UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K

☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2020

OR

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from to

Commission File Number 001-37368

ADAPTIMMUNE THERAPEUTICS PLC

(Exact name of Registrant as specified in its charter)

England and Wales	**Not Applicable**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
60 Jubilee Avenue, Milton Park Abingdon, Oxfordshire OX14 4RX United Kingdom (Address of principal executive offices)	**(44) 1235 430000** (Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	**Trading Symbol(s)**	**Name of each exchange on which registered**
American Depositary Shares, each representing 6 Ordinary Shares, par value £0.001 per share	ADAP	The Nasdaq Stock Market LLC

Securities registered pursuant to Section 12(g) of the Act:
None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. ☒ Yes ☐ No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. ☐ Yes ☒ No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. ☒ Yes ☐ No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). ☒ Yes ☐ No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☒	Accelerated filer ☐	Non-accelerated filer ☐	Smaller reporting company ☐ Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). ☐ Yes ☒ No

State the aggregate market value of the voting and non-voting common equity held by non-affiliates computed by reference to the price at which the common equity was last sold, or the average bid and asked price of such common equity, as of the last business day of the registrant's most recently completed second fiscal quarter. $1,359,787,192.

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date.

As of February 24, 2021 the number of outstanding ordinary shares, par value £0.001 per share, of the Registrant is 930,827,670.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive Proxy Statement for the 2021 Annual Meeting of Shareholders to be filed with the U.S. Securities and Exchange Commission pursuant to Regulation 14A not later than 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K are incorporated by reference in Part III, Items 10-14 of this Annual Report on Form 10-K.

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GENERAL INFORMATION

In this Annual Report on Form 10-K ("Annual Report"), "Adaptimmune," the "Group," the "Company," "we," "us" and "our" refer to Adaptimmune Therapeutics plc and its consolidated subsidiaries, except where the context otherwise requires. "Adaptimmune" and "SPEAR" are registered trademarks of Adaptimmune.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report contains forward-looking statements that involve risks and uncertainties, as well as assumptions that, if they never materialize or prove incorrect, could cause our results to differ materially from those expressed or implied by such forward-looking statements. We make such forward-looking statements pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 and other federal securities laws. All statements other than statements of historical facts contained in this Annual Report are forward-looking statements. In some cases, you can identify forward-looking statements by words such as "believe," "may," "will," "estimate," "continue," "anticipate," "intend," "expect" or the negative of these words or other comparable terminology. These forward-looking statements include, but are not limited to, statements about:

Any forward-looking statements in this Annual Report reflect our current views with respect to future events or to our future financial performance and involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by these forward-looking statements. Factors that may cause actual results to differ materially from current expectations include, among other things, those listed under Part I, Item 1A. Risk Factors and elsewhere in this Annual Report. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Except as required by law, we assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future.

This Annual Report also contains estimates, projections and other information concerning our industry, our business, and the markets for certain diseases, including data regarding the estimated size of those markets, and the incidence and prevalence of certain medical conditions. Information that is based on estimates, forecasts, projections, market research or similar methodologies is inherently subject to uncertainties and actual events or circumstances may differ materially from events and circumstances reflected in this information. Unless otherwise expressly stated, we obtained this industry, business, market and other data from reports, research surveys, studies and similar data prepared by third parties, industry, medical and general publications, government data and similar sources.

Item 1. Business

Overview

We are a clinical-stage biopharmaceutical company focused on providing novel cell therapies to people with cancer. We are a leader in the development of T-cell therapies for solid tumors and have seen responses in six different types of solid tumors in clinical trials.

Our proprietary platform enables us to identify cancer targets, find and develop cell therapy candidates active against those targets and produce therapeutic candidates for administration to patients. Our cell therapy candidates include Specific Peptide Enhanced Affinity Receptor ("SPEAR" T-cells), which use genetically engineered T-cell receptors; next generation T-cell Infiltrating Lymphocytes ("TiLs") where a patient's own T-cells are co-administered with our next generation technology, and HLA-independent TCRs ("HiTs") where surface proteins are targeted independently of the peptide-HLA complex.

We have clinical trials ongoing with three wholly-owned SPEAR T-cell therapies:

- ***SPEARHEAD-1 Phase 2 Trial with ADP-A2M4****:* A registration directed Phase 2 clinical trial is underway in synovial sarcoma and myxoid round cell liposarcoma ("MRCLS") indications in which the MAGE-A4 antigen is expressed. Subject to the successful conclusion of the SPEARHEAD-1 trial during the first half of 2021 and approval of a Biologics License Application by the FDA we plan to commercially launch ADP-A2M4 in 2022 in the United States ("U.S.") for treatment of synovial sarcoma.

- ***SPEARHEAD-2 Phase 2 Trial with ADP-A2M4*****:** A Phase 2 trial combining ADP-A2M4 with pembrolizumab in patients with head and neck cancer expressing the MAGE-A4 antigen is underway at clinical sites in the U.S.

- ***SURPASS Phase 1 Trial with ADP-A2M4CD8***: Enrollment is ongoing in a Phase 1 trial for our next generation SPEAR T-cells, ADP-A2M4CD8, focusing on treatment of patients with lung, gastroesophageal, head and neck and bladder cancers in which the MAGE-A4 antigen is expressed. Based on the responses seen in the Phase 1 clinical trial using ADP-A2M4 and initial responses seen in the SURPASS trial, we are planning to initiate a Phase 2 clinical trial with ADP-A2M4CD8 in esophageal and esophagogastric junction ("EGJ") cancers in mid-2021.

- ***ADP-A2AFP Phase 1 Trial***: We continue treating patients in our Phase 1, open-label, dose-escalation trial designed to evaluate the safety and anti-tumor activity of our alpha fetoprotein ("AFP") therapeutic candidate for the treatment of hepatocellular carcinoma ("HCC"). A further cohort has also been initiated for patients with tumors other than HCC that express the AFP antigen.

- ***ADP-A2M4 Phase 1 Trial – Radiation Sub-study***: Our Phase 1 clinical trial of ADP-A2M4 in urothelial, melanoma, head and neck, ovarian, non-small cell lung, esophageal and gastric, synovial sarcoma and MRCLS cancers has now completed enrollment. A radiation sub-study of this trial continues to enroll patients and is assessing whether low-dose radiation enhances T-cell tumor trafficking and responses.

We have an active preclinical pipeline of cell therapy candidates with the aim of delivering five new cell therapies to the clinic in the next five years. The pipeline includes new autologous SPEAR T-cells, SPEAR T-cells addressing alternative HLA-types, next generation SPEAR T-cells, next-generation TILs and HiTs. These are being developed internally and in collaboration with third parties including Alpine Immune Sciences ("Alpine"), the National Center for Cancer Immune Therapy in Denmark ("CCIT") and Noile-Immune Biotech Inc. ("Noile-Immune"). These approaches enable us to further enhance and extend the reach of our cell therapies and increase the number of patients we can potentially treat.

We are also developing allogeneic or "off-the-shelf" cell therapies utilizing a proprietary allogeneic platform. The platform is applicable to all of our cell therapies and we plan to bring two allogeneic programs to the clinic within

the next five years, one for SPEAR T-cells targeting MAGE-A4 and one for HiTs targeting mesothelin, the latter in collaboration with Astellas.

We have a strategic collaboration program ongoing with Astellas (through its wholly owned subsidiary Universal Cells) in relation to up to three targets with the aim of co-developing T-cell therapy candidates directed to those targets and utilizing our allogeneic platform for "off-the-shelf" cell therapies. The first target subject to the collaboration is the mesothelin target to which a HiT cell therapy is being developed. We also have a number of development and research collaborations including our collaboration with GSK for the development, manufacture and commercialization of TCR therapeutic candidates for up to five programs, a clinical and pre-clinical alliance agreement with MD Anderson Cancer Center and research collaborations with Alpine, Noile-Immune and CCIT.

We are an integrated cell therapy company with our own manufacturing facility in the U.S. and dedicated lentiviral vector manufacturing in the United Kingdom ("U.K."). This enables us to continue improving the patient experience associated with our cell therapies including the ability to rapidly introduce improvements to the manufacturing process and patient supply chain.

Business Strategy

Building on our leadership position with T-cell therapies in solid tumor indications, our strategic objective is to be a world leader in designing and delivering cell therapies that transform the lives of people with cancer. In order to achieve our objectives, our five-year core value drivers are as follows:

Progressing two cell therapies toward commercialization. We are planning to file a Biologics License Application ("BLA") with the FDA during 2022 for ADP-A2M4 for the treatment of patients with synovial sarcoma. Planning for filing of the BLA is underway and preparation for commercialization in anticipation of authorization is in progress. We are also initiating a second Phase 2 clinical trial ("SURPASS-2") with ADP-A2M4CD8 in esophageal and EGJ cancers and are aiming to obtain clinical data from the Phase 2 trial during 2021 and 2022. Depending on the clinical data obtained we plan to file a BLA following conclusion of that clinical trial.

Progressing two cell therapies into later clinical phase. Depending on data from ongoing clinical trials, we plan to rapidly progress clinical candidates through clinical trials and towards BLA filing. For example, our ADP-A2M4CD8 therapy is in a Phase 1 clinical trial (SURPASS) focusing on MAGE-A4 positive patients in lung, head and neck, bladder and gastroesophageal indications. Depending on the data obtained additional indications may be identified for ADP-A2M4CD8 to be progressed into later phase trials and, depending on data, ultimately to a BLA filing. We also have an ongoing Phase 1 trial with our ADP-A2AFP cell therapy and we aim to progress quickly into further clinical trials once the Phase 1 trial has concluded or we have sufficient data to take a decision on the next steps for ADP-A2AFP.

Progress five new autologous cell therapies into the clinic within five years. We continue to progress our pipeline of cell therapy candidates including HiT cell therapy candidates, new SPEAR T-cells and next generation TILs. We aim to progress these candidates through our pre-clinical pipeline quickly and start Phase 1 clinical trials once preclinical work is complete. For example, we are planning to start a next-generation TIL trial in collaboration with CCIT.

Continuing to develop off-the-shelf cell immunotherapies and progress two cell therapies to the clinic within five years. We continue to develop our off-the-shelf platform, which is broadly applicable to cell therapies, both internally and in collaboration with our partner Astellas. We have two allogeneic products in preclinical development. The first allogeneic product includes a SPEAR T-cell targeting MAGE-A4 and the second allogeneic product includes a HiT targeting mesothelin and is partnered with Astellas.

Continuing to improve our manufacturing and patient supply processes to optimize how we deliver our cell therapies to patients. Our integrated cell therapy capabilities enable us to continually enhance our cell and vector manufacturing and supply processes which we believe will ultimately enable us to treat patients quicker, at less cost and more effectively.

Expanding our intellectual property portfolio. We continue to build and develop our technology platform, comprising intellectual property, proprietary methods and know-how in the field of cell therapies. These assets form the foundation for our ability to strengthen our product pipeline and defend and expand our position as a leader in cell therapy.

Our Cell Therapies for Cancer

The Immune System and T-cells

The immune system plays an important role in targeting and destroying cancer cells. Specifically, T-cells, which are a type of white blood cell, and their receptors create a natural system that is designed to scan the body for diseased cells. In general, cells process proteins internally and then convert these proteins into peptide fragments which are then presented on the cell surface by a protein complex called the Human Leukocyte Antigen ("HLA"). T-cells naturally scan all other cells in the body for the presence of abnormal peptide fragments, such as those generated from infectious agents. Recognition of this peptide-HLA complex takes place through the T-cell receptor or TCR expressed on the T-cells. However, binding of naturally occurring TCRs to cancer targets tends to be very poor because cancer proteins appear very similar to naturally occurring proteins on healthy cells.

Cancer Target Identification and Validation

Before developing any engineered T-cell therapy, it is important to identify and validate a suitable target cancer peptide or protein. The target must be expressed only on the cancer cells of interest and with expression in normal non-cancerous tissue only where a risk to the patient would be deemed acceptable. Careful validation and identification of targets is important to ensure that any engineered cell therapy is specific to the targeted cancer and does not bind to the same target on non-cancer cells, or that the receptor in the cell therapy does not recognize a similar peptide or protein derived in normal cells. Our target identification and validation platform is focused on three approaches. First, we identify and validate peptide-HLA targets for cancer testis antigens for the most prevalent HLA-type, for example, the HLA A2 peptide for the MAGE-A4 antigen. Second, we identify and validate similar peptides for non-cancer testis antigens which are closely related to a specific disease indication, for example, the AFP antigen. Finally, we identify and validate surface HLA peptides for these existing intracellular targets in the context of different HLA types as well as other extracellular cell surface targets for HLA-independent or HiT constructs ensuring that we can address a broader patient population either across multiple HLA types across our existing therapeutic candidates or cell surface targets, such as mesothelin, without HLA restriction, respectively.

Cell Therapies

We have developed a range of cell therapies all of which utilize the interaction between a T-cell and its TCR's and a peptide or protein. For all of our autologous cell therapies patient T-cells are extracted and are then engineered to generate the end cell therapy whether this is through engineering of the TCR itself or through the addition of another agent which enhances the efficacy of the TCR or T-cell. The nature of the engineering impacts the type of cell therapy product generated. The engineered T-cells are then expanded and infused back into the patient. When these T-cells encounter a recognized peptide or protein within the patient's body, they multiply and initiate the destruction of the targeted cancer cells.

Our SPEAR T-cells

Following identification of a suitable target peptide, we identify TCRs that are capable of binding to that target peptide or protein. We then engineer and optimize those identified receptors to enhance their ability to recognize and bind to the cancer targets, thereby enabling a highly targeted immunotherapy which complements a patient's immune system. The optimized TCR for the cell therapy then undergoes extensive preclinical safety testing prior to administration to patients. A lentiviral vector is used to transfer the engineered TCR into the patient's T-cells if that patient has the relevant target and HLA type for our TCR cell therapy. The optimized cell therapy then undergoes extensive preclinical safety testing prior to administration to patients. Our SPEAR T-cell platform technology enables us to develop a pipeline of targets and TCR therapeutic candidates that we believe may be effective in a variety of cancer

types that are unresponsive to currently available and experimental therapies. We have three wholly owned SPEAR T-cells currently in clinical trials (ADP-A2M4CD8, ADP-A2M4 and ADP-A2AFP) and a pipeline of SPEAR T-cells and other cell therapies in development, including SPEAR T-cells directed to peptides expressed in the context of different HLA-types.

Our HiT Cell Therapies

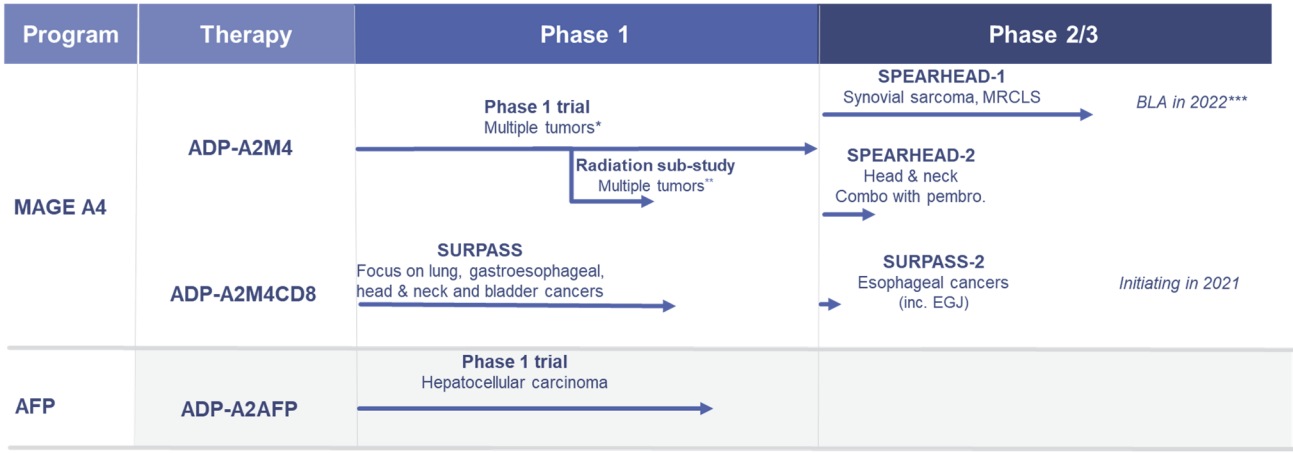
Naturally occurring TCRs recognize peptides that are presented on the cell surface by a protein complex called the Human Leukocyte Antigen, or HLA. Patient treatment with our SPEAR T-cells requires patients to express a particular HLA-type. We have now developed a TCR platform capable of producing TCRs able to recognize targets expressed on the surface of cancer cells independently of HLA-type. The TCR is engineered to recognize and bind to a cell surface protein. The HiT platform enables us to identify suitable targets and to then generate engineered HiTs which can bind and interact with those targets. These HLA-independent TCRs or HiTs use the same immune system processes as naturally occurring TCRs.

Our Next Generation TIL Therapies

Tumor Infiltrating Lymphocyte or TIL therapy utilizes TILs taken from a patient's tumor. A section of the tumor is excised, the TILs are isolated and then those TILs which bind to tumor antigens are cultured and then 'supercharged'. With our next generation approach, those expanded TILs will be further engineered to co-express one of our next generation technologies, following which they will be infused back into the patient. The first next generation TIL is being developed in collaboration with CCIT, in Denmark and will combine CCIT's TIL process with our next generation IL-7 product to generate TIL-IL7 cell therapies.

Our Clinical Product Pipeline

Our current clinical pipeline is summarized in the diagram below.

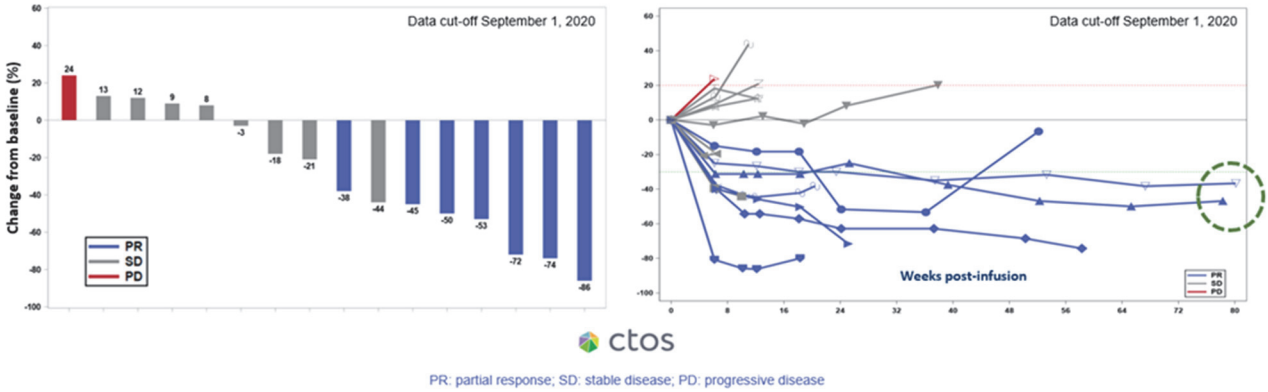


** Bladder, Melanoma, Head & Neck, Ovarian, Non-small cell lung cancer (NSCLC), Esophageal, Gastric, Synovial sarcoma, MRCLS*
*** Site specific protocol amendment with MD Anderson Cancer Center*
****Planned for synovial sarcoma*
MRCLS: myxoid/round cell liposarcoma; EGJ: esophagogastric junction cancers

We have clinical trials ongoing with three wholly owned SPEAR T-cell therapies: ADP-A2M4, ADP-A2M4CD8, and ADP-A2AFP.

- ***SPEARHEAD-1 Phase 2 Trial with ADP-A2M4****:* A Phase 2 clinical trial is underway in synovial sarcoma and MRCLS indications. Subject to the successful conclusion of the SPEARHEAD-1 trial, where we aim

to complete dosing during the first half of 2021, and approval of a Biologics License Application by the FDA, we plan to commercially launch ADP-A2M4 for the treatment of synovial sarcoma in the U.S. in 2022. Clinical data was presented at the Connective Tissue Oncology Society ("CTOS") in November 2020 from the ADP-A2M4 Phase 1 trial. An overall response rate of 44% and disease control rate of 94% in patients with synovial sarcoma was presented. A summary of the data presented is illustrated below.

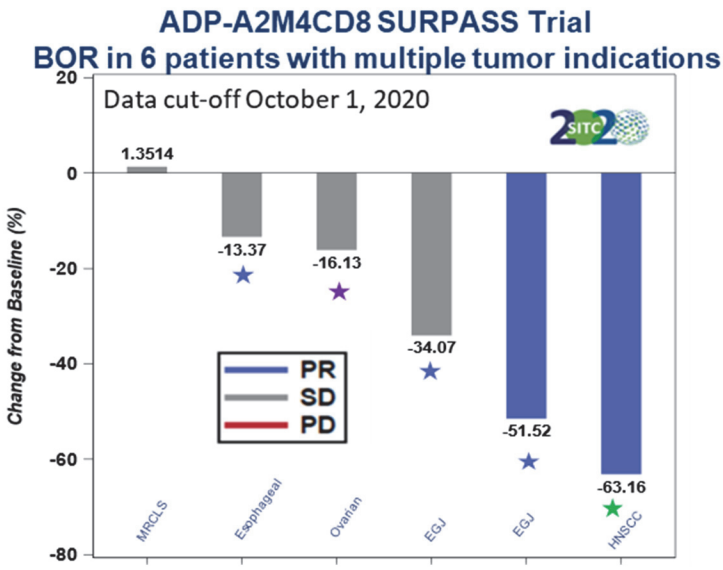


PR (blue): partial response; SD (grey): stable disease; PD (red): progressive disease, Reponses evaluated by RECIST v1.1

Orphan Drug designation for ADP-A2M4 for the treatment of soft tissue sarcomas has been granted in the European Union ("EU") and U.S. together with Regenerative Medicine Advanced Therapy ("RMAT") designation in the U.S. for the treatment of synovial sarcoma and access to the Priority Medicines ("PRIME") Regulatory Support initiative by the European Medicines Agency ("EMA") for ADP-A2M4 for the treatment of synovial sarcoma.

- ***SPEARHEAD-2 Phase 2 Trial with ADP-A2M4*:** A Phase 2 trial combining ADP-A2M4 with pembrolizumab in ten patients with head and neck cancer is underway at clinical sites in the U.S.

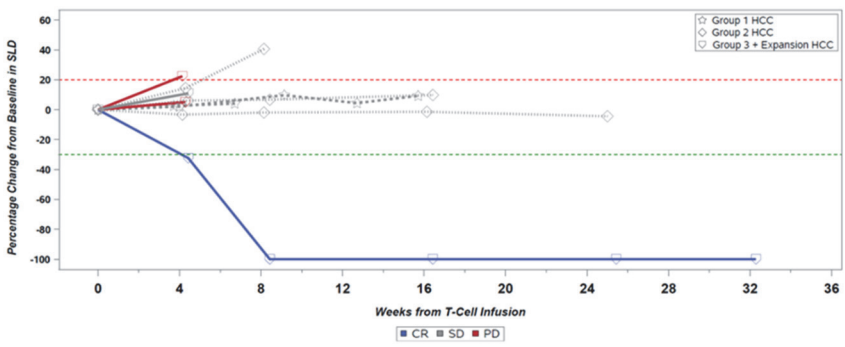
- ***SURPASS Phase 1 Trial with ADP-A2M4CD8***: Enrollment is ongoing in a Phase 1 trial for a next generation SPEAR T-cell, ADP-A2M4CD8 and patients are now being treated in the expansion phase of the trial. This next generation SPEAR T-cell utilizes the same engineered T-cell receptor as ADP-A2M4, but with the addition of a CD8α homodimer. The addition of the CD8α homodimer has been shown in vitro to increase cytokine release and SPEAR T-cell potency. Data from the trial was presented at the Society for Immunotherapy of Cancer ("SITC") conference in November 2020 and a summary of these data is shown below:



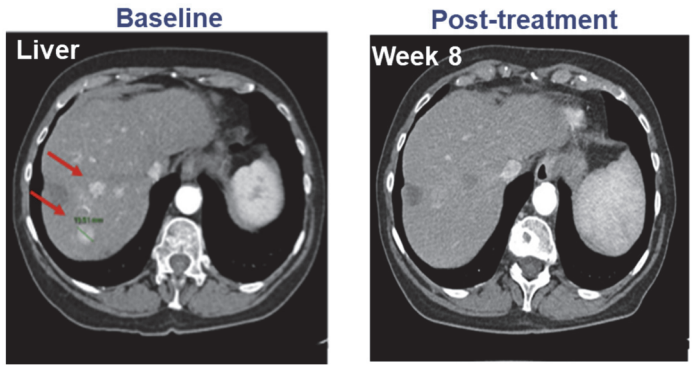
Data represent percent changes from Baseline in sum of diameters in target lesions through progression or prior to surgical resection;
Sum of diameters = sum of the long diameters for non-nodal lesions and short axis for nodal lesions;
Reponses evaluated by RECIST v1.1

- ***SURPASS-2, Phase 2 Trial with ADP-A2M4CD8***: Based on the responses seen in the SURPASS Phase 1 clinical trial and in the ADP-A2M4 Phase 1 Trial, we are currently planning to initiate a Phase 2 clinical trial with ADP-A2M4CD8 in esophageal cancers (including esophagogastric junction cancer) in mid-2021.

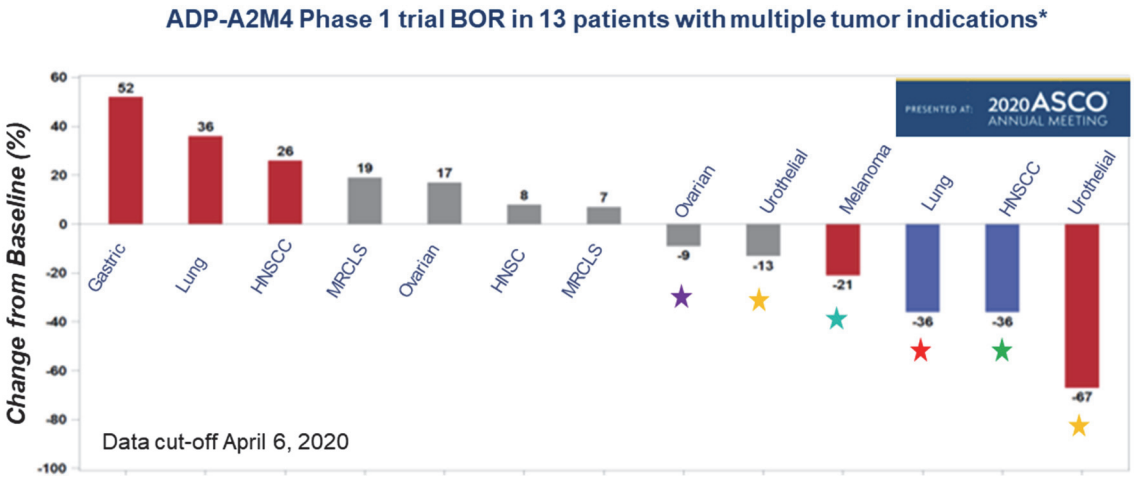
- ***ADP-A2AFP Phase 1 Trial***: We continue dosing patients in our Phase 1, open-label, dose-escalation trial designed to evaluate the safety and anti-tumor activity of ADP-A2AFP for the treatment of HCC. Data from the trial was reported at the International Liver Congress in August 2020 and this data is summarized below. Overall, four patients have been treated with approximately five billion or more transduced cells (three in Cohort 3 and one in the expansion phase). One patient was reported to have had a complete response, one patient had SD, and two patients were reported to have had progressive disease. Five patients were previously treated in the first two dose cohorts with doses of 100 million and 1 billion transduced cells, respectively, and all patients had best responses of stable disease ("SD"). A further cohort has also been initiated for patients with tumors other than HCC that express the AFP antigen. The first patient treated in that cohort was assessed by the investigator to have progressive disease.



Scans from the patient that exhibited a complete response are shown below prior to treatment ("baseline") and after treatment with ADP-A2AFP at week 8.



- ***ADP-A2M4 Pilot Trial***: Our Phase 1 clinical trial of ADP-A2M4 in urothelial, melanoma, head and neck, ovarian, non-small cell lung, esophageal and gastric, synovial sarcoma and MRCLS cancers has now completed enrollment. A data update on the trial was presented at ASCO on May 29, 2020. Clinical responses and promising durability was reported in patients with synovial sarcoma, with a 50% response rate (eight partial responses in 16 patients treated) reported, including an unconfirmed partial response (44% response rate without inclusion of unconfirmed partial response). Beyond synovial sarcoma, responses were reported in head and neck cancer (one confirmed partial response in three patients treated) and lung cancer (one confirmed partial response in two patients treated), with evidence of anti-tumor activity in ovarian cancer and bladder cancer. A summary of these responses is illustrated below:

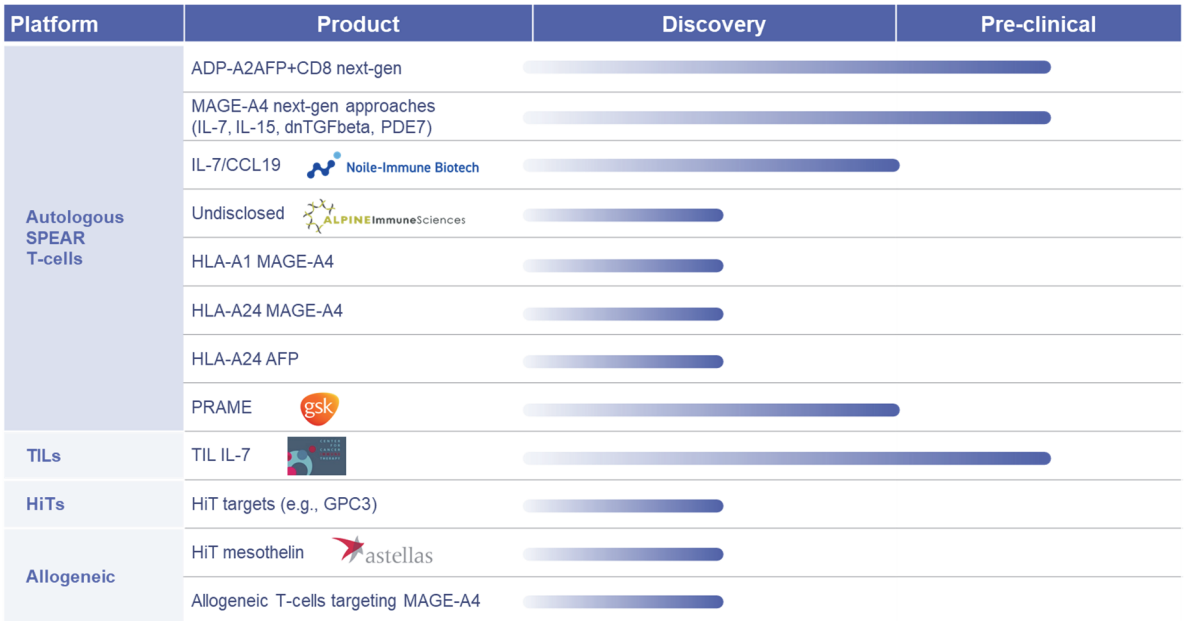


*Cohort 3 and Expansion; PR, partial response; SD, stable disease; PD, progressive disease as evaluated by RECIST v1.1

A radiation sub-study under the Phase 1 clinical trial also continues to enroll patients and a partial response in rectal mucosal melanoma was reported in the first patient treated.

Preclinical Candidate Pipeline

We believe we have a strong pipeline of cell therapy candidates in development and we aim to deliver five products to the clinic within five years. Our current pipeline is illustrated below:



Our aim with our development programs is to utilize the insights we obtain from our clinical trials and translational sciences work to drive towards:

- ***A cure for cancer***: Our next generation cell therapies including ADP-A2AFPCD8 (a next generation SPEAR T-cell product targeting AFP), multiple next generation products targeting MAGE-A4, and the TIL-IL7 we are developing with CCIT in Denmark which are designed with the aim of improving efficacy of existing products and approaches. We have developed these approaches in house and in combination with our partners, for example, with Noile-Immune Biotech and Alpine Immune Sciences. To the extent these next generation products do improve efficacy they will lead us closer to our goal of curing cancer.

- ***Mainstream therapy***: Increasing the scope of our cell therapies and ability to treat an increasing number of patients is important. We are developing TCR-products to alternative HLA types which increases the number of potentially treatable patients. We are also developing HiTs which, again, increase the number of potentially treatable patients by removing the requirement for a specific HLA type.

Allogeneic iPSC Platform

We continue to develop our allogeneic platform which can be used to generate ‘off-the-shelf’ cell therapies that are universally applicable to all eligible patients by developing gene-edited inducible pluripotent stem cells (iPSC) differentiated to T-cells by our in-house proprietary process. These “off-the shelf” cells are being developed to overcome the current limitation of autologous therapies that need to be manufactured specifically for each patient and donor-derived T-cells which may need repeated infusions. The enhanced T-cell technology being developed involves selective engineering for the removal of potentially immunogenic cell surface proteins (for example, HLA molecules) and the addition of our TCRs, without the use of nucleases, to develop these T-cell products. If successful, this will enable us to treat our patients with an off-the-shelf or on demand cell therapy product without the need to acquire a patient’s own

cells. We have two preclinical programs ongoing, one for the development of an allogeneic SPEAR T-cell product directed to the MAGE-A4 target and using the same TCR as ADP-A2M4 and the second program for development of an allogeneic HiT targeting the mesothelin protein in partnership with Astellas.

Integrated Cell Therapy Company

We are committed to building an integrated cell therapy company with a broad range of capabilities which enable the research and development of cell therapies, the translational analyses of clinical responses, control of the manufacturing and supply chain and, in the future, commercialization**.** The ability to take learnings from every stage of the process and feed these learnings back into further research and development enables decisions to be taken at the appropriate time and improvements and enhancements to processes and products to be made effectively and in a timely manner.

We have our own cell therapy manufacturing facility at the Navy Yard in Philadelphia, Pennsylvania which is capable of manufacturing all of our autologous cell therapies currently in the clinic. The Navy Yard facility is increasing its manufacturing capacity to support anticipated commercialization of ADP-A2M4 in synovial sarcoma. We also have our own dedicated vector manufacturing capability in the United Kingdom, within the Catapult Cell and Gene Therapy Manufacturing Centre in Stevenage, which is now able to produce lentiviral vector for our clinical trials using a suspension process developed by the Company.

Control of our own end-to-end manufacturing processes (including vector, T-cell and analytical quality control testing) enables us to improve and further develop these processes for manufacture of our cell therapies. The ability to manufacture in-house provides security of vector supply at a lower cost than using a third-party provider. In addition, the ability to continually evaluate and optimize processes enables ongoing reduction in the times taken to treat our patients and the overall cost of goods applicable to manufacture and supply of our cell therapies.

COVID-19 and Our Business

During the COVID-19 pandemic we have continued to focus on ensuring the safety or our work force whilst continuing the work we do to make our therapies available to people with cancer. Our facilities in the U.S. and U.K. remain open to support critical manufacturing and scientific activities. We are working with our employees to ensure that they follow guidelines set out by the U.K. and U.S. governments, as well as regional guidance including requirements for social distancing and mask wearing. In addition to safe working practices, we have invested in PPE and installed screens and other physical measures to enhance the COVID safety of our facilities. Where our employees do not need to come into the facilities to perform critical activities, those employees are working from home.

The pandemic has created challenges for conducting clinical trials and we continue to work with our clinical sites to enroll and treat patients at the earliest possible time particularly given that many of our patients have late stage cancer. Certain clinical sites have chosen to postpone treatment of patients or participation in trials whilst the pandemic is impacting resources at those sites. We also anticipate increasing challenges around our supply chain. Many of the materials and consumables we require for manufacture and supply of products and also for research are also required for manufacture of COVID-19 vaccines and as a result will be prioritized to meet vaccine supplies. In certain cases, for example, in accordance with the U.S. Defense Production Act, suppliers may be required to prioritize vaccine supplies. This could result in delays in supply of materials and consumables we require for our business and hence delay in our ability to manufacture or supply our cell therapies or to progress research programs.

We will continue to adjust our working practices as the pandemic progresses to ensure we can continue to treat people with cancer as quickly and as effectively as possible.

Core Alliances and Collaborations

Universal Cells Co-development Collaboration Agreement

On January 13, 2020, the Company entered into a Co-development and Co-commercialization agreement (the "Astellas Collaboration Agreement") with Universal Cells, Inc., a wholly-owned subsidiary of Astellas Pharma Inc. ("Universal Cells").

Under the Agreement the parties will agree on up to three targets and will co-develop T-cell therapies directed to those targets pursuant to an agreed research plan. For each target, Universal Cells will fund co-development up until completion of a Phase 1 trial for products directed to such target. Upon completion of the Phase 1 trial for a product, Universal Cells and Adaptimmune will elect whether to progress with co-development and co-commercialization of such product, or to allow the other party to pursue the candidate independently. The first target program aims to develop an allogeneic ("off-the-shelf") mesothelin directed HiT cell therapy.

In addition, Universal Cells is also granted the right to develop, independently of Adaptimmune, allogeneic T-cell therapy candidates directed to two targets selected by Universal Cells. Universal Cells will have sole rights to develop and commercialize products directed against such products.

Under the terms of the agreement, Adaptimmune may receive up to $897.5 million in payments, including:

- An upfront payment of $50 million, which was received in January 2020.
- Development milestones of up to $73.75 million for each co-developed and co-commercialized product.
- Development milestones of up to $147.5 million per product and up to $110 million in sales milestones for products developed unilaterally by Universal Cells.

In addition, Adaptimmune will receive research funding of up to $7.5 million per year and tiered royalties on net sales in the mid-single to mid-teen digits.

Under the terms of the Agreement and in consideration for rights under certain contributed Universal Cells technology for a product unilaterally developed by Adaptimmune, Universal Cells may receive up to $552.5 million,

including up to $147.5 million in milestone payments per product and up to $110 million in sales milestones for products developed unilaterally by Adaptimmune. In addition, Universal Cells will receive tiered royalties on net sales in the mid-single to mid-teen digits.

To the extent that Universal Cells and Adaptimmune co-develop and co-commercialize any product, the parties will share equally all worldwide costs and profits.

In addition to the Agreement, the parties have also entered into an agreement relating to the use of Universal Cells gene editing and HLA-editing technology in the context of the development of our own allogeneic T-cell therapies. Adaptimmune retains exclusive rights in the T-cell field under the agreement.

Development and Research Collaborations

GSK Collaboration and License Agreement

We entered into the GSK Collaboration and License Agreement regarding the development, manufacture and commercialization of TCR therapeutic candidates in May 2014. The collaboration is for up to five programs. The first program was the NY-ESO SPEAR T-cell program, in relation to which GSK has now exercised its option to take an exclusive license. The second program related to development of a SPEAR T-cell to a peptide derived from the PRAME antigen. This program has now completed. The third target program with GSK remains ongoing and is also directed to the PRAME target. We are responsible for taking the third target program through preclinical testing and up to IND application filing. GSK is responsible for the IND filing itself should the preclinical testing and development be favorable.

Preclinical and Clinical Collaborations

We have third party collaborations in place with Noile-Immune, Alpine Immune Sciences and with the CCIT in Denmark.

With Alpine, we are collaborating to develop next-generation SPEAR T-cell products that incorporate Alpine's secreted and transmembrane immunomodulatory protein technology. The collaboration agreement was announced in May 2019, and we believe that the Alpine technology will complement our existing internal next generation technology and enhance anti-tumor potential through engagement of further rapid and flexible immunomodulatory mechanisms. In the Noile-Immune collaboration, announced in August 2019, we will co-develop next-generation SPEAR T-cell products, incorporating Noile-Immune's PRIME (proliferation inducing and migration enhancing) technology, based upon co-expression of IL-7 and CCL19. With CCIT, we are combining CCIT's existing TIL therapies with our next generation IL-7 construct with the aim of creating enhanced TIL cell therapies. TIL therapy has previously seen efficacy in certain solid tumors including melanoma and the aim is to build on that efficacy.

We also have a strategic alliance agreement with the MD Anderson Cancer Center which covers both the conduct of certain clinical trials for our SPEAR T-cell therapies and also certain pre-clinical research work.

Intellectual Property

We actively seek to protect the intellectual property and proprietary technology that we believe is important to our business, including seeking, maintaining, enforcing and defending patent rights for our SPEAR T-cells and processes, whether developed internally or licensed from third parties. Our success will depend on our ability to obtain and maintain patent and other protection including data/market exclusivity for our cell therapies, manufacturing and platform technology, preserve the confidentiality of our know-how and trade secrets and operate without infringing the valid and enforceable patents and proprietary rights of third parties. See "Risk Factors—Risks Related to Our Intellectual Property."

Our policy is to seek to protect our proprietary position generally by filing an initial priority filing at the U.K. Intellectual Property Office ("UKIPO") and/or the U.S. Patent Trademark Office ("USPTO"). This is followed by the filing of a patent application under the Patent Co-operation Treaty claiming priority from the initial application(s) and then application for patent grant in, for example, the United States, Europe (including major European territories), Japan, Australia, New Zealand, India and Canada. In each case, we determine the strategy and territories required after discussion with our patent professionals to ensure that we obtain relevant coverage in territories that are commercially important to us and reflect the scope of cell therapies being developed. We will additionally rely on data exclusivity, market exclusivity and patent term extensions when available, including as relevant exclusivity through orphan or pediatric drug designation. We also rely on trade secrets and know-how relating to our underlying platform technologies, manufacturing processes and pre-clinical candidates.

Product Patent Families

ADP-A2M4 - We own three patent applications covering the composition of matter of ADP-A2M4 and other related TCRs and T-cell therapies. The patent application claims are primarily directed to the engineered TCR therapeutic candidate and in particular the amino acid substitutions required for such engineered TCR therapeutic candidate. Patent applications have also been filed in relation to the use of ADP-A2M4 in combination with PD-L1/PD-1 inhibitors. The initial priority patent applications were filed in the UKIPO and patent applications under the applicable Patent Co-operation Treaty have since been filed claiming priority from that United Kingdom patent application. National applications have been filed in all commercially relevant territories. We expect any composition of matter patents within this family, if issued, and if the appropriate maintenance, renewal, annuity, or other governmental fees are paid, to expire in 2037-2039 (worldwide, excluding possible patent term extensions). An initial priority patent application has also been filed in relation to the use of ADP-A2M4 TCR in treatment of head and neck, lung and ovarian cancers, this will enter the PCT international phase in May 2021.

ADP-A2M4CD8 – We own a patent application covering the composition of matter of ADP-A2M4CD8 and other related TCR T-cell therapies. The patent application claims are directed to the engineered TCR therapeutic candidate in combination with the CD8 next generation technology. The initial priority patent applications were filed in the UKIPO and patent applications under the applicable Patent Co-operation Treaty have since been filed claiming priority from that United Kingdom patent application. We expect any composition of matter patents within this family, if issued, and if the appropriate maintenance, renewal, annuity, or other governmental fees are paid, to expire in 2037-2039 (worldwide, excluding possible patent term extensions). An initial priority patent application has also been filed in relation to the use of A2M4CD8 TCR in treatment of esophageal and gastric cancers, this will enter the PCT international phase in May 2021.

ADP-A2AFP - We own a patent application covering the composition of matter of ADP-A2AFP. The patent application claims are primarily directed to the engineered TCR therapeutic candidate, the use of the ADP-A2AFP therapy and in particular the amino acid substitutions required for such engineered TCR therapeutic candidate. An initial priority patent application was filed in the UKIPO and a patent application under the applicable Patent Co-operation Treaty (PCT) has since been filed claiming priority from that U.K. patent application. National applications have been filed in all commercially relevant territories and claims have been allowed in Europe and the U.S. We expect any composition of matter patents within this family, if issued, and if the appropriate maintenance, renewal, annuity, or other governmental fees are paid, to expire in 2034 (worldwide, excluding possible patent term extensions). A PCT application has also been filed in relation to the use of ADP-A2AFP TCR for the treatment of liver cancer.

We also have product patent applications filed in relation to our new cell therapy candidates including candidates to new targets and our new HiTs.

Platform Technology

We own a number of platform technology patents and patent applications which are directed to certain aspects of the process that we use to engineer our SPEAR TCRs and other cell therapies. These are owned jointly with Immunocore Limited, with whom we have historically had a shared development history.

Novel targets **-** We have filed 29 patent applications which cover peptides expressed on the tumor cell surface and the TCRs which recognize them. The applications as filed cover 872 peptides from 63 different target proteins. National applications have been filed in all commercially relevant territories.

TCR libraries - We have filed 10 patent applications which cover large libraries of TCR genes which we have generated and the method of their generation: these act as proprietary sources for screening for TCRs, which are the starting points for affinity engineering into clinical candidates. National applications have been filed in all commercially relevant territories

Phage display technology - Patents have also been granted in relation to our phage display approach for receptor development and are expected to expire beginning in 2023. The priority patent application was filed in 2002 and patents are now granted in the United States, Australia, Canada, China, major European territories (including the United Kingdom, France, Germany, Spain and Italy), Japan, South Africa, India, Norway and New Zealand.

We also have an issued patent directed to a method for increasing the affinity of given TCRs to a target peptide. (expected to expire in 2025) and patent applications directed to decreasing off-target reactivity and selection for the affinity-enhanced TCRs.

Manufacturing Process Patents and Patent Applications

We have trade secrets and patent applications relating to the manufacture of our cell therapies. For example, we have filed patent applications in commercially relevant territories, which claim priority from initial priority patent applications filed at the USPTO and UKIPO, which are directed to a particular modification to the lentiviral vector technology. We believe this modification enhances the safety profile of the lentiviral vector technology. This has been granted in the United States and allowed in Europe. Further patent applications have been filed on the manufacturing and quality control of our products.

Preclinical and Next Generation Approaches

We have four patent applications filed covering a range of next generation technology approaches and/or combination approaches.

Allogeneic iPSC Platform Approaches

We have filed a number of patent applications covering our proprietary iPSC stem cell differentiation technology which enables the differentiation of stem cells into T-cells which can then be administered to patients. The patent applications are primarily directed to the various stages required for the differentiation of the iPSC stem cells into different cell line types including NK cells, NKT cells, macrophages, dendritic cells, alphabeta T-cells, and gammadelta T-cells. These applications have now been filed as PCT applications and will be pursued in all commercially relevant territories. Expiry of protection will extend to 2039 (worldwide, excluding possible patent term extensions).

Third-Party Intellectual Property Rights

We have a non-exclusive license from ThermoFisher Inc. under certain of its intellectual property rights covering its Dynabeads® CD3/CD28 technology. This technology is used in our manufacturing process to isolate, activate and expand patient T-cells. We also have a supply agreement which runs until December 31, 2025. See “Risk Factors—Risks Related to Our Reliance Upon Third Parties—We rely heavily on ThermoFisher and the technology we license from them.”

Whether licenses are required under any third-party patents or other third-party patents depends on what steps we take going forward in relation to our manufacturing processes, development processes and development products including our allogeneic manufacturing and differentiation process. We may, however, need to negotiate a license under any remaining third party patents or develop alternative strategies for dealing with any remaining third party patents if licenses are not available on commercially acceptable terms or at all.

Competition

The biotechnology and pharmaceutical industries are characterized by rapidly advancing technologies and intense competition. Competitors include large pharmaceutical companies with established development and commercialization programs, small and large biotechnology companies with varying development and commercialization capabilities and academic centers developing novel technologies and products.

We face competition in all of the following areas:

(a) ***From other cell therapies***: There are a number of other cell therapies which have already received marketing approval or which are currently in late stage clinical trials. These include CAR-T therapies, for example, Kymriah™ (tisagenlecleucel) and Yescarta™ (axicabtagene ciloleucel) which have received marketing approval in hematological malignancies, TIL cell therapies, for example, Iovance's TIL therapy which is in late stage clinical trials and cell therapies, or other products directed to the peptide-HLA complex (pHLA). These cell therapies are being developed in both solid and hematological indications.

(b) ***From other T-cell therapies:*** Third parties and academic institutions are developing TCR-based cell therapies which are directed to a multitude of shared targets including HPV-16 E6/E7, KRAS, MAGE-A1, MAGE-A3, MAGE A3/A6, MAGE-A4, MART1, NRAS, NY-ESO-1, p53, PRAME, mesothelin, as well as personalized neoantigen targets. These cell therapies are at a variety of preclinical and clinical development stage. There are additionally third parties with T-cell therapy platforms capable of generating multiple TCR T-cell therapies or cell therapies potentially directed to multiple targets or cell therapies which utilize T-cells and the immune system in similar ways, such as TRuC T-cells being developed by TCR^2 Therapeutics. Examples include Medigene AG's PRAME TCR therapeutic candidate (MDG1011), which has begun a Phase 1/2 clinical investigation in AML, MM and myelodysplastic syndromes and Immatics N.V. which has several engineered TCR T-cell therapies in Phase 1 clinical trials for solid tumors.

(c) ***From other cell-based immunotherapy approaches***: The immune system utilizes a number of different cell types and processes. Other immunotherapy approaches may target different parts of the immune system including different types of T-cells (for example, gamma delta T-cells), macrophage based systems, NK-cell based products, Marrow-infiltrating lymphocytes (MILs) and virus-specific T-cells.

(d) ***From other therapeutic product types***. In any indication that we address there may be multiple other product modalities which are already being marketed and where we will have to show increased benefit to patients, or which are in clinical trials. Where products receive approval and start being used within the patient setting, such products can also impact our ability to complete clinical development and obtain information around the safety and efficacy of our own products.

Where we see competition in any indication and a competitor receives marketing approval before our cell therapy, we will need to demonstrate increased efficacy over the competing product. We may also see competition in relation to areas that are still in research and development. For example, allogeneic approaches to cell therapies are being developed by multiple third parties, for example, Fate Therapeutics Inc. and Takeda Pharmaceuticals Limited. Given the potential advantage such therapies have over autologous cell therapy products, such approaches may increasingly impact our ability to further develop and progress with our cell therapies which is why we have focused on also developing our own equivalent "off-the-shelf" products in parallel.

Government Regulation and Product Approvals

Government authorities in the United States, at the federal, state and local level, and in other countries and jurisdictions, including the EU and U.K, extensively regulate, among other things, the research, development, testing, manufacture, quality control, approval, packaging, storage, recordkeeping, labeling, advertising, promotion, distribution, marketing, post-approval monitoring and reporting, and import and export of pharmaceutical products. The processes for obtaining regulatory approvals in the United States and in foreign countries and jurisdictions, along with subsequent compliance with applicable statutes and regulations and other regulatory authorities, require the expenditure of substantial time and financial resources. Failure to comply with the various federal, state and local level laws and requirements can also result in severe penalties and restrictions to the business.

FDA Approval Process

In the United States, therapeutic products, including drugs, biologics, and medical devices are subject to extensive regulation by the FDA. The Federal Food, Drug, and Cosmetic Act (the "FDC Act"), and other federal and state statutes and regulations, govern, among other things, the research, development, testing, manufacture, storage, recordkeeping, approval, labeling, promotion and marketing, distribution, post-approval monitoring and reporting, sampling, and import and export of pharmaceutical products. Some biological products are subject to regulation under the FDC Act. Most biological products are approved for marketing under provisions of the Public Health Service Act ("PHSA") via a BLA. The application process and requirements for approval of BLAs are generally similar to those for new drug applications ("NDAs"), and biologics are associated with generally similar, if not greater, approval risks and costs as drugs. Failure to comply with applicable U.S. requirements may subject a company to a variety of administrative or judicial sanctions, such as FDA refusal to approve pending NDAs or BLAs, warning or untitled letters, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, civil penalties, and criminal prosecution.

Biological product development for a new product or certain changes to an approved product in the United States typically involves preclinical laboratory and animal tests, the submission to the FDA of an Investigational New Drug application ("IND"), which must become effective before human clinical testing may commence, and adequate and well-controlled clinical trials to establish the safety and effectiveness of the drug for each indication for which FDA approval is sought. Satisfaction of FDA pre-market approval requirements typically takes many years and the actual time required may vary substantially based upon the type, complexity, and novelty of the product or disease.

The FDA may order the temporary, or permanent, discontinuation of a clinical trial at any time, or impose other sanctions, if it believes that the clinical trial either is not being conducted in accordance with FDA requirements or presents an unacceptable risk to the clinical trial patients. An Investigational Review Board ("IRB") may also require the clinical trial at the site to be halted, either temporarily or permanently, for failure to comply with the IRB's requirements, or may impose other conditions.

Clinical trials to support BLAs for marketing approval are typically conducted in three sequential phases, but the phases may overlap. In Phase 1, the initial introduction of the biologic into healthy human subjects or patients, the product is tested to assess metabolism, pharmacokinetics, pharmacological actions, side effects associated with increasing doses, and, if possible, early evidence on effectiveness. Phase 2 usually involves trials in a limited patient population to determine the effectiveness of the drug or biologic for a particular indication, dosage tolerance, and optimum dosage, and to identify common adverse effects and safety risks. If a compound demonstrates evidence of effectiveness and an acceptable safety profile in Phase 2 evaluations, Phase 3 trials are undertaken to obtain the additional information about clinical efficacy and safety in a larger number of patients, typically at geographically dispersed clinical trial sites, to permit the FDA to evaluate the overall benefit-risk relationship of the drug or biologic and to provide adequate information for the labeling of the product.

After completion of the required clinical testing, a BLA is prepared and submitted to the FDA. FDA approval of the BLA is required before marketing of the product may begin in the United States. The BLA must include the results of all preclinical, clinical, and other testing, compilation of data relating to the product's pharmacology, chemistry, manufacture, and controls as well as proposed labeling for the product. The FDA has 60 days from its receipt

of a BLA to determine whether the application will be accepted for filing based on the agency's threshold determination that it is sufficiently complete to permit substantive review. Once the submission is accepted for filing, the FDA begins an in-depth review. The FDA has agreed to certain performance goals in the review of BLAs. Most such applications for standard review biologic products are reviewed within 10 months of the date the FDA receives the BLA; most applications for priority review biologics are reviewed within six months of the date the FDA receives the BLA. Priority review can be applied to a biologic that the FDA determines has the potential to treat a serious or life-threatening condition and, if approved, would be a significant improvement in safety or effectiveness compared to available therapies. The review process for both standard and priority review may be extended by the FDA for three additional months to consider certain late-submitted information, or information intended to clarify information already provided in the submission.

After the FDA evaluates the BLA, it issues either an approval letter or a complete response letter. A complete response letter generally outlines the deficiencies in the submission and may require substantial additional testing, or information, in order for the FDA to reconsider the application. If, or when, those deficiencies have been addressed to the FDA's satisfaction in a resubmission of the BLA, the FDA will issue an approval letter. The FDA has committed to reviewing such resubmissions in two or six months depending on the type of information included.

An approval letter authorizes commercial marketing of the biologic with specific prescribing information for specific indications. As a condition of BLA approval, the FDA may require a risk evaluation and mitigation strategy ("REMS") to help ensure that the benefits of the biologic outweigh the potential risks. REMS can include medication guides, communication plans for healthcare professionals, and elements to assure safe use ("ETASU"). ETASU can include, but are not limited to, special training or certification for prescribing or dispensing, dispensing only under certain circumstances, special monitoring, and the use of patient registries.

Expedited Pathways

The FDA is required to facilitate the development, and expedite the review, of biologics that are intended for the treatment of a serious or life- threatening disease or condition for which there is no effective treatment and which demonstrate the potential to address unmet medical needs for the condition. These expedited programs include fast track designation, breakthrough therapy designation and RMAT designation (Regenerative Medicine Advanced Therapy designation), accelerated approval, and priority review designation.

Orphan Drug Designation

Under the Orphan Drug Act, the FDA may grant orphan drug designation to biological products intended to treat a rare disease or condition, generally a disease or condition that affects fewer than 200,000 individuals in the United States, or if it affects more than 200,000 individuals in the United States, there is no reasonable expectation that the cost of developing and making a product available in the United States for such disease or condition will be recovered from sales of the product. Orphan drug designation must be requested before submitting a BLA. After the FDA grants orphan drug designation, the identity of the biological product and its potential orphan use are disclosed publicly by the FDA. Orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process. The first BLA applicant to receive FDA approval for a particular active moiety to treat a particular disease with FDA orphan drug designation is entitled to a seven-year exclusive marketing period in the United States for that product for that indication. During the seven-year exclusivity period, the FDA may not approve any other applications to market a biological product containing the same active moiety for the same disease, except in limited circumstances, such as a showing of clinical superiority to the product with orphan drug exclusivity. A product is clinically superior if it is safer, more effective or makes a major contribution to patient care. Orphan drug exclusivity does not prevent the FDA from approving a different drug or biological product for the same disease or condition, or the same biological product for a different disease or condition. Among the other benefits of orphan drug designation are tax credits for certain research and a waiver of the BLA user fee.

Pediatric Information

Under the Pediatric Research Equity Act, or PREA, NDAs or BLAs or efficacy supplements to NDAs or BLAs must contain data to assess the safety and effectiveness of the biological product for the claimed indications in all relevant pediatric subpopulations and to support dosing and administration for each pediatric subpopulation for which the biological product is safe and effective. The FDA may grant full or partial waivers, or deferrals, for submission of data. Unless otherwise required by regulation, PREA does not apply to any biological product for an indication for which orphan designation has been granted. Under the Best Pharmaceuticals for Children Act, or BPCA, a sponsor that qualifies for "pediatric exclusivity" is entitled to an additional six months of market exclusivity if it complies with a Written Request, or WR, issued by FDA for pediatric studies. The sponsor may apply to FDA to issue a WR. Pediatric exclusivity may apply to patent rights and to FDA regulatory exclusivity and operates by adding six months of exclusivity on to the end of the latest-expiring form of exclusivity. To qualify for pediatric exclusivity, at least one of those rights must still be currently in force at the time FDA approves the pediatric studies.

Additional Controls for Biologics

To help reduce the increased risk of the introduction of adventitious agents, the PHSA emphasizes the importance of manufacturing controls for products whose attributes cannot be precisely defined. The PHSA also provides authority to the FDA to immediately suspend licenses in situations where there exists a danger to public health, to prepare or procure products in the event of shortages and critical public health needs, and to authorize the creation and enforcement of regulations to prevent the introduction or spread of communicable diseases in the United States and between states.

After a BLA is approved, the product may also be subject to official lot release as a condition of approval. As part of the manufacturing process, the manufacturer is required to perform certain tests on each lot of the product before it is released for distribution. If the product is subject to official release by the FDA, the manufacturer submits samples of each lot of product to the FDA together with a release protocol showing a summary of the history of manufacture of the lot and the results of all of the manufacturer's tests performed on the lot. The FDA may also perform certain confirmatory tests on lots of some products, such as viral vaccines, before releasing the lots for distribution by the manufacturer. In addition, the FDA conducts laboratory research related to the regulatory standards on the safety, purity, potency, and effectiveness of biological products. As with drugs, after approval of biologics, manufacturers must address any safety issues that arise, are subject to recalls or a halt in manufacturing, and are subject to periodic inspection after approval.

Biosimilars

The Biologics Price Competition and Innovation Act of 2009, or BPCIA, created an abbreviated approval pathway for biological products shown to be highly similar to or interchangeable with an FDA-licensed reference biological product. Under the BPCIA, a biological product may be deemed biosimilar to an FDA-approved biological product or reference biological product upon a showing that there are no differences in conditions of use, route of administration, dosage form, and strength, and no clinically meaningful differences between the biological product and the reference product in terms of safety, purity, and potency.

A reference biologic is granted 12 years of marketing exclusivity from the time of first licensure of the reference product, and in addition no application for a biosimilar can be submitted for four years from the date of licensure of the reference product. The first biologic product submitted under the abbreviated approval pathway that is determined to be interchangeable with the reference product has exclusivity against a finding of interchangeability for other biologics for the same condition of use for the lesser of (i) one year after first commercial marketing of the first interchangeable biosimilar, (ii) eighteen months after the first interchangeable biosimilar is approved if there is no patent challenge, (iii) eighteen months after resolution of a lawsuit over the patents of the reference biologic in favor of the first interchangeable biosimilar applicant, or (iv) 42 months after the first interchangeable biosimilar's application has been approved if a patent lawsuit is ongoing within the 42-month period.

Post-Approval Requirements

Once a BLA is approved, a product will be subject to certain post-approval requirements. For instance, the FDA closely regulates the post-approval marketing and promotion of biologics, including standards and regulations for direct-to-consumer advertising, off-label promotion, industry- sponsored scientific and educational activities and promotional activities involving the internet. Biologics may be marketed only for the approved indications and in accordance with the provisions of the approved labeling.

Adverse event reporting and submission of periodic reports is required following FDA approval of a BLA. The FDA also may require post-marketing testing, known as Phase 4 testing, REMS, and surveillance to monitor the effects of an approved product, or the FDA may place conditions on an approval that could restrict the distribution or use of the product. In addition, quality control, biological product manufacture, packaging, and labeling procedures must continue to conform to cGMPs after approval.

FDA Regulation of Companion Diagnostics

If safe and effective use of a therapeutic product depends on an *in vitro* diagnostic, then the FDA generally will require approval or clearance of the diagnostic, known as a companion diagnostic, at the same time that the FDA approves the therapeutic product. The FDA has generally required *in vitro* companion diagnostics intended to select the patients who will respond to cancer treatment to obtain marketing approval through the pre-market approval ("PMA") process for that diagnostic simultaneously with approval of the therapeutic. The review of these *in vitro* companion diagnostics in conjunction with the review of a cancer therapeutic involves coordination of review by the FDA's Center for Biologics Evaluation and Research and by the FDA's Center for Devices and Radiological Health.

The PMA process involves a rigorous premarket review during which the applicant must prepare and provide the FDA with reasonable assurance of the device's safety and effectiveness and information about the device and its components regarding, among other things, device design, manufacturing and labeling. In addition, PMAs for certain devices must generally include the results from extensive preclinical and adequate and well-controlled clinical trials to establish the safety and effectiveness of the device for each indication for which FDA approval is sought.

Successful PMA approval is uncertain, and the FDA may ultimately respond to a PMA submission with a not approvable determination based on deficiencies in the application and require additional clinical trial or other data that may be expensive and time-consuming to generate and that can substantially delay approval. If the FDA finds the PMA application is approvable, the FDA typically issues an approvable letter requiring the applicant's agreement to specific conditions, such as changes in labeling, or specific additional information, such as submission of final labeling, in order to secure final approval of the PMA. If the FDA concludes that the applicable criteria have been met, the FDA will issue a PMA for the approved indications, which can be more limited than those originally sought by the applicant. The PMA can include post-approval conditions that the FDA believes necessary to ensure the safety and effectiveness of the device, including, among other things, restrictions on labeling, promotion, sale and distribution.

Anti-Kickback, False Claims Laws

In addition to FDA restrictions on marketing of pharmaceutical products, several other types of state and federal laws have been applied to restrict certain marketing practices in the pharmaceutical industry in recent years. These laws include anti-kickback statutes, false claims statutes, and other statutes pertaining to health care fraud and abuse. The federal healthcare program anti-kickback statute prohibits, among other things, knowingly and willfully offering, paying, soliciting or receiving remuneration to induce, or in return for, purchasing, leasing, ordering or arranging for the purchase, lease or order of any healthcare item or service reimbursable under Medicare, Medicaid, or other federally financed healthcare programs. Violations of the anti-kickback statute are punishable by imprisonment, criminal fines, civil monetary penalties, and exclusion from participation in federal healthcare programs.

Federal false claims laws prohibit any person from knowingly presenting, or causing to be presented, a false claim for payment to the federal government, or knowingly making, or causing to be made, a false statement to have a false claim paid. In addition, certain marketing practices, including off-label promotion, may also violate false claims

laws. Additionally, the Healthcare Reform Act amended the federal false claims law such that a violation of the federal healthcare program anti-kickback statute can serve as a basis for liability under the federal false claims law.

Other federal statutes pertaining to healthcare fraud and abuse include the civil monetary penalties statute, which prohibits the offer or payment of remuneration to a Medicaid or Medicare beneficiary that the offeror/payor knows or should know is likely to influence the beneficiary to order a receive a reimbursable item or service from a particular supplier, and the healthcare fraud statute, which prohibits knowingly and willfully executing or attempting to execute a scheme to defraud any healthcare benefit program or obtain by means of false or fraudulent pretenses, representations, or promises any money or property owned by or under the control of any healthcare benefit program in connection with the delivery of or payment for healthcare benefits, items, or services.

Other Federal and State Regulatory Requirements

Various federal, state and local laws, regulations, and recommendations relating to safe working conditions, laboratory practices, the experimental use of animals, the environment and the purchase, storage, movement, import, export, use, and disposal of hazardous or potentially hazardous substances, including radioactive compounds and infectious disease agents, used in connection with our research are applicable to our activities. They include, among others, the U.S. Atomic Energy Act, the Clean Air Act, the Clean Water Act, the Occupational Safety and Health Act, the National Environmental Policy Act, the Toxic Substances Control Act, and Resources Conservation and Recovery Act, national restrictions on technology transfer, import, export, and customs regulations, and other present and possible future local, state, or federal regulation.

Europe, UK and Rest of the World Regulation

In addition to regulations in the United States, we are subject to a variety of regulations in other jurisdictions both due to the location of our facilities and the fact that we are engaging in clinical programs outside of the United States and will need to obtain worldwide regulatory approval for our TCR therapeutic candidates. In particular we have clinical trials ongoing in the United Kingdom and in certain countries in the EU and are subject to regulations relating to performance of those clinical trials and manufacture and supply of our cell therapies in those countries. Prior to supplying any cell therapy in any country or starting any clinical trials in any country outside of the United States we must obtain the requisite approvals from regulatory authorities in such countries. The existence of a United States regulatory approval does not guarantee that regulatory approvals will be obtained in other countries in which we wish to conduct clinical trials or market our cell therapies. In the EU, for example, a clinical trial application must be submitted to each country's national health authority and an independent ethics committee, much like the FDA and IRB, respectively prior to any clinical trial being conducted in the relevant country. A marketing authorization application is then submitted to the EMA for approval by the European Commission. Finally, prior to any commercial supply, a pricing and reimbursement application is submitted to each relevant country's national or local health authority(ies).

The requirements and process governing the conduct of clinical trials, product licensing, pricing and reimbursement vary from country to country. In all cases, the clinical trials are conducted in accordance with Good Clinical Practice ("GCP") and the applicable regulatory requirements and the ethical principles that have their origin in the Declaration of Helsinki. However, the interpretation of these requirements may well differ from country to country.

Review and Approval of Drug Products Outside of the United States

In order to market any product outside of the United States, a company must also comply with numerous and varying regulatory requirements of other countries and jurisdictions regarding quality, safety and efficacy and governing, among other things, clinical trials, marketing authorization, commercial sales and distribution of products. Whether or not it obtains FDA approval for a product, the company would need to obtain the necessary approvals by the comparable foreign regulatory authorities before it can commence clinical trials or marketing of the product in those countries or jurisdictions. The approval process ultimately varies between countries and jurisdictions and can involve additional product testing and additional administrative review periods. The time required to obtain approval in other countries and jurisdictions might differ from and be longer than that required to obtain FDA approval. Regulatory approval in one

country or jurisdiction does not ensure regulatory approval in another, but a failure or delay in obtaining regulatory approval in one country or jurisdiction may negatively impact the regulatory process in others.

Procedures Governing Approval of Products in the EU and U.K.

Pursuant to the European Clinical Trials Directive, a system for the approval of clinical trials in the EU has been implemented through national legislation of the member states. Under this system, an applicant must obtain approval from the competent national authority of a EU member state in which the clinical trial is to be conducted. Furthermore, the applicant may only start a clinical trial after a competent ethics committee has issued a favorable opinion. A clinical trial application must be accompanied by an investigational medicinal product dossier with supporting information prescribed by the European Clinical Trials Directive and corresponding national laws of the member states and further detailed in applicable guidance documents. Similar approval requirements apply in the UK and a clinical trial application must be made to the UK regulatory authority (MHRA) prior to starting any clinical trial.

To obtain marketing approval of a product under EU regulatory systems, an applicant must submit a marketing authorization application, or MAA, either under a centralized or decentralized procedure. The centralized procedure provides for the grant of a single marketing authorization by the European Commission that is valid for all EU member states. The centralized procedure is compulsory for specific products, including for medicines produced by certain biotechnological processes, products designated as orphan medicinal products, advanced therapy medicinal products and products with a new active substance indicated for the treatment of certain diseases. For products with a new active substance indicated for the treatment of other diseases and products that are highly innovative or for which a centralized process is in the interest of patients, the centralized procedure may be optional.

Under the centralized procedure, the Committee for Medicinal Products for Human Use, or the CHMP, established at the EMA is responsible for conducting the scientific assessment of a product. The CHMP is also responsible for several post-authorization and maintenance activities, such as the assessment of modifications or extensions to an existing marketing authorization. For advanced therapy medicinal products (ATMPs), the scientific evaluation of MAA is primarily performed by the Committee for Advanced Therapies (CAT). The CAT prepares a draft opinion of each ATMP subject to a MAA which is sent for final approval to the CHMP.

Under the centralized procedure in the EU, the maximum timeframe for the evaluation of an MAA is 210 days, excluding clock stops, when additional information or written or oral explanation is to be provided by the applicant in response to questions of the CHMP. Accelerated evaluation might be granted by the CHMP in exceptional cases, when a medicinal product is of major interest from the point of view of public health and in particular from the viewpoint of therapeutic innovation. In this circumstance, the EMA ensures that the opinion of the CHMP is given within 150 days. Then, the European Commission grants or refuses the marketing authorization, following a procedure that involves representatives of the member states. The Commission's decision is in accordance with the CHMP's assessment except in very rare cases. For marketing approval in the U.K, an application for marketing approval will be made for the MHRA and follows a similar process to that used in the EU.

Marketing authorization is valid for five years in principle and the marketing authorization may be renewed after five years on the basis of a re-evaluation of the risk-benefit balance by the EMA or by the competent authority of the authorizing member state or U.K. To this end, the marketing authorization holder must provide the EMA or the competent authority with a consolidated version of the file in respect of quality, safety and efficacy, including all variations introduced since the marketing authorization was granted, at least six months before the marketing authorization ceases to be valid. Once renewed, the marketing authorization is valid for an unlimited period, unless the Commission or the competent authority decides, on justified grounds relating to pharmacovigilance, to proceed with one additional five-year renewal. Any authorization which is not followed by the actual placing of the drug on the EU market (in case of centralized procedure) or on the market of the authorizing member state within three years after authorization ceases to be valid (the so-called sunset clause).

As a result of Brexit, as of 1 January 2021, marketing authorizations granted on the basis of a centralized procedure in the EU are only valid in Northern Ireland, but not in Great Britain (England, Scotland and Wales). However, prior EU authorizations have all been automatically converted into U.K. marketing authorizations effective in

Great Britain. Marketing authorization holders were given the option to opt out of the conversion process by 21 January 2021. If they haven't opted out, they will need to produce documentation to the MHRA by 1 January 2022. UK rules require marketing authorization holders to be established in the U.K. or in the EU/European Economic Area. EU rules require marketing authorization holders to be established in the EU/European Economic Area and, in addition, that certain activities be performed in the EU, related for example to pharmacovigilance, batch release and quality control. Marketing authorization holders may need to take steps to comply with these requirements aiming at holding both a EU and a U.K. marketing authorization.

With regard to the sunset clause, from the perspective of the U.K, the period of three years during which the drug has not been marketed in Great Britain will be restarted from the date of conversion to a Great Britain marketing authorization. From the perspective of the EU, in case the drug has been marketed in the U.K, the placing on the U.K. market before the end of the Brexit transition period will be taken into account. If, after the end of the Brexit transition period, the drug is not placed on any other market of the remaining member states of the EU, the three year period for the sunset clause will start running from the last date the drug was placed on the U.K. market before the end of the Brexit transition period.

Legal Proceedings and Related Matters

From time to time, we may be party to litigation that arises in the ordinary course of our business. We do not have any pending litigation that, separately or in the aggregate, would, in the opinion of management, have a material adverse effect on our results of operations, financial condition or cash flows.

Employees and Human Capital Management

As of December 31, 2020, we had 462 employees. Of these employees, 360 were in research and development (including in manufacturing and operations, and quality control and quality assurance) and 102 were in management and administrative functions (including business development, finance, intellectual property, information technology and general administration). We have never had a work stoppage and none of our employees are covered by collective bargaining agreements or represented by a labor union.

We value our employees and as a company work hard to ensure that we employ those individuals that will work with us to achieve the objectives of the Company, that match our values. We engage with our employees in multiple ways including through companywide events, social events and team events. We employ individuals based on their experience and ability to perform the applicable job and encourage diversity in our workforce whenever possible. We have an equal opportunities policy which promotes the right of every employee to be treated with dignity and respect and not to be harassed or bullied on any grounds. We employ individuals from approximately 25 different nationalities within our U.K. and U.S. offices and are working to encourage diversity within our workforce. We have a performance based reward scheme, bonus scheme and share option plan which all employees are entitled to participate in. These schemes and other employee incentivization programs are designed to retain employees. Over 2020, the total global attrition rate was 14% and we continually work to keep attrition to a minimum.

Other Information

The Company's primary website is www.adaptimmune.com. Information in the investor section and on our website is not part of this Annual Report or any of our other securities filings unless specifically incorporated herein or therein by reference. The Company makes available, free of charge, at its corporate website, its Annual Report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as soon as reasonably practicable after they are electronically filed with the Securities and Exchange Commission ("SEC"). The SEC maintains an internet site that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC at www.sec.gov.

Item 1A. Risk Factors.

Our business has significant risks. You should carefully consider the following risk factors as well as all other information contained in this Annual Report, including our consolidated financial statements and the related notes, before making an investment decision regarding our securities. The risks and uncertainties described below are those significant or material risk factors currently known and specific to us that we believe are relevant to our business, results of operations and financial condition. Additional risks and uncertainties not currently known to us or that we now deem immaterial may also impair our business, results of operations and financial condition.

Risk Factors Summary

The following is a summary of the principal risks that could adversely affect our business.

Risks Related to Our Financial Condition and Capital Requirements

- We have incurred net losses every year since inception and expect to continue to incur net losses in the future. If we are unable to obtain additional financing or funding we may be unable to complete the development and commercialization of our cell therapies.

- We may never generate revenue from sales of our cell therapies and become profitable and our generation of revenue depends on our ability to timely progress our cell therapies through development.

Risks Related to the Development of Our Cell Therapies

- Our ability to fund our business and continue to develop our cell therapies is dependent on the data obtained from our ongoing ADP-A2M4CD8 and ADP-A2AFP clinical trials.

- Our clinical trials and clinical data are at an early stage and future data may not support continued development of our cell therapies.

- Clinical trials are time consuming and expensive and we may not be able to recruit patients as planned.

- Our cell therapies are novel and there is an increased risk that we may see unacceptable toxicities.

Risks Related to the Manufacture and Supply of Our Cell Therapies

- Manufacture of cell therapies is complex and we may encounter difficulties manufacturing and supplying our cell therapies to patients, whether for clinical trials or for commercial purposes.

- We have our own manufacturing facility and our ability to manufacture cell therapies is dependent on our ability to maintain regulatory approval for the facility, recruit employees required for manufacture, manufacture cell therapies reliably and reproducibly and increase manufacturing and supply to meet the required demand.

Risks Related to the Commercialization and Marketing of Our Cell Therapies

- We have never commercialized a product as a company.

- We may not be able to obtain marketing approvals of our cell therapies as broadly as planned or on the timescales we plan.

Risks Related to the COVID-19 pandemic

- The COVID-19 pandemic may materially delay our clinical programs and research programs, delay our ability to treat patients where clinical sites decide to delay participation, interrupt our ability to carry out our normal processes and cause delays with regulatory authorities.

Risks Related to Government Regulation

- We are subject to significant regulatory, compliance and legal requirements and will continue to be subject to these requirements.

- Any commercialization of our cell therapies will also require approval for a companion diagnostic. We are reliant on a third party for development of the companion diagnostic.

Risks Related to Our Reliance Upon Third Parties

- We are reliant on third parties for provision of services including manufacturing services and clinical research services, for the provision of components and materials required for manufacturing, research and development and for the performance of our collaborations.

Risks Related to Our Intellectual Property

- We may be forced to litigate to defend our intellectual property rights and we may be subject to patent infringement proceedings brought against us by third parties.

- Our ability to be competitive depends, in part, on our ability to protect our proprietary technology including through patents and through maintaining confidentiality in our trade secrets.

General Business Risks

- Our inability to continue to attract and retain qualified personnel may hinder our business.

- We expect to face intense competition from third parties and this competition may come from companies with significantly greater resources and experience than we have.

- Failure of our information technology systems could significantly disrupt the operation of our business.

- The market price of our ADSs is subject to volatility.

For a more complete discussion of the risks we face as a business, please see the discussion below.

Risks Related to Our Financial Condition and Capital Requirements

We have incurred net losses every year since our inception and expect to continue to incur net losses in the future.

We have generated losses since our inception in 2008, during which time we have devoted substantially all of our resources to research and development efforts relating to our cell therapies, including engaging in activities to manufacture and supply our cell therapies for clinical trials, conducting clinical trials of our cell therapies, providing general and administrative support for these operations, enhancing capabilities to support commercialization for ADP-A2M4 and protecting our intellectual property. For the years ended December 31, 2020, 2019 and 2018, we incurred net losses of $130.1 million, $137.2 million and $95.5 million, respectively. As of December 31, 2020, we had accumulated losses of $585.8 million. We do not have any products approved for sale and have not generated any revenue from product supplies or royalties. Based on our current plans, we do not expect to generate product or royalty revenues unless and until we obtain marketing approval for, and commercialize, any of our SPEAR T-cells or other cell therapies.

If we fail to obtain additional financing, we may be unable to complete the development and commercialization of our cell therapies.

We expect to continue incurring significant losses as we continue with our research and development programs and to incur general and administrative costs associated with our operations. The extent of funding required to develop our cell therapies is difficult to estimate given the novel nature of our cell therapies and their un-proven route to market and we may not have anticipated all the costs required to meet our planned objectives. As of December 31, 2020, the Company had cash and cash equivalents of $56.9 million, marketable securities of $311.3 million, and stockholders' equity of $341.2 million. We expect to use these funds to advance and accelerate the clinical development of our cell

therapies, to further develop and enhance our manufacturing capabilities and secure a commercially viable manufacturing platform for all of our cell therapies, to advance additional cell therapies into preclinical testing and progress such cell therapies through to clinical trials, to support commercialization for ADP-A2M4 and to fund working capital, including for other general corporate purposes. We believe that our cash and cash equivalents and marketable securities will be sufficient to fund our operations, based upon our currently anticipated research and development activities and planned capital spending, into early 2023. This belief is based on estimates that are subject to risks and uncertainties and may change if actual results differ from management's estimates. Our expenses may increase significantly in the event of any of the following:

- Any requirement to outsource manufacture of our cell therapies to third parties, or acquire additional raw materials to support manufacture in the event of any inability to manufacture at our own facilities;
- Any requirement to conduct additional or further clinical trials or to treat additional patients to satisfy the regulatory authorities that a cell therapy is safe or that it is efficacious and can be approved for marketing or to proceed to the next stage of development;
- Any requirement to vary, change or amend our current manufacturing processes;
- Third party litigation, including patent litigation, being brought against the company;
- A requirement to pay any third party upfront, milestone, royalty or other payments in order to continue to develop or commercialize any of our cell therapies;
- A requirement to create additional infrastructure to support our ongoing operations, including future commercialization efforts;
- Any inability to recruit patients to our clinical trials on a timely basis necessitating the need to open additional clinical sites or otherwise enable increase recruitment;
- Any unplanned capital expenditure including any requirement to increase or enhance manufacturing capability or invest in additional manufacturing facilities;
- Changes in the timing on when we receive payments from our third party collaborators including GSK and Astellas; or
- Inability of third parties to provide critical supplies on a timely basis necessitating alternative or additional third party supplies to be put in place.

We cannot be certain that additional funding will be available on acceptable terms, or at all. We have no committed source of additional capital and if we are unable to raise additional capital in sufficient amounts or on terms acceptable to us, we may have to significantly delay, scale back or discontinue the development or commercialization of our cell therapies or other research and development initiatives. Our license and supply agreements may also be terminated if we are unable to meet the payment obligations under these agreements. We could be required to seek collaborators for our cell therapies at an earlier stage than otherwise would be desirable or on terms that are less favorable to us than might otherwise be available or relinquish or license on unfavorable terms our rights to our cell therapies in markets where we otherwise would seek to pursue development or commercialization ourselves.

Our current cash projections include reliance on the ability to obtain certain tax credits and the operation of certain tax regimes within the United Kingdom. Should these cease to be available, this could impact our ongoing requirement for investment and the timeframes within which additional investment is required.

As a company that carries out extensive research and development activities, we benefit from the U.K. research and development tax credit regime for small and medium sized companies, whereby our principal research subsidiary

company, Adaptimmune Limited, is able to surrender the trading losses that arise from its research and development activities for a payable tax credit of up to approximately 33.4% of eligible research and development expenditures. Qualifying expenditures largely comprise employment costs for research staff, consumables and certain internal overhead costs incurred as part of research projects. Subcontracted research expenditures are eligible for a cash rebate of up to approximately 21.7%. The majority of our pipeline research, clinical trials management and manufacturing development activities, all of which are being carried out by Adaptimmune Limited, are eligible for inclusion within these tax credit cash rebate claims.

We may not be able to continue to claim research and development tax credits (R&D tax credits) in the future as we increase our personnel and expand our business because we may no longer qualify as an SME (small or medium-sized enterprise). In order to qualify as an SME for R&D tax credits, we must continue to be a company with fewer than 500 employees and also have either an annual turnover not exceeding €100 million or a balance sheet not exceeding €86 million.

We may also benefit in the future from the U.K's "patent box" regime, which would allow certain profits attributable to revenues from patented products to be taxed at a rate of 10%. As we have many different patents covering our products, future upfront fees, milestone fees, product revenues, and royalties could be taxed at this favorably low tax rate. When taken in combination with the enhanced relief available on our research and development expenditures, we expect a long-term lower rate of corporation tax to apply to us. If, however, there are unexpected adverse changes to the U.K. research and development tax credit regime or the "patent box" regime, or we are unable to qualify for such advantageous tax legislation, our business, results of operations and financial condition may be adversely affected.

Our ability to generate revenue from sales of our cell therapies and become profitable depends on our ability to progress our cell therapies through development.

We have no cell therapies approved for commercial sale, have not generated any revenue from sales of our cell therapies, and do not anticipate generating any revenue from sales of our cell therapies until sometime after we receive regulatory approval, if at all, for the commercial sale of a cell therapy. We may never become profitable.

Our ability to generate revenue and achieve profitability depends on many factors, including:

- progressing our cell therapies through preclinical development and clinical development without substantial delays;
- demonstrating a favorable benefit (efficacy parameters): risk (safety) for our cell therapies;
- obtaining regulatory approvals and marketing authorizations for our cell therapies for which we or our collaborator complete clinical trials;
- developing sustainable and scalable manufacturing and supply processes for our cell therapies to support commercial supply;
- obtaining market acceptance, pricing and reimbursement of our cell therapies as viable treatment options;
- the costs of commercializing any cell therapy;
- the indications any cell therapy is approved in and the patient population treatable with any cell therapy; and
- our ability to develop and obtain approval for the companion diagnostic assay required for administration of our cell therapies.

Risks Related to the Development of Our Cell Therapies

We are heavily reliant on the data obtained from our ongoing ADP-A2M4CD8 and ADP-A2AFP clinical trials.

Our ability to obtain additional financing is dependent on the data from our ADP-A2M4CD8 ("SURPASS") and ADP-A2AFP clinical trials. Both of these trials are phase I trials and data from either trial might not be sufficient to enable us to further develop ADP-A2M4CD8 or ADP-A2AFP. If we do not see sufficiently positive data in either of these clinical trials or if we see an adverse side effect profile preventing continuation of any clinical trials, we may not be able to obtain the additional financing required to fund our anticipated business operations. This in turn may necessitate delays in planned activities, including the commercialization of ADP-A2M4 in synovial sarcoma and our ability to progress other cell therapies into and through clinical development.

Our cell therapy products require significant additional clinical testing before we can seek regulatory approval and begin commercialization.

Our cell therapies may not achieve regulatory approval or proceed to the next stage of development. All of our cell therapies require further clinical development before a BLA can be filed with any regulatory authority to permit commercialization. Results seen in early clinical trials, for example, with our ADP-A2M4, ADP-A2M4CD8, and ADP-A2AFP cell therapy candidates may not be predictive of the data we will obtain in our later phase clinical trials. Negative results in any cell therapy clinical program may also impact our ability to continue with clinical development of other similar cell therapies. Although each cell therapy may target a different cancer peptide or protein, the underlying technology platform and other aspects of our clinical programs are the same or substantially similar for many of our cell therapies. Accordingly, a failure or delay in any one program may affect the ability to obtain regulatory approval to continue or conduct clinical programs for other cell therapies.

The data produced in our ongoing clinical trials is at an early stage and future data may not support continued progression of any of our therapies through development.

The patient response data that has been reported in our ADP-A2M4 trials (other than for synovial sarcoma), ADP-A2AFP trials and ADP-A2M4CD8 trials represents data from small numbers of patients within each study at the applicable dosing level. As such, the data is initial data and there is no assurance that any responses will persist, that we will see responses in any other patients or that such patients will not suffer severe adverse events which may result in a delay or halt to any clinical trial. Further data may be required in order to progress cell therapies to the next stage of development. Negative results in one clinical trial may also impact ability to proceed with development in other clinical trials given the common technology platform and similarity of other aspects of our clinical programs.

Like other biologic products, we expect there may be greater variability in results for cell therapies which are administered on a patient-by-patient basis than for "off-the-shelf" products, like many other biologics. There is typically an extremely high rate of attrition from the failure of any products proceeding through clinical trials. Cell therapies in later stages of clinical trials may fail to show the desired safety and efficacy profile despite having progressed through preclinical programs and initial clinical trials. A number of companies in the biopharmaceutical industry have suffered significant setbacks in advanced clinical trials due to lack of efficacy or unacceptable safety issues, notwithstanding promising results in earlier trials. Most biologic candidates that begin clinical trials are never approved by regulatory authorities for commercialization. We may therefore be unsuccessful in demonstrating the required efficacy and safety profile from the performance of any of our clinical programs.

We are aware that certain patients do not respond to our SPEAR T-cells and that other patients may relapse or cease to present the peptide being targeted by such SPEAR T-cells. The percentage of the patient population in which these events may occur is unknown, but the inability of patients to respond and the possibility of relapse may impact our or our collaborator's ability to conduct clinical trials, to obtain regulatory approvals, if at all, and to successfully commercialize any SPEAR T-cell

We plan to provide further data updates as and when the applicable data is believed to be sufficiently mature. Given the nature of T-cell therapies and the time taken to observe patient responses to our SPEAR T-cells, we

cannot provide any assurance that further data updates will be provided frequently or that such data updates will be available at any particular time.

We may not be able to commence additional clinical trials for cell therapies on the timeframes we expect.

Progression of new cell therapies into clinical trials is inherently risky and dependent on the results obtained in preclinical programs, the results of other clinical programs and any other activities which may impact our ability to commence clinical trials, for example, availability of manufacturing process and components. If any issues are identified during any cell therapy development, we may experience significant delays in development of pipeline candidates and in existing clinical programs. This may also impact our ability to achieve certain financial milestones and the expected timeframes to market any of our cell therapies.

The FDA or other regulatory authorities may not approve any IND (or equivalent application) for any of our future cell therapies, or for new indications for our cell therapies already in clinical trials, or may require amendments to existing protocols (including as a result of the COVID-19 pandemic). For example, we amended the protocols for all of our pending and on-going ADP-A2M4 and ADP-A2M10 clinical trials in response to reported serious adverse events ("SAEs") of prolonged serious pancytopenia in our clinical trials for ADP-A2M4 and ADP-A2M10 in two patients treated with the highest lymphodepletion regimen. Such amendments and updates may delay our clinical trials, may require changes or resubmission of our INDs, or may result or be related to a halt in our planned or contemplated clinical trials.

