation of mechanism of action – identifying bioactive bacterial-derived molecules and cognate host targets and pathways which they modulate. For more on MicroRx®, see page 11.

4D also has the internal capability to analyse microbiome samples using machine learning to identify metagenomic and metabolomic signatures, revealing even more about diseases of interest and the activity of our LBPs.

World-leading partner

In addition to 4D's proprietary programmes, 4D is working with global pharmaceutical company MSD in two areas – oncology and novel vaccines.

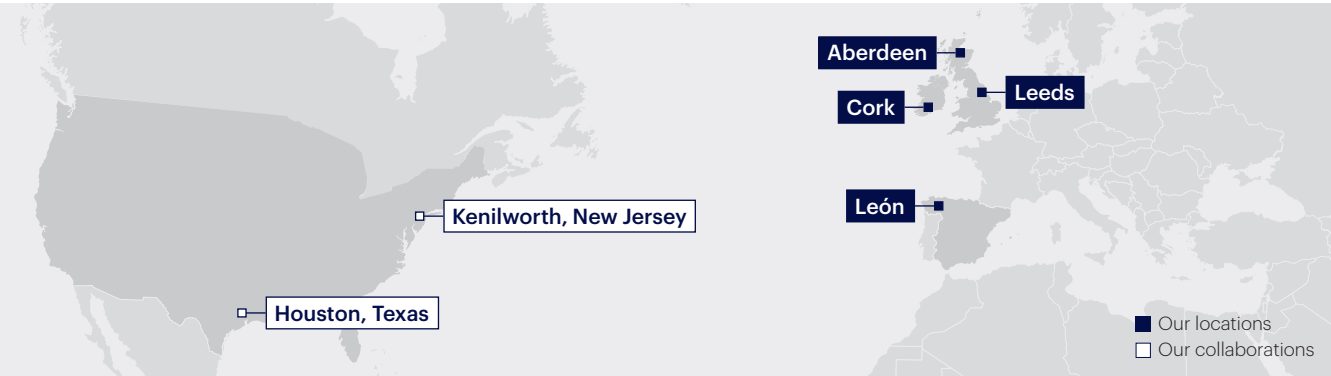
Our first collaboration is in the field of immuno-oncology, leveraging the pivotal role of the microbiome in cancer to build on the class-leading position of MSD's blockbuster Keytruda®. Our clinical collaboration is investigating the efficacy and safety of our lead candidate MRx0518 in combination with Keytruda®, in heavily pre-treated patients with limited treatment options.

Building on this relationship, in 2019 we entered a research collaboration and option agreement with MSD to use the MicroRx® platform to discover and develop LBPs in the vaccines space. The deal involves:

up to **3**
undisclosed indications

$5 million
equity investment in 4D pharma by MSD

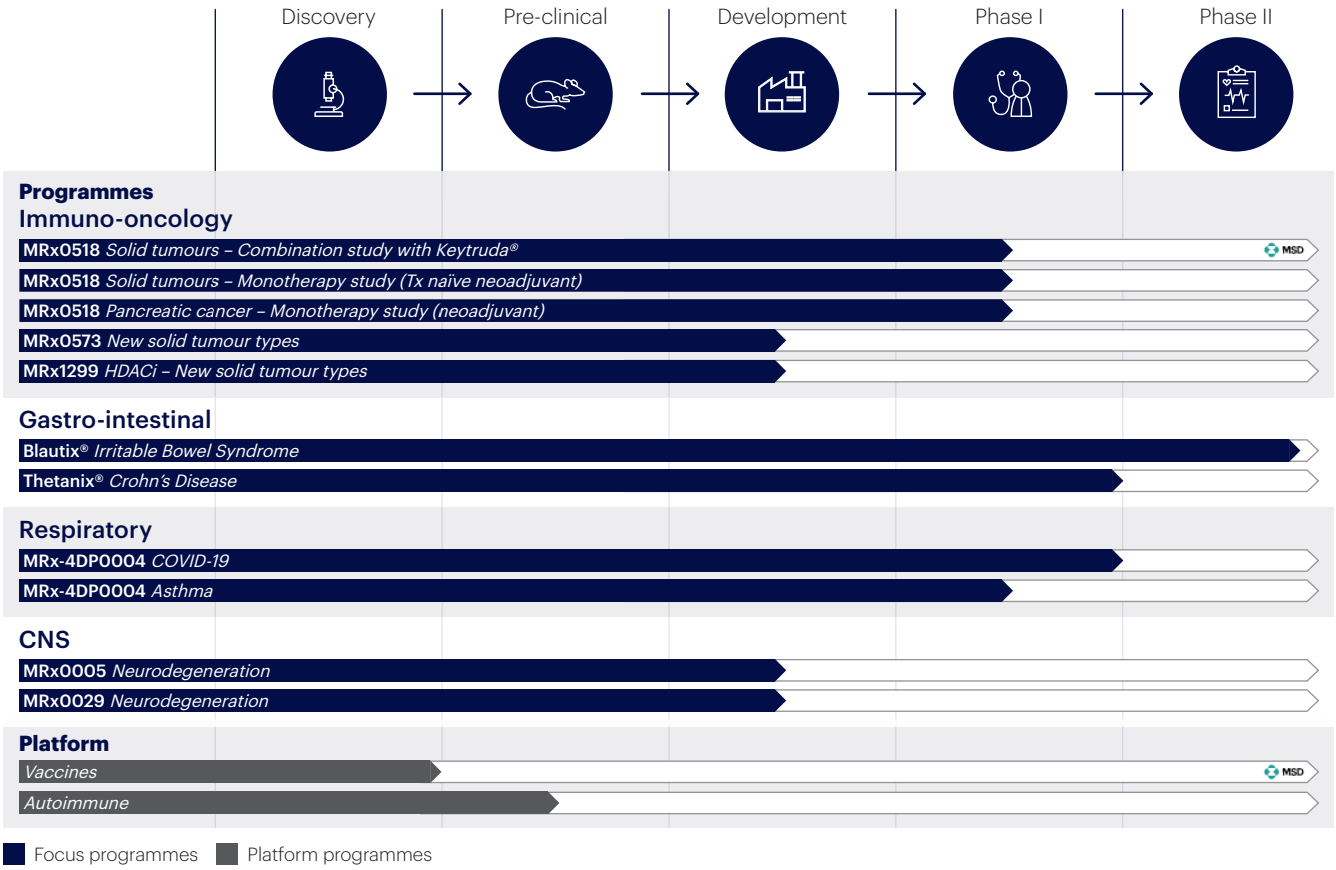
>$1 billion
in potential milestones, plus tiered royalties on annual net sales of any licensed products derived from the collaboration



At a glance continued

Our development pipeline

4D's MicroRx® platform has to date generated a strong pipeline with four internally derived clinical-stage candidates. We are poised to deliver key clinical data across multiple therapeutic areas in 2020. Our clinical candidates are followed by a suite of pre-clinical candidates in the areas of oncology, central nervous system, and autoimmune disease.



Chairman's statement

A year of significant progress

2019 was a successful year for the Group in which we made great progress in the clinic across multiple programmes, and entered collaborations with new partners. The coming year will be pivotal for 4D as we reach key readouts from multiple clinical studies.

Performance

Over the last year we have continued to lead the development of Live Biotherapeutics, significantly expanding our clinical development activities and rapidly generating early signs of clinical efficacy. Meanwhile, we continued to identify promising new candidates from our MicroRx® platform in exciting new areas like neurodegenerative disease.

This year has ushered in a critical period for us as a fully fledged clinical-stage biotech, including some historic firsts for the broader microbiome space. We reported safety and positive early clinical observations in oncology – the first ever for a Live Biotherapeutic – and since the period end we announced an interim analysis from our Phase II study of Blautix® in IBS, demonstrating a safety profile comparable to placebo and encouraging us to continue with the analysis of the full cohort.

In 2019 we launched a Phase I/II trial in asthma, another first for an LBP in this indication. In addition, we commenced a clinical biomarker study of immuno-oncology LBP MRx0518 with our partners at Imperial College London. This study will generate valuable data to deepen our understanding of MRx0518's activity and help guide clinical development plans. After the period end, in early January 2020, we launched a third study of MRx0518 and our second at the world-leading MD Anderson Cancer Center, in combination with radiotherapy in patients with pancreatic cancer.

While we are immensely pleased with the rapid progress we are making in the clinic, we continue to leverage the MicroRx® platform to generate value, through our internal development pipeline but also by facilitating partnerships. Our research collaboration with MSD in the vaccines space serves as an example of the power and potential of the platform, and provides a valuable endorsement from an industry-leading partner.

"Building on the success of 2019, when we took great strides on multiple fronts in the clinic, the coming year will be pivotal for 4D as we reach readouts from key clinical studies in oncology, IBS and asthma."

Prof. Axel Glasmacher
Non-Executive Chairman

Our Culture

Our success is built on a foundation of collaboration between our cross-functional teams. Where we are today is a testament to the hard work and commitment of our staff across all our sites in Europe and those involved in our wider collaborations. I would like to thank them all for their valuable contribution to the progress we have made in 2019.

Board and Governance

We were delighted to welcome Dr. Sandy Macrae as an independent Non-Executive Director in August 2019. Dr. Macrae brings extensive biopharma leadership experience, most recently as CEO of US-based genomic medicine pioneer Sangamo Therapeutics.

Chairman's statement continued

Leadership reflects growth

David Norwood has an extensive track record of founding and growing a number of highly successful healthcare and technology companies. David served as Chairman of 4D pharma since its inception in 2014, overseeing its growth from a pioneering research outfit to a fully fledged clinical development biotech with multiple candidates in the clinic in Europe and the US.

Reflecting this growth and the Group's increasing focus on its clinical programmes, in April 2020 the Board elected Prof. Axel Glasmacher as the Group's Chairman. David will continue to work closely with Axel and the Board as a Non-Executive Director.

Axel's experience in the clinical development of novel therapeutics, including as Senior Vice President and Head of Global Clinical Research and Development, Haematology Oncology at Celgene, will be invaluable as 4D looks ahead to key readouts from its lead programmes in oncology, gastrointestinal and respiratory disease in the coming year.

"4D is a company that has done excellent scientific and clinical work and is looking forward to important data readouts in the near future. I am honoured to work with investors, the Board and the team at 4D to bring Live Biotherapeutic agents to patients as soon as possible."

Prof. Axel Glasmacher
Non-Executive Chairman
4D pharma plc

Board and Governance continued

Reflecting the transition to a new phase in the Company's growth, after the period end I was appointed to the role of Chairman, taking over from David Norwood, who has done an excellent job leading the Company since its inception. On behalf of the Board I would like to thank David for his leadership in making 4D what it is today, and look forward to continuing to work with him in his role as Non-Executive Director.

I would also like to thank Thomas Engelen for his contribution over the years, after he stepped down from 4D's Board of Directors in May 2020.

The Board is committed to maintaining high standards of governance, both at Board level and operationally throughout the business. The Group's Corporate Governance Structure Statement can be found on pages 26 to 28.

Outlook

Building on the success of 2019, during which we took great strides on multiple fronts in the clinic, the coming year will be pivotal for 4D as we reach readouts from key clinical studies in oncology, IBS and asthma. In the last year we entered pioneering research collaborations, and will seek to continue the rapid progress already made to date. I look forward to taking the next steps to bring this revolutionary new class of medicines to patients.

In 2020 the global COVID-19 pandemic hit the UK affecting almost all aspects of the economy, the pharmaceutical industry and 4D pharma included. In response we have been proactive, putting the safety of staff and patients first. We have made good use of technology to minimise disruption to our operations while protecting our staff. However, as has been seen across the biopharma industry, there have been unavoidable impacts on certain activities, resulting in some potential delays to expected clinical readouts. We continue to monitor the situation closely and will provide updates as and when the expected resolution of the situation becomes clearer.

In light of this unprecedented situation the Board has carefully re-evaluated the Company's strategic priorities and near-to-mid-term objectives. We have taken measures to streamline the business, including changes to management structure and reducing staffing requirements, primarily relating to manufacturing, research and administrative services. The Board has also prioritised allocation of capital and resources to key programmes, such as oncology, set to deliver key clinical value drivers for our shareholders in the coming year, including launching a Phase II clinical trial in COVID-19 in the second quarter of 2020.

David Norwood
Non-Executive Chairperson
(up to 17 April 2020)

Axel Glasmacher
Non-Executive Chairperson
(since 17 April 2020)

22 May 2020

Continuing to push Live Biotherapeutics forward

In 2019 we made significant progress in our mission to deliver Live Biotherapeutics, a disruptive new class of drug. 4D has firmly established itself as a clinical-stage drug development biotech, focussing significant resources on the clinical development of our lead LBP drug candidates.

We were pleased to announce positive safety data and the world's first ever positive clinical observations of a Live Biotherapeutic in oncology, from a study of our LBP MRx0518 in combination with the immune checkpoint inhibitor (ICI) Keytruda® in heavily pre-treated patients with secondary resistant tumours refractory to ICIs.

Continuing to lead the development of LBPs for diseases beyond the gut, we also launched a Phase I/II clinical trial of MRx-4DP0004 in partly controlled asthma.

Meanwhile, we continue to utilise the MicroRx® platform to discover promising new LBP candidates for major diseases with significant unmet need. This year we presented data on two novel LBPs which have demonstrated potential as treatments for neurodegenerative diseases like Parkinson's.

A landmark achievement in 2019 was the announcement of a research collaboration and option agreement with MSD (Merck & Co., Inc.) in the field of vaccines. This partnership represents a significant endorsement of 4D's approach and the MicroRx® platform from an industry leader.

From a corporate strategy perspective, since the period end we made further progress in our goal of expanding our US presence, bringing in new US-based investors as part of a fundraise completed in February 2020, including a $5 million investment from our partner MSD.

Research

Our research is the core of what we do, and our philosophy is what sets us apart. Since inception we have pursued a function-focussed approach investigating the interactions between commensal bacteria and the human host. Our long-standing position, that understanding mechanism will be key to the success of this new area of medicine, is a view increasingly espoused within the microbiome field as well as the broader biopharma industry. This 'function first' approach has generated a pipeline pioneering the use of Live Biotherapeutics in diseases beyond the gut. In 2019 we presented ground-breaking research on the mechanisms and pre-clinical efficacy of our investigational LBPs for the treatment of cancer and neurodegenerative disease, in respected peer-reviewed journals and at leading international conferences.

Recognising the value of such an approach, and building on our existing clinical collaboration in oncology, in October 4D pharma and MSD were pleased to announce a research collaboration and option agreement in the vaccines space in up to three undisclosed indications. Under the terms of the deal 4D pharma is eligible for potential milestone payments totalling over $1 billion. It has been great to see this project come together, driven by close collaboration between our respective research teams and effectively leveraging our complementary expertise.

As the Live Biotherapeutics field rapidly matures, we see the next critical stage being the generation of robust clinical data, to deliver on the immense potential of microbiome research to date. This year we have made significant advances in this respect across our development pipeline.

Oncology

Oncology is a core focus area for 4D and a field in which I believe LBPs will make a significant impact first. 2019 saw a number of clinical developments regarding our lead oncology candidate MRx0518.

In November we were pleased to be able to report the first clinical observations from our ongoing Phase I/II trial in combination with blockbuster immunotherapy Keytruda®, in heavily pre-treated patients with acquired resistance to checkpoint inhibitors. Of the first six patients enrolled, three achieved a clinical benefit including two partial responses. Additional details of these patients achieving clinical benefit were presented in March 2020 at Chardan's 2nd Annual Microbiome Medicines Summit. While preliminary, these observations are hugely encouraging in this particularly difficult to treat population, and represent a significant milestone for the microbiome-oncology space. Since the period end we have successfully completed Part A of the study, confirming the safety of the combination therapy and generating highly encouraging preliminary signals of activity. Part B of the study will assess clinical benefit and safety, enrolling up to an additional 30 patients per tumour type cohort (up to a total of 120). Encouraged by these early results, enrolment for Part B will be expanded to additional trial sites.

"A landmark achievement in 2019 was the announcement of a research collaboration and option agreement with MSD in the field of vaccines. This partnership represents a significant endorsement of 4D's approach and the MicroRx® platform from an industry leader."

Duncan Peyton
Chief Executive Officer

Chief Executive Officer's report continued

Oncology continued

To inform our clinical strategy, in 2019 4D launched two clinical biomarker studies of MRx0518, furthering our understanding of this promising immunotherapy and its potential application. One, a study of MRx0518 as a monotherapy in patients undergoing surgical resection of solid tumours, is being conducted at Imperial College London, while the second is in pancreatic cancer under our strategic collaboration with the University of Texas MD Anderson Cancer Center.

Meanwhile, we have ramped up our business development activities with the goal of expanding the development of MRx0518 into new settings, and are actively exploring additional collaborations.

Beyond our lead immuno-oncology candidate MRx0518, the MicroRx® platform has continued to identify new LBP candidates exhibiting novel mechanisms of action with the potential to treat different types of cancers. This year we presented mechanistic and pre-clinical efficacy data from the first of these – MRx1299.

Gastrointestinal Disease

This year we made significant progress with our Phase II study of Blautix® in IBS. In April 2020 4D announced results of a pre-planned interim analysis performed on around 270 patients. The interim analysis demonstrated that Blautix® has a safety profile comparable to placebo, and that the study was not futile with regards to the primary endpoint.

Based on these encouraging interim safety and non-futility data we are actively exploring potential partnering or out-licensing opportunities as we seek to streamline our development pipeline and focus on our key areas of oncology, asthma and neurodegenerative disease.

Respiratory disease

2019 saw another world first for Live Biotherapeutics delivered by 4D, in the area of respiratory disease. We commenced a Phase I/II randomised, placebo-controlled trial of MRx-4DP0004 in partly controlled asthma in July, evaluating the safety and tolerability of MRx-4DP0004 in combination with existing maintenance therapy, with a range of secondary endpoints to evaluate efficacy. Unfortunately, the global COVID-19 pandemic has had a significant impact on recruitment for the study as we have a duty to prioritise the safety of our patients in this high risk group, and the wellbeing of the medical staff involved. We are monitoring the situation closely and will be in a position to provide further updates as the expected impact on the trial becomes clearer.

COVID-19

However, with great challenges come great opportunity and social obligation. The primary burden on healthcare systems caused by SARS-CoV-2 infection is the hyperinflammatory response which leads to the need for mechanical ventilation and admission to intensive care. There is a clear and urgent need for an immunomodulatory therapeutic to prevent or reduce hyperinflammation associated with severe disease.

As the scientific community's understanding of the immunology of COVID-19 has developed it became clear that the unique immunomodulatory activity of MRx-4DP0004 may be able to address this critical gap in the management of COVID-19 – to prevent or reduce hyperinflammation in hospitalised patients. 4D is conducting a Phase II placebo-controlled trial to demonstrate clinical benefit in addition to standard of care. The trial has received expedited acceptance from the UK's MHRA, and preparations are advancing quickly to begin dosing patients.

Intellectual Property

Intellectual property is a key component of our strategy. We continue to invest in our industry-leading patent estate, now numbering over 60 patent families.

Our functional, granular approach to LBPs has allowed us to secure robust multi-layered protection for all our development candidates in major markets including the US, Europe and Japan. This year we secured over a hundred new patents across multiple territories, and have many more applications pending.

Our IP estate is a testament to our highly productive R&D platform, MicroRx®. In addition, however, we have also filed a number of patent applications deriving from the product development work at our cGMP-certified facility, and from our machine learning microbiome analysis research. Our IP strategy allows us to capture the competitive advantages from our unique end-to-end capabilities.

2019 saw the first major challenges to IP in the microbiome therapeutics space. We are confident in the strength of our patent portfolio and its ability to protect our single strain Live Biotherapeutic candidates. Where challenged, we will robustly defend it.

Financial Summary

Our cash consumption for the year ended 31 December 2019 remained in line with management expectations, driven by the increased clinical trial activity and progress of our pre-clinical candidates.

In the year to December 2019, our cash and cash equivalents and short-term deposits reduced from £26.2 million to £3.8 million with a loss before tax of £29.4 million (compared with £28.4 million in the year to December 2018). This is inclusive of £0.2 million of Revenue relating to the recognition of a limited part of the upfront cash payment, in accordance with IFRS 15 and the terms of our collaboration with MSD in the vaccine space. Our claim for research and development tax credit was £5.4 million (compared with £4.7 million in the year to December 2018).

The Group continues to manage its cash deposits prudently and invest available longer-term funds across a number of financial institutions which have investment grade credit ratings. The Board has continued to operate a robust set of financial controls including rolling short-term and long-term forecasts to assist in the control and prioritisation of resources.

After the period end, in February 2020, the Group completed a fundraise through the placing and a subscription for new ordinary shares with and by certain existing and new investors, to raise aggregate gross proceeds of £22 million. As a result of this fundraise, prioritisation of the Group's programmes and cost reduction measures put in place, the Directors estimate that cash held by the Group, together with known receivables, will be sufficient to support the current level of activities until Q4 2020.

The Directors are continually exploring sources of finance available to the Group and have a reasonable expectation that they will be able to secure sufficient cash inflows for the Group to continue its activities for not less than twelve months from the date of approval of these accounts. The accounts have therefore been prepared on a going concern basis.

Because the additional finance is not committed at the date of approval of the financial statements, these circumstances represent a material uncertainty as to the Group's ability to continue as a going concern, as described in note 2c to the audited accounts.

Should the Group be unable to obtain further finance such that the going concern basis of preparation was no longer appropriate, adjustments may be required which would include the reduction in the carrying value of the Group's assets to their recoverable amounts and would also incorporate provisions for any future liabilities that would arise.

Outlook

Over the past year we made impressive progress in all aspects of our business. We reported the first signs of clinical activity for a Live Biotherapeutic in the field of oncology, and took a new candidate into the clinic in asthma. We have set up multiple near-to-mid-term clinical catalysts as we generate robust clinical data with multiple shots on goal. In parallel, the Company has continued to elucidate the mechanisms of our lead LBPs, and identified promising new candidates in priority areas like neurodegenerative disease.

While the progression of our drug candidates through the clinic to approval is a key value driver, we believe the MicroRx® platform itself also has immense potential to create value, in diverse therapeutic areas, exemplified by our collaboration with MSD in the vaccines space. In order to capture the potential of the platform and maximise value creation, we are actively pursuing additional research collaborations, pairing our expertise in LBP discovery and development and access to our library of well characterised bacterial isolates with the disease-specific expertise of partners.

Like many others in the wider pharmaceutical industry, 4D pharma has not been immune to the disruption caused by the COVID-19 pandemic. We are taking the situation very seriously and heeding the advice of the UK government and other authorities, utilising technology effectively to mitigate this unprecedented disruption where possible. To protect the safety of patients, our staff and the staff of our collaborators, we have limited non-essential activity at clinical sites which has had an impact on patient recruitment for some studies. The time course of the pandemic, and thus its impact on our operations, is hard to predict. 4D is monitoring the situation closely and prepared to adapt our strategy and operations in response to unfolding events.

Duncan Peyton
Chief Executive Officer
22 May 2020

Chief Executive Officer's report continued

Oncology case study

4D is a world leader in developing LBPs to treat cancer. Our lead immuno-oncology candidate, MRx0518, is being evaluated in an ongoing Phase I/II trial in solid tumours in combination with blockbuster immune checkpoint inhibitor (ICI) Keytruda®.

First early signals of clinical efficacy

In 2019, we reported positive preliminary data on the combination of MRx0518 and Keytruda® in a challenging patient population – all patients enrolled on the Phase I/II study had initially responded to ICI but then developed secondary resistance and progressive disease before treatment in combination with MRx0518. The goal of the study is to evaluate whether MRx0518 can be added to the ICI regimen to change these unresponsive patients into responders. Of the first six patients enrolled on the open-label study, we saw:

- Two partial responses (reduction of target lesion by ≥30%)
- One stable disease for >six months – a clinical benefit in this checkpoint-refractory population
- Evidence of increased tumour immune infiltration by lymphocytes, a known predictor of response to immunotherapy and key to MRx0518's mechanism of action
- No drug-related serious adverse events

We have since provided additional details on the patients with tumours exhibiting partial responses to the combination therapy:

The first is a patient with renal cell carcinoma (RCC), who had received three previous lines of therapy and has now been on the study for over one year.

The second is a patient with non-small cell lung cancer (NSCLC) with a mutation in epidermal growth factor receptor (EGFR), who has had seven previous lines of therapy and has now been on the study for over 10 months. NSCLC patients harbouring EGFR mutations are reported to be less likely to show clinical benefit from PD-1/PD-L1 checkpoint inhibitors.

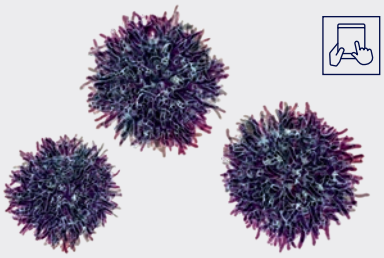
Both of the patients whose tumours achieved partial responses to MRx0518 and a PD-1 checkpoint inhibitor, previously showed a response no better than stable disease (SD) to PD-1 checkpoint inhibitor treatment, before developing secondary resistance and progressive disease.

After the period end, in May 2020, we announced successful completion of the Part A safety phase of the trial. The Safety Review Committee evaluated data collected during the first cycle of treatment for the first 12 patients, and determined that it is safe to proceed to Part B of the study. Part B will enrol up to an additional 120 patients across four tumour type cohorts. 4D will expand enrolment to additional sites to accelerate recruitment and the delivery of this key clinical readout.

New settings and combinations

Highly encouraged by the good safety profile and early signals of clinical activity we have seen so far for MRx0518, in a particularly difficult patient population, we are actively exploring additional drug combinations and settings in which to evaluate MRx0518.

4D is active in seeking collaborations to expand the MRx0518 clinical development programme.



