Adaptive Biotechnologies and Microsoft launch groundbreaking ImmuneCODE database to share populationwide immune response to the COVID-19 virus

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Decoding the immune response to the virus from thousands of patient samples may contribute to the development of novel diagnostics, vaccines and therapeutics

Data will be updated regularly and made freely available to researchers and public health officials around the world

SEATTLE and REDMOND, Wash. — June 11, 2020—Adaptive Biotechnologies Corp. (Nasdaq: ADPT) on Thursday launched ImmuneCODE with Microsoft Corp. (Nasdaq: MSFT) to begin sharing one of the largest, most detailed views of the immune response to COVID-19 in real time based on de-identified data generated from thousands of COVID-19 blood samples from patients around the globe. The open database contains detailed information on the extraordinarily diverse set of T cells shown to specifically recognize unique features of the COVID-19 virus, called antigens, with unprecedented speed and scale. T cells contain a treasure trove of information that could provide one consistent and trackable measure of the immune response. This could help diagnose and manage COVID-19 from exposure through clearance of the virus, and potentially offer an accurate assessment of immunity. Data from ImmuneCODE will accelerate ongoing global efforts to develop better diagnostics, vaccines and therapeutics and answer important questions about the virus to support initiatives to safely reopen society.

"In just a few months, Adaptive and Microsoft intend to generate data for ImmuneCODE sufficient to accurately map how the adaptive immune system responds to SARS-CoV-2 from initial exposure through clearance by using our combined immune medicine platform and machine learning, potentially providing an accurate assessment of immunity," said Harlan Robins, chief scientific officer and co-founder of Adaptive Biotechnologies. "The scale and precision with which we are now able to decode the T cell response to the virus may fundamentally change our ability to recover from this pandemic and the way in which all viruses are studied in the future."

Thousands of de-identified geographically and ethnically diverse patient blood samples from institutions around the world* are being collected and analyzed alongside samples from ImmuneRACE (Immune Response Action to COVID-19 Events), the companies' prospective study enrolling 1,000 participants across the U.S. to decode how immune systems detect and respond to the virus. Using Microsoft Azure's hyperscale cloud and machine learning capabilities, the T cell response signature will be continuously refined by extending the number of matches of COVID-19-related T cells to antigens and directly associating this T cell signature with disease and outcomes.

"Adaptive Biotechnologies' sequencing of T-cells sets up an extremely large but manageable machine learning problem, and thus makes it possible, for the first time, to catalog and share how our adaptive immune system responds to viruses, including the novel virus that causes COVID-19," said Peter Lee, corporate vice president, Microsoft Research and Incubation. "Making these data freely available to the global research community through the ImmuneCODE database will deepen our collective understanding of the human immune response and thereby help researchers accelerate the development of news drugs and vaccines in the fight against this global health crisis."

The role of the T cell

Although most efforts to look at the immune response are focused on the B cell or the virus itself, this approach is different because it focuses on the T cell. T cells are the adaptive immune system's first responders to detect any virus. They quickly multiply and circulate in the blood to attack the virus, often before symptoms appear. Among many other jobs, T cells also recruit B cells to produce antibodies after about a week or two to potentially provide immunity against future infection.

To date, testing for COVID-19 has either been in the form of a viral test to detect the presence of the virus or a serology test to detect the presence of antibodies to signal prior infection. An in-depth understanding of the T cell response to the COVID-19 virus has a variety of different applications. That in-depth understanding may improve accuracy in the existing testing paradigm or potentially provide an assessment of immunity. Additionally, it is possible that identifying and tracking T cell response may provide insight as to the severity of a patient's illness, the length of any post-infection immunity period, and the potential efficacy of vaccines in development.

As Adaptive generates these data, subsequent updates to ImmuneCODE will provide an increasingly clearer picture of the immune response to the COVID-19 virus. This includes analyzing the immune responses from thousands of infected individuals, linking T cell responses to viral antigens and patient outcomes, and tracking the immune response. In addition to making these data freely available, Adaptive is conducting its own research to develop a new kind of diagnostic looking specifically at the T cell response to the COVID-19 virus.

About ImmuneCODE

ImmuneCODE is an open database that provides a detailed population-level view into the adaptive immune response to the COVID-19 virus. Adaptive Biotechnologies and Microsoft are making these data freely available to any researcher, public health official or organization around the world to accelerate solutions to the global pandemic. The database contains detailed information on the virus-specific T cells as well as the virus-related antigens they recognize. The T cell responses to these antigens will be tracked across the population to create an immune response signature using thousands of de-identified samples combined from organizations around the globe and ImmuneRACE, the virtual clinical study launched in May to help in the race to find a solution to COVID-19.

De-identified blood samples from ImmuneRACE, including patients who were actively infected, recovered or were recently exposed to the virus, are being collected by LabCorp, through its Covance drug development business, using a mobile phlebotomy service. Immune cell receptors from these samples are being sequenced using Illumina platform technology and mapped to virus-specific antigens that are confirmed by Adaptive's proprietary

immune medicine platform to induce an immune response. These study data are being pooled with data from thousands of additional unique de-identified patient samples from many institutions around the world. Using Microsoft Azure's hyperscale cloud and machine learning capabilities, the accuracy of the immune response will be continuously improved and updated online in real time as more samples are sequenced.