We are continuing to expand our clinical trial footprint in Europe. This requires gaining the approval of country specific review bodies for GMO application and Clinical Trial Application ("CTA"). As this is not a harmonized process, the requirements can vary considerably, and delays can be incurred at a country level. For example, the information required in relation to manufacturing processes or assays may differ between countries and may require additional testing to be conducted in order for approval to be obtained.

T-cell therapy is a novel approach to cancer treatment that creates significant increased risk in terms of side-effect profile.

Development of a pharmaceutical or biologic therapy or product has inherent risks based on differences in patient population and responses to therapy and treatment. The mechanism of action and impact on other systems and tissues within the human body following administration of our cell therapies is complex and not completely understood, which means that we cannot predict the long-term effects of treatment with any of our cell therapies (whether by us or a collaborator). In addition, it is not possible for any pre-clinical safety package to completely identify all potential safety risks. For example, there is a risk that the target (or similar) peptide to which any SPEAR T-cell is directed may be present in both patients' cancer cells and other non-cancer cells and tissues. Cross-reactivity or allo-reactivity (binding to peptides presented on other HLA types) could also occur where the affinity-enhanced engineered TCR contained within any cell therapy including SPEAR T-cells binds to peptides presented by HLAs other than the HLA type for which the relevant TCR was developed. Should any of these cross-reactivities occur, patients may suffer a range of side effects associated with the SPEAR T-cell binding to both the cancer cells and/or other cells and tissues and such side effects could cause patient death. The extent of these side effects will depend on which cells and tissues are affected as well as the degree to which the target (or similar) peptide is expressed in these cells and tissues. One of our prior SPEAR T-cells, designed to target an HLA-1 restricted MAGE-A3 cancer-specific peptide, recognized another unrelated peptide from a protein called TITIN, expressed within normal cardiac and other muscle tissues in patients. As a result of this cross-reactivity to the TITIN protein in the heart, two patients died during our MAGE-A3 clinical program, the program was put on pause, then formally placed on hold by the FDA, after which we terminated the program.

Any unacceptable toxicities arising in ongoing clinical programs could result in suspension or termination of those clinical programs. The more SAEs that are reported the greater the risk of suspension of termination of clinical programs, even where the SAEs are unrelated to each other or to our cell therapies. Our patients undergo lymphodepletion prior to receiving our SPEAR T-cells which leaves them immune-compromised for a period of time after the lymphodepletion and increases their risk of contracting other unrelated diseases or pathogens including COVID-19. The treatment regimen used in our protocols, in particular the use of chemotherapy, also carries an inherent

risk of cytopenia (including pancytopenia), where blood cell levels reduce to lower than normal. If blood cell levels do not recover sufficiently the patient may suffer serious adverse events, which may even be life threatening. There have been multiple events of pancytopenia as well as SAEs similar to those reported across our clinical trials; these are multifactorial in etiologies and could result in regulatory authorities imposing a hold on one or more clinical programs whilst the events are investigated further. Serious adverse events seen with other immunotherapy products, such as the severe cytokine release syndrome ("CRS") and neurotoxicity events observed with CD19-directed CAR-T cell treatments, may also occur at any stage of the clinical program. Further, following infusion of any SPEAR T-cells, there may be a transient inflammatory reaction of the disease to the treatment. Symptoms in any given subject would be dependent on the location and other characteristics of their tumor. For example, subjects with lung tumors may experience dyspnea. Cardiac toxicities may be observed in patients with pre-existing cardiac or pericardial masses. These inflammatory reactions and related symptoms may be mild and self-limited, but can be severe, potentially life-threatening and require medical intervention.

Any side effects may also result in the need to perform additional trials, which will delay regulatory approval for such cell therapies and require additional resources and financial investment to bring the relevant cell therapy to market.

Use of cell therapies in combination with other third party products or therapies may increase or exacerbate side effects that have been seen with our cell therapies alone or may result in new side effects that have not previously been identified with our cell therapies alone. Any undesirable side effects seen in combination trials may affect our ability to continue with and obtain regulatory approval for the combination therapy, but may also impact our ability to continue with and obtain regulatory approval for our cell therapies alone.

Summary information on adverse events seen in relation to each of our cell therapies are provided below as of the dates stated.

As of December 27, 2020, for ADP-A2M4 studies APD-0044-001 and ADP-0044-002:

- The adverse events occurring in >10% of patients treated with ADP-A2M4 under study ADP-0044-001 (N=38) and considered by investigators to be at least possibly related to ADP-A2M4 include neutropenia/neutrophil count decreased, thrombocytopenia/platelet count decreased, lymphopenia/lymphocyte count decreased, anemia/red blood cells decreased, CRS, fatigue, pyrexia, decreased appetite, rash, dyspnea, sinus tachycardia/tachycardia, hypophosphatemia, headache, nausea, vomiting, chills, diarrhea, hypotension, alanine aminotransferase increased, aspartate aminotransferase increased and tumor pain.

- The adverse events occurring in >10% of patients treated with ADP-A2M4 under study ADP-0044-002 (N=24) and considered by investigators to be at least possibly related to ADP-A2M4 include neutropenia/neutrophil count decreased, thrombocytopenia/platelet count decreased, CRS, pyrexia, fatigue, headache, nausea, back pain, leukopenia/WBC decreased and pruritus.

- Serious adverse events reported with ADP-A2M4 under study ADP-0044-001 (N=38) in two or more patients whether considered related to the SPEAR T-cells or not include CRS, pneumonia, sepsis, pyrexia, pancytopenia, atrial fibrillation, thrombocytopenia/platelet count decreased, pleural effusion and rash. Two patients have had treatment related fatal SAE reports: one patient experienced prolonged pancytopenia/aplastic anemia and the other experienced a cerebrovascular accident (stroke).

As of December 3, 2020, for ADP-A2M4CD8, seven patients have been dosed:

- The adverse events occurring in one or more patients that is considered by investigator to be at least possibly related to ADP-A2M4CD8 include neutropenia/neutrophil count decreased, CRS, fatigue, hypoxia, and pleural effusion.

- There has been a total of five SAEs reported in two patients: one patient experienced Grade 1 CRS

(probably related), and a SAE of pancytopenia with fatal outcome (possibly related to treatment and probably related to the fludarabine and cyclophosphamide chemotherapy regimens). The other patient experienced Grade 3 CRS and Grade 2 Immune effector Cell-Associated Neurotoxicity Syndrome (ICANS) (both considered probably related to ADP-A2M4CD8).

As of Feb 01, 2021, for ADP-A2AFP:

- The adverse events occurring in >10% of patients treated with ADP-A2AFP and considered by investigators to be at least possibly related to ADP-A2AFP include neutropenia/neutrophil count decreased, leukopenia/white blood cell count decreased, lymphopenia/lymphocyte count decreased, anemia/red blood cell count decreased, pyrexia, thrombocytopenia/platelet count decreased, alanine aminotransferase increased, aspartate aminotransferase increased, blood alkaline phosphatase increased hypoalbuminemia, vomiting, and CRS.

- Serious adverse events reported with ADP-A2AFP whether considered related to the SPEAR T-cells or not include bile duct obstruction, febrile neutropenia, abdominal pain, CRS and infusion related reaction.

Use of cell therapies in combination with other third party products or therapies may increase or exacerbate side effects that have been seen with our cell therapies alone or may result in new side effects that have not previously been identified with our cell therapies alone. Any undesirable side effects seen in combination trials may affect our ability to continue with and obtain regulatory approval for the combination therapy, but may also impact our ability to continue with and obtain regulatory approval for our cell therapies alone.

We may encounter substantial delays in our clinical trials or may not be able to conduct our trials on the timelines we expect.

Any delay in our clinical trials will impact our ability to obtain clinical data from those trials and our ability to progress our business along anticipated timelines and to raise finance. Delays in clinical trials can also increase the costs incurred in performing those clinical trials or necessitate a need to initiate additional clinical trial sites. Our ability to progress our clinical trials is dependent on a number of factors including:

- finding clinical sites prepared to carry out the relevant clinical trials, screening of patients by the clinical sites, recruitment of patients both in terms of number and type of patients and general performance of the relevant clinical site.

- The ability of our clinical sites to recruit patients on the timelines we expect. It can be difficult for clinical sites to find patients that express both the required HLA-type and required antigen type and which also meet the inclusion criteria for our clinical trials. In addition, during the COVID-19 pandemic, resources at clinical sites are being prioritized towards treatment of COVID-19 and as a result there may be a delay in their ability to progress our clinical trials, recruit and enroll patients into clinical trials or to start new clinical trials.

- The patient population in which any required peptide antigen is presented. The patient population may be lower than expected which will increase the timescales required to find and recruit patients into the applicable clinical trial. Screening of a large number of patients is required to identify HLA and tumor antigen positive patients for all of our clinical trials with our SPEAR T-cells.

- Our ability to select, initiate and activate clinical sites on the timelines we expect. Selection and activation of clinical trial sites can take a long period of time and includes requirements to assess the clinical trial site, obtain IRB approval of clinical trial protocols, negotiate and execute clinical trial agreements and educate study staff to enable them to carry out the clinical trial.

- Any requirement to change clinical trial design as the clinical trial progresses. It is also difficult to predict whether changes may be required to any clinical trial design as our clinical trials progress. The need to make changes to any clinical trial design can result in delays to the performance of that clinical trial whilst any changes are approved by the FDA or other relevant authority and implemented at applicable clinical trial sites.

- Any competition for patients at our clinical sites. Many of our clinical trial sites have multiple clinical trials ongoing which compete for patients in any specific indication. We may have to wait before treating patients while patients complete existing clinical trials or receive other treatment therapies for their cancer. Moreover, because our cell therapies represent a departure from more commonly used methods for cancer treatment, potential patients and their physicians may opt to use conventional therapies, such as chemotherapy and hematopoietic cell transplantation, rather than enrollment in any of our current or future clinical trials. This may also mean we cannot recruit patients at a suitable time in their disease progression.

- Any change in the standard of care for patients. Where standard of care for patients changes clinical sites may no longer be prepared to continue with any clinical trial or require amendments to agreed protocols for clinical trials. Such circumstances can lead to the suspension of the relevant clinical trial at a site, inability to recruit further patients at that clinical site or a requirement to amend the protocol, all of which will delay or potentially halt progression of a cell therapy through clinical trials.

- Any country specific requirement. In certain countries additional data, studies or documentation may be required ahead of any clinical trial starting. For example, comparability studies may be required in relation to any changes in manufacturing process and the extent of these comparability studies can vary between different countries. This can result in delays to the start of any clinical trials in those countries and lead to increased research and development being required ahead of the start of those clinical trials.

- The severity of the disease we are trying to treat and the type of patient we are trying to recruit. For many of our clinical trials patients have received numerous prior therapies and have few or no other remaining treatment options. Given the late stage of their disease the patients also tend to be very ill and hence require treatment quickly and have the potential for increased SAEs following treatment. Depending on the protocol it can be difficult to find patients that meet the inclusion requirements for our clinical trials and can wait for manufacture of our cell therapy products.

- The clinical trial protocol design and in particular the inclusion and exclusion requirements applicable to the clinical trial.

- Patient referral practices. It is common for investigators or physicians not to refer patients to other investigators or physicians either within their own clinical sites or to other clinical sates. This increases the number of clinical sites which have to be initiated in order to recruit patients to our clinical trials.

- Availability of reimbursement from insurance companies. The availability of reimbursement for patients to participate in clinical trials can impact on their ability to enroll in our clinical trials.

Even if we are able to enroll a sufficient number of patients in our clinical trials, delays in patient enrollment may result, and have resulted in, increased costs or may affect the timing or outcome of the planned clinical trials, which could prevent completion of these trials and adversely affect our ability to advance the development of our SPEAR T-cells and other cell therapies.

Certain of our clinical trials include dose escalation studies in which the dose of cell therapies administered to patients is varied or initial studies in which the pre-treatment regimen may be varied, for example, a regimen with and without fludarabine. The outcome of such dose escalation or initial studies will inform the clinical study going forward.

However, the need to carry out dose escalation or other initial studies may result in delays in data from such clinical programs while the most suitable dose or regimen is assessed. For example, the trial design for our SPEAR T-cell trials includes dose escalation and therefore efficacy data may not be obtained from initial patients treated in such studies during the dose escalation phase.

Our cell therapies represent a novel approach to cancer treatment that could result in heightened regulatory scrutiny and delays in clinical development.

Use of any of our cell therapies to treat a patient involves genetically engineering a patient's T-cells. This is a novel treatment approach that carries inherent development risks including the following, any of which can result in delays to our ability to develop our cell therapies:

- Further development, characterization and evaluation may be required at any point in the development of any cell therapy where clinical or preclinical data suggest any potential safety risk for patients. The need to develop further assays, or to modify in any way the protocols related to our cell therapies to improve safety or effectiveness, may delay the clinical program, regulatory approval or commercialization, if approved at all, of any cell therapy.

- End users and medical personnel require a substantial amount of education and training in their administration of cell therapies either to engage in clinical trials and recruit patients or ultimately to provide cell therapies to patients once our cell therapies have been approved.

- Regulators may be more risk averse or require substantial dialogue and education as part of the normal regulatory approval process for each stage of development of any cell therapy. Many regulators have additional requirements or processes relating to cell therapy products which need to be addressed during development. To date, only a limited number of gene therapy products have been approved in the United States and EU. Consequently, it is difficult to predict and evaluate what additional regulatory hurdles may apply to the development of our cell therapies and whether additional investment, time or resources will be required to overcome any such hurdles.

- Regulatory requirements governing gene and cell therapy products have changed frequently and may continue to change in the future.

- Random gene insertion associated with retrovirus-mediated genetically modified products, known as insertional oncogenesis, could lead to lymphoma, leukemia or other cancers, or other aberrantly functioning cells. Insertional oncogenesis was seen in early gene therapy studies conducted outside of the United States in 2003 although these studies utilized a murine gamma-retroviral vector rather than a lentiviral vector.

- Although our viral vectors are not able to replicate, there may be a risk with the use of retroviral or lentiviral vectors that they could undergo recombination and lead to new or reactivated pathogenic strains of virus or other infectious diseases.

- There is the potential for delayed adverse events following exposure to gene therapy products due to persistent biological activity of the genetic material or other components of products used to carry the genetic material. In part for this reason, the FDA recommends a 15-year follow-up observation period for all surviving patients who receive treatment using gene therapies in clinical trials.

- Clinical trials using genetically modified cells may be subject to additional or further regulatory processes, for example, by the NIH Office of Biotechnology Activities' Recombinant DNA Advisory Committee, or RAC or the need to apply for a specific applications relating to the use of Genetically Modified Organism application in the EU. These additional processes may delay or impede the initiation of a clinical trial.

- Increased risk to patient safety caused by the need to lymphodeplete patients prior to administration of our cell therapies including in circumstances in which there is a heightened safety risk or in which medical resources could be prioritized elsewhere, for example, during a pandemic such as COVID-19.

- Negative results seen in third party clinical trials utilizing gene therapy products may result in regulators halting development of our cell therapies or in requiring additional data or requirements prior to our cell therapies progressing to the next stage of development. For example, regulators could require changes to be made to our clinical trial protocols or increase requirements for dose escalation studies as part of our clinical trial protocols.

Our clinical trials may fail to demonstrate adequately the safety and efficacy of any cell therapies which would prevent or delay regulatory approval and commercialization.

There is a risk in any clinical trial that side effects from cell therapies will require a hold on, or termination of, clinical programs or further adjustments to clinical programs in order to progress any cell therapy. Our cell therapy must demonstrate an acceptable benefit:risk profile in its intended patient population and for its intended use. The benefit:risk profile required for product licensure will vary depending on these factors and may include not only the ability to show tumor shrinkage, but also adequate duration of response, a delay in the progression of the disease and/or an improvement in survival. For example, response rates from the use of the SPEAR T-cells may not be sufficient to obtain regulatory approval unless we or our collaborators can also show an adequate duration of response.

The regulatory authorities (including the FDA) may issue a hold on our clinical trials as a result of safety information and data obtained in third party clinical trials or in relation to third party products. Any such hold will require addressing by us and will inevitably delay progression of the clinical trials concerned, if such clinical trials progress at all.

In addition, even if such trials are successfully completed, the FDA or foreign regulatory authorities may not interpret the results as we or our collaborators do. Accordingly, more trials may be required before we can submit any cell therapy for regulatory approval. To the extent that the results of the trials are not satisfactory to the FDA or foreign regulatory authorities for support of a marketing authorization application, we may be required to expend significant resources, which may not be available to us, to conduct additional trials in support of potential approval of our cell therapies. We cannot predict whether any of our cell therapies will satisfy regulatory requirements at all or for indications in which such cell therapies are currently being evaluated as part of any clinical programs.

We have limited experience conducting later stage clinical trials which may cause a delay in any clinical program and in the obtaining of regulatory approvals.

Although we have recruited a team that has significant experience with clinical trials, as a company we have limited experience in conducting clinical trials through to regulatory approval. In part because of this lack of experience, we cannot be certain that planned clinical trials will begin or be completed on time, if at all. Large-scale trials would require significant additional financial and management resources, and reliance on third-party clinical investigators, contract research organizations, or CROs, or consultants. Relying on third-party clinical investigators, consultants or CROs may force us to encounter delays that are outside of our control.

Clinical trials are expensive, time-consuming and difficult to implement.

Clinical trials, depending on the stage, can be costly as well as difficult to implement and define, particularly with technologies that are not tried and tested, such as our cell therapies. These factors can lead to a longer clinical development timeline and regulatory approval process, including a requirement to conduct further or more complex clinical trials in order to obtain regulatory approval. Regulatory authorities may disagree with the design of any clinical program, and designing an acceptable program could lead to increased timeframes for obtaining of approvals, if any. In addition, progression of clinical trials depends on the ability to recruit suitable patients to those trials and delay in recruiting will impact the timeframes of such clinical trials and as a result the timeframes for obtaining regulatory approval, if any, for the relevant cell therapy.

In particular, eligible patients must be screened for the target peptide and HLA type, which may reduce the number of patients who can be recruited for any clinical program. For example, low target peptide expression levels in the NY-ESO SPEAR T-cell and ADP-A2M10 programs affected speed of patient recruitment in certain of the clinical trials. The ability to administer cell therapies to patients in accordance with set protocols for the clinical trials and the results obtained depends on patient participation for the duration of the clinical trial, which many of these patients are unable to do because of their late-stage cancer and limited life expectancy.

Validation of our cell therapies requires access to human samples which we may be unable to obtain or, if they can be obtained, that the terms under which they are provided will be favorable to us.

Certain of the steps involved in validating and carrying out safety testing in relation to our cell therapies require access to human samples (e.g., tissues samples or cell samples) from third parties. Such samples may be obtained from universities or research institutions and will often be provided subject to certain terms and conditions. We may not be able to obtain samples in sufficient quantities to enable preclinical testing in sufficient quantities for planned activities, particularly during the period in which COVID-19 impacts the ability of research institutions to supply and access such samples. In addition, the terms under which such samples are available may not be acceptable to us or may restrict our use of any generated results or require us to make payments to the third parties.

Our cell therapies and their application are not fully scientifically understood and are still undergoing validation and investigation.

Cell therapies including our SPEAR T-cells and their potential associated risks are still under investigation. Our cell therapies including our SPEAR T-cells may not work in the way that we currently anticipate and affinity modification of the receptors within T-cells or other cellular therapies may not produce the anticipated enhancements in activity. For example, there is a potential risk that, given that the TCR chains in our SPEAR T-cells are produced separately and then assembled within patient T-cells into full TCRs, the TCR chains from both transduced and naturally occurring T-cells could be assembled into an unintended end TCR due to mispairing of TCR chains, which could create unknown recognition and cross-reactivity problems within patients. Although this phenomenon has not been reported in humans, it remains a theoretical risk for our SPEAR T-cells and other similar cell therapies and is still being studied and investigated. This could delay regulatory approval, if any, for the relevant cell therapy. To the extent that any mispairing is identified, either in our or our competitors' clinical trials, additional investment may be required in order to modify relevant cell therapies and to further assess and validate the risk of such mispairing to patients. Following modification of the relevant SPEAR T-cell or other cell therapy, such modified cell therapy may not remain suitable for patient treatment and may not eliminate the risk of mispairing of TCR chains and regulatory approval may not be obtained on a timely basis or at all in relation to such modified cell therapy. The occurrence of such events would significantly harm our business, prospects, financial condition and results of operations.

We may not be able to identify and validate additional target peptides or isolate and develop affinity-enhanced TCRs or other cell therapy candidates that are suitable for validation and further development.

The success of our cell therapies depends on both the identification of target peptides presented on cancer cells, which can be bound by our cell therapy products, and isolation and affinity enhancement of receptors including TCRs, which can be used to treat patients if regulatory approval is obtained. Any failure to identify and validate further target peptides will reduce the number of potential cell therapies that we can successfully develop, which in turn will reduce the commercial opportunities available to us and increase our reliance on our existing SPEAR T-cells. Delays in our ability to identify and develop target peptides and cell therapies, including as caused by COVID-19 or similar pandemics, may also impact our ability to progress development of programs and obtain additional funds to support our business.

We may not to develop new cell therapy candidates for which the safety and efficacy profiles enable progression to and through preclinical testing and into clinical development. Failure to identify further candidates for progression into preclinical testing and clinical programs will significantly impact our pipeline of cell therapies and also increase our reliance on the SPEAR T-cells currently in clinical development. If resources become limited or if we fail to identify suitable target peptides, receptors including TCRs or affinity-enhanced receptors, our ability to submit INDs for further cell therapies may be delayed or never realized, which would have a materially adverse effect on our business.

Development of an off-the-shelf cell therapy takes a considerable amount of time and such development may not be successful.

We have a platform process which may enable us to treat patient populations with an off-the-shelf product. We have entered into an alliance with Universal Cells, Inc. to further develop that platform process. However, our research program or the research program with Universal Cells, Inc. may not be successful, might not be carried out within the timescales currently anticipated, or even if successful might not result in a cell therapy that can be used to treat patients or achieve a profitable return on investment. In particular the various cell lines developed during this process will need to be properly characterized and produced in accordance with regulatory requirements and this development process can take a significant amount of time and resource to ensure that any process or cell lines can be used for the production of clinical stage and ultimately commercial stage products. It is not at this time whether the cell therapy candidates resulting from the process will have a similar profile of activity to our existing cell therapy products or whether such cell therapy candidates will be safe to administer to patients. Delays may occur at any part of the process and results obtained during development may necessitate a requirement to repeat or modify steps in the process.

Risks Related to the Manufacture and Supply of Our Cell Therapies

Manufacturing and supply of cell therapies is complex and if we encounter any difficulties in manufacture or supply of cell therapies our ability to provide supply of our cell therapies for clinical trials or for commercial purposes could be delayed or stopped.

The process of manufacturing and administering cell therapies is complex and highly regulated. The manufacture of cell therapies requires the harvesting of white blood cells from the patient, isolating certain T-cells from these white blood cells, combining patient T-cells with our lentiviral delivery vector through a process known as transduction, expanding the transduced T-cells to obtain the desired dose, and ultimately infusing the modified T-cells back into the patient. As a result of the complexities, our manufacturing and supply costs are likely to be higher than those at more traditional manufacturing processes and the manufacturing process is less reliable and more difficult to reproduce.

Delays or failures in the manufacture of cell therapies (whether by us, any collaborator or our third party contract manufacturers) can result in a patient being unable to receive their cell therapy or a requirement to re-manufacture which itself then causes delays in manufacture for other patients. Any delay or failure or inability to manufacture on a timely basis can adversely affect a patient's outcomes and delay the timelines for our clinical trials. Such delays or failure or inability to manufacture (including as a result of the impact of the COVID-19 pandemic) can result from:

- a failure in the manufacturing process itself for example, by an error in manufacturing process (whether by us or our third party contract manufacturing organization), equipment or reagent failure, failure in any step of the manufacturing process, failure to maintain a GMP environment, failure in quality systems applicable to manufacture, sterility failures, contamination during process;

- a lack of reliability or reproducibility in the manufacturing process itself leading to variability in end manufacture of cell therapy. Should the process be unreliable, the relevant regulatory agency (such as the FDA in the U.S.) may place a hold on a clinical trial or request further information on the process which could in turn result in delays to the clinical trials;

- variations in patient starting material or apheresis product resulting in less product than expected or product which is not viable, or which cannot be used to successfully manufacture a cell therapy;

- product loss or failure due to logistical issues including issues associated with the differences between patients' white blood cells or characteristics, interruptions to process, contamination, failure to supply patient apheresis material within required timescales (for example, as a result of an import or export hold-up) or supplier error;

- inability to have enough manufacturing slots (including those at our Navy Yard facility) to manufacture cell therapies for patients as and when those patients require manufacture;

- inability to procure starting materials or to manufacture starting materials (including at our U.K. vector facility), for example, vector required for SPEAR T-cell manufacture including as a result of the COVID-19 outbreak;

- loss of or close-down of any manufacturing facility used in the manufacture of our cell therapies. For example, we will be manufacturing cell therapies at our Navy Yard manufacturing facility. Should there be a contamination event at the facility resulting in the close-down of that facility or a COVID-19 outbreak preventing workers from attending at the facility, it would not be possible to find alternative manufacturing capability for these cell therapies within the timescales required for ongoing clinical trials. In addition, as with many pharmaceutical manufacturing facilities, the facility will have periods of time within which it cannot be used for manufacture of patient product to enable routine checks to be performed on the facility;

- loss or contamination of patient starting material, requiring the starting material to be obtained again from the patient or the manufacturing process to be re-started;

- a requirement to modify or make changes to any manufacturing process. Such changes may additionally require comparability testing which then may reduce the amount of manufacturing slots available for manufacture of our cell therapies. Delays in our ability to make the required modifications or perform any required comparability testing within currently anticipated timeframes or that such modifications or comparability testing, when made, will obtain regulatory approval or that the new processes or modified processes will successfully be transferred to the third party contract suppliers within currently anticipated timeframes can also impact timelines for manufacture;

- reduction or loss of the staff resources required to manufacture our cell therapies at our facilities or those of our CMOs;

- allocation of the resources, materials, and services of any collaborator or our third party contract manufacturers away from our cell therapy programs, for example, to utilize such assets on the research, development and manufacture of COVID-19 vaccines or therapies;

- reduction in available workforce to perform manufacturing processes, for example, as a result of a COVID-19 outbreak or workforce exhibiting potential COVID-19 symptoms, and pending receipt of test results for COVID-19 infection;

- increased country-specific requirements. For example, our current manufacturing site is in the United States and this means that for patients outside of the U.S. there is a need to transfer patient specific apheresis material from clinical sites in Europe to the manufacturer in the U.S., for the patient product to be converted into our end cell therapy product, for that product to be released for use in Europe and then for that cell therapy product to be transported back to the site in Europe for administration to the patient. The supply and manufacturing chain required to achieve this is very complex and could be subject to failures at any point; and

- changes in the manufacturing and supply process. As our cell therapies progress through preclinical programs and clinical trials towards approval and commercialization, it is expected that various aspects of the manufacturing and administration process will be altered in an effort to optimize processes and results. We have already identified some improvements to our manufacturing and administration processes, but these changes may not achieve the intended objectives, may not be transferable to third parties or able to be used at larger scales and could cause our cell therapies to perform differently or affect the results of planned clinical trials or other future clinical trials. Any changes to the manufacturing process may require amendments to be made to regulatory applications or comparability tests to be conducted which can further delay timeframes. If cell therapies manufactured under the new process have a worse safety or efficacy profile than the prior investigational product or the process is less reproducible than the previous process, we may need to re-evaluate the use of that manufacturing process, which could significantly delay or even result in the halting of our clinical trials.

We have insurance to cover certain business interruption events which is capped at £10 million in the U.K. and $5 million in the U.S. However, because our level of insurance is capped, it may be insufficient to fully compensate us if any of these events were to occur in the future.

Our manufacturing process needs to comply with regulations and any failure to comply with relevant regulations could result in delays in or termination of our clinical programs and suspension or withdrawal of any regulatory approvals.

In order to commercially produce our products, we will need to comply with the FDA's and other regulatory authorities' cGMP requirements at our Navy Yard facility, vector facility and third party contract manufacturing facilities. We may encounter difficulties in achieving quality control and quality assurance and may experience shortages in qualified personnel. We and our third party contract manufacturers are subject to inspections by the FDA and comparable agencies in other jurisdictions to confirm compliance with applicable regulatory requirements once the process has been approved. Any failure to follow cGMP or other regulatory requirements, reliably manufacture product or delay, interruption or other issues that arise in the manufacture, fill- finish, packaging, or storage of our cell therapies as a result of a failure of our facilities or the facilities or operations of third parties to comply with regulatory requirements or pass any regulatory authority inspection could significantly impair our ability to develop and commercialize our cell therapies, including leading to significant delays in the availability of our cell therapies for our clinical trials or the termination of or suspension of a clinical trial, or the delay or prevention of a filing or approval of marketing authorization applications for our cell therapies. Significant non-compliance could also result in the imposition of sanctions, including warning letters, fines, injunctions, civil penalties, failure of regulatory authorities to grant marketing approvals for our cell therapies, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of products, operating restrictions and criminal prosecutions, any of which could damage our reputation and our business.

Given we now manufacture cell therapies at our own U.S. manufacturing facility and vector at a dedicated U.K. vector facility, regulatory authorities might raise non-compliance issues or require us to make changes to the way in which we operate either facility. This may result in a delay in our ability to manufacture cell therapies at our own facility or in our ability to supply vector material for use in the manufacturing process. In addition, any cell therapy or vector produced in any of our facilities might not be able to meet regulatory requirements and we may be unable to recruit and maintain sufficient staff to enable manufacture of products within required timescales. Resourcing of cell manufacturing facilities is increasingly competitive, which may restrict the number of available skilled operators which can be recruited at our manufacturing facilities. Any failure to meet regulatory requirements or produce cell therapies and vector according to regulatory requirements could result in delays to our clinical programs, potential side effects and even fatalities to patients and may result in withdrawal of regulatory approval for our manufacturing facility.

We have our own manufacturing capabilities which may result in increased costs being incurred by us

During 2017, we opened a manufacturing facility for our SPEAR T-cell products within our Navy Yard facility in Philadelphia, Pennsylvania and have started manufacturing SPEAR T-cells for use in our clinical trials. Regulatory

authorities, in particular the FDA, might not continue to approve our ability to manufacture SPEAR T-cells or other cell therapies at the Navy Yard facility.

Our ability to successfully manufacture our own cell therapies at the Navy Yard facility within a reasonable period of time and within currently projected costs is dependent on a number of factors including:

- our ability to recruit the required employees at a suitable level and experience and within required timescales and to maintain employment of such required employees;
- our ability to obtain regulatory approval for the facility and for the manufacture of cell therapies at the facility and to satisfy regulatory authorities on an ongoing basis;
- our ability to manufacture cell therapies reliably and reproducibly and to timescales sufficient to support required patient administration;
- our ability to manufacture cell therapies in compliance with the applicable regulatory requirements, including requirements applicable in both the United States and EU;
- our ability to develop internal quality controls and processes sufficient to enable manufacture and supply of cell therapies at our Navy Yard facility;
- our ability to establish comparability with currently used manufacturing processes and for such comparability data to be accepted by the appropriate regulatory authorities; and
- our ability to be able to fund the ongoing development including equipment requirements necessary for successful manufacture of cell therapies at our facility.

Any delay or failure in manufacture at our facility could result in delays to the supply of cell therapies for our clinical programs. Should any of our third party manufacturers also cease to be able to supply cell therapies at a time where our own manufacturing facility is unable to produce cell therapies for use in our clinical programs or is unable to produce cell therapies at the required level, then we will be unable to support such clinical programs until alternative manufacturing capability is secured.

Our autologous cell therapy products are patient specific and we need to ensure that the correct product is administered to the correct patient.

Administration of cell therapies is patient specific. The process requires careful handling of patient-specific products and fail-safe tracking to ensure that the tracking process is without error and that patient samples are tracked from patient removal, through manufacturing and re-administration to the same patient. While such mechanisms are in place, should the tracking process fail, whether at our own facility, a third party facility or at any point in the manufacturing and supply process, a patient could receive another patient's T-cells resulting in significant toxicity and potentially patient fatality. We will need to invest in enhanced systems, such as bar coding, to further ensure fail safe tracking. There is always a risk of a failure in any such system. Inability to develop or adopt an acceptable fail-safe tracking methodology and handling regime may delay or prevent us from receiving regulatory approval and/or result in significant toxicity and potentially patient fatality if a patient receives another patient's T-cells. This risk may be increased where cell therapies are used in clinical programs that we do not control or sponsor and, should an error be made in the administration of our cell therapies in such clinical programs, this could affect the steps required in our own clinical programs and manufacturing process requiring the addition of further tracking mechanisms to ensure fail-safe tracking. The tracking systems required to further ensure safe patient administration may also require increased administration to satisfy other regulatory requirements, for example, data protection requirements in Europe. The need to ensure tracking systems are adequate and to comply with these additional regulatory requirements may result in delay to the start of trials or the need to obtain additional regulatory licenses or consents prior to starting such trials.

Risks Related to the COVID-19 pandemic

The outbreak of COVID-19 or any other similar pandemic may materially delay development of our cell therapies and our ability to obtain additional financing.

The outbreak of coronavirus, SARS-CoV-2 ("COVID-19") has developed into a global pandemic, spreading to most regions of the world including the United States, the United Kingdom and areas of Europe where we have facilities or ongoing clinical trials. Our business is affected in the following ways:

- We have been required to introduce a work from home policy for at least some of our work force, with our facilities remaining open to support those activities that cannot be conducted from home, in particular the manufacture of cell therapies, treatment of clinical patients and critical research and development activities. The requirement to stay at home and the control measures required to mitigate risks to our work force including social distancing requirements limits effectiveness of our work force, the numbers of individuals that can work at the facility at any one time and is resulting in delays to performance of manufacturing, development and research activities. Increased working from home also impacts normal communications and may increase the cyber security risk or create data accessibility concerns.
- Any outbreak of COVID-19 at any of our facilities could result in manufacturing operations or facilities being closed or necessitate a further reduction in the work we are able to perform at those facilities which in turn could result in a delay to the treatment of patients and a delay in our research and development programs.
- Many clinical sites have diverted resources away from the performance of clinical trials or have imposed restrictions on their ability to perform clinical trials, particularly where those clinical trials may increase the risk to the patients being treated. This has resulted in many of our clinical trial sites choosing to delay treatment of cell therapy patients and not enrolling or screening patients until the situation improves which has inevitably delayed our ability to obtain data from our clinical trials and will extend the time required to complete enrollment in current clinical trials.
- We have provided our clinical sites with guidance in relation to the treatment of patients during the COVID-19 pandemic, however, there is an increased risk to our patients as a result of the pandemic including as a result of infection with COVID-19 whilst they are being treated in any of our clinical trials or are attending at clinical sites for routine scans or treatments. This risk is increased by the requirement in our clinical trial protocols to treat patients with a lymphodepletion regimen which leaves patients' immune-compromised for a period of time. This increased risk may delay treatment of patients or delay recruitment of patients into our clinical trials.
- The current restrictions in place as a result of COVID-19 will result in interruption to our ability and that of our clinical sites to conduct clinical trial activities in accordance with the applicable clinical trial protocol or other regulatory requirements including monitoring requirements, timing of patient visits, ability to follow patients after they have received treatment, ability to perform scans and patient assessments. Deviations and changes to clinical trial protocols may be required in order to address the interruptions caused by COVID-19. Inability to perform clinical trials in accordance with regulatory requirements may impact a later ability to obtain regulatory approval in relation to our cell therapies or may delay our ability to obtain such regulatory approval.
- Many of the third parties we rely on for our development of cell therapies have also been impacted by the COVID-19 pandemic. Whilst we have not seen any material impact on the ability of third parties to supply goods or services to us, we anticipate delays with the supply of certain raw materials and consumables required for manufacturing and research activities as a result of diversion of those materials and consumables to high priority vaccine development requirements. Any delays may impact our ability to manufacture product for our clinical trials and may cause delay to our research and preclinical development projects.
- Given third party service providers are subject to restrictions on resources as a result of the COVID-19 pandemic, we may see delays in the provision of their services to us. Where these delays are in critical areas of the business for example, vector manufacturing, plasmid manufacturing which supports our ability to manufacture and supply cell therapies, we may see an impact on our ability to provide cell therapies for patients in our clinical trials.
- Regulatory authorities have in certain cases postponed certain activities including surveillance inspections of manufacturing facilities. We also anticipate that there could be delays from regulatory authorities in relation not any requests that are made given that applications and authorizations relevant to COVID-19 vaccination will be prioritized. If a prolonged government shutdown occurs, or if global health concerns continue to prevent the regulatory authorities from conducting their regular inspections, reviews or other regulatory activities, it could

impact the ability of the FDA or other regulatory authorities to timely review and process our regulatory submissions.

The COVID-19 pandemic continues to rapidly evolve and the extent to which it may impact our future business is highly uncertain and difficult to predict. The impact on global health systems, the life sciences industry more generally or the economy as a whole is not yet known. Depending on the length and progression of such pandemic, we may experience disruptions that would significantly impact our business.

Risks Related to the Commercialization and Marketing of Our Cell Therapies

We may not be able to obtain marketing approvals of our cell therapies as broadly as planned or on the timescales we plan.

The process of obtaining marketing approvals, both in the United States and in countries outside of the United States, is expensive, may take many years and can vary substantially based upon a variety of factors, including the type, complexity and novelty of the cell therapies involved. For example, clinical trials may be required in pediatric populations before any marketing approval can be obtained, which can be time consuming and costly. Changes in marketing approval policies during the development period, changes in or the enactment of additional statutes or regulations, or changes in regulatory review for each submitted product application, may cause delays in the approval or rejection of an application. The FDA and foreign regulatory authorities also have substantial discretion in the drug and biologics approval process. The number and types of preclinical programs and clinical trials that will be required for regulatory approval varies depending on the cell therapy, the disease or condition that the cell therapy is designed to address, and the regulations applicable to any particular cell therapy. Approval policies, regulations or the type and amount of clinical data necessary to gain approval may change during the course of a cell therapy's clinical development and may vary among jurisdictions, and there may be varying interpretations of data obtained from preclinical programs or clinical trials, either of which may cause delays or limitations in the approval or the decision not to approve an application.

In addition, approval of our cell therapies could be delayed or refused for many reasons, including the following:

- the FDA or comparable foreign regulatory authorities may disagree with the design or implementation of our or our collaborators' clinical trials;
- we or our collaborators may be unable to demonstrate to the satisfaction of the FDA or comparable foreign regulatory authorities that our SPEAR T-cells have a beneficial risk: benefit profile for any of their proposed indications;
- the results of clinical trials may not meet the level of statistical significance required by the FDA or comparable foreign regulatory authorities for approval;
- the FDA or comparable foreign regulatory authorities may disagree with our interpretation of data from preclinical programs or clinical trials;
- the data collected from clinical trials of our cell therapies may not be sufficient to the satisfaction of the FDA or comparable foreign regulatory authorities to support the submission of a BLA (including as a result of impacts caused by the COVID-19 outbreak) or other comparable submission in foreign jurisdictions or to obtain regulatory approval in the United States or elsewhere;
- our manufacturing processes or facilities or those of the third-party manufacturers we use may not be adequate to support approval of our cell therapies;

- the approval policies or regulations of the FDA or comparable foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval

- requirement for additional clinical trials ahead of the grant of any regulatory approval;

- requirement for further development or characterization of processes. For example, the potency of our cell therapies will need to be assessed by a potency assay and although we believe that our assay will be satisfactory to assess potency, the regulatory authorities may disagree which will necessitate development of a further assay or process;

- third parties we rely on being unable to meet regulatory requirements or provide information or documentation to support regulatory applications or questions from regulatory authorities. For example, we rely on a third party vector manufacturer who will be required to provide certain information to enable us to file the BLA;

- access to an approved companion diagnostic to support the launch of any cell therapy. Commercialization of our cell therapies will require approval for and access to a companion diagnostic. We are reliant on a third party for development of our companion diagnostic assay and there is no certainty that development will be possible in the timelines we require or that end regulatory approval will be available in the timelines we require; and

- data from clinical trials sponsored by third party competitors for similar cell therapy products which might impact a regulators view of the safety or efficacy profile or our cell therapies or the grant of marketing approvals to competitors ahead of any application we make for marketing approval which may preclude our ability to obtain marketing approval in the same indication unless we can show increased efficacy.

Our estimates of the patient population that may be treated by our cell therapies is based on estimates informed by published information. This information may not be accurate in relation to our cell therapies and our estimates of potential patient populations could therefore be much higher or lower than those that are actually available or possible for commercialization. In addition, these estimates are based on assumptions about the number of eligible patients which have the peptide and HLA type targeted by the applicable cell therapy. Different patient populations will present different peptides according to their specific HLA type. HLA types vary across the patient population and, due to this variability, any therapy will initially only be suitable for treatment of patients expressing the particular HLA type presenting the relevant peptide.

Manufacture of a commercially available cell therapy will require an increase in manufacturing capacity and it is not currently known whether this will be possible within the timescales planned for commercialization.

Subject to the successful conclusion of the SPEARHEAD-1 study, which was fully enrolled in 2020, and approval of a BLA by the FDA, we plan to commercially launch ADP-A2M4 in 2022 for patients with synovial sarcoma in the U.S. Manufacture of a commercial cell therapy will require an increase in manufacturing capacity and further development of processes for manufacture and supply to support commercialization. Such increase in manufacturing and development will require significant additional resources and may take considerable time, costs and effort to facilitate.

Development of a commercially available cell therapy process is difficult and we may be unable to develop the process on currently anticipated timescales or at all.

Developing a commercially viable process is a difficult and uncertain task, and there are risks associated with scaling to the level required for advanced clinical trials or commercialization, including, among others, increased costs, potential problems with process scale-out, process reproducibility, stability issues, lot consistency, loss of product, and timely availability of reagents or raw materials or contract manufacturing services or facilities. A failure to develop such a commercially viable process within anticipated timescales may prevent or delay progression of our T-cell therapies into pivotal clinical trials and ultimately commercialization. This failure to develop a timely process may result from, for

example, inability to scale-up within required timelines, inability to put in place the required processes and control measures for a commercial process or failure of third parties (including vector suppliers) to put in place adequate facilities or processes to enable commercial manufacture. In addition, we may ultimately be unable to reduce the expenses associated with our SPEAR T-cells to levels that will allow us to achieve a profitable return on investment.

Following grant of marketing authorization we will be subject to ongoing regulatory obligations, which may result in significant additional expense as well as significant penalties if we fail to comply with regulatory requirements or experience unanticipated problems with our cell therapies.

If the FDA or a comparable foreign regulatory authority approves our cell therapies, the manufacturing processes, labeling, packaging, distribution, adverse event reporting, storage, advertising, promotion, import, export and recordkeeping for our cell therapies will be subject to extensive and ongoing regulatory requirements. These requirements include submissions of safety and other post-marketing information and reports, registration and listing, as well as continued compliance with cGMPs and cGCPs for any clinical trials that we conduct post-approval. We and our contract manufacturers will be subject to periodic unannounced inspections by the FDA to monitor and ensure compliance with cGMPs. We must also comply with requirements concerning advertising and promotion for any cell therapies for which we obtain marketing approval. Promotional communications with respect to prescription drugs, including biologics, are subject to a variety of legal and regulatory restrictions and must be consistent with the information in the product's approved labeling. Thus, we will not be able to promote any cell therapies we develop for indications or uses for which they are not approved.

We may not be able to develop or obtain approval for the analytical assays and companion diagnostics required for commercialization of our cell therapies including ADP-A2M4.

Administration of our cell therapies requires the use of an immuno-chemistry or other screening assay in which patients are screened for the presence of the cancer peptide targeted by our cell therapies. For example, in our ADP-A2M4 trial patients are screened for the presence of MAGE-A4. This assay requires the identification of suitable antibodies which can be used to identify the presence of the relevant target cancer peptide.

If safe and effective use of a biologic product depends on an *in vitro* diagnostic, such as a test to detect patients with a particular cancer peptide, then the FDA generally requires approval or clearance of the diagnostic, known as a companion diagnostic, concurrently with approval of the therapeutic product. To date, the FDA has generally required *in vitro* companion diagnostics that are intended for use in selection of patients who will respond to cancer treatment to obtain a pre-market approval, or PMA, which can take up to several years, for that diagnostic approval or clearance to occur simultaneously with approval of the biologic product.