Read more at:
4dpharmaplc.com/publications

Second generation oncology candidates

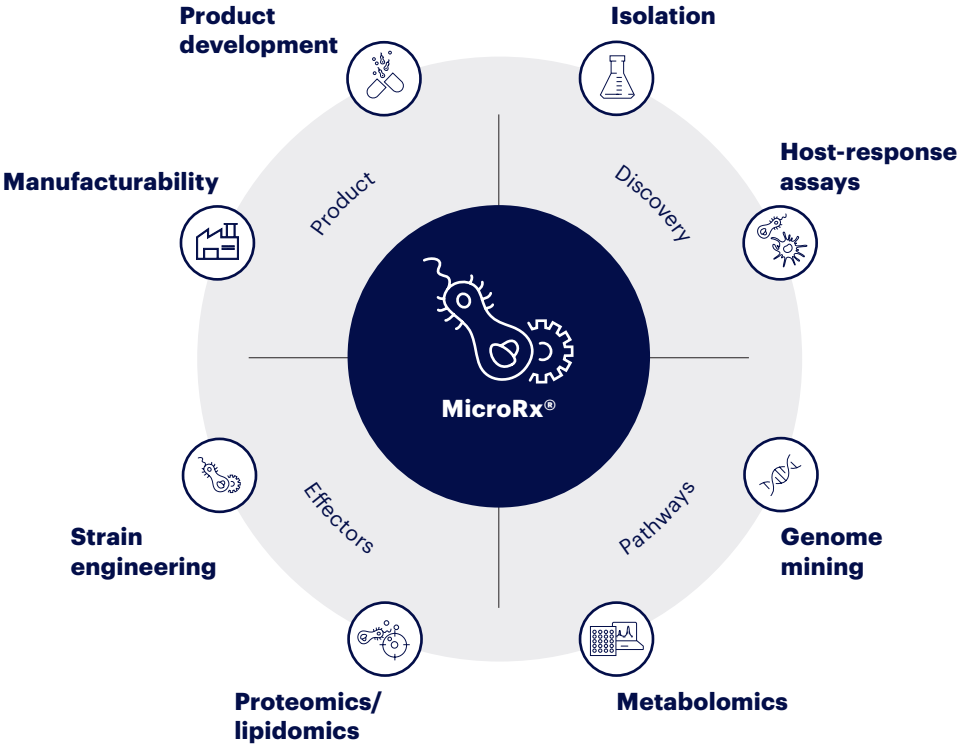
In 2019 the MicroRx® platform continued to generate new oncology LBP candidates with distinct mechanisms of action.

This allows us to expand our oncology programme into additional cancer types and settings.

One such candidate, MRx1299, has demonstrated anti-tumour efficacy in an animal model of cancer. In 2019, we made significant progress with development and scale-up and expected to have clinic-ready product in 2020.

"The role of the gut microbiome in cancer and response to therapy is increasingly understood. This year saw the Company make significant progress in bringing MRx0518 to patients, having now initiated three studies across a range of clinical settings. We are particularly encouraged by the emerging data from the first of these studies and await further clinical readouts in 2020."

Duncan Peyton
CEO



MicroRx® platform

Our proprietary Live Biotherapeutic discovery platform.

Combining cutting-edge technologies and our expertise in microbiology, immunology and bioinformatics, the MicroRx® platform enables a multi-faceted and targeted interrogation of our library of human gut commensal bacteria isolates, to identify strains with desired functional signatures relevant to pathways of disease.

Our extensively characterised library represents comprehensive coverage of the phylogenetic diversity of the human gut microbiome. This pool of bacterial strains is enriched with organisms that have evolved specific functionalities to modulate host immunity, metabolism and the central nervous system. MicroRx® not only allows 4D to identify which of these strains could be used to treat disease, but also drills down into the mechanism of action, including identification of bioactive molecules and their target host receptors.

MicroRx® drives our pipeline

The power and potential of the MicroRx® platform is reflected in our pipeline, one of the deepest in the space, with clinical programmes across oncology, respiratory and gastrointestinal disease, followed by a suite of pre-clinical programmes in autoimmune/inflammatory and neurological indications.

Live Biotherapeutics are an emerging therapeutic modality with a unique, accelerated development path. As they are expected to have favourable safety profiles, regulators do not demand as extensive pre-clinical toxicity testing as traditional therapeutic modalities, accelerating progression into the clinic. Further, first-in-human Phase I/II studies may be conducted in patients without first requiring safety studies in healthy volunteers. This means we can generate meaningful clinical data far sooner than traditional drug modalities like small molecules and biologics.

MicroRx® drives our collaborations

We are increasingly using MicroRx® to generate value in the form of collaborations with the pharmaceutical industry.

In October 2019, we announced a research collaboration with MSD in the field of vaccines. The partnership couples 4D's MicroRx® platform with MSD's world-leading expertise in the development and commercialisation of novel vaccines, to discover LBPs for use in the vaccines space in up to three undisclosed indications.

4D received an upfront cash payment and is eligible for development and regulatory milestone payments across up to three indications totalling over $1 billion, plus tiered royalties on any licensed product deriving from the collaboration. In addition, in February 2020, MSD made a $5 million equity investment in the Company.

This partnership builds on our existing oncology clinical collaboration with MSD, evaluating MRx0518 in combination with MSD's immunotherapy agent Keytruda®.

Looking ahead, 4D expects to continue to leverage the platform with additional collaborations to expand its application into new therapeutic areas, and generate both short- and long-term value for the Company.

Chief Executive Officer's report continued

Phase II

A disease-modifying approach to IBS

4D is revolutionising the understanding and treatment of IBS.

Irritable bowel syndrome (IBS) is a functional gastrointestinal condition affecting up to 10% of the US and EU population, but with poorly understood etiology. The condition is currently defined symptomatically – patients are categorised as constipation predominant (IBS-C), diarrhoea predominant (IBS-D) or mixed (IBS-M).

This mixed phenotype, and clinical observations that patients frequently switch between IBS-C and IBS-D, suggests a common underlying condition in which the microbiome is now understood to play a key role.

However, current treatment options are purely symptomatic and do not address the underlying cause of the disease. Because of this, approved therapies for IBS have only modest efficacy. Moreover, inherent in their mechanisms of action, available therapies cause severe and unpleasant side effects such as diarrhoea.

4D is addressing this large and hugely underserved patient population with the world's first disease-modifying therapeutic for IBS – Blautix®.

Ongoing Phase II trial

Blautix® is a single strain Live Biotherapeutic addressing the underlying microbiome-related cause of disease, which has the potential to become the first ever disease-modifying therapy for IBS.

4D pharma is conducting a Phase II randomised, double-blind, placebo-controlled trial at centres in the US and EU.

In April 2020 we announced results of an interim analysis on approximately the first 250 patients. The pre-planned interim analysis demonstrated that Blautix® has a safety profile comparable to placebo, and that the study was not futile with regards to the primary endpoint.

We have now completed enrolment of the trial and expect to be able to report topline results in Q3 2020.

Developing a novel therapy for asthma

Asthma represents a significant burden to patients, healthcare systems and the wider economy.

A significant number of patients are poorly controlled by current treatments, leading to exacerbations, hospitalisation and mortality.

Biologic therapeutics approved for more severe patients only address the allergic or eosinophilic sub-types of asthma, meaning other patient sub-types remain under-served. These drugs must be injected or administered intravenously, and many come with warnings of serious side effects like anaphylaxis.

There is significant need for a patient-friendly, oral add-on therapy to reduce exacerbations, providing additional treatment options before patients are put on biologics, and which addresses under-served sub-groups.

MRx-4DP0004

In pre-clinical studies MRx-4DP0004 reduced lung infiltration of immune cells of both the eosinophil and neutrophil type – uniquely positioning it to potentially treat both eosinophilic and non-eosinophilic asthma.

Ongoing Phase I/II trial

This year we launched a Phase I/II first-in-human study of MRx-4DP0004 in patients with partly controlled asthma. To our knowledge, this is the world's first clinical study of a single strain Live Biotherapeutic in this indication. COVID-19 has had an impact on enrolment for the trial, potentially delaying expected preliminary data to Q4 2020 – Q1 2021.

Phase I/II

Our markets

A novel approach to treating major global diseases

4D pharma is using its revolutionary therapeutic approach – Live Biotherapeutics – to address major diseases with large global markets and significant unmet need, for which current treatment options are inadequate.

Cancer

1 in 4 deaths in the OECD* are due to cancer

* Organisation for Economic Co-operation and Development

17 million
new cases are diagnosed each year worldwide

$56.5 billion
projected global immune checkpoint inhibitor market by 2025

4D's MRx0518 has shown the potential to increase response to immune checkpoint inhibitors in the clinic

The role of the microbiome in cancer and response to therapy is increasingly understood

Irritable bowel syndrome

Up to **10%**
of the US and European population suffer from IBS

8.5 – 21.6 days
on average are taken off work each year in the UK and US by people suffering from IBS

Current treatments are symptomatic and only work in **<10% – 20%**
of patients

20% of patients
experience unpleasant side effects like diarrhoea as an inherent consequence of the mechanism of action of the current treatments

Asthma

340 million people are affected by asthma worldwide

$28.3 billion
the estimated value of the global asthma therapeutics market by 2022

20%
of severe asthmatics are inadequately controlled

1/5
asthmatics in the US and EU have severe asthma (higher in other regions)

1.8 million
hospitalisations due to asthma occur annually in the US alone

Neurodegenerative diseases

As people live longer, neurodegenerative diseases like Parkinson's and Alzheimer's disease are becoming an ever greater healthcare burden

>10 million people
are living with Parkinson's disease worldwide

$52 billion
the estimated direct and indirect cost of Parkinson's disease in the US alone

100% progression
While current treatments may help to control motor symptoms, they do nothing to reverse, prevent or slow disease progression and eventually all Parkinson's patients will experience debilitating disease

Our business model

Well positioned to create and deliver value

4D has invested in its internal expertise and capabilities, complemented by our strategic partnerships, to generate value for stakeholders.

What makes us different

Safer, faster approach to drug development

Unique platform with opportunity for partnerships

Understanding mechanism is central to our approach

Integrated end-to-end company

Largest IP estate in the space

Strategic collaborations

- Leveraging complementary expertise
- Opportunities to expand into new therapeutic areas

- Deep pipeline with multiple shots on goal
- Rapid progression into the clinic
- Reduced clinical safety risk
- First-in-man studies in patients
- Accelerated delivery of clinically meaningful data
- In-house pioneering LBP manufacturing

Delivering value

Partners

Our collaborations give partners access to our adaptable MicroRx® platform, a source of novel therapeutics and insight into mechanisms and potential combination therapies

Patients

4D's therapeutics address areas of high unmet need, providing patients with safe, effective, disease-modifying, easily administered treatment options

Shareholders

4D is well positioned to be a market leader in a novel therapeutic field with growing interest from Big Pharma and investors in both Europe and the US. Our pipeline represents multiple shots on goal in large chronic disease populations with multiple sources of upside in the near-to-mid term and reduced risk

Regulators

4D has been at the forefront of defining the regulatory framework for Live Biotherapeutics. We will continue to work closely with the agencies across the US, EU and beyond as we bring this novel class of therapeutics to approval

Section 172

Under Section 172 of the Companies Act 2006, the Directors consider that they have acted in a way they consider, in good faith, would promote the sustainable success of the Group, having regard for the stakeholders and matters set out in Section 172, in the decisions taken during the year ended 31 December 2019.

The Board considers its key stakeholders to be patients and clinicians, employees, shareholders, regulators and our partners. The Board takes seriously the views of these stakeholders in setting and implementing our strategy. We set out below how we have engaged with key stakeholders, to provide valuable input into the Board's balanced decision making. This engagement sets the context for the strategy set out on pages 16 and 17.

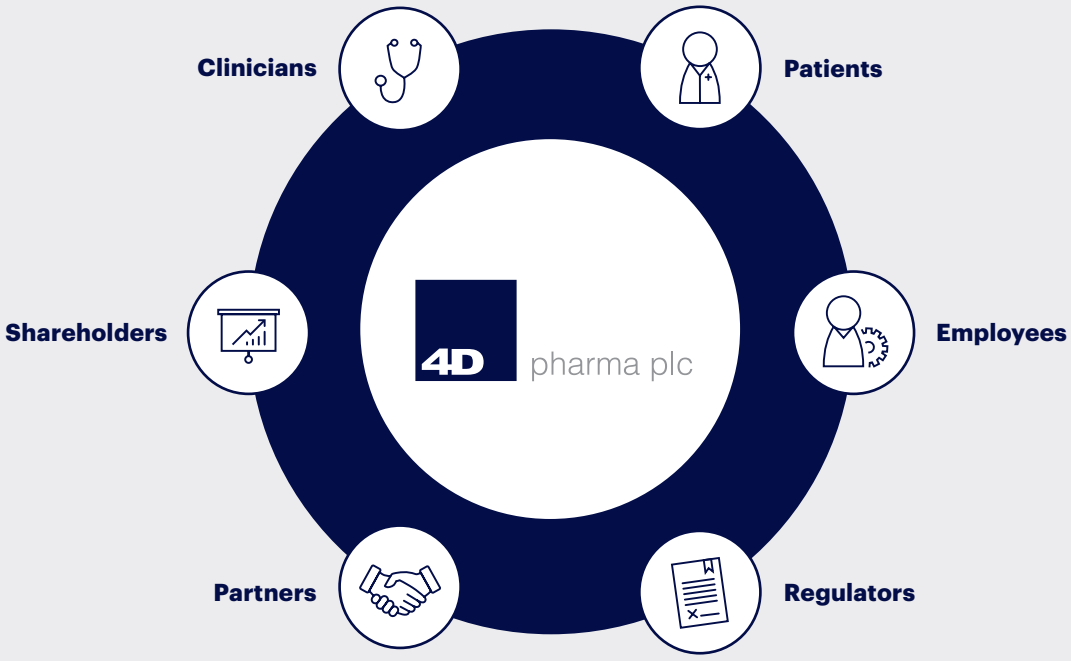
Directors seek to visit institutional shareholders at least twice a year and the Board's engagement with shareholders has influenced our capital structure. The Group also takes into consideration shareholder views and interests in its decision making.

Our close engagement with clinicians – through advisory boards, key opinion leader events, site visits and regular communication via telephone and email – and through them with patients and patient groups, has helped the Board identify areas of highest unmet medical need and contributed to the positioning of our investigational therapeutics and broader clinical development strategy.

Engagement with regulators is another key component of our clinical activities, including scientific advice meetings, formal protocol reviews, full regulatory submissions and associated feedback. Close regulator engagement has also allowed the Group to recognise and respond to public health events such as the COVID-19 outbreak, effectively leveraging dedicated fast-track channels to secure expedited acceptance of a clinical trial of one of 4D's LBPs in COVID-19 patients.

Our employees are fundamental to the culture of the Group and execution of its strategy and the Board takes account of employees' interests when making decisions. Suggestions from employees aimed at improving the Group's performance are welcomed and may be voiced through various channels including the Group's intranet, various internal communications software, regular operational meetings, and providing direct contact details of Board members.

The Board engages with our partners regularly and at key milestones or decision points – primarily through video conferences and email due to geographic distribution – to review progress, maximise effectiveness and ensure equitable satisfaction of the collaborations' objectives.



Our strategy

Converting world-leading research into novel therapies

Our strategic priorities

1) Clinical development
2) Collaborations and partnerships
3) World-leading enabling technology
4) Pioneering Live Biotherapeutic product manufacturing
5) Intellectual property rights


Read about our KPIs on pages 18 and 19


Read about our risks on pages 20 to 23

1 Clinical development

Links to KPIs: 1 2 3 4 5 6

Links to risks: 1 2 3 4 5 6 7 8

Description
As the microbiome space matures there is demand for robust clinical data and we are dedicated to leading the field in providing this across our key therapeutic areas.

Performance
We have now taken four LBP candidates into clinical trials in patients. In the last year we commenced three studies of MRx0518 in different cancer settings, and reported preliminary safety and clinical observations from one of these, a Phase I/II study in combination with checkpoint inhibitor immunotherapy pembrolizumab. We also launched the world's first investigational clinical trial of a single strain Live Biotherapeutic in partly controlled asthma with MRx-4DP0004. After the period end we announced an interim analysis of a Phase II trial of Blautix® in IBS, and successful completion of the safety phase of a Phase I/II trial in cancer.

Looking ahead
Our key focus over the next 12 months will be generating ground-breaking clinical data across our cancer, IBS, asthma and COVID-19 programmes.

After the period end, in early 2020 the world was struck by the COVID-19 pandemic. This affected almost all sectors, including the pharmaceutical industry. While 4D has not been immune to the unprecedented disruption, particularly to the conducting of clinical trials, the Company has taken appropriate steps to protect the safety of its staff, patients, and healthcare workers. The likely duration of the disruption is not yet known and it is too early to accurately predict the impact on 4D's operations and clinical timelines. However, cost saving measures are expected to extend the period of time the Group has sufficient working capital. The Group is continually reviewing the rapidly evolving global situation and will adapt its strategy and operations accordingly.

2 Collaborations and partnerships

Links to KPIs: 1 2 3 4 5 6

Links to risks: 1 2 3 4 5 6 7 8

Description
Collaborations and partnerships are key to maximising the value of the MicroRx® platform and successful progression of our therapeutics to market, the ultimate driver of long-term value. These include strategic collaborations with world-leading academic and clinical institutions as well as pharmaceutical partners with complementary expertise and resources.

Performance
In early 2019 we entered into a strategic alliance with the University of Texas MD Anderson Cancer Center. This partnership brings together MD Anderson's translational medicine and clinical research capabilities with 4D's expertise in the discovery and development of Live Biotherapeutics in oncology.

Further, in late 2019, 4D entered into a research collaboration and option to license agreement with MSD to discover and develop LBPs for vaccines in up to three indications. Under the terms of the agreement 4D received an upfront cash payment, a $5 million equity investment, and is eligible to receive up to $347.5 million per indication in option exercise and development and regulatory milestone payments, plus royalties on sales of any licensed product deriving from the collaboration.

Looking ahead
In the near-term we look forward to advancing our research with our world-leading partners at MSD and MD Anderson. Beyond these partnerships, we are actively pursuing additional research collaborations to enable us to realise the true value of the MicroRx® platform and expand into new therapeutic areas.

3 World-leading enabling technology

Links to KPIs: 1 2 3 4 5 6

Links to risks: 1 2 3 4 5 6 7 8

Description
4D is committed to leading research into understanding the functionality of single strain Live Biotherapeutics and the mechanisms by which they affect host biology and influence disease. This approach informs our clinical development strategy and facilitates collaborations.

Performance
We mine our bacterial library using our proprietary discovery platform MicroRx® to identify Live Biotherapeutics with therapeutic potential, with defined functional mechanisms of action applicable to target indications. LBPs can exert their therapeutic activity in the gut but can have effects in distant organs and tissues.

Using MicroRx®, we have developed one of the deepest pipelines in the microbiome space, across a number of key therapeutic areas. In 2019 we published four papers in peer-reviewed journals, including mechanistic work on lead oncology candidate MRx0518, pre-clinical efficacy data on two candidates for neurodegeneration, microbiome analysis, and improved methods relating to microbial identification.

Looking ahead
Our research capability continues to support our proprietary development programmes and expand our collaborations.

4 Pioneering Live Biotherapeutic product manufacturing

Links to KPIs: 1 2 3 4 5 6

Links to risks: 1 2 3 4 5 6 7 8

Description
To support rapid progression of our drug candidates from discovery into and through the clinic, we invested heavily in our internal manufacturing capabilities and expertise.

Performance
Our in-house facility can produce over 100 million capsules of cGMP drug product per year, with capacity to support all our ongoing trials and potentially small-scale commercial supply. To date we have taken seven strains through process development and scale-up to be able to manufacture clinic-ready product. Having in-house control of production has been a significant advantage in a field that has experienced significant hurdles relating to manufacturing. It also generates valuable know-how and intellectual property with returns across our pipeline and platform.

Looking ahead
We will continue to leverage the competitive advantage of our in-house production capabilities to support our expanding clinical development activities.

5 Intellectual property rights

Links to KPIs: 1 2 3 4 5 6

Links to risks: 1 2 3 4 5 6 7 8

Description
4D continues to recognise the importance of establishing robust intellectual property protections for our candidate therapies, and protecting the competitive advantage derived from our industry-leading manufacturing know-how.

4D has always recognised the importance of establishing robust intellectual protection for our candidate therapies. This is essential to capturing the value of our research while sharing the advances we have made among the scientific community. It also enables us to protect the competitive advantage gained by bringing LBP manufacturing in-house.

Performance
We have established the largest IP estate among specialist LBP developers and continue to implement our aggressive intellectual property strategy in securing robust, multi-layered protection of our therapeutic candidates. In 2019 our portfolio continued to expand and included over 900 granted patents by the end of the year.

Despite two of our European patents being challenged by third parties, neither has been revoked. In the first of those challenges, the European Patent Office issued a preliminary opinion stating that the key claims of the patent under attack are valid and should be upheld. In the second opposition, we anticipate the European Patent Office taking a similar position.

Looking ahead
As our research continues to drive innovation, we will continue to secure protection of our innovations in the understanding of bacteria-host interactions. It is increasingly recognised that a focus on functionality is key in building and protecting value for microbiome targeted therapies.

Our key performance indicators

Measuring our performance

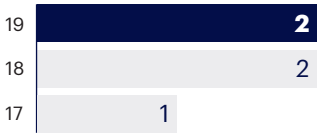
We track a series of metrics focussed primarily on science and product development whilst ensuring that the business maintains both sufficient resources and effective allocation of those resources to achieve our strategic goals.

The Board and management of 4D monitor these metrics as an indicator of how the Group is progressing towards the goal of advancing its Live Biotherapeutic programmes.

1

Successful clinical trials

2 +0%



Progress

4D is a drug development company and will realise long-term value by successfully progressing its candidates through the clinic to registration and approval.

Links to strategic priorities

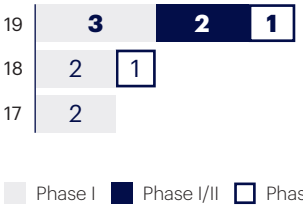
1 **2** **3** 4 5

Read about our strategy on pages 16 and 17

2

Clinical trials initiated, by phase

7 +133%



Progress

Clinical trials are essential in converting the productivity and potential of our MicroRx® platform and early-stage research into long-term value. In the last year we significantly expanded our clinical development activities. We launched a Phase I/II trial of MRx0518 in combination with Keytruda®, and a Phase I biomarker study as a neoadjuvant monotherapy.

We also commenced a Phase I/II trial of MRx-4DP0004 in asthma. These pioneering studies reflect our commitment to taking microbiome therapeutics beyond the gut.

After the period end, in early January 2020 we launched our third study of MRx0518, in pancreatic cancer in combination with preoperative radiotherapy.

Links to strategic priorities

1 **2** **3** **4** 5

3

Strategic collaborations

3 +200%

Progress

Collaborations enable us to realise the potential of our platform, leveraging the complementary expertise of our partners. In January we established a long-term strategic collaboration with the University of Texas MD Anderson Cancer Center, to evaluate 4D's Live Biotherapeutic oncology pipeline across a range of cancer settings. To date we have launched two clinical trials as part of this collaboration. In October we entered a research collaboration and option to license agreement with MSD in the vaccines space, combining our MicroRx® platform with MSD's world-leading expertise in vaccine development. This provides key validation of our approach from a respected partner, expanding on our existing clinical collaboration in oncology, and demonstrates the broad applicability of the platform to diverse therapeutic areas.

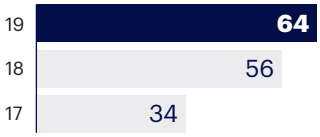
Links to strategic priorities

1 **2** **3** **4** 5

4

Intellectual property portfolio

64 patent families +14%



Progress

Intellectual property is essential to 4D's strategy and capturing the value of our world-leading research output. We have continued to invest significantly in expanding our IP rights, and by the end of 2019, had initiated 64 patent families including over 900 granted patents providing coverage for our pipeline and clinical-stage candidates, manufacturing innovations and novel diagnostic approaches across major global markets.

Links to strategic priorities

1 2 **3** **4** **5**

5

Cash and equivalents (£m)

£3.8m -85%

Progress

We continue to invest capital from our shareholders and partners into supporting research and clinical development programmes, to generate the critical data to advance this novel modality. In February 2020, after the reporting period, we completed a £22 million gross equity fundraising, by way of a placing and subscription to new and existing shareholders, which will support development of our candidates to key clinical milestones and value inflection points, as well as the continued development of the MicroRx® platform and for general working capital purposes, into Q4 2020.

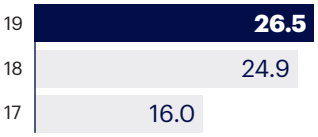
Links to strategic priorities

1 **2** 3 **4** 5

6

R&D spend (£m)

£26.5m +6%



Progress

Investment in research and development (R&D) is central to 4D's progress and returning long-term value. Our unique approach allows rapid translation from bench to bedside. In 2019 our R&D spend was £26.5 million compared to £24.9 million in 2018, reflecting long-term investments in our clinical development programmes.

Links to strategic priorities

1 **2** **3** **4** **5**

Risk and risk management

Bringing a new class of drug to market: assessing and mitigating key risks

The Group operates within a complex regulatory environment, which is subject to change. The nature of drug development exposes the Group to risks and uncertainties which could affect our ability to meet our strategic goals, our business model and our operating environment.

The Board is accountable for carrying out a robust assessment of the principal risks facing the Group, and has developed a risk management framework which provides the structure within which the principal risks affecting our business are managed and sets the tone, culture and appetite for risk. A key part of this framework is the Board's Audit and Risk Committee, responsible for reviewing all aspects of internal control and financial reporting of the business. Read the report of the Audit and Risk Committee on page 29.

