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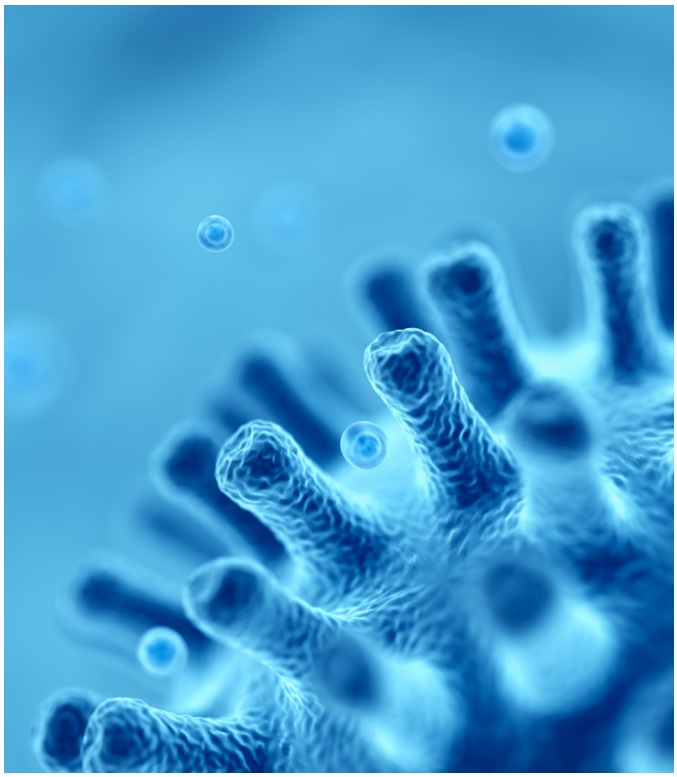
Biopharma Companies Join Forces to Fight COVID-19

IQVIA Pharma Deals

Rising to the formidable challenge presented by the COVID-19 pandemic, the biopharmaceutical industry is embracing a spirit of collaboration to advance the development of vaccines and therapeutic interventions that can prevent disease or speed recovery. This has resulted in a steady stream of new alliances that bring together complementary assets, resources and expertise. Existing partners are also broadening the scope of ongoing collaborations to include COVID-19 R&D.



Introduction

As the need to combat the COVID-19 pandemic grows ever urgent, several key players in the biopharmaceutical industry have joined forces with biotech companies, universities and government agencies in the hope of developing solutions to treat or prevent COVID-19, which has to date infected more than 3.5 million people worldwide and resulted in more than 245,000 deaths. A range of approaches are being pursued, including vaccines to prevent the disease and neutralizing antibodies from recovered patients to treat active infection. While it is likely to take at least 12 – 18 months for a prophylactic COVID-19 vaccine to be successfully developed, antibody-based approaches could offer an important therapeutic option in the nearer term.

Pharma joins together in the race to find COVID-19 cure

A number of collaborations have been signed in recent weeks to expedite the development of novel COVID-19 vaccine projects, with several big pharma companies involved utilizing vaccine platforms that have previously been deployed against other viral diseases (Table 1). Johnson & Johnson (J&J) and the Biomedical Advanced Research and Development Authority (BARDA) have together committed more than $1 billion of investment to co-fund research, development and clinical testing of a vaccine for COVID-19. J&J has selected a lead COVID-19 vaccine candidate from constructs it has been working on since January and expects to initiate human clinical studies by September at the latest and to have the first

batches of a COVID-19 vaccine available for emergency use authorization in early 2021.

Sanofi has two ongoing COVID-19 vaccine partnerships: with BARDA to investigate an advanced preclinical SARS vaccine candidate that could be modified to protect against COVID-19 and with Translate Bio to develop an mRNA vaccine, drawing upon a 2018 agreement between the parties to develop vaccines for infectious diseases using mRNA technology. Meanwhile, Pfizer has agreed to co-develop BioNTech's COVID-19 mRNA vaccine program, BNT162, which entered clinical testing at the end of April 2020. As part of the deal, BioNTech will receive $298 million upfront, comprised of $185 million cash payment and a $113 million equity investment. The two companies have been collaborating since 2018 to develop an mRNA-based influenza vaccine.

In mid-March, Moderna initiated the first clinical trial to test a COVID-19 vaccine in humans and announced the dosing of the first participant in a Phase I study of its mRNA-1273 vaccine candidate against SARS-CoV-2. mRNA-1273 was selected in collaboration with investigators from the US NIH's National Institute of Allergy and Infectious Diseases (NIAID). China-based CanSino Biologics followed days later with its adenovirus-based vaccine, Ad5-nCoV, which is being developed in alliance with the Beijing Institute of Biotechnology. In April, Inovio Pharmaceuticals dosed its first participant in a Phase I study of its DNA vaccine INO-4800.

