

New EU Research Project NEUROCOV Investigates Neurological and Neuropsychiatric Complications Following COVID-19 Infections

Over the next five years, the interdisciplinary NEUROCOV consortium will investigate the role of the host-virus interplay in the occurrence of neurological and psychiatric symptoms resulting from COVID-19 as a foundation for new treatment options.

9 September 2022 – Infections with the coronavirus SARS-CoV-2 can trigger both temporary and long-term neurological and neuropsychiatric symptoms, severely impacting patients and the wider society. The presently limited insights into COVID-19 and its underlying mechanisms – especially regarding our understanding of how the central nervous system is affected – restrict therapeutic possibilities. The new research project NEUROCOV will address this major unmet need by focusing on the interplay between the nervous tissue and the immune/inflammatory response triggered by SARS-CoV-2 infection. To this aim, the Deutsches Zentrum für Neurodegenerative Erkrankungen (DZNE) and the Human Technopole (HT) brought together ten partners from seven countries. Through the funding of the European Union’s Horizon Europe Framework Programme for Research and Innovation, the project will receive nearly EUR 8.4 million over the next five years. NEUROCOV is coordinated by the DZNE.

Within the still ongoing COVID-19 pandemic, a further pandemic has started to emerge – that of long-term neurological and neuropsychiatric complications. These include a compromised sense of smell and taste, impaired ability to concentrate, memory problems, stroke, and significant brain scan alterations among COVID-19 patients across all ages and independent of COVID-19 severity. The impact of this phenomenon, also called NeuroCOVID, is immense, and both society and health care systems are at risk of unprecedented long-term consequences. In fact, affected individuals suffer significantly in their everyday social and professional lives over a long period, resulting in sharply increasing health care costs.

Although the range of neurological deficits and neuropsychiatric complications of COVID-19 are highly varied, both their prevalence and the extent of their diversity are starting to be charted with increasing precision. Yet, still little is known about which brain cell types are susceptible to SARS-CoV-2 infection, how damage occurs (both directly and indirectly as result of the inflammatory and immune responses) and, above all, what makes individuals vulnerable or resistant to such complications. Hence, both predictive and therapeutic options are currently lacking.



New Insights into Immune System Involvement of NeuroCOVID

“Through the NEUROCOV project, we want to contribute to a better understanding of COVID-19 and the associated NeuroCOVID. Based on this knowledge, we strive to contribute to developing new and effective treatments”, says Prof. Joachim Schultze, Director of Systems Medicine at the DZNE and Project Coordinator.

“As such, we will focus on the involvement of the immune system and the direct loss of neuronal functions. They constitute the cellular and molecular foundation of any cognitive decline or neurodegeneration and therefore warrant particular attention”, Prof. Schultze says.

To this end, NEUROCOV will investigate underlying disease mechanisms and develop practical approaches to predict the risk for neurological symptoms. This will be done through studies addressing patients across all ages in different European countries and also engaging the LongCOVID patients’ communities, thereby tackling the multifaceted societal dimensions of NeuroCOVID.

“A hallmark of the project is its multi-scale design that reaches all the way from the population-wide socioeconomic impact to the molecular mechanisms that underlie individual vulnerabilities to NeuroCOVID”, says Prof. Giuseppe Testa, Head of the Neurogenomics Research Centre of the Human Technopole, who spearheads the initiative with Prof. Schultze. “To make this possible”, continues Testa, “highly interdisciplinary teams will study the host-virus interaction combining brain organoid and high resolution OMIC technologies with Artificial Intelligence. Our goal is to develop predictive models that can assess the individual risk of developing NeuroCOVID complications and their long-term impact”. This will be complemented by identifying possible drug candidates suitable for further investigation.

Central to this endeavour is the close collaboration with patients, especially with regard to ensuring that societal needs and concerns are carefully addressed.

“Not only will we be able to pioneer a novel approach for NeuroCOVID based on systems medicine, but we thus can also provide solutions that bridge scientific disciplines across clinical care, advanced experimental biology, and Artificial Intelligence applications for other infectious and neurological diseases”, adds Schultze.

Academic and clinical partner institutions from Belgium, Germany, Finland, Italy, Israel, Sweden, and The Netherlands make up the highly interdisciplinary team of experts.

Press Release



Project Key Facts

Full Name: NEUROCOV – The pandemic within: tackling brain vulnerability in COVID-19 at high resolution

Start Date: 1 September 2022

Duration: 60 months

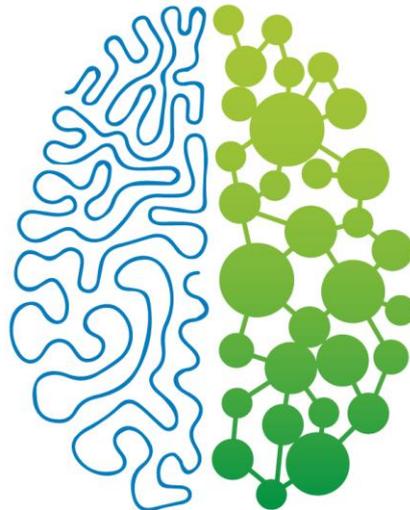
Budget: 8,384,036 €

Coordinator: Deutsches Zentrum für Neurodegenerative Erkrankungen, Germany

Website: www.neurocov.eu

Twitter: https://twitter.com/NEUROCOV_eu

LinkedIn: <https://www.linkedin.com/showcase/neurocov-eu>



NeuroCOV



Funded by
the European Union

Press Release

Project Partners

Belgium

- Katholieke Universiteit Leuven

Germany

- Deutsches Zentrum für Neurodegenerative Erkrankungen
- Helmholtz Zentrum München Deutsches Forