

## **New study published in Cell Press demonstrates that SARS-CoV-2 awakens ancient retroviral genes and the expression of proinflammatory HERV-W envelope protein in COVID-19 patients**

- **SARS-CoV-2 induces endogenous retrovirus envelope in cultured lymphocytes from a subset of healthy donors**
- **Results achieved with successive variants of SARS-CoV-2 until Omicron waves**
- **HERV-W ENV (W-ENV) is detected on lymphocytes, in serum and tissues of COVID-19 patients. W-ENV expression is also seen in endothelial cells within blood vessels of lung, heart and brain tissues**
- **W-ENV protein in serum and lymphocytes correlates with COVID-19 severity**

**Geneva, Switzerland, May 3, 2023 – 8:00am CEST** - GeNeuro (Euronext Paris: CH0308403085 - GNRO), a biopharmaceutical company developing novel treatments for neurodegenerative and autoimmune diseases such as multiple sclerosis (MS), amyotrophic lateral sclerosis (ALS) and the severe consequences of COVID-19, (PASC, post-COVID or Long-COVID), announced today the publication in the leading open science journal iScience from "Cell Press" of the new results from the collaboration between GeNeuro and the CIRI, Centre International de Recherche en Infectiologie, in Lyon, France, on the link between SARS-CoV-2 and the pathogenic HERV-W proinflammatory envelope protein (W-ENV).

The publication ([SARS-CoV-2 awakens ancient retroviral genes and the expression of proinflammatory HERV-W envelope protein in COVID-19 patients](#) – Charvet et al.) evidences that in vitro exposure to SARS-CoV-2 (from the original strain to successive SARS-CoV-2 variants, including the Omicron), activates the expression of the human endogenous retrovirus (HERV) HERV-W proinflammatory envelope protein (W-ENV) in peripheral blood mononuclear cells (PBMC) from a subset of healthy donors, in ACE2 receptor and infection-independent manner. It is detected in blood lymphocytes and serum, from about 20% of all positive individuals at PCR diagnosis to 100% of severe cases hospitalized in intensive care unit. W-ENV was also found in post-mortem tissues of lungs, heart, gastrointestinal tract, brain olfactory bulb and nasal mucosa from COVID-19 patients. Altogether, results from this comprehensive study demonstrate that SARS-CoV-2 could induce W-ENV expression and suggest its involvement in the immunopathogenesis of certain COVID-19-associated syndromes and thereby its relevance in the development of personalized treatment of patients.

Cell publishes findings of unusual significance in any area of experimental biology, including but not limited to cell biology, molecular biology, neuroscience, immunology, virology and microbiology, cancer, human genetics, systems biology, signaling, and disease mechanisms and therapeutics. Its 2022 impact factor is 66.85.

*“Our research suggests that HERV-W ENV does not simply represent a biomarker of COVID-19 severity or evolution but is also likely to be a superimposed pathogenic player that contributes to the disease severity and may help to explain the inter-individual variability in COVID-19 manifestations. In addition, it may play a role in the clinical evolution with possible long-term pathology as seen with the now emerging Long-COVID secondary pandemic, representing millions of patients suffering from various symptoms and long-term disabling pathology for which no rationalized understanding nor therapeutic perspective can be proposed to date. In the face of this challenging situation, data from the present study strongly suggest W-ENV as a marker of severity and as a potential therapeutic target for personalized medical approaches in COVID-19 associated syndromes,”* said **Dr Branka Horvat, INSERM Research Director who heads**

**the “Immunobiology of Viral Infections” team at the CIRI, International Center for Infectiology Research.** *This project has received funding from the European Union’s Horizon Europe research and innovation program under grant agreement No 101057302.*

As a reminder, GeNeuro launched a Phase 2 trial at the end of 2022 that is evaluating the clinical efficacy of a six-month treatment with temelimab, the anti-W-ENV antibody developed by GeNeuro, on the improvement of cognitive impairment and/or fatigue in long-COVID patients who are positive for the presence of W-ENV protein in their blood. The W-ENV protein was observed in more than 25% of patients with persistent syndromes after having had COVID, as evidenced in a recent publication made available on MedRxiv.

### About GeNeuro

GeNeuro’s mission is to develop safe and effective treatments against neurological disorders and autoimmune diseases, such as multiple sclerosis, by neutralizing causal factors encoded by HERVs, which represent 8% of human DNA.

GeNeuro is based in Geneva, Switzerland and has R&D facilities in Lyon, France. It owns rights to 18 patent families protecting its technology.

For more information, visit: [www.geneuro.com](http://www.geneuro.com)



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