The key objectives for this process are to ensure that the risk appetite of the Board is embedded throughout the Group and fully understood by all members of the team who have responsibility for managing the risk and making key business decisions. This will then be encoded in systems of internal controls, which will seek to mitigate the principal risks that could affect the strategy and operation of our business model and finally to ensure that identified risks are reported to the relevant stakeholders in a timely manner.

We are continuously developing and improving our risk management process through ongoing review and evaluation of the risks, clarifying our risk appetite and reviewing the longer-term viability of the business to make sure that we fully understand our risks and are managing them appropriately. These systems can be summarised as follows:

Read about our strategy on pages 16 and 17

1

Third-party patents could limit the Group's freedom to operate

Why is it important?

A third-party patent could be granted that affects a 4D technology or product. This could lead to us having to negotiate a licence, being forced to seek to revoke the patent in legal proceedings, or even being unable to commercialise a future product, materially affecting future revenues.

Current mitigating actions

We are diligent in carrying out searches to identify potential third-party IP; a comprehensive freedom to operate strategy has been developed and implemented to ensure that no blocking patents owned by third parties are unexpectedly granted. The third-party patent landscape is under continuous review. To ensure that we are in the strongest possible position in the event of any patent dispute, the Group continues to make patent filings across the Group's technology portfolio. There have been a significant number of patents granted since the inception of 4D (including US and European patents protecting each of the lead candidates) with a substantial year-on-year growth of the portfolio and an increasing number of new applications filed.

Change in level of risk

→ **No change**

Links to strategic priorities

1 **2** **3** **4** **5**

2

Product development in a breakthrough technology could encounter unforeseen delays to programmes

Why is it important?

Live Biotherapeutics are an emerging technology; neither 4D nor anyone else has yet taken a product through development to market. We are developing a number of wholly owned programmes which will provide the Group with self-commercialisation, co-commercialisation, out-licensing or other commercialisation opportunities. Failure to complete development activities to plan may impact on the Group's ability to bring products to market on time, which would affect the timings of future revenues and hinder the Group's ability to deliver on its strategic goals.

The COVID-19 pandemic has significantly impacted the pharmaceutical industry, causing widespread disruption and delays to clinical development activities.

Current mitigating actions

The nature of Live Biotherapeutics means they have a lower early clinical development risk. Our diverse portfolio, of unique drug candidates with distinct modes of action across key therapeutic areas, mitigates the risk of failure of any one programme to the Group's operations. We have expanded our clinical development team and brought in additional expertise and experience with new Non-Executive Directors. To supplement internal expertise, we work with highly competent clinical research organisations (CROs) to conduct our clinical trials to the highest standard.

The likely duration of the disruption caused by COVID-19 is not yet known and it is too early to accurately predict the impact on 4D's operations and clinical timelines. We have taken appropriate steps to ensure the safety of our staff and patients, and employed technological solutions to minimise disruption. The Group is continually reviewing the rapidly evolving global situation and will adapt its strategy and operations accordingly.

Change in level of risk

↑ **Increased risk (due to COVID-19)**

Links to strategic priorities

1 **2** **3** **4** 5

3

Failure to gain regulatory approval

Why is it important?

The biotechnology and pharmaceutical markets are highly regulated by government authorities in the US, Europe and other important markets. These regulatory requirements are a major factor in determining whether a candidate can be developed into a marketable product, and the time and cost associated with such development. Even if products are approved, they may still face subsequent regulatory difficulties which could result in commercialisation delays negatively impacting future revenues.

Current mitigating actions

We have continued to invest in our clinical and regulatory teams, and also in their upskilling in the field of Live Biotherapeutics. In addition to these in-house teams we utilise highly competent regulatory consultants and have successfully engaged regulators in multiple jurisdictions in Europe and the US.

This year we have dosed patients with two additional Live Biotherapeutic drug candidates, with no serious drug-related adverse events reported to date. This increases our confidence in our thesis of the favourable safety profile of Live Biotherapeutics which reduces early development risk.

Change in level of risk

→ **No change**

Links to strategic priorities

1 2 3 4 5

Risk and risk management continued

4 Exchange rate movements

Why is it important?
Although we report our results in Sterling, a significant proportion of our operations trade in local currency and as such the Group has a large exposure to the Euro and the US Dollar. Fluctuations in these currencies could therefore impact the Sterling operating costs and therefore the cash flows of the Group.

Current mitigating actions
We constantly monitor currencies and their movements against Sterling. As the Group is currently pre-revenue the exposure affects the cost of operations and although the size of the exposure is significant we regularly review cash resources to manage these changes and have planned these prudently into our forward forecasts.

Change in level of risk
→ No change

Links to strategic priorities
1 2 3 **4** 5

5 Brexit

Why is it important?
After the reporting period, on 31 January 2020 the UK left the European Union and began its 11-month transition period. The UK's relationship with the EU following this transition period could have a significant impact on the way the Group operates, both in terms of our subsidiaries, suppliers, cross-border regulation, and potential future revenue streams. At the moment we are not certain of the impact that this will have on trade tariffs, taxation, the nature of international trade including access to trade and the exchange rate. These factors can affect the relative cost and income that will be recognised in the accounts and have an impact on future planning.

Current mitigating actions
As the Group is currently pre-revenue the impact is currently limited to fluctuations in costs and as a result of the exchange rate and any cross-border tariffs. Through constant monitoring of the situation the Group remains reactive and looks to adjust its policies accordingly to minimise any adverse factors resulting from the ongoing negotiations. The Group reviews its cash flow projections for changes in exchange rates and the impact it would have and manages its holdings in funds accordingly.

Change in level of risk
→ No change

Links to strategic priorities
1 2 3 **4** 5

6 Financial risk

Why is it important?
Since inception in 2014 the Group has incurred losses as it seeks to take its candidates through development to an approved product. The Group expects to make losses for the foreseeable future and may not be able to raise additional funds that may be needed to support its product development programmes and commercialisation.

Current mitigating actions
The Directors continue to keep a close control of overheads and explore sources of finance available. After the period end, in February the Board approved a subscription and placing raising gross proceeds of £22 million. The investors in this fundraise were sourced from the UK, US and other international jurisdictions. As part of the announcement of its subscription and placing for £22 million in February 2020, the Group disclosed that it would have sufficient working capital, post fundraise, to support activities until late August 2020. Following delays to some clinical trials resulting from the COVID-19 pandemic, a prioritisation of key activities and cost saving measures, the Company's cash sufficiency is now likely to extend until Q4 2020. In the absence of any cash inflows from collaboration agreements, the Company is expecting to raise new funds by the end of 2020. In seeking to raise these funds, the Company is likely to seek to source funds from both the UK, US and international investors.

Change in level of risk
→ No change

Links to strategic priorities
1 2 3 4 5

7

Competition risk

Why is it important?

4D has a differentiated approach to the discovery and development of Live Biotherapeutics. However, a number of other companies are also developing microbiome-targeted therapeutics, some in indications overlapping with our current programmes. We may therefore face direct competition from other microbiome therapeutics in some markets. Indirect competition in our markets from other types of drugs may impact the approval, uptake and commercial success of our products.

Current mitigating actions

We are diligent in continually monitoring our direct and indirect competitors, in addition to the views of key opinion leaders and changes in clinical practice to ensure we are aware of the current, near-term and mid-term environment in which we operate. The competitive and commercial landscape is a key factor in deciding our development priorities, goals and strategy.

Change in level of risk

→ **No change**

Links to strategic priorities

1 **2** **3** 4 **5**

8

COVID-19 and other emerging pandemics

Why is it important?

The global SAR-CoV-2 pandemic has caused unprecedented disruption to an increasingly interconnected global economy. The impact has been felt in almost every sector, including the pharmaceutical industry. In addition to government-enforced lockdown measures disrupting the day-to-day activities of the Group, COVID-19 has impacted clinical trial timelines as non-essential patient visits to study sites are cancelled or postponed.

Current mitigating actions

The Group has taken reasonable measures to protect the safety of its staff, its patients, and its partners. The Group's IT infrastructure and supplementary technological solutions have been utilised effectively to minimise disruption.

4D maintains close communication with its lead investigators and other clinical site staff, monitoring events closely so as to be able to respond to the evolving situation and reduce risk to patients and staff primarily, while minimising disruption to clinical timelines.

Change in level of risk

↑ **Increased risk (new risk arising after reporting period)**

Links to strategic priorities

1 **2** 3 **4** **5**

Read about our strategy on pages 16 and 17

Board of Directors

Decades of collective biopharma leadership experience

As 4D has grown and developed from an R&D organisation to a fully fledged clinical-stage drug development biotech, the Company has made key additions to its Board. The Group appointed three new Non-Executive Directors in 2019, bringing valuable experience in the clinical development of novel therapies and biopharma Business Development.

Prof. Axel Glasmacher
Non-Executive Chairman

Appointment date
January 2019
(as Non-Executive Director).

April 2020
(as Non-Executive Chairman).

Skills
Axel was until recently Senior Vice President and Head of the Clinical Research and Development Haematology Oncology at Celgene, where he has worked in various global roles for more than ten years. His work at Celgene led to the approvals of Revlimid®, Idhifa® and Vidaza® (haematological cancers). He also worked on the PD-L1 inhibitor durvalumab.

Experience
Prior to Celgene, Axel worked within the field of haematology-oncology at the University Hospital in Bonn.

Axel served as a Non-Executive Director of 4D pharma from January 2019 to 17 April 2020, when he took over the position of Non-Executive Chairman.

Duncan Peyton
Chief Executive Officer

Appointment date
June 2014.

Skills
Duncan has a proven track record in identifying, investing in and growing businesses within the pharmaceutical sector. He was the founder of Aquarius Equity, a specialist investor in businesses within the life sciences sector, which provided investors with access to innovative, high growth potential companies that delivered significant capital growth.

Experience
Duncan started his career in a bioscience start-up business, which ultimately went on to list on the London Stock Exchange, subsequently qualified as a corporate finance lawyer with Addleshaw Goddard, then Addleshaw Booth & Co, and later joined 3i plc as an investment manager. Duncan founded Aquarius in 2005, which made founding investments into Nanoco Technologies Limited, Auralis Limited (subsequently sold to ViroPharma), Tissue Regenix Group plc, Brabant Pharma (subsequently sold to Zogenix, Inc.) and C4X Discovery plc. Duncan is a co-founder of 4D pharma plc and has served as Chief Executive Officer since 2014.

Alex Stevenson
Chief Scientific Officer

Appointment date
June 2014.

Skills
Alex began his career as a microbiologist, working in research for a number of years before joining an NYSE-quoted drug development company. He subsequently moved into pharmaceutical and healthcare investment and has fulfilled a number of board-level investment and operational management roles.

Experience
Alex was a Director and shareholder in Aquarius Equity from 2008, where he was responsible for identifying new investments and developing and implementing scientific strategies both pre and post-investment. These included Tissue Regenix Group plc, C4X Discovery Holdings plc and Brabant Pharma (subsequently sold to Zogenix, Inc.). Prior to joining Aquarius Equity, Alex worked for IP Group plc, where he specialised in life sciences investments identifying, developing and advising a number of companies in its portfolio, some of which went on to list on AIM. He joined IP Group following its acquisition of Techtran Group Limited in 2005. Alex is a co-founder of 4D pharma plc and has served as Chief Scientific Officer since 2014.

David Norwood
Non-Executive Director

A **R**

Appointment date
June 2014.

Skills
David has had a long career building a number of science, technology and investment companies. He is the founder of IP Group plc, one of the UK's leading technology commercialisation businesses, and a shareholder in the Company.

Experience
Previously, David was chief executive of stockbroker Beeson Gregory (acquired by Evolution Group plc) after it acquired IndexIT Partnership, a technology advisory boutique he had founded in 1999. He was a founding shareholder of Evolution Group plc (acquired by Investec), and also co-founder of Ora Capital. He has been a founder and director of many UK technology companies including Oxford Nanopore Technologies Limited, Proximagen Limited, Synairgen plc, Ilika Technologies Limited, Oxford Catalysts and Plectrum Petroleum (acquired by Cairn Energy plc). He has also acted as seed investor and/or advisor to Wolfson Microelectronics Limited, Nanoco Technologies, Tissue Regenix Group plc and Arc International (now part of Synopsys).

David served as 4D pharma's Non-Executive Chairman from its founding in 2014 until 17 April 2020.

Thomas Engelen
Non-Executive Director

A R

Appointment date
June 2014.

Skills
Thomas has been a founder and/or non-executive director of a number of UK life sciences companies including Colonis Pharma Limited, Warneford Partners Limited, Martindale Pharma Limited and Pneumagen Limited. Thomas has supported private equity and other investors in over 50 potential deal transactions, on targets in Europe and the US, from cash constrained/chapter 11 to cash rich with enterprise value of up to $1 billion.

Experience
Before this Thomas worked in life sciences for over 20 years in senior executive roles. Starting in 1987 at Akzo Nobel Pharma, he worked with hospital products, diagnostics and medical equipment as general manager for the Middle East and Africa. After this he led Rosemont Pharmaceuticals in Leeds in niche oral liquid medicines, followed by being president of Organon in Brazil. He was promoted to VP The Americas and lastly to CMO at Organon, in charge of the global product portfolio, based in the US. Returning to Europe he led Novartis Consumer Health in the UK. Thomas has also acted as non-executive chairman at Akcros Holdings Limited, Penlan Healthcare and Quantum Pharmaceutical.

Resigned May 2020.

Ed Baracchini
Non-Executive Director

Appointment date
January 2019.

Skills
Ed has had a long and successful career in the pharmaceutical industry. He was previously the Chief Business Officer at Xencor Inc. where he led strategic alliances and licensing.

Experience
During his time at Xencor Ed negotiated licence agreements with Novartis ($2.6 billion: immuno-oncology bispecific antibodies), Novo Nordisk ($600 million: drug discovery collaboration), Amgen ($500 million: option and development agreement autoimmune disease antibody) among numerous others. Prior to that he served as SVP Business Development for Metabasis Therapeutics.

Dr. Sandy Macrae
Non-Executive Director

Appointment date
August 2019.

Skills
Sandy has over twenty years of experience in the pharmaceutical industry, with a combination of scientific, medical and commercial expertise.

Experience
Sandy currently serves as President and Chief Executive Officer of Sangamo Therapeutics, Inc., a leading genomic medicine company active in developing cell and gene therapies across a range of rare and large indications.

Sandy has previously served as Global Medical Officer of Takeda Pharmaceuticals, overseeing medical affairs, regulatory affairs, pharmacovigilance, outcomes research and epidemiology, quantitative sciences, and knowledge and informatics. Prior to that, Sandy held roles of increasing responsibility at GlaxoSmithKline, including Senior Vice President, Emerging Markets Research and Development (R&D), and Vice President, Business Development. Earlier in his career, he worked for SmithKline Beecham, where he was responsible for clinical development in the therapeutic areas of neurology and gastroenterology.

■ Committee Chairman
A Audit and Risk Committee
R Remuneration Committee

Corporate governance statement

Effective governance for sustainable growth

This section of the Annual Report describes the Group's corporate governance structures and processes and how they have been applied during the year ended 31 December 2019.

Chairman's introduction

On behalf of the Board, I am pleased to present our Corporate Governance Statement for the year ended 31 December 2019.

In this section, we explain our approach to the corporate governance of the Group. As Chairman, I am responsible for the leadership of the Board, ensuring its effectiveness in all aspects of its functions and, within that role, for promoting good governance throughout the Group.

The Board recognises the importance of good corporate governance and has, since the Company's initial public offering and as the Group has grown, maintained a regular review and evaluation of its effectiveness, and that of the wider governance structure of the Group.

I believe that the Company's governance structure has facilitated the growth and development of the Group, while remaining accountable to all of its stakeholders, including shareholders, employees, collaborators and regulators. As the Group continues to grow, we will continue to evaluate this structure and will take the governance steps necessary to support the Group's development.

Axel Glasmacher
Non-Executive Chairman
22 May 2020

The AIM Rules for Companies require the Board to apply a recognised corporate governance code. The Board has chosen to formally apply the Quoted Companies Alliance Corporate Governance Code, updated in 2018 (the 'QCA Code'). The QCA Code was developed by the Quoted Companies Alliance, an independent membership organisation championing the interests of small to mid-sized quoted companies, one of whose aims is to promote high quality corporate governance in quoted companies. In consultation with a number of significant institutional small company investors, it has developed the QCA Code as an alternative corporate governance code applicable to quoted companies that do not have a premium listing of equity shares, including AIM companies.

Board composition and responsibility

The Board consisted of seven Directors, five of whom were Non-Executive. The names of the Directors, together with their biographical details, are set out on pages 24 and 25.

The Board has determined that each of Ed Baracchini, Thomas Engelen, Axel Glasmacher and Sandy Macrae are independent in character and judgement, and that there are no relationships or circumstances which could materially affect or interfere with the exercise of their independent judgement. The Board has determined that David Norwood is not independent, by virtue only of his holding of ordinary shares in the Company, summarised in the report from the Chairman of the Remuneration Committee (on pages 30 and 31). The Board has nevertheless determined that (save only for such holding of ordinary shares) there are no relationships or circumstances which could materially affect or interfere with the exercise of his independent judgement.

The Board is satisfied with its composition and the balance between Executive and Non-Executive Directors, which allows it to exercise objectivity in decision making and proper control of the Group's business.

Decision making

The Board's primary objective is to focus on adding value to the assets of the Group by identifying and assessing business opportunities and ensuring that potential risks are identified, monitored and controlled.

Material issues are reserved to a decision of the Board, including approval (and review of performance) of the Group's strategic aims and objectives; approval of the annual operating and capital expenditure budgets (and any material changes to them); approval of all financial statements and results; and maintenance of a sound system of internal control and risk management. The implementation of Board decisions and day-to-day operations of the Group are delegated to Executive Directors.

The Board meets both at regular intervals and also at short notice to consider specific matters (for example proposed material transactions). The Board receives appropriate and timely information prior to each meeting, with a formal agenda and Board and Committee papers being distributed several days before meetings take place. Any Director may challenge Group proposals and decisions are taken democratically after discussion.

Any Director who feels that any concern remains unresolved after discussion may ask for that concern to be noted in the minutes of the meeting. Any specific actions arising from such meetings are agreed by the Board and then followed up by management.

The Non-Executive Directors constructively challenge and help develop proposals on strategy and bring strong, independent judgement, knowledge and experience to the Board's deliberations. The Directors are given access to independent professional advice at the Group's expense when the Directors deem it is necessary in order for them to carry out their responsibilities.

The Group has effective procedures in place to deal with conflicts of interest. The Board is aware of other commitments of its Directors and changes to these commitments are reported to the Board.

Appointment and re-election of Directors

Each of the Directors is subject to retirement by rotation and re-election in accordance with the articles of association of the Company. All Directors appointed by the Board are subject to election by shareholders at the first Annual General Meeting after their appointment.

Board evaluation

Given its composition and flexibility, the Board has been able, since the admission of the Company's shares to trading on AIM, to maintain a regular evaluation of its effectiveness and that of its Committees. It is believed that the Board and its Committees have functioned well throughout this period, meeting with appropriate regularity and with Directors free to voice differing opinions. In particular, the Board considers its composition to be appropriate (in view of the size and requirements of the Group's business, and the need to maintain a practical balance between Executives and Non-Executives). As the business of the Group grows and evolves, the Board continues to actively consider potential candidates to occupy Board positions.

Committees

The Board has established an Audit and Risk Committee and a Remuneration Committee, with formally delegated duties and responsibilities. The Board has, since the admission of the Company's shares to trading on AIM, kept under regular review the possible establishment of a Nomination Committee. The Board remains of the view that, given the current composition of the Board, it is not appropriate to have a Nomination Committee. This will continue to be kept under regular review by the Board.

10 principles

The QCA Code is constructed around ten broad principles and a set of disclosures grouped under three broad headings: deliver growth; maintain a dynamic management framework; and build trust.

Read more about the Group's corporate governance and QCA Code compliance on our website at https://www.4dpharmaplc.com/en/investors

Meeting attendance

	Full Board	Audit and Risk Committee	Remuneration Committee
Number of meetings in year	5	2	1
Attendance:			
Executive Directors			
Duncan Peyton	5	—	—
Dr. Alex Stevenson	5	—	—
Non-Executive Directors			
David Norwood	5	2	1
Thomas Engelen	5	2	1
Axel Glasmacher	5	—	—
Ed Baracchini	5	—	—
Sandy Macrae*	1	—	—

* Appointed August 2019.

Corporate governance statement continued

Pursuit, evaluation and maintenance of leadership excellence

Committees continued

The Audit and Risk Committee

The Audit and Risk Committee was comprised of Thomas Engelen as Chairman and David Norwood as the other member of the Committee. Thomas Engelen was an independent Director and has recent and relevant financial experience. The Committee has primary responsibility for monitoring the quality of internal controls, ensuring that the financial performance of the Company is properly measured and reported on, and reviewing reports from the Company's auditor relating to the Company's accounting and internal controls, in all cases having due regard to the interests of shareholders.

The Remuneration Committee

The Company has established a formal and transparent procedure for developing policy on Executive remuneration and for fixing the remuneration packages of individual Directors and senior management. The Remuneration Committee was comprised of Thomas Engelen as Chairman and David Norwood as the other member of the Committee. The Committee reviews the performance of the Executive Directors and senior management and determines their terms and conditions of service, including their remuneration and the grant of incentives, having due regard to the interests of shareholders.

The Board believes that the Audit and Risk Committee and the Remuneration Committee have the necessary character, skills and knowledge to discharge their duties and responsibilities effectively, notwithstanding that (given the overall composition of the Board) there is not a majority of members who are independent Non-Executive Directors. Each Committee is, however, chaired by an independent Non-Executive Director.

Corporate culture

The Board recognises the need, and strives, to promote a corporate culture based on strong ethical and moral values, maintaining high standards of integrity and probity in the conduct of the Group's operations. This culture is promoted throughout its employees.

The Group encourages its employees to understand all aspects of the Group's business and seeks to remunerate its employees fairly, being flexible where practicable. The Group gives full and fair consideration to applications for employment received regardless of age, gender, colour, ethnicity, disability, nationality, religious beliefs, transgender status or sexual orientation. The Board takes account of employees' interests when making decisions, and suggestions from employees aimed at improving the Group's performance are welcomed.

Approach to risk and internal control

The Board is responsible for establishing and maintaining the Group's systems of internal control. The primary responsibility for monitoring the quality of internal control has been delegated to the Audit and Risk Committee. Reference is made to the statement on Risk and Risk Management on pages 20 to 23.

Communicating vision and strategy

We are committed to communicating openly with our shareholders to ensure that the Group's strategy and performance are clearly understood. The Directors seek to visit institutional shareholders at least twice a year. Normally, all shareholders may attend the Company's Annual General Meeting, where there is an opportunity to question the Directors as part of the agenda, or more informally after the meeting. However, in light of the COVID-19 outbreak and government guidelines including social distancing measures in place, this year's meeting will be a closed meeting and we would instead invite questions to be submitted to ir@4dpharmaplc.com ahead of the meeting. A range of corporate information (including all 4D announcements) is also available to shareholders, investors and the public on our website.

Acting independently

The Committee acts independently of management to ensure the interests of shareholders are protected in relation to financial reporting, internal controls and risk management.

Members
- Thomas Engelen (Chairman)
- David Norwood

As a member of the Audit and Risk Committee, I am pleased to present our report for the year ended 31 December 2019. The Audit and Risk Committee is a sub-committee of the Board and is responsible for reviewing all aspects of the financial reporting of the business and all aspects of internal control. The Committee represents the interests of our shareholders in relation to the integrity of information and the effectiveness of the audit processes in place.

Key responsibilities

The principal duties of the Committee are to:

- monitor the integrity of the Group's financial reporting including the review of significant financial reporting judgements;
- advise the Board on whether, taken as a whole, the Annual Report and Accounts is fair, balanced and understandable;
- advise the Board on principal risks, their mitigation and risk appetite;
- review the robustness of our risk management and internal controls;
- oversee the external audit process including monitoring the auditor's independence, objectivity, effectiveness and performance; and
- approve any engagement by the external auditor outside of the Group's audit.

The Committee manages the relationship with the external auditor on behalf of the Board to ensure that the external auditor continues to be independent, objective and effective in its work, and also considers the re-appointment of the auditor each year.

RSM UK Audit LLP was appointed as auditor in 2014 following a comprehensive tender process. Each year the Committee considers the continued independence of the external auditor and the effectiveness of the external audit process, to determine whether to recommend to the Board that the current auditor be re-appointed.

The Committee has reviewed the external audit process in the year through meetings and reviewing the reports from the external audit team. The Committee has concluded that the external audit process was effective and is satisfied that the scope of the audit is appropriate and that significant judgements have been robustly challenged.

Composition and meetings

The Audit and Risk Committee during the year under review has consisted of two Non-Executive Directors. The Committee was chaired by Thomas Engelen, with me David Norwood as the other member. I am an independent Director and have recent and relevant financial experience.

There were two meetings held in the year ended 31 December 2019 – one in January and one in May.

Committee meetings are also attended by the Group Finance Director, and representatives from the external auditor.

Significant issues relating to the financial statements

The specific issues considered by the Audit and Risk Committee in the year under review, in relation to the financial statements, are shown below.

Valuation of goodwill and other intangible assets

Testing of goodwill and other intangible assets for potential impairment is complex and requires a number of management estimates and sensitivities to be applied, which inevitably requires judgement and is a recurring matter.

The forecasting tools developed by management to help assess the values of intangible assets and goodwill were updated for variables that were known to have changed.

The Committee reviewed the reports together with the assumptions, judgements and sensitivities applied to the valuations and underlying models for impairment testing purposes.

