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Response to COVID-19

It can hardly have failed to grasp your attention that the world is in the grip of a pandemic, the likes of which have not been experienced within living memory. SARS-CoV-2 or the Corona Virus as it is more commonly called, has already killed thousands of people, young, old, male, female, with and without underlying health conditions and left a huge amount of suffering in its wake. Indeed, it has almost overnight, completely restructured the way the modern world functions. "Working from Home" or "Home Office" have become the new norm, each of us isolated in our small domains.

Although it is an alarming and disorientating time, there have also been positive trends to emerge from this, unfortunately, still unfolding situation. The research communities across the globe from multiple disciplines have been working together to find ways to prevent the spread, treat and save COVID-19 patients. The impressive speed with which research fields (including academia and industry) have responded to the crisis and the accelerated and collaborative mode of working is something to be proud of and which can hopefully be maintained in the future.

The **RESTORE partners** have also been contributing to the intense efforts to curb the devastating spread of SARS-CoV-2 and to treat critically ill patients. We would like to share some of the efforts of the RESTORE partners in targeting and treating SARS-CoV-2/COVID-19. They are involved in a variety of research actions from compassionate treatment and clinical trials of novel therapeutics to identification of novel biomarkers, diagnostics and vaccine development. A more detailed explanation of the partners individual activities can be found in the table below.

If you would like to share with RESTORE how you are fighting the virus,
please tweet us **@RESTOREhorizon**.

We would also like to take a moment to acknowledge those people who are living with chronic, incurable diseases, who were living with these diseases prior to the outbreak of SARS-CoV-2 and who will still be living with these diseases once the worst of the pandemic has passed. At RESTORE we are doing everything in our power, utilising our unique network, to combat SARS-CoV-2 but also to ensure that funding for research and treatment development of Advanced Therapies for chronic diseases will continue.

**We stand by our mission to make previously incurable chronic diseases curable,
making treatments available and accessible to all patients in need.**

Partner	Project Name	Project Description	Project Category	Project Status
Charité (Michael Schmück-Henneresse, Petra Reinke)	ACT-2-CoV - Establishing SARS-CoV-2 specific adoptive T cell therapy (ACT) for the treatment of severe COVID-19	We aim to establish adoptive T cell therapy (ACT) as a treatment option for COVID-19. ACT is an innovative treatment that enhances the patient's own immune system by infusing large numbers of multifunctional virus-specific T cells that have been activated and expanded outside the body.	Diagnostics and Therapy	Submitted to regulatory authorities
Pluristem LTD		Pluristem received the Israeli Ministry of Health's clearance to treat COVID-19 patients under a per-patient compassionate use framework in Israel. On April 7th 2020 they reported treating seven patients suffering from acute respiratory failure and inflammatory complications associated with COVID-19, in three medical centers in Israel. While the treated patients are considered high risk for mortality, preliminary data from these patients demonstrated 100% survival rate with encouraging signs of improvement in respiratory system as well as other systems. On April 13th, Pluristem reported treatment of first patient suffering from COVID-19 complications in the United States under the U.S. Food and Drug Administration's (FDA) Single Patient Expanded Access Program, also called a compassionate use program, which is part of the U.S. Coronavirus Treatment Acceleration Program (CTAP). In parallel to emergency/compassionate treatments, Pluristem submitted applications to FDA and EMA for multinational regulated clinical trial program for the potential use of PLX cells in the treatment of patients suffering from complications associated with COVID-19. An investment of 50 million Euro's was made by European Investment Bank (EIB) through three tranches over a period of 36 months to support Pluristem's R&D and clinical development including development of Covid-19 program. For the most up to date news from Pluristem please visit: https://www.pluristem.com/news/	Compassionate Treatment and Clinical Trial	

