Half-time Milestone achieved in the LongCOVID EU project

The LongCOVID project, a 4-year EU initiative coordinated by the Helsinki University Hospital, nearly crosses its halfway mark. Launched on June 1 2022, the consortium has been working together through nine interconnected work packages aimed at understanding the mechanisms of host-virus response underlying the long-term symptoms following SARS-CoV-2 infection.

Looking at the achievements of the first two years, the project has made significant progress in a number of areas:

(1)   Cohort and registry studies

Several cohort and registry studies have been planned over the course of the project at Helsinki University Hospital (Finland), University Hospital Basel (Switzerland) and University Medical Centre Groningen (Netherlands). These studies are all ongoing at the moment and will be completed in the fourth year of the project. Notably, in October 2023, the third LongCOVID publication titled "Prognosis of patients with long COVID symptoms: a protocol for a longitudinal cohort study at a primary care referred outpatient clinic in Helsinki, Finland" (https://doi.org/10.1136/bmjopen-2023-072935) was published in the BMJ Open journal.

(2)   Mechanistic studies

A pivotal aspect of the project involves unraveling the mechanisms and effects of SARS-CoV-2 in human neurons and glial cells. The consortium aims to answer the questions, such as: Which brain cells are productively infected? What is the mechanism of virus entry and spreading? What is the cell response to infection and neuron-specific antivirals? First research results were published in April 2023, indicating that human neurons are not well infected by SARS-COV-2 but infection is productive (https://doi.org/10.1128/jvi.00144-23). Further manuscripts are in preparation, giving closer insights into the research.

(3)   Pathogenetic studies

The consortium is investigating the pathomechanisms of neuronal infection in mice, exploring questions such as the potential efficacy of antiviral drugs in blocking the spread of SARS-CoV-2 to the brain. The preprint publication "Ronapreve (REGN-CoV; casirivimab and imdevimab) reduces the viral burden and alters the pulmonary response to the SARS-CoV-2 Delta variant (B.1.617.2) in K18-hACE2 mice using an experimental design reflective of a treatment use case" with the first research results is already available (https://doi.org/10.1101/2022.01.23.477397).

(4)   Translational Biomarker studies

The biomarker studies aim to decipher biomarkers associated with the SARS-CoV-2-host interactions and contributing to the progression of COVID-19 illness to Long Covid (LC) using genomics, lipidomics, proteomics, microbiome analysis, metabolomics and immunomics. Early genomic findings were published as pre-print publication "Genome-wide Association Study of Long COVID" (https://doi.org/10.1101/2023.06.29.23292056).

(5)   Interventional and follow-up studies

The two planned digital interventional studies with the aim to prove the feasibility and evidence of the efficacy of therapeutic management strategies for patients with LC Syndrome are currently ongoing. For the digital intervention study 2, a dedicated platform for patients and clinicians was already developed, incorporating 123 intervention elements across 12 modules and 1 onboarding module (e.g. videos, interviews, exercises, quizzes).

Next to the extensive scientific work, the LongCOVID partners joined efforts in the non-scientific work packages "Ethics and Privacy", "Dissemination and Exploitation" and "Project Management".
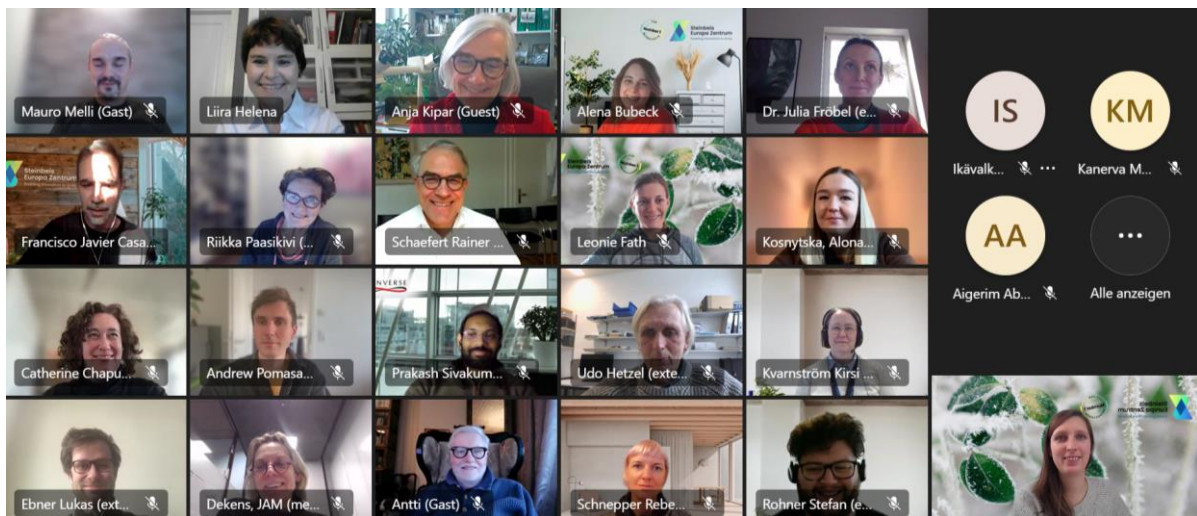
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Project Coordinator
Helena Liira
Mari Kanerva
Helsinki University Hospital
Helsinki, Finland
E-Mail: helena.liira@hus.fi
E-Mail: mari.kanerva@varha.fi

🌐   https://longcovidproject.eu/

in   https://www.linkedin.com/company/87155855/

🐦   @LongCOVID_HE