Recoverability of intercompany balances

There are various intergroup balances within the Group. For intergroup balances held with entities in a current or shareholder deficit position there is a potential that these recoverable balances may not be realised in full.

Following a review and after discussions with management the Committee is satisfied that an impairment charge of £177,000 should be recorded in the year to 31 December 2019 reflecting the Committee's recognition of the inherent risk involved in the recoverability of intercompany balances and that the disclosures in the financial statements are appropriate.

David Norwood
On behalf of the Audit and Risk Committee
22 May 2020

Report of the Remuneration Committee

Retaining talent

The Committee aims to attract, retain and motivate the executive management of the Company and set remuneration at an appropriate level.

Members
- Thomas Engelen (Chairman)
- David Norwood

As a member of the Remuneration Committee, I am pleased to present our report for the year ended 31 December 2019.

This report does not constitute a Directors' remuneration report in accordance with the Companies Act 2006. As a company whose shares are admitted to trading on AIM, the Company is not required by the Companies Act 2006 to prepare such a report.

Key responsibilities

The Remuneration Committee is a sub-committee of the Board. Its principal purpose is to determine and agree with the Board the framework and broad policy for remuneration, and to determine the remuneration packages and service contracts of the Executive Directors, the Company Secretary and such other members of the executive management as it considers appropriate. Among other things, the Committee shall approve the design of, and determine targets for, any performance incentive schemes operated by the Company and approve the awards made under such schemes.

Composition and meetings

During the year the members of the Committee were Thomas Engelen, an independent Non-Executive Director, and David Norwood, a non-independent Non-Executive Director. All members served on the Committee throughout the year and to the date of this report. Thomas Engelen was Chairman of the Committee throughout this period.

There was one meeting of the Committee held in the year ended 31 December 2019, held in March. The meeting was convened to consider and review the Group's remuneration policy, and to approve annual awards to senior management under the Group's Long Term Incentive Plan. There were no changes to the remuneration or service agreements of the Executive Directors during the period.

Policy on Executive remuneration

The Committee aims to attract, retain and motivate the executive management of the Company and set remuneration at an appropriate level to promote the long-term success of the Group, in line with its strategic objectives.

The overall policy of the Board is to ensure that executive management is provided with appropriate incentives to encourage enhanced performance and, in a fair and responsible manner, rewarded for its contribution to the success of the Group.

The main elements of the remuneration packages for Executive Directors and senior management are as follows:

Basic annual salary

The base salary is reviewed annually. The review process is undertaken by the Remuneration Committee and takes into account several factors, including the current position and development of the Group, individual contributions and market salaries for comparable organisations.

The Company does not provide an occupational pension scheme for Executive Directors, nor does it make contributions into the private pension schemes of Executive Directors.

Discretionary annual bonus

All Executive Directors and senior managers are eligible for a purely discretionary annual bonus. This takes into account exceptional individual contribution, business performance and technical and commercial progress, along with financial results.

Long-term incentives

The Group operates a long-term share incentive scheme; all Group Executive Directors and employees are eligible for the granting of awards under the scheme. Details of the awards made under the scheme during the year are provided in note 23 to the financial statements. All such awards vest after three years and are subject to individual performance criteria. There were no awards during the year to the Directors of the Company.

Benefits in kind

The Company provides taxable healthcare benefits for Executive Directors.

Policy on Non-Executive Directors' remuneration

Non-Executive Directors receive a fixed fee and do not receive any pension payments or other benefits, nor do they participate in bonus or incentive schemes. The Board reviews Non-Executive remuneration to ensure that it is in line with current market rates in order to attract and retain high calibre individuals.

Directors' remuneration

The remuneration of the Directors who served on the Company's Board during the year to 31 December 2019 is as follows:

	31 December 2019			31 December 2018		
	Base salary and fees £000	**Healthcare benefits £000**	**Total £000**	Base salary and fees £000	Healthcare benefits £000	Total £000
Executive Directors						
Duncan Peyton	**100**	**2**	**102**	100	2	102
Dr. Alex Stevenson	**100**	**2**	**102**	100	2	102
Non-Executive Directors						
David Norwood	**25**	**—**	**25**	25	—	25
Thomas Engelen	**25**	**—**	**25**	25	—	25
Ed Baracchini	**50**	**—**	**50**	—	—	—
Prof. Axel Glasmacher	**50**	**—**	**50**	—	—	—
Dr. Sandy Macrae	**17**	**—**	**17**	—	—	—

There were no bonus or pension schemes for the Directors during the years ended 31 December 2019 and 31 December 2018.

Service contracts

Duncan Peyton and Dr. Alexander Stevenson have service agreements with an indefinite term providing for a maximum of twelve months' notice by either party.

Non-Executive Directors are employed on letters of appointment which may be terminated on not less than three months' notice.

Directors' interests in share capital

At 31 December 2019, David Norwood held 7,123,725 ordinary shares in the Company's share capital, or 10.9% (31 December 2018: 10.8%); Duncan Peyton held 6,455,075 ordinary shares in the Company's share capital, or 9.9% (31 December 2018: 9.7%); Dr. Alexander Stevenson held 6,413,136 ordinary shares in the Company's share capital, or 9.8% (31 December 2018: 9.7%); and Thomas Engelen held 523,800 shares in the Company's share capital, or 0.8% (31 December 2018: 0.8%).

No Director was granted any share options in the year ended 31 December 2019; none of the Directors held any share options at 31 December 2018.

David Norwood
On behalf of the
Remuneration Committee
22 May 2020

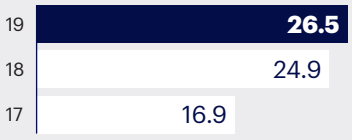
Directors' report

Maintaining transparency

The Directors present their report together with the audited consolidated financial statements, along with the Independent Auditor's Report for the year ended 31 December 2019.

Expenditure on R&D (£m)

£26.5m



Strategic Report

In accordance with section 414C(11) of the Companies Act 2006 and the Companies Act 2006 (Strategic Report and Directors' Report) Regulations 2013, the Group has chosen to set out in the Strategic Report information required by schedule 7 of the Large and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008.

Directors

The Directors who held office during the year, and as at the date of signing the financial statements, and brief biographical descriptions of the Directors, are set out on pages 24 and 25.

The beneficial and non-beneficial interests of the Directors in the Company's ordinary shares of 0.25 pence are disclosed in the Report of the Remuneration Committee on pages 30 and 31.

No Director had an interest in any contract that was significant in relation to the Group's business at any time during the year.

Directors' indemnity insurance

The Group has maintained insurance throughout the year for its Directors and officers against the consequences of actions brought against them in relation to their duties for the Group. Such provision remains in force as at the date of approval of the Directors' Report.

Research and development activities

The principal activity of the Group is research and development, a review of which is included in the CEO's Report on pages 7 to 12.

Total research and development spend in the year to 31 December 2019 was £26.5 million (year to 31 December 2018: £24.9 million).

No development expenditure was capitalised in the current year or the year to 31 December 2018.

Subsequent events and future developments

After the period end, in February, the Board approved a subscription and placing of ordinary shares, raising gross proceeds of £22 million.

In April 2020 the Group received MHRA acceptance for a UK Phase II clinical trial of LBP MRx-4DP0004 to treat COVID-19.

An overview of the expected future developments of the business is included in the Chief Executive Officer's report on pages 7 to 12.

Stakeholder engagement

Details of how the Group and Board engage with key stakeholders are included in the Section 172 statement on page 15. In 2019, this process helped to shape the direction of the Group's business, including an increased focus on key programmes such as oncology and a research collaboration in the field of vaccines with MSD.

Dividends

The Directors do not recommend payment of a dividend nor was there a dividend in the year to 31 December 2018.

Employment policies

The Group is committed to ensuring the health and safety of its employees in the workplace. This includes the provision of regular medical checks.

The Group is committed to keeping employees as fully informed as possible with regard to the Group's performance and prospects and seeks their views, wherever possible, on matters which affect them as employees.

Financial instruments

Details of the Group's financial risk management objectives and policies are disclosed on pages 20 to 23 and in note 26 to the financial statements.

Share capital and funding

As at 31 December 2019 share capital comprised 65,493,842 ordinary shares of 0.25 pence each. There is only one class of share and all shares are fully paid. No share carries any right to fixed income, and each share carries the right to one vote at general meetings of the Company.

Full details of the Group's and the Company's share capital movements during the year are given in note 22 to the financial statements.

Details of shares under option are provided in note 23 to the financial statements.

Corporate Governance Statement

The Group's statement on corporate governance can be found in the Corporate Governance Statement on pages 26 to 28.

Substantial shareholders

	Number of 0.25 pence ordinary shares as at 31 December 2019	% of issued capital	Number of 0.25 pence ordinary shares as at 31 December 2018	% of issued capital
Link Fund Solutions	**13,091,131**	**19.99%**	—	—
Richard Griffiths and controlled undertakings	**9,854,533**	**15.05%**	—	—
David Norwood	**7,123,725**	**10.88%**	7,080,000	10.81%
Duncan Peyton	**6,455,075**	**9.86%**	6,337,215	9.68%
Alexander Stevenson	**6,413,136**	**9.79%**	6,337,242	9.68%
Lansdowne Partners	**4,816,517**	**7.35%**	3,000,000	4.58%
Société Générale SA	**3,435,023**	**5.24%**	—	—
Janus Henderson Investors	**2,858,694**	**4.36%**	4,228,522	6.46%
Jupiter Asset Management	**2,084,632**	**3.18%**	—	—

Going concern

The CEO's Report on pages 7 to 12 outlines the business activities of the Group, along with the factors which may affect its future development and performance, and discusses the Group's financial position, along with details of its cash flow and liquidity. Reference is made to the statement on Risk and Risk Management on pages 20 to 23.

The Group and parent company are subject to a number of risks similar to those of other development stage pharmaceutical companies. These risks include, amongst others, generation of revenues in due course from the development portfolio and risks associated with research, development, and obtaining regulatory approvals of its products. Ultimately, the attainment of profitable operations is dependent on future uncertain events which include obtaining adequate financing to fulfil the Group's commercial and development activities and generating a level of revenue to support the Group's cost structure.

The Directors have prepared detailed financial forecasts and cash flows looking beyond twelve months from the date of the approval of these financial statements. In developing these forecasts, the Directors have made assumptions based upon their view of the current and future economic conditions that are expected to prevail over the forecast period. Following fundraising activity which concluded in Q1 2020, and introduction of cost reduction measures, the Directors estimate that the cash held by the Group together with known receivables will be sufficient to support the current level of activities into quarter four of 2020. The Directors are continuing to explore sources of finance available to the Group and have a reasonable expectation that they will be able to secure sufficient cash inflows into the Group to continue its activities for not less than twelve months from the date of approval of these accounts. They have therefore prepared the financial statements on a going concern basis.

Because the additional finance is not committed at the date of approval of these financial statements, these circumstances represent a material uncertainty as to the Group's ability to continue as a going concern. Should the Group be unable to obtain further finance such that the going concern basis of preparation was no longer appropriate, adjustments would be required including to reduce the carrying value of assets to their recoverable amounts, and to provide for future liabilities that may arise.

Disclosure of information to the auditor

The Directors who held office at the date of approval of this Directors' Report confirm that:

- so far as they are each aware, there is no relevant audit information of which the Group's auditor is unaware; and
- each Director has taken all the steps that he ought to have taken as a Director to make himself aware of any relevant audit information, and to establish that the Group's auditor is aware of that information.

Auditor

RSM UK Audit LLP has indicated its willingness to continue in office. Ordinary resolutions to re-appoint RSM UK Audit LLP as auditor and to authorise the Directors to agree its remuneration will be proposed at the forthcoming Annual General Meeting.

Annual General Meeting

The Annual General Meeting of the Company will be held on 30 June at 10am at 9 Bond Court, Leeds, LS1 2JZ.

Recommendation

The Board considers that the resolutions to be proposed at the Annual General Meeting are in the best interests of the Company and it is unanimously recommended that shareholders support these proposals as the Board intends to do in respect of its own holdings.

The Directors' Report was approved by the Board on 22 May 2020 and was signed on its behalf by:

Duncan Peyton
Chief Executive Officer
22 May 2020

Statement of Directors' responsibilities

4dpharmaplc.com

The Directors are responsible for preparing the Strategic Report, the Directors' Report and the financial statements in accordance with applicable law and regulations.

Company law requires the Directors to prepare Group and Company financial statements for each financial year. The Directors are required by the AIM Rules of the London Stock Exchange to prepare Group financial statements in accordance with International Financial Reporting Standards (IFRS) as adopted by the European Union (EU) and have elected under company law to prepare the Company financial statements in accordance with IFRS as adopted by the EU.

The Group financial statements are required by law and IFRS adopted by the EU to present fairly the financial position of the Group and the Company and the financial performance of the Group. The Companies Act 2006 provides in relation to such financial statements that references in the relevant part of that Act to financial statements giving a true and fair view are references to their achieving a fair presentation.

Under company law the Directors must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the Group and the Company and of the profit or loss of the Group for that period.

In preparing each of the Group and Company financial statements, the Directors are required to:

a. select suitable accounting policies and then apply them consistently;

b. make judgements and accounting estimates that are reasonable and prudent;

c. state whether they have been prepared in accordance with IFRSs adopted by the EU; and

d. prepare the financial statements on the going concern basis unless it is inappropriate to presume that the Group and the Company will continue in business.

The Directors are responsible for keeping adequate accounting records that are sufficient to show and explain the Group's and the Company's transactions and disclose with reasonable accuracy at any time the financial position of the Group and the Company and enable them to ensure that the financial statements comply with the Companies Act 2006. They are also responsible for safeguarding the assets of the Group and the Company and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

The Directors are responsible for the maintenance and integrity of the corporate and financial information included on the 4D pharma plc website.

Legislation in the United Kingdom governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

Pages 1 to 34 inclusive (together with other sections of the Annual Report incorporated by reference) comprise and include the information required by the Companies Act 2006 to be included in the Strategic Report.

Independent auditor's report

To the members of 4D pharma plc

Opinion

We have audited the financial statements of 4D Pharma plc (the 'parent company') and its subsidiaries (the 'group') for the year ended 31 December 2019 which comprise the Group Statement of Total Comprehensive Income, the Group and Parent Company Statement of Financial Position, the Group and Parent Company Statement of Changes in Equity, the Group and Parent Company Cash Flow Statement and notes to the financial statements, including a summary of significant accounting policies. The financial reporting framework that has been applied in their preparation is applicable law and International Financial Reporting Standards (IFRSs) as adopted by the European Union and, as regards the parent company financial statements, as applied in accordance with the provisions of the Companies Act 2006.

In our opinion:

- the financial statements give a true and fair view of the state of the group's and of the parent company's affairs as at 31 December 2019 and of the group's loss for the year then ended;
- the group financial statements have been properly prepared in accordance with IFRSs as adopted by the European Union;
- the parent company financial statements have been properly prepared in accordance with IFRSs as adopted by the European Union and as applied in accordance with the Companies Act 2006; and
- the financial statements have been prepared in accordance with the requirements of the Companies Act 2006.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) (ISAs (UK)) and applicable law. Our responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the financial statements section of our report. We are independent of the group and parent company in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, including the FRC's Ethical Standard as applied to listed entities and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Material uncertainty related to going concern

We draw attention to the accounting policy on going concern on page 46 of the financial statements, which indicates that the cash flow forecast prepared by the directors estimates that the Group has sufficient funds to support the current level of activities to the final quarter of 2020 and therefore needs to raise additional funds. As stated in the accounting policy on going concern, these events or conditions, along with the other matters as set forth on page 46 indicate that a material uncertainty exists that may cast significant doubt on the Group's ability to continue as a going concern. Our opinion is not modified in respect of this matter.

Summary of our audit approach

Key audit matters	**Group** • Revenue recognition and collaboration agreements • Impairment of intangibles **Parent Company** • Impairment of intercompany receivables
Materiality	**Group** • Overall materiality: £590,000 • Performance materiality: £442,000 **Parent Company** • Overall materiality: £275,000 • Performance materiality: £206,000
Scope	Our audit procedures covered 100% of revenue and expenses, 100% of total assets and 100% of loss before tax.

Key audit matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the group and parent company financial statements of the current period and include the most significant assessed risks of material misstatement (whether or not due to fraud) we identified, including those which had the greatest effect on the overall audit strategy, the allocation of resources in the audit and directing the efforts of the engagement team. These matters were addressed in the context of our audit of the group and parent company financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

Independent auditor's report continued

To the members of 4D pharma plc

Key audit matters continued

In addition to the matter described in the Material uncertainty related to going concern section we have determined the matters described below to be the key audit matters to be communicated in our report.

Revenue recognition and collaboration agreements

Key audit matter description	The Group has entered into a number of collaboration agreements as part of its ongoing clinical trials and has recognised revenue of £211,000 in the year. As set out in the accounting policies, the recognition of revenue is dependent on the assessment of the stage of completion against that planned as the contract progresses. We considered this to be a key audit matter because of the significance that the generation of revenue has to the overall development of the Group and the significant judgements and estimates made by management in respect of the contract progress and the inherent profitability of the contract.
How the matter was addressed in the audit	We performed work on the Directors' assessment of the Collaboration Agreements as follows: ◦ Reviewing the assessment made by management of the underlying contractual terms, corroborating and challenging the judgements and assumptions used by management and agreeing that these were consistent with the underlying agreements in place; and ◦ Reviewing the detailed calculations supporting the key inputs into the revenue recognised and challenging management as to the timing of these and the assumptions made with regards to the stage of completion achieved and the margin to be recognised.

Impairment of intangibles

Key audit matter description	The Group carries goodwill and other intangibles amounting to £13,988,000 (2018: £14,445,000) in respect of past business combinations and subsequent purchases of intangible assets. As set out in note 12 the recoverability (and timing thereof) of the goodwill and other intangibles arising on these acquisitions is dependent on the cash generating units to which the intangible is allocated generating sufficient cash flows in the future. We considered this to be a key audit matter because of the significant management judgement in forecasting the cash flows and selecting an appropriate discount rate there is a high level of estimation uncertainty which results in there being a significant risk associated with determining whether goodwill and other intangible assets are impaired and useful economic lives remain appropriate.
How the matter was addressed in the audit	We performed work on the Directors' impairment assessment as follows: ◦ Reviewing the underlying models, corroborating and challenging the judgements and assumptions used by management and the need or otherwise for these to be updated based on new matters arising in their assessment of whether goodwill and other intangible assets had been impaired; ◦ Performing sensitivity analysis on the cash flow model; ◦ Considering whether the models used in the prior year are still appropriate given the developments within the business during the year and the stages of the programme lifecycles; and ◦ Assessing management's sensitivity analysis of key assumptions and how these have been updated, including those in relation to the likelihood of successful product development, timing of sales, pricing, and discount rate, and considered whether the disclosures about the sensitivity of the outcome of the impairment assessment to reasonably possible changes in key assumptions were adequate and properly reflected the risks inherent in the assessment of the carrying value of goodwill and other intangibles.

Impairment of intercompany receivables

Key audit matter description	At 31 December 2019 the parent company balance sheet includes amounts owed by subsidiary undertakings of £59,643,000 (2018: £50,650,000). The risk is that this balance may not be recoverable owing to the ongoing losses sustained in the group's subsidiary undertaking. The recoverability of these balances is judgemental, and the Directors have provided us with their assessment of recoverability through multiple scenarios, including the present value of future cashflows, the saleable value of liquid assets, and also through assessing the value of the group (including assessment of the current market capitalisation).
How the matter was addressed in the audit	We performed work on the Directors assessment as follows: ◦ Reviewing forecasts, and challenging the assumptions used in the determining the present value of future cashflows, including the likelihood of successful product development, timing of sales, pricing, and discount rate; ◦ Considering the sensitivity of key assumptions in relation to the recoverability of saleable assets; ◦ Challenging management on their assessment of the valuation of the group including their consideration of recent transactions involving similar type businesses; and ◦ Ensuring adequate disclosure in the notes to the financial statements.

Our application of materiality

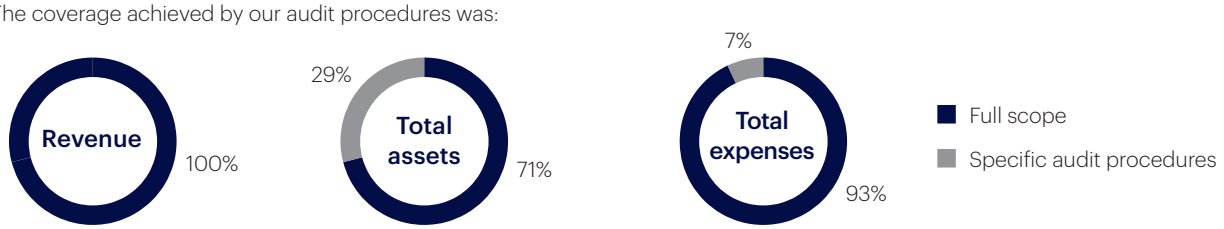
When establishing our overall audit strategy, we set certain thresholds which help us to determine the nature, timing and extent of our audit procedures. When evaluating whether the effects of misstatements, both individually and on the financial statements as a whole, could reasonably influence the economic decisions of the users we take into account the qualitative nature and the size of the misstatements. Based on our professional judgement, we determined materiality as follows:

	Group	Parent company
Overall materiality	£590,000	£275,000
Basis for determining overall materiality	2% of total expenditure	2% of total expenditure
Rationale for benchmark applied	The Group continues to apply the funds it has raised in the application of scientific research – these costs are expensed as incurred so users of the financial statements will consider the application of the funds as the relevant measure	
Performance materiality	£442,000	£206,000
Basis for determining performance materiality	75% of overall materiality	75% of overall materiality
Reporting of misstatements to the Audit Committee	Misstatements in excess of £29,500 and misstatements below that threshold that, in our view, warranted reporting on qualitative grounds.	Misstatements in excess of £13,700 and misstatements below that threshold that, in our view, warranted reporting on qualitative grounds.

An overview of the scope of our audit

The group consists of 4 components, located in the following countries; United Kingdom, Republic of Ireland, Spain.

The coverage achieved by our audit procedures was:



Full scope audits were performed for 2 components and specific audit procedures at group level for the remaining 2 components.

Specific audit procedures were performed in respect of the components located in Spain and the Republic of Ireland, targeted to address the risk of material misstatement in the consolidated financial statements. These included specific procedures to address the Key Audit Matters identified as part of the Group audit.

Other information

The directors are responsible for the other information. The other information comprises the information included in the annual report, other than the financial statements and our auditor's report thereon. Our opinion on the financial statements does not cover the other information and, except to the extent otherwise explicitly stated in our report, we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated. If we identify such material inconsistencies or apparent material misstatements, we are required to determine whether there is a material misstatement in the financial statements or a material misstatement of the other information. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact.

We have nothing to report in this regard.

Independent auditor's report continued

To the members of 4D pharma plc

Opinions on other matters prescribed by the Companies Act 2006

In our opinion, based on the work undertaken in the course of the audit:

- the information given in the Strategic Report and the Directors' Report for the financial year for which the financial statements are prepared is consistent with the financial statements; and
- the Strategic Report and the Directors' Report have been prepared in accordance with applicable legal requirements.

Matters on which we are required to report by exception

In the light of the knowledge and understanding of the group and the parent company and their environment obtained in the course of the audit, we have not identified material misstatements in the Strategic Report or the Directors' Report.

We have nothing to report in respect of the following matters in relation to which the Companies Act 2006 requires us to report to you if, in our opinion:

- adequate accounting records have not been kept by the parent company, or returns adequate for our audit have not been received from branches not visited by us; or
- the parent company financial statements are not in agreement with the accounting records and returns; or
- certain disclosures of directors' remuneration specified by law are not made; or
- we have not received all the information and explanations we require for our audit.

Responsibilities of directors

As explained more fully in the directors' responsibilities statement, the directors are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view, and for such internal control as the directors determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the directors are responsible for assessing the group's and the parent company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the directors either intend to liquidate the group or the parent company or to cease operations, or have no realistic alternative but to do so.

Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

A further description of our responsibilities for the audit of the financial statements is located on the Financial Reporting Council's website at: http://www.frc.org.uk/auditorsresponsibilities. This description forms part of our auditor's report.

Use of our report

This report is made solely to the company's members, as a body, in accordance with Chapter 3 of Part 16 of the Companies Act 2006. Our audit work has been undertaken so that we might state to the company's members those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the company and the company's members as a body, for our audit work, for this report, or for the opinions we have formed.

Andrew Allchin (Senior Statutory Auditor)
For and on behalf of RSM UK Audit LLP, Statutory Auditor
Chartered Accountants
Central Square 5th Floor
29 Wellington Street
Leeds
LS1 4DL
22 May 2020

Group statement of total comprehensive income

For the year ended 31 December 2019

	Notes	**31 December 2019 £000**	31 December 2018 £000
Revenue	4	**211**	—
Research and development costs	5	**(26,512)**	(24,908)
Administrative expenses	5	**(4,359)**	(4,212)
Foreign currency (losses)/gains	5	**(1,006)**	749
Other income	5	**34**	—
Operating loss before non-recurring income		**(31,632)**	(28,371)
Non-recurring income	6	**2,659**	—
Operating loss after non-recurring income		**(28,973)**	(28,371)
Finance income	8	**61**	282
Finance expense	8	**(514)**	(348)
Loss before taxation		**(29,426)**	(28,437)
Taxation	9	**5,360**	4,747
Loss for the year		**(24,066)**	(23,690)
Other comprehensive income			
Exchange differences on translating foreign operations		**379**	(601)
Loss for the year and total comprehensive income for the year		**(23,687)**	(24,291)
Loss per share			
Basic and diluted for the year	10	**(36.75)p**	(36.17)p

The basic and diluted loss per share are the same as the effect of share options is anti-dilutive.

