

America's biopharmaceutical companies are committed to developing solutions to help diagnose and treat those with COVID-19, a disease caused by a novel strain of coronavirus. In addition to applying their scientific expertise to find ways to diagnose, treat and prevent infections from the virus, the biopharmaceutical industry is providing financial support and in-kind donations to organizations and collaborating with U.S. and global health authorities to combat this global public health emergency.

More than half of PhRMA members have R&D efforts under way or are providing donations of medicines and critical medical supplies as well as providing financial donations to support patients and first responders in addressing this evolving crisis.

## Here are just a few ways America's research-based biopharmaceutical companies are working to combat the novel coronavirus:



### DEVELOPING POTENTIAL NEW TREATMENTS AND VACCINES

As part of its commitment to finding solutions for patients with coronavirus and preventing others from becoming infected, PhRMA members have been donating investigational compounds that may have potential to treat coronavirus for emergency use and clinical trials, including compounds formerly tested on other viral pathogens such as Ebola and HIV. Other members are researching vaccine candidates for prevention and undertaking inventories of existing research portfolio libraries to identify additional potential treatments for research and development. Companies are also exploring ways to leverage existing technologies that provide the ability to rapidly upscale production once a potential vaccine candidate is identified.



### PARTNERSHIPS

PhRMA member companies are collaborating with relevant U.S. and global public health authorities including the U.S. Food and Drug Administration (FDA), National Institutes of Health (NIH) and Centers for Disease Control and Prevention (CDC), as well as the World Health Organization (WHO), China public health authorities including the Chinese Center for Disease Control and Prevention and the European Medicines Agency, among many others to address this public health crisis. These collaborations are focused on all areas of research and development, including evaluating how pandemic preparedness platforms can potentially be tailored to address the coronavirus emergency, leveraging existing R&D partnerships to accelerate development of antiviral agents against COVID-19 and contribute both resources and expertise to various R&D consortia to address the outbreak.



### MONETARY & IN-KIND SUPPORT

Millions of dollars of direct monetary and in-kind contributions are being used to support organizations at the heart of the crisis who are able to have an immediate impact for infected patients and communities in China. PhRMA member companies acted immediately on the ground in China to donate a variety of crucial supplies including advanced surgical equipment, antibiotics, disinfection equipment, batch virus testing devices (e.g., throat swabs), vitamins, protective clothing, goggles, masks, gloves and more.



### SUPPLY CHAIN INTEGRITY

As the situation evolves, PhRMA companies are continuing to prioritize the continuity of their supply chains and are working proactively to prevent and mitigate any potential shortages through close coordination with the FDA and other global stakeholders.

**Below is a snapshot of on-going PhRMA member company efforts to support the detection, prevention and treatment of the coronavirus outbreak. The below only represents a portion of the more than 50% of PhRMA's members who are engaged in this effort.**

## ABBVIE

AbbVie is collaborating with select health authorities and institutions globally on clinical research related to COVID-19. AbbVie is supporting clinical studies and basic research, working closely with European health authorities and the FDA, CDC, NIH and BARDA to coordinate on these efforts.

Additionally, the company is donating \$35 million to help support underserved communities and health care systems working to address the impact of the COVID-19 global pandemic. AbbVie's partners are:

- + International Medical Corps to help create capacity to treat patients at overburdened hospitals. AbbVie's donation will support the creation and operation of mobile field hospitals in the U.S. that will provide capacity and create improved patient flow options as hospitals work to keep COVID-19 patients separated from other patients.
- + Direct Relief to help meet health care system needs in the hardest hit countries. This support will enable the procurement and delivery of oxygen concentrators, ventilators and personal protective equipment to healthcare systems and prioritize countries with high infection rates.
- + Feeding America to protect the most vulnerable, including the elderly, by enabling access to food and essential household supplies with minimal contact. Feeding America has created a new model of home delivery and drive-through service.

Included in the \$35 million is a reserve of \$5 million for a new AbbVie COVID-19 Community Resilience Fund for strengthening community resilience in under-resourced areas impacted by COVID-19.

Additionally, AbbVie employees with relevant scientific, health care and other critical expertise who volunteer in times of pandemic crisis will continue to receive full pay and benefits during their temporary service period.

## ALKERMES

As a leader in mental health, Alkermes recognizes there are many people who will be disproportionately impacted by COVID-19 – particularly some of the most vulnerable members of society. Alkermes has made donations to five organizations in the local communities where it operates. These organizations focus on delivering food and support for low-income families and children, as well as seniors:

- + Council on Aging and the Wilmington School District, two essential communities during this time of need (Ohio)
- + Healthy Waltham, an organization providing food to children who normally depend on meals in schools and to seniors so they can remain at home and safe during this crisis (Massachusetts)
- + ALONE, a program focused on caring for the elderly population during this vulnerable and isolating period (Ireland)
- + Feeding America's COVID-19 Response Fund, the largest hunger-relief organization in the United States (U.S. field-based employees)

## AMGEN

Amgen and Adaptive Biotechnologies announced a collaboration aimed at helping address the COVID-19 pandemic. The companies will combine expertise to discover and develop fully-human neutralizing antibodies targeting SARS-CoV-2 to potentially prevent or treat COVID-19. The mutually exclusive collaboration brings together Adaptive's proprietary immune medicine platform for the identification of virus-neutralizing antibodies with Amgen's expertise in immunology and novel antibody therapy development. Given the rapidly rising incidence of COVID-19 around the world, the companies will begin work immediately and finalize financial details and terms in the coming weeks.