We expect that, for all our cell therapies, the FDA and similar regulatory authorities outside of the United States will require the development and regulatory approval of a companion diagnostic assay as a condition to approval. We also expect that the FDA may require PMA supplemental approvals for use of that same companion diagnostic as a condition of approval of additional cell therapies. We do not have experience or capabilities in developing or commercializing these companion diagnostics and plan to rely in large part on third parties to perform these functions.

If we or our collaborators, or any third parties that we engage to assist us, are unable to successfully develop companion diagnostic assays for use with any SPEAR T-cells, or are unable to obtain regulatory approval or experience delays in either development or obtaining regulatory approval (including as a result of the impact of the COVID-19 pandemic), we may be unable to identify patients with the specific profile targeted by the relevant cell therapy for enrollment in our clinical trials. In addition, delay in development and approval of any companion diagnostic (including as a result of the impact of the COVID-19 pandemic) may also impact our ability to obtain a marketing approval for the therapeutic product and to commercialize the therapeutic product. For example, delays in the development of a companion diagnostic for detection of the MAGE-A4 antigen in synovial sarcoma and MRCLS indications may result in delays to any marketing approval for ADP-A2M4 in those indications. Accordingly, further investment may be required to further develop or obtain the required regulatory approval for the relevant companion diagnostic assay, which would delay or substantially impact our ability or our collaborators' ability to conduct further clinical trials or obtain regulatory approval.

Obtaining and maintaining regulatory approval of our cell therapies in one jurisdiction does not mean that we will be successful in obtaining regulatory approval of our cell therapies in other jurisdictions.

We or our collaborators may submit marketing authorization applications in multiple countries. Regulatory authorities in different countries have different requirements for approval of cell therapies with which we must comply prior to marketing in those jurisdictions. Obtaining foreign regulatory approvals and compliance with foreign regulatory requirements could result in significant delays, difficulties and costs for us and could delay or prevent the introduction of our cell therapies in certain countries. For example, in certain jurisdictions additional clinical trials in different patient populations may be required. If we fail to comply with the regulatory requirements in international markets and/or receive applicable marketing approvals, our target market will be reduced and our ability to realize the full market potential of our cell therapies will be harmed.

The market opportunities for cell therapies may be limited to those patients who have failed prior treatments.

Initial approval of new cancer therapies may be limited to what is referred to as third-line use. Third-line treatment is the third type of treatment following initial, or first-line, treatment and second-line treatment, which is given when first-line treatment does not work or ceases working. However, cancer therapies may be used from the point at which cancer is detected in its early stages (first line) onward. Whenever the first-line therapy fails or the process is unsuccessful, second-line therapy may be administered, such as additional rounds of chemotherapy, radiation and antibody drugs or a combination of these treatments. If second-line therapies fail, patients are generally given the opportunity to receive third-line therapies, which tend to be more novel therapies. Our current clinical trials generally require that patients have received chemotherapy prior to enrollment and are primarily directed to third-line use. Depending upon the outcome of current trials, we or our collaborators may conduct future clinical trials using cell therapies for first-line therapy, but clinical trials might not be approved or if approved such trials might not lead to regulatory approval. If our cell therapies only receive third-line or second-line approval, the patient population into which we or our collaborators can supply our cell therapies will be significantly reduced, which may limit commercial opportunities.

In addition, our patient population may be derived from those who have previously failed checkpoint therapy, which may result in tumor resistance mechanisms which also impart resistance to our cell therapies and hence may reduce the effectiveness of our cell therapies.

We currently have a limited marketing and sales organization and have no experience in marketing products.

As an organization, we have never marketed or supplied commercial pharmaceutical or biologic products or therapies. We will need to transition from a company with a research and development focus to a company capable of supporting commercial activities. We may not be successful in such a transition.

We do not currently have a sales force and will need to hire and develop the sales function and associated support network if we are to supply cell therapies on a commercial basis. As our cell therapies proceed through clinical programs, we intend to develop an in-house marketing organization and sales force, which will require significant capital expenditures, management resources, and time. We will have to compete with other pharmaceutical and biotechnology companies to recruit, hire, train, and retain suitably skilled and experienced marketing and sales personnel. This process may result in additional delays in bringing our cell therapies to market or in certain cases require us to enter into alliances with third parties in order to do so. However, there can be no assurance that we will be able to establish or maintain such collaborative arrangements, or even if we are able to do so, that they will result in effective sales forces. Any revenue we receive will depend upon the efforts of such third parties, which may not be successful. We may have little or no control over the marketing and sales efforts of such third parties, and our revenue from cell therapy sales may be lower than if we had commercialized our cell therapies ourselves. We also face significant competition in our search for third parties to assist us with the sales and marketing efforts of our cell therapies. Such competition may also result in delay or inability to supply cell therapies to particular countries or territories in the world which in turn will restrict the revenue that can be obtained from any cell therapy. Any inability on our part to develop in-house sales and commercial distribution capabilities or to establish and maintain relationships with third-party collaborators that can successfully

commercialize any cell therapy in the United States or elsewhere will have a materially adverse effect on our business and results of operations.

If product liability lawsuits are brought against us, we may incur substantial liabilities and may be required to limit commercialization of our cell therapies.

We face an inherent risk of product liability as a result of the clinical testing of our cell therapies and our ongoing manufacture of cell therapies and will face an even greater risk upon any commercialization. For example, we may be sued if any of our SPEAR T-cells causes or is perceived to cause injury or is found to be otherwise unsuitable during clinical testing, manufacturing, marketing or sale. Any such product liability claims may include allegations of defects in manufacturing, defects in design, a failure to warn of dangers inherent in the product, negligence, strict liability or a breach of warranties. Claims could also be asserted under state consumer protection acts. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of our cell therapies. Even a successful defense would require significant financial and management resources and, regardless of the merits or eventual outcome, liability claims may result in:

- decreased demand for our cell therapies;
- injury to our reputation;
- withdrawal of clinical trial participants;
- initiation of investigations by regulators;
- costs to defend the related litigation;
- a diversion of management's time and our resources;
- substantial monetary awards to trial participants or patients;
- product recalls, withdrawals or labeling, marketing or promotional restrictions;
- loss of revenue;
- exhaustion of any available insurance and our capital resources;
- the inability to commercialize our cell therapies; and
- a decline in our share price.

Our inability to obtain sufficient product liability insurance at an acceptable price to protect against potential product liability claims could also prevent or inhibit the commercialization of our cell therapies. We currently hold £15.0 million in clinical trial insurance coverage in the aggregate per year, with a per trial limit of £5.0 million. We also hold products and services liability insurance capped at £3.0 million in the aggregate and public liability insurance capped at £5.0 million per occurrence. These levels may not be adequate to cover all liabilities that we may incur. We may also need to increase our insurance coverage as we expand the scope of our clinical trials and commercialize any of our cell therapies. In addition, insurance coverage is increasingly expensive. We may not be able to maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liability that may arise.

Even if we or our collaborators obtain regulatory approval of our cell therapies, they may not gain market acceptance among physicians, patients, hospitals, cancer treatment centers and others in the medical community.

The use of engineered T-cells and cell therapies more generally as a potential cancer treatment is a recent development and may not become broadly accepted by physicians, patients, hospitals, cancer treatment centers and others in the medical community. Additional factors will influence whether SPEAR T-cells are accepted in the market, including:

- the clinical indications for which our cell therapies are approved;
- physicians, hospitals, cancer treatment centers and patients considering the SPEAR T-cells as a safe and effective treatment;
- the potential and perceived advantages of our cell therapies over alternative treatments;
- the prevalence and severity of any side effects;
- product labeling or prescribing information requirements of the FDA or other regulatory authorities;
- limitations or warnings contained in the labeling approved by the FDA;
- the timing of market introduction of our cell therapies as well as competitive products;
- the cost of treatment in relation to alternative treatments;
- the availability of coverage, adequate reimbursement and pricing by third-party payors and government authorities;
- the willingness of patients to pay for cell therapies on an out-of-pocket basis in the absence of coverage by third-party payors and government authorities;
- relative convenience and ease of administration as compared to alternative treatments and competitive therapies; and
- the effectiveness of our sales and marketing efforts.

In addition, although we are not utilizing embryonic stem cells or replication competent vectors in our manufacturing process, adverse publicity due to the ethical and social controversies surrounding the therapeutic use of such technologies, and reported side effects from any clinical trials using these technologies or the failure of such trials to demonstrate that these therapies are safe and effective may limit market acceptance of cell therapies including SPEAR T-cells. If our cell therapies are approved but fail to achieve market acceptance among physicians, patients, hospitals, cancer treatment centers or others in the medical community, we or our collaborators will not be able to generate significant revenue.

Even if our cell therapies achieve market acceptance, we or our collaborators may not be able to maintain that market acceptance over time if new products or technologies are introduced that are more favorably received than our cell therapies, are more cost effective or render our cell therapies obsolete.

Coverage and reimbursement may be limited or unavailable in certain market segments for cell therapies.

Successful sales of cell therapies, if approved, depend on the availability of coverage and adequate reimbursement from third-party payors. In addition, because cell therapies represent new approaches to the treatment of cancer, we cannot accurately estimate the potential revenue from cell therapies. Patients who are provided medical

treatment for their conditions generally rely on third-party payors to reimburse all or part of the costs associated with their treatment. Obtaining coverage and adequate reimbursement from governmental healthcare programs, such as Medicare and Medicaid, and commercial payors is critical to new product acceptance.

Government authorities and third-party payors, such as private health insurers and health maintenance organizations, decide which drugs and treatments they will cover and the amount of reimbursement. Reimbursement by a third-party payor may depend upon a number of factors, including, but not limited to, the third-party payor's determination that use of a product is:

- a covered benefit under its health plan;
- safe, effective and medically necessary;
- appropriate for the specific patient;
- cost-effective; and
- neither experimental nor investigational.

Obtaining coverage and reimbursement approval of a cell therapy from a government or other third-party payor is a time-consuming and costly process which could require us to provide to the payor supporting scientific, clinical and cost-effectiveness data for the use of our products. Even if we obtain coverage for a given cell therapy, the resulting reimbursement payment rates might not be adequate for us to achieve or sustain profitability or may require co-payments that patients find unacceptably high. Patients are unlikely to use cell therapies unless coverage is provided and reimbursement is adequate to cover a significant portion of the cost of the cell therapy.

In the United States, no uniform policy of coverage and reimbursement for products exists among third-party payors. Therefore, coverage and reimbursement for products can differ significantly from payor to payor. As a result, the coverage determination process is often a time-consuming and costly process that will require us to provide scientific and clinical support for the use of our cell therapies to each payor separately, with no assurance that coverage and adequate reimbursement will be obtained.

In some foreign countries, particularly those in the EU, the pricing of biologics is subject to governmental control. In these countries, pricing negotiations with governmental authorities can take considerable time after obtaining marketing approval of a cell therapy. In addition, market acceptance and sales of our cell therapies will depend significantly on the availability of coverage and adequate reimbursement from third-party payors for the cell therapies and may be affected by existing and future health care reform measures.

There have been, and likely will continue to be, legislative and regulatory proposals at the foreign, national and state levels directed at broadening the availability of healthcare and containing or lowering the cost of healthcare. We cannot predict the initiatives that may be adopted in the future. The continuing efforts of the government, insurance companies, managed care organizations and other payors of healthcare services to contain or reduce costs of healthcare and/or impose price controls may adversely affect:

- the demand for cell therapies, if we or our collaborators obtain regulatory approval;
- our or our collaborators' ability to set a price that is fair for our cell therapies;
- our or our collaborators' ability to generate revenue and achieve or maintain profitability;
- the level of taxes that we are required to pay; and
- the availability of capital.

Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors, which may adversely affect our future profitability.

Our cell therapies for which we intend to seek approval as biologic products may face competition sooner than anticipated.

The enactment of the Biologics Price Competition and Innovation Act of 2009, or BPCIA, created an abbreviated pathway for the approval of biosimilar and interchangeable biological products. The abbreviated regulatory pathway establishes legal authority for the FDA to review and approve biosimilar biologics, including the possible designation of a biosimilar as "interchangeable" based on its similarity to an existing reference product. Under the BPCIA, an application for a biosimilar product cannot be approved by the FDA until 12 years after the original branded product or "reference" is approved under a BLA. On March 6, 2015, the FDA approved the first biosimilar product under the BPCIA. However, the law is complex and is still being interpreted and implemented by the FDA and as a result, its ultimate impact, implementation and meaning are subject to uncertainty. While it is uncertain when such processes intended to implement BPCIA may be fully adopted by the FDA, any such processes could have a material adverse effect on the future commercial prospects for our biological products.

There is a risk that the FDA will not consider our cell therapies to be reference products for competing products, potentially creating the opportunity for generic competition sooner than anticipated. Additionally, this period of regulatory exclusivity does not apply to companies pursuing regulatory approval via their own traditional BLA, rather than via the abbreviated pathway. Moreover, the extent to which a biosimilar, once approved, will be substituted for any one of our reference products in a way that is similar to traditional generic substitution for non-biological products is not yet clear, and will depend on a number of marketplace and regulatory factors that are still developing.

Foreign countries also have abbreviated regulatory pathways for biosimilars and hence even where the FDA does not approve a biosimilar biologic, a biosimilar could be approved using an abbreviated regulatory pathway in other markets where our cell therapies are approved and marketed.

Risks Related to Government Regulation

Regulatory authorities may impose a hold on our clinical trials.

A clinical trial may be suspended or terminated by us or a collaborator, IRBs for the institutions in which such trials are being conducted, the Data Monitoring Committee for such trial, or by the FDA or other regulatory authorities due to a number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial site by the FDA or other regulatory authorities resulting in the imposition of a clinical hold, unforeseen safety issues or adverse side effects, failure to demonstrate a benefit from using a cell therapy, changes in governmental regulations or administrative actions or lack of adequate funding to continue the clinical trial. If we or our collaborators experience termination of, or delays in the completion of, any clinical trial of our cell therapies, the commercial prospects for our cell therapies will be harmed, and our ability to generate product revenue will be delayed. In addition, any delays in completing our clinical trials will increase our costs, slow our product development and approval process and jeopardize our ability to commence product sales and generate revenue.

The FDA regulatory process can be difficult to predict, in particular whether for example, accelerated approval processes are available or further unanticipated clinical trials are required will depend on the data obtained in our ongoing clinical trials.

The regulatory approval process and the amount of time it takes us to obtain regulatory approvals for our cell therapies will depend on the data that are obtained in our ongoing clinical trials and in one or more future registration or pivotal clinical trials. We may attempt to seek approval on a per indication basis for our cell therapies on the basis of a single pivotal trial or on the basis of data from a Phase 2 trial. While the FDA requires in most cases two adequate and well-controlled pivotal clinical trials to demonstrate the efficacy of a product candidate, a single trial with other confirmatory evidence may be sufficient where the trial is a large multicenter trial demonstrating internal consistency

and a statistically very persuasive finding of a clinically meaningful effect on mortality, irreversible morbidity or prevention of a disease with a potentially serious outcome and confirmation of the result in a second trial would be practically or ethically difficult. Depending on the data we obtain, the FDA or other regulatory authorities may require additional clinical trials to be carried out or further patients to be treated prior to the granting of any regulatory approval for marketing of our cell therapies. It is difficult for us to predict with such a novel technology exactly what will be required by the regulatory authorities in order to take our cell therapies to market or the timeframes under which the relevant regulatory approvals can be obtained.

Obtaining and maintaining regulatory approval of our cell therapies in one jurisdiction does not mean that we will be successful in obtaining regulatory approval of our cell therapies in other jurisdictions.

Obtaining and maintaining regulatory approval of our cell therapies in one jurisdiction does not guarantee that we or our collaborators will be able to obtain or maintain regulatory approval in any other jurisdiction, while a failure or delay in obtaining regulatory approval in one jurisdiction may have a negative effect on the regulatory approval process in others. For example, even if the FDA grants marketing approval of a SPEAR T-cell, comparable regulatory authorities in foreign jurisdictions must also approve the manufacturing, marketing and promotion of the SPEAR T-cell in those countries. Approval procedures vary among jurisdictions and can involve requirements and administrative review periods different from, and greater than, those in the United States, including additional preclinical programs or clinical trials as clinical trials conducted in one jurisdiction may not be accepted by regulatory authorities in other jurisdictions. In many jurisdictions outside the United States, a cell therapy must be approved for reimbursement before it can be approved for sale in that jurisdiction. In some cases, the price that we or our collaborators intend to charge for our cell therapies is also subject to approval.

We may be unable to obtain breakthrough or similar designations for our cell therapies or maintain the benefits associated with such designations.

In 2012, the FDA established a breakthrough therapy designation which is intended to expedite the development and review of products that treat serious or life-threatening diseases when "preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development." The designation of a SPEAR T-cell as a breakthrough therapy provides potential benefits that include more frequent meetings with the FDA to discuss the development plan for the SPEAR T-cell and ensure collection of appropriate data needed to support approval; more frequent written correspondence from the FDA about things such as the design of the proposed clinical trials and use of biomarkers; intensive guidance on an efficient drug development program, beginning as early as Phase 1; organizational commitment involving senior managers; and eligibility for rolling review and priority review.

We have obtained RMAT designation (Regenerative Medicine Advanced Therapy designation) from the FDA for ADP-A2M4 for the treatment of synovial sarcoma. We may apply for similar status or accelerated programs in other countries and for other of our products and indications. However, given the novel nature of our cell therapies, it is difficult for us to predict whether the FDA or other regulatory authorities will approve such requests or what further clinical or other data may be required to support an application for such accelerated approval procedures.

Breakthrough therapy designation does not change the standards for product approval. Additionally, other treatments from competing companies may obtain the designations and impact our ability to develop and commercialize our SPEAR T-cells, which may adversely impact our business, financial condition or results of operation.

We may also seek accelerated approval under the FDA's fast track and accelerated approval programs, the FDA may approve a drug or biologic for a serious or life-threatening illness that provides meaningful therapeutic benefit to patients over existing treatments based upon a surrogate endpoint that is reasonably likely to predict clinical benefit, or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality, that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity, or prevalence of the condition and the availability or lack of alternative treatments. For drugs granted accelerated approval, post-marketing confirmatory trials have been required to describe the anticipated effect on irreversible morbidity or mortality or other clinical benefit. These confirmatory trials must be completed with due diligence. Moreover, the FDA

may withdraw approval of our cell therapy or indication approved under the accelerated approval pathway if, for example:

- the trial or trials required to verify the predicted clinical benefit of our cell therapy fail to verify such benefit or do not demonstrate sufficient clinical benefit to justify the risks associated with the drug;
- other evidence demonstrates that our cell therapy is not shown to be safe or effective under the conditions of use;
- we fail to conduct any required post approval trial of our cell therapy with due diligence; or
- we disseminate false or misleading promotional materials relating to the relevant cell therapy.

In Europe, the EMA has implemented the so-called "PRIME" (Priority Medicines) status in order support the development and accelerate the approval of complex innovative medicinal products addressing an unmet medical need. The PRIME status enables early dialogue with the relevant EMA scientific committees and, possibly, some payers; and thus reinforces the EMA's scientific and regulatory support. It also opens accelerated assessment of the marketing authorization application (150 days instead of 210 days). The PRIME status, which is decided by the EMA, is reserved to medicines that may benefit from accelerated assessment, i.e. medicines of major interest from a public health perspective, in particular from a therapeutic innovation perspective.

In 2020, the EMA granted access to the PRIME initiative to ADP-A2M4 for the treatment of certain patients with synovial sarcoma. We may apply for PRIME status for other of our cell therapy products. There can be no assurance that any application will be successful in obtaining PRIME status.

We will be subject to ongoing regulatory obligations and continued regulatory review, which may result in significant additional expense as well as significant penalties if we fail to comply with regulatory requirements or experience unanticipated problems with our cell therapies.

Any regulatory approvals that we receive for our cell therapies will require surveillance to monitor the safety and efficacy of the cell therapy. The FDA may also require a risk evaluation and mitigation strategy in order to approve our cell therapies, which could entail requirements for a medication guide, physician communication plans or additional elements to ensure safe use, such as restricted distribution methods, patient registries and other risk minimization tools.

Later discovery of previously unknown problems with our cell therapies, including adverse events of unanticipated severity or frequency, or with our third-party manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may result in, among other things:

- restrictions on our ability to conduct clinical trials, including full or partial clinical holds on ongoing or planned trials;
- restrictions on such products' manufacturing processes;
- restrictions on the marketing of a product;
- restrictions on product distribution;
- requirements to conduct post-marketing clinical trials;
- untitled or warning letters;
- withdrawal of the products from the market;

- refusal to approve pending applications or supplements to approved applications that we submit;
- recall of products;
- fines, restitution or disgorgement of profits or revenue;
- suspension or withdrawal of regulatory approvals;
- refusal to permit the import or export of our products;
- product seizure;
- injunctions;
- imposition of civil penalties; or
- criminal prosecution.

The FDA's and other regulatory authorities' policies may change, and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our cell therapies. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the United States or abroad. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained and we may not achieve or sustain profitability.

In addition, if following any pivotal clinical trial we were able to obtain accelerated approval of any of our cell therapies, the FDA will require us to conduct a confirmatory trial or trials to verify the predicted clinical benefit and additional safety studies. The results from the confirmatory trial or trials may not support the clinical benefit, which would result in the approval being withdrawn.

We may seek a conditional marketing authorization in Europe for some or all of our current cell therapies, but we may not be able to obtain or maintain such authorization.

As part of its marketing authorization process, the EMA may grant marketing authorizations for certain categories of medicinal products on the basis of less complete data than is normally required, when doing so may meet unmet medical needs of patients and serve the interest of public health. In such cases, it is possible for the Committee for Medicinal Products for Human Use, or CHMP, to recommend the granting of a marketing authorization, subject to certain specific obligations to be reviewed annually, which is referred to as a conditional marketing authorization. This may apply to medicinal products for human use that fall under the centralized procedure (EMA's scientific assessment and European Commission's approval), including those that aim at the treatment, the prevention, or the medical diagnosis of seriously debilitating diseases or life-threatening diseases and those designated as orphan medicinal products.

A conditional marketing authorization may be granted when the CHMP finds that, although comprehensive clinical data referring to the safety and efficacy of the medicinal product have not been supplied, all the following requirements are met:

- the benefit:risk balance of the medicinal product is positive;
- it is likely that the applicant will be in a position to provide the comprehensive clinical data;
- unmet medical needs will be fulfilled; and

- the benefit to public health of the immediate availability on the market of the medicinal product concerned outweighs the risk inherent in the fact that additional data is still required.

The granting of a conditional marketing authorization is restricted to situations in which only the clinical part of the application is not yet fully complete. Incomplete preclinical or quality data may only be accepted if duly justified and only in the case of a product intended to be used in emergency situations in response to public-health threats. Conditional marketing authorizations are valid for one year, on a renewable basis. The holder will be required to complete ongoing trials or to conduct new trials with a view to confirming that the benefit-risk balance is positive. In addition, specific obligations may be imposed in relation to the collection of pharmacovigilance data.

Granting a conditional marketing authorization allows medicines to reach patients with unmet medical needs earlier than might otherwise be the case and will ensure that additional data on a product are generated, submitted, assessed and acted upon. Although we may seek a conditional marketing authorization for one or more of our cell therapies, the CHMP may ultimately not agree that the requirements for such conditional marketing authorization have been satisfied. This would delay the commercialization of our cell therapies as we would have to wait for a complete data package before submitting the marketing authorization application.

We or our collaborators may not be able to obtain or maintain orphan drug exclusivity for our cell therapies.

Regulatory authorities in some jurisdictions, including the United States and Europe, may designate drugs or biologics for relatively small patient populations as orphan drugs. Orphan drug designation does not convey any advantage in or shorten the duration of the regulatory review and approval process, but it can lead to financial incentives, such as opportunities for grant funding toward clinical trial costs, tax advantages in-lieu of R&D tax credits and user-fee waivers.

Generally, if a product with an orphan drug designation subsequently receives the first marketing approval for the indication for which it has such designation, the product is entitled to a period of marketing exclusivity, which precludes the EMA or the FDA from approving another marketing authorization application for the same drug for that time period. The applicable period is seven years in the United States and ten years in Europe. The European exclusivity period can be reduced to six years if a drug no longer meets the criteria for orphan drug designation or if the drug is sufficiently profitable so that market exclusivity is no longer justified. Orphan drug exclusivity may be lost if the FDA determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantity of the drug to meet the needs of patients with the rare disease or condition. In Europe, the orphan exclusivity may be lost vis-à-vis another drug in cases the manufacturer is unable to assure sufficient quantity of the drug to meet patient needs or if that other product is proved to be clinically superior to the approved orphan product. A drug is clinically superior if it is safer, more effective or makes a major contribution to patient care.

As a result of Brexit, as of 1 January 2021, incentives related to an orphan designation granted in the EU are limited to the EU and Ireland, but not Great Britain (England, Wales and Scotland). The competent authority in the UK (MHRA) will review applications for orphan designation at the time of a marketing authorization, and has announced that it will offer incentives in the form of market exclusivity and full or partial refunds for marketing authorization fees to encourage the development of medicines in rare diseases.

There can be no assurance that any of our cell therapies will be eligible for orphan drug designation in the United States or in other jurisdictions or that it will obtain orphan drug marketing exclusivity upon approval or that we will not lose orphan drug designation for ADP-A2M4. Inability to obtain orphan drug designation for a specific cell therapy or loss of such designation for ADP-A2M4 in the future would prevent any ability to take advantage of the financial benefits associated with orphan drug designation and would preclude us from obtaining marketing exclusivity upon approval, if any. Even if we obtain orphan drug exclusivity for a product, that exclusivity may not effectively protect the product from competition because different drugs can be approved for the same condition. The extent of market exclusivity which is obtained may also be affected if the indication for any relevant registration or pivotal trial is narrower than the orphan designation granted. Even after an orphan drug is approved, the FDA can subsequently approve another drug for the same condition if the FDA concludes that the later drug is clinically superior in that it is shown to be safer, more effective or makes a major contribution to patient care.

Any failure by us to comply with existing regulations could harm our reputation and operating results.

The production of cell therapies is highly regulated and subject to constant inspection. The regulatory environment may also change from time to time. Any failure to comply with regulatory requirements, whether in the United States or in other countries in which our cell therapies are supplied, may result in investigation by regulatory authorities, suspension of regulatory authorizations and, as a result, suspension of clinical programs or ability to supply any of our cell therapies and potentially significant fines or other penalties being imposed in relation to any breach. Any failure may also harm our reputation and impact our ability going forward to obtain regulatory approvals for other cell therapies or require us to undertake additional organizational changes to minimize the risk of further breach. A failure to comply may apply to any part of our business, for example, to the processes used for manufacture of our cell therapies (including the reliability of the process) or to the processes used for treatment of patients (including tracking of patient product and supply of patient specific product).

Our research and development activities utilize hazardous, radioactive and biological materials. Should such materials cause injury or be used other than in accordance with applicable laws and regulations, we may be liable for damages.

We use hazardous and biological reagents and materials in our research and development at our U.K. site. We have obtained the appropriate certification or ensured that such certification has been obtained as required for the use of these reagents but our use is subject to compliance with applicable laws and there is a risk that should any third party or employee suffer injury or damage from radioactive, hazardous or biological reagents that we may incur liability or obligations to compensate such third parties or employees. We have employer's liability insurance capped at £10.0 million per occurrence and public liability insurance capped at £5.0 million per occurrence; however, these amounts may be insufficient to compensate us if these events actually occur in the future.

We are subject to the U.K. Bribery Act, the U.S. Foreign Corrupt Practices Act and other anti-corruption laws, as well as export control laws, customs laws, sanctions laws and other laws governing our operations. If we fail to comply with these laws, we could be subject to civil or criminal penalties, other remedial measures, and legal expenses, which could adversely affect our business, results of operations and financial condition.

Our operations are subject to anti-corruption laws, including the U.K. Bribery Act 2010, or Bribery Act, the U.S. Foreign Corrupt Practices Act, or FCPA, and other anti-corruption laws that apply in countries where we do business. The Bribery Act, the FCPA and these other laws generally prohibit us and our employees and intermediaries from bribing, being bribed or making other prohibited payments to government officials or other persons to obtain or retain business or gain some other business advantage. Under the Bribery Act, we may also be liable for failing to prevent a person associated with us from committing a bribery offense. We and our commercial partners may operate in a number of jurisdictions that pose a high risk of potential Bribery Act or FCPA violations, and we participate in collaborations and relationships with third parties whose actions, if non-compliant, could potentially subject us to liability under the Bribery Act, FCPA or local anti-corruption laws. In addition, we cannot predict the nature, scope or effect of future regulatory requirements to which our international operations might be subject or the manner in which existing laws might be administered or interpreted.

We are also subject to other laws and regulations governing our international operations, including regulations administered by the governments of the United Kingdom and the United States, and authorities in the EU, including applicable export control regulations, economic sanctions on countries and persons, anti-money laundering laws, customs requirements and currency exchange regulations, collectively referred to as the Trade Control laws.

However, there is no assurance that we will be completely effective in ensuring our compliance with all applicable anti-corruption laws, including the Bribery Act, the FCPA or other legal requirements, including Trade Control laws. If we are not in compliance with the Bribery Act, the FCPA and other anti-corruption laws or Trade Control laws, we may be subject to criminal and civil penalties, disgorgement and other sanctions and remedial measures, and legal expenses, which could have an adverse impact on our business, financial condition, results of operations and liquidity. Likewise, any investigation of any potential violations of the Bribery Act, the FCPA, other anti-

corruption laws or Trade Control laws by United Kingdom, United States or other authorities could also have an adverse impact on our reputation, our business, results of operations and financial condition.

If we are found in violation of federal or state "fraud and abuse" or other health care laws, we may be required to pay a penalty and/or be suspended from participation in federal or state health care programs, which may adversely affect our business, financial condition and results of operations.

If we obtain marketing approval for our products in the United States, if at all, we will be subject to various federal and state health care "fraud and abuse" and other health care laws. Healthcare providers, physicians and third-party payors play a primary role in the recommendation and use of pharmaceutical products that are granted marketing approval. Accordingly, arrangements with third-party payors, existing or potential customers and referral sources are subject to broadly applicable fraud and abuse and other healthcare laws and regulations, and these laws and regulations may constrain the business or financial arrangements and relationships through which manufacturers market, sell and distribute the products for which they obtain marketing approval.

Such restrictions under applicable federal and state healthcare laws and regulations include the following the Anti-Kickback Statute, the Healthcare Reform Act, the False Claims Act, or FCA, federal criminal laws that prohibit executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters; the Physician Payment Sunshine Act, the Health Insurance Portability and Accountability Act of 1996 (HIPAA)

Violation of any of the laws described above or any other governmental laws and regulations may result in penalties, including civil and criminal penalties, damages, fines, the curtailment or restructuring of operations, the exclusion from participation in federal and state healthcare programs and imprisonment. Furthermore, efforts to ensure that business activities and business arrangements comply with applicable healthcare laws and regulations can be costly for manufacturers of branded prescription products. Additionally, if we are found in violation of one or more of these laws our business, results of operations and financial condition may be adversely affected.

Legal, political and economic uncertainty surrounding the exit of the United Kingdom from the EU may be a continued source of instability in international markets and currency exchange rate volatility, and could materially and adversely affect our business, financial condition, results of operations and prospects.

In June 2016, the United Kingdom voted in a referendum to leave the EU (commonly referred to as "Brexit"). On March 29, 2017, the United Kingdom formally notified the Council of the EU of its intention to leave the EU. Following negotiations on the terms of the United Kingdom's exit from the EU, a withdrawal agreement ("Withdrawal Agreement") setting out the terms of the exit was entered into on January 24, 2020. The Withdrawal Agreement became effective, and the United Kingdom formally left the EU, on January 31, 2020. Although the United Kingdom officially exited the EU, the pre-January 31, 2020 legal status quo continued during a "transition period," which expired on December 31, 2020.

On December 24, 2020, the United Kingdom and the EU entered into a Trade and Cooperation Agreement. The agreement sets out certain procedures for approval and recognition of medical products in each jurisdiction and certain other provisions around trade and cooperation more generally between the U.K. and EU. Any delay in obtaining, or an inability to obtain, any marketing approvals, as a result of the Trade and Cooperation Agreement or otherwise, would prevent us from commercializing any product candidates in the U.K. and/or the EU and restrict our ability to generate revenue and achieve and sustain profitability. If any of these outcomes occur, we may be forced to restrict or delay efforts to seek regulatory approval in the U.K. and/or the EU for any product candidates we may develop, which could significantly and materially harm our business

Whilst a Trade and Cooperation is now in place there may be continued uncertainty in relation to the transition of goods and services across the EU/U.K. border, the ability to recruit and hire staff from the EU and the regulatory process in the U.K. There may also be continued market volatility as a result of Brexit. Adequacy provisions relating to the transfer of personal data between the EU and UK have not yet been provided or agreed which provides uncertainty on the mechanism applicable to transfer of personal data from the EU to our UK and US facilities. There remains uncertainty as to how regulatory processes will work in the UK and between the EU and the UK including in relation to the release of end product for use in the UK and EU and the mechanism permitting release of product by a qualified

person. We are also seeing certain goods being delayed at the UK or EU border and general uncertainty as to the requirements for import and export of goods to and from the EU and UK.

Given certain regulatory authorizations within the EU can only be held by entities located in the EU, we have set up an EU subsidiary, Adaptimmune B.V.. This subsidiary currently holds orphan designation for our ADP-A2M4 product. We have also set up a third party to act as a qualified person to release product for use in the EU and ensure we can continue to treat patients in our EU clinical trials. Additional resources and requirements may be required to enable us to continue to hold required authorizations including marketing authorization in the EU and to commercialize our cell therapies in the EU.

The ultimate impact of Brexit on our business operations could vary depending on the details of such agreement(s) and, while negotiations are still underway, Brexit could significantly affect the financial, trade, regulatory and legal landscape in the United Kingdom, and could have a material impact on its economy and the future growth of its various industries, including the pharmaceutical and biotechnology industries. Further, Brexit could lead to legal uncertainty and regulatory divergence between the United Kingdom and the EU. Given the lack of comparable precedent, it is unclear what financial, trade, regulatory and legal implications the withdrawal of the United Kingdom from the EU will have and how such withdrawal will affect us. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations and prospects.

Risks Related to Our Reliance Upon Third Parties

We rely on Universal Cells Inc. in relation to the performance of collaboration agreements between us and Universal Cells Inc. for the further development of 'off-the-shelf' cell therapies.

Development of allogeneic T-cell therapies and our ability to commercialize those allogeneic T-cell therapies may depend heavily on the performance of Universal Cells under the ongoing collaboration (the "Universal Cells Collaboration") and payments made by Universal Cells to us in relation to such development. In particular:

- Research funding, development or sales milestones or product royalties or any other sums might not become due or payable to us at any time or on the time frames currently expected under the Universal Cells Collaboration.

- Universal Cells has a right to terminate programs under the Universal Cells Collaboration and the agreement in whole or in part for convenience, on provision of prior written notice. Termination may impact not only our requirement for additional investment or capital but also the timeframes within which current research and development programs (including clinical programs) can be performed or whether we can continue to perform those research and development programs at all. Termination may also impact our ability to access and use certain Universal Cells technology within our own allogeneic platform and products arising from that platform.

- Any research or development plan agreed upon between Universal Cells and us may be delayed (including as a result of the impact of the COVID-19 pandemic) or may be unsuccessful or fail to result in therapies that are feasible for further development or commercialization.

- The timing for commercialization of any products under the Universal Cells Collaboration is currently unknown and will depend on the targets selected , the type of allogeneic T-cell therapy being developed and the timing of performance of obligations under the Collaboration agreement.

- Changes to the development plans or agreement may impact the timing and extent of milestone payments, the amount of research funding received, the nature of the relationship with Universal Cells or the scope of the collaboration.

- Delay in performance of responsibilities under any research or development plan could impact our ability to progress T-cell therapies through research and development, including where Universal Cells delays the performance of any of its responsibilities.

- Universal Cells has the ability to influence or control certain decisions relating to the development of therapies covered by the Universal Cells Collaboration. This ability could result in delays to the research and development programs covered by the collaboration or changes to the scope of those programs, including the disease indications relevant to such clinical programs.

We rely heavily on ThermoFisher and the technology that we license from them.

The ability to use the ThermoFisher Dynabeads® CD3/CD28 technology to isolate, activate and expand T-cells is important to our ongoing ability to offer SPEAR T-cells. In December 2012, we entered into a series of license and sub-license agreements with Life Technologies Corporation (now part of ThermoFisher Scientific Inc ("Thermofisher")), such agreements having been amended as of November 2019. These agreements provide us with a field-based non-exclusive license under certain intellectual property rights owned or controlled by ThermoFisher in relation to the methods of use of the ThermoFisher Dynabeads® CD3/CD28 technology to isolate, activate and expand T-cells and enable transfection of the T-cells with any TCR genes to manufacture our TCR products and use and sell those TCR products to treat cancer, infectious disease and/or autoimmune disease. We also have a field-based non-exclusive sub-license under certain other patents which cover the method of use of the Dynabeads® CD3/CD28 and are controlled by ThermoFisher under a head-license from the University of Michigan, the United States Navy and the Dana-Farber Cancer Institute.

In June 2016, we entered into a supply agreement with ThermoFisher for the supply of the Dynabeads® CD3/CD28 technology. The supply agreement runs until December 31, 2025.

ThermoFisher has the right to terminate the above described agreements for material breach or insolvency. On termination of the license agreements, the supply agreement will also automatically terminate. If ThermoFisher terminates the non-exclusive license, sub-license and supply agreements or otherwise refuses or is unable to supply the Dynabeads® product, we will have to seek an alternative source of the beads or develop an alternative process methodology to enable supply of our cell therapies. Should ThermoFisher change its process or make changes to its product, we may have to validate those changes to ensure there is no impact to our cell therapies. Such validation, including any comparability testing, will take additional time and resources.

We rely on third parties to manufacture and supply our cell therapies and to develop next generation cell therapies, and we may have to rely on third parties to produce and process our cell therapies, if approved.

We rely on a limited number of third-party manufacturers and third party service providers for clinical trial product supplies and services at each stage of the manufacturing process, and as a result we are exposed to the following risks (including where such third party risks arise as a result of the impact of COVID-19):

- We may be unable to contract with manufacturers on commercially acceptable terms or at all because the number of potential manufacturers is limited and the FDA, EMA and other comparable foreign regulators must approve any replacement manufacturer, which would require new testing and compliance inspections. In addition, a new manufacturer would have to be educated in, and develop substantially equivalent processes for, production of our cell therapies after receipt of any applicable regulatory approval.

- We may not be able to obtain lentiviral delivery manufacturing slots with third party contract manufacturers within the timescales we require for supply of lentiviral delivery vector or to obtain agreed dates for such manufacturing slots sufficiently in advance of the requirement for supply.

- Our third-party manufacturers might be unable to timely formulate and manufacture our cell therapies or produce the quantity and quality required to meet our clinical trial and commercial needs or to provide commercially viable product on the timelines we require or at all, which may necessitate a change in third-party manufacturers or a requirement to further develop internal capabilities, all of which may result in delays to clinical trials or to commercialization plans.

- With any new manufacturing process or new CMO we will need to transfer the manufacturing process or new process to that CMO. Any delay in the development and transfer of these new processes to the third-party contract supplier or inability of the third-party contract supplier to replicate or carry out the transferred process at the appropriate level and quality or in a reproducible fashion will result in delays in our ability to progress clinical programs, further develop our cell therapies and obtain marketing approval for our cell therapies.

- Introduction of new raw material or intermediate material manufacturers, such as CMOs for vectors, may require comparability testing to be carried out to show that the manufacturing process and end material is comparable to the currently used manufacturing process and/or material. Any inability to show comparability or delay in comparability testing may result in delays to the supply of the affected materials and as a result delays to clinical trials.

- Contract manufacturers may not be able to execute our manufacturing procedures appropriately, or we may be unable to transfer our manufacturing processes to contract manufacturers successfully or without additional time and cost. Even where CMOs fail to manufacture our cell therapies successfully, it may not be possible to achieve re-manufacture quickly or without expending resources or additional costs.

- Our future contract manufacturers may not perform as agreed, may be acquired by competitors or may not remain in the contract manufacturing business for the time required to supply our clinical trials or to successfully produce, store and distribute our cell therapies. In addition, contract manufacturers may not manufacture within agreed timescales for manufacture and/or may cancel pre-agreed manufacturing slots, which would result in delays in manufacturing and could require us to find replacement manufacturers which may not be available to us on favorable terms or at all.

- Manufacturers are subject to ongoing periodic unannounced inspection by the FDA, EMA, and other comparable foreign regulators and corresponding state agencies to ensure strict compliance with cGMP and other government regulations and corresponding foreign standards. Although we do not have day-to-day control over third-party manufacturers' compliance with these regulations and standards, we are responsible for ensuring compliance with such regulations and standards.

- We may not own, or may have to share, the intellectual property rights to any improvements made by our third-party manufacturers in the manufacturing process for our cell therapies. Our third party manufacturers may use processes which infringe or potentially infringe third party intellectual property rights which may result in inability to use such processes going forward, an increase in the pricing of such processes or a need to change a different process.

- Our third party manufacturers may fail to perform testing and analysis services accurately, in a manner that can be interpreted or on a timely basis. This could delay or prevent release of our cell therapies and as a result delay clinical trials and patient treatment.

- Our third-party manufacturers could breach or terminate their agreement with us.

- Our third-party manufacturers may cease to be able to do business with us (whether for insolvency or other reasons, including takeover, merger or acquisition) at a time when we are unable to source such manufacture elsewhere or at our own manufacturing facility.

- Increased costs, unexpected delays, equipment failures, lack of reproducibility, labor shortages, natural disasters, power failures and numerous other factors which are outside of our control or which may be imposed by our CMOs. For example, moving to commercial phase manufacture usually incurs increased cost and qualification requirements at our CMOs. Such costs may be prohibitive, or such activities may not be able to be performed within appropriate timelines.

- Our collaborators or third party contract manufacturers may allocate their resources, materials, and services away from our cell therapy programs, for example, to utilize such assets on the research, development and manufacture of COVID-19 vaccines or therapies.

Certain of the components required for manufacturing of our cell therapies come from sole source or limited source suppliers.

Certain raw materials or precursor materials used in the manufacture and supply of our cell therapies may come from sole source or limited source suppliers. For example, there are currently a limited number of third party manufacturers within the United States that can supply us with our lentiviral delivery vector and ThermoFisher is currently the only supplier of the Dynabeads® CD3/CD28 technology. Should such suppliers be unable to supply or manufacture such raw materials or precursor materials either at all or within required timescales we may be unable to supply our cell therapies or such supply may be significantly delayed. Inability to obtain such raw materials or precursor materials may also necessitate changes in the manufacturing process used for supply of our cell therapies. Such changes to the manufacturing process may need to be developed internally or by a third party and may also require additional regulatory approvals to be obtained before they can be used for the manufacture and supply of our cell therapies for clinical trials.

In addition, we are focusing manufacture of our cell therapies at a single manufacturing site, namely our Navy Yard facility. Should the Navy Yard facility be unable to manufacture our cell therapies for any reason, including natural disaster, contamination or for any regulatory reason, we may be unable to supply cell therapies for our clinical trials unless we can procure manufacture from a third party manufacturer. There is no assurance that we will be able to procure manufacture from a third party manufacturer or that such manufacture will be provided within the timescales we require or at an acceptable price. Any change in manufacturer used to produce our cell therapies requires notification to regulatory authorities which can be time consuming. There is no assurance that regulatory authorities will agree that any change in manufacturer is acceptable or that the processes used at such manufacturer are comparable to the processes previously used and additional evidence of comparability may be required.

We rely on third parties to conduct our clinical trials.

We depend upon independent investigators and collaborators, such as universities, medical institutions, CROs and strategic partners to conduct our preclinical programs and sponsored clinical trials under agreements with us. We expect to have to negotiate budgets and contracts with CROs and trial sites (either directly or through a third party consultant), which may result in delays to our development timelines and increased costs. We rely heavily on these third parties over the course of our clinical trials, and we do not have day-to-day control of their activities. Nevertheless, we are responsible for ensuring that each of our trials is conducted in accordance with applicable protocols and legal, regulatory and scientific standards, and our reliance on third parties does not relieve us of our regulatory responsibilities.

We and these third parties are required to comply with cGCPs, which are regulations and guidelines enforced by the FDA and comparable foreign regulatory authorities for cell therapies in clinical development. Regulatory authorities enforce these cGCPs through periodic inspections of trial sponsors, principal investigators and trial sites. If we or any of these third parties fail to comply with applicable cGCP regulations and guidelines (including as a result of the outbreak of COVID-19), the clinical data generated in our clinical trials may be deemed unreliable and the FDA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing authorization applications. Moreover, our business may be implicated if any of these third parties violates federal or state fraud and abuse or false claims laws and regulations or healthcare privacy and security laws.

Any third parties conducting our clinical trials are not and will not be our employees and, except for remedies available to us under our agreements with such third parties which could be limited, we cannot control whether or not they devote sufficient time and resources to our ongoing clinical trials and preclinical programs. These third parties may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical trials or other drug or biologic development activities, which could affect their performance on our behalf. If these third parties do not successfully carry out their contractual duties or obligations or meet expected deadlines (including as a result of the outbreak of COVID-19), if they need to be replaced or if the quality or accuracy of the

clinical data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements or for other reasons, our clinical trials may be extended, delayed or terminated and we may not be able to complete development of, obtain regulatory approval of, or successfully commercialize our cell therapies. As a result, our financial results and the commercial prospects for our cell therapies would be harmed, our costs could increase and our ability to generate revenue could be delayed.

Switching or adding third parties to conduct our clinical trials involves substantial cost and requires extensive management time and focus. In addition, there is a natural transition period when a new third party commences work. As a result, delays may occur, which can materially impact our ability to meet our timelines for bringing our cell therapies to market, if at all.

Risks Related to Our Intellectual Property

We may be forced to litigate to enforce or defend our intellectual property rights, and/or the intellectual property rights of our licensors.

We may be forced to litigate to enforce or defend our intellectual property rights against infringement and unauthorized use by competitors, and to protect our trade secrets. In so doing, we may place our intellectual property at risk of being invalidated, held unenforceable, narrowed in scope or otherwise limited. Further, an adverse result in any litigation or defense proceedings may increase the risk of non-issuance of pending applications. In addition, if any licensor fails to enforce or defend its intellectual property rights, this may adversely affect our ability to develop and commercialize our SPEAR T-cells and to prevent competitors from making, using, and selling competing products. Any such litigation could be very costly and could distract our management from focusing on operating our business. The existence and/or outcome of any such litigation could harm our business, results of operations and financial condition.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential and proprietary information could be compromised by disclosure during this type of litigation. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our ADSs.

We may also be forced to defend our intellectual property rights in opposition proceedings in front of patent offices in order to obtain or continue to hold granted patent rights. Our inability to successfully defend our patents and patent applications in opposition proceedings may result in a reduction in the scope of protection offered by such patents or patent applications or alternatively the patents or patent applications may be revoked. Anonymous third party oppositions have been lodged against certain our European patents. None of these oppositions relate to any cases which claim any of our clinical candidates. These cases are scheduled to be heard either 2021 or 2022, and a decision may be appealed thereafter. We have filed an opposition to a granted European patents owned by Immatics and relating to a peptide binding TCR and use for T-cell therapy. The case is likely to likely be heard in 2022 and a decision may be appealed thereafter.

We may not be able to protect our proprietary technology in the marketplace or the cost of doing so may be prohibitive or excessive.

Our success will depend, in part, on our ability to obtain patents, protect our trade secrets and operate without infringing on the proprietary rights of others. We rely upon a combination of patents, trade secret protection (i.e., know-how), and confidentiality agreements to protect the intellectual property of our cell therapies. However, patent protection may not be available for some of the cell therapies or technology we are developing. If we must spend significant time and money protecting or enforcing our patents, designing around patents held by others or licensing, potentially for large fees, patents or other proprietary rights held by others, our business results of operations and financial condition may be harmed.

Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial cost and divert our efforts and attention from other aspects of our business. Enforcement of patents may also be cost prohibitive and we may be unable to prevent competitors from entering the market with products that are similar to or the same as our cell therapies.

In addition, patents have a limited lifespan. In most countries, including the United States, the standard expiration of a patent is 20 years from the effective filing date. Various extensions of patent term may be available in particular countries; however, in all circumstances the life of a patent, and the protection it affords, has a limited term. If patent term extension is not available, our competitors may be able to take advantage of our investment in development and clinical trials by referencing our clinical and non-clinical data, and then may be able to launch their product earlier than might otherwise be the case.

We may be unable to adequately prevent disclosure of trade secrets and other proprietary information.

We rely on trade secrets to protect our proprietary know-how and technological advances, especially where we do not believe patent protection is appropriate or obtainable. However, trade secrets are difficult to protect. We rely, in part, on confidentiality agreements with our employees, consultants, outside scientific collaborators, sponsored researchers and other advisors to protect our trade secrets and other proprietary information. These agreements may not effectively prevent disclosure of confidential information and may not provide an adequate remedy in the event of unauthorized disclosure of confidential information. Proceedings to enforce trade secrets can be cost prohibitive and we may be unable to prevent our competitors using our trade secrets.

If third parties claim that our activities or products infringe upon their intellectual property, our operations could be adversely affected.

There is a substantial amount of litigation, both within and outside the United States, involving patents and other intellectual property rights in the pharmaceutical industry. If we or our third party suppliers were found to infringe upon a patent or other intellectual property right, or if we failed to obtain or renew a license under a patent or other intellectual property right from a third party, or if a third party that we were licensing technologies from was found to infringe upon a patent or other intellectual property rights of another third party, we may be required to pay damages, including triple damages if the infringement is found to be willful, suspend the manufacture of certain of our cell therapies or reengineer or rebrand our cell therapies, if feasible, or we may be unable to enter certain new product markets. Any such claims could also be expensive and time- consuming to defend and divert management's attention and resources.

Licenses may be required from third parties in relation to any of cell therapies developed or commercialized by us.

We may identify third-party intellectual property rights that are required to enable the further development, commercialization, manufacture or development of our SPEAR T-cells. Licenses to such intellectual property rights may or may not be available on commercial terms that are acceptable to us. As a result we may incur additional license fees for such intellectual property rights, or the cost and expenses to identify an alternative route for commercialization, that does not require the relevant third-party intellectual property rights, or the cost and diversion of resources required to challenge any such third party intellectual property rights.

Where we license certain technology from a third party, the prosecution, maintenance and defense of the patent rights licensed from such third party may be controlled by the third party which may impact the scope of patent protection which will be obtained or enforced.

Where we license patent rights or technology from a third-party, control of such third party patent rights may vest in the licensor, particularly where the license is non-exclusive or field restricted. This may mean that we are not able to control or affect the scope of the claims of any relevant third-party patent or have control over any enforcement of such a patent. Where a licensor brings an enforcement action, this could negatively impact our business or result in additional restrictions being imposed on the license we have and the scope of such license or result in invalidation or limitation of the scope of the licensed patent. In addition, should we wish to enforce the relevant patent rights against a

third person, we may be reliant on consent from the relevant licensor or the cooperation of the licensor. The licensor may refuse to bring such action and leave us unable to restrict competitor entry into the market.

Issued patents protecting our SPEAR T-cells or other cell therapies could be found invalid or unenforceable if challenged in court or at the USPTO.

If we or one of our collaborators initiate legal proceedings against a third party to enforce a patent protecting one of our SPEAR T-cells or cell therapies, the defendant could counterclaim that the patent protecting our cell therapy, as applicable, is invalid and/or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity and/or unenforceability are commonplace, and there are numerous grounds upon which a third party can assert invalidity or unenforceability of a patent. Third parties may also raise similar claims before administrative bodies in the United States or abroad, even outside the context of litigation. Such mechanisms include re-examination, post grant review, and equivalent proceedings in foreign jurisdictions (e.g., opposition proceedings). Such proceedings could result in revocation or amendment to our patents in such a way that they no longer cover our cell therapies.

General Business Risks

We depend upon our key personnel and our ability to attract and retain employees.

We are heavily dependent on the ongoing employment and involvement of certain key employees in particular, Adrian Rawcliffe, our Chief Executive Officer; Dr. Helen Tayton-Martin, our Chief Business Officer; William Bertrand, our Chief Operating Officer; John Lunger, our Chief Patient Supply Officer, Dr. Elliot Norry, our Chief Medical Officer, and Gavin Wood, who was appointed as our Chief Financial Officer effective April 1, 2020. We do not hold key-man insurance for our senior managers.

Our business is dependent on our ability to recruit experienced and suitably trained employees or consultants, and to retain such employees on a long-term basis. Despite our efforts to retain valuable employees, members of our management, scientific and development teams may terminate their employment with us on short notice. Although we have employment agreements with all of our employees in the United Kingdom, these employment agreements provide for a mutual nine months' notice period in the case of Dr. Tayton-Martin and Mr. Wood; mutual three months' or two months' notice periods in the case of senior managers and mutual one-month notice periods for all other employees. In the United States, the employment agreements provide for at-will employment except that, under their employment agreements, Mr. Rawcliffe, Mr. Bertrand, Mr. Lunger and Dr. Norry must provide 60 days' written notice and our senior vice-presidents must provide 30 days' written notice. This means that any of our employees in the United States, except for Mr. Rawcliffe, Mr. Bertrand, Mr. Lunger, Dr. Norry and our senior vice-presidents, could leave our employment at any time, with or without notice.

We will need to grow the size and capabilities of our organization, and we may experience difficulties in managing this growth.

As of December 31, 2020, we had 462 employees. As our development and commercialization plans and strategies develop, we must add a significant number of additional managerial, operational, sales, marketing, financial, and other personnel. Future growth will impose significant added responsibilities on members of management, including:

- identifying, recruiting, integrating, maintaining, and motivating additional employees;
- managing our internal development efforts effectively, including the clinical and FDA review process for our SPEAR T-cells, while complying with our contractual obligations to contractors and other third parties; and
- improving our operational, financial and management controls, reporting systems, and procedures.

Our management may also have to divert a disproportionate amount of its attention away from day-to-day activities in order to devote a substantial amount of time to managing growth activities and the resourcing of replacement employees in the event employees leave. The ability to hire additional individuals and to integrate those individuals into the business may be more difficult whilst the COVID-19 pandemic is ongoing given the need for certain employees to work from home, the difficulty in providing adequate training and the inability to conduct interviews in person.

We expect to face intense competition, which may be from companies with greater resources and experience than we have.

The pharmaceutical industry, and the immuno-oncology industry specifically, is highly competitive and subject to rapid developments in treatment options. Competitors include large global pharmaceutical companies, biotechnology companies, specialty immune-therapy companies and universities and research organizations, whether alone or in collaboration with other entities. Many of our competitors have substantially greater financial, technical and other resources, such as larger research and development staff and may also be able to progress clinical candidates through clinical studies quicker than we are able to. Mergers and acquisitions within the pharmaceutical and biotechnology industry can also result in resources being concentrated within our competitors. Our competitors may also have better developed commercialization capabilities and already established sales forces and manufacturing capability.

Within in any particular cancer indication we may face competition from other cell therapy companies, from personalized medicine approaches, from other modalities of treatment, alternative drug products or therapies or from pre-existing treatment regimens used to treat patients with that cancer indication.

Failure of our information technology systems could significantly disrupt the operation of our business.

Our ability to execute our business plan and to comply with regulators' requirements with respect to data control and data integrity, depends, in part, on the continued and uninterrupted performance of our information technology systems and similar systems used by third-party providers that we rely on. These systems are vulnerable to damage from a variety of sources, including telecommunications or network failures, malicious human acts and natural disasters. There is an increase in vulnerability to damage as a result of the working from home policy adopted at our U.S. and U.K. facilities for certain of our employees during the course of the COVID-19 outbreak and the increase in malicious human acts occurring at the same time. Moreover, despite network security and back-up measures, some of our servers are potentially vulnerable to physical or electronic break-ins, computer viruses and similar disruptive problems. Despite the precautionary measures we have taken to prevent unanticipated problems that could affect our information systems, sustained or repeated system failures or problems arising during the upgrade of any of our information systems that interrupt our ability to generate and maintain data, and in particular to operate our proprietary technology platform, could adversely affect our ability to operate our business. In addition, where disruption to such systems occurs at third-party providers, we may have limited ability to find alternative providers in any required timeframes or at all, and such disruption could significantly affect our ability to proceed with clinical or analytical or development programs.

We are exposed to risks related to currency exchange rates.

We conduct a significant portion of our operations within the United Kingdom in both U.S. dollars and pounds sterling and our arrangements with GSK are denominated in pounds sterling. Changes in currency exchange rates have had and could have a significant effect on our operating results. Exchange rate fluctuations between the U.S. dollar and local currencies create risk in several ways, including the following: weakening of the pound sterling may increase the cost of overseas research and development expenses and other costs outside the United Kingdom; strengthening of the U.S. dollar may decrease the value of any future revenues denominated in other currencies. Effects of exchange rates on transactions and cash deposits held in a currency other than the functional currency of a subsidiary can distort our financial results; and commercial pricing and profit margins are affected by currency fluctuations.

Risks Related to Ownership of our American Depositary Shares (ADSs)

The market price and trading volume of our ADSs may be volatile.

Many factors may have a material adverse effect on the market price of the ADSs, including but not limited to:

- the commencement, enrollment or results of our planned clinical trials;
- the loss of any of our key scientific or management personnel;
- announcements of the failure to obtain regulatory approvals or receipt of a complete response letter from the FDA;
- announcements of undesirable restricted labeling indications or patient populations, or changes or delays in regulatory review processes;
- announcements of therapeutic innovations or new products by us or our competitors;
- adverse actions taken by regulatory agencies with respect to our clinical trials, manufacturing supply chain or sales and marketing activities;
- changes or developments in laws or regulations applicable to SPEAR T-cells;
- any adverse changes to our relationship with licensors, manufacturers or suppliers;
- the failure of our testing and clinical trials;
- unanticipated safety concerns;
- the failure to retain our existing, or obtain new, collaboration partners;
- announcements concerning our competitors or the pharmaceutical industry in general;
- the achievement of expected product sales and profitability;
- the failure to obtain reimbursements for SPEAR T-cells, if approved for marketing, or price reductions;
- manufacture, supply or distribution shortages;
- acquisitions or mergers and business deals announced by our competitors;
- the progress of competing treatment options and products or advent of new products which could impact the uptake or commercial value of our cell therapies;
- actual or anticipated fluctuations in our operating results;
- our cash position;
- changes in financial estimates or recommendations by securities analysts;
- potential acquisitions;

- the trading volume of ADSs on the Nasdaq Global Select Market (" Nasdaq");
- sales of our ADSs by us, our executive officers and directors or our shareholders in the future;
- general economic and market conditions and overall fluctuations in the U.S. equity markets including as resulting from the COVID-19 outbreak and economic effects of such outbreak; and
- changes in accounting principles.

In addition, the stock market in general, and Nasdaq and biopharmaceutical companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies. Broad market and industry factors may negatively affect the market price of our ADSs, regardless of our actual operating performance. Further, a decline in the financial markets and related factors beyond our control may cause the price of our ADSs to decline rapidly and unexpectedly. In the past, securities class action litigation has often been instituted against companies following periods of volatility in their stock price. This type of litigation could result in substantial costs and could divert our management and other resources.

Substantial future sales of our ADSs in the public market, or the perception that these sales could occur, could cause the price of the ADSs to decline and dilute shareholders.

Substantial future sales of our ADSs in the public market, or the perception that these sales could occur, could cause the market price of the ADSs to decline. Sales of a substantial number of our ADSs in the public market could occur at any time. In addition, we have registered an aggregate of 151,248,915 ordinary shares that we may issue under our equity compensation plans and, as a result, they can be freely sold in the public market upon issuance and following conversion into ADSs, but subject to volume limitations applicable to affiliates under Rule 144. Additionally, the majority of ordinary shares that may be issued under our equity compensation plans also remain subject to vesting in tranches over a four-year period. As of December 31, 2020, an aggregate of 53,554,476 options over our ordinary shares had vested and become exercisable. If a large number of our ADSs are sold in the public market after they become eligible for sale, the sales could reduce the trading price of our ADSs and impede our ability to raise capital in the future.

We incur increased costs as a result of being a public company whose ADSs are publicly traded in the United States and our management must devote substantial time to public company compliance and other compliance requirements.

As a U.S. public company whose ADSs trade on Nasdaq, we have incurred and will continue to incur significant legal, accounting, insurance and other expenses. We are subject to the reporting requirements of the Exchange Act, which requires, among other things, that we file with the SEC annual, quarterly and current reports with respect to our business and financial condition and must comply with the Nasdaq listing requirements and other applicable securities rules and regulations. In addition, the Sarbanes-Oxley Act, as well as rules subsequently adopted by the SEC and the Nasdaq to implement provisions of the Sarbanes-Oxley Act, impose significant requirements on public companies, including requiring establishment and maintenance of effective disclosure and financial controls and changes in corporate governance practices.

We expect the rules and regulations applicable to public companies to substantially increase our legal and financial compliance costs and to make some activities more time-consuming and costly. Our insurance costs have increased, particularly for directors and officers liability insurance, and we may be required to incur further substantial increased costs to maintain the same or similar coverage or be forced to accept reduced coverage in future. To the extent these requirements divert the attention of our management and personnel from other business concerns, they could have a material adverse effect on our business, financial condition and results of operations. The increased costs will increase our net loss and may require us to reduce costs in other areas of our business or increase the requirement for future financing. These laws and regulations could also make it more difficult and expensive for us to attract and retain qualified persons to serve on our board of directors, our board committees or as our executive officers. Furthermore, if

we are unable to satisfy our obligations as a public company, we could be subject to delisting of the ADSs from Nasdaq, fines, sanctions and other regulatory action and potentially civil litigation.

Raising additional capital may cause dilution to our existing shareholders, restrict our operations or require us to relinquish rights to our technologies or product candidate.

We may seek additional capital through a combination of public and private equity offerings, debt financings, strategic partnerships and alliances and licensing arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms may include liquidation or other preferences that adversely affect your rights as a shareholder. The incurrence of indebtedness would result in increased fixed payment obligations and could involve certain restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. If we raise additional funds through strategic partnerships and alliances and licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies or product candidates, or grant licenses on terms unfavorable to us.

We may be classified as a passive foreign investment company in any taxable year and U.S. holders of our ADSs could be subject to adverse U.S. federal income tax consequences.

The rules governing passive foreign investment companies, or PFICs, can have adverse effects for U.S. federal income tax purposes. The tests for determining PFIC status for a taxable year depend upon the relative values of certain categories of assets and the relative amounts of certain kinds of income. The determination of whether we are a PFIC depends on the particular facts and circumstances (such as the valuation of our assets, including goodwill and other intangible assets) and may also be affected by the application of the PFIC rules, which are subject to differing interpretations. In addition, it is not entirely clear how to apply the income test to a company like us, which for any particular taxable year may have gross income that is either entirely passive or that significantly exceeds any active gross income, but the overall losses of which from research and development activities exceed the overall amount of its gross income for that year. Based on our estimated gross income, the average value of our assets, including goodwill and the nature of our active business, although not free from doubt, we do not believe that the Company was classified as a PFIC for U.S. federal income tax purposes for the U.S. taxable year ended December 31, 2020. There can be no assurance, however, that we will not be considered to be a PFIC for this taxable year or any particular year in the future because PFIC status is factual in nature, depends upon factors not wholly within our control, generally cannot be determined until the close of the taxable year in question and is determined annually.

If we are a PFIC, U.S. holders of our ADSs would be subject to adverse U.S. federal income tax consequences, such as ineligibility for any preferred tax rates on capital gains or on actual or deemed dividends, interest charges on certain taxes treated as deferred, and additional reporting requirements under U.S. federal income tax laws and regulations. A U.S. holder of our ADSs may be able to mitigate some of the adverse U.S. federal income tax consequences described above with respect to owning the ADSs if we are classified as a PFIC, provided that such U.S. investor is eligible to make, and validly makes, a "mark-to-market" election. In certain circumstances a U.S. Holder can make a "qualified electing fund" election to mitigate some of the adverse tax consequences described with respect to an ownership interest in a PFIC by including in income its share of the PFIC's income on a current basis. However, we do not currently intend to prepare or provide the information that would enable a U.S. Holder to make a qualified electing fund election.

Investors should consult their own tax advisors regarding our PFIC status for any taxable year and the potential application of the PFIC rules to an investment in our ADSs or ordinary shares.

If we fail to establish and maintain proper internal controls, our ability to produce accurate financial statements or comply with applicable regulations could be impaired.

We must maintain effective internal control over financial reporting in order to accurately and timely report our results of operations and financial condition. The rules governing the standards that must be met for our management to assess our internal control over financial reporting pursuant to Section 404 of the Sarbanes-Oxley Act are complex and require significant documentation, testing and possible remediation. These stringent standards require that our audit committee be advised and regularly updated on management's review of internal control over financial reporting.

Our compliance with applicable provisions of Section 404 requires that we incur substantial accounting expenses and expend significant management attention and time on compliance-related issues as we implement additional corporate governance practices and comply with reporting requirements. If we fail to staff our accounting and finance function adequately or maintain internal control over financial reporting adequate to meet the requirements of the Sarbanes-Oxley Act, our business and reputation may be harmed. Moreover, if we are not able to comply with the applicable requirements of Section 404 in a timely manner, we may be subject to sanctions or investigations by regulatory authorities, including the SEC and Nasdaq. Furthermore, if we are unable to conclude that our internal control over financial reporting is effective or if our independent registered public accounting firm identifies deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, we could lose investor confidence in the accuracy and completeness of our financial reports, the market price of our ADSs could decline, and we could be subject to sanctions or investigations by the SEC, Nasdaq or other regulatory authorities. Failure to implement or maintain effective internal control systems required of U.S. public companies could also restrict our access to the capital markets. The occurrence of any of the foregoing would also require additional financial and management resources.

U.S. investors may have difficulty enforcing civil liabilities against our company, our directors, officers and members of senior management.

We are incorporated under the laws of England and Wales. The rights of holders of our ordinary shares and, therefore, certain of the rights of holders of ADSs, are governed by English law, including the provisions of the Companies Act 2006, and by our articles of association. These rights differ in certain respects from the rights of shareholders in typical U.S. corporations organized in, for example, Delaware. Some of our directors, officers and members of senior management reside outside the United States, and a substantial portion of our assets and all or a substantial portion of the assets of such persons are located outside the United States. As a result, it may be difficult for you to serve legal process on us or our directors and executive officers or have any of them appear in a U.S. court. The United States and the United Kingdom do not currently have a treaty providing for the recognition and enforcement of judgments, other than arbitration awards, in civil and commercial matters. The enforceability in the United Kingdom of any judgment of a U.S. federal or state court will depend on the particular facts of the case as well as the laws and any treaties in effect at the time, including conflicts of laws principles (such as those bearing on the question of whether a U.K. court would recognize the basis on which a U.S. court had purported to exercise jurisdiction over a defendant). In this context, there is doubt as to the enforceability in the United Kingdom, in original actions or in actions for enforcement of judgments of U.S. courts, of civil liabilities based solely on the federal securities laws of the United States. In addition, awards for punitive damages in actions brought in the United States or elsewhere may be unenforceable in the United Kingdom. An award for monetary damages under the U.S. securities laws would likely be considered punitive if it did not seek to compensate the claimant for loss or damage suffered and was intended to punish the defendant.

Provisions in the U.K. City Code on Takeovers and Mergers that may have anti-takeover effects do not apply to us.

The U.K. City Code on Takeovers and Mergers, or the Takeover Code, applies to an offer for, among other things, a public company whose registered office is in the United Kingdom if the company is considered by the Panel on Takeovers and Mergers, or the Takeover Panel, to have its place of central management and control in the United Kingdom (or the Channel Islands or the Isle of Man). This is known as the "residency test." The test for central management and control under the Takeover Code is different from that used by the U.K. tax authorities. Under the Takeover Code, the Takeover Panel will determine whether we have our place of central management and control in the United Kingdom by looking at various factors, including the structure of our Board, the functions of the directors and where they are resident.

In July 2018, the Takeover Panel confirmed that, based on our current circumstances, we are not subject to the Takeover Code. As a result, our shareholders are not entitled to the benefit of certain takeover offer protections provided under the Takeover Code. We believe that this position is unlikely to change at any time in the near future but, in accordance with good practice, we will review the situation on a regular basis and consult with the Takeover Panel if there is any change in our circumstances which may have a bearing on whether the Takeover Panel would determine our place of central management and control to be in the United Kingdom.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

The following table summarizes the facilities we lease as of December 31, 2020, including the location and size of the facilities, and their primary use.

Location	Approximate Square Feet	Primary Usage	Lease Expiration Dates
Abingdon, Oxfordshire, United Kingdom	67,140	Corporate headquarters, Research, Development, Process development, Manufacturing, Administration	October 2041
Abingdon, Oxfordshire, United Kingdom	46,017	Manufacturing, Process Development, Research	October 2041
Philadelphia, Pennsylvania, United States	47,700	Manufacturing, Process Development, Research	October 2031
Stevenage, Hertfordshire, United Kingdom	2,642	Administration	December 2023

As of December 31, 2020, all of the above sites were utilized by the Company with the exception of our facilities in Abingdon, Oxfordshire, of 46,017 square feet, which are not currently occupied after completion of external works in November 2018.

We believe that our existing facilities are adequate for our near-term needs, but we expect to need additional space as we grow and expand our operations. We believe that suitable additional or alternative office, laboratory, and manufacturing space will be available as required in the future on commercially reasonable terms.

Item 3. Legal Proceedings

As of December 31, 2020, we were not a party to any material legal proceedings.

Item 4. Mine Safety Disclosures

Not applicable

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

General Market Information

Our ADSs have been listed on The Nasdaq Global Select Market since May 6, 2015 and are traded under "ADAP". Each ADS represents six ordinary shares. As of February 24, 2021, there were approximately 27 holders of record of our ordinary shares, par value £0.001 per share, and approximately eight holders of record of our ADSs. The closing sale price per ADS on Nasdaq on February 24, 2021 was $5.99.

Equity Compensation Plans

For information about our equity compensation plans, see Part III, Item 11, below

Sales of Unregistered Securities

We did not sell any unregistered securities during the year ended December 31, 2020.

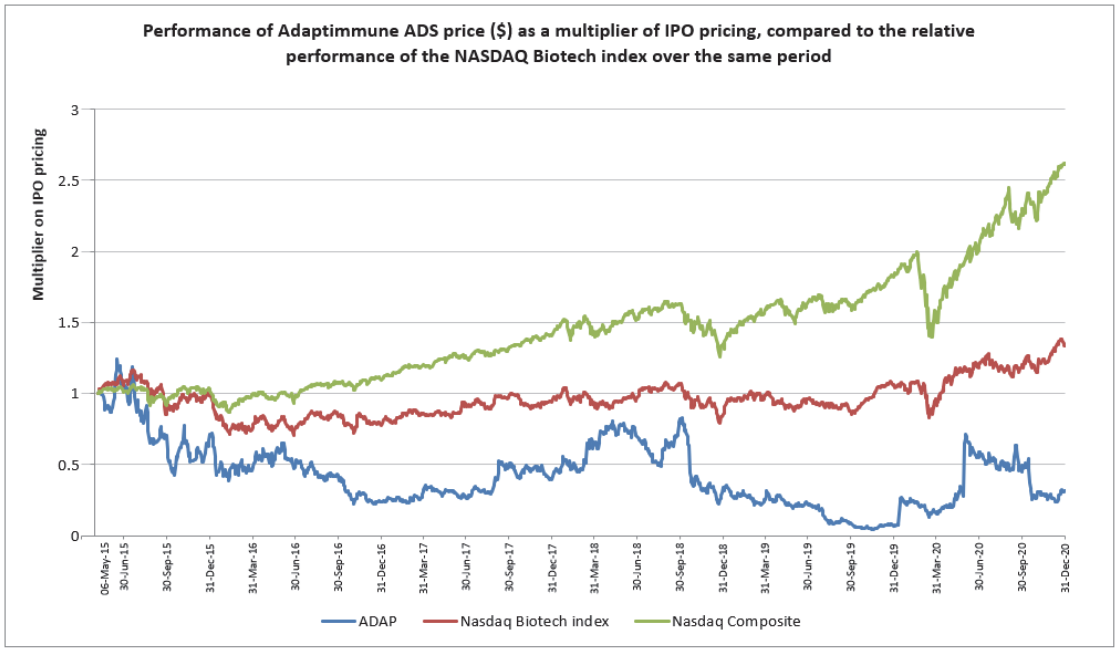
Company Purchases of Equity Securities

We did not repurchase any of our equity securities during the year ended December 31, 2020.

Stock Performance Graph

Notwithstanding any statement to the contrary in any of our previous or future filings with the Securities and Exchange Commission, the following information relating to the price performance of our ADSs shall not be deemed "filed" with the Securities and Exchange Commission or "soliciting material" under the Exchange Act and shall not be incorporated by reference into any such filings.

The following graph compares the cumulative total shareholder return on our ADSs with that of the Nasdaq Biotech Index and the Nasdaq Composite Index for the period that our ADSs were publicly traded, which commenced on May 6, 2015. We selected the Nasdaq Biotech Index because our ADSs trade on The Nasdaq Global Select Market and we believe this indicates our relative performance against a group consisting of more similarly situated companies.



Item 6. Selected Financial Data

Not applicable.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

You should read the following discussion and analysis of our financial condition and results of operations in conjunction with our consolidated financial statements and the related notes to those statements included elsewhere in this Annual Report. In addition to our historical consolidated financial information, the following discussion contains forward-looking statements that reflect our plans, estimates, beliefs and expectations. Our actual results and the timing of events could differ materially from those discussed in these forward-looking statements. Factors that could cause or contribute to these differences include those discussed below and elsewhere in this Annual Report, particularly in Part I, Item 1A. "Risk Factors."

Overview

We are a clinical-stage biopharmaceutical company focused on providing novel cell therapies to people with cancer. We are a leader in the development of T-cell therapies for solid tumors and have seen responses in six solid tumors in clinical trials.

Our proprietary platform enables us to identify cancer targets, find and develop cell therapy candidates active against those targets and produce therapeutic candidates for administration to patients. Our cell therapy candidates include Specific Peptide Enhanced Affinity Receptor ("SPEAR") T-cells, which use genetically engineered T-cell receptors; next generation T-cell Infiltrating Lymphocytes ("TiLs") where a patient's own T-cells are co-administered with our next generation technology, and HLA-independent TCRs ("HiTs") where surface proteins are targeted independently of the peptide-HLA complex.

Clinical Pipeline Progress

We have multiple clinical trials ongoing:

- ***SPEARHEAD-1 Phase 2 Trial with ADP-A2M4****:* A registration directed Phase 2 clinical trial is underway in synovial sarcoma and myxoid round cell liposarcoma ("MRCLS") indications in which the MAGE-A4 antigen is expressed. Subject to the successful conclusion of the SPEARHEAD-1 trial during the first half of 2021 and approval of a Biologics License Application ("BLA") by the FDA we plan to commercially launch ADP-A2M4 in 2022 for treatment of synovial sarcoma.

- ***SPEARHEAD-2 Phase 2 Trial with ADP-A2M4*****:** A Phase 2 trial combining ADP-A2M4 with pembrolizumab in patients with head and neck cancer expressing the MAGE-A4 antigen is underway at clinical sites in the United States.

- ***SURPASS Phase 1 Trial with ADP-A2M4CD8***: Enrollment is ongoing in a Phase 1 trial for our next generation SPEAR T-cells, ADP-A2M4CD8, focusing on treatment of patients with lung, gastroesophageal, head and neck and bladder cancers in which the MAGE-A4 antigen is expressed. Based on the responses seen in the Phase 1 clinical trial using ADP-A2M4 and initial responses seen in the SURPASS trial, we are planning to initiate a Phase 2 clinical trial with ADP-A2M4CD8 in esophageal and esophagogastric ("EGJ") cancers in mid-2021.

- ***ADP-A2AFP Phase 1 Trial***: We continue treating patients in our Phase 1, open-label, dose-escalation trial designed to evaluate the safety and anti-tumor activity of our alpha fetoprotein ("AFP") therapeutic candidate for the treatment of hepatocellular carcinoma ("HCC"). A further cohort has also been initiated for patients with tumors other than HCC that express the AFP antigen.

- ***ADP-A2M4 Phase 1 Trial – Radiation Sub-study***: Our Phase 1 clinical trial of ADP-A2M4 in urothelial, melanoma, head and neck, ovarian, non-small cell lung, esophageal and gastric, synovial sarcoma and MRCLS cancers has now completed enrollment. A radiation sub-study of this trial continues to enroll patients and is assessing whether low-dose radiation enhances T-cell tumor trafficking and responses.

COVID-19 pandemic and Our Business

During the COVID-19 pandemic we have continued to focus on ensuring the safety or our work force whilst continuing the work we do to make our therapies available to people with cancer. Our facilities in the U.S. and U.K. remain open to support critical manufacturing and scientific activities. Where our employees do not need to come into the facilities to perform critical activities, those employees are working from home.

The pandemic has created challenges for conducting clinical trials and we continue to work with our clinical sites to enroll and treat patients at the earliest possible time particularly given that many of our patients have late stage cancer. Certain clinical sites have chosen to postpone treatment of patients or participation in trials whilst the pandemic is impacting resources at those sites. We also anticipate increasing challenges around our supply chain. Many of the materials and consumables we require for manufacture and supply of products and also for research are also required for manufacture of COVID-19 vaccines and as a result will be prioritized to meet vaccine supplies.

We will continue to adjust our working practices as the pandemic progresses to ensure we can continue to treat people with cancer as quickly and as effectively as possible.

Financial Operations Overview

Revenue

The Company has two contracts with customers: the GSK Collaboration and License Agreement and the Astellas Collaboration Agreement.

The GSK Collaboration Agreement

The GSK Collaboration and License Agreement consists of multiple performance obligations. GSK nominated its third target under the Collaboration and License Agreement in 2019, and the Company received $3.2 million following the nomination of the target, which is being recognized as revenue as development progresses.

The Astellas Collaboration Agreement

On January 13, 2020, the Company entered into a collaboration agreement with Astellas. The Company received a $50.0 million non-refundable upfront payment in January 2020 after entering into the agreement. Under the agreement the parties will agree on up to three targets and will co-develop T-cell therapies directed to those targets pursuant to an agreed research plan. For each target, Astellas will fund co-development up until completion of a Phase 1 trial for products directed to such target. In addition, Astellas was also granted the right to develop, independently of Adaptimmune, allogeneic T-cell therapy candidates directed to two targets selected by Astellas. Astellas will have sole rights to develop and commercialize products resulting from these two targets.

The agreement consists of the following performance obligations: (i) research services and rights granted under the co-exclusive license for each of the three co-development targets and (ii) the rights granted for each of the two independent Astellas targets. The revenue allocated to the co-development targets is recognized as the development of products directed to the targets progresses up until completion of a Phase 1 trial. The revenue allocated to each of the research licenses for the targets being independently developed by Astellas will be recognized when the associated license commences, which is upon designation of a target by Astellas.

Research and Development Expenses

Research and development expenditures are expensed as incurred. Research and development expenses consist principally of the following:

- salaries for research and development staff and related expenses, including benefits;

- costs for production of preclinical compounds and drug substances by contract manufacturers;
- fees and other costs paid to contract research organizations in connection with additional preclinical testing and the performance of clinical trials;
- costs associated with the development of a process to manufacture and supply our lentiviral vector and cell therapies for use in clinical trials;
- costs to develop manufacturing capability at our U.S. facility for manufacture of cell therapies for use in clinical trials;
- costs relating to facilities, materials and equipment used in research and development;
- costs of acquired or in-licensed research and development which does not have alternative future use;
- costs of developing assays and diagnostics;
- an allocation of indirect costs clearly related to research and development;
- amortization and depreciation of property, plant and equipment and intangible assets used to develop our cells therapies; and
- share-based compensation expenses.

These expenses are partially offset by:

- reimbursable tax and expenditure credits from the U.K. government.

Research and development expenditure is presented net of reimbursements from reimbursable tax and expenditure credits from the U.K. government. As a company that carries out extensive research and development activities, we benefit from the U.K. research and development tax credit regime for small and medium sized companies ("SME R&D Tax Credit Scheme"), whereby our principal research subsidiary company, Adaptimmune Limited, is able to surrender the trading losses that arise from its research and development activities for a payable tax credit of up to approximately 33.4% of eligible research and development expenditures. Qualifying expenditures largely comprise employment costs for research staff, consumables and certain internal overhead costs incurred as part of research projects for which we do not receive income. Subcontracted research expenditures are eligible for a cash rebate of up to approximately 21.7%. A large proportion of costs in relation to our pipeline research, clinical trials management and manufacturing development activities, all of which are being carried out by Adaptimmune Limited, are eligible for inclusion within these tax credit cash rebate claims.

Expenditures incurred in conjunction with our collaboration agreements are not qualifying expenditures under the SME R&D Tax Credit Scheme but certain of these expenditures can be reimbursed through the U.K. research and development expenditure credit scheme (the "RDEC Scheme"). Under the RDEC Scheme tax relief is given at 12% (up to April 1, 2020) and 13% (after April 1, 2020) of allowable R&D costs, which may result in a payable tax credit at an effective rate of approximately 10.3% of qualifying expenditure for the year ended December 31, 2020.

Our research and development expenses may vary substantially from period to period based on the timing of our research and development activities, which depends upon the timing of initiation of clinical trials and the rate of enrollment of patients in clinical trials. The duration, costs, and timing of clinical trials and development of our cell therapies will depend on a variety of factors, including:

- the scope, rate of progress, and expense of our ongoing as well as any additional clinical trials and other research and development activities;

- uncertainties in clinical trial enrollment rates;
- future clinical trial results;
- significant and changing government regulation;
- the timing and receipt of any regulatory approvals; and
- supply and manufacture of lentiviral vector and cell therapies for clinical trials.

A change in the outcome of any of these variables may significantly change the costs and timing associated with the development of that SPEAR T-cell. For example, if the FDA, or another regulatory authority, requires us to conduct clinical trials beyond those that we currently anticipate will be required for regulatory approval, or if we experience significant delays in enrollment in any of our clinical trials, we could be required to expend significant additional financial resources and time on the completion of clinical development.

General and Administrative Expenses

Our general and administrative expenses consist principally of:

- salaries for employees other than research and development staff, including benefits;
- business development expenses, including travel expenses;
- professional fees for auditors, lawyers and other consulting expenses;
- costs of facilities, communication, and office expenses;
- cost of establishing commercial operations;
- information technology expenses;
- amortization and depreciation of property, plant and equipment and intangible assets not related to research and development activities; and
- share-based compensation expenses.

Other Income (Expense), Net

Other income (expense), net primarily comprises foreign exchange gains (losses). We are exposed to foreign exchange rate risk because we currently operate in the United Kingdom and United States. Our expenses are generally denominated in the currency in which our operations are located, which are the United Kingdom and United States. However, our U.K.-based subsidiary incurs significant research and development costs in U.S. dollars and, to a lesser extent, Euros. Our U.K. subsidiary has an intercompany loan balance in U.S. dollars payable to the ultimate parent company, Adaptimmune Therapeutics plc. Since July 1, 2019, the intercompany loan has been considered of a long-term investment nature as repayment is not planned or anticipated in the foreseeable future. It is Adaptimmune Therapeutics plc's intent not to request payment of the intercompany loan for the foreseeable future. The foreign exchange gains or losses arising on the revaluation of intercompany loans of a long-term investment nature are reported within other comprehensive (loss) income, net of tax.

Our results of operations and cash flows will be subject to fluctuations due to changes in foreign currency exchange rates, which could harm our business in the future. We seek to minimize this exposure by maintaining

currency cash balances at levels appropriate to meet forthcoming expenditure in U.S. dollars and pounds sterling. To date, we have not used hedging contracts to manage exchange rate exposure, although we may do so in the future.

Taxation

We are subject to corporate taxation in the United Kingdom and the United States. We incur tax losses and tax credit carryforwards in the United Kingdom. No deferred tax assets are recognized on our U.K. losses and tax credit carryforwards because there is currently no indication that we will make sufficient taxable profits to utilize these tax losses and tax credit carryforwards.

We benefit from reimbursable tax credits in the United Kingdom through the SME R&D Tax Credit Scheme as well as the RDEC Scheme which are presented as a deduction to research and development expenditure.

Our subsidiary in the United States has generated taxable profits due to a Service Agreement between our U.S. and U.K. operating subsidiaries and is subject to U.S. federal corporate income tax of 21%. Due to its activity in the United States, and the sourcing of its revenue, the U.S. subsidiary is not currently subject to any state or local income taxes. The Company also benefits from the U.S Research Tax Credit and Orphan Drug Credit.

In the future, if we generate taxable income in the United Kingdom, we may benefit from the United Kingdom's "patent box" regime, which would allow certain profits attributable to revenues from patented products to be taxed at a rate of 10%. As we have many different patents covering our products, future upfront fees, milestone fees, product revenues, and royalties may be taxed at this favorably low tax rate.

U.K. Value Added Tax ("VAT") is charged on all qualifying goods and services by VAT-registered businesses. An amount of 20% of the value of the goods or services is added to all relevant sales invoices and is payable to the U.K. tax authorities. Similarly, VAT paid on purchase invoices paid by Adaptimmune Limited and Adaptimmune Therapeutics plc is reclaimable from the U.K. tax authorities.

Results of Operations

Comparison of Years Ended December 31, 2020 and 2019

The following table summarizes the results of our operations for the years ended December 31, 2020 and 2019, together with the changes to those items (in thousands):

	Year ended December 31,		Increase/decrease	
	2020	2019		
Revenue	**$ 3,958**	**$ 1,122**	**$ 2,836**	**253 %**
Research and development (including losses accrued on firm purchase commitments of $- and $5,000)	(91,568)	(97,501)	(5,933)	(6)%
General and administrative expenses	(45,795)	(43,391)	2,404	6 %
Total operating expenses	**(137,363)**	**(140,892)**	**(3,529)**	**(3)%**
Operating loss	**(133,405)**	**(139,770)**	**6,365**	**(5)%**
Interest income	2,313	2,772	(459)	(17)%
Other income, net	1,162	75	(1,087)	(1,449)%
Loss before income taxes	**(129,930)**	**(136,923)**	**(6,993)**	**(5)%**
Income taxes	(162)	(242)	(80)	(33)%
Loss for the period	**$ (130,092)**	**$ (137,165)**	**$ (7,073)**	**(5)%**

Revenue

Revenue increased by $2.9 million to $4.0 million in the year ended December 31, 2020 compared to $1.1 million for the year ended December 31, 2019 due to an increase in development activities under our collaboration agreements.

We expect that revenues will increase in future periods as the Company increases development activities on the first target under the Astellas Collaboration Agreement and as further targets are nominated.

Research and development expenses

Research and development expenses decreased by $5.9 million to $91.6 million for the year ended December 31, 2020 from $97.5 million for the year ended December 31, 2019. Our research and development expenses comprise the following (in thousands):

	Year ended December 31,			
	2020	2019	Increase/decrease	
Salaries, materials, equipment, depreciation of property, plant and equipment and other employee-related costs[1]	$ 64,308	$ 63,240	$ 1,068	2 %
Subcontracted expenditure	33,744	32,788	956	3 %
Manufacturing facility expenditure	7,652	6,754	898	13 %
Accrued purchase commitments	—	5,000	(5,000)	(100)%
Share-based compensation expense	4,417	3,812	605	16 %
In-process research and development costs	889	4,556	(3,667)	(80)%
Reimbursements receivable for research and development tax and expenditure credits	(19,442)	(18,649)	(793)	4 %
	$ 91,568	**$ 97,501**	**$ (5,933)**	**(6)%**

(1) These costs are not analyzed by project since employees may be engaged in multiple projects at a time.