The notes on pages 46 to 84 form an integral part of these financial statements.

Group statement of financial position

At 31 December 2019

Registered no. 08840579

	Notes	At 31 December 2019 £000	At 31 December 2018 £000
Assets			
Non-current assets			
Property, plant and equipment			
– Owned assets	11	**4,196**	4,865
– Right-of-use assets	11	**964**	—
Intangible assets	12	**13,988**	14,445
Taxation receivables	16	**188**	137
		19,336	19,447
Current assets			
Inventories	14	**198**	290
Trade and other receivables	15	**1,118**	1,248
Taxation receivables	16	**6,122**	5,393
Short-term investments and cash on deposit	17	**—**	10,174
Cash and cash equivalents	17	**3,836**	16,053
		11,274	33,158
Total assets		**30,610**	52,605
Liabilities			
Current liabilities			
Trade and other payables	18	**6,192**	3,525
Lease liabilities	19	**68**	11
Contingent consideration	20	**—**	1,641
		6,260	5,177
Non-current liabilities			
Lease liabilities	19	**1,043**	15
Contingent consideration	20	**—**	684
Deferred tax	21	**964**	966
		2,007	1,665
Total liabilities		**8,267**	6,842
Net assets		**22,343**	45,763
Capital and reserves			
Share capital	22	**164**	164
Share premium account	22	**108,296**	108,296
Merger reserve		**958**	958
Translation reserve		**446**	67
Other reserve		**(864)**	(864)
Share-based payments reserve	23	**367**	708
Retained earnings		**(87,024)**	(63,566)
Total equity		**22,343**	45,763

Approved by the Board and authorised for issue on 22 May 2020.

The notes on pages 46 to 84 form an integral part of these financial statements.

Duncan Peyton
Chief Executive Officer and Director
22 May 2020

Company statement of financial position

At 31 December 2019

Registered no. 08840579

	Notes	At 31 December 2019 £000	At 31 December 2018 £000
Assets			
Non-current assets			
Property, plant and equipment			
– Owned assets	11	**312**	465
– Right-of-use assets	11	**663**	—
Intangible assets	12	**373**	585
Investment in subsidiaries	13	**11,703**	11,805
		13,051	12,855
Current assets			
Loans to subsidiaries	13	**59,643**	50,650
Trade and other receivables	15	**371**	394
Taxation receivables	16	**1,991**	1,225
Short-term investments and cash on deposit	17	**—**	10,174
Cash and cash equivalents	17	**2,921**	13,475
		64,926	75,918
Total assets		**77,977**	88,773
Liabilities			
Current liabilities			
Trade and other payables	18	**1,840**	1,242
Lease liabilities	19	**32**	—
Contingent consideration	20	**—**	1,641
		1,872	2,883
Non-current liabilities			
Lease liabilities	19	**754**	—
Contingent consideration	20	**—**	684
		754	684
Total liabilities		**2,626**	3,567
Net assets		**75,351**	85,206
Capital and reserves			
Share capital	22	**164**	164
Share premium account	22	**108,296**	108,296
Merger reserve		**958**	958
Share-based payments reserve	23	**367**	708
Retained earnings		**(34,434)**	(24,920)
Total equity		**75,351**	85,206

The Company has elected to take the exemptions under Section 408 of the Companies Act 2016 not to present the parent company's Statement of Comprehensive Income. The Company's loss for the year was £9.889 million (31 December 2018: £8.092 million).

Approved by the Board and authorised for issue on 22 May 2020.

The notes on pages 46 to 84 form an integral part of these financial statements.

Duncan Peyton
Chief Executive Officer and Director
22 May 2020

Group statement of changes in equity

For the year ended 31 December 2019

	Share capital £000	Share premium £000	Merger reserve £000	Translation reserve £000	Other reserve £000	Share-based payment reserve £000	Retained earnings £000	Total equity £000
At 1 January 2018	164	108,296	958	668	(864)	440	(39,876)	69,786
Total transactions with owners recognised in equity for the year	—	—	—	—	—	—	—	—
Loss and total comprehensive income for the year	—	—	—	(601)	—	—	(23,690)	(24,291)
Issue of share-based compensation	—	—	—	—	—	268	—	268
At 31 December 2018	164	108,296	958	67	(864)	708	(63,566)	45,763
Total transactions with owners recognised in equity for the year	—	—	—	—	—	—	—	—
Loss and total comprehensive income for the year	—	—	—	379	—	—	(24,066)	(23,687)
Lapsed options	—	—	—	—	—	(608)	608	—
Issue of share-based compensation	—	—	—	—	—	267	—	267
At 31 December 2019	**164**	**108,296**	**958**	**446**	**(864)**	**367**	**(87,024)**	**22,343**

Details regarding the purpose of each reserve within equity are given in note 24.

Company statement of changes in equity

For the year ended 31 December 2019

	Share capital £000	Share premium £000	Merger reserve £000	Share-based payment reserve £000	Retained earnings £000	Total £000
At 1 January 2018	164	108,296	958	440	(16,828)	93,030
Total transactions with owners recognised in equity for the year	—	—	—	—	—	—
Loss and total comprehensive income for the year	—	—	—	—	(8,092)	(8,092)
Issue of share-based compensation	—	—	—	268	—	268
At 31 December 2018	164	108,296	958	708	(24,920)	85,206
Total transactions with owners recognised in equity for the year	—	—	—	—	—	—
Loss and total comprehensive income for the year	—	—	—	—	(9,889)	(9,889)
Lapsed options	—	—	—	(375)	375	—
Lapsed options relating to investment in subsidiaries	—	—	—	(103)	—	(103)
Issue of share-based compensation	—	—	—	137	—	137
At 31 December 2019	**164**	**108,296**	**958**	**367**	**(34,434)**	**75,351**

Details regarding the purpose of each reserve within equity are given in note 24.

Group cash flow statement

For the year ended 31 December 2019

	Notes	**Year to 31 December 2019 £000**	Year to 31 December 2018 £000
Loss after taxation		**(24,066)**	(23,690)
Adjustments for:			
Depreciation of property, plant and equipment	11	**1,065**	905
Amortisation of intangible assets	12	**216**	296
(Profit)/loss on disposal of property, plant and equipment		**(17)**	1
Loss on disposal of intangible assets		**29**	—
Lease liabilities included in the Income Statement		**159**	—
Finance income	8	**(61)**	(282)
Finance expense	8	**514**	348
Release of contingent consideration	6	**(2,659)**	—
Share-based compensation	23	**267**	268
Cash flows from operations before movements in working capital		**(24,553)**	(22,154)
Changes in working capital:			
Decrease/(increase) in inventories		**92**	(37)
Decrease in trade and other receivables		**130**	1,894
Increase in taxation receivables		**(780)**	(1,166)
Increase/(decrease) in trade and other payables		**3,555**	(1,474)
Cash outflow from operating activities		**(21,556)**	(22,937)
Cash flows from investing activities			
Purchases of property, plant and equipment		**(538)**	(537)
Purchase of software and other intangibles	12	**(57)**	(4)
Acquisition of subsidiaries net of cash acquired		**—**	(660)
Cash received on disposal of assets		**43**	—
Interest received		**94**	378
Monies drawn from deposit		**10,174**	27,959
Net cash inflow from investing activities		**9,716**	27,136
Cash flows from financing activities			
Lease liability payments	19	**(197)**	(10)
Interest paid		**(180)**	(1)
Net cash outflow from financing activities		**(377)**	(11)
(Decrease)/increase in cash and cash equivalents		**(12,217)**	4,188
Cash and cash equivalents at the start of the year		**16,053**	11,865
Cash and cash equivalents at the end of the year	17	**3,836**	16,053

On 1 January 2019 IFRS 16 'Leases' came into effect, replacing IAS 17. Amongst other effects the new reporting requirement removed the distinction between operating leases and finance leases, which changed the general presentation. The Group has limited exposure to the effects of the changes so has elected to implement the simplified cumulative catch-up approach with the effects being recognised entirely in the current year. Further details of the effect of the adoption of IFRS 16 are included in the accounting policies (note 3) and in notes 5, 8, 11 and 19 to these accounts.

The year to 31 December 2018 includes a cash outflow of £660,000 relating to the final milestone payment for the acquisition of 4D Pharma Leon S.L.U. The milestone was achieved on successful GMP certification which occurred during 2017.

Company cash flow statement

For the year ended 31 December 2019

	Notes	**Year to 31 December 2019 £000**	Year to 31 December 2018 £000
Loss after taxation		**(9,889)**	(8,092)
Adjustments for:			
Depreciation of property, plant and equipment	11	**248**	152
Amortisation of intangible assets	12	**268**	264
(Profit)/loss on disposal of property, plant and equipment		**(17)**	1
Loss on disposal of intangible assets		**1**	—
Lease liabilities included in the Income Statement		**2**	—
Finance income		**(61)**	(282)
Finance expense		**462**	346
Release of contingent consideration	6	**(2,659)**	—
Share-based compensation	23	**137**	135
Cash flows from operations before movements in working capital		**(11,508)**	(7,476)
Changes in working capital:			
Decrease in trade and other receivables		**(10)**	34
Increase in taxation receivables		**(766)**	(747)
Increase/(decrease) in trade and other payables		**655**	(200)
Cash outflow from operating activities		**(11,629)**	(8,389)
Cash flows from investing activities			
Purchases of property, plant and equipment		**(29)**	(42)
Purchase of software and other intangibles	12	**(57)**	—
Cash received on disposal of assets		**43**	—
Loans to subsidiary undertakings	13	**(8,993)**	(17,491)
Interest received		**94**	378
Monies drawn from deposit		**10,174**	27,959
Net cash inflow from investing activities		**1,232**	10,804
Cash flows from financing activities			
Lease liability payments	19	**(30)**	—
Interest paid		**(127)**	—
Net cash outflow from financing activities		**(157)**	—
(Decrease)/increase in cash and cash equivalents		**(10,554)**	2,415
Cash and cash equivalents at the start of the year		**13,475**	11,060
Cash and cash equivalents at the end of the year	17	**2,921**	13,475

On 1 January 2019 IFRS 16 'Leases' came into effect, replacing IAS 17. Amongst other effects the new reporting requirement removed the distinction between operating leases and finance leases, which changed the general presentation. The Group has limited exposure to the effects of the changes so has elected to implement the simplified cumulative catch-up approach with the effects being recognised entirely in the current year. Further details of the effect of the adoption of IFRS 16 are included in the accounting policies (note 3) and in notes 5, 8, 11 and 19 to these accounts.

Notes to the financial statements

For the year ended 31 December 2019

1. General information

4D pharma plc (the 'Company') is an AIM-quoted company incorporated and domiciled in the UK. The locations and principal activities of the subsidiaries are set out in note 13. The Company is incorporated in England and Wales. The registered office is Fifth Floor, 9 Bond Court, Leeds LS1 2JZ. These Group financial statements consolidate those of the Company and its subsidiaries (together referred to as the 'Group' and individually as 'Group entities') for the year ended 31 December 2019.

The Company has elected to take the exemption under section 408 of the Companies Act 2006 not to present the parent company's Statement of Comprehensive Income.

The significant accounting policies adopted by the Group are set out in note 3.

2. Basis of preparation

(a) Statement of compliance

The Group and Company financial statements have been prepared in accordance with International Financial Reporting Standards as adopted by the European Union (IFRS) and IFRS Interpretations Committee (IFRSIC) interpretations as they apply to the financial statements of the Group for the year ended 31 December 2019 and the requirements of the Companies Act 2006 applicable to companies reporting under IFRS.

(b) Basis of measurement

The parent company and Group financial statements have been prepared on the historical cost basis except for the methods used to measure fair values of assets and liabilities, which are discussed in the respective notes and in note 3.

(c) Going concern

The Chairman's Statement and Chief Executive Officer's Report on pages 5 to 12 outline the business activities of the Group along with the factors which may affect its future development and performance. The Group's financial position is discussed in the Chief Executive Officer's Report on pages 8 and 9 along with details of its cash flow and liquidity. Note 26 to the financial statements sets out the Group's financial risks and the management of those risks.

The Group and parent company are subject to a number of risks similar to those of other development stage pharmaceutical companies. These risks include, amongst others, generation of revenues in due course from the development portfolio and risks associated with research, development and obtaining regulatory approvals of its products. Ultimately, the attainment of profitable operations is dependent on future uncertain events which include obtaining adequate financing to fulfil the Group's commercial and development activities and generating a level of revenue to support the Group's cost structure.

The Directors have prepared detailed financial forecasts and cash flows looking beyond twelve months from the date of the approval of these financial statements. In developing these forecasts, the Directors have made assumptions based upon their view of the current and future economic conditions that are expected to prevail over the forecast period. Shortly after the year end the Company issued and placed new ordinary shares to raise combined gross proceeds of £22 million (£20.8 million net of transaction costs) from the issue of new share capital. Together with restructuring measures undertaken in light of COVID-19 the Directors estimate that the cash held by the Group together with known receivables will be sufficient to support the current level of activities to the end of quarter four of 2020. The Directors are continuing to explore sources of finance available to the Group and have a reasonable expectation that they will be able to secure sufficient cash inflows into the Group to continue its activities for not less than twelve months from the date of approval of these accounts. They have therefore prepared the financial statements on a going concern basis. See note 29 for further details.

Because the additional finance is not committed at the date of approval of these financial statements, these circumstances represent a material uncertainty as to the Group's ability to continue as a going concern. Should the Group be unable to obtain further finance such that the going concern basis of preparation were no longer appropriate, adjustments would be required including to reduce the balance sheet values of assets to their recoverable amounts, and to provide for future liabilities that may arise.

(d) Functional and presentational currency

These financial statements are presented in Pounds Sterling, which is the Group's functional currency. Unless otherwise stated, all financial information presented has been rounded to the nearest thousand.

(e) Use of estimates and judgements

The preparation of financial statements requires management to make estimates and judgements that affect the amounts reported for assets and liabilities as at the reporting date and the amounts reported for revenues and expenses during the year. The nature of estimation means that actual amounts could differ from those estimates. Estimates and judgements used in the preparation of the financial statements are continually reviewed and revised as necessary. While every effort is made to ensure that such estimates and judgements are reasonable, by their nature they are uncertain and, as such, changes in estimates and judgements may have a material impact on the financial statements.

2. Basis of preparation continued

(e) Use of estimates and judgements continued

The key sources of estimation uncertainty and critical accounting policies that have a significant risk of causing material adjustment to the carrying amount of assets and liabilities within the next financial year are discussed below.

(i) Taxation

Management judgement is required to determine the amount of tax assets that can be recognised, based upon the likely timing and level of future taxable profits together with an assessment of the effect of future tax planning strategies. The carrying value of the unrecognised tax losses at 31 December 2019 was £48.271 million. The value of the additional deferred tax asset not recognised at the year end is £9.173 million. Further information is included in note 9.

(ii) Research and development

Careful judgement by the Directors is applied when deciding whether the recognition requirements for development costs have been met. This is necessary as the economic success of any product development is uncertain until such time as technical viability has been proven and commercial supply agreements are likely to be achieved. Judgements are based on the information available at each reporting date which includes the progress with testing and certification and progress on, for example, establishment of commercial arrangements with third parties. In addition, all internal activities related to research and development of new products are continuously monitored by the Directors. Further information is included in note 3.

(iii) Intangible fixed assets and goodwill

Estimated impairment of intangible fixed assets, goodwill and intercompany balances

The Group tests annually whether intangible fixed assets and goodwill have suffered any impairment, in accordance with the accounting policy stated in note 3. The potential recoverable amounts of intangible fixed assets and goodwill have been determined based on value in use calculations. These calculations require the use of estimates both in arriving at the expected future cash flows and the application of a suitable discount rate in order to calculate the present value of these flows. There is a degree of judgement involved in making assessments of attributable values on acquisition and making impairment assessments. More detail is given in note 3(i).

Valuation of intangibles on acquisition

Valuation of an early stage drug discovery pharmaceutical company is a notoriously difficult task. Analysis of financial history gives little indication of future performance. Despite this, for products currently in development, sales potentials can be estimated and management has used its own experience as well as consulting with external experts to establish best estimates of sales pricing and revenue forecasting and these can provide the starting point for valuing these products and ensuring that their value has not been impaired. In addition, clinical development risks, measured as product attrition failure rates, incurred as drugs progress through the clinic are reasonably well documented and can be applied as meaningful risk adjusters to account for the chance of development failure.

3. Significant accounting policies

The accounting policies set out below are applied consistently by Group entities.

The Group financial statements are presented in Sterling and all values are rounded to the nearest thousand pounds except where otherwise indicated.

(a) Basis of consolidation

(i) Business combinations

Business combinations are accounted for using the acquisition method as at the acquisition date – i.e. when control is transferred to the Group. Control is the power to govern the financial and operating policies of an entity so as to obtain benefits from its activities. In assessing control, the Group takes into consideration potential voting rights that are currently exercisable. The Group measures goodwill at the acquisition date as:

- the fair value of the consideration transferred; plus
- the recognised amount of any non-controlling interests in the acquiree; plus
- if the business combination is achieved in stages, the fair value of the pre-existing equity interest in the acquiree; less
- the net recognised amount (generally fair value) of the identifiable assets acquired and liabilities assumed.

Transaction costs, other than those associated with the issue of debt or equity securities, that the Group incurs in connection with a business combination are expensed as incurred.

Notes to the financial statements continued

For the year ended 31 December 2019

3. Significant accounting policies continued

(a) Basis of consolidation continued

(ii) Non-controlling interests

For each business combination, the Group elects to measure any non-controlling interests in the acquiree either:

- at fair value; or
- at their proportionate share of the acquiree's identifiable net assets, which are generally at fair value.

Changes in the Group's interest in a subsidiary that do not result in a loss of control are accounted for as transactions with owners in their capacity as owners. Adjustments to non-controlling interests are based on a proportionate amount of the net assets of the subsidiary. No adjustments are made to goodwill and no gain or loss is recognised in profit or loss.

(iii) Subsidiaries

Subsidiaries are entities controlled by the Group. The financial statements of subsidiaries are included in the consolidated financial statements from the date that control commences until the date that control ceases.

(vi) Transactions eliminated on consolidation

Intra-group balances and transactions, and any unrealised income and expenses arising from intra-group transactions, are eliminated in preparing the consolidated financial statements. Unrealised gains arising from transactions with equity-accounted investees are eliminated against the investment to the extent of the Group's interest in the investee. Unrealised losses are eliminated in the same way as unrealised gains, but only to the extent that there is no evidence of impairment.

(b) Foreign currency transactions

Transactions in foreign currencies are initially recorded in the functional currency by applying the spot rate ruling at the date of the transaction. Monetary assets and liabilities denominated in foreign currencies are retranslated at the functional currency rate of exchange ruling at the reporting date. All differences are recognised in profit or loss.

Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rates as at the dates of the initial transactions. Non-monetary items measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value was determined.

Foreign operations

The assets and liabilities of foreign operations are translated into Pounds Sterling using the exchange rates at the reporting date. The revenues and expenses of foreign operations are translated into Pounds Sterling using the average exchange rates, which approximate the rates at the dates of the transactions, for the period. All resulting foreign exchange differences are recognised in other comprehensive income through the foreign currency reserve in equity.

(c) Segmental reporting

An operating segment is a component of an entity that engages in business activities from which it may earn revenues and incur expenses, whose operating results are regularly reviewed by the Group's chief operating decision maker, being the Chief Executive Officer, to make decisions about resources to be allocated to the segment and assess its performance, and for which discrete financial information is available. As at the reporting date the Group operated as a single segment.

(d) Revenue recognition

Revenue is measured at the fair value of the consideration received or receivable. Revenues from contracts to provide scientific research services to third parties or from collaboration agreements are recognised as those services are delivered.

The Company has a licensing and development agreement with MSD for the development of novel vaccines. The terms of these agreements contain multiple elements and deliverables, which may include: (i) upfront fees; (ii) milestone payments; (iii) option exercise fees; and (iv) tiered royalties based on net sales of licensed product. Payments to the Group under these agreements include upfront fees, payments for research activities, payments based upon the achievement of certain milestones and royalties on product sales. There are no performance, cancellation, termination, or refund provisions though commercially reasonable efforts are required in the arrangement. The Group follows the provisions of IFRS 15 in accounting for these agreements.

(e) Finance income and finance expense

Finance income comprises interest income on funds invested and changes in the fair value of financial assets at fair value through the Income Statement. Interest income is recognised as interest accrues using the effective interest rate method.

Finance expense comprises interest expense on borrowings, changes in the fair value of financial assets at fair value through the Group Statement of Comprehensive Income, impairment losses recognised on financial assets and losses on hedging instruments that are recognised in profit or loss. All borrowing costs are recognised using the effective interest method.

3. Significant accounting policies continued

(f) Income tax

Income tax expense comprises current and deferred tax. Income tax expense is recognised in the Group Statement of Total Comprehensive Income except to the extent that it relates to items recognised directly in equity or in other comprehensive income.

Current income tax assets and liabilities for the current and prior years are measured at the amount expected to be recovered from, or paid to, the tax authorities. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted by the reporting date.

Deferred income tax is recognised on all temporary differences arising between the tax bases of assets and liabilities and their carrying amounts in the financial statements with the following exceptions:

- where the temporary difference arises from the initial recognition of goodwill or of an asset or liability in a transaction that is not a business combination and that at the time of the transaction affects neither accounting nor taxable profit or loss; and
- in respect of taxable temporary differences associated with investments in subsidiaries where the timing of the reversal of the temporary differences can be controlled and it is probable that the temporary differences will not reverse in the foreseeable future.

Deferred income tax assets and liabilities are measured on an undiscounted basis using the tax rates and tax laws that have been enacted or substantially enacted by the date and which are expected to apply when the related deferred tax asset is realised or the deferred tax liability is settled.

Deferred income tax assets are recognised to the extent that it is probable that future taxable profits will be available against which differences can be utilised. An asset is not recognised to the extent that the transfer of economic benefits in the future is uncertain.

(g) Recognition of financial instruments

Financial assets and financial liabilities are recognised when the Company becomes party to the contractual provisions of the instrument. The Group determines the classification of its financial assets and liabilities at initial recognition and re-evaluates this designation at each financial year end.

(h) Property, plant and equipment

Property, plant and equipment are recognised initially at cost. After initial recognition, these assets are carried at cost less any accumulated depreciation and any accumulated impairment losses. Cost comprises the aggregate amount paid and the fair value of any other consideration given to acquire the asset and includes costs directly attributable to making the asset capable of operating as intended.

Initial and subsequent measurement of the right-of-use asset

A right-of-use asset is recognised at commencement of the lease and initially measured at the amount of the lease liability, plus any incremental costs of obtaining the lease and any lease payments made at or before the leased asset is available for use by the Group. They are subsequently measured at cost less accumulated depreciation and any accumulated impairment losses.

Depreciation is computed by allocating the depreciable amount of an asset on a systematic basis over its useful life and is applied separately to each identifiable component.

The following bases and rates are used to depreciate classes of assets, including right-of use assets:

- Plant and machinery – straight line over three to ten years
- Fixtures, fittings and office equipment – straight line over four to five years
- Land and buildings – straight line over the shorter of the lease or a five to ten year period

The carrying values of property, plant and equipment are reviewed for impairment if events or changes in circumstances indicate that the carrying value may not be recoverable, and are written down immediately to their recoverable amount. Useful lives and residual values are reviewed annually and where adjustments are required these are made prospectively.

A property, plant and equipment item is de-recognised on disposal or when no future economic benefits are expected to arise from the continued use of the asset. Any gain or loss arising on the de-recognition of the asset is included in the Income Statement in the year of de-recognition.

Notes to the financial statements continued

For the year ended 31 December 2019

3. Significant accounting policies continued

(i) Intangible assets

Intellectual property and patents

The carrying value of intangible fixed assets is reviewed annually for impairment whenever events or changes in circumstances indicate the carrying value may not be recoverable.

At each reporting date the Group reviews the carrying value of its intangible assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss.

Where the asset does not generate cash flows that are independent from other assets, the Group estimates the recoverable amount of the cash-generating unit to which the asset belongs. A cash-generating unit is the smallest identifiable group of assets that generates cash inflows from other assets or Group assets.

Recoverable amount is the higher of fair value less costs to sell and value in use. In assessing value in use the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset, for which the estimates of future cash flows have not been adjusted.

If the recoverable amount of an asset is estimated to be less than its carrying amount, the carrying amount of the asset is reduced to its recoverable amount. An impairment loss is recognised as an expense immediately.

Where an impairment loss subsequently reverses, the carrying amount of the assets is increased to the revised estimate of its recoverable amount, but so that the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognised for the asset in prior years. A reversal of an impairment loss is recognised in profit or loss immediately.

Amortisation is provided on the fair value of the asset and is calculated on a straight-line basis over its useful life. Amortisation is recognised within the Group Statement of Comprehensive Income. Intellectual property and patents acquired as part of a business combination are only amortised once technical viability has been proven and commercial agreements are likely to be achieved.

Patents include the costs associated with acquiring and registering patents in respect of intellectual property rights. Patents are amortised on a straight-line basis over their useful lives of up to 20 years from the date of filing the patent.

Goodwill

Goodwill on acquisitions, being the excess of the fair value of the cost of acquisition over the Group's interest in the fair value of the identifiable assets and liabilities acquired, is capitalised and tested for impairment on an annual basis.

Any impairment is recognised immediately in profit or loss and is not subsequently reversed. For the purpose of impairment testing, goodwill is allocated to cash-generating units of 4D pharma plc, which represent the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets.

Software

Software is recognised initially at cost. After initial recognition, these assets are carried at cost less any accumulated amortisation and any accumulated impairment losses. Cost comprises the aggregate amount paid and the fair value of any other consideration given to acquire the asset and includes costs directly attributable to making the asset capable of operating as intended.