Neutralizing antibodies defend healthy cells by interfering with the biological function of an invading virus. These antibodies may be used therapeutically to treat someone currently fighting the disease and can be given to people who have heightened risk of exposure to SARS-CoV-2, such as health care workers.

Amgen's subsidiary, deCODE Genetics, alongside colleagues from Iceland's Directorate of Health and the National University Hospital published online in the *New England Journal of Medicine* a population-based study of the early spread of the SARS-CoV-2 virus (causing COVID-19 disease) in Iceland. The aim of the study was to provide as comprehensive a view as possible of how the virus spreads in a population, in this case one of 360,000 and implementing early and aggressive testing, tracking and isolation measures to contain the epidemic. The results show that roughly 0.8% of the population at large is infected with several strains or clades of the virus supporting the concern that silent carriers spread the disease. This suggests that while the efforts of the public health system have been effective so far in mitigating the spread to date, more data, including massive population screening, will be key to informing efforts to contain the virus in Iceland in the long run. This work to identify the various mutations will also be important in Amgen's collaboration with Adaptive to find antibodies that are broadly effective against different strains of SARS-CoV-2 and the various mutations those strains carry. Once the best antibody or antibodies are identified, Amgen will apply its expertise in genetics, immunology, antibody engineering, and manufacturing to optimize, develop, and produce a therapy designed to treat and prevent COVID-19 infection.

Amgen and the Amgen Foundation have also announced an initial commitment of up to \$12.5 million to support U.S. and global relief efforts to address critical needs in communities impacted by the COVID-19 pandemic. The funds will be used to support emergency response efforts in Amgen's U.S. and international communities, patient-focused organizations that are mounting their own response efforts and international relief efforts by Direct Relief and International Medical Corps. The Amgen Foundation will also match donations made by Amgen staff around the globe who wish to contribute their own funds to the relief efforts.

In addition, the Amgen Foundation seeks to advance excellence in science education and inspire the next generation of innovators:

- ✦ In January, the Amgen Foundation and Harvard's Faculty of Arts and Sciences launched LabXchange, a free online science education platform that provides users access to personalized instruction, virtual lab experiences and networking opportunities across the global scientific community. As the founding sponsor, the Amgen Foundation awarded \$11.5 million in grant funding to Harvard to deepen the impact of this new online learning platform across the globe.
- ✦ The Amgen Foundation is the founding biology partner of the Khan Academy, a leading innovative and effective educational technology platform with over 70 million registered users across the globe.

- ✦ Free online learning programs supported through both of these deep relationships are available to help students continue their science education during school closures, and can be accessed via the LabXchange and Khan Academy's online learning websites.

## ASTELLAS

Astellas Pharma US (Astellas) and the Astellas Global Health Foundation are each expanding support for global and local communities fighting COVID-19 by providing up to \$2 million of new financial assistance, in aggregate, to meet the urgent demand for resources to help patients, health care workers and first responders.

At a national level in the United States, Astellas is preparing to help humanitarian organizations working to support communities due to the COVID-19 outbreak. This includes Astellas corporate donations to AmeriCares, the American Red Cross and Direct Relief to help their emergency efforts. The company also is coordinating opportunities to mobilize equipment, personal protective equipment (PPE) donations, blood donations in alignment with Centers for Disease Control and Prevention guidance, employee contributions and volunteerism to meet the critical demand for time and resources where needs are most pressing.

Locally at Astellas' US-headquarters in Illinois, Astellas is partnering with multiple state organizations with their response to COVID-19, as a Founding Partner to the Governor's Illinois COVID-19 Response Fund and the Illinois Biotechnology Innovation Organization (iBIO) COVID-19 PPE Relief Fund.

To assist health care systems coping with increasing demands presented by the escalation of COVID-19 around the world, Astellas will provide paid time off to Astellas employees who are medically qualified practitioners, medically qualified volunteers or individuals seeking to support organizations looking in their local communities.

## ASTRAZENECA

Through its scientific expertise in infectious disease and proprietary antibody discovery technology, AstraZeneca has rapidly mobilized its research efforts to discovering novel coronavirus-neutralising antibodies as a treatment to prevent COVID-19 disease. The company is currently tailoring its Pandemic Prevention Platform (P3) program, funded in part by the U.S. government, to address the 2019-nCoV outbreak and AstraZeneca's teams are now focused on identifying monoclonal antibodies to progress into clinical trial evaluation.

AstraZeneca is also donating nine million face masks to support health care workers around the world as they respond to the COVID-19 global pandemic. The company has partnered with the World Economic Forum's COVID Action Platform, created with the support of the World Health Organization, to identify countries in greatest need.