The net decrease in our research and development expenses of $5.9 million for the year ended December 31, 2020 compared to the year ended December 31, 2019 was primarily due to the following:

- an increase of $1.1 million in salaries, materials, equipment, depreciation of property, plant and equipment and other employee-related costs, primarily due to an increase in employee compensation in the year ended December 31, 2020, which was partially offset by lower consumables costs and a reduction in travel costs as a result of COVID-19;

- an increase of $1.0 million in subcontracted expenditures, including clinical trial expenses, contract research organization (CRO) costs and contract manufacturing expenses, largely driven by an increase in clinical trial patient costs;

- a decrease of $5.0 million in accrued purchase commitments, which relate to the supply of the Dynabeads® CD3/CD28 technology. In the year ended December 31, 2019, management considered that there was sufficient uncertainty surrounding the utility of the Dynabeads resulting in the purchase commitment being recognized in research and development expenses; and

- a decrease of $3.7 million in payments for in-process research and development as a result of our entering into a collaboration agreement relating to the development of next-generation SPEAR T-cell products with Alpine Immune Sciences, Inc. and Noile-Immune Biotech Inc. in the year ended December 31, 2019, offset by milestones payable to Universal Cells under our amended existing agreement in the year ended December 31, 2020

Our subcontracted costs for the year ended December 31, 2020 were $33.7 million, compared to $32.8 million in the same period of 2019. This includes $22.3 million directly associated with our ADP-A2M4, ADP-A2M4CD8, ADP-A2AFP and ADP-A2M10 SPEAR T-cells and $11.4 million of other costs.

Our research and development expenses are highly dependent on the phases and progression of our research projects and will fluctuate depending on the outcome of ongoing clinical trials. We expect that our research and development expenses will increase in future periods as we continue to invest in our research and development capabilities and as we progress towards regulatory approval of our first SPEAR T-cell product.

General and administrative expenses

General and administrative expenses increased by $2.4 million to $45.8 million for the year ended December 31, 2020 compared to $43.4 million in the same period in 2019. Our general and administrative expenses comprise the following (in thousands):

	Year ended December 31,		Increase/decrease	
	2020	2019		
Salaries, depreciation of property, plant and equipment and other employee-related costs	$ 25,408	$ 25,911	$ (503)	(2)%
Other corporate costs	15,586	11,145	4,441	40 %
Share-based compensation expense	5,997	7,241	(1,244)	(17)%
Reimbursements	(1,196)	(906)	(290)	32 %
	$ 45,795	**$ 43,391**	**$ 2,404**	**6 %**

The net increase in our general and administrative expenses of $2.4 million for the year ended December 31, 2020 compared to the same period in 2019 was primarily due to the following:

- an increase of $4.4 million in other corporate costs due to increased professional fees, insurance costs, investment in our IT systems, and costs associated with the buildout of our commercial capabilities; offset by

- a decrease of $1.2 million in share-based compensation expense due to option forfeitures.

We expect that our general and administrative expenses will increase in the future as we expand our operations and move towards commercial launch.

Interest income

Interest income decreased by $0.5 million to $2.3 million for the year ended December 31, 2020 compared to $2.8 million for the year ended December 31, 2019. Interest income primarily relates to interest on cash, cash equivalents and available-for-sale debt securities and is presented net of amortization/accretion of the premium/discount on purchase of the debt securities. Amortization on available-for-sale debt securities for the year ended December 31, 2020 was $3.8 million compared to accretion of $0.2 million for the year ended December 31, 2019.

Other income, net

Other income, net was $1.2 million for the year ended December 31, 2020 compared to $0.1 million for the year ended December 31, 2019. Other income, net primarily relates to unrealized foreign exchange gains and losses on cash and cash equivalents, and intercompany loans held in U.S. dollars by our U.K. subsidiary other than those of a long-term investment nature, where repayment is not planned or anticipated in the foreseeable future.

Income taxes

Income tax expense decreased to $162,000 for the year ended December 31, 2020 from $242,000 for the year ended December 31, 2019. Income taxes arise in the United States due to our U.S. subsidiary generating taxable profits. We incur losses in the United Kingdom.

Comparison of Years Ended December 31, 2019 and 2018

The following table summarizes the results of our operations for the years ended December 31, 2019 and 2018, together with the changes to those items (in thousands):

	Year ended December 31,			
	2019	2018	Increase/decrease	
Development revenue	$ 1,122	$ 20,391	$ (19,269)	(94)%
License revenue	—	39,114	(39,114)	(100)%
Total revenue	**1,122**	**59,505**	**(58,383)**	**(98)%**
Research and development (including losses accrued on firm purchase commitments of $5,000 and $-)	(97,501)	(98,269)	768	(1)%
General and administrative expenses	(43,391)	(43,601)	210	(0)%
Total operating expenses	**(140,892)**	**(141,870)**	**978**	**(1)%**
Operating loss	**(139,770)**	**(82,365)**	**(57,405)**	**70 %**
Interest income	2,772	2,849	(77)	(3)%
Other income (expense), net	75	(15,501)	15,576	(100)**%**
Loss before income taxes	**(136,923)**	**(95,017)**	**(41,906)**	**44 %**
Income taxes	(242)	(497)	255	(51)**%**
Loss for the period	**$ (137,165)**	**$ (95,514)**	**$ (41,651)**	**44 %**

Revenue

Revenue decreased by $58.4 million to $1.1 million in the year ended December 31, 2019 compared to $59.5 million for the year ended December 31, 2018.

The revenue recognized for the year ended December 31, 2019 was due to development work of products to the third target nominated by GSK under the Collaboration and License Agreement. The development and license revenue for the year ended December 31, 2018 was recognized due to the performance under the NY-ESO transition program and the PRAME development plan, which were completed in 2018.

Research and development expenses

Research and development expenses decreased by $0.8 million to $97.5 million for the year ended December 31, 2019 from $98.3 million for the year ended December 31, 2018. Our research and development expenses comprised the following (in thousands):

	Year ended December 31,			
	2019	2018	Increase/decrease	
Salaries, materials, equipment, depreciation of property, plant and equipment and other employee-related costs[(1)]	$ 63,240	$ 60,590	$ 2,650	4 %
Subcontracted expenditure	32,788	41,580	(8,792)	(21)%
Manufacturing facility expenditure	6,754	4,848	1,906	39 %
Accrued purchase commitments	5,000	—	5,000	NA
Share-based compensation expense	3,812	8,340	(4,528)	(54)%
Payments for in-process research and development	4,556	210	4,346	2,070 %
Reimbursements for research and development tax and expenditure credits and government grants	(18,649)	(17,299)	(1,350)	8 %
	$ 97,501	**$ 98,269**	**$ (768)**	**(1)**%

(1) These costs are not analyzed by project since employees may be engaged in multiple projects at a time.

The net decrease in our research and development expenses of $0.8 million for the year ended December 31, 2019 compared to the year ended December 31, 2018 was primarily due to the following:

- an increase of $2.7 million in salaries, materials, equipment, depreciation of property, plant and equipment and other employee-related costs, due to a combination of factors including wage inflation, increased temporary staff costs, and an increase in the average number of employees engaged in research and development from 320 to 322;

- a decrease of $8.8 million in subcontracted expenditures, including clinical trial expenses, contract research organization (CRO) costs and contract manufacturing expenses. This was primarily driven by a decrease in subcontracted expenses and clinical trial costs due to the transfer of NY-ESO to GSK in 2018;

- an increase in expenditure of $1.9 million on manufacturing due to increased activity at our U.S. facility in Philadelphia and the development of a dedicated vector manufacturing capability in Stevenage, Hertfordshire, United Kingdom;

- an increase of $5.0 million in accrued purchase commitments, which relate to the supply of the Dynabeads® CD3/CD28 technology. Management considered that there was sufficient uncertainty surrounding the future utility of the Dynabeads, which was dependent upon current clinical trial plans, the Company's clinical pipeline, manufacturing methods and undetermined future projects, to result in the purchase commitment being recognized in research and development expenses in the year ended December 31, 2019. Further details of the purchase commitment can be found in Note 9 of the Consolidated Financial Statements;

- a decrease of $4.5 million in share-based compensation expense due to forfeitures of share options;

- an increase of $4.3 million in payments for in-process research and development after entering into collaboration agreements relating to the development of next-generation SPEAR T-cell products with Alpine Immune Sciences, Inc. on May 14, 2019 and with Noile-Immune Biotech, Inc. on August 26, 2019; and

- an increase in reimbursements for research and development tax and expenditure credits and government grants of $1.4 million due to an increase in eligible R&D expenditure and more costs falling within the UK SME R&D scheme.

Our subcontracted costs for the year ended December 31, 2019 were $32.8 million, compared to $41.6 million in the same period of 2018, of which $18.5 million related to process development for our SPEAR T-cell platform and the remaining $14.3 million related to our wholly owned pipeline, including ADP-A2M4, ADP-A2M10 and ADP-A2AFP. Our research and development expenses are highly dependent on the phases and progression of our research projects and future clinical trial results and therefore fluctuate from period to period.

General and administrative expenses

General and administrative expenses remained flat at $43.4 million for the year ended December 31, 2019 compared to $43.6 million in the same period in 2018.

Interest income

Interest income was $2.8 million for the year ended December 31, 2019 compared to $2.8 million for the year ended December 31, 2018. Interest income primarily relates to interest on cash, cash equivalents and available-for-sale debt securities.

Other income (expense), net

Other income (expense), net was income of $0.1 million for the year ended December 31, 2019 compared to an expense of $15.5 million for the year ended December 31, 2018. Other income (expense), net relates to unrealized foreign exchange gains and losses on cash and cash equivalents, and intercompany loans held in U.S. dollars by our U.K. subsidiary other than those of a long-term investment nature, where repayment is not planned or anticipated in the foreseeable future. Beginning on July 1, 2019, the intercompany loan was considered of a long-term investment nature as repayment is not planned or anticipated in the foreseeable future. It is Adaptimmune Therapeutics plc's intent not to request payment of the intercompany loan for the foreseeable future. The foreign exchange gains or losses arising on the revaluation of intercompany loans of a long-term investment nature are reported within other comprehensive (loss) income, net of tax.

Income taxes

Income tax expense decreased to $242,000 for the year ended December 31, 2019 from $497,000 for the year ended December 31, 2018. Income taxes arise in the United States due to our U.S. subsidiary generating taxable profits. We incur losses in the United Kingdom.

Liquidity and Capital Resources

Sources of Funds

Since our inception, we have incurred significant net losses and negative cash flows from operations. We financed our operations primarily through sales of equity securities, cash receipts under our GSK Collaboration and License Agreement, government grants and research and development tax and expenditure credits. From inception through to December 31, 2020, we have raised:

- $853.8 million of proceeds from issues of equity, net of issue costs;

- $202.3 million through collaborative arrangements with GSK and Astellas; and

- $59.2 million in the form of U.K. research and development tax credits and receipts from the U.K. RDEC Scheme.

We use a non-GAAP measure, Total Liquidity, which is defined as the total of cash and cash equivalents and marketable securities, to evaluate the funds available to us in the near-term. A description of Total Liquidity and reconciliation to cash and cash equivalents, the most directly comparable U.S. GAAP measure, are provided below under "Non-GAAP measures".

As of December 31, 2020, we had cash and cash equivalents of $56.9 million and Total Liquidity of $368.2 million. We believe that our Total Liquidity will be sufficient to fund our operations, based upon our currently anticipated research and development activities and planned capital spending, into early 2023.

During the year ended December 31, 2020, the Company incurred a net loss of $130.1 million, used cash of $53.6 million in its operating activities, and generated revenues of $4.0 million. The Company has incurred net losses in most periods since inception, and it expects to incur operating losses in foreseeable future periods.

Management considers that there are no conditions or events, in the aggregate, that raise substantial doubt about the entity's ability to continue as a going concern for a period of at least one year from the date the financial statements are issued.

Cash Flows

The following table summarizes the results of our cash flows for the years ended December 31, 2020, 2019 and 2018 (in thousands).

	Year ended December 31, 2020	Year ended December 31, 2019	Year ended December 31, 2018
Net cash used in operating activities	$ (53,591)	$ (112,507)	$ (104,388)
Net cash (used in) provided by investing activities	(278,924)	94,945	(17,457)
Net cash provided by financing activities	340,051	366	102,690
Cash, cash equivalents and restricted cash	61,484	54,908	72,476

Year ended December 31, 2020 compared to year ended December 31, 2019

Net cash used in operating activities decreased by $58.9 million to $53.6 million for the year ended December 31, 2020 from $112.5 million for the year ended December 31, 2019. The net cash used in operating activities in the year end December 31, 2020 was significantly reduced by the $50.0 million upfront payment from Astellas in January 2020 upon entering into the Astellas Collaboration Agreement and an increase in the U.K. R&D tax credits received in the year ended December 31, 2020 compared to the year ended December 31, 2019.

Year ended December 31, 2019 compared to year ended December 31, 2018

Net cash used in operating activities increased by $8.1 million to $112.5 million for the year ended December 31, 2019 from $104.4 million for the year ended December 31, 2018. Net cash used in operating activities was significantly impacted by the timing of milestone payments received from GSK under the GSK Collaboration and License Agreement. In the year ended December 31, 2019, we received $3.2 million of milestone payments from GSK compared to $30.2 million in the year ended December 31, 2018. Excluding cash inflows from the GSK milestone payments and the associated VAT, the cash used in operations decreased in the year ended December 31, 2019. This was primarily due to higher subcontracted expenditure being incurred in 2018 under the GSK Collaboration Agreement.

Components of cash flows from operating activities

Net cash used in operating activities of $53.6 million for the year ended December 31, 2020 comprised a net loss of $130.1 million offset by noncash items of $20.5 million and $56.0 million of favorable changes in operating assets and liabilities. The noncash items consisted primarily of depreciation expense on plant and equipment of $6.6 million, amortization of intangibles of $1.0 million, share-based compensation expense of $10.4 million, amortization of marketable securities of $3.8 million, offset by unrealized foreign exchange gains of $1.3 million.

Net cash used in operating activities of $112.5 million for the year ended December 31, 2019 comprised a net loss of $137.2 million offset by noncash items of $20.0 million and $4.7 million of favorable changes in operating assets and liabilities. The noncash items consisted primarily of depreciation expense on plant and equipment of $7.2 million, amortization of intangibles of $0.8 million, share-based compensation expense of $11.1 million, and unrealized foreign exchange losses of $1.1 million.

Net cash used in operating activities of $104.4 million for the year ended December 31, 2018 comprised a net loss of $95.5 million and $45.3 million of adverse changes in operating assets and liabilities offset by noncash items of $36.5 million. The noncash items consisted primarily of depreciation expense on plant and equipment of $7.2 million, share-based compensation expense of $16.2 million and a realized loss on marketable securities of $2.5 million and unrealized foreign exchange losses of $9.7 million.

Investing Activities

Net cash used in investing activities was $278.9 million for the year ended December 31, 2020 compared to net cash provided by investing activities of $94.9 million for the year ended December 31, 2019, and net cash used in investing activities of $17.5 million for the year ended December 31, 2018. The Company invests surplus cash and cash equivalents in marketable securities. Cash used in investing activities increased in the year ended December 31, 2020, because the Company invested surplus cash, including net proceeds from issuance of shares in marketable securities. Investment in marketable securities of $381.0 million was offset by $105.0 million from maturity or redemption of marketable securities in the year ended December 31, 2020.

Net cash provided by investing activities in the year ended December 31, 2019 included purchases of property and equipment of $1.6 million, acquisition of intangibles of $1.5 million, investment in marketable securities of $27.3 million, offset by cash inflows from maturity or redemption of marketable securities of $125.3 million. The Company invests surplus cash and cash equivalents in marketable securities. In the year ended December 31, 2019, the investments in marketable securities were reduced to fund the Company's ongoing operations.

Net cash used in investing activities in the year ended December 31, 2018, included purchases of property and equipment of $3.9 million, acquisition of intangibles of $0.8 million, and investment in marketable securities of $150.8 million, offset by cash inflows from maturity or redemption of marketable securities of $138.0 million. In the year ended December 31, 2018, the Company invested surplus cash, including net proceeds from issuance of shares in marketable securities.

Financing Activities

Net cash provided by financing activities was $340.1 million, $0.4 million and $102.7 million for the years ended December 31, 2020, 2019 and 2018, respectively.

Net cash provided by financing activities for the year ended December 31, 2020 consisted of net proceeds from public offerings of $334.4 million and proceeds from exercise of share options of $5.7 million.

Net cash provided by financing activities for the year ended December 31, 2019 consisted of proceeds from exercise of share options of $0.4 million.

Net cash provided by financing activities for the year ended December 31, 2018 consisted of net proceeds of $99.7 million raised through a registered direct offering and proceeds from exercise of share options of $3.0 million.

Non-GAAP Measures

Total Liquidity (a non-GAAP financial measure)

Total Liquidity (a non-GAAP financial measure) is the total of cash and cash equivalents and marketable securities. Each of these components appears in the Consolidated Balance Sheet. The U.S. GAAP financial measure most directly comparable to Total Liquidity is cash and cash equivalents as reported in the consolidated financial statements, which reconciles to Total Liquidity as follows (in thousands):

	December 31, 2020	December 31, 2019
Cash and cash equivalents	$ 56,882	$ 50,412
Marketable securities - available-for-sale debt securities	311,335	39,130
Total Liquidity	**$ 368,217**	**$ 89,542**

We believe that the presentation of Total Liquidity provides useful information to investors because management reviews Total Liquidity as part of its management of overall liquidity, financial flexibility, capital structure and leverage. The definition of Total Liquidity includes marketable securities, which are highly liquid and available to use in our current operations.

Off-Balance Sheet Arrangements

During the periods presented, we did not have, and we do not currently have, any off-balance sheet arrangements, as defined in the rules and regulations of the SEC.

Contractual Obligations

The following table summarizes our contractual commitments and obligations as of December 31, 2020 (in thousands):

	Payments due by period				
	Total	Less than 1 year	1 - 3 years	3 - 5 years	More than 5 years
Operating lease obligations[(1)]	$ 30,008	$ 4,326	$ 8,498	$ 8,070	$ 9,114
Purchase obligations[(2)(3)]	13,927	6,334	7,593	—	—
Total contractual cash obligations	**$ 43,935**	**$ 10,660**	**$ 16,091**	**$ 8,070**	**$ 9,114**

(1) Operating lease obligations primarily consists of minimum lease payments under non-cancellable leases for laboratory and office property in Oxfordshire, United Kingdom, and Philadelphia, United States. Further details of our operating leases are provided in Item 2 and in Note 8 of Item 16 of this Annual Report.

(2) Purchase obligations include signed orders for capital equipment, clinical materials and contract manufacturing, which have been committed but not yet received and committed funding under the MD Anderson strategic alliance.

(3) Future clinical trial expenses are not considered purchase commitments because they are contingent on enrollment in clinical trials and the activities required to be performed by the clinical sites.

Purchase obligations

In 2016, we entered into a multi-year strategic alliance with MD Anderson designed to expedite the development of T-cell therapies for multiple types of cancer. We and MD Anderson are collaborating on a number of

studies including clinical and preclinical development of our SPEAR T-cell therapies targeting NY-ESO and MAGE-A10 and we will collaborate on future clinical stage first and second generation SPEAR T-cell therapies such as ADP-A2M4 across a number of cancers, including bladder, lung, ovarian, head and neck, melanoma, synovial sarcoma, esophageal and gastric cancers. Under the terms of the agreement, we committed at least $19.6 million to fund studies. The Company made an upfront payment of $3.4 million to MD Anderson in the year ended December 31, 2017 and milestone payments of $2.3 million in the years ended December 31, 2018 and 2020, respectively. Payment of this funding is contingent on mutual agreement to study orders under the alliance agreement and the performance of set milestones by MD Anderson. The timing and amount of future payments is uncertain.

Other obligations

On August 26, 2019, we entered into a collaboration and license agreement relating to the development of next-generation SPEAR T-cell products with Noile-Immune Biotech Inc. ("Noile-Immune"). An upfront exclusive license option fee of $2.5 million was paid to Noile-Immune in 2019. This has been recognized within Research and Development in the Consolidated Statement of Operations for the year ended December 31, 2019. Under the agreement, development and commercialization milestone payments up to a maximum of $312 million may be payable if all possible targets are selected and milestones achieved. Noile-Immune would also receive mid-single-digit royalties on net sales of resulting products.

On May 14, 2019, we entered into a Collaboration Agreement relating to the development of next-generation SPEAR T-cell products with Alpine Immune Sciences Inc. ("Alpine"). We paid an upfront exclusive license option fee of $2.0 million to Alpine in June 2019. Under the agreement, Adaptimmune will pay Alpine for ongoing research and development funding costs and development and commercialization milestone payments up to a maximum of $288 million, which may be payable if all possible targets are selected and milestones achieved. The upfront payment of $2.0 million and the payments for ongoing research are recognized within Research and development. Alpine would also receive low single-digit royalties on worldwide net sales of applicable products.

In 2015, we entered into a Research Collaboration and License Agreement relating to gene editing and HLA-engineering technology with Universal Cells. We paid an upfront license fee of $2.5 million to Universal Cells. A milestone payment of $3.0 million was made in February 2016 and further milestone payments of $0.2 million and $0.9 million were made in the year ended December 31, 2018 and 2017, respectively. The agreement was amended and re-stated as of January 13, 2020, primarily to reflect changes to the development plan agreed between the parties. Further milestone payments of up to $37.6 million are payable if certain development and product milestones are achieved. Universal Cells would also receive a profit-share payment for the first product, and royalties on sales of other products utilizing its technology.

Critical Accounting Policies and Significant Judgments and Estimates

We have prepared our consolidated financial statements in accordance with U.S. GAAP. Our preparation of these consolidated financial statements requires us to make estimates, assumptions and judgments that affect the reported amounts of assets, liabilities, expenses and related disclosures at the date of the consolidated financial statements, as well as revenue and expenses during the reporting periods. We evaluate our estimates and judgments on an ongoing basis. We base our estimates on historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results could therefore differ materially from these estimates under different assumptions or conditions.

While our significant accounting policies are described in more detail in Note 2 to our consolidated financial statements, we believe the following accounting policies to be critical to the judgments and estimates used in the preparation of our financial statements.

Revenue Recognition

Allocation of transaction price using the relative standalone selling price

Upfront payments are allocated between performance obligations using the Company's best estimate of the relative standalone selling price of the performance obligation. The relative standalone selling price is estimated by determining the market values of development and license obligations. As these inputs are not directly observable, the estimate is determined considering all reasonably available information including internal pricing objectives used in negotiating the contract, together with internal data regarding the cost and margin of providing services for each deliverable, taking into account the different stage of development of each development program and adjusted-market data from comparable arrangements. This assessment involves significant judgment and could have a significant impact on the amount and timing of revenue recognition.

Determination of the cost to complete

Revenue allocated to performance obligations relating to provision of development activities is recognized using an estimate of the percentage of completion of the project based on the costs incurred on the project as a percentage of the total expected costs. The determination of the percentage of completion requires management to estimate the costs-to-complete the project. A detailed estimate of the costs-to-complete is re-assessed every reporting period based on the latest project plan and discussions with project teams. If a change in facts or circumstances occurs, the estimate will be adjusted and the revenue will be recognized based on the revised estimate. The difference between the cumulative revenue recognized based on the previous estimate and the revenue recognized based on the revised estimate would be recognized as an adjustment to revenue in the period in which the change in estimate occurs. Determining the estimate of the cost-to-complete requires significant judgment and may have a significant impact on the amount and timing of revenue recognition. However, a 10% change in the cost-to-complete at December 31, 2020, would not have a significant impact on revenue recognized in the year ended December 31, 2020.

Operating Leases (Incremental Borrowing Rate)

Since the rates implicit in our leases are not readily determinable, we use the Company’s incremental borrowing rates (the rate of interest that we would have to pay to borrow on a collateralized basis over a similar term for an amount equal to the lease payments in a similar economic environment) based on the information available at commencement date in determining the discount rate used to calculate the present value of lease payments. As we have no external borrowings, the incremental borrowing rates are determined using information on indicative borrowing rates that would be available to us based on the value, currency and borrowing term provided by financial institutions, adjusted for company and market specific factors.

Although we do not expect our estimates of the incremental borrowing rates to generate material differences within a reasonable range of sensitivities, judgement is involved in selecting an appropriate rate, and the rate selected for each lease will have an impact on the value of the lease liability and corresponding right-of-use (ROU) asset in the Consolidated Balance Sheets.

Deferred Taxes

Deferred tax is accounted for using the asset and liability method that requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the financial statement carrying amount and the tax bases of assets and liabilities at the applicable tax rates. As of December 31, 2020, we have deferred tax assets of $85.4 million, offset by deferred tax liabilities of $3.0 million and a valuation allowance of $82.4 million.

A valuation allowance is provided when it is more-likely-than-not that some portion or all of the deferred tax assets will not be realized. Future realization of the tax benefit of a deferred tax asset depends on the existence of

sufficient taxable income of the appropriate character (for example, ordinary income or capital gain) within the carryback or carryforward period available under the tax law. The Company considers the following possible sources of taxable income when assessing whether there is sufficient taxable income to realize a tax benefit for deductible temporary differences and carryforwards:

- future reversals of existing taxable temporary differences;
- future taxable income exclusive of reversing temporary differences and carryforwards;
- taxable income in prior carryback year(s) if carryback is permitted under the tax law; and
- tax-planning strategies.

The Company considers both positive and negative evidence regarding realization of the deferred tax assets and the subjectivity of this evidence. This assessment includes estimating future taxable income, scheduling reversals of temporary differences, evaluating expectations of future profitability, determining refund potential in the event of net operating loss carrybacks, and evaluating potential tax-planning strategies.

The Company has generated losses in the United Kingdom since inception and is forecasted to generate tax losses for the next several years and therefore the deferred tax assets arising in the United Kingdom are only considered more-likely-than-not of being realized to the extent that reversing temporary taxable differences are available.

The U.S. subsidiary has generated taxable income since the fiscal year ended June 30, 2014 due to a Service Agreement between our U.S. and U.K. operating subsidiaries and is forecast to generate taxable income in future periods. In determining whether the deferred tax asset is more-likely-than-not of being recognized, the Company has taken into account the short history of taxable profits, the forecast of future taxable income, including whether future originating temporary deductible differences are likely to be realized, and the reversal of temporary taxable deductions. Several of the temporary deductible differences reverse over a long time period, such as those relating to share-based compensation expense, which the Company forecasts are likely to reverse over the next five years. The Company considers that forecasting taxable income beyond the next few years is very subjective due to the nature and extent of the development process subcontracted from the Company in the United Kingdom to the U.S. subsidiary. Less weight has been given to forecasts of taxable income beyond the next few years. The deferred tax asset arising in the United States is only considered more-likely-than-not of being realized to the extent that there are available reversing temporary taxable differences. The Company's analysis is subject to estimates and judgments particularly relating to the timing of the reversal of temporary deductible differences for stock compensation expense and the availability of future taxable income beyond the next few years, which depend on the nature and extent of the subcontract development work performed by the U.S. subsidiary.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to market risks in the ordinary course of our business, which are principally limited to interest rate fluctuations, foreign currency exchange rate fluctuations, particularly between pound sterling and U.S. dollar, and credit risk. These risks are managed by maintaining an appropriate mix of cash deposits and securities in various currencies, placed with a variety of financial institutions for varying periods according to expected liquidity requirements.

As of December 31, 2020, we held $311.3 million in marketable securities, with the aim of diversifying our investments and reducing credit risks. We have not entered into investments for trading or speculative purposes.

Interest Rate Risk

Our surplus cash and cash equivalents are invested in interest-bearing savings, money market funds, corporate debt securities and commercial paper from time to time. Our investments in corporate debt securities are subject to fixed interest rates. Our exposure to interest rate sensitivity is impacted by changes in the underlying U.K. and U.S. bank interest rates and the fair market value of our corporate debt securities will fall in value if market interest rates increase. We do not believe an immediate one percentage point change in interest rates would have a material effect on the fair market value of our portfolio, and therefore we do not expect our operating results or cash flows to be significantly affected by changes in market interest rates.

Currency Risk

We are exposed to foreign exchange rate risk because we currently operate in the United Kingdom and the United States. Our expenses are generally denominated in the currency in which our operations are located, which are the United Kingdom and the United States. However, our U.K.-based subsidiary incurs significant research and development costs in U.S. dollars and, to a lesser extent, Euros.

The results of operations and cash flows will be subject to fluctuations due to changes in foreign currency exchange rates, which could harm our business in the future. We seek to minimize this exposure by maintaining currency cash balances at levels appropriate to meet forthcoming expenses in U.S. dollars and pounds sterling. To date, we have not used forward exchange contracts or other currency hedging products to manage our exchange rate exposure, although we may do so in the future. The exchange rate as of December 31, 2020, the last business day of the reporting period, was £1.00 to $1.36.

Credit Risk

Our cash and cash equivalents are held with multiple banks and we monitor the credit rating of those banks. Our investments in corporate debt securities and commercial paper are subject to credit risk. Our investment policy limits investments to certain types of instruments, such as money market instruments, corporate debt securities and commercial paper, places restrictions on maturities and concentration by type and issuer and specifies the minimum credit ratings for all investments and the average credit quality of the portfolio.

Trade receivables were $0.1 million and $nil as of December 31, 2020 and 2019, respectively. Trade receivables arise in relation to the Astellas Collaboration Agreement and the GSK Collaboration and License Agreement. We have been transacting with Astellas since January 2020 and GSK since 2014, during which time no impairment losses have been recognized. No balances were past due as of December 31, 2020.

Item 8. Financial Statements and Supplementary Data

The financial statements required to be filed pursuant to this Item 8 are appended to this report. An index of those financial statements is found in Item 15.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None

Item 9A. Controls and Procedures

Disclosure Controls and Procedures.

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of our disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) as of the end of the period covered by this Annual Report.

Based on such evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures were effective to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms, and is accumulated and communicated to our management, including our Chief Executive and Chief Financial Officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.

Management's Annual Report on Internal Control over Financial Reporting.

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Securities Exchange Act Rule 13a-15(f). Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Therefore, even those systems determined to be effective can provide only reasonably assurance of achieving their control objectives. Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in *Internal Control—Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on our evaluation under the framework, our management concluded that our internal control over financial reporting was effective as of December 31, 2020.

KPMG, LLP, the independent registered public accounting firm who audited the Company's Consolidated Financial Statements included in this Annual Report, has issued a report on the Company's internal control over financial reporting as stated in their report which appears herein.

Changes in Internal Control Over Financial Reporting.

There has been no change in our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) that occurred during the fourth quarter of 2020 that has materially affected, or is reasonably likely to materially affect, internal control over financial reporting.

Item 9B. Other Information

None

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required under this item is incorporated herein by reference to our definitive proxy statement pursuant to Regulation 14A, to be filed with the Commission not later than 120 days after the close of our fiscal year ended December 31, 2020.

Item 11. Executive Compensation

The information required under this item is incorporated herein by reference to our definitive proxy statement pursuant to Regulation 14A, to be filed with the Commission not later than 120 days after the close of our fiscal year ended December 31, 2020.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required under this item is incorporated herein by reference to our definitive proxy statement pursuant to Regulation 14A, to be filed with the Commission not later than 120 days after the close of our fiscal year ended December 31, 2020.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required under this item is incorporated herein by reference to our definitive proxy statement pursuant to Regulation 14A, to be filed with the Commission not later than 120 days after the close of our fiscal year ended December 31, 2020.

Item 14. Principal Accounting Fees and Services

The information required under this item is incorporated herein by reference to our definitive proxy statement pursuant to Regulation 14A, to be filed with the Commission not later than 120 days after the close of our fiscal year ended December 31, 2020.

PART IV

Item 15. Exhibits, Financial Statement Schedules

(a) 1. Financial Statements

As part of this Annual Report on Form 10-K, the consolidated financial statements are listed in the accompanying index to financial statements on page F-1.

2. Financial Statement Schedules

All schedules have been omitted because they are not required, not applicable, not present in amounts sufficient to require submission of the schedule, or the required information is otherwise included.

3. Exhibit Index

The following is a list of exhibits filed as part of this Annual Report on Form 10-K or are incorporated herein by reference:

Exhibit Number	Description of Exhibit
3.1*	Articles of Association of Adaptimmune Therapeutics plc (incorporated by reference to Exhibit 3.1 to our Form 8-K filed with the SEC on June 16, 2016)
4.1*	Form of certificate evidencing ordinary shares (incorporated by reference to Exhibit 4.1 to the Company's Registration Statement on Form F-1 (file no: 333-203267)).
4.2*	Form of Deposit Agreement among Adaptimmune Therapeutics plc, Citibank, N.A., as the depositary bank and Holders and Beneficial Owners of ADSs issued thereunder (incorporated by reference to Exhibit 4.2 to the Company's Registration Statement on Form F-1 (file no: 333-203267)).
4.3*	Form of American Depositary Receipt (included in Exhibit 4.2) (incorporated by reference to Exhibit 4.3 to the Company's Registration Statement on Form F-1 (file no: 333-203267)).
4.4**	Description of the Registrant's Securities.
10.1*†	Collaboration Agreement, dated January 5, 2018, between Adaptimmune Limited and Cell Therapy Catapult Limited (incorporated by reference to Exhibit 10.1 to the Company's Annual Report on Form 10-K for the year ended December 31, 2017 filed with the SEC on March 15, 2018).
10.2*†	Collaboration Agreement dated May 14, 2019 between Adaptimmune Limited and AIS Operating Co., Inc., f/k/a Alpine Immune Sciences, Inc. (incorporated by reference to Exhibit 10.1 to our Form 10-Q filed with the SEC on August 1, 2019).
10.3*†	Collaboration agreement dated as of August 26, 2019, by and between Adaptimmune Limited and Noile-Immune Biotech, Inc. (incorporated by reference to Exhibit 10.1 to our Form 8-K filed with the SEC on August 27, 2019).
10.4*†	Collaboration and License Agreement, dated January 13, 2020, by and between Universal Cells, Inc. and Adaptimmune Limited (incorporated by reference to Exhibit 10.4 to the Company's Annual Report on Form 10-K for the year ended December 31, 2019 filed with the SEC on February 27, 2020).
10.5*†	Amended and Restated Research Collaboration and License Agreement, dated January 13, 2020, by and between Adaptimmune Limited and Universal Cells, Inc. and effective as of November 25, 2015 (incorporated by reference to Exhibit 10.5 to the Company's Annual Report on Form 10-K for the year ended December 31, 2019 filed with the SEC on February 27, 2020).
10.6*†	First Amendment to Commercial Development and Supply Agreement, dated November 23, 2019, between Adaptimmune Limited and Life Technologies Corporation and effective as of November 18, 2019 (incorporated by reference to Exhibit 10.6 to the Company's Annual Report on Form 10-K for the year ended December 31, 2019 filed with the SEC on February 27, 2020).
10.7*†	Commercial Development and Supply Agreement, dated June 16, 2016, by and between Life Technologies Corporation and Adaptimmune Limited and effective as of June 1, 2016 (incorporated by reference to Exhibit 10.1 to our Form 10-Q filed with the SEC on August 8, 2016).

Exhibit Number	Description of Exhibit
10.8*†	Strategic Alliance Agreement, dated September 23, 2016, by and between Adaptimmune LLC and The University Of Texas M.D. Anderson Cancer Center (incorporated by reference to Exhibit 10.11 to our Form 10-Q filed with the SEC on November 10, 2016).
10.9*	Employment Agreement dated as of December 16, 2020 by and between Adaptimmune, LLC and Elliot Norry, and effective January 1, 2021, (incorporated by reference to Exhibit 10.1 to our Form 8-K filed with the SEC on December 16, 2020).
10.10*	Senior Vice President Severance Policy dated December 4, 2019 (incorporated by reference to Exhibit 10.2 to our Form 8 K filed with the SEC on January 13, 2020).
10.11*	Employment Agreement dated as of August 1, 2019 by and between Adaptimmune, LLC and John Lunger (incorporated by reference to Exhibit 10.1 to our Form 8-K filed with the SEC on August 1, 2019).
10.12*	Employment Agreement dated as of June 26, 2019 by and between Adaptimmune, LLC and Adrian Rawcliffe (incorporated by reference to Exhibit 10.1 to our Form 8-K filed with the SEC on June 26, 2019).
10.13*	James Noble Letter Agreement dated June 26, 2019 (incorporated by reference to Exhibit 10.2 to our Form 8-K filed with the SEC on June 26, 2019).
10.14*	James Noble Variation Agreement dated June 26, 2019 (incorporated by reference to Exhibit 10.3 to our Form 8-K filed with the SEC on June 26, 2019).
10.15*	James Noble Letter of Appointment dated June 26, 2019 (incorporated by reference to Exhibit 10.4 to our Form 8-K filed with the SEC on June 26, 2019).
10.16*	Letter of Appointment dated July 5, 2018 and effective from July 5, 2018 between the Company and John Furey (incorporated by reference to Exhibit 99.1 to our Form 8-K filed with the SEC on July 6, 2018).
10.17*	Employment Agreement dated as of March 15, 2017 by and between Adaptimmune, LLC and William Bertrand (incorporated by reference to Exhibit 99.2 to our Form 8-K filed with the SEC on March 15, 2017).
10.18*	Service Agreement dated March 15, 2017 between Adaptimmune Limited and Helen Tayton-Martin (incorporated by reference to Exhibit 99.3 to our Form 8-K filed with the SEC on March 15, 2017).
10.19*	Executive Severance policy of Adaptimmune Therapeutics plc, dated March 10, 2017, and effective March 10, 2017 (incorporated by reference to Exhibit 10.21 to the Company's Annual Report on Form 10-K for the year ended December 31, 2016 filed with the SEC on March 13, 2017).
10.20*	Letter of Appointment, dated May 23, 2016 and effective June 23, 2016, between the Company and Barbara Duncan (incorporated by reference to Exhibit 99.1 to our Form 8-K filed with the SEC on June 23, 2016).

Exhibit Number	Description of Exhibit
10.21*	Letter of Appointment, dated August 9, 2016 and effective August 11, 2016, between the Company and David M. Mott (incorporated by reference to Exhibit 10.1 to our Form 8-K filed with the SEC on August 12, 2016).
10.22*	Letter of Appointment, dated August 9, 2016 and effective August 11, 2016, between the Company and Lawrence M. Alleva (incorporated by reference to Exhibit 10.2 to our Form 8-K filed with the SEC on August 12, 2016).
10.23*	Letter of Appointment, dated August 9, 2016 and effective August 11, 2016, between the Company and Ali Behbahani (incorporated by reference to Exhibit 10.3 to our Form 8-K filed with the SEC on August 12, 2016).
10.24*	Letter of Appointment, dated August 9, 2016 and effective August 11, 2016, between the Company and Elliott Sigal (incorporated by reference to Exhibit 10.5 to our Form 8-K filed with the SEC on August 12, 2016).
10.25*	Service Agreement dated February 17, 2020, between Adaptimmune Limited and Gavin Wood, and effective April 1, 2020, (incorporated by reference to Exhibit 10.1 to our Form 8-K filed with the SEC on February 18, 2020).
10.26*	Letter of Appointment, dated November 7, 2016 and effective November 14, 2016, between the Company and Tal Zaks (incorporated by reference to Exhibit 10.8 to our Form 10-Q filed with the SEC on November 10, 2016).
10.27*	Adaptimmune Therapeutics plc Company Share Option Plan, dated March 16, 2015, as amended on April 15, 2015, as further amended on January 13, 2016 (incorporated by reference to Exhibit 4.32 to the Company's Transition Report on Form 20-F filed with the SEC on March 17, 2016).
10.28*	Adaptimmune Therapeutics plc 2015 Share Option Scheme, dated March 16, 2015, as amended on April 15, 2015, January 13, 2016 and December 18, 2017 (incorporated by reference to Exhibit 10.5 to the Company's Annual Report on Form 10-K for the year ended December 31, 2017 filed with the SEC on March 15, 2018).
10.29*	Adaptimmune Therapeutics plc 2016 Employee Share Option Scheme, dated January 14, 2016, as amended on December 18, 2017 (incorporated by reference to Exhibit 10.6 to the Company's Annual Report on Form 10-K for the year ended December 31, 2017 filed with the SEC on March 15, 2018).
10.30*	Adaptimmune Limited Share Option Scheme (Incorporating Management Incentive Options), as amended on January 13, 2016 (incorporated by reference to Exhibit 4.28 to the Company's Transition Report on Form 20-F filed with the SEC on March 17, 2016).
10.31*	Adaptimmune Limited 2014 Share Option Scheme (Incorporating Enterprise Management Incentive Options), as amended on January 13, 2016 (incorporated by reference to Exhibit 4.29 to the Company's Transition Report on Form 20-F filed with the SEC on March 17, 2016).

Exhibit Number	Description of Exhibit
10.32*	Adaptimmune Limited Company Share Option Plan, dated December 16, 2014, as amended on January 13, 2016 (incorporated by reference to Exhibit 4.30 to the Company's Transition Report on Form 20-F filed with the SEC on March 17, 2016).
10.33*	Lease, dated February 28, 2018, between MEPC Milton Park No. 1 Limited, MEPC Milton Park No. 2 Limited and Adaptimmune Limited relating to 39 Innovation Drive, Milton Park (incorporated by reference to Exhibit 10.3 to the Company's Annual Report on Form 10-K for the year ended December 31, 2017 filed with the SEC on March 15, 2018).
10.34*	Rent Security Deposit Deed, dated February 28, 2018, between MEPC Milton Park No. 1 Limited, MEPC Milton Park No. 2 Limited and Adaptimmune Limited relating to 39 Innovation Drive, Milton Park (incorporated by reference to Exhibit 10.4 to the Company's Annual Report on Form 10-K for the year ended December 31, 2017 filed with the SEC on March 15, 2018)..
10.35*	Lease, dated October 24, 2016, by and between MEPC Milton Park No. 1 Limited and MEPC Milton Park No. 2 Limited, Adaptimmune Limited and Adaptimmune Therapeutics plc relating to 60 Jubilee Avenue Milton Park (incorporated by reference to Exhibit 10.12 to our Form 10-Q filed with the SEC on November 10, 2016).
10.36*	Lease Agreement, dated July 28, 2015, between L/S 351 Rouse Boulevard, LP, and Adaptimmune LLC relating to 351 Rouse Boulevard, Philadelphia, Pennsylvania (incorporated by reference to Exhibit 4.14 to the Company's Transition Report on Form 20-F filed with the SEC on October 13, 2015).
10.37*†	Amendment Agreement No. 6, dated July 20, 2018 between Adaptimmune Limited and GlaxoSmithKline Intellectual Property Development Ltd. (incorporated by reference to Exhibit 10.1 to our Form 10-Q filed with the SEC on August 2, 2018).
10.38*†	Amendment Agreement No. 5, dated September 7, 2017 between Adaptimmune Limited and GlaxoSmithKline Intellectual Property Development Ltd. (incorporated by reference to Exhibit 10.1 to our Form 10-Q filed with the SEC on November 2, 2017).
10.39*†	Amendment Agreement No. 2, dated February 2, 2016 between Adaptimmune Limited and GlaxoSmithKline Intellectual Property Development Ltd (incorporated by reference to Exhibit 4.4 to the Company's Transition Report on Form 20-F filed with the SEC on March 17, 2016).
10.40*†	Amendment Agreement No. 1, dated May 8, 2015 between Adaptimmune Limited and GlaxoSmithKline Intellectual Property Development Ltd (incorporated by reference to Exhibit 4.3 to the Company's Transition Report on Form 20-F filed with the SEC on March 17, 2016).
10.41*†	Collaboration and License Agreement, dated May 30, 2014 between Adaptimmune Limited and GlaxoSmithKline Intellectual Property Development Ltd (incorporated by reference to Exhibit 10.2 to our Registration Statement on Form F-1 (file no: 333-203267)).
14.1*	Code of Business Conduct and Ethics of Adaptimmune Therapeutics plc (incorporated by reference to Exhibit 14.1 to our Form 8-K filed with the SEC on July 20, 2017).
21.1**	List of Subsidiaries.
23.1**	Consent of KPMG LLP
31.1**	Certificate of Chief Executive Officer pursuant to 17 CFR 240.13a-14(a).