Amortisation is computed by allocating the amortisation amount of an asset on a systematic basis over its useful life and is applied separately to each identifiable component. Amortisation is applied to software over three to five years on a straight-line basis.

The carrying value of software is reviewed for impairment if events or changes in circumstances indicate that the carrying value may not be recoverable, and is written down immediately to their recoverable amount. Useful lives and residual values are reviewed annually and where adjustments are required these are made prospectively.

A software item is de-recognised on disposal or when no future economic benefits are expected to arise from the continued use of the asset. Any gain or loss arising on the de-recognition of the asset is included in the Income Statement in the year of de-recognition.

3. Significant accounting policies continued

(i) Intangible assets continued

Internally generated intangible assets

Expenditure on research activities is recognised in the Group Statement of Comprehensive Income as incurred. Expenditure arising from the Group's development is recognised in the Statement of Financial Position only if all of the following conditions are met:

- an asset is created that can be identified in the Group Statement of Financial Position;
- it is probable that the asset created will generate future economic benefits;
- the development cost of the asset can be measured reliably;
- the Group has the intention to complete the asset and the ability and intention to use or sell it;
- the product or process is technically and commercially feasible; and
- sufficient resources are available to complete the development and to either sell or use the asset.

Where these criteria have not been achieved, development expenditure is recognised in profit or loss in the year in which it is incurred.

The Group has adopted the industry standard approach to the treatment of development expenditure by capitalising development costs at the point where regulatory approval is reached and the probability of generating future economic benefits is high.

(j) Impairment of assets

An asset's recoverable amount is the higher of an asset's or cash-generating unit's fair value less costs to sell and its value in use and is determined for an individual asset, unless the asset does not generate cash inflows that are largely independent of those from other assets or groups of assets. Where the carrying value of an asset exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. In determining fair value less costs of disposal, an appropriate valuation model is used; these calculations are corroborated by valuation multiples, or other available fair value indicators. Impairment losses on continuing operations are recognised in the Group Statement of Comprehensive Income in those expense categories consistent with the function of the impaired asset.

(k) Investments in subsidiaries

Investments in and loans to subsidiaries are stated in the Company's Statement of Financial Position at cost less provision for any impairment.

(l) Impairment of financial assets

An impairment loss is recognised for the expected credit losses on financial assets when there is an increased probability that the counterparty will be unable to settle an instrument's contractual cash flows on the contractual due dates, a reduction in the amounts expected to be recovered, or both.

The probability of default and expected amounts recoverable is assessed using reasonable and supportable past and forward-looking information that is available without undue cost or effort. The expected credit loss is a probability-weighted amount determined from a range of outcomes and takes into account the time value of money.

Impairment of intercompany loans measured at amortised cost

The measurement of impairment losses depends on whether the financial asset is 'performing', 'underperforming' or 'non-performing' based on the Company's assessment of increases in the credit risk of the financial asset since its initial recognition and any events that have occurred before the year end which have a detrimental impact on cash flows.

The financial asset moves from 'performing' to 'underperforming' when the increase in credit risk since initial recognition becomes significant.

In assessing whether credit risk has increased significantly, the Company compares the risk of default at the year end with the risk of a default when the investment was originally recognised using reasonable and supportable past and forward-looking information that is available without undue cost.

The risk of a default occurring takes into consideration default events that are possible within twelve months of the year end (the twelve-month expected credit losses) for 'performing' financial assets, and all possible default events over the expected life of those receivables (the lifetime expected credit losses) for 'underperforming' financial assets.

Impairment losses, and any subsequent reversals of impairment losses, are adjusted against the carrying amount of the receivable and are recognised in profit or loss.

Notes to the financial statements continued

For the year ended 31 December 2019

3. Significant accounting policies continued

(m) Inventories

Inventories are stated at the lower of cost and net realisable value. Cost based on latest contractual prices includes all costs incurred in bringing each product to its present location and condition. Net realisable value is based on estimated selling price less any further costs expected to be incurred to disposal. Provision is made for slow-moving or obsolete items.

(n) Trade and other receivables

Trade receivables are initially measured at their transaction price. Group and other receivables are initially measured at fair value plus transaction costs.

Receivables are held to collect the contractual cash flows which are solely payments of principal and interest. Therefore, these receivables are subsequently measured at amortised cost using the effective interest rate method.

(o) Cash, cash equivalents and short-term investments

Cash and cash equivalents comprise cash at hand and deposits with maturities of three months or less. Short-term investments comprise deposits with maturities of more than three months, but no greater than twelve months.

(p) Financial liabilities and equity

Financial liabilities and equity instruments are classified according to the substance of the contractual arrangements entered into. An equity instrument is any contract that evidences a residual interest in the assets of the Company after deducting all of its liabilities.

(q) Trade and other payables

Trade, Group and other payables are initially measured at fair value, net of direct transaction costs, and subsequently measured at amortised cost using the effective interest rate method.

Receivables are held to collect the contractual cash flows which are solely payments of principal and interest. Therefore, these receivables are subsequently measured at amortised cost using the effective interest rate method.

(r) Leases (IFRS 16 first time adoption)

During the year, the Group adopted IFRS 16 'Leases' for the first time. IFRS 16 replaces IAS 17 'Leases'.

The Group previously split leases between 'finance leases' that transferred substantially all the risks and rewards incidental to ownership of the asset to the Group, and 'operating leases'.

The main change on application of IFRS 16 is the accounting for 'operating leases' where rentals payable (as adjusted for lease incentives) were previously expensed under IAS 17 on a straight-line basis over the lease term.

Under IFRS 16 a right-of-use asset and a lease liability are recognised for all leases except 'low-value' and 'short-term' leases where lease payments are recognised on a straight-line basis over the lease term.

The accounting for leases previously accounted for as finance leases under IAS 17 has not changed substantially, except that residual value guarantees are recognised under IFRS 16 at amounts expected to be payable rather than the maximum amount guaranteed, as required by IAS 17.

The right-of-use assets recognised at 1 January 2019 were assessed for impairment. Any impairment losses have been recognised in profit or loss.

The Group has applied IFRS 16 retrospectively to all leases and has elected to recognise the cumulative adjustments in the year due to their limited effect. The Group has applied this approach subject to the transition provisions set out below.

- For all contracts that existed prior to 1 January 2019, the Group has not applied IFRS 16 to reassess whether each contract is, or contains, a lease.
- A single discount rate has been applied to portfolios of leases with similar characteristics.
- The right-of-use assets have not been assessed for impairment at 1 January 2019, but have been reduced by the amount of any onerous lease provisions at that date.
- Initial direct costs have been excluded from the measurement of the right-of-use assets.
- Hindsight has been applied in determining the lease term for contracts that contain lease extension or termination options.

3. Significant accounting policies continued
(r) Leases (IFRS 16 first time adoption) continued
The amounts recognised for leases at 1 January 2019 have been measured as follows:

(i) Operating leases under IAS 17, except 'low-value' and 'short-term' leases
The lease liability is measured at the present value of the remaining lease payments at 1 January 2019, discounted at the lessee's incremental borrowing rate at that date.

The right-of-use asset is measured as if IFRS 16 had been applied from commencement of the lease, adjusted for accrued or prepaid operating lease payments, using the lessee's incremental borrowing rate at 1 January 2019 to discount future payments.

The right-of-use asset is adjusted for any re-measurement of the lease liability and lease modifications, as follows:

- An estimate of costs to be incurred in restoring the leased asset to the condition required under the terms and conditions of the lease is recognised as part of the cost of the right-of-use asset when the Group incurs the obligation for these costs.
- The costs are incurred at the start of the lease or over the lease term. The provision is measured at the best estimate of the expenditure required to settle the obligation.

(ii) Leases – the Group as lessee
On commencement of a contract (or part of a contract) which gives the Group the right to use an asset for a period of time in exchange for consideration, the Group recognises a right-of-use asset and a lease liability unless the lease qualifies as a 'short-term' lease or a 'low-value' lease.

(iii) 'Low-value' leases
When the value of the underlying asset is £10,000 or less, the Group recognises, and continues to recognise, the lease payments associated with those leases on a straight-line basis over the lease term.

(iv) 'Short-term' leases
Where the lease term is twelve months or less and the lease does not contain an option to purchase the leased asset, lease payments are recognised as an expense on a straight-line basis over the lease term.

On transition to IFRS 16, where the lease term ends before 31 December 2019, the Group has continued to recognise the lease payments associated with those leases on a straight-line basis over the lease term.

(v) Leases assessed on a portfolio basis
The Group has elected to treat its property leases as a portfolio as all land and buildings have similar lease characteristics. Consequently, IFRS 16 is applied to all land and building leases, not otherwise included in low-value or short-term leases, in aggregate rather than to each individual lease.

(vi) Initial measurement of the lease liability
The lease liability is initially measured at the present value of the lease payments during the lease term discounted using the interest rate implicit in the lease, or the incremental borrowing rate if the interest rate implicit in the lease cannot be readily determined.

The lease term is the non-cancellable period of the lease plus extension periods that the Group is reasonably certain to exercise and termination periods that the Group is reasonably certain not to exercise.

Lease payments include fixed payments, less any lease incentives receivable, variable lease payments dependant on an index or a rate (such as those linked to LIBOR) and any residual value guarantees. Variable lease payments are initially measured using the index or rate when the leased asset is available for use.

Termination penalties are included in the lease payments if the lease term has been adjusted because the Group reasonably expects to exercise an option to terminate the lease.

The exercise price of an option to purchase the leased asset is included in the lease liability when the Group is reasonably certain to exercise that option.

(vii) Subsequent measurement of the lease liability
The lease liability is subsequently increased for a constant periodic rate of interest on the remaining balance of the lease liability and reduced for lease payments.

Interest on the lease liability is recognised in the Income Statement, unless interest is directly attributable to qualifying assets. The Group had no such liabilities during the current and previous year.

Variable lease payments not included in the measurement of the lease liability as they are not dependent on an index or rate are recognised in profit or loss in the period in which the event or condition that triggers those payments occurs.

(viii) Finance leases under IAS 17
The carrying amounts of the lease liability and right-of-use asset at 1 January 2019 are measured under IAS 17. IFRS 16 is applied thereafter.

Notes to the financial statements continued

For the year ended 31 December 2019

3. Significant accounting policies continued

(r) Leases (IFRS 16 first time adoption) continued

(ix) Significant judgements and major sources of estimation uncertainty

The Group has determined that all leases of assets with a value, when new, of £10,000, will be classified and accounted for as 'low-value' leases.

The Group applies judgement in determining whether individual leases can be accounted for as a portfolio. The judgements include an assessment of whether the leases share similar characteristics and whether the financial statements would be materially different if each lease was accounted for individually.

In determining the lease term the Group assesses whether it is reasonably certain to exercise, or not to exercise, options to extend or terminate a lease. This assessment is made at the start of the lease and is re-assessed if significant events or changes in circumstances occur that are within the lessee's control.

The Group uses judgement to assess whether the interest rate implicit in the lease is readily determinable.

When the interest rate implicit in the lease is not readily determinable, the Group estimates the incremental borrowing rate based on its external borrowings secured against similar asset, adjusted for the term of the lease.

The Group estimates the amount expected to be paid under a residual value guarantee taking into consideration current market prices for similar assets of a similar age and condition and the remaining term of the lease.

The Group makes estimates of the cost of restoring leased assets to their original condition when required to do so under the terms and conditions of the lease. Those estimates are based on the current condition of the leased assets and past experience of restoration costs.

The Group has applied judgement in applying the following transition provisions in IFRS 16:

- Determining whether leases have similar characteristics to apply a single discount rate. Lease portfolios have been grouped between leases of UK and European properties, UK and European machinery, UK and European office equipment and UK and European vehicles. These classes of asset have similar lease terms.

(x) Impact of transition

The Group has determined that it has a single class of similar assets that were not previously recognised as finance leases and has applied the weighted average incremental borrowing rate at 1 January 2019 of 16.81% across all companies in the Group. The weighted average incremental borrowing rate at 1 January 2019 across all leases was 16.58%.

The Group's property operating lease commitments of £646,944 at 31 December 2018 discounted at the Company's incremental borrowing rate of 16.81% at 1 January 2019 equate to £501,888 compared to the lease liability of £1,144,434 recognised at that date. The difference of £642,546 represents the recognition of leases to the end of the term, extending it beyond the lease break clauses that had previously been used to establish the non-cancellable operating lease components.

The Company's property operating lease commitments of £512,568 at 31 December 2018 discounted at the Company's incremental borrowing rate of 16.81% at 1 January 2019 equate to £395,124 compared to the lease liability of £813,946 recognised at that date. The difference of £418,822 represents the recognition of the lease to the end of the term, extending it beyond the lease break clause that had previously been used to establish the non-cancellable operating lease component.

There were no changes to any other Group or Company lease commitments.

The financial impact of applying IFRS 16 on 1 January 2019 is set out below:

	Group £000	Company £000
Net assets at 31 December 2018	45,763	85,206
Right-of-use asset recognised on transition to IFRS 16 within property, plant and equipment	1,131	756
Lease liability recognised on transition to IFRS 16 within non-current borrowings	(186)	(141)
Lease liability recognised on transition to IFRS 16 within current borrowings	(958)	(673)
Reversal of accrued operating lease payments recognised under IAS 17 within trade and other payables	59	59
Reversal of prepaid operating lease payments recognised under IAS 17 within trade and other receivables	(46)	(1)
Total adjustment to net assets at 1 January 2019	—	—
Net assets, as restated at 1 January 2019	45,763	85,206

3. Significant accounting policies continued

(r) Leases (IFRS 16 first time adoption) continued

(x) Impact of transition continued

The impact of the transition on the Income Statement for the current year was as follows:

	Group £000	Company £000
Income Statement charges for the current year before IFRS 16		
Property leases		
– Research and development costs	75	—
– Administrative expenses	155	155
	230	155
Income Statement charges for the current year after IFRS 16		
Depreciation of right-of-use assets		
– Research and development costs	52	—
– Administrative expenses	92	92
Interest charge		
– Finance expense	180	127
	324	219
Additional loss reported in the current year Income Statement as a result of implementation of IFRS 16		
– Research and development costs	(23)	—
– Administrative expenses	(63)	(63)
– Finance expense	180	127
	94	64

(xi) The following accounting policies were applied to leases in the year ended 31 December 2018:

Leases were classified as finance leases when the terms of the lease transferred substantially all the risks and rewards of ownership to the Group. All other leases were classified as operating leases.

Assets held under hire purchase and finance leases were recognised as assets of the Group at their fair value or, if lower, at the present value of the minimum lease payments, each determined at the inception of the lease. The corresponding liability to the lessor was recognised as a finance lease obligation. Lease payments were apportioned between finance charges and the reduction of lease obligation so as to achieve a constant rate of interest on the remaining balance of the liability. Finance charges were charged directly to profit or loss.

Rentals payable under operating leases were expensed on a straight-line basis over the term of the relevant lease. Benefits received and receivable as an incentive to enter into an operating lease (such as upfront cash payments and reimbursement of relocation costs or the cost of lease improvements) were also spread on a straight-line basis over the lease term.

(1) Property, plant and equipment

Depreciable leased assets were initially measured at an amount equal to the lease liability and subsequently measured at cost less accumulated depreciation and any accumulated impairment losses. Leased assets were depreciated over the shorter of the lease term and the useful life of the asset.

(2) Operating lease expenses

Details of the operating lease payments during the year to 31 December 2018 are disclosed in note 5.

(3) Property, plant and equipment

At 31 December 2019, the net carrying amount of plant and machinery leased by the Group under finance leases was £28,643. The Company had no finance leases at 31 December 2019.

(s) Share-based payments

Equity settled share-based payment transactions are measured with reference to the fair value at the date of grant, recognised on a straight-line basis over the vesting period, based on the Company's estimate of shares that will eventually vest. Fair value is measured using a suitable option pricing model.

At each reporting date before vesting, the cumulative expense is calculated, representing the extent to which the vesting period has expired and management's best estimate of the achievement or otherwise of non-market conditions and the number of equity instruments that will ultimately vest. The movement in cumulative expense since the previous reporting date is recognised in the Group Statement of Comprehensive Income, with a corresponding entry in equity.

Notes to the financial statements continued

For the year ended 31 December 2019

3. Significant accounting policies continued

(s) Share-based payments continued

Where the terms of an equity settled award are modified or a new award is designated as replacing a cancelled or settled award, the cost based on the original award terms continues to be recognised over the remainder of the original vesting period. In addition, an expense is recognised over the remainder of the new vesting period for the incremental fair value of any modification, based on the difference between the fair value of the original award and the fair value of the modified award, both as measured on the date of modification. No reduction is recognised if this difference is negative.

Where awards are granted to the employees of the subsidiary company, the fair value of the awards at grant date is recorded in the Company's financial statements as an increase in the value of the investment with a corresponding increase in equity via the share-based payment reserve.

Where equity settled share-based payments have lapsed due to a failure to meet the vesting conditions, to the extent that they relate to performance criteria, the value of the adjustment is recognised in the Income Statement. Where share-based payments fail to vest as a result of market-based vesting criteria, the fair value of the award is included in the Income Statement as an expense until the fair value is recognised in full and the cumulative total of the lapsed award is transferred from the Share-based payment reserve to Retained earnings.

(t) Share capital

Proceeds on issue of shares are included in shareholders' equity, net of transaction costs. The carrying amount is not remeasured in subsequent years.

(u) New accounting standards and interpretations

Adoption of IFRS

The Group and Company financial statements have been prepared in accordance with IFRS, IAS and IFRS Interpretations Committee (IFRSIC) effective as at 31 December 2019. The Group and Company have not chosen to adopt any amendments or revised standards early.

During the year, the Group adopted the following standards effective from 1 January 2019. The Group has applied these standards in the preparation of the financial statements and has not adopted any new or amended standards early.

IFRS 16	Leases	1 January 2019

Details on the impact of adoption is included in the notes above.

IFRS issued but not yet effective

At the date of issue of these financial statements, the following accounting standards and interpretations, which have not been applied, were in issue but not yet effective. The Directors do not anticipate adoption of the standards listed below will have a material impact on the financial statements or they consider the implementation too uncertain to speculate on the impact on the accounts at this point in time.

UK IFRS	Departure from EU IFRS on Brexit	31 January 2020
IFRS 17	Insurance Contracts	1 January 2021
Amendment to references to the Conceptual Framework	Amendment to references	1 January 2020
Amendment to IAS 1 and IAS 8	Definition of Materials	1 January 2020
Amendment to IFRS 3	Business Combinations	1 January 2020
Amendments to IFRS 9, IAS 39 and IFRS 7	Interest Rate Benchmark Reform	1 January 2020

4. Revenue

	Year to 31 December 2019 £000	Year to 31 December 2018 £000
Revenue	**211**	—

In October 2019, the Group entered into a collaboration agreement with MSD (Merck & Co.). The collaboration agreement was for the use of the MicroRx platform to discover and develop LBP candidates as vaccines in up to three indications and the Group is responsible for the discovery and engineering of the LBPs. Associated costs of sale of £168,848 are included within research and development costs in the Group Statement of Total Comprehensive Income.

No other revenue was generated during the year.

5. Operating loss

By nature:	**Year to 31 December 2019 £000**	Year to 31 December 2018 £000
Operating loss is stated after charging / (crediting):		
Research and development costs		
Depreciation on property, plant, and equipment		
– Owned assets	**780**	831
– Right-of-use assets	**52**	—
Amortisation of intangible assets	**86**	231
Staff costs (see note 7)	**5,027**	4,396
Operating lease rentals:		
– Land and buildings	**155**	153
– Equipment	**2**	2
Contractual commitments	**16,750**	4,417
Other research and development costs	**3,660**	14,878
	26,512	24,908
Administrative expenses		
Depreciation on property, plant, and equipment		
– Owned assets	**141**	74
– Right-of-use assets	**92**	—
Amortisation of intangible assets	**130**	65
(Profit) / loss on disposal of property, plant and equipment	**(17)**	1
Loss on disposal of intangible assets	**29**	—
Staff costs (see note 7)	**1,707**	1,686
Operating lease rentals:		
– Land and buildings	**—**	145
– Equipment	**2**	2
Auditor's remuneration	**53**	52
Legal and professional	**284**	124
Consultancy	**23**	1
Contractual commitments	**703**	424
Other administrative costs	**1,212**	1,638
	4,359	4,212
Foreign currency losses / (gains)	**1,006**	(749)
Other income	**(34)**	—
Auditor's remuneration:		
Audit services:		
– Fees payable to Company auditor for the audit of the parent and the consolidated accounts	**40**	43
– Auditing the financial statements of subsidiaries pursuant to legislation	**10**	8
– Non-audit services	**3**	1
Total auditor's remuneration	**53**	52

Notes to the financial statements continued

For the year ended 31 December 2019

6. Non-recurring income

	Year to 31 December 2019 £000	Year to 31 December 2018 £000
Fair value adjustment on contingent consideration	**2,659**	—

As detailed in Contingent consideration (see note 20) the Group has provided for the contingent consideration on the achievement of three time-based milestones for the validation of the MicroDx platform by 4D Pharma Cork Ltd.

The contingent liability was calculated upon the acquisition of 4D Pharma Cork Limited and was based on the discounted probability of the liability at that time. The probability of future milestones is re-assessed as the timepoints for the milestones are reached; these milestones are:

1) Technical validation of a diagnostic platform for IBS dysbiosis

The milestone was achieved by 23 August 2017 and triggered the issue of 635,692 shares for an aggregate market value of €2.6 million (at £3.7575 per 4D pharma plc share, being the average mid-market price of a 4D share for the five business days immediately preceding the date of allotment). The shares were subsequently admitted on 31 August 2017.

2) Clinical validation of the optimal IBS dysbiosis diagnostic platform based on more than 1,000 patients in a multicentre trial

It is anticipated that the clinical validation stage will be completed in 2020. Whilst there are no adverse indicators relating to the clinical validation of the platform at 31 December 2019, the time-based criteria for the completion of the milestone, which required completion of this phase by 23 August 2019, was not achieved and the fair value of the contingent consideration has been adjusted by £1.877 million to bring the balance at 31 December 2019 to £Nil.

3) Regulatory approval of a diagnostic platform for IBS dysbiosis

The third milestone is also time based and linked to regulatory approval being achieved by 23 August 2020. Based on the patient recruitment at milestone two it is anticipated that regulatory approval would be achieved in 2021 meaning that the probability of achieving milestone three by the required date is considered to be minimal; as a result the fair value has been reduced to £Nil, releasing £0.782 million of the contingent consideration.

7. Staff costs

	Year to 31 December 2019			Year to 31 December 2018		
Group	**Research and development £000**	**Administrative £000**	**Total £000**	Research and development £000	Administrative £000	Total £000
Wages and salaries	**4,087**	**1,385**	**5,472**	3,476	1,376	4,852
Social security costs	**653**	**191**	**844**	658	183	841
Pension contributions	**98**	**53**	**151**	74	47	121
	4,838	**1,629**	**6,467**	4,208	1,606	5,814
Share-based compensation	**189**	**78**	**267**	188	80	268
	5,027	**1,707**	**6,734**	4,396	1,686	6,082
Directors' remuneration (including benefits in kind) included in the aggregate remuneration above comprised:						
Emoluments for qualifying services	**—**	**371**	**371**	—	254	254

7. Staff costs continued

Company	Year to 31 December 2019 Research and development £000	Administrative £000	Total £000	Year to 31 December 2018 Research and development £000	Administrative £000	Total £000
Wages and salaries	**1,330**	**1,061**	**2,391**	828	1,201	2,029
Social security costs	**233**	**129**	**362**	201	141	342
Pension contributions	**32**	**50**	**82**	20	44	64
	1,595	**1,240**	**2,835**	1,049	1,386	2,435
Share-based compensation	**59**	**78**	**137**	54	80	134
	1,654	**1,318**	**2,972**	1,103	1,466	2,569
Directors' remuneration (including benefits in kind) included in the aggregate remuneration above comprised:						
Emoluments for qualifying services	**—**	**371**	**371**	—	254	254

Directors' emoluments (excluding social security costs, but including benefits in kind) disclosed above include £101,823 (31 December 2018: £101,587) paid to the highest paid Director.

The Directors were not granted any share options in the year ended 31 December 2019 or the period ended 31 December 2018 and none of the directors held any share options at 31 December 2019.

An analysis of the highest paid Director's remuneration is included in the Report of the Remuneration Committee.

The average number of employees during the year (including Directors) was as follows:

Group	Year to 31 December 2019 Number	Year to 31 December 2018 Number
Directors	**7**	4
Scientific and administrative staff	**120**	112
	127	116

Company	Year to 31 December 2019 Number	Year to 31 December 2018 Number
Directors	**7**	4
Scientific and administrative staff	**22**	20
	29	24

Notes to the financial statements continued

For the year ended 31 December 2019

8. Finance income and finance expense

	Year to 31 December 2019 £000	Year to 31 December 2018 £000
Finance income		
Bank interest receivable	**61**	282
Finance expense		
Lease liability interest on:		
– Plant and equipment	**—**	(1)
– Land and buildings (resulting from IFRS 16 adjustments)	**(180)**	—
Unwinding of discount	**(334)**	(346)
Other interest payable	**—**	(1)
	(514)	(348)

Bank interest receivable includes £Nil (31 December 2018: £33,102) which is receivable after the year end.