In addition to these donations, AstraZeneca is accelerating the development of its diagnostic testing capabilities to scale-up screening and is also working in partnership with governments on existing screening programs to supplement testing.

To help ensure the continued supply of its medicines to patients, AstraZeneca will screen employees across its manufacturing and supply network. The company's research and development teams have also been working expeditiously to identify monoclonal antibodies to progress towards clinical trial evaluation as a treatment to prevent COVID-19. More than 50 virology, immunology, respiratory and protein engineering experts across research, clinical, regulatory and manufacturing are placing the highest priority on developing a treatment to minimize the global impact of the disease.

Additionally, AstraZeneca will initiate a randomized, global clinical trial to assess the potential of Calquence (acalabrutinib) in the treatment of the exaggerated immune response (cytokine storm) associated with COVID-19 infection in severely ill patients. The trial design is based upon strong scientific evidence supporting the role of the Bruton's tyrosine kinase (BTK) pathway in the production of inflammatory cytokines and on encouraging early clinical data. Calquence is a next-generation, highly selective BTK inhibitor currently used to treat certain types of blood cancers.

**BAYER**

Bayer is donating 3 million tablets of the drug Resochin (chloroquine phosphate) to the U.S. Government to support its efforts in the fight against COVID-19. Resochin, a product discovered by Bayer in 1934 and indicated for prevention and treatment of malaria, may have potential in treating patients with COVID-19 infection, based on new and limited data from initial preclinical and evolving clinical research conducted in China. Bayer has also made a \$250,000 commitment to the Berkeley Relief Fund, an initiative by the Berkeley, California, City Council to provide emergency relief grants for small businesses, nonprofit arts organizations and worker rent support. In addition, Bayer has provided substantial financial donations and donations of several medicines to the Chinese Red Cross, which is working with Chinese health authorities to coordinate the deployment of aid measures to support those affected by the outbreak of COVID-19 there. Bayer is also supporting hospitals in Lombardy, Italy, with a donation of one million euros. The aid is being added to an aid fund that the regional authorities in Lombardy have set up to help procure urgently needed equipment for intensive care units in hospitals with the greatest needs. Bayer will continue to provide affected regions and countries with rapid and unbureaucratic assistance as part of its corporate social responsibility.

**BIOGEN**

The Biogen Foundation has committed \$10 million to support global response efforts and communities around the world impacted by the COVID-19 pandemic. The funds will be used to address immediate critical needs, with the majority of donations going to support non-profit organizations in the U.S., including Massachusetts and North Carolina, in Italy and in other impacted countries worldwide. This donation will be used to help expand testing options, ease the strain on medical systems, provide training for front line health workers and support access to necessities like food. This adds to the donation made by Biogen China to the Red Cross Society of China. The company has also provided medical equipment and supplies to Partners HealthCare in Massachusetts, to help diagnose COVID-19 in a greater number of people. Partners HealthCare is one of the largest providers of healthcare services in the Boston area. Biogen will also be supporting Massachusetts General Hospital and Brigham and Women's Hospital directly as they work on the front line to treat and contain the virus.

**BOEHRINGER  
INGELHEIM**

Boehringer Ingelheim (BI) is standing together with all parties to support the fight against the COVID-19 pandemic while taking action to protect employees' health and safety. BI is continually assessing what additional measures they can take to help its patients and communities. The company's focus remains on assuring the ongoing supply of BI medicines for its human and animals patients in the U.S. and around the world. In addition, BI has made a number of financial contributions totaling over \$1 million to protect health care professionals in the critical services they are providing to patients. BI has donated medicines and medical supplies. Its teams are conducting a computational screen of our entire library of over one million compounds and are investigating the activity of selected existing small molecule compounds from our former antiviral research against SARS-CoV2.

At a local level, BI is redeploying the hard-working employees who support its U.S. cafeterias to prepare meals to donate to those whose access to food is a struggle. The company's U.S. Boehringer Ingelheim Cares Foundation (BI Cares), an independent nonprofit organization, is

making monetary donations and donating urgently needed medicines for patients through our non-governmental organization (NGO) partners. BI Cares added a new cause to its Matching Gifts Program to provide BI U.S. employees the opportunity to double the impact of their charitable giving to a fund being used to prevent the spread of and help those affected by COVID-19. Additionally, the Foundation is conducting employee engagement campaigns to raise funds to donate to nonprofits near our U.S. sites that are distributing groceries to food insecure individuals and families.

**BRISTOL MYERS SQUIBB**

Bristol Myers Squibb and the Bristol Myers Squibb Foundation, a 501(c)(3) organization, are actively and separately contributing to the fight against COVID-19. The Bristol Myers Squibb Foundation, an independent charitable organization, has provided more than \$6 million in financial support including \$2.5 million to human service organizations and patient support groups that are providing food services, critical education and aid to vulnerable populations in communities around the U.S. It has also partnered in 10 countries such as China, Italy and Spain in their response with more provided every day. Both entities have increased efforts in recent weeks at the global and local levels, providing funds for personal protection equipment (PPEs) for front line health care workers, supporting patient advocacy organizations, and accelerating grant distributions to small community-based organizations that serve vulnerable populations.

