



The protein that opens doors to the medicine of the future and treatment of COVID-19

“Understand the pathogenic role of HERV-W envelope protein and develop novel prognostic markers and therapeutic targets for personalized treatment of COVID-19-associated syndromes”

These are the goals of a project involving researchers from 5 different EU countries. This study has already produced evidence for the induction of a specific protein during COVID-19 disease. New information to guide predictive and personalized medicine may be obtained in the near future thanks to this discovery.

THE PROJECT

HERVCOV is the name of the project funded by the European Commission with a grant of almost 7 million euros that involves research centers, companies and associations from Croatia, France, Greece, Italy and Spain.

The study behind HERVCOV is focused on the HERV-W-ENV protein, a molecule found to be induced during SARS-CoV-2 infection and present at high levels in the blood of patients with severe COVID-19 and has been associated to the so-called “long COVID” disorders.

Human Endogenous RetroVirus (HERV) represent about 8% of the human genome and their DNA copies were inserted after retroviral infections of germ cells that mainly occurred millions of years ago. The majority of their sequences are epigenetically silenced and/or have mutations disrupting their coding potential. However, some HERV copies can be activated by different stimuli such as viral infections, and further produce pathogenic retroviral proteins like HERV-W ENV. This pathogenic protein is known to contribute to the onset and progression of several inflammatory and neurological diseases. During the COVID-19 pandemic, we have witnessed the activation of this protein expression in blood lymphocytes and in lungs of patients who are or have been infected with SARS-CoV-2.



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THE PROJECT GOALS

Since 2019, more than 500 million SARS-CoV-2 infections have been recorded causing more than 6 million deaths in the world (source “Our World Data”, May 2022). Although most severe symptoms seem to be mitigated at this stage of the pandemic, numerous studies have demonstrated long term effects in recovered patients, affecting their neurological, gastrointestinal, cardiocirculatory systems and even mental health.

HERVCOV project aims to study the effect of SARS-CoV-2 infection on the HERV activation and resulting pathology in COVID-19 patients. This study could also offer important insights to other related diseases studying host responses in different contexts. Thanks to these studies, in the near future we shall be able to deliver specific health care approaches based on the analysis of biomarkers, disease symptoms and progression, and tailored to a personalized and precision medicine. The identification of critical-factors and immune responses customized for each person will lead to the specific therapeutic interventions and adapted vaccination strategies.

THE PARTNERS

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