9. Taxation

The tax credit is made up as follows:

	Year to 31 December 2019 £000	Year to 31 December 2018 £000
Current income tax		
Total current income tax	**(5,351)**	(4,760)
Adjustment in respect of prior years	**(9)**	13
Total income tax credit recognised in the year	**(5,360)**	(4,747)

The income tax credit can be reconciled to the accounting loss as follows:

	Year to 31 December 2019 £000	Year to 31 December 2018 £000
Loss before taxation	**(29,426)**	(28,437)
Tax at the average standard rate of 19.07% (31 December 2018: 18.67%)	**(5,612)**	(5,308)
Effects of:		
Expenses not deductible for tax purposes	**16**	107
Adjustments from foreign currency translations on subsidiaries	**(54)**	3
Enhanced research and development expenditure	**(3,804)**	(3,412)
Property, plant, equipment and software timing differences	**64**	8
Deferred tax not provided on losses	**2,406**	2,569
Adjustment in respect of prior years	**(9)**	11
Effects of variation on tax reclaims over the standard rate	**1,633**	1,275
Tax income tax credit recognised in the year	**(5,360)**	(4,747)

9. Taxation continued

Reductions to the UK corporation tax rates were substantively enacted as part of the Finance Bill 2016 on 6 September 2016 which would reduce the main rate to 17% from 1 April 2020. However, in a pre-election manifesto Boris Johnson pledged to put the reduction from 19% to 17% on hold if the Conservatives won the election and having done so, the freeze in rate was substantively enacted during the 2020 Budget. The rate of 19% has been used as the basis for the UK portion of the deferred tax calculation noted below; the rate of 17% had been used previously so the comparatives have been restated below to reflect the change in assumption on the applicable rate.

At 31 December 2019, the Group had tax losses available for carry forward of approximately £48.271 million (31 December 2018: £35.169 million). The Group has not recognised deferred tax assets relating to such earned forward losses of approximately £9.173 million (31 December 2018: £6.767 million (restated)).

At 31 December 2019, the Company had tax losses available for carry forward of approximately £18.357 million (31 December 2018: £12.194 million). The Group has not recognised deferred tax assets relating to such earned forward losses of approximately £3.488 million (31 December 2018: £2.317 million (restated)).

Group's management considers that there is insufficient evidence of future taxable income, taxable temporary differences and feasible tax-planning strategies to utilise all of the cumulative losses and therefore it is not considered certain that the deferred tax assets will be realised in full. If future income differs from current projections, this could significantly impact the tax charge or benefit in future years.

10. Loss per share

(a) Basic and diluted

	Year to 31 December 2019 £000	Year to 31 December 2018 £000
Loss for the year attributable to equity shareholders	**(24,066)**	(23,690)
Weighted average number of shares		
Ordinary shares in issue	**65,493,842**	65,493,842
Basic loss per share (pence)	**(36.75)**	(36.17)

The basic and diluted loss per share are the same as the effect of share options is anti-dilutive.

(b) Adjusted

Adjusted loss per share is calculated after adjusting for the effect of non-recurring income in relation to the reassessment of the contingent consideration.

Reconciliation of adjusted loss after tax:

	Year to 31 December 2019 £000	Year to 31 December 2018 £000
Reported loss after tax	**(24,066)**	(23,690)
Non-recurring income	**(2,659)**	—
Adjusted loss after tax	**(26,725)**	(23,690)
Adjusted basic loss per share (pence)	**(40.81)**	(36.17)

Notes to the financial statements continued

For the year ended 31 December 2019

11. Property, plant and equipment

Group	Plant and machinery £000	Fixtures, fittings and office equipment £000	Land and buildings £000	Total £000
Cost				
At 31 December 2017	5,246	209	1,079	6,534
Additions	474	6	57	537
Disposals	(2)	—	—	(2)
Exchange rate adjustment	62	—	12	74
At 31 December 2018	5,780	215	1,148	7,143
Additions	534	—	1,135	1,669
Disposals	(56)	—	—	(56)
Exchange rate adjustment	(271)	—	(76)	(347)
At 31 December 2019	**5,987**	**215**	**2,207**	**8,409**
Depreciation				
At 31 December 2017	1,129	60	134	1,323
Provided during the year	715	51	139	905
Released on disposal	(1)	—	—	(1)
Exchange rate adjustment	42	—	9	51
At 31 December 2018	1,885	111	282	2,278
Provided during the year	726	52	287	1,065
Released on disposal	(30)	—	—	(30)
Exchange rate adjustment	(52)	—	(12)	(64)
At 31 December 2019	**2,529**	**163**	**557**	**3,249**
Net book value				
At 31 December 2019	**3,458**	**52**	**1,650**	**5,160**
At 31 December 2018	3,895	104	866	4,865
At 31 December 2017	4,117	149	945	5,211

Included in the totals above are the following assets held under leases; these agreements are secured against the assets to which they relate.

11. Property, plant and equipment continued

Group assets under lease agreements	Owned assets: Plant and machinery £000	Owned assets: Total owned assets £000	Right-of-use assets: Land and buildings £000	Total £000
Cost				
At 31 December 2017	46	46	—	46
Exchange rate adjustment	1	1	—	1
At 31 December 2018	47	47	—	47
Additions	—	—	1,131	1,131
Exchange rate adjustment	(3)	(3)	(25)	(28)
At 31 December 2019	**44**	**44**	**1,106**	**1,150**
Depreciation				
At 31 December 2017	8	8	—	8
Provided during the year	9	9	—	9
Exchange rate adjustment	1	1	—	1
At 31 December 2018	18	18	—	18
Provided during the year	7	7	144	151
Exchange rate adjustment	(1)	(1)	(2)	(3)
At 31 December 2019	**24**	**24**	**142**	**166**
Net book value				
At 31 December 2019	**20**	**20**	**964**	**984**
At 31 December 2018	29	29	—	29
At 31 December 2017	38	38	—	38

Notes to the financial statements continued

For the year ended 31 December 2019

11. Property, plant and equipment continued

Company	Plant and machinery £000	Fixtures, fittings and office equipment £000	Land and buildings £000	Total £000
Cost				
At 31 December 2017	221	177	298	696
Additions	26	7	9	42
Disposals	(2)	—	—	(2)
At 31 December 2018	245	184	307	736
Additions	29	—	755	784
Disposals	(56)	—	—	(56)
At 31 December 2019	**218**	**184**	**1,062**	**1,464**
Depreciation				
At 31 December 2017	49	47	24	120
Provided during the year	47	45	60	152
Released on disposal	(1)	—	—	(1)
At 31 December 2018	95	92	84	271
Provided during the year	48	45	155	248
Released on disposal	(30)	—	—	(30)
At 31 December 2019	**113**	**137**	**239**	**489**
Net book value				
At 31 December 2019	**105**	**47**	**823**	**975**
At 31 December 2018	150	92	223	465
At 31 December 2017	172	130	274	576

Company assets under lease agreements	Right-of-use assets: Land and buildings £000	Total £000
Cost		
At 31 December 2017 and 31 December 2018	—	—
Additions	755	755
At 31 December 2019	**755**	**755**
Depreciation		
At 31 December 2017 and 31 December 2018	—	—
Provided during the year	92	92
At 31 December 2019	**92**	**92**
Net book value		
At 31 December 2019	**663**	**663**
At 31 December 2017 and 31 December 2018	—	—

Right-of-use assets have been created in the year on application of IFRS 16 'Leases'. This conversion has resulted in leases previously categorised as operating leases and expensed to the Statement of Comprehensive Income being recognised as right-of-use assets with an associated lease liability included in the Statement of Financial Position; for further details see note 19.

12. Intangible assets

Group	Software £000	Patents £000	Intellectual property £000	Goodwill £000	Total £000
Cost					
At 31 December 2017	331	1,081	4,507	9,390	15,309
Additions	4	—	—	—	4
Exchange rate adjustment	1	—	—	63	64
At 31 December 2018	336	1,081	4,507	9,453	15,377
Additions	57	—	—	—	57
Disposals	(110)	—	—	—	(110)
Exchange rate adjustment	(5)	—	—	(266)	(271)
At 31 December 2019	**278**	**1,081**	**4,507**	**9,187**	**15,053**
Amortisation					
At 31 December 2017	78	557	—	—	635
Provided during the year	97	199	—	—	296
Exchange rate adjustment	1	—	—	—	1
At 31 December 2018	176	756	—	—	932
Provided during the year	84	132	—	—	216
Disposals	(81)	—	—	—	(81)
Exchange rate adjustment	(2)	—	—	—	(2)
At 31 December 2019	**177**	**888**	**—**	**—**	**1,065**
Net book value					
At 31 December 2019	**101**	**193**	**4,507**	**9,187**	**13,988**
At 31 December 2018	160	325	4,507	9,453	14,445
At 31 December 2017	253	524	4,507	9,390	14,674

Notes to the financial statements continued

For the year ended 31 December 2019

12. Intangible assets continued

Company	Software £000	Patents £000	Total £000
Cost			
At 31 December 2017 and 31 December 2018	196	1,076	1,272
Additions	57	—	57
Disposals	(14)	—	(14)
At 31 December 2019	**239**	**1,076**	**1,315**
Amortisation			
At 31 December 2017	25	398	423
Provided during the year	65	199	264
At 31 December 2018	90	597	687
Provided during the year	70	198	268
Disposals	(13)	—	(13)
At 31 December 2019	**147**	**795**	**942**
Net book value			
At 31 December 2019	**92**	**281**	**373**
At 31 December 2018	106	479	585
At 31 December 2017	171	678	849

Goodwill amounting to £9.390 million, intellectual property amounting to £4.507 million and patent rights amounting to £1.081 million relate to a single cash-generating unit (CGU), contained in the acquisitions of 4D Pharma Research Limited, 4D Pharma Leon S.L.U. and 4D Pharma Cork Limited (formerly Tucana Health Limited). These entities together provide the necessary facilities and resources to enable the Group to successfully research, manufacture, gain approval for and commercialise Live Biotherapeutic products.

Goodwill, which has arisen on the business combinations, represents staff and accumulated know-how after fair value has been attributed to all other assets and liabilities acquired. Intellectual property of £1.923 million recognised on the business combinations represents bacteria identified by the Group's know-how and processes and at different stages of research and development, from early identification to patented strains of bacteria. Intellectual property of £2.584 million represents the methods and know-how in relation to the MicroDx platform acquired as part of 4D Pharma Cork Limited (formerly Tucana Health Limited).

During the year goodwill, intellectual property, patents and associated property, plant and equipment was tested for impairment in accordance with IAS 36 Impairment of Assets. The recoverable amount of the CGU exceeds the carrying amount of goodwill, intellectual property, patents and associated property, plant and equipment. The recoverable amount of the CGU has been measured using a value-in-use calculation and, as such, no impairment was deemed necessary. The key assumptions used, which are based on both management's past experience as well as externally provided reports, for the value-in-use calculations are those relating to the risk-adjusted net present value of candidates that have been identified as potential future products as at 31 December 2019 and for which estimated potential peak sales and future cash flows have been estimated over a period in excess of 15 years from the date of these accounts due to the long timeline on the development of pharmaceuticals. In addition an external valuation of intellectual property contained via the acquisition of 4D Pharma Cork Limited (formerly Tucana Health Limited) has been used. Valuation of an early stage drug discovery pharmaceutical company is a notoriously difficult task and an analysis of financial history gives little indication of future performance. Despite this, for products currently in development, sales potentials can be estimated and management has used its own experience as well as consulting with external experts to establish best estimates of sales pricing and revenue forecasting and these can provide the starting point for valuing these products and ensuring that their value has not been impaired.

The recoverable amount of goodwill, intellectual property, patents and associated property, plant and equipment exceeds the carrying amount by 1,516%. The key assumption considered most sensitive for the value-in-use calculation is that regarding the discount rate applied to the net present value calculations. Management has performed sensitivity analysis on this key assumption and flexed this between 10% to 20%. Due to the headroom which exists between the recoverable amount and the carrying value there is no reasonable possible change in this assumption that would cause the CGU's carrying value to exceed its recoverable amount.

13. Investment and loans to subsidiaries

Non-current assets

Company	Investment in subsidiaries £000
At 31 December 2017	11,671
Share-based payments issued to employees in subsidiaries	134
At 31 December 2018	11,805
Lapsed options in subsidiaries	(232)
Share-based payments issued to employees in subsidiaries	130
At 31 December 2019	**11,703**
By subsidiary	
4D Pharma Research Limited	2,374
4D Pharma Cork Limited	3,845
4D Pharma Leon S.L.U.	5,484
At 31 December 2019	**11,703**

Current assets

Company	Loans to subsidiary undertakings £000
Company	
At 31 December 2017	33,159
Additions in the year	17,491
At 31 December 2018	50,650
Additions in the year	9,170
Impairment provision	(177)
At 31 December 2019	**59,643**
By subsidiary	
4D Pharma Research Limited	53,340
4D Pharma Cork Limited	3,371
4D Pharma Leon S.L.U.	2,932
At 31 December 2019	**59,643**

IFRS 9 requires intercompany loans be recognised based on the recoverability of the discounted value of future cash flows with effective interest taken to the Income Statement and that any impairment be recognised. The Company and Group have reviewed the position on loans and have agreed that they are current in nature and that, while there is no evidence of impairment, a provision of £177,433 has been included in the current year in recognition of the inherent risk involved; no impairment was deemed necessary in the prior year.

Details of the share-based payments issued to employees in subsidiaries are included in note 23.

Notes to the financial statements continued

For the year ended 31 December 2019

13. Investment and loans to subsidiaries continued

Subsidiary undertakings

Subsidiary undertakings	Country of incorporation	Registered office	Principal activity	**Holding at 31 December 2019**
4D Pharma Research Limited	Scotland	Life Sciences Innovation Building, Cornhill Road, Aberdeen AB25 2ZS	Research and development	**100%**
4D Pharma Cork Limited	Ireland	Room 447, Food Sciences Building, University College Cork, Western Road, Cork T12 YN60	Research and development	**100%**
4D Pharma S.L.U.	Spain	Parque Tecnológico de León, Parcela, M–10.4, 24009, Armunia, León, Spain	Production of Live Biotherapeutics	**100%**
Microbiomics Limited	England and Wales	9 Bond Court, Leeds LS1 2JZ	Dormant	**100%**
The Microbiota Company Limited	England and Wales	9 Bond Court, Leeds LS1 2JZ	Dormant	**100%**

The shares in all the companies listed above are held by 4D pharma plc.

The following companies were exempt from the requirements of the Companies Act 2006 to prepare individual accounts for the financial year ended 31 December 2019, by virtue of section 394A of the Companies Act 2006:

Subsidiary undertakings	Company number
The Microbiota Company Limited	09132301
Microbiomics Limited	08871792

14. Inventories

	31 December 2019 Group £000	**31 December 2019 Company £000**	31 December 2018 Group £000	31 December 2018 Company £000
Consumables and materials	**198**	**—**	290	—

The Directors consider that the carrying amount of inventories is the lower of cost and market value.

During the year £1.201 million (31 December 2018: £1.851 million) of inventories were expensed to the Income Statement.

15. Trade and other receivables

	31 December 2019 Group £000	**31 December 2019 Company £000**	31 December 2018 Group £000	31 December 2018 Company £000
Prepayments	**1,118**	**371**	1,248	394

The Directors consider that the carrying amount of trade and other receivables approximates to their fair value.

16. Taxation receivables

Non-current receivables	**31 December 2019 Group £000**	**31 December 2019 Company £000**	31 December 2018 Group £000	31 December 2018 Company £000
Corporation tax	**188**	**—**	137	—

Non-current assets include research and development tax claims in overseas subsidiaries that are receivable in more than one year.

16. Taxation receivables continued

Current receivables	31 December 2019 Group £000	31 December 2019 Company £000	31 December 2018 Group £000	31 December 2018 Company £000
Corporation tax	**5,375**	**1,741**	4,690	966
VAT	**747**	**250**	703	259
	6,122	**1,991**	5,393	1,225

The Directors consider that the carrying amount of taxation receivables approximates to their fair value.

17. Cash, cash equivalents and deposits

	31 December 2019 Group £000	31 December 2019 Company £000	31 December 2018 Group £000	31 December 2018 Company £000
Short-term investments and cash on deposit	**—**	**—**	10,174	10,174
Cash and cash equivalents	**3,836**	**2,921**	16,053	13,475
	3,836	**2,921**	26,227	23,649

Under IAS 7 Statement of Cash Flows, cash held on long-term deposits (being deposits with maturity of greater than three months and no more than twelve months) that cannot readily be converted into cash are classified as short-term investments.

At 31 December 2019 no cash was held on deposit in either the Group or Company.

The Directors consider that the carrying value of cash and cash equivalents approximates their fair value. For details on the Group's credit risk management refer to note 26.

18. Trade and other payables

Current	31 December 2019 Group £000	31 December 2019 Company £000	31 December 2018 Group £000	31 December 2018 Company £000
Trade payables	**1,224**	**515**	1,931	845
Other payables	**27**	**19**	28	24
Taxation and social security	**255**	**123**	278	128
Accruals and deferred income	**4,686**	**1,183**	1,288	245
	6,192	**1,840**	3,525	1,242

Trade and other payables principally comprise amounts outstanding for trade purchases and ongoing costs. Trade payables are non-interest bearing and are typically settled on 30 to 45-day terms.

The Directors consider that the carrying value of trade payables, other payables and accruals approximates to their fair value.

The Group has financial risk management policies in place to ensure that any trade payables are settled within the credit time frame and no interest has been charged by any suppliers as a result of late payment of invoices during the reporting year presented herein.

Notes to the financial statements continued

For the year ended 31 December 2019

19. Lease liabilities

Lease liabilities, excluding short-term and low-value leases, included in the Statement of Financial Position were as follows:

Lease liabilities	**31 December 2019 Group £000**	**31 December 2019 Company £000**	31 December 2018 Group £000	31 December 2018 Company £000
Current liabilities	**68**	**32**	11	—
Non-current liabilities	**1,043**	**754**	15	—
	1,111	**786**	26	—

Maturity analysis of lease liabilities

The maturity of the gross contractual undiscounted cash flows due on the Group's lease liabilities (excluding short-term and low-value leases) is set out below based on the period between 31 December 2019 and the contractual maturity date.

Analysed as follows:

	31 December 2019 Group £000	**31 December 2019 Company £000**	31 December 2018 Group £000	31 December 2018 Company £000
Land and buildings				
Due within six months	**114**	**78**	—	—
Due between six months and one year	**114**	**78**	—	—
Due between one and two years	**229**	**155**	—	—
Due between two to five years	**725**	**498**	—	—
Due in more than five years	**815**	**672**	—	—
	1,997	**1,481**	—	—
Plant and equipment				
Due within six months	**7**	**—**	7	—
Due between six months and one year	**7**	**—**	7	—
Due between one and two years	**3**	**—**	14	—
Due between two to five years	**—**	**—**	4	—
Due in more than five years	**—**	**—**	—	—
	17	**—**	32	—
Total				
Due within six months	**121**	**78**	7	—
Due between six months and one year	**121**	**78**	7	—
Due between one and two years	**232**	**155**	14	—
Due between two to five years	**725**	**498**	4	—
Due in more than five years	**815**	**672**	—	—
	2,014	**1,481**	32	—

19. Lease liabilities continued

Maturity analysis of lease liabilities continued

The maturity of the net contractual discounted cash flows due on the Group's lease liabilities (excluding short-term and low-value leases) is set out below based on the period between 31 December 2019 and the contractual maturity date.

Analysed as follows:

	31 December 2019 Group £000	**31 December 2019 Company £000**	31 December 2018 Group £000	31 December 2018 Company £000
Land and buildings				
Due within six months	**14**	**16**	—	—
Due between six months and one year	**43**	**16**	—	—
Due between one and two years	**74**	**38**	—	—
Due between two to five years	**314**	**189**	—	—
Due in more than five years	**651**	**527**	—	—
	1,096	**786**	—	—
Plant and equipment				
Due within six months	**6**	**—**	6	—
Due between six months and one year	**5**	**—**	5	—
Due between one and two years	**4**	**—**	11	—
Due between two to five years	**—**	**—**	4	—
Due in more than five years	**—**	**—**	—	—
	15	**—**	26	—
Total				
Due within six months	**20**	**16**	6	—
Due between six months and one year	**48**	**16**	5	—
Due between one and two years	**78**	**38**	11	—
Due between two to five years	**314**	**189**	4	—
Due in more than five years	**651**	**527**	—	—
	1,111	**786**	26	—

Lease terms

The Group leases properties used for its operations in the UK and in Europe. Lease terms are six to seven years, with lease terms on the same leases at 31 December 2018 being for seven to eight years. Rentals are fixed with index-linked increases at certain dates after inception of the lease. All property leases are subject to repair and maintenance terms and include provision for repair work on termination of the lease, estimations for the value of which have been included above.

Terms on specific property leases also include:

- UK property leases include a rent review by valuation in 2023
- European property leases include a break clause in 2021

The Group leases certain plant and machinery in Europe; the term is for four years and payments are fixed.

The Group also leases photocopiers which are low value and leased over a period of no more than three years at inception.

Repayment and interest rates on lease agreements are fixed at the contract date.

The Group average effective borrowing rate for leases at 31 December 2019 was 16.58% (31 December 2018: 3.95%) over a weighted average remaining period of 84 months (31 December 2018: 27 months).

The Company average effective borrowing rate for leases at 31 December 2019 was 16.81% (31 December 2018: Nil) over a weighted average remaining period of 89 months (31 December 2018: Nil).

All lease agreements are secured by the Company against the assets to which they relate.

Notes to the financial statements continued

For the year ended 31 December 2019

19. Lease liabilities continued

Lease terms continued

Disclosure of the carrying amounts of right-of-use assets by class and additions to right-of-use assets has been provided in note 11 'Property, plant and equipment'.

Effect of leases on financial performance

	31 December 2019 Group £000	**31 December 2019 Company £000**	31 December 2018 Group £000	31 December 2018 Company £000
Depreciation charge for the year included in land and buildings: for right-of-use assets:				
– Research and development costs	**52**	**—**	—	—
– Administrative expenses	**92**	**92**	—	—
Total depreciation charge on leased assets	**144**	**92**	—	—
Lease expense in the year included in 'research and development' for:				
– Short-term leases, excluding leases with a term of one month or less	**155**	**—**	153	—
– Leases of low-value assets, excluding short-term leases disclosed above	**2**	**—**	2	—
Lease expense in the year included in 'administrative expenses' for:				
– Short-term leases, excluding leases with a term of one month or less	**—**	**—**	—	—
– Leases of low-value assets, excluding short-term leases disclosed above	**2**	**2**	2	2
Interest expense for the year on lease liabilities recognised in 'finance costs'	**180**	**127**	1	—
Foreign currency adjustments to lease liabilities	**(22)**	**—**	—	—
Total effect of leases on financial performance	**461**	**221**	158	2

Effect of leases on cash flows

	31 December 2019 Group £000	**31 December 2019 Company £000**	31 December 2018 Group £000	31 December 2018 Company £000
Total cash outflow for leases in the year	**377**	**157**	312	2

Minimum lease commitments

The total minimum lease commitments for short-term and low-value leases at 31 December 2019 and operating lease commitments at 31 December 2018 were as follows:

	Short-term and low-value leases		Operating leases	
	31 December 2019 Group £000	**31 December 2019 Company £000**	31 December 2018 Group £000	31 December 2018 Company £000
Land and buildings				
Not later than one year	**80**	**—**	363	150
After one year but not more than five years	**—**	**—**	627	363
	80	**—**	990	513
Plant and equipment				
Not later than one year	**1**	**1**	2	2
After one year but not more than five years	**—**	**—**	1	1
	1	**1**	3	3
Total				
Not later than one year	**81**	**1**	365	152
After one year but not more than five years	**—**	**—**	628	364
	81	**1**	993	516

19. Lease liabilities continued

Minimum lease commitments continued

Differences between the operating lease commitments disclosed at 31 December 2018 under IAS 17 discounted at the incremental borrowing rate at 1 January 2019 and lease liabilities recognised at 1 January 2019 are explained below:

	Land and buildings			Office equipment	
Group	UK	European	Total land and buildings	UK	Total lease liabilities
Operating leases at 31 December 2018:					
– Not later than one year	226	137	363	2	365
– After one year but not more than five years	363	264	627	1	628
Total operating leases at 31 December 2018	589	401	990	3	993
Less: short-term leases included above	76	—	76	3	79
Lease liabilities subject to adjustment by IFRS 16	513	401	914	—	914
At 1 January 2019:					
– Incremental borrowing rate	16.81%	16.81%	16.81%	—	16.81%
– Discounted lease commitments	702	300	1,002	—	1,002
– Recognition of discounted termination and other lease payments	112	30	142	—	142
Lease liability recognised	814	330	1,144	—	1,144
Difference	301	(71)	230	—	230
Made up of:					
– Reclassification of components of operating leases as commitments	—	(267)	(267)	—	(267)
– Discounted adjustment to recognised lease period	301	196	497	—	497
	301	(71)	230	—	230

	Land and buildings	Office equipment	
Company	UK	UK	Total lease liabilities
Operating leases at 31 December 2018:			
– Not later than one year	150	2	152
– After one year but not more than five years	363	1	364
Total operating leases at 31 December 2018	513	3	516
Less: short-term leases included above	—	3	3
Lease liabilities subject to adjustment by IFRS 16	513	—	513
At 1 January 2019:			
– Incremental borrowing rate	16.81%	—	16.81%
– Discounted lease commitments	702	—	702
– Recognition of discounted termination and other lease payments not included under IAS 17	112	—	112
Lease liability recognised	814	—	814
Difference	301	—	301
Made up of:			
– Discounted adjustment to recognised lease period	301	—	301
	301	—	301

Notes to the financial statements continued

For the year ended 31 December 2019

20. Contingent consideration

	31 December 2019 Group £000	**31 December 2019 Company £000**	31 December 2018 Group £000	31 December 2018 Company £000
Current liabilities	**—**	**—**	1,641	1,641
Non-current liabilities	**—**	**—**	684	684
	—	**—**	2,325	2,325

The contingent consideration is made up as follows:

	31 December 2019 Group £000	**31 December 2019 Company £000**	31 December 2018 Group £000	31 December 2018 Company £000
Brought forward	**2,325**	**2,325**	1,979	1,979
Fair value adjustment on contingent consideration	**(2,659)**	**(2,659)**	—	—
Unwinding of discount	**334**	**334**	346	346
	—	**—**	2,325	2,325
Analysed as follows:				
Within one year	**—**	**—**	1,641	1,641
More than one year	**—**	**—**	684	684
	—	**—**	2,325	2,325

The above contingent consideration relates to the amounts due on the remaining milestones which form part of the original contingent acquisition costs for the entire issued share capital in Tucana Health Limited (now 4D Pharma Cork Limited) on 10 February 2016.