**EISAI, INC.**

Eisai, Inc. has donated PPE to Hackensack Meridian Health in New Jersey and the Kaiser Health System in California. In addition, Eisai has provided funds to fast-acting patient advocacy organizations who are getting relief to patients in need.

**ELI LILLY AND COMPANY**

Lilly is committed to doing everything possible to bring the full force of their scientific and medical expertise to attack the coronavirus pandemic. The company announced it has entered into an agreement with AbCellera to co-develop antibodies for the potential treatment and prevention of COVID-19, the disease caused by the SARS-CoV-2 novel coronavirus. The collaboration will leverage AbCellera's rapid pandemic response platform, developed under the DARPA Pandemic Prevention Platform (P3) Program, and Lilly's global capabilities for rapid development, manufacturing and distribution of therapeutic antibodies.

Additionally, Lilly scientists are partnering with the Indiana State Department of Health, with support from the FDA, to accelerate testing in Indiana for SARS-CoV-2, the virus that causes COVID-19. Lilly is using its specialized research laboratories to analyze samples taken in Indiana health care facilities, including nursing homes and emergency rooms. In addition, Lilly has launched a drive-through testing facility at their corporate headquarters for active front-line health care workers and Indianapolis first responders, as a service to the community and in an effort to protect people working on the front lines of this epidemic. On April 1, Lilly announced it is expanding testing to two new groups of higher-risk individuals: workers in businesses deemed essential by the State of Indiana who have regular public contact as part of their job, and people in the community showing symptoms who are vulnerable to severe complications of the virus. Lilly hopes that expanding testing in these populations will make a meaningful difference in this fight – for both individuals and health care providers as they battle this virus on the front lines. Lilly will not accept payment from government agencies, hospitals, insurance companies or patients for conducting or analyzing tests.

Lilly is also closely monitoring their supply chain and does not currently anticipate shortages for any of their medicines, including all forms of insulin. Additionally, Lilly and the Lilly Foundation are actively engaged with community partners to address new and complex challenges arising from the coronavirus, including the economic impact on vulnerable people.

**EMD SERONO**

As part of the global effort to investigate potential therapeutics for COVID-19 and their support of independent research, Merck KGaA, Darmstadt, Germany\* recently donated a supply of interferon beta-1a (Rebif®) to the French Institut National de la Santé et de la Recherche Médicale (INSERM) following a request for use in a clinical trial. To date, Merck KGaA, Darmstadt, Germany's interferon beta-1a is not approved by any regulatory authority for the treatment of COVID-19 or for use as an antiviral agent. The company has also supported China's fight against the coronavirus with multiple donation efforts in cash and kind to three well respected local charitable organizations in order to support much needed medical aid. This includes products to support local institutions and invitro diagnostic manufactures to accelerate research, as well as virus diagnosis and testing efforts and personal protective equipment. Overall, the spread of the coronavirus also stresses the importance of pandemic preparedness – a topic that we continue to support with our € 1 million Future Insight Prize.

*\*The biopharma business of Merck KGaA, Darmstadt, Germany operates as EMD Serono in the U.S. and Canada.*

**GENENTECH, A MEMBER OF THE ROCHE GROUP**

On March 23, 2020, Genentech announced the FDA approved the initiation of the company's randomized, double-blind, placebo-controlled Phase III clinical trial (COVACTA) in collaboration with BARDA, a part of the U.S. Health and Human Services Office of the Assistant Secretary for Preparedness and Response (ASPR), to evaluate the safety and efficacy of Actemra® (tocilizumab) plus standard of care in hospitalized adult patients with severe COVID-19 pneumonia compared to placebo plus standard of care. This is the first global study of Actemra in this setting and the company is working as quickly as possible to enroll 330 patients globally, including the United States. Additionally, Genentech is providing 10,000 vials of Actemra to the U.S. Strategic National Stockpile for potential future use at the direction of the U.S. Department of Health and Human Services (HHS).

On March 12, 2020, Roche received FDA Emergency Use Authorization for the cobas® SARS-CoV-2 Test to detect the novel virus that causes COVID-19 disease. Hospitals and reference laboratories can run the test on Roche's fully automated cobas® 6800 and cobas® 8800 Systems, which are widely available in the U.S. and around the world. They expect to supply millions of tests per month globally.

Genentech is donating an initial \$7 million to organizations dedicated to providing emergency public health response, food assistance, housing and care for the most vulnerable in our communities. These donations will be directed on a national, regional and local level. In addition, they are making significant financial donations to organizations like Direct Relief that are working locally and nationally to provide personal protective equipment (PPE), such as face masks, goggles and gowns and other critical support to health care systems.