Table 1: Selected COVID-19 partnering deals

COMPANIES	MODALITY	DEAL DETAILS
Sanofi; BARDA	Vaccine	Development of a modified preclinical SARS vaccine
Translate Bio; Sanofi	mRNA vaccine	Development of vaccines for up to five undisclosed infectious disease pathogens
BioNTech; Pfizer	mRNA vaccine	Development and distribution of preclinical asset BNT162
AbCellera Biologics; Eli Lilly	Antibodies	Co-development of therapeutic antibodies leveraging AbCellera's rapid pandemic response platform
Adaptive Biotechnologies; Amgen	Antibodies	Neutralizing antibodies from recovered COVID-19 patients
Neurimmune; Ethris	mRNA-based antibodies	Development of mRNA-encoded, neutralizing antibodies to be administered by inhalation
GlaxoSmithKline; Vir Biotechnology	Antibodies	Development of VIR-7831 and VIR-7832, which have demonstrated high affinity for the SARS-CoV-2 spike protein
BD; Bill & Melinda Gates Foundation; bioMérieux; Boehringer Ingelheim; Bristol-Myers Squibb; Eisai; Eli Lilly; Gilead; GSK; Johnson & Johnson; Merck & Co.; Merck KGaA; Novartis; Pfizer; Sanofi	N/A	Shared molecular compound libraries and expertise to accelerate the development, manufacture and delivery of COVID-19 treatments

Source: IQVIA Pharma Deals

Aside from companies centered on vaccine development, several alliances have emerged focused on the identification of novel antibodies to neutralize the SARS-CoV-2 virus, which may be used therapeutically to treat infected patients, and which could also be given to people with a heightened risk of exposure to the virus. Eli Lilly teamed up with AbCellera in March to co-develop antibody therapies for COVID-19 by leveraging the Canadian biotech's rapid pandemic response platform. The two companies will select from more than 500 unique antibodies isolated from one of the first US patients who recovered from COVID-19.

As part of a deal with Amgen, Adaptive Biotechnologies will use its immune medicine platform to rapidly screen B-cell receptors from individuals that have recovered from COVID-19 to identify naturally-occurring antibodies that neutralize SARS-CoV-2. A different approach is being taken by Neurimmune and Ethris which have partnered to develop mRNA-encoded, neutralizing anti-SARS-CoV-2 antibodies that will be delivered directly to the lungs of patients with COVID-19.

In April, GlaxoSmithKline (GSK) agreed to make a $250 million equity investment in Vir Biotechnology as part of a broad collaboration between the parties aimed at addressing the COVID-19 pandemic and potential future coronavirus outbreaks. The initial focus of the deal is to accelerate two specific antibody candidates identified by Vir's monoclonal antibody platform - VIR-7831 and VIR-7832 - which have demonstrated high affinity for the SARS-CoV-2 spike protein (a target of particular interest that is used by the virus to dock to human cells) and have proven highly potent in neutralizing SARS-CoV-2 in live virus-cellular assays. Subject to regulatory review, the two companies hope these antibody candidates will be expedited into Phase II clinical trials within the next 3 to 5 months. Combining their capabilities in CRISPR (clustered, regularly interspaced short palindromic repeats) screening and machine learning, GSK and Vir also aim to identify cellular targets whose inhibition can prevent SARS-CoV-2 infection and will conduct research into SARS-CoV-2 and other coronavirus vaccines by identifying neutralizing epitopes that are present across entire viral families. This initiative adds to GSK's existing collaborations in the COVID-19 vaccine field under which it has provided access to its pandemic adjuvant system to several parties developing COVID-19 vaccine candidates, including Xiamen Innovax Biotech, Clover Biopharmaceuticals and the University of Queensland. Vir has itself accumulated a roster of COVID-19 collaborations, such as expanding its existing partnership with Alnylam Pharmaceuticals to include the development and commercialization of RNAi therapeutics targeting SARS-CoV-2 and signing new deals with Biogen, the NIAID's Vaccine Research Center, WuXi Biologics, Xencor and Generation Bio.

In a further collaborative research effort, 15 pharmaceutical companies, including Novartis and GSK, have agreed to share libraries of molecular compounds that already have some degree of safety and activity data with the newly-launched COVID-19 Therapeutics Accelerator for screening for potential against COVID-19. The aim is to move successful hits into in vivo trials in as little as two months.

Outlook

As multiple therapeutic approaches will likely be required to address the current coronavirus pandemic ahead of the successful development of an effective vaccine, it is expected that additional COVID-19-focused partnerships will materialize in the coming days and weeks as companies pool technical and scientific expertise and do their best to accelerate development timelines. Combined with efforts from regulatory agencies, such as the FDA and its Coronavirus Treatment Acceleration Program, these partnerships will enable promising medicines to reach patients as soon as possible.

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Heather has more than 15 years of experience in providing intelligence and insight to the pharmaceutical industry and was previously a Senior Advisor at PharmaVentures, specializing in providing expert opinion on the structure and pricing of pharmaceutical licensing transactions. During this time, she also developed expertise in forecasting and product valuation, competitive landscaping, market analysis and transfer pricing. Heather graduated from the University of Oxford with a Master's degree in Molecular and Cellular Biochemistry and holds a Diploma in Financial Management from the ACCA.

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