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Inserm France (U935/INGESTEM IPSC Infrastructure, A Turhan, A Bennaceur, F Griscelli)	STemCoV2	Development preclinical models from multi-human 3D-organoids to conduct therapeutic approaches of CoV2 infection disease: Mode of action of MSC adoptive transfer and other treatments. Deep learning and multivariate analyses	Biomarkers and Pre-Clinical Therapeutic Study	Started
Inserm France (Gustave Roussy Institute, F Griscelli)	GEnCoV2	Diagnosis assays of Sars-CoV-2 by RTPCR (ELiTe InGenius), Immune-Assays and molecular genotype of COVID-19 in a large cohort of patients.	Diagnosis, Biomarkers	Started
CGT Catapult and Cobra Biologics	UK BioIndustry Association (BIA) Industry-led Vaccine Manufacturing Group	The industry-led vaccine manufacturing group is working closely with the Government and reporting directly into the Chief Scientific Advisor, Sir Patrick Vallance. The workstream in particular is currently supporting The Jenner Institute's adenovirus vaccine candidate at the University of Oxford, led by Dr Sandy Douglas, with Professor Sarah Gilbert and the Clinical Bio-Manufacturing Facility. There has been a successful bid to UKRI in partnership with BIA members Pall, Fujifilm, Cobra, Cell and Gene Therapy Catapult, the Vaccines Manufacturing Innovation Centre (VMIC) and Oxford Biomedica to develop rapid scale up of such a vaccine. For more information please visit https://www.bioindustry.org/news-listing/bia-industry-led-vaccine-manufacturing-group-welcomes-funding-announcement-of-14m-from-uk-government-to-help-rapidly-scale-up-covid-19-vaccines.html	Vaccine Manufacturing	Ongoing
Miltenyi Biotec	Developing research and diagnostic tools to evaluate protective immunity	The aim of the project is to develop a new cellular assay that gives more reliable information on the epidemiological spread of the coronavirus and the immune status of the population than currently available tests. Therefore, Miltenyi Biotec has developed a new, more meaningful rapid assay based on the cellular immune response that determines the virus-specific T cells in the blood that are responsible for killing virus-infected body cells. In combination with serological testing, this new cell-based test would enable an accurate statement as to who in the population was already infected with Covid-19 and who is protected from new infections. This would allow for better secured political decision and provide new starting points for the development and monitoring of a vaccine.	Diagnostics/ Biomarkers	Started

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Miltenyi Biotec	In-house SARS-CoV-2 testing	Employees at Miltenyi's were asked to participate in a voluntary systematic testing to determine the frequency of non-diagnosed, positive cases and to obtain information about the dynamics of infection within the company. This epidemiological study of the asymptomatic carrier state would provide additional data that could assist institutions such as the Robert Koch Institute and the Johns Hopkins Coronavirus Resource Center in their efforts to understand the spread of the disease.	Cohort Study	Started
Miltenyi Biotec	SARS-CoV-2 PepTivator® Peptide Pool	Our newly developed SARS-CoV-2 PepTivator® Peptide Pools cover the sequence of major SARS-CoV-2 proteins and can be used to stimulate SARS-CoV-2-specific T cells. These T cells can then be detected and/or isolated for further research. We provide three different peptide pools, each covering the sequence of one SARS-CoV-2 protein.	basic research, diagnostics/ biomarkers	Finalised
Innovation Acta	EUROCOVID EUROpean COoperation for anti-Vlral Drug discovery and preparedness for current and emerging coronavirus outbreaks (Coordinator University of Siena)	The project will aim at identifying a fast-track drug repurposing to identify a drug to be progressed in Phase IIa/IIb studies and at discovering new preclinical broad-spectrum antivirals as a therapeutic treatment for the current outbreak or in case of future viral outbreaks of unknown aetiology or the development of drug resistance mutations.	Basic research and therapy (essentially preclinical drug development research aimed at finding new therapies)	Project proposal submitted for EC funding IMI call H2020-JTI-IMI2-2020-21-single-stage
Innovation Acta	AGAINST-19 Antibodies and druGs for pAtlent treatmeNt againST COVID -19 (Coordinator University of Pisa)	The project aims at providing novel therapeutic opportunities, at identifying novel antiviral targets and also biomarkers for predicting the course of infection and disease.	Basic research, biomarkers and therapy (also including clinical studies)	Project proposal submitted for EC funding IMI call H2020-JTI-IMI2-2020-21-single-stage