**GILEAD SCIENCES**

Gilead is harnessing decades of antiviral expertise to rapidly respond to the COVID-19 pandemic. As a company, Gilead is committed to putting its resources and research to bear to advance treatments that may help in the global response to this public health emergency. Gilead has:

- + Initiated Phase 3 studies to evaluate the safety and efficacy of the investigational antiviral remdesivir in adults diagnosed with COVID-19. The company is also supporting additional clinical trials globally with study drug.
- + Recently announced that it will donate existing supply of remdesivir, equaling 1.5 million individual doses for the treatment of patients with severe COVID-19 infection globally, for clinical trials, compassionate use or expanded access programs and following potential future regulatory authorizations.
- + Accelerated and expanded manufacturing of remdesivir to increase its available drug

supply as rapidly as possible, setting a goal of manufacturing more than 1 million treatment courses by the end of 2020 and several million treatment courses in 2021.

- + Established a \$20 million philanthropic fund, the Gilead CARES (COVID-19 Acute Relief and Emergency Support) Grantee Fund, to support nonprofit organizations impacted by the COVID-19 crisis, alongside other community donations.

Across all its efforts, Gilead is collaborating with government agencies, academic institutions, non-profit organizations and individual researchers and clinicians, to share information and efficiently deploy resources globally to help patients and communities fighting COVID-19.

**GLAXOSMITH-KLINE**

GlaxoSmithKline (GSK) is closely monitoring the COVID-19 pandemic and is supporting global efforts to tackle the virus. From the onset, GSK has been actively exploring ways to help, with science and expertise, alongside protecting the health and wellbeing of its people and managing the company's global supply chains to support patients and consumers who depend on GSK products.

GSK is taking the following actions to support the global response to COVID-19:

- + GSK and Sanofi are entering into a collaboration to develop an adjuvanted vaccine for COVID-19, using innovative technology from both companies, to help address the ongoing pandemic. Sanofi will contribute its S-protein COVID-19 antigen, which is based on recombinant DNA technology. GSK will contribute its proven pandemic adjuvant technology to the collaboration. The use of an adjuvant can be of particular importance in a pandemic situation since it may reduce the amount of vaccine protein required per dose, allowing more vaccine doses to be produced and therefore contributing to protect more people.
- + GSK is entering into a collaboration to find coronavirus solutions with Vir Biotechnology. The collaboration will use Vir's proprietary monoclonal antibody platform technology to accelerate existing and identify new anti-viral antibodies that could be used as therapeutic or preventative options to help address the current COVID-19 pandemic and future outbreaks. The companies will leverage GSK's expertise in functional genomics and combine their capabilities in CRISPR screening and artificial intelligence to identify anti-coronavirus compounds that target cellular host genes. They will also apply their combined expertise to research SARS-CoV-2 and other coronavirus vaccines.
- + Donating \$10 million to WHO and the UN Foundation's COVID-19 Solidarity Response Fund to support WHO and partners prevent, detect and manage the pandemic, particularly where the needs are the greatest.
- + Expansion of vaccines collaborations—GSK is now working with five partner companies and research groups across the world, including in the USA and China. These include partnerships with the University of Queensland, Clover Biopharmaceuticals, and Xiamen Innovax Biotech Co., Ltd. to make our vaccine adjuvant technology available to support their respective COVID-19 vaccine research programs. The use of an adjuvant is of particular importance in a pandemic situation since it may reduce the amount of vaccine

protein required per dose, allowing more vaccine doses to be produced, and therefore contributing to the protection of more people.

- + GSK is entering a new collaborative research effort, the COVID-19 Therapeutics Accelerator, by making available compounds from its libraries for screening, with the aim of bringing forward the most promising molecules that could be used to treat cases of COVID-19.
- + Evaluating its marketed medicines and those in development, to determine if any could be used beyond their current indications, and evaluating options to make available specialized laboratory space to help in research and testing of COVID-19.
- + GSK is also donating surplus reagents to countries to support diagnostic testing, preparing to do the same for surplus personal protective equipment (PPE) and have initiated new volunteering processes for employees, to enable those with medical or specialist expertise to provide support to frontline health workers and national governments.

GSK continues to monitor the situation closely, and take actions to develop our response to the pandemic. In doing so, we will continue to put the needs of patients and our people first at all times.

## INCYTE

Incyte is closely monitoring the evolving COVID-19 pandemic. The company's primary focus is on ensuring patients have access to the medicines they need while safeguarding the health and safety of its employees.

Incyte announced plans to initiate a Phase 3 clinical trial (RUXCOVID) evaluating the efficacy and safety of ruxolitinib (Jakafi®) plus standard-of-care (SoC), compared to SoC therapy alone, in patients with COVID-19 associated cytokine storm. Incyte also intends to launch an Expanded Access Program to allow eligible patients with COVID-19 associated cytokine storm to receive ruxolitinib while it is being investigated for this indication.

Additionally, Incyte is committed to supporting its local communities, particularly during this unprecedented time of need. To date, Incyte has made several contributions, including:

- + Supplies, including personal protective equipment (PPE), from Incyte's laboratories in Wilmington, DE, have been donated to local Delaware hospitals.
- + Incyte has also donated to the Food Bank of Delaware to cover the costs of increased food distribution and pre-made weekend meal kits.
- + Incyte Italy has made a donation to fund the purchase of hospital equipment and goods to support patients, hospitals, healthcare facilities and providers in the critically affected Lombardy region.
- + Along with other companies, Incyte supported The Leukemia & Lymphoma Society COVID-19 Patient Financial Aid program, aimed at providing financial assistance to eligible patients for food, non-medical and other day-to-day expenses that may arise due to loss of income.