* Providence, a large health system with 51 hospitals, including the one near Seattle that treated the first U.S. COVID-19 patient, is an initial clinical collaborator. Other participating institutions include Institute for Systems Biology (ISB), BloodWorks Northwest, Hospital 12 de Octubre, i+12/CNIO (Madrid, Spain), Istituto Scientifico Romagnolo per lo Studio e la Cura dei Tumori (IRST) IRCCS (Meldola, FC – Italy) / AUSL-Romagna and Department of Experimental, Diagnostic and Specialty Medicine (DIMES), and Università di Bologna (Italy). This list is growing as we continue to work with other investigators globally to collect and sequence valuable patient cohorts. Institutions or collaborators interested in contributing blood samples can direct inquiries to COVID19ImmuneResponse@adaptivebiotech.com.

About the Adaptive and Microsoft partnership
Adaptive and Microsoft partnered in 2018 to create a TCR-Antigen Map, an approach to translating the genetics of the massive adaptive immune system to understand how it works. Together we are using immunosequencing at scale and machine learning to map T-cell receptor (TCR) sequences to diseases and disease-associated antigens. Using these data, we aim to develop a blood test for the early and accurate detection of many diseases, translating the natural diagnostic capability of the immune system into the clinic. In 2019, we confirmed clinical signals in two diseases, and established our first proof of concept in Lyme disease. We expect to submit our first clinical application to the FDA in 2020.

About Adaptive Biotechnologies

Adaptive Biotechnologies is a commercial-stage biotechnology company focused on harnessing the inherent biology of the adaptive immune system to transform the diagnosis and treatment of disease. We believe the adaptive immune system is nature's most finely tuned diagnostic and therapeutic for most diseases, but the inability to decode it has prevented the medical community from fully leveraging its capabilities. Our proprietary immune medicine platform reveals and translates the massive genetics of the adaptive immune system with scale, precision and speed to develop products in life sciences research, clinical diagnostics, and drug discovery. We have two commercial products, and a robust clinical pipeline to diagnose, monitor and enable the treatment of diseases such as cancer, autoimmune conditions and infectious diseases. Our goal is to develop and commercialize immune-driven clinical products tailored to each individual patient. For more information, please visit adaptivebiotech.com and follow us on www.twitter.com/adaptivebiotech.

This press release contains forward-looking statements that are based on beliefs and assumptions and on information currently available to Adaptive. All statements contained in the press release other than statements of historical fact are forward-looking statements, including statements regarding the ability to map adaptive immune responses to COVID-19, the ability to successfully collect a sufficient number and quality of samples through ImmuneRACE, the ability to efficiently and effectively process data with ImmuneCODE, to leverage any findings or data to advance solutions to diagnose, treat and prevent COVID-19, the ability to develop, commercialize and achieve market acceptance of the Adaptive's TCR-Antigen Map and other current and planned products and services, research and development efforts. These statements involve risks, uncertainties and other factors that may cause actual results, levels of activity, performance or achievements to be materially different from the information expressed or implied by these forward-looking statements, which are described under "Risk Factors," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and elsewhere in the documents Adaptive files with the Securities and Exchange Commission from time to time.

About Illumina
Illumina is improving human health by unlocking the power of the genome. Our focus on innovation has established us as the global leader in DNA sequencing and array-based technologies, serving customers in the research, clinical, and applied markets. Our products are used for applications in the life sciences, oncology, reproductive health, agriculture, and other emerging segments. To learn more, visit www.illumina.com **and follow @illumina**.

About LabCorp
LabCorp (NYSE: LH), an S&P 500 company, is a leading global life sciences company that is deeply integrated in guiding patient care, providing comprehensive clinical laboratory and end-to-end drug development services. With a mission to improve health and improve lives, LabCorp delivers world-class diagnostics solutions, brings innovative medicines to patients faster, and uses technology to improve the delivery of care. LabCorp reported revenue of more than $11.5 billion in 2019. To learn more about LabCorp, **visit** www.LabCorp.com**, and to learn more about LabCorp's Covance drug development business, visit** www.Covance.com.

About Providence
Providence is a national, not-for-profit Catholic health system comprising a diverse family of organizations and driven by a belief that health is a human right. With 51 hospitals, 1,085 physician clinics, senior services, supportive housing and many other health and educational services, the health system and its partners employ more than 120,000 caregivers serving communities across seven states – Alaska, California, Montana, New Mexico, Oregon, Texas, and Washington, with system offices in Renton, Wash., and Irvine, Calif.

About Microsoft
Microsoft (Nasdaq "MSFT" @microsoft) enables digital transformation for the era of an intelligent cloud and an intelligent edge. Its mission is to empower every person and every organization on the planet to achieve more.

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