Exhibit Number	Description of Exhibit
31.2**	Certificate of Chief Financial Officer pursuant to 17 CFR 240.13a-14(a).
32.1**	Certificate of Chief Executive Officer pursuant to 17 CFR 240.13a-14(b) and 18 U.S.C.1350.
32.2**	Certificate of Chief Financial Officer pursuant to 17 CFR 240.13a-14(b) and 18 U.S.C.1350.
101.INS**	XBRL Instance Document – the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH**	Inline XBRL Taxonomy Extension Schema Document.
101.CAL**	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF**	Inline XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB**	Inline XBRL Taxonomy Extension Label Linkbase Document.
101.PRE**	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
104**	Cover Page Interactive Data File (formatted in Inline XBRL and contained in Exhibit 101).

* Previously filed.
** Filed herewith.
† Confidential treatment has been granted with respect to portions of this exhibit. A complete copy of this exhibit, including the redacted terms, has been filed separately with the Securities and Exchange Commission.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, hereunto duly authorized, in Oxfordshire, England, on February 25, 2021.

ADAPTIMMUNE THERAPEUTICS PLC

By: /s/ Adrian Rawcliffe
Name: Adrian Rawcliffe
Title: Chief Executive Officer and Director

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Adrian Rawcliffe and Gavin Wood, and each of them, as his or her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them or their or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed by the following persons on February 25, 2021, in the capacities indicated.

Signature	Title	Date
/s/ Adrian Rawcliffe Adrian Rawcliffe	Chief Executive Officer and Director *(Principal Executive Officer)*	February 25, 2021
/s/ Gavin Wood Gavin Wood	Chief Financial Officer (*Principal Accounting and Financial Officer*)	February 25, 2021
/s/ David M. Mott David M. Mott	Chairman of the Board of Directors	February 25, 2021
/s/ Lawrence M. Alleva Lawrence M. Alleva	Director	February 25, 2021
/s/ Ali Behbahani, MD Ali Behbahani, MD	Director	February 25, 2021
/s/ Barbara Duncan Barbara Duncan	Director	February 25, 2021
/s/John Furey John Furey	Director	February 25, 2021
/s/ James Noble James Noble	Director	February 25, 2021
/s/ Elliott Sigal, MD, PhD Elliott Sigal, MD, PhD	Director	February 25, 2021
/s/ Tal Zaks, MD, PhD Tal Zaks, MD, PhD	Director	February 25, 2021

Index to the Financial Statements:

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors Adaptimmune Therapeutics plc:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Adaptimmune Therapeutics plc and subsidiaries (the Company) as of December 31, 2020 and 2019, the related consolidated statements of operations, comprehensive loss, changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2020, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2020 and 2019, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2020, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2020, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 25, 2021 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Change in Accounting Principles

As discussed in Note 2 to the consolidated financial statements, the Company changed its method of accounting for leases as of January 1, 2019 due to the adoption of Accounting Standard Codification Topic 842, Leases.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Allocation of transaction price to the performance obligations

As discussed in Note 3 to the consolidated financial statements, the Company recorded revenue of $3.96 million during the year ended 31 December 2020. As discussed in Note 2, the Company enters into revenue generating collaboration agreements with its customers, which contain multiple performance obligations. In determining revenue, the Company allocates the aggregate transaction price to the performance obligations depending on the relative standalone selling price of the performance obligations.

We identified the allocation of transaction price to the performance obligations as a critical audit matter. A high degree of subjective auditor judgement was required to evaluate certain key unobservable inputs used to determine the relative standalone selling price, specifically the market values of development and license obligations. The following are the primary procedures we performed to address this critical audit matter.

- We evaluated the design and tested the operating effectiveness of an internal control related to the revenue process, specifically the development of relative standalone selling prices.

-We evaluated the unobservable inputs listed above by comparing them to external sources, such as available information regarding industry pricing practices, and with historical agreements of a similar nature entered into by the Company.

Evaluation of estimation of costs to complete for Astellas collaboration agreement

As discussed in Note 3 to the consolidated financial statements, the Company recorded revenue of $3.96 million during the year ended 31 December 2020, a portion of which related to the Astellas collaboration agreement. As discussed in Note 2, for research and development activities carried out under the Astellas collaboration agreement, the Company recognizes revenue over time based on costs incurred compared to total expected costs for that project. This determination requires the company to estimate cost-to-complete, which is done at every reporting period based on the latest project plan and discussions with project teams.

We identified the evaluation of estimation of costs to complete for the Astellas collaboration agreement as a critical audit matter. A high degree of auditor judgement was involved in assessing the appropriateness of the costs to complete estimated by the company. The following are the primary procedures we performed to address this critical audit matter.

- We evaluated the design and tested the operating effectiveness of certain internal controls related to the revenue process, including controls related to the initial development and periodic reassessment of estimates of costs to complete.

- We evaluated factors used in determining the stage of completion, by assessing the Company's assumptions underlying the estimate of total contract costs to be incurred and comparing them to similar research and development projects carried out by the Company.

- We compared the Company's estimate of total contract costs to be incurred to the actual costs incurred to assess the Company's ability to accurately estimate costs.

- We compared a selection of costs incurred to date to timesheet data or third-party costs to assess the accuracy of information used in determining revenue to be recognised.

-We inquired of the project manager and alliance director of the project to evaluate factors impacting the costs to complete, including progress to date and the estimate of remaining costs to be incurred

- We inspected minutes of Joint Steering Committee meetings between the Company and Astellas to evaluate factors impacting costs to complete and compared it with the outcome of the inquiries stated above.

/s/ KPMG LLP

We have served as the Company's auditor since 2010.

KPMG LLP

Reading, United Kingdom
February 25, 2021

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors Adaptimmune Therapeutics Plc:

Opinion on Internal Control Over Financial Reporting

We have audited Adaptimmune Therapeutics plc and subsidiaries' (the Company) internal control over financial reporting as of December 31, 2020, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2020, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2020 and 2019, the related consolidated statements of operations, comprehensive loss, changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2020, and the related notes (collectively, the consolidated financial statements), and our report dated February 25, 2021 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ KPMG LLP

Reading, United Kingdom
February 25, 2021

ADAPTIMMUNE THERAPEUTICS PLC
CONSOLIDATED BALANCE SHEETS
(in thousands, except share data)

	December 31, 2020	December 31, 2019
Assets		
Current assets		
Cash and cash equivalents	$ 56,882	$ 50,412
Marketable securities - available-for-sale debt securities	311,335	39,130
Accounts receivable, net of allowance for doubtful accounts of $0 and $0	139	—
Other current assets and prepaid expenses (including current portion of clinical materials)	29,796	30,947
Total current assets	**398,152**	**120,489**
Restricted cash	4,602	4,496
Clinical materials	—	2,503
Operating lease right-of-use assets, net of accumulated amortization	18,880	20,789
Property, plant and equipment, net of accumulated depreciation	27,778	31,068
Intangibles, net of accumulated amortization	1,730	2,198
Total assets	$ **451,142**	$ **181,543**
Liabilities and stockholders' equity		
Current liabilities		
Accounts payable	$ 6,389	$ 6,357
Operating lease liabilities, current	2,773	2,493
Accrued expenses and other accrued liabilities	27,079	23,363
Deferred revenue, current	2,832	2,128
Total current liabilities	**39,073**	**34,341**
Operating lease liabilities, non-current	20,938	22,966
Deferred revenue, non-current	49,260	—
Other liabilities, non-current	644	598
Total liabilities	**109,915**	**57,905**
Contingencies and commitments — Note 10		
Stockholders' equity		
Common stock - Ordinary shares par value £0.001, 1,038,249,630 authorized and 928,754,958 issued and outstanding (2019: 785,857,300 authorized and 631,003,568 issued and outstanding)	1,325	943
Additional paid in capital	935,706	585,623
Accumulated other comprehensive loss	(10,048)	(7,264)
Accumulated deficit	(585,756)	(455,664)
Total stockholders' equity	**341,227**	**123,638**
Total liabilities and stockholders' equity	$ **451,142**	$ **181,543**

See accompanying notes to Consolidated Financial Statements.

ADAPTIMMUNE THERAPEUTICS PLC
CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except share and per share data)

	Year ended December 31, 2020	Year ended December 31, 2019	Year ended December 31, 2018
Development revenue	$ 3,958	$ 1,122	$ 20,391
License revenue	—	—	39,114
Revenue	**3,958**	**1,122**	**59,505**
Operating expenses			
Research and development (including losses accrued on firm purchase commitments of $0, $5,000 and $0)	(91,568)	(97,501)	(98,269)
General and administrative	(45,795)	(43,391)	(43,601)
Total operating expenses	**(137,363)**	**(140,892)**	**(141,870)**
Operating loss	**(133,405)**	**(139,770)**	**(82,365)**
Interest income	2,313	2,772	2,849
Other income (expense), net	1,162	75	(15,501)
Loss before income taxes	**(129,930)**	**(136,923)**	**(95,017)**
Income taxes	(162)	(242)	(497)
Net loss attributable to ordinary shareholders	**$ (130,092)**	**$ (137,165)**	**$ (95,514)**
Net loss per ordinary share			
Basic and diluted	**$ (0.15)**	**$ (0.22)**	**$ (0.16)**
Weighted average shares outstanding:			
Basic and diluted	854,783,763	629,805,218	584,338,942

See accompanying notes to Consolidated Financial Statements.

ADAPTIMMUNE THERAPEUTICS PLC
CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
(in thousands)

	Year ended December 31, 2020	Year ended December 31, 2019	Year ended December 31, 2018
Net loss	**$ (130,092)**	**$ (137,165)**	**$ (95,514)**
Other comprehensive (loss) income, net of tax			
Foreign currency translation adjustments, net of tax of $0, $0 and $0	(19,220)	(9,478)	8,260
Foreign currency gains (losses) on intercompany loan of a long-term investment nature, net of tax of $0, $0 and $0	16,364	11,783	—
Unrealized gains (losses) on available-for-sale debt securities			
Unrealized holding gains (losses) on available-for-sale debt securities, net of tax of $0, $0 and $0	161	207	1,145
Reclassification adjustment for gains on available-for-sale debt securities included in net loss, net of tax of $0, $0 and $0	(89)	(13)	2,473
Total comprehensive loss for the period	**$ (132,876)**	**$ (134,666)**	**$ (83,636)**

See accompanying notes to Consolidated Financial Statements.

ADAPTIMMUNE THERAPEUTICS PLC
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
(in thousands, except share data)

	Common stock	Common stock	Additional paid in capital	Accumulated other comprehensive (loss) income	Accumulated deficit	Total stockholders' equity
Balance as of January 1, 2018	**562,119,334**	**$ 854**	**$ 455,401**	**$ (21,641)**	**$ (231,630)**	**$ 202,984**
Cumulative effects of applying new accounting standards	—	—	—	—	8,645	8,645
Balance as of January 1, 2018 (adjusted)	**562,119,334**	**854**	**455,401**	**(21,641)**	**(222,985)**	**211,629**
Issuance of shares upon completion of registered direct offering	60,000,000	78	99,575	—	—	99,653
Issuance of shares upon exercise of stock options	5,334,936	7	3,030	—	—	3,037
Other comprehensive income	—	—	—	11,878	—	11,878
Share-based compensation expense	—	—	16,202	—	—	16,202
Net loss	—	—	—	—	(95,514)	(95,514)
Balance as of December 31, 2018	**627,454,270**	**939**	**574,208**	**(9,763)**	**(318,499)**	**246,885**
Issuance of shares upon exercise of stock options	3,549,298	4	362	—	—	366
Other comprehensive income	—	—	—	2,499	—	2,499
Share-based compensation expense	—	—	11,053	—	—	11,053
Net loss	—	—	—	—	(137,165)	(137,165)
Balance as of December 31, 2019	**631,003,568**	**943**	**585,623**	**(7,264)**	**(455,664)**	**123,638**
Issuance of shares upon exercise of stock options	11,401,390	14	5,649	—	—	5,663
Issuance of shares in the January Offering	126,000,000	165	78,451	—	—	78,616
Issuance of shares upon exercise of the overallotment for the January Offering	18,900,000	24	11,914	—	—	11,938
Issuance of shares in the June Offering	123,000,000	155	209,831	—	—	209,986
Issuance of shares upon exercise of the overallotment for the June Offering	18,450,000	24	33,824	—	—	33,848
Other comprehensive loss	—	—	—	(2,784)	—	(2,784)
Share-based compensation expense	—	—	10,414	—	—	10,414
Net loss	—	—	—	—	(130,092)	(130,092)
Balance as of December 31, 2020	**928,754,958**	**$ 1,325**	**$ 935,706**	**$ (10,048)**	**$ (585,756)**	**$ 341,227**

See accompanying notes to Consolidated Financial Statements.

ADAPTIMMUNE THERAPEUTICS PLC
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	Year ended December 31, 2020	Year ended December 31, 2019	Year ended December 31, 2018
Cash flows from operating activities			
Net loss	$ (130,092)	$ (137,165)	$ (95,514)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation	6,627	7,172	7,188
Amortization	967	838	622
Share-based compensation expense	10,414	11,053	16,202
Unrealized foreign exchange (gains) losses	(1,333)	1,076	9,747
Amortization (accretion) on available-for-sale debt securities	3,836	(185)	237
Other	(55)	(13)	2,473
Changes in operating assets and liabilities:			
Decrease (increase) in receivables and other operating assets	1,747	(1,436)	(5,162)
Decrease (increase) in non-current operating assets	2,458	(1,450)	742
Increase (decrease) in payables and other liabilities	3,867	5,508	(2,702)
Increase (decrease) in deferred revenue	47,973	2,095	(38,221)
Net cash used in operating activities	**(53,591)**	**(112,507)**	**(104,388)**
Cash flows from investing activities			
Acquisition of property, plant and equipment	(2,341)	(1,592)	(3,910)
Acquisition of intangibles	(565)	(1,482)	(798)
Maturity or redemption of marketable securities	105,022	125,303	138,038
Investment in marketable securities	(381,040)	(27,284)	(150,787)
Net cash (used in) provided by investing activities	**(278,924)**	**94,945**	**(17,457)**
Cash flows from financing activities			
Proceeds from issuance of shares in registered direct offering	—	—	99,653
Proceeds from issuance of shares in the January offering	78,616	—	—
Proceeds from issuance of shares upon exercise of the overallotment for the January Offering	11,938	—	—
Proceeds from issuance of shares in the June Offering	209,986	—	—
Proceeds from issuance of shares upon exercise of the overallotment for the June Offering	33,848	—	—
Proceeds from exercise of stock options	5,663	366	3,037
Net cash provided by financing activities	**340,051**	**366**	**102,690**
Effect of currency exchange rate changes on cash, cash equivalents and restricted cash	(960)	(372)	3,335
Net increase (decrease) in cash, cash equivalents and restricted cash	6,576	(17,568)	(15,820)
Cash, cash equivalents and restricted cash at start of period	54,908	72,476	88,296
Cash, cash equivalents and restricted cash at end of period	**$ 61,484**	**$ 54,908**	**$ 72,476**
Supplemental cash flow information			
Interest received	$ 6,216	$ 3,426	$ 3,114
(Amortization) accretion on available-for-sale debt securities	(3,836)	185	(237)
Income taxes paid	75	201	258

See accompanying notes to Consolidated Financial Statements.

Note 1 — General

Adaptimmune Therapeutics plc is registered in England and Wales. Its registered office is 60 Jubilee Avenue, Milton Park, Abingdon, Oxfordshire, OX14 4RX, United Kingdom. Adaptimmune Therapeutics plc and its subsidiaries (collectively "Adaptimmune" or the "Company") is a clinical-stage biopharmaceutical company primarily focused on providing novel cell therapies to people with cancer. We are a leader in the development of T-cell therapies for solid tumors. The Company's proprietary platform enables it to identify cancer targets, find and develop cell therapy candidates active against those targets and produce therapeutic candidates for administration to patients.

The Company is subject to a number of risks similar to other biopharmaceutical companies in the early stage of clinical development including, but not limited to, the need to obtain adequate additional funding, possible failure of preclinical programs or clinical programs, the need to obtain marketing approval for its cell therapies, competitors developing new technological innovations, the need to successfully commercialize and gain market acceptance of its cell therapies, the need to develop a reliable commercial manufacturing process, the need to commercialize any cell therapies that may be approved for marketing, and protection of proprietary technology. If the Company does not successfully commercialize any of its cell therapies, it will be unable to generate product revenue or achieve profitability. The Company had an accumulated deficit of $585,756,000 as of December 31, 2020.

Note 2 — Summary of Significant Accounting Policies

(a) Basis of presentation

The Consolidated Financial Statements of Adaptimmune Therapeutics plc and its subsidiaries and other financial information included in this Annual Report have been prepared in accordance with generally accepted accounting principles in the United States of America ("US GAAP") and are presented in U.S. dollars. All significant intercompany accounts and transactions between the Company and its subsidiaries have been eliminated on consolidation.

(b) Use of estimates in financial statements

The preparation of financial statements, in conformity with U.S. GAAP and SEC regulations, requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the date of the Consolidated Financial Statements and reported amounts of revenues and expenses during the reporting period. Estimates and assumptions are primarily made in relation to revenue recognition, estimation of the incremental borrowing rate for operating leases, and valuation allowances relating to deferred tax assets. If actual results differ from the Company's estimates, or to the extent these estimates are adjusted in future periods, the Company's results of operations could either benefit from, or be adversely affected by, any such change in estimate.

(c) Going concern

In accordance with Accounting Standards Codification ("ASC") 205-40, Going Concern, the Company has evaluated whether there are conditions and events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern within one year after the date the financial statements are issued.

Management considers that there are no conditions or events, in the aggregate, that raise substantial doubt about the entity's ability to continue as a going concern for a period of at least one year from the date the financial statements are issued. Although our financial statements have been prepared on a going concern basis, if the Company fails to obtain sufficient additional financing in future, this may raise substantial doubt over the Company's ability to continue as a going concern in future reporting periods.

(d) Foreign currency

The reporting currency of the Company is the U.S. dollar. The Company has determined the functional currency of the ultimate parent company, Adaptimmune Therapeutics plc, is U.S. dollars because it predominately raises finance and expends cash in U.S. dollars. The functional currency of subsidiary operations is the applicable local currency. Transactions in foreign currencies are translated into the functional currency of the subsidiary in which they occur at the foreign exchange rate in effect on at the date of the transaction. Monetary assets and liabilities denominated in foreign currencies at the balance sheet date are translated into the functional currency of the relevant subsidiary at the foreign exchange rate in effect on the balance sheet date. Foreign exchange differences arising on translation are recognized within other income (expense) in the Consolidated Statement of Operations.

The Company's U.K. subsidiary has an intercompany loan balance in U.S dollars payable to the ultimate parent company, Adaptimmune Therapeutics plc. Beginning on July 1, 2019, the intercompany loan was considered of a long-term investment nature as repayment is not planned or anticipated in the foreseeable future. It is Adaptimmune Therapeutics plc's intent not to request payment of the intercompany loan for the foreseeable future. The foreign exchange gain or losses arising on the revaluation of intercompany loans of a long-term investment nature are reported within other comprehensive (loss) income, net of tax.

The results of operations for subsidiaries, whose functional currency is not the U.S. dollar, are translated at an average rate for the period where this rate approximates to the foreign exchange rates ruling at the dates of the transactions and the balance sheet are translated at foreign exchange rates ruling at the balance sheet date. Exchange differences arising from this translation of foreign operations are reported as an item of other comprehensive (loss) income.

Foreign exchange gains for the year ended December 31, 2020 of $1,105,000 and foreign exchange losses of $137,000 and $15,257,000 for the years ended December 31, 2019 and 2018, respectively, are included within Other (expense) income, net in the Consolidated Statement of Operations.

(e) Fair value measurements

The Company is required to disclose information on all assets and liabilities reported at fair value that enables an assessment of the inputs used in determining the reported fair values. The fair value hierarchy prioritizes valuation inputs based on the observable nature of those inputs. The hierarchy defines three levels of valuation inputs:

Level 1 — Quoted prices in active markets for identical assets or liabilities

Level 2 — Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly

Level 3 — Unobservable inputs that reflect the Company's own assumptions about the assumptions market participants would use in pricing the asset or liability

The carrying amounts of the Company's cash and cash equivalents, restricted cash, accounts receivable, accounts payable and accrued expenses approximate fair value because of the short-term nature of these instruments. The fair value of marketable securities, which are measured at fair value on a recurring basis is detailed in Note 4, *Financial Instruments.*

(f) Accumulated other comprehensive (loss) income

The Company reports foreign currency translation adjustments and the foreign exchange gain or losses arising on the revaluation of intercompany loans of a long-term investment nature within Other comprehensive (loss) income. Unrealized gains and losses on available-for-sale debt securities are also reported within Other comprehensive (loss) income until a gain or loss is realized, at which point they are reclassified to Other (expense) income, net in the Consolidated Statement of Operations.

The following table shows the changes in Accumulated other comprehensive (loss) income (in thousands):

	Accumulated foreign currency translation adjustments	Accumulated unrealized (losses) gains on available-for-sale debt securities	Total accumulated other comprehensive (loss) income
Balance at January 1, 2018	**$ (17,867)**	**$ (3,774)**	**$ (21,641)**
Foreign currency translation adjustments	8,260	—	8,260
Unrealized holding gains on available-for-sale debt securities, net of tax of $0	—	1,145	1,145
Reclassification from accumulated other comprehensive (loss) income of losses on available-for-sale debt securities included in net income, net of tax of $0	—	2,473	2,473
Balance at December 31, 2018	**(9,607)**	**(156)**	**(9,763)**
Foreign currency translation adjustments	(9,478)	—	(9,478)
Foreign currency gains on intercompany loan of a long-term investment nature, net of tax of $0	11,783	—	11,783
Unrealized holding gains on available-for-sale debt securities, net of tax of $0	—	207	207
Reclassification from accumulated other comprehensive (loss) income of gains on available-for-sale debt securities included in net income, net of tax of $0	—	(13)	(13)
Balance at December 31, 2019	**(7,302)**	**38**	**(7,264)**
Foreign currency translation adjustments	(19,220)	—	(19,220)
Foreign currency losses on intercompany loan of a long-term investment nature, net of tax of $0	16,364	—	16,364
Unrealized holding gains on available-for-sale debt securities, net of tax of $0	—	161	161
Reclassification from accumulated other comprehensive (loss) income of gains on available-for-sale debt securities included in net loss, net of tax of $0	—	(89)	(89)
Balance at December 31, 2020	**$ (10,158)**	**$ 110**	**$ (10,048)**

The following amounts were reclassified out of Other comprehensive (loss) income (in thousands):

	Amount reclassified			
Component of accumulated other comprehensive income	Year ended December 31, 2020	Year ended December 31, 2019	Year ended December 31, 2018	Affected line item in the Statement of operations
Unrealized gains (losses) on available-for-sale securities				
Reclassification adjustment for (gains) losses on available-for-sale debt securities	$ (89)	$ (13)	$ 2,473	Other (expense) income, net

(g) Cash, cash equivalents and restricted cash

The Company considers all highly liquid investments with a maturity at acquisition date of three months or less to be cash equivalents. Cash and cash equivalents comprise cash balances, commercial paper and corporate debt securities with maturities of three months or less at acquisition and short deposits with maturities of three months or less.

The Company's restricted cash consists of cash providing security for letters of credit in respect of lease agreements and credit cards.

The following table provides a reconciliation of cash, cash equivalents, and restricted cash reported within the balance sheet that sum to the total of the same such amounts shown in the statement of cash flows (in thousands).

	December 31, 2020	December 31, 2019
Cash and cash equivalents	$ 56,882	$ 50,412
Restricted cash	4,602	4,496
Total cash, cash equivalents, and restricted cash shown in the statement of cash flows	**$ 61,484**	**$ 54,908**

(h) Available-for-sale debt securities

As of December 31, 2020, the Company has the following investments in available-for-sale debt securities, (in thousands):

	Remaining Contractual Maturity	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Aggregate Estimated Fair Value
Available-for-sale debt securities:					
Corporate debt securities	Less than 3 months	$ 67,545	$ 56	$ (20)	$ 67,581
Corporate debt securities	3 months to 1 year	101,447	92	(24)	101,515
Agency bonds	1 year to 2 years	5,993	8	—	6,001
Corporate debt securities	1 year to 2 years	136,238	112	(112)	136,238
		$ 311,223	**$ 268**	**$ (156)**	**$ 311,335**

As of December 31, 2019, the Company had the following investments in available-for-sale debt securities (in thousands):

	Remaining contractual maturity	Amortized cost	Gross unrealized gains	Gross unrealized losses	Aggregate estimated fair value
Available-for-sale debt securities:					
Corporate debt securities	Less than 3 months	$ 23,479	$ 7	$ (1)	$ 23,485
Corporate debt securities	3 months to 1 year	15,613	32	—	15,645
		$ 39,092	**$ 39**	**$ (1)**	**$ 39,130**

Management determines the appropriate classification of its investments in available-for-sale debt securities at the time of purchase and reevaluates such designation as of each reporting date. The securities are classified as current or non-current based on the maturity dates and management's intentions.

At December 31, 2020, the Company has classified all of its available-for-sale debt securities, including those with maturities beyond one year, as current assets on the accompanying Consolidated Balance Sheets based on the highly-liquid nature of these investment securities and because these investment securities are considered available for use in current operations.

The investment in available-for-sale debt securities is measured at fair value at each reporting date. Unrealized gains and losses are excluded from earnings and are reported as a component of Other comprehensive (loss) income, net of tax. Realized gains and losses are included in Other income (expense), net. Interest income and amortization of premiums and discounts at acquisition are included in Interest income. In the year ended December 31, 2020, 2019 and 2018, proceeds from the maturity or redemption of available-for-sale debt securities were $105,022,000, $125,303,000 and $138,038,000 respectively. There were realized gains of $89,000, $13,000 recognized on early settlement of available-for-sale debt securities during the year ended December 31, 2020 and 2019, respectively, and there were realized losses of $2,473,000 in the year ended December 31, 2018. The Company reclassified the gains and losses out of accumulated other comprehensive loss during the same periods.

At each reporting date, the Company assesses whether each individual investment is impaired, which occurs if the fair value is less than the amortized cost, adjusted for amortization of premiums and discounts at acquisition. If the investment is impaired, the impairment is assessed to determine if it is other than temporary. Impairments judged to be other than temporary are included in other (expense) income, net when they are identified.

The aggregate fair value (in thousands) and number of securities held by the Company (including those classified as cash equivalents) in an unrealized loss position as of December 31, 2020 and 2019 are as follows:

	December 31, 2020			December 31, 2019		
	Fair market value of investments in an unrealized loss position	Number of investments in an unrealized loss position	Unrealized losses	Fair market value of investments in an unrealized loss position	Number of investments in an unrealized loss position	Unrealized losses
Marketable securities:						
Corporate debt securities	$ 157,985	30	$ (158)	$ 2,013	1	$ (1)

As of December 31, 2020 and 2019, these securities are not considered to be other than temporarily impaired because the impairments are not severe, have been for a short duration and are due to normal market and exchange rate fluctuations. No securities have been in an unrealized loss position for more than one year. Furthermore, the Company does not intend to sell the debt securities in an unrealized loss position, and it is unlikely that the Company will be required to sell these securities before the recovery of the amortized cost.

The cost of securities sold is based on the specific-identification method. Interest on debt securities is included in interest income.

Our investment in available-for-sale debt securities is subject to credit risk. The Company's investment policy limits investments to certain types of instruments, such as money market instruments and corporate debt securities, places restrictions on maturities and concentration by type and issuer and specifies the minimum credit ratings for all investments and the average credit quality of the portfolio.

(i) Accounts receivable

Accounts receivable include amounts billed to customers and accrued receivables where only the passage of time is required before payment of amounts due.

Management analyses current and past due accounts and determines if an allowance for uncollectible accounts is required based on collection experience and other relevant information. As of December 31, 2020 and 2019, the allowance for doubtful accounts is $nil. The process of estimating the uncollectible accounts involves assumptions and judgments and the ultimate amounts of uncollectible accounts receivable could be in excess of the amounts provided.

(j) Clinical materials

Clinical materials for use in research and development with alternative future use are capitalized as either other current assets or other non-current assets, depending on the timing of their expected consumption. The Company assesses whenever events or changes in circumstances indicate that an asset's carrying amount may not be recoverable. In 2019, the Company determined that the remaining purchase commitments should be accrued due to uncertainty over the future use of the clinical materials. Further information is disclosed in Note 9.

(k) Property, plant and equipment

Property, plant and equipment is stated at cost, less any impairment losses, less accumulated depreciation.

Depreciation is computed using the straight-line method over the estimated useful lives of the related assets. The following table provides the range of estimated useful lives used for each asset type:

Computer equipment	3 to 5 years
Laboratory equipment	5 years
Office equipment	5 years
Leasehold improvements	the expected duration of the lease

Assets under construction are not depreciated until the asset is available and ready for its intended use.

The Company assesses property, plant and equipment for impairment whenever events or changes in circumstances indicate that an asset's carrying amount may not be recoverable.

(l) Intangibles

Intangibles primarily include acquired software licenses and third party software in development, which are recorded at cost and amortized over the estimated useful lives of approximately three years.

Intangibles are assessed for impairment whenever events or changes in circumstances indicate that an asset's carrying amount may not be recoverable.

(m) Leases prior to the adoption of ASC 842 on January 1, 2019

Costs in respect of operating leases in the year ended December 31, 2018 prior to the adoption of ASC 842 were charged to the Consolidated Statement of Operations on a straight-line basis over the lease term. Rent holidays were recognized on a straight-line basis over the lease term (including any rent holiday period). Lease incentives, including leasehold improvement incentives or allowances, were recorded as deferred rent and amortized as reductions to lease expense over the lease term. Leasehold improvements made by a lessee that were funded by landlord incentives or allowances were recorded as leasehold improvement assets and amortized over the shorter of the useful life of the asset and the non-cancellable lease term.

Lease expenses amounted to $3,399,000 for the year ended December 31, 2018. These were recorded within research and development and general and administrative expenses in the Company's Consolidated Statements of Operations.

(n) Leases after the adoption of ASC 842 on January 1, 2019

On January 1, 2019, the Company adopted a new standard, Accounting Standard Update 2016-02 – Leases, which is codified in ASC 842. The comparative financial information for the year ended December 31, 2018 has not been restated and is prepared in accordance with the accounting policies that are described in Note 2(m).

The Company determines whether an arrangement is a lease at contract inception by establishing if the contract conveys the right to use, or control the use of, identified property, plant, or equipment for a period of time in exchange for consideration. Leases may be classified as finance leases or operating leases. All the Company's leases are classified as operating leases as they were previously classed as these and the lease classification is not reassessed on adoption of ASC 842. Operating lease right-of-use (ROU) assets and operating lease liabilities recognized in the Consolidated Balance Sheet represent the right to use an underlying asset for the lease term and an obligation to make lease payments arising from the lease respectively.

Operating lease ROU assets and operating lease liabilities are recognized at the lease commencement date based on the present value of minimum lease payments over the lease term. Since the rate implicit in the lease is not readily determinable, the Company uses its incremental borrowing rates (the rate of interest that the Company would have to pay to borrow on a collateralized basis over a similar term for an amount equal to the lease payments in a similar economic environment) based on the information available at commencement date in determining the discount rate used to calculate the present value of lease payments. As the Company has no external borrowings, the incremental borrowing rates are determined using information on indicative borrowing rates that would be available to the Company based on the value, currency and borrowing term provided by financial institutions, adjusted for company and market specific factors. The lease term is based on the non-cancellable period in the lease contract, and options to extend the lease are included when it is reasonably certain that the Company will exercise that option. Any termination fees are included in the calculation of the ROU asset and lease liability when it is assumed that the lease will be terminated.

The Company accounts for lease components (e.g. fixed payments including rent and termination costs) separately from non-lease components (e.g. common-area maintenance costs and service charges based on utilization) which are recognized over the period in which the obligation occurs.

At each reporting date, the operating lease liabilities are increased by interest and reduced by repayments made under the lease agreements.

The right-of-use asset is subsequently measured for an operating lease at the amount of the remeasured lease liability (i.e. the present value of the remaining lease payments), adjusted for the remaining balance of any lease incentives received, any cumulative prepaid or accrued rent if the lease payments are uneven throughout the lease term, and any unamortized initial direct costs.

The Company has operating leases in relation to property for office and research facilities. All of the leases have termination options, and it is assumed that the initial termination options for the buildings will be activated for most of these. The maximum lease term without activation of termination options is to 2041.

In May 2017, the Company entered into an agreement for the lease of a building at Milton Park, Oxfordshire, United Kingdom. The term of the lease expires on October 23, 2041, with termination options exercisable by the Company on the fifth anniversary of the lease commencement date and at approximately five yearly intervals thereafter.

In September 2015, the Company entered into an agreement for a 25-year lease, with early termination options, for a research and development facility in Oxfordshire, United Kingdom. In October 2016, the Company entered into the lease for that facility following the completion of construction.

In July 2015, the Company entered into a 15 year lease agreement, with an early termination option at 123 months, for offices and research facilities in Philadelphia, United States. The lease commenced upon completion of construction in October 2016.

The Company has elected not to recognize a right-of-use asset and lease liability for short-term leases. A short-term lease is a lease with a lease term of 12 months or less and which does not include an option to purchase the underlying asset that the lessee is reasonably certain to exercise.

Operating lease costs are recognized on a straight-line basis over the lease term, and they are categorized within Research and development and General and administrative expenses in the Consolidated Statement of Operations. The operating lease cash flows are categorized under Net cash used in operating activities in the Consolidated Statement of Cash Flows.

(o) Segmental reporting

Operating segments are identified as components of an enterprise about which separate discrete financial information is available for evaluation by the chief operating decision-maker in making decisions regarding resource allocation and assessing performance. The Company's chief operating decision maker (the "CODM"), its Chief Executive Officer, manages the Company's operations on an integrated basis for the purposes of allocating resources. When evaluating the Company's financial performance, the CODM reviews total revenues, total expenses and expenses by function and the CODM makes decisions using this information on a global basis. Accordingly, the Company has determined that it operates in one operating segment.

(p) Revenue

Revenue is recognized so as to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. To achieve that core principle, an entity should apply the following steps:

Step 1: Identify the contract(s) with a customer.

Step 2: Identify the performance obligations in the contract.

Step 3: Determine the transaction price.

Step 4: Allocate the transaction price to the performance obligations in the contract.

Step 5: Recognize revenue when (or as) the entity satisfies a performance obligation.

Variable consideration

The Company determines the variable consideration to be included in the transaction price by estimating the most likely amount that will be received and then applies a constraint to reduce the consideration to the amount which is probable of being received. The determination of whether a milestone is probable includes consideration of the following factors:

- whether achievement of a development milestone is highly susceptible to factors outside the entity's influence, such as milestones involving the judgment or actions of third parties, including regulatory bodies or the customer;
- whether the uncertainty about the achievement of the milestone is not expected to be resolved for a long period of time;
- whether the Company can reasonably predict that a milestone will be achieved based on previous experience; and.
- the complexity and inherent uncertainty underlying the achievement of the milestone.

Percentage of completion

The determination of the percentage of completion requires the Company to estimate the costs-to-complete the project. The Company makes a detailed estimate of the costs-to-complete, which is re-assessed every reporting period based on the latest project plan and discussions with project teams. If a change in facts or circumstances occurs, the estimate will be adjusted and the revenue will be recognized based on the revised estimate. The difference between the cumulative revenue recognized based on the previous estimate and the revenue recognized based on the revised estimate would be recognized as an adjustment to revenue in the period in which the change in estimate occurs.

Contract assets and liabilities

The Company recognizes a contract asset, when the value of satisfied (or part satisfied) performance obligations is in excess of the payment due to the Company, and deferred revenue (contract liability) when the amount of unconditional consideration is in excess of the value of satisfied (or part satisfied) performance obligations. Once a right to receive consideration is unconditional, that amount is presented as a receivable.

Changes in deferred revenue typically arise due to:

- adjustments arising from a change in the estimate of the cost to complete the project, which results in a cumulative catch-up adjustment to revenue that affects the corresponding contract asset or deferred revenue;
- a change in the estimate of the transaction price due to changes in the assessment of whether variable consideration is constrained because it is not considered probable of being received;
- the recognition of revenue arising from deferred revenue; and
- the reclassification of amounts to receivables when a right to consideration to becomes unconditional.

A change in the estimate of variable consideration constrained (for example, if a development milestone becomes probable of being received) could result in a significant change in the revenue recognized and deferred revenue.

(q) Research and development expenditures

Research and development expenditures are expensed as incurred.

Expenses related to clinical trials are recognized as services are received. Nonrefundable advance payments for services are deferred and recognized in the Consolidated Statement of Operations as the services are rendered. This determination is based on an estimate of the services received and there may be instances when the payments to vendors exceed the level of services provided resulting in a prepayment of the clinical expense. If the actual timing of the performance of services varies from our estimate, the accrual or prepaid expense is adjusted accordingly.

Upfront and milestone payments to third parties for in-licensed products or technology which has not yet received regulatory approval and which does not have alternative future use in R&D projects or otherwise are expensed as incurred. The Company expensed acquired in-process R&D of $889,000, $4,556,000, and $210,000 in the years ended December 31, 2020, 2019 and 2018, respectively.

Milestone payments made to third parties either on or subsequent to regulatory approval are capitalized as an intangible asset and amortized over the remaining useful life of the product.

Research and development expenditure is presented net of R&D tax and expenditure credits from the U.K. government, which are recognized over the period necessary to match the reimbursement with the related costs when it is probable that the Company has complied with any conditions attached and will receive the reimbursement. Reimbursable R&D tax and expenditure credits were $19,442,000, $18,649,000 and $17,299,000 in the years ended December 31, 2020, 2019 and 2018, respectively.

(r) Share-based compensation

The Company awards certain employees options over the ordinary shares of the parent company. The cost of share-based awards issued to employees are measured at the grant-date fair value of the award and recognized as an expense over the requisite service period. The fair value of the options is determined using the Black-Scholes option-pricing model. Share options with graded-vesting schedules are recognized on a straight-line basis over the requisite service period for each separately vesting portion of the award. The Company has elected to account for forfeitures of stock options when they occur by reversing compensation cost previously recognized, in the period the award is forfeited, for an award that is forfeited before completion of the requisite service period.

(s) Retirement benefits

The Company operates defined contribution pension schemes for its directors and employees. The contributions to this scheme are expensed to the Consolidated Statement of Operations as they fall due. The pension contributions for the years ended December 31, 2020, 2019 and 2018 were $2,070,000, $1,904,000 and $1,847,000, respectively.

(t) Interest income

Interest income arises on cash, cash equivalents and available-for-sale debt securities and is net of amortization (accretion) of the premium (discount) on purchase of the debt securities of $3,836,000, ($185,000), and $237,000 in the years ended December 31, 2020, 2019 and 2018, respectively.

(u) Income taxes

Income taxes for the period comprise current and deferred tax. Income tax is recognized in the Consolidated Statement of Operations except to the extent that it relates to items occurring during the year recognized either in other comprehensive income or directly in equity, in which case it is recognized in other comprehensive income or equity. We release stranded tax effects using the portfolio approach.

Current tax is the expected tax payable or receivable on the taxable income or loss for the current or prior periods using tax rates enacted at the balance sheet date.

Deferred tax is accounted for using the asset and liability method that requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the financial statement carrying amount and the tax bases of assets and liabilities at the applicable tax rates and for operating loss and tax credit carryforwards. A valuation allowance is provided when it is more likely than not that some portion or all of the deferred tax assets will not be realized. The Company evaluates the realizability of its deferred tax assets by assessing its valuation allowance and by adjusting the amount of such allowance, if necessary. The factors used to assess the likelihood of realization include the Company's forecast of income, carryback availability, reversing taxable temporary differences and available tax-planning strategies that could be implemented to realize the deferred tax assets.

Income tax positions must meet a more-likely-than-not recognition threshold to be recognized. Income tax positions that previously failed to meet the more-likely-than-not threshold are recognized in the first subsequent financial reporting period in which that threshold is met. Previously recognized tax positions that no longer meet the more-likely-than-not threshold are derecognized in the first subsequent financial reporting period in which that threshold is no longer met. Recognized income tax positions are measured at the largest amount that is greater than 50 percent likely of being realized. We recognize potential accrued interest and penalties related to unrecognized tax benefits within the Consolidated Statement of Operations as income tax expense.

In interim periods, the income tax expense (benefit) related to income (loss) from continuing operations before income tax expense (benefit) excluding significant unusual or infrequently occurring items is computed at an estimated annual effective tax rate and the income tax expense (benefit) related to all other items is individually computed and recognized when the items occur.

(v) Loss per share

Basic loss per share is determined by dividing net loss attributable to ordinary shareholders by the weighted average number of ordinary shares outstanding during the period. Diluted loss per share is determined by dividing net loss attributable to ordinary shareholders by the weighted average number of ordinary shares outstanding during the period, adjusted for the dilutive effect of all potential ordinary shares that were outstanding during the period. Potentially dilutive shares are excluded when the effect would be to increase diluted earnings per share or reduce diluted loss per share.

The following table reconciles the numerator and denominator in the basic and diluted loss per share computation (in thousands):

	Year ended December 31, 2020	Year ended December 31, 2019	Year ended December 31, 2018
Numerator for basic and diluted loss per share			
Net loss	$ (130,092)	$ (137,165)	$ (95,514)
Net loss attributable to shareholders used for basic and diluted EPS calculation	**$ (130,092)**	**$ (137,165)**	**$ (95,514)**
Denominator for basic and diluted loss per share			
Weighted average number of shares used to calculate basic and diluted loss per share	854,783,763	629,805,218	584,338,942

The effects of the following potentially dilutive equity instruments have been excluded from the diluted loss per share calculation because they would have an antidilutive effect on the loss per share for the period:

	Year ended December 31, 2020	Year ended December 31, 2019	Year ended December 31, 2018
Weighted average number of share options[(1)]	93,812,818	96,675,101	88,553,474

From January 1, 2021 through to February 25, 2021, the Company granted 14,803,056 options over ordinary shares with an exercise price determined by reference to the market value of an ADS at the date of grant, and 12,663,792 options over ordinary shares with an exercise price equal to the nominal value of the ordinary shares (£0.001 per share). These grants have not been included in the figures above.

(w) New accounting pronouncements

Adopted in the year ended December 31, 2020

Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract

On January 1, 2020, the Company adopted ASU 2018-15 – Intangibles — Goodwill and Other — Internal-Use Software (Subtopic 350-40) Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract. The guidance aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software (and hosting arrangements that include an internal use software license). The Company elected to apply the guidance prospectively to all implementation costs incurred after the date of adoption. The guidance has not had a material effect on the Consolidated financial statements.

Simplifying the Accounting for Income Taxes

On January 1, 2020, the Company adopted ASU 2019-12 – Simplifying the Accounting for Income Taxes (Topic 740). The simplifications to accounting for income taxes cover a variety of areas, including the removal of the exception to the incremental approach for intraperiod tax allocation when there is a loss from continuing operations and income or a gain from other items (for example, discontinued operations or other comprehensive income). The changes also add a requirement for an entity to reflect the effect of an enacted change in tax laws or rates in the annual effective tax rate computation in the interim period that includes the enactment date. Most of the amendments should be applied on a prospective basis. If the guidance had not been adopted in the current period, this would have impacted the allocation of tax between the tax effect of continuing operations and the tax effect of items that are included within other comprehensive income. The guidance has not had a material effect on the Consolidated financial statements.

Changes to the Disclosure Requirements for Fair Value Measurement

On January 1, 2020, the Company adopted ASU 2018-13 – Fair Value Measurement (Topic 820) - Disclosure Framework— Changes to the Disclosure Requirements for Fair Value Measurement, which modifies the disclosure requirements on fair value measurements in Topic 820, Fair Value Measurement. Certain amendments apply prospectively with all other amendments applied retrospectively to all periods presented upon their effective date. The guidance has not had a material effect on the Consolidated financial statements.

Revenue Recognition in Collaborative Arrangements

On January 1, 2020, the Company adopted ASU 2018-18 – Collaborative Arrangements — Clarifying the Interaction between Topic 808 and Topic 606, which clarifies that certain transactions between collaborative arrangement participants should be accounted for as revenue under Topic 606 when the collaborative arrangement participant is a customer in the context of a unit of account. In those situations, all the guidance in Topic 606 should be applied, including recognition, measurement, presentation, and disclosure requirements. The guidance has been applied retrospectively to all contracts that were not completed at the date of initial application of Topic 606. The guidance has not had a material effect on the Consolidated financial statements.