**JOHNSON &  
JOHNSON**

Johnson & Johnson (J&J) is seeking to further expedite its investigational coronavirus vaccine program through an expanded collaboration with the Biomedical Advanced Research and Development Authority (BARDA), part of the Office of the Assistant Secretary for Preparedness and Response (ASPR) at the U.S. Department of Health & Human Services.

The Company announced on March 30, 2020 the selection of a lead COVID-19 vaccine candidate from constructs it has been working on since January 2020; the significant expansion of the existing partnership between the Janssen Pharmaceutical Companies of Johnson & Johnson and the BARDA; and the rapid scaling of the Company's manufacturing capacity with the goal of providing global supply of more than one billion doses of a vaccine. The Company expects to initiate human clinical studies of its lead vaccine candidate at the latest by September 2020 and anticipates the first batches of a COVID-19 vaccine could be available for emergency use authorization in early 2021, a substantially accelerated timeframe in comparison to the typical vaccine development process.

Through a landmark new partnership, BARDA, which is part of the Office of the ASPR at HHS, and Johnson & Johnson together have committed more than \$1 billion of investment to co-fund vaccine research, development, and clinical testing. Johnson & Johnson will use its validated vaccine platform and is allocating resources, including personnel and infrastructure globally, as needed, to focus on these efforts. Separately, BARDA and the Company have provided additional funding that will enable expansion of their ongoing work to identify potential antiviral treatments against the novel coronavirus.

Additionally, J&J initiated a review of known pathways in coronavirus pathophysiology to determine whether previously tested medicines can be used to help patients survive a COVID-19 infection and reduce the severity of disease in non-lethal cases. Johnson & Johnson has also announced that its Janssen Pharmaceutical Companies have entered a collaboration with the Beth Israel Deaconess Medical Center (BIDMC) to support the development of a preventive vaccine candidate for COVID-19. The parties have commenced preclinical testing of multiple vaccine prospects, with the aim to identify by the end of the month a COVID-19 vaccine candidate for clinical trials.

In January 2020, Johnson & Johnson announced its support of frontline health workers through the Johnson & Johnson Center for Health Worker Innovation, committing \$250M over 10 years. The Johnson & Johnson Family of Companies and the Johnson & Johnson Foundation are increasing that commitment by \$50M for immediate COVID-19 response, primarily focused on supporting frontline health workers. The company also has donated over \$3.7M in personal protective equipment for frontline health workers, including goggles, protective suits and masks and made product donations to countries, including South Korea, China, Italy and more.

**LUNDBECK**

As an organization dedicated to improving the lives of people affected by brain diseases, with a particular focus on supporting the mental health of individuals across the globe, Lundbeck is working to support communities that may be most impacted by the COVID-19 outbreak. Lundbeck North America has committed \$1 million in support of COVID-19 relief efforts and is donating to COVID Response Funds in regions where we have a meaningful presence, with significant donations from the Lundbeck US Charitable Fund to Response Funds in Illinois, Seattle and San Diego. These donations will enable local nonprofit organizations to provide interim housing and shelter, direct financial assistance, and primary healthcare and

mental healthcare services to vulnerable community members. The company also is taking action to bolster our health care system's ability to respond to the pandemic through support of the the Illinois Biotechnology Innovation Organization (iBio) COVID-19 PPE Relief Fund, which will secure protective medial products for Illinois-based health care workers and first responders. The Lundbeck US Charitable Fund made a significant donation to the Center for Disaster Philanthropy COVID-19 Response Fund, which focuses on nonprofit organizations working directly to support health care workers and respond to the pandemic among the most vulnerable populations. Lundbeck's La Jolla Research Center donated a large portion of its inventory of disposable gloves to California healthcare workers in local area hospitals. Across the globe, the company's local affiliates are supporting relief organizations; early in the pandemic, Lundbeck China donated 1 million Chinese Yuen to the Red Cross Foundation to support the front line workers in the city of Wuhan. And the Lundbeck Foundation, which owns 70% of Lundbeck, has earmarked DKK 30 million (USD 4.3 million) for research projects targeting the current coronavirus pandemic.

## MERCK

The company has provided a half a million (500,000) personal protective masks to New York City for use as part of urgent efforts to address the outbreak in New York. The company has also donated 300,000 masks for New Jersey. Additionally, through Merck for Mothers, the company's global initiative to help end preventable maternal deaths, the company will provide \$3 million to help health systems better meet the needs of pregnant women before, during and following delivery while tackling COVID-19. Merck for Mothers will direct investments to efforts in the U.S. and globally in countries impacted by COVID-19 to help address maternal health challenges that are arising as a result of the pandemic.

In response to the COVID-19 pandemic, Merck remains focused on protecting the safety of its employees and their families, assuring that our supply of medicines and vaccines reach our patients, contributing its scientific expertise to the development of antiviral approaches, and supporting its healthcare providers and the communities in which they serve.