The contingent consideration is based on milestones in the development of the MicroDx diagnostic platform which has been designed to diagnose, stratify and monitor the treatment of patients based on their gut microbiome, the bacteria which colonise the human gastrointestinal tract. Further details relating to the milestones are included in note 6.

The following table lists the inputs used in valuing the provision:

Group and Company	**2019**	2018
Share price	**755p**	755p
Costs of capital	**17.50%**	17.50%

21. Deferred tax

Group	£000
At 31 December 2017	965
Exchange rate movement	1
At 31 December 2018	966
Exchange rate movement	(2)
At 31 December 2019	964

All deferred tax liabilities relate to the tax arising on fair value adjustment on the acquisition of subsidiaries and as such there is no provision for deferred tax in the Company.

22. Share capital

Group and Company	Ordinary shares Number	Share capital £000	Share premium £000	Total £000
Allotted, called up and fully paid ordinary shares of 0.25p				
Ordinary shares as at 1 January 2018, 31 December 2018 and 31 December 2019	**65,493,842**	**164**	**108,296**	**108,460**

The balances classified as share capital and share premium include the total net proceeds (nominal value and share premium respectively) on issue of the Company's equity share capital, comprising entirely of 0.25 pence ordinary non-redeemable shares each carrying one voting right and being entitled pari passu to participate in dividends or distributions on the winding up of the Company.

23. Share-based payment reserve

	Group £000	Company £000
At 31 December 2017	440	440
Share-based compensation:		
– Issued to investment in subsidiaries	—	134
– Issued	268	134
At 31 December 2018	708	708
Share-based compensation:		
– Lapsed options	(608)	(375)
– Lapsed options relating to investment in subsidiaries	—	(233)
– Issued	267	137
– Issued to investment in subsidiaries	—	130
At 31 December 2019	**367**	**367**

Share option schemes

The Group operates the following unapproved share option scheme:

4D pharma plc 2015 Long Term Incentive Plan (LTIP)

Share options were granted to staff members on 10 November 2015, 11 May 2016, 24 May 2017, 26 October 2018 and 5 July 2019. Share options are awarded to management and key staff as a mechanism for attracting and retaining key members of staff. These options vest over period of up to three years from the date of grant and are exercisable until the tenth anniversary of the award. Exercise of the award is subject to the employee remaining a full-time member of staff at the point of exercise and the vesting conditions being met.

Vesting conditions are based on a mixture of the Company's TSR performance, relative to an appropriate comparator group, and certain individual performance criteria.

The fair value benefit is measured using a Black Scholes model, taking into account the terms and conditions upon which the share options were issued.

Notes to the financial statements continued

For the year ended 31 December 2019

23. Share-based payment reserve continued

Share option schemes continued

Group and Company

Year ended 31 December 2019

Date of grant	Exercise period	Exercise price per share Pence	Number At 31 December 2018	Granted	Non-vesting or lapsed	**At 31 December 2019**	Exercisable
11 May 2016	2019–2026	0.25	60,147	—	(50,461)	**9,686**	9,686
24 May 2017	2020–2027	0.25	240,406	—	(129,589)	**110,817**	—
26 October 2018	2021–2028	0.25	746,779	—	(346,388)	**400,391**	—
5 July 2019	2022–2029	0.25	—	538,596	—	**538,596**	—
			1,047,332	538,596	(526,438)	**1,059,490**	9,686
Weighted average exercise price of options (pence)			0.25	0.25	0.25	**0.25**	0.25

Year ended 31 December 2018

Date of grant	Exercise period	Exercise price per share Pence	Number At 31 December 2017	Granted	Non-vesting or lapsed	At 31 December 2018	Exercisable
10 November 2015	2018–2025	0.25	40,909	—	(40,909)	—	—
11 May 2016	2019–2026	0.25	60,147	—	—	60,147	—
24 May 2017	2020–2027	0.25	240,406	—	—	240,406	—
26 October 2018	2021–2028	0.25	—	746,779	—	746,779	—
			341,462	746,779	(40,909)	1,047,332	—
Weighted average exercise price of options (pence)			0.25	0.25	0.25	0.25	—

For shares outstanding at the year end, the weighted average remaining contractual life of the options issued in was 9.35 years (31 December 2018: 8.77 years).

No share options had been exercised at the year end (31 December 2018: Nil) and 9,686 (31 December 2018: Nil) share options were exercisable at the year end.

The following table lists the assumptions used in calculating the fair value of options:

Date of grant	Expected volatility	Risk-free interest rate	Dividend yield	Expected life of options	Weighted average exercise price	Weighted average share price at date of grant	Number of options granted
10 November 2015	52.50%	0.87%	0.00%	3 years	0.25p	770p	40,909
11 May 2016	52.50%	1.40%	0.00%	3 years	0.25p	771p	60,147
24 May 2017	52.50%	0.41%	0.00%	3 years	0.25p	321p	240,406
26 October 2018	50.96%	0.72%	0.00%	3 years	0.25p	141p	746,779
5 July 2019	69.62%	0.57%	0.00%	3 years	0.25p	93p	538,596

The expected life of the options is based on historical data and is not necessarily indicative of exercise patterns that may occur. The expected volatility reflects the assumption that the historical volatility is indicative of future trends, which may also not necessarily be the actual outcome.

No dividends were assumed to be paid in the foreseeable future.

The model assumes, within the calculation of the charge, delivery of options that are dependent on a judgemental comparison to the total shareholder return against a specified comparator group of companies upon passing of the vesting period.

No other features of options granted were incorporated into the measurement of fair value.

24. Capital and reserves

The components of equity are as follows:

Called-up share capital

The share capital account includes the par value for all shares issued and outstanding.

Share premium account

The share premium account is used to record amounts received in excess of the nominal value of shares on issue of new shares less the costs of new share issues.

Merger reserve

The merger reserve comprises the premium arising on shares issued as consideration for the acquisition of subsidiary undertakings where merger relief under section 612 of the Companies Act 2006 applies.

Retained earnings

Retained earnings includes the accumulated profits and losses arising from the Group Statement of Comprehensive Income and certain items from other comprehensive income attributable to equity shareholders net of distributions to shareholders.

Other reserve

The other reserve represents the balance arising on the acquisition of the former non-controlling interest in 4D Pharma Research Limited.

Share-based payment reserve

The share-based payment reserve accumulates the corresponding credit entry in respect of share-based compensation charges. Movements in the reserve are disclosed in the Group Statement of Changes in Equity.

Translation reserve

The translation reserve is composed of the exchange rate movements in non-cash assets in foreign subsidiaries which arise on the translation of foreign subsidiaries. Movements in the reserve are disclosed in the Group Statement of Changes in Equity.

25. Commitments

The Group had the following non-cancellable commitments at the date of the Statement of Financial Position:

	31 December 2019 Group £000	**31 December 2019 Company £000**	31 December 2018 Group £000	31 December 2018 Company £000
Short-term, low-value and 'operating leases' (see note 19)*	**81**	**1**	993	516
Committed capital expenditure	**23**	**—**	—	—
Research and development	**11,304**	**11,304**	9,249	8,836
Administrative expenses	**941**	**941**	160	160
	12,349	**12,246**	10,402	9,512

* Operating leases at 31 December 2018 above include certain leases which were capitalised as right-of-use assets under IFRS 16 'Leases' on 1 January 2019; further detail is included in note 19.

Notes to the financial statements continued

For the year ended 31 December 2019

25. Commitments continued

The maturity analysis of non-cancellable commitments is as follows:

	31 December 2019 Group £000	**31 December 2019 Company £000**	31 December 2018 Group £000	31 December 2018 Company £000
Short-term, low-value and 'operating leases' (see note 19):				
– Not later than one year	**81**	**1**	365	152
– After one year but not more than five years	**—**	**—**	628	364
	81	**1**	993	516
Committed capital expenditure:				
– Not later than one year	**23**	**—**	—	—
– After one year but not more than five years	**—**	**—**	—	—
	23	**—**	—	—
Research and development:				
– Not later than one year	**6,937**	**6,937**	3,385	2,972
– After one year but not more than five years	**4,367**	**4,367**	5,864	5,864
	11,304	**11,304**	9,249	8,836
Administrative expenses:				
– Not later than one year	**416**	**416**	160	160
– After one year but not more than five years	**525**	**525**	—	—
	941	**941**	160	160
Total:				
– Not later than one year	**7,457**	**7,354**	3,910	3,284
– After one year but not more than five years	**4,892**	**4,892**	6,492	6,228
	12,349	**12,246**	10,402	9,512

26. Financial risk management

Overview

This note presents information about the Group's exposure to various kinds of financial risks, the Group's objectives, policies and processes for measuring and managing risk, and the Group's management of capital.

The Board of Directors has overall responsibility for the establishment and oversight of the Group's risk management framework. The Executive Directors report regularly to the Board on Group risk management.

It is, and has been throughout the year, the Group's policy that no speculative trading in financial instruments is undertaken.

Capital risk management

The Company reviews its forecast capital requirements on a half-yearly basis to ensure that entities in the Group will be able to continue as a going concern while maximising the return to stakeholders.

The capital structure of the Group consists of equity attributable to equity holders of the parent, comprising issued share capital, reserves and retained earnings as disclosed in the Group Statement of Changes in Equity. Total equity was £22.343 million at 31 December 2019 (31 December 2018: £45.763 million).

The Company is not subject to externally imposed capital requirements.

Liquidity risk

The Group's approach to managing liquidity is to ensure that, as far as possible, it will always have sufficient liquidity to meet its liabilities when due, under both normal and stressed conditions, without incurring unacceptable losses or risking damage to the Group's reputation.

The Group manages all of its external bank relationships centrally in accordance with defined treasury policies. The policies include the minimum acceptable credit rating of relationship banks and financial transaction authority limits. Any material change to the Group's principal banking facility requires Board approval. The Group seeks to mitigate the risk of bank failure by ensuring that it maintains relationships with a number of investment grade banks.

26. Financial risk management continued

Liquidity risk continued

At the reporting date the Group had no outstanding borrowings other than the lease liabilities detailed below.

Categorisation of financial instruments	31 December 2019 Fixed rate £000	Floating rate £000	Non-interest bearing £000	Total £000
Group				
Cash, cash equivalents and short-term deposits	**—**	**3,836**	**—**	**3,836**
Trade and other payables	**—**	**—**	**(6,192)**	**(6,192)**
Lease liabilities	**(1,111)**	**—**	**—**	**(1,111)**
	(1,111)	**3,836**	**(6,192)**	**(3,467)**
Company				
Cash, cash equivalents and short-term deposits	**—**	**2,921**	**—**	**2,921**
Intercompany loans	**—**	**—**	**59,643**	**59,643**
Trade and other payables	**—**	**—**	**(1,840)**	**(1,840)**
Lease liabilities	**(786)**	**—**	**—**	**(786)**
	(786)	**2,921**	**57,803**	**59,938**

Categorisation of financial instruments	31 December 2018 Fixed rate £000	Floating rate £000	Non-interest bearing £000	Total £000
Group				
Cash, cash equivalents and short-term deposits	5,174	21,052	1	26,227
Trade and other payables	—	—	(3,545)	(3,545)
Lease liabilities*	(26)	—	—	(26)
	5,148	21,052	(3,544)	22,656
Company				
Cash, cash equivalents and short-term deposits	5,174	18,474	1	23,649
Intercompany loans	—	—	50,650	50,650
Trade and other payables	—	—	(1,242)	(1,242)
	5,174	18,474	49,409	73,057

* Excludes leases re-classified under IFRS 16.

All categories of financial assets and liabilities are measured at amortised cost with exception of the contingent consideration which is measured at fair value through the Statement of Total Comprehensive Income using a level 3 valuation technique.

The values disclosed in the above table are carrying values. The Board considers that the carrying amount of financial assets and liabilities approximates to their fair value.

Interest rate risk

As the Group has no significant borrowings the risk is limited to the reduction of interest received on cash surpluses held at bank which receive a floating rate of interest. The exposure to interest rate movements is immaterial.

Maturity profile

The Directors consider that the carrying amount of the financial liabilities approximates to their fair value.

As all financial assets are expected to mature within the next twelve months an aged analysis of financial assets has not been presented.

Notes to the financial statements continued

For the year ended 31 December 2019

26. Financial risk management continued

Maturity of liabilities and cash outflows

Group	2019 Less than one year £000	2019 Between one and two years £000	2019 Between two and five years £000	2019 More than five years £000	2018 Less than one year £000	2018 Between one and two years £000	2018 Between two and five years £000	2018 More than five years £000
Trade and other payables	**6,192**	**—**	**—**	**—**	3,545	—	—	—
Lease liabilities	**68**	**78**	**314**	**651**	11	11	4	—
	6,260	**78**	**314**	**651**	3,556	11	4	—

Company	2019 Less than one year £000	2019 Between one and two years £000	2019 Between two and five years £000	2019 More than five years £000	2018 Less than one year £000	2018 Between one and two years £000	2018 Between two and five years £000	2018 More than five years £000
Intercompany loans	**59,643**	**—**	**—**	**—**	50,650	—	—	—
Trade and other payables	**1,840**	**—**	**—**	**—**	1,242	—	—	—
Lease liabilities	**32**	**38**	**189**	**527**	—	—	—	—
	61,515	**38**	**189**	**527**	51,892	—	—	—

Foreign currency risk

The Group's principal functional currency is Sterling. However, the Group has two subsidiaries whose functional currency is the Euro and the Group as a whole undertakes certain transactions denominated in foreign currencies.

The Group is exposed to currency risk on sales and purchases that are denominated in a currency other than the respective functional currency of the Company. These are primarily US Dollars (USD), and Euros (EUR). Transactions outside of these currencies are limited.

The Group may use forward exchange contracts as an economic hedge against currency risk, where cash flow can be judged with reasonable certainty. Foreign exchange swaps and options may be used to hedge foreign currency receipts in the event that the timing of the receipt is less certain. There were no open forward contracts as at 31 December 2019 or at 31 December 2018 and the Group did not enter into any such contracts during these years.

The split of Group assets between Sterling and other currencies at the year end is analysed as follows:

Group	2019 GBP £000	2019 USD £000	2019 EUR £000	2019 Total £000	2018 GBP £000	2018 USD £000	2018 EUR £000	2018 Total £000
Cash, cash equivalents and deposits	**1,919**	**1,682**	**235**	**3,836**	25,771	123	333	26,227
Trade and other payables	**(5,151)**	**(187)**	**(854)**	**(6,192)**	(2,126)	(185)	(1,234)	(3,545)
Lease liabilities	**(786)**	**—**	**(325)**	**(1,111)**	—	—	(26)	(26)
	(4,018)	**1,495**	**(944)**	**(3,467)**	23,645	(62)	(927)	22,656

Sensitivity analysis to movement in exchange rates

To understand the sensitivity to exchange rate fluctuations the Group has considered the effect on the net balances based on a 1 point and 5 point variation and has concluded that the impact is immaterial, the details are as follows:

Group	2019 GBP £000	2019 USD £000	2019 EUR £000	2019 Total £000	2018 GBP £000	2018 USD £000	2018 EUR £000	2018 Total £000
Exchange rate at 31 December	**1**	**1.32594**	**1.18152**		1	1.27434	1.10941	
5 point decrease	**(4,018)**	**1,441**	**(906)**	**(3,483)**	23,645	(60)	(887)	22,698
1 point decrease	**(4,018)**	**1,484**	**(936)**	**(3,470)**	23,645	(62)	(919)	22,664
At 31 December	**(4,018)**	**1,495**	**(944)**	**(3,467)**	23,645	(62)	(927)	22,656
1 point increase	**(4,018)**	**1,506**	**(952)**	**(3,464)**	23,645	(62)	(935)	22,648
5 point increase	**(4,018)**	**1,554**	**(986)**	**(3,450)**	23,645	(65)	(971)	22,609

27. Related party transactions

Key management compensation	**Year to 31 December 2019 £000**	Year to 31 December 2018 £000
Executive Directors		
Salaries and short-term benefits	**204**	204
Employer's National Insurance and social security costs	**25**	25
	229	229
Fees for services provided as Non-Executive Directors		
Salaries and short-term benefits	**167**	50
Employer's National Insurance and social security costs	**5**	5
	172	55
Other key management		
Salaries and short-term benefits	**1,333**	1,054
Employer's National Insurance and social security costs	**200**	175
Employer's pension contributions	**55**	39
Share-based payment charge	**267**	268
	1,855	1,536

Group

Transactions with Directors and related entities

There were no transactions with Directors and related entities during the current or previous year.

Transactions with key personnel and related entities

During the year Summ.it assist llp, an entity in which Stephen Dunbar, the Finance Director, is a partner, recharged the Group £1,403 for IT equipment and software (31 December 2018: £1,337), £Nil for IT support (31 December 2018: £90), £20,904 for accounting and bookkeeping services (31 December 2018: £20,211) and £2,823 was charged for other costs (31 December 2018: £2,391). At the year end £2,579 was due to summ.it assist llp (31 December 2018: £2,392).

Biomar Microbial Technologies, an entity in which Antonio Fernandez is a director, charged rent and building service costs to the Group of £40,348 (31 December 2018: £17,756) and the Group charged Biomar £27,583 for services (31 December 2018: £32,981). At the year end £2,844 was due from Biomar Microbial Technologies (31 December 2018: £3,557).

Company

Transactions between 100% owned Group companies have not been disclosed as these have all been eliminated in the preparation of the Group financial statements.

Transactions with Directors and related entities

There were no transactions with Directors and related entities during the current or previous year.

Transactions with key personnel and related entities

During the year Summ.it assist llp, an entity in which Stephen Dunbar, the Finance Director, is a partner, recharged the Group £1,403 for IT equipment and software (31 December 2018: £1,337), £Nil for IT support (31 December 2018: £90), £20,904 for accounting and bookkeeping services (31 December 2018: £20,211) and £2,823 was charged for other costs (31 December 2018: £2,391). At the year end £2,579 was due to summ.it assist llp (31 December 2018: £2,392).

All related party transactions during the current and previous year were considered to be at arm's length.

Notes to the financial statements continued

For the year ended 31 December 2019

28. Reconciliation of net cash flows to movement in net debt

	31 December 2019 Group £000	31 December 2019 Company £000	31 December 2018 Group £000	31 December 2018 Company £000
Net debt at the beginning of the year	**(23,876)**	**(21,324)**	(47,983)	(47,214)
Cash flows	**22,129**	**20,665**	23,837	25,924
Non-cash items*	**(1,204)**	**(1,511)**	345	346
Interest and other finance costs	**226**	**35**	(75)	(380)
Increase in net debt in the year	**21,151**	**19,189**	24,107	23,890
Net debt at 31 December	**(2,725)**	**(2,135)**	(23,876)	(21,324)

* Non-cash items relate to the fair value movement of debt recognised in the year which do not give rise to a cash inflow or outflow.

Net debt is defined as follows:

	31 December 2019 Group £000	31 December 2019 Company £000	31 December 2018 Group £000	31 December 2018 Company £000
Current assets				
Short-term investments and cash on deposit	**—**	**—**	10,174	10,174
Cash and cash equivalents	**3,836**	**2,921**	16,053	13,475
Current liabilities				
Lease liabilities*	**(68)**	**(32)**	(11)	—
Contingent consideration	**—**	**—**	(1,641)	(1,641)
Non-current liabilities				
Lease liabilities*	**(1,043)**	**(754)**	(15)	—
Contingent consideration	**—**	**—**	(684)	(684)
Net debt	**2,725**	**2,135**	23,876	21,324

Analysis of net debt

Group	31 December 2018 £000	Cash flows £000	Non-cash items £000	Interest and other finance costs £000	31 December 2019 £000
Short-term investments and cash on deposit	10,174	(10,268)	—	94	**—**
Cash and cash equivalents	16,053	(12,217)	—	—	**3,836**
	26,227	(22,485)	—	94	**3,836**
Liabilities arising from financing activities					
Lease liabilities*	(26)	356	(1,121)	(320)	**(1,111)**
Contingent consideration	(2,325)	—	2,325	—	**—**
	(2,351)	356	1,204	(320)	**(1,111)**
Net debt	23,876	(22,129)	1,204	(226)	**2,725**

* Lease liabilities exclude liabilities which were only recognised as 'operating leases' prior to the introduction of IFRS 16. However, payments in respect of 'operating leases' have been included in the cash flow and other finance cost columns.

28. Reconciliation of net cash flows to movement in net debt continued

Analysis of net debt continued

Group	31 December 2017 £000	Cash flows £000	Non-cash items £000	Interest and other finance costs £000	31 December 2018 £000
Short-term investments and cash on deposit	38,133	(28,337)	—	378	10,174
Cash and cash equivalents	11,865	4,188	—	—	16,053
	49,998	(24,149)	—	378	26,227
Liabilities arising from financing activities					
Lease liabilities	(36)	312	1	(303)	(26)
Contingent consideration	(1,979)	—	(346)	—	(2,325)
	(2,015)	312	(345)	(303)	(2,351)
Net debt	47,983	(23,837)	(345)	75	23,876

Company	31 December 2018 £000	Cash flows £000	Non-cash items £000	Interest and other finance costs £000	**31 December 2019 £000**
Short-term investments and cash on deposit	10,174	(10,268)	—	94	**—**
Cash and cash equivalents	13,475	(10,554)	—	—	**2,921**
	23,649	(20,822)	—	94	**2,921**
Liabilities arising from financing activities					
Lease liabilities	—	157	(814)	(129)	**(786)**
Contingent consideration	(2,325)	—	2,325	—	**(0)**
	(2,325)	157	1,511	(129)	**(786)**
Net debt	21,324	(20,665)	1,511	(35)	**2,135**

Company	31 December 2017 £000	Cash flows £000	Non-cash items £000	Interest and other finance costs £000	31 December 2018 £000
Short-term investments and cash on deposit	38,133	(28,337)	—	378	10,174
Cash and cash equivalents	11,060	2,415	—	—	13,475
	49,193	(25,922)	—	378	23,649
Liabilities arising from financing activities					
Lease liabilities	—	(2)	—	2	—
Contingent consideration	(1,979)	—	(346)	—	(2,325)
	(1,979)	(2)	(346)	2	(2,325)
Net debt	47,214	(25,924)	(346)	380	21,324

Notes to the financial statements continued

For the year ended 31 December 2019

29. Subsequent events

Fundraising events

In February 2020 the Group raised £22 million (£20.8 million net of transaction costs) through the issue of 27,179,920 new ordinary shares and a placing of 16,820,080 new ordinary shares with certain new and existing investors at a share price of 50 pence per share. A warrant was also issued on the basis of one share for every two placing or subscription shares based on an admission cost of 100 pence per ordinary share and is exercisable for five years from the date of admission.

As part of the Fundraising, the Company has exercised its right to cause MSD (the tradename of Merck & Co., Inc, Kenilworth, NJ, USA) to purchase US$5 million (approx. £3.83 million) of new ordinary shares at the Issue Price pursuant to the terms of a Subscription Agreement (the agreement to do so having been announced in parallel with the Company's research collaboration and option to license agreement with MSD on 8 October 2019).

Directors' participation in Fundraising

At the time of the Fundraising certain of the Directors agreed to subscribe for Subscription Shares at the Issue Price. The number of Subscription Shares subscribed for by each of these Directors pursuant to the Fundraising, and their resulting shareholdings on Admission, are set out below:

Director	Number of existing ordinary shares	Number of subscription shares subscribed for in the Fundraising	Consideration for subscription shares	Number of ordinary shares held on admission	Percentage of enlarged share capital on admission
David Norwood	7,123,725	1,333,336	£666,668	8,457,061	7.70%
Duncan Peyton	6,455,075	1,333,332	£666,666	7,788,407	7.10%
Alex Stevenson	6,413,136	1,333,332	£666,666	7,746,468	7.10%
	19,991,936	4,000,000	£2,000,000	23,991,936	

COVID-19

In 2020 the global COVID-19 pandemic hit the UK affecting almost all aspects of the economy, the pharmaceutical industry and the Group included. In response to this unexpected and unprecedented event, the Group has taken the situation very seriously and heeded the advice of the UK government and other authorities, utilising technology effectively to mitigate this unprecedented disruption where possible. To protect the safety of patients, our staff and the staff of our collaborators we have limited non-essential activity at clinical sites which has had an impact on patient recruitment for some studies resulting in some potential delays to expected clinical readouts.

The likely duration of the disruption caused by COVID-19 is not yet known and it is too early to accurately predict the impact on the Group's operations and clinical timelines. However, in light of this unprecedented situation the Board has carefully re-evaluated the Company's strategic priorities and near-to-mid-term objectives. We have taken measures to streamline the business, including changes to management structure and reducing staffing requirements, primarily relating to manufacturing, research and administrative services. The Board has also prioritised allocation of capital and resources to key programmes set to deliver key clinical value drivers for our shareholders, including oncology and launching a Phase II clinical trial in COVID-19.

The Group remains committed to reviewing the rapidly evolving global situation and adapting its strategy and operations accordingly.

Company information

Country of incorporation
United Kingdom

Company number
08840579

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AJ Stevenson
DR Norwood (Non-Executive)
E Baracchini (Non-Executive)
A Macrae (Non-Executive)

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