To be adopted in future periods

Measurement of Credit Losses on Financial Instruments

In June 2016, the FASB issued ASU 2016-13 - Financial Instruments - Credit losses, which replaces the incurred loss impairment methodology for financial instruments in current GAAP with a methodology that reflects expected credit losses and requires consideration of a broader range of reasonable and supportable information to inform credit loss estimates. The guidance is effective for the fiscal year beginning January 1, 2020, including interim periods within that fiscal year. In November 2019, the FASB issued ASU 2019-10 which resulted in the postponement of the effective date of the new guidance for eligible smaller reporting companies (as defined by the SEC), including the Company, at that time to the fiscal year beginning January 1, 2023. The Company intends to adopt the guidance in the fiscal year beginning January 1, 2023; however, earlier adoption is permitted, and the Company may choose to implement the guidance in an earlier fiscal year. The guidance must be adopted using a modified-retrospective approach and a prospective transition approach is required for debt securities for which an other-than-temporary impairment had been recognized before the effective date. The Company is currently evaluating the impact of the guidance on its Consolidated financial statements.

Note 3 — Revenue

The Company has two contracts with customers: a collaboration and license agreement with GSK and a collaboration agreement with Astellas.

Revenue comprises the following categories (in thousands):

	Year ended December 31, 2020	Year ended December 31, 2019	Year ended December 31, 2018
Development revenue	$ 3,958	$ 1,122	$ 20,391
License revenue	—	—	39,114
	$ 3,958	**$ 1,122**	**$ 59,505**

Deferred revenue increased by $49,964,000 from $2,128,000 at January 1, 2020 to $52,092,000 at December 31, 2020 due to the upfront payment of $50,000,000 received under the Astellas Collaboration Agreement in January 2020.

As of December 31, 2019, there was deferred revenue of $2,128,000 associated with the third target under the GSK Collaboration Agreement, of which $1,887,000 was recognized as revenue in the year ended December 31, 2020.

The Astellas Collaboration Agreement

On January 13, 2020, the Company entered into the Astellas Collaboration Agreement. The Company received $50,000,000 as a non-refundable upfront payment in January 2020 after entering into the agreement. Under the agreement the parties will agree on up to three targets and will co-develop T-cell therapies directed to those targets pursuant to an agreed research plan. For each target, Astellas will fund co-development up until completion of a Phase 1 trial for products directed to such target.

Upon successful completion of the Phase 1 trial for a product, Astellas and Adaptimmune will elect whether to progress with co-development and co-commercialization of such product, or to allow the other party to pursue the candidate independently. If the parties progress with co-development and co-commercialization of a product, then each party will grant the other party a co-exclusive license to co-develop and co-commercialize such product in the field of T-cell therapy. If a product is developed solely by one party, then the other party will grant to the continuing party an exclusive license to develop and commercialize such product in the field of T-cell therapy.

In June 2020, the parties nominated the target for the first collaboration program and the Company commenced development of this target under the agreement and began recognizing revenue for this performance obligation.

In addition, Astellas was also granted the right to develop, independently of Adaptimmune, allogeneic T-cell therapy candidates directed to two targets selected by Astellas. Astellas will have sole rights to develop and commercialize products resulting from these two targets.

Under the terms of the agreement, Adaptimmune could be entitled to receive up to $847,500,000 in further payments, including:

- development milestones of up to $73,750,000 for each co-developed and co-commercialized product; and
- development milestones of up to $147,500,000 per product and up to $110,000,000 in sales milestones for products developed unilaterally by Astellas.

In addition, Adaptimmune is entitled to receive research funding of up to $7,500,000 per year on a per collaboration target basis, which is payable on a quarterly basis within standard payment terms, and tiered royalties on net sales in the mid-single to mid-teen digits.

To the extent that Astellas and Adaptimmune co-develop and co-commercialize any product, the parties would share equally all worldwide costs and profits.

Either party can terminate the agreement in the event of material breach or insolvency of the other party. Astellas can terminate the Agreement for convenience in its entirety or partly in relation to any targets and products directed to such targets. Adaptimmune can terminate the Agreement for convenience in relation to any target it is unilaterally developing and to products directed to such target.

The payments to the Company under the contract are typically billed as the development services are performed or are due on achievement of milestones and within standard payment terms. Management has determined that the contract does not include a significant financing component because (i) the timing of initiation of the programs, the right to obtain the services and the right to terminate the contract resides with Astellas and (ii) a substantial amount of the consideration promised by the customer is variable, and the amount or timing of that consideration varies on the basis of the occurrence or nonoccurrence of a future event that is not substantially within the control of the customer or the Company.

The Company has assessed the agreement under the provisions of ASC 606, *Revenue from Contracts with Customers* and ASC 808, *Collaborative Arrangements*. The Company determined that Astellas is a customer and has applied the provisions of ASC 606 to the contract and related performance obligations. The Company identified the following performance obligations under the agreement: (i) research services and rights granted under the co-exclusive license for each of the three co-development targets and (ii) the rights granted for each of the two independent Astellas targets.

The aggregate transaction price at inception of the agreement was the $50,000,000 upfront payment. Future development milestones are not considered probable as of December 31, 2020 and have not been included in the transaction price. Reimbursement of the research funding over the co-development period (up until completion of a Phase 1 trial for products directed to such target) is variable consideration and included in the transaction price as of December 31, 2020 to the extent that a significant reversal of revenue is not probable. The Company may also receive sales milestones upon the achievement of specified levels of annual net sales by Astellas under an independent Astellas program. These amounts have not been included within the transaction price as of December 31, 2020 because they are sales-based and would be recognized when the subsequent sales occur.

The aggregate transaction price is allocated to the performance obligations depending on the relative standalone selling price of the performance obligations. In determining the best estimate of the relative standalone selling price, the Company considered internal pricing objectives it used in negotiating the contract, together with internal data regarding the cost and margin of providing research services and adjusted-market data from comparable arrangements. The variable consideration is allocated to the performance obligation to which it relates.

The amount of the transaction price allocated to the performance obligation is recognized as or when the Company satisfies the performance obligation. The Company expects to satisfy the performance obligations relating to the three co-development targets as development progresses and recognizes revenue based on an estimate of the percentage of completion of the project determined based on the costs incurred on the project as a percentage of the total expected costs. The Company considers that this depicts the progress of the project, where the significant inputs would be internal project resources and third-party costs. The revenue allocated to the research services will be recognized as development of products directed to the target progresses up until completion of a Phase 1 trial.

The Company has determined that the performance obligations relating to the two independent Astellas targets would be recognized at a point-in-time, upon commencement of the licenses in the event of nomination of the target, since they are right-to-use licenses.

The amount of the transaction price that is allocated to performance obligations that are unsatisfied or partially satisfied under the agreement as of December 31, 2020 was $62,800,000, of which $15,200,000 is allocated to the rights granted for each of the two independent Astellas targets, $7,300,000 is allocated to research services and rights under the co-exclusive license for each of the second and third co-development targets, and $17,800,000 is allocated to research services and rights granted under the co-exclusive license for the first co-development target.

The GSK Collaboration and License Agreement

The GSK Collaboration and License Agreement consists of multiple performance obligations, including the transition of the NY-ESO SPEAR T-cell program to GSK, the development of a second and third target, and an exclusive license (the "NY-ESO License") to research, develop, and commercialize the Company's NY-ESO SPEAR T-cell therapy program.

In 2017, GSK exercised its option to obtain the NY-ESO License and in July 2018, the IND for the NY-ESO SPEAR T-cell program transferred to GSK.

In 2017, GSK nominated a second target program which was completed in 2018.

In 2019, GSK nominated its third target under the Collaboration and License Agreement and the Company received $3,200,000 following the nomination of the target. The development of products to the third target is a separate performance obligation. Revenue allocated to this performance obligation is recognized as the development progresses.

Under the terms of the GSK Collaboration and License Agreement, the Company may also be entitled to development milestones. The development and regulatory milestones are per product milestones and are dependent on achievement of certain obligations, the nature of the product being developed, stage of development of product, territory in which an obligation is achieved and type of indication or indications in relation to which the product is being developed. In addition, for any program multiple products may be developed to address different HLA-types. These amounts have not been included within the transaction price as of December 31, 2020 because they are not considered probable.

The Company may also receive commercialization milestones upon the first commercial sale of a product based on the indication and the territory and mid-single to low double-digit royalties on worldwide net sales. These amounts have not been included within the transaction price as of December 31, 2020 because they are sales or usage-based royalties promised in exchange for a license of intellectual property, which will be recognized when the subsequent sale or usage occurs.

The payments to the Company under the contract are typically due upon achievement of milestones and within standard payment terms (approximating to 45 days). The contract does not include a significant financing component.

The amount of the transaction price allocated to the performance obligation is recognized as or when the Company satisfies the performance obligation. The Company satisfies the performance obligations relating to the development of each target over time and recognizes revenue based on an estimate of the percentage of completion of the project determined based on the costs incurred on the project as a percentage of the total expected costs. The Company considers that this depicts the progress of the project, where the significant inputs are internal project resource and third-party clinical and manufacturing costs.

The previous performance obligation relating to the NY-ESO License was recognized at a point-in-time, upon commencement of the license in 2018.

Note 4 — Financial instruments

The Company's financial instruments consist primarily of cash and cash equivalents, marketable securities, restricted cash, accounts receivable, accounts payable and accrued expenses.

Assets and liabilities measured at fair value on a recurring basis based on Level 1, Level 2, and Level 3 fair value measurement criteria as of December 31, 2020 are as follows (in thousands):

		Fair value measurements using		
	December 31, 2020	Level 1	Level 2	Level 3
Assets:				
Corporate debt securities	$ 305,334	$ 305,334	$ —	$ —
Agency bonds	6,001	—	6,001	—
	$ 311,335	**$ 305,334**	**$ 6,001**	**$ —**

Assets and liabilities measured at fair value on a recurring basis based on Level 1, Level 2, and Level 3 fair value measurement criteria as of December 31, 2019 are as follows (in thousands):

		Fair Value Measurements Using		
	December 31, 2019	Level 1	Level 2	Level 3
Assets:				
Marketable securities:				
Corporate debt securities	$ 39,130	$ 39,130	$ —	$ —
	$ 39,130	**$ 39,130**	**$ —**	**$ —**

The Company estimates the fair value of available-for-sale debt securities with the aid of a third party valuation service, which uses actual trade and indicative prices sourced from third-party providers on a daily basis to estimate the fair value. If observed market prices are not available (for example, securities with short maturities and infrequent secondary market trades), the securities are priced using a valuation model maximizing observable inputs, including market interest rates.

Significant concentration of credit risk

The Company held cash and cash equivalents of $56,882,000, marketable securities of $311,335,000 and restricted cash of $4,602,000 as of December 31, 2020. The cash and cash equivalents and restricted cash are held with multiple banks and the Company monitors the credit rating of those banks. The Company maintains cash balances in excess of amounts insured by the Federal Deposit Insurance Corporation in the United States and the U.K. Government Financial Services Compensation Scheme in the United Kingdom.

The Company has two customers, which are Astellas and GSK. There were trade receivables of $139,000 as of December 31, 2020 and $nil as of December 31, 2019. The Company has been transacting with Astellas since January 2020 and GSK since 2014, during which time no impairment losses have been recognized. As of December 31, 2020, there were no overdue accounts receivable.

Foreign exchange risk

The Company is exposed to foreign exchange rate risk because it operates in the United Kingdom and the United States. Expenses are generally denominated in the currency in which the Company's operations are located,

which are the United Kingdom and the United States. However, the U.K.-based subsidiary incurs significant research and development costs in U.S. dollars and, to a lesser extent, Euros.

The results of operations and cash flows will be subject to fluctuations due to changes in foreign currency exchange rates, which could harm the Company's business in the future. Management seeks to minimize this exposure by maintaining currency cash balances at levels appropriate to meet foreseeable expenses in U.S. dollars and pounds sterling. To date, the Company has not used forward exchange contracts or other currency hedging products to manage exchange rate exposure, although it may do so in the future. The exchange rate as of December 31, 2020, the last business day of the reporting period, was £1.00 to $1.36.

Interest rate risk

Surplus cash and cash equivalents are invested in interest-bearing savings, money market funds, corporate debt securities and commercial paper from time to time. Investments in corporate debt securities are subject to fixed interest rates. The Company's exposure to interest rate sensitivity is impacted by changes in the underlying U.K. and U.S. bank interest rates and the fair market value of its corporate debt securities will fall in value if market interest rates increase. Management believes that an immediate one percentage point change in interest rates would not have a material effect on the fair market value of our portfolio, and therefore does not expect the operating results or cash flows to be significantly affected by changes in market interest rates.

Note 5 — Other current assets

Other current assets consisted of the following (in thousands):

	December 31, 2020	December 31, 2019
Corporate tax receivable	$ 20,585	$ 19,284
Prepayments	6,314	8,395
Clinical materials	2,086	1,459
Other current assets	811	1,809
	$ 29,796	**$ 30,947**

Note 6 — Property, plant and equipment, net

Property and equipment, net consisted of the following (in thousands):

	December 31, 2020	December 31, 2019
Computer equipment	$ 3,572	$ 3,069
Laboratory equipment	26,051	23,464
Office equipment	893	864
Leasehold improvements	28,359	27,320
	58,875	54,717
Less accumulated depreciation	(31,097)	(23,649)
	$ 27,778	**$ 31,068**

Depreciation expense was $6,627,000, $7,172,000 and $7,188,000 for the years ended December 31, 2020, 2019 and 2018, respectively.

Note 7 — Intangible assets, net

Intangible assets, net consisted of the following (in thousands):

	December 31, 2020	December 31, 2019
Software	$ 4,651	$ 4,095
Licensed IP rights – completed technology used in R&D	211	204
	4,862	4,299
Less accumulated amortization	(3,132)	(2,101)
	$ 1,730	**$ 2,198**

Amortization expense was $967,000, $838,000, and $622,000 for the years ended December 31, 2020, 2019 and 2018 respectively. The estimated aggregate amortization expense expected to be recorded in respect of these assets for each of the five years ended 2025 is $933,000, $671,000, $135,000, $nil and $nil, respectively.

Note 8 — Operating leases

The following table shows the lease costs for the years ended December 31, 2020 and 2019 (in thousands):

	Year ended December 31, 2020	2019
Lease cost:		
Operating lease cost	$ 4,044	$ 4,017
Short-term lease cost	359	319
	$ 4,403	**$ 4,336**

	Year ended December 31, 2020	2019
Other information:		
Operating cash outflows from operating leases (in thousands)	$ 3,769	$ 4,063
Weighted-average remaining lease term - operating leases	6.3 years	7.3 years
Weighted-average discount rate - operating leases	7.2%	7.2%

The maturities of operating lease liabilities as of December 31, 2020 are as follows (in thousands):

	Operating leases
2021	$ 4,326
2022	4,371
2023	4,127
2024	4,011
2025	4,059
after 2025	9,114
Total lease payments	**30,008**
Less: Imputed interest	6,297
Present value of lease liability	**$ 23,711**

The Company has operating leases in relation to property for office and research facilities. The maximum lease term without activation of termination options is to 2041.

Note 9 — Accrued expenses and other current liabilities

Accrued expenses and other current liabilities consisted of the following (in thousands):

	December 31, 2020	December 31, 2019
Accrued clinical and development expenditure	$ 13,081	$ 8,782
Accrued employee expenses	11,825	6,863
Other accrued expenditure	2,126	2,662
Accrued purchase commitments	—	5,000
Other	47	56
	$ **27,079**	$ **23,363**

In 2016, the Company entered into a supply agreement with ThermoFisher for the supply of the Dynabeads® CD3/CD28 technology. The supply agreement runs until December 31, 2025. Under the supply agreement, the Company is required to purchase its requirements for CD3/CD28 magnetic bead product from ThermoFisher for a period of 5 years. Minimum purchasing obligations of $5,000,000 were recognized in the year ended December 31, 2019. $2,500,000 of these obligations were paid in 2020 and $2,500,000 was paid in 2021. Management regularly updates the assessment of the utility of the Dynabeads, and in the year ended December 31, 2019, considered that there was sufficient uncertainty surrounding the utility of the Dynabeads, which was dependent upon the then current study trajectories, the Company's clinical pipeline, manufacturing methods and undetermined future projects, to result in the $5,000,000 purchase commitment being recognized in Research and development expense in the year ended December 31, 2019.

The movements in the accrued purchase commitments are as follows (in thousands):

	Accrued purchase commitments
Accrued purchase commitments at January 1, 2019	$ —
Recognized in the year	5,000
Accrued purchase commitments at December 31, 2019 and January 1, 2020	**5,000**
Paid or invoiced during the year	(5,000)
Accrued purchase commitments at December 31, 2020	$ —

Note 10 — Contingencies and commitments

Leases

Lease payments under operating leases as of December 31, 2020 and information about the Company's lease arrangements are disclosed in Note 8.

Capital commitments

As of December 31, 2020, the Company had commitments for capital expenditure totaling $264,000, which the Company expects to incur within one year.

Commitments for clinical materials, clinical trials and contract manufacturing

As of December 31, 2020, the Company had non-cancellable commitments for purchase of clinical materials, contract manufacturing, maintenance, and committed funding under the MD Anderson strategic alliance of up to $9,084,000, of which the Company expects to pay $4,133,000 within one year and $4,951,000 in one to three years. The amount and timing of these payments vary depending on the rate of progress of development. Future clinical trial expenses have not been included within the purchase commitments because they are contingent on enrollment in clinical trials and the activities required to be performed by the clinical sites. The Company's subcontracted costs for clinical trials and contract manufacturing were $33,744,000, $32,788,000 and $41,580,000 for the years ended December 31, 2020, 2019, and 2018 respectively.

MD Anderson Strategic Alliance

On September 26, 2016, the Company announced that it had entered into a multi-year strategic alliance with The University of Texas MD Anderson Cancer Center ("MD Anderson") designed to expedite the development of T-cell therapies for multiple types of cancer. The Company and MD Anderson are collaborating on a number of studies including clinical and preclinical development of the Company's SPEAR T-cell therapies and will collaborate on future clinical stage first and second generation SPEAR T-cell therapies across a number of cancers.

Under the terms of the agreement, the Company committed at least $19,644,000 to fund studies. Payment of this funding is contingent on mutual agreement to study orders in order for any study to be included under the alliance and the performance of set milestones by MD Anderson. The Company made an upfront payment of $3,412,000 to MD Anderson in the year ended December 31, 2017 and milestone payments of $2,325,000 in the year ended December 31, 2018 and $3,549,000 in the year ended December 31, 2020. The Company is obligated to make further payments to MD Anderson as certain milestones are achieved. These costs are expensed to research and development as MD Anderson renders the services under the strategic alliance.

The agreement may be terminated by either party for material breach by the other party. Individual studies may be terminated for, amongst other things, material breach, health and safety concerns or where the institutional review

board, the review board at the clinical site with oversight of the clinical study, requests termination of any study. Where any legal or regulatory authorization is finally withdrawn or terminated, the relevant study will also terminate automatically.

Universal Cells Research, Collaboration and License Agreement and Co-development and Co-commercialization agreement

On November 25, 2015, the Company entered into a Research, Collaboration and License Agreement relating to gene editing and Human Leukocyte Antigen ("HLA") engineering technology with Universal Cells, Inc. ("Universal Cells"). The Company paid an upfront license and start-up fee of $2,500,000 to Universal Cells in November 2015, a milestone payment of $3,000,000 in February 2016 and further milestone payments of $200,000 and $900,000 were made in the year ended December 31, 2018 and 2017, respectively. The agreement was amended and re-stated as of January 13, 2020, primarily to reflect changes to the development plan agreed between the parties. Further milestone payments of up to $37,600,000 are payable if certain development and product milestones are achieved. Universal Cells would also receive a profit-share payment for the first product, and royalties on sales of other products utilizing its technology. The upfront license and start-up fee and milestone payments were expensed to research and development when incurred.

Astellas Collaboration Agreement

Under the Astellas Collaboration Agreement, described further in Note 3, the Company could in certain circumstances elect to unilaterally develop a product using technology contributed by Astellas. If Adaptimmune unilaterally develops a product with technology contributed by Astellas, Astellas could be eligible to receive up to $552,500,000, including up to $147,500,000 in milestone payments per product, and up to $110,000,000 in sales milestones for products developed unilaterally by Adaptimmune. In addition, Astellas is entitled to receive tiered royalties on net sales in the mid-single to mid-teen digits.

Noile-Immune Collaboration Agreement

On August 26, 2019, the Company entered into a collaboration and license agreement relating to the development of next-generation SPEAR T-cell products with Noile-Immune Biotech Inc. ("Noile-Immune"). An upfront exclusive license option fee of $2,500,000 was paid to Noile-Immune in 2019. This was recognized within Research and Development in the Consolidated Statement of Operations for the year ended December 31, 2019. Under the agreement, development and commercialization milestone payments up to a maximum of $312,000,000 may be payable if all possible targets are selected and milestones achieved. Noile-Immune would also receive mid-single-digit royalties on net sales of resulting products.

Alpine Collaboration Agreement

On May 14, 2019, the Company entered into a Collaboration Agreement relating to the development of next-generation SPEAR T-cell products with Alpine Immune Sciences Inc. ("Alpine"). The Company paid an upfront exclusive license option fee of $2,000,000 to Alpine in June 2019. Under the agreement, Adaptimmune will pay Alpine for ongoing research and development funding costs and development and commercialization milestone payments up to a maximum of $288,000,000 may be payable if all possible targets are selected and milestones achieved. The upfront payment of $2,000,000 and the payments for ongoing research was recognized within Research and development in the Consolidated Statement of Operations for the year ended December 31, 2019. Alpine would also receive low single-digit royalties on worldwide net sales of applicable products.

ThermoFisher License Agreement

In 2012, the Company entered into a series of license and sub-license agreements with Life Technologies Corporation, part of ThermoFisher Scientific, Inc. ("ThermoFisher") that provide the Company with a field-based license under certain intellectual property rights owned or controlled by ThermoFisher. The Company paid upfront license fees of $1,000,000 relating to the license and sublicense agreements and has an obligation to pay minimum

annual royalties (in the tens of thousands of U.S. dollars prior to licensed product approval and thereafter at a level of 50% of running royalties in the previous year), milestone payments and a low single-digit running royalty payable on the net selling price of each licensed product. The upfront payment made in 2012 was expensed to research and development when incurred. Subsequent milestone payments have been recognized as an intangible asset due to the technology having alternative future use in research and development projects at the time of the payment. The minimum annual royalties have been expensed as incurred.

In 2016, the Company entered into a supply agreement with ThermoFisher for the supply of the Dynabeads® CD3/CD28 technology. The Dynabeads® CD3/CD28 technology is designed to isolate, activate and expand human T-cells, and is being used in the manufacturing of the Company's affinity enhanced T-cell therapies. The supply agreement runs until December 31, 2025. Under the supply agreement the Company is required to purchase its requirements for CD3/CD28 magnetic bead product from ThermoFisher for a period of 5 years. ThermoFisher has the right to terminate the supply agreement for material breach or insolvency.

Note 11 — Stockholders' equity

Ordinary shares

Subject to any other provisions of our articles of association and without prejudice to any special rights, privileges or restrictions as to voting attached to any shares forming part of our share capital, the voting rights of shareholders are as follows. On a show of hands, each shareholder present in person, and each duly authorized representative present in person of a shareholder that is a corporation, has one vote. On a show of hands, each proxy present in person who has been duly appointed by one or more shareholders entitled to vote on a resolution has one vote, but a proxy has one vote for and one vote against a resolution if, in certain circumstances, the proxy is instructed by more than one shareholder to vote in different ways on a resolution. On a poll, each shareholder present in person or by proxy or (being a corporation) by a duly authorized representative has one vote for each share held by the shareholder. We are prohibited (to the extent specified by the Companies Act 2006) from exercising any rights to attend or vote at meetings in respect of any shares held by the Company as treasury shares.

Subject to the Companies Act 2006 and the provisions of all other relevant legislation, we may by ordinary resolution declare dividends out of our profits available for distribution in accordance with the respective rights of shareholders but no such dividend shall exceed the amount recommended by the directors. If, in the opinion of the directors, our profits available for distribution justify such payments, the directors may from time to time pay interim dividends to the holders of any class of shares. Subject to any special rights attaching to or terms of issue of any shares, all dividends shall be declared and paid according to the amounts paid up on the shares on which the dividend is paid. No dividend shall be payable to us in respect of any shares held by us as treasury shares (except to the extent permitted by the Companies Act 2006 and any other relevant legislation). As of December 31, 2020, Adaptimmune Therapeutics Plc and Adaptimmune Limited have accumulated net losses and, accordingly, no profits available for distribution out of which to declare or pay dividends.

Subject to any special rights attaching to or the terms of issue of any shares, on any winding-up of the Company our surplus assets remaining after satisfaction of our liabilities will be distributed among our shareholders in proportion to their respective holdings of shares and the amounts paid up on those shares.

Effective from May 29, 2020, the Directors were generally authorized to allot new shares or to grant rights to subscribe for or to convert any security into shares in the Company up to a maximum aggregate nominal amount of £257,595.00. This authority runs for one year and will expire on May 28, 2021 (unless previously renewed, varied or revoked). Effective from May 29, 2020, the Directors were also empowered to allot equity securities for cash, pursuant to their general authority to allot described in this paragraph, without first offering them to existing shareholders in proportion to their existing holdings up to an aggregate maximum nominal amount of £257,595.00. This power will expire on May 28, 2021 (unless previously renewed, varied or revoked).

2020 January Offering

On January 24, 2020, the Company closed an underwritten public offering of 21,000,000 American Depository Shares (ADSs), which together with the full exercise by the underwriters on February 7, 2020 of their option to purchase an additional 3,150,000 ADSs, generated net proceeds of $90,554,000.

2020 June Offering

On June 4, 2020, the Company closed an underwritten public offering of 20,500,000 ADSs, which together with the full exercise by the underwriters of their option to purchase an additional 3,075,000 ADSs, generated net proceeds of $243,834,000.

2018 Registered direct offering

On September 7, 2018, the Company completed a registered direct offering of its ADSs following its entry into a definitive agreement with Matrix Capital Management Company, LP, New Enterprise Associates 16, L.P., New Enterprise Associates 14, L.P. and Syncona Portfolio Limited. The Company sold 10,000,000 ADSs (representing 60,000,000 ordinary shares) at a price of $10.00 per ADS. The net proceeds were $99,653,000 after deducting offering expenses of $347,000.

Note 12 — Share-based compensation

The Company grants options over ordinary shares in Adaptimmune Therapeutics plc under the following option plans: (i) the Adaptimmune Therapeutics plc Employee Share Option Scheme (adopted on January 14, 2016), (ii) the Adaptimmune Therapeutics plc 2015 Share Option Scheme (adopted on March 16, 2015) and (iii) the Adaptimmune Therapeutics plc Company Share Option Plan (adopted on March 16, 2015).

The Adaptimmune Therapeutics plc Company Share Option Plan is a tax efficient option scheme intended to comply with the requirements of Schedule 4 to the Income Tax (Earnings and Pensions) Act 2003 of the United Kingdom, which provides for the grant of company share option plan ("CSOP") options. Grants may not exceed the maximum value of £30,000 per participant for the shares under the option, which is a CSOP compliance requirement.

Generally, the vesting dates for the options granted under these plans up to December 31, 2020 are 25% on the first anniversary of the grant date and 75% in monthly installments over the following three years. However, the options

granted to non-executive directors under the Adaptimmune Therapeutics plc 2015 Share Option Scheme vest and become exercisable as follows:

Options granted to non-executive directors on May 11, 2015:	Immediately on grant date
Options granted to a non-executive director on June 23, 2016:	25% on the first anniversary of the grant date and 75% in monthly installments over the following two years
Options granted to non-executive directors on August 11, 2016:	100% on the first anniversary of the grant date
Options granted to non-executive directors on November 28, 2016:	25% on the first anniversary of the grant date and 75% in monthly installments over the following two years
Options granted to non-executive directors on July 3, 2017	100% on the first anniversary of the grant date
Options granted to non-executive directors on June 22, 2018:	100% on the first anniversary of the grant date
Options granted to a non-executive director on July 5, 2018:	25% on the first anniversary of the grant date and 75% in monthly instalments over the following two years
Options granted to non-executive directors on July 2, 2019:	100% on the first anniversary of the grant date
Options granted to non-executive directors on July 1, 2020:	100% on the first anniversary of the grant date

Effective from January 2018, the Company has also granted restricted stock unit style options ("RSU-style"). The RSU-style options over ordinary shares in Adaptimmune Therapeutics plc are granted under the Adaptimmune Therapeutics plc Employee Share Option Scheme (adopted on January 14, 2016). These options have an exercise price equal to the nominal value of an ordinary share, of £0.001, and generally vest over four years, with 25% on the first, and each subsequent, anniversary of the grant date.

Options granted under these plans are not subject to performance conditions. The contractual term of options granted under these plans is ten years.

The maximum aggregate number of options which may be granted under these plans and any incentive plans adopted by the Company cannot exceed a scheme limit that equates to 8% of the initial fully diluted share capital of the Company immediately following its IPO plus an automatic annual increase of an amount equivalent to 4% of the issued share capital on each 30 June (or such lower number as the Board, or an appropriate committee of the Board, may determine). The automatic increase is effective from July 1, 2016.

Prior to December 31, 2014, the Company granted options to purchase ordinary shares in Adaptimmune Limited under three option schemes:

(i) The Adaptimmune Limited Share Option Scheme was adopted on May 30, 2008. Under this scheme Enterprise Management Incentive ("EMI") options (which are potentially tax-advantaged in the United Kingdom) have been granted (subject to the relevant conditions being met) to its employees who are eligible to receive EMI options under applicable U.K. tax law and unapproved options (which do not attract tax advantages) have been granted to its employees who are not eligible to receive EMI options, and to its Directors and consultants. In May 2014, the Company no longer qualified for EMI status and since that date, no further EMI options were granted under this scheme; however, unapproved options have been under granted under this scheme since that date.

(ii) The Adaptimmune Limited 2014 Share Option Scheme was adopted on April 11, 2014. EMI options were granted (subject to the relevant conditions being met) under this scheme to our employees who are eligible to receive EMI options under applicable U.K. tax law. Unapproved options were granted to its employees who are not eligible to receive EMI options and to directors. In May 2014, the Company no longer qualified for EMI status and since that date, no further EMI options were granted under this scheme; however, unapproved options have been under granted under this scheme since that date.

(iii) The Adaptimmune Limited Company Share Option Plan was adopted on December 16, 2014. This scheme allowed the grant of options to our eligible employees prior to the Company's corporate reorganization in 2015. This scheme is a tax efficient option scheme and options were granted on December 19, 2014 and on December 31, 2014 to our part-time and full-time employees.

As part of the corporate reorganization in connection with our IPO, the holders of options granted under these schemes over ordinary shares of Adaptimmune Limited were granted equivalent options on substantially the same terms over ordinary shares of Adaptimmune Therapeutics plc ("Replacement Options") in exchange for the release of these options. The Company does not intend to grant any further options under these schemes.

As of December 31, 2020, all the Replacement Options under the Adaptimmune Limited schemes have vested.

The contractual life of options granted under these schemes is ten years.

The following table shows the total share-based compensation expense included in the Consolidated Statements of Operations (thousands):

	Year ended December 31, 2020	Year ended December 31, 2019	Year ended December 31, 2018
Research and development	$ 4,417	$ 3,812	$ 8,340
General and administrative	5,997	7,241	7,862
	$ 10,414	**$ 11,053**	**$ 16,202**

As of December 31, 2020, there was $11,876,000 of total unrecognized compensation cost related to stock options granted but not vested under the plans. That cost will be recognized over an expected remaining weighted-average period of 2.5 years. The following table shows information about share options granted:

	Year ended December 31, 2020	Year ended December 31, 2019	Year ended December 31, 2018
Number of options over ordinary shares granted	15,595,374	15,679,383	20,771,970
Weighted average fair value of ordinary shares options	$ 0.59	$ 0.48	$ 0.87
Number of additional options with a nominal exercise price granted	8,282,152	8,020,410	8,603,676
Weighted average fair value of options with a nominal exercise price	$ 0.85	$ 0.86	$ 1.37

The following table summarizes all stock option activity for the year ended December 31, 2020:

	Options	Weighted average exercise price per option	Average remaining contractual term (years)	Aggregate intrinsic value (thousands)
Outstanding at January 1, 2020	88,878,122	£ 0.57		
Changes during the period:				
Granted	23,877,526	£ 0.42		
Exercised	(11,401,390)	£ 0.39		
Forfeited	(9,711,074)	£ 0.58		
Outstanding at December 31, 2020	**91,643,184**	**£ 0.55**	**6.9**	**£ 18,227**
Exercisable at December 31, 2020	53,554,476	£ 0.65	5.8	£ 6,455

The following table summarizes information about stock options granted based on the market value at grant date which were outstanding as of December 31, 2020:

	Options	Weighted average exercise price per option	Average remaining contractual term (years)	Aggregate intrinsic value (thousands)
Outstanding at January 1, 2020	76,646,336	£ 0.66		
Changes during the period:				
Granted	15,595,374	£ 0.65		
Exercised	(9,077,500)	£ 0.49		
Forfeited	(7,638,728)	£ 0.74		
Outstanding at December 31, 2020	**75,525,482**	**£ 0.67**	**6.6**	**£ 7,611**
Exercisable at December 31, 2020	51,909,485	£ 0.67	5.7	£ 5,371

The following table summarizes information about RSU-style options which were outstanding as of December 31, 2020:

	Options	Average remaining contractual term (years)	Aggregate intrinsic value (thousands)
Outstanding at January 1, 2020	12,231,786		
Changes during the period:			
Granted	8,282,152		
Exercised	(2,323,890)		
Forfeited	(2,072,346)		
Outstanding at December 31, 2020	**16,117,702**	**8.4**	**£ 10,616**
Exercisable at December 31, 2020	1,644,991	7.5	£ 1,083

There were 11,401,390, 3,549,298 and 5,334,936 share options exercised in the years ended December 31, 2020, 2019 and 2018 respectively. In the years ended December 31, 2020, 2019 and 2018 the total intrinsic value of stock options exercised was $8,195,000, $1,977,000 and $6,727,000, respectively and the cash received from exercise of stock options was $5,663,000, $366,000 and $3,037,000 respectively. The Company recognizes tax benefits arising on the exercise of stock options regardless of whether the benefit reduces current taxes. The tax benefit arising on the exercise of stock options was $1,265,000, $1,488,000 and $1,325,000 for the years ended December 31, 2020, 2019 and 2018 respectively. The Company satisfies the exercise of stock options through newly issued shares.

	Outstanding			Exercisable	
Exercise price	Total share options	Weighted-average remaining contractual life	Weighted-average exercise price	Total share options	Weighted-average exercise price
£ 0	16,117,702	8.4	£ 0.00	1,644,991	£ —
0.01 - 0.25	3,283,400	4.2	0.14	2,710,901	0.12
0.26 - 0.50	15,844,377	5.6	0.41	12,545,729	0.42
0.51 - 0.75	36,418,280	7.4	0.62	21,166,559	0.63
0.76 - 1.00	13,871,334	5.9	0.93	12,394,690	0.92
1.01 - 1.50	4,492,290	8.3	1.23	1,574,057	1.17
1.51 - 2.00	1,615,801	6.3	1.70	1,517,549	1.70
Total	**91,643,184**	**6.9**	**£ 0.55**	**53,554,476**	**£ 0.65**

The fair value of the stock options granted during the period was calculated using the Black-Scholes option-pricing model using the following assumptions:

	Year ended December 31, 2020	Year ended December 31, 2019	Year ended December 31, 2018
Expected term (years)	5 years	5 years	5 years
Expected volatility	90 - 99%	69 - 73%	66 - 69%
Risk free rate	0.00 - 0.42%	0.22 - 0.90%	0.90 - 1.15%
Expected dividend yield	0%	0%	0%

The expected term of the option is based on management judgment. The life of the options depends on the option expiration date, volatility of the underlying shares and vesting features. We do not have sufficient history to determine the expected life based on internal data and therefore the estimate is based on empirical data. Management uses historical data to determine the volatility of the Company's share price. The risk free rate is based on the Bank of England's estimates of the gilt yield curve as of the respective grant dates.

Note 13 — Income taxes

Loss before income taxes is as follows (in thousands):

	Year ended December 31, 2020	Year ended December 31, 2019	Year ended December 31, 2018
U.S.	$ (1,359)	$ (494)	$ (1,650)
U.K.	(128,571)	(136,429)	(93,367)
Loss before income taxes	**$ (129,930)**	**$ (136,923)**	**$ (95,017)**

The components of income tax expense are as follows (in thousands):

	Year ended December 31, 2020	Year ended December 31, 2019	Year ended December 31, 2018
United States:			
Federal	$ 162	$ 242	$ 400
State and local	—	—	97
U.K.	—	—	—
Total current tax expense	**162**	**242**	**497**
United States:			
Federal	—	—	—
State and local	—	—	—
U.K.	—	—	—
Total deferred tax expense	—	—	—
Total income tax expense	**$ 162**	**$ 242**	**$ 497**

As of December 31, 2020 and 2019 the tax effects of temporary differences and carryforwards that give rise to deferred tax assets and liabilities were as follows (in thousands):

	December 31, 2020	December 31, 2019
Deferred tax liabilities		
Property, plant and equipment	$ (796)	$ (1,251)
Right-of-use assets	(2,009)	(2,364)
Other	(156)	(79)
Total	**(2,961)**	**(3,694)**
Deferred tax assets		
Share-based compensation expense	9,292	9,941
Intangibles	1,745	1,413
Operating lease liabilities	2,343	2,550
Net operating loss and expenditure credit carryforwards	71,742	48,837
Other	237	125
Total	**85,359**	**62,866**
Valuation allowance	(82,398)	(59,172)
	2,961	**3,694**
Net deferred tax asset (liability)	**$ —**	**$ —**

The valuation allowances are primarily related to deferred tax assets for operating loss and tax credit carry-forwards and temporary differences relating to share-based compensation expense. Deferred tax assets have been recognized without a valuation allowance to the extent supported by reversing taxable temporary differences. A valuation allowance has been provided over the remaining deferred tax assets, which management considered are not more likely than not of being realized after weighing all available positive and negative evidence including cumulative losses in recent years and projections of future taxable losses.

The movements in the deferred tax valuation allowance for the year ended December 31, 2020 and 2019 are as follows (thousands):

	2020	2019
Valuation allowance at January 1,	$ 59,172	$ 40,776
Increase in valuation allowance	20,329	16,961
Foreign exchange translation adjustments	2,897	1,435
	$ 82,398	**$ 59,172**

The net change in valuation allowance of $20,329,000 includes $23,025,000 which was recognized in net loss, offset by $2,696,000 recognized in other comprehensive loss.

Reconciliation of the U.K. statutory income tax rate to the Company's effective tax rate is as follows (in percentages):

	Year ended December 31, 2020	Year ended December 31, 2019	Year ended December 31, 2018
U.K. tax rate	19.0 %	19.0 %	19.0 %
Reimbursable tax credits within Research and development expense	2.8 %	2.8 %	3.5 %
R&D expenditures surrendered for R&D tax credit refund	(8.4)%	(7.7)%	(10.0)%
Expenses not deductible	(1.4)%	— %	(0.2)%
Permanent differences for unrealized foreign exchange on intercompany loans of a long-term investment nature	— %	(1.5)%	— %
Change in valuation allowances	(17.8)%	(12.4)%	(17.5)%
Change in tax rates	4.1 %	— %	— %
Difference in tax rates	— %	(1.2)%	(1.3)%
R&D tax credits generated	1.8 %	1.5 %	5.1 %
Other	(0.1)%	(0.7)%	1.0 %
Effective income tax rate	**(0.0)%**	**(0.2)%**	**(0.5)%**

The Company is headquartered in the United Kingdom and has subsidiaries in the United Kingdom and the United States. The Company incurs tax losses in the United Kingdom. The weighted-average U.K. corporate tax rate for the years ended December 31, 2020, 2019 and 2018 was 19% in each year. The Company's subsidiary in the United States has generated taxable profits due to a service agreement between the Company's subsidiaries in the United States and the United Kingdom. The U.S. federal corporate tax rate was 21% for the years ended December 31, 2020, 2019 and 2018, respectively.

The United Kingdom's 2019-21 Finance Bill, which was enacted on July 22, 2020, maintained the corporation tax rate at 19% from April 1, 2020 and for the year commending April 1, 2021. This removed the previously enacted reduction in the corporation tax rate to 17% from April 1, 2020. As of December 31, 2020, the Company used a 19% and 21% tax rate in respect of the measurement of deferred taxes arising in the U.K. and the U.S., respectively, which reflects the currently enacted tax rates and the anticipated timing of the unwinding of the deferred tax balances. In respect of the measurement of deferred taxes arising in the U.K, the increase in the tax rate adopted by the Company from 17% in the year ended December 31, 2019 to 19% in the year ended December 31, 2020 has increased the net deferred tax asset and corresponding valuation allowance by $5,675,000. The effect of the change in tax rates on the Consolidated statement of operations is $nil, after consideration of the change in valuation allowance.

As of December 31, 2020, we do not have unremitted earnings in our U.S. subsidiary.

As of December 31, 2020, we had U.K. net operating losses of approximately $334,400,000, expenditure credit carryforwards of $700,000 and U.S. tax credit carryforwards of $7,500,000. Unsurrendered U.K. tax losses and tax credit carryforwards can be carried forward indefinitely to be offset against future taxable profits; however, this is restricted to an annual £5,000,000 allowance in each standalone company or group and above this allowance, there will be a 50% restriction in the profits that can be covered by losses brought forward. U.K. tax credit carryforwards can be carried forward indefinitely to be offset against future tax liabilities of the company. U.S. tax credit carryforwards can be carried forward for 20 years to be offset against future tax liabilities, subject to a minimum tax payment of 25% of the tax charge. The tax credit carryforwards expire between 2036 and 2040.

Our tax returns are under routine examination in the U.K. and U.S. tax jurisdictions. The scope of these examinations includes, but is not limited to, the review of our taxable presence in a jurisdiction, our deduction of certain items, our claims for research and development credits, our compliance with transfer pricing rules and regulations and the inclusion or exclusion of amounts from our tax returns as filed. The Company is no longer subject to examinations by tax authorities for the tax years 2013 and prior in the United Kingdom. However, U.K. net operating losses from the tax years 2013 and prior would be subject to examination if and when used in a future tax return to offset taxable income. Our U.K. income tax returns have been accepted by Her Majesty's Revenue and Customs through the period

ended December 31, 2016. The Company is subject to examinations by tax authorities in the United States for all tax years 2013 through 2020. Our U.S. federal income tax return for the year ended June 30, 2014 and December 31, 2016 were audited by the U.S. Internal Revenue Service and resulted in no changes. We are also subject to audits by U.S. state taxing authorities where we have operations.

Unrecognized tax benefits arise when the estimated benefit recorded in the financial statements differs from the amounts taken or expected to be taken in a tax return because of the uncertainties described above. As of December 31, 2020 and December 31, 2019, the Company had no unrecognized tax benefits.

Note 14 — Geographic information

Operations by geographic area

Revenue represents recognized income from Astellas Collaboration Agreement and the GSK Collaboration and License Agreement. All revenue was derived in the United Kingdom.

Long-lived assets (excluding intangibles and financial instruments) were located as follows (in thousands):

	December 31, 2020	December 31, 2019
U.K.	$ 24,329	$ 27,367
U.S.	22,329	24,490
Total long-lived assets[1]	**$ 46,658**	**$ 51,857**

(1) Clinical materials of $nil and $2,503,000, included within non-current assets as of December 31, 2020 and 2019, respectively, are not included within the table above because they can easily be transferred between geographic locations.

Major customers:

During the year ended December 31, 2020, 52% and 48% of the Company's revenues were generated from Astellas and GSK, respectively. During the year ended December 31, 2019, 100% of revenues were generated from GSK.