## NOVARTIS

Novartis has announced a broad range of initiatives to respond to COVID-19 Pandemic. Efforts include the creation of a \$20 million global fund to support impacted communities and entering into new collaborative research efforts such as the COVID-19 Therapeutics Accelerator, coordinated by the Bill & Melinda Gates Foundation, Wellcome and Mastercard, as well as a COVID-19 directed partnership organized by the Innovative Medicines Initiative. Novartis and the Novartis US Foundation have also established \$5 million U.S. COVID-19 Community Response Fund for immediate response and recovery efforts related to the pandemic.

The company has also made available a set of compounds from its libraries that it considers suitable for in vitro antiviral testing and is evaluating its existing products to see if any could be repurposed beyond their approved indications. The company will also donate up to 130 million doses of generic hydroxychloroquine to support the global COVID-19 pandemic response. Hydroxychloroquine and a related drug, chloroquine, are currently under evaluation in clinical trials for the treatment of COVID-19. Novartis is supporting ongoing clinical trial efforts, and will evaluate needs for additional clinical trials. When supported for use in COVID-19 infected patients by regulatory authorities, Novartis intends to donate up to 130 million 200 mg doses by the end of May, including its current stock of 50 million 200 mg doses. The company is also exploring further scaling of capacity to increase supply and is committed to working with manufacturers around the world to meet global demand.

**PFIZER**

The company has recently completed a preliminary assessment of certain antiviral compounds that were previously in development and that inhibited the replication of coronaviruses similar to the one causing COVID-19 in cultured cells. Pfizer is engaging with a third party to screen these compounds under an accelerated timeline and currently expects to have the results back by the end of March. Upon completion of such screening, the company could be in a position to move forward with development depending on the results. Toxicology studies would then need to be completed prior to any clinical development, but if successful, Pfizer hopes to be in the clinic by no later than the end of 2020.

Additionally, Pfizer and BioNTech announced that the companies have agreed to a letter of intent regarding the co-development and distribution (excluding China) of a potential mRNA-based coronavirus vaccine aimed at preventing COVID-19 infection. The companies have executed a Material Transfer and Collaboration Agreement to enable the parties to immediately start working together. The collaboration aims to accelerate development of BioNTech's potential first-in-class COVID-19 mRNA vaccine program, BNT162, which is expected to enter clinical testing by the end of April 2020. The rapid advancement of this collaboration builds on the research and development collaboration into which Pfizer and BioNTech entered in 2018 to develop mRNA-based vaccines for prevention of influenza.

Furthermore, in the United States, the Pfizer Foundation has provided a \$500,000 grant to International Medical Corps. The funding will support the provision of urgently needed supplies to front-line health care workers, provide training, and deploy medical strike teams. Pfizer Inc has also donated select antibiotics to Direct Relief to manage complications related to COVID-19. The company and The Pfizer Foundation have also announced the commitment of \$40 million in medical and charitable cash grants to help combat the global health effects of the COVID-19 pandemic in the U.S. and around the world. The donation addresses the urgent needs of partners who are working to slow the spread of the virus within communities and strengthen vulnerable health care systems against future public health threats. Pfizer is also responding to patient and health care provider needs during this unprecedented time by donating additional critical medicines and vaccines in the U.S. and around the world.

**SANOFI**

Sanofi Pasteur, the vaccines global business unit of Sanofi, will leverage previous development work for a SARS vaccine which may unlock a fast path forward for developing a COVID-19 vaccine. Sanofi is collaborating with BARDA, expanding the company's long-standing partnership with the Authority. Sanofi will use its recombinant DNA platform to produce a 2019 novel coronavirus vaccine candidate. The recombinant technology produces an exact genetic match to proteins found on the surface of the virus. The DNA sequence encoding this antigen will be combined into the DNA of the baculovirus expression platform, the basis of Sanofi's licensed recombinant influenza product, and used to rapidly produce large quantities of the coronavirus antigen which will be formulated to stimulate the immune system to protect against the virus.

The company is also collaborating with and with Translate Bio, a clinical-stage messenger RNA (mRNA) therapeutics company, where Sanofi is combining its deep vaccine expertise and support with Translate Bio's messenger RNA platform to discover, design, and manufacture a number of SARS-CoV-2 vaccine candidates. In addition, Sanofi has started a global clinical trial program with Regeneron evaluating Kevzara® (sarilumab) in patients

hospitalized with severe COVID-19. This global clinical program began in the U.S. at medical centers in New York, one of the epicenters of the U.S. COVID-19 outbreak, and is quickly recruiting across the country where COVID-19 is most prevalent.

Additionally, Sanofi and GSK have signed a letter of intent to develop an adjuvanted vaccine for COVID-19, using innovative technology from both companies, to help address the ongoing pandemic. Sanofi will contribute its S-protein COVID-19 antigen, which is based on recombinant DNA technology. This technology has produced an exact genetic match to proteins found on the surface of the virus, and the DNA sequence encoding this antigen has been combined into the DNA of the baculovirus expression platform, the basis of Sanofi's licensed recombinant influenza product in the US. GSK will contribute its proven pandemic adjuvant technology. The use of an adjuvant can be of particular importance in a pandemic situation since it may reduce the amount of vaccine protein required per dose, allowing more vaccine doses to be produced and therefore contributing to protect more people. Sanofi is also contributing towards those on the front lines. Sanofi China donated 1 million RMB to the Chinese Red Cross Foundation to purchase relevant equipment and supplies for the epidemic area, including protective suits, goggles, masks, gloves, and disinfection equipment. Sanofi Pasteur China donated virus testing devices (throat swabs) worth 500 thousand RMB to Hubei Provincial CDC - Center for Diseases Control and prevention. Sanofi has also contributed \$450,000 to humanitarian aid organizations who are working on the frontlines and with the free health clinics across the U.S., and to community organizations helping those in need.

## SUNOVIAN

Sunovion Pharmaceuticals is committed to giving back in the communities where the Company's employees work and live around the world. As the COVID-19 situation evolved, Sunovion mobilized to contribute to community relief efforts and assist with medical supply donations to address increasing health care needs.

Support has been directed to first responders, health care workers and people and communities vulnerable to the physical and mental health impacts of COVID-19. Sunovion has provided a significant donation to the Center for Disaster Philanthropy (CDP) COVID-19 Response Fund. This fund supports nonprofit organizations responding to the pandemic among the most vulnerable populations, as well as preparedness, containment, response and recovery activities for those affected and for the responders.

In partnership with MassBio, Sunovion contributed to the Massachusetts Emergency Management Agency (MEMA) to bring donated medical supplies and resources to the State's health care institutions so that they can continue to test and treat patients with COVID-19. The Company donated cases of PPE including respirators, masks, safety goggles and gloves, as well as protective suits, gowns and shoe covers. In New Jersey, Sunovion donated safety masks to the Office of Emergency Management for distribution to the health care system. In Canada, Sunovion has joined forces with Innovative Medicines Canada to set up a COVID-19 fund to support the most urgent needs and communities across the country, beginning with a shipment of safety masks for front-line health care providers. Additionally, following a call from the government, a number of Sunovion's UK team members are serving as volunteers to support the community and the National Health Service (NHS).

In the U.S., Sunovion has partnered with its food service vendor to provide food donations to the United Way of Tri-County and has provided financial support to the Greater Boston Food Bank and Community Foodbank of New Jersey, which have a key role in distributing food and grocery products to member agencies that serve people experiencing food insecurity throughout their respective communities. In the UK, Sunovion has delivered food donations to a food bank in London.

## TAKEDA

Takeda and CSL Behring have formed an alliance along with other global plasma leaders to develop a potential plasma-derived therapy for treating COVID-19. The alliance will begin immediately with the investigational development of one, unbranded anti-SARS-CoV-2 polyclonal hyperimmune immunoglobulin medicine with the potential to treat individuals with serious complications from COVID-19. The collaboration will leverage leading-edge expertise and work that the companies already have underway. Experts from the alliance will begin collaborating across key aspects such as plasma collections, clinical trial development and manufacturing. Further companies and institutions may join the alliance as well.

Developing a hyperimmune will require plasma donation from many individuals who have fully recovered from COVID-19, and whose blood contains antibodies that can fight the novel coronavirus. Once collected, the “convalescent” plasma would then be transported to manufacturing facilities where it undergoes proprietary processing, including effective virus inactivation and removal processes, and then is purified into the product.

Takeda is also donating more than \$6.25 million dollars to organizations in the United States to help those impacted by the Coronavirus and to help enable organizations to continue helping the communities they serve.

## TEVA PHARMACEUTICAL

Teva is donating critical medicines, which are being studied in clinical trials to assess benefit against COVID-19 globally, including more than 10 million doses of hydroxychloroquine sulfate tablets through wholesalers to hospitals across the U.S. This includes tablets being used in critical research efforts. Teva’s global manufacturing network continues to increase production of both active pharmaceutical ingredients (API) and finished product to ensure these medicines will get to patients globally, wherever and whenever they are needed.

**UCB**

Patients are at the heart of everything UCB does, and the company is committed to helping those impacted by COVID-19 as well as leveraging scientific expertise and resources to play its part in the global response. UCB's actions are based on three pillars:

- + Contributing to basic research and treatment development – UCB is now working with Seattle Structural Genomics Center for Infectious Disease in the US, Diamond Light Source in the UK and The University of Oxford researching COVID-19 for treatment and vaccine development.
- + Offering expertise to increase local testing capabilities where the company has lab facilities.
- + Supporting locally and globally through donations as well as direct assistance to patients and partners – UCB has begun producing and donating hydro-alcoholic solution, donating personal protective equipment to health care authorities and local hospitals and supporting UCB's healthcare professionals who wish to volunteer their expertise in line with local government needs and guidance.

**The biopharmaceutical industry has the capacity and expertise to find and scale solutions to prevent and treat infection of the coronavirus and we will continue to provide updates on the response to the outbreak, and our member companies' contributions, as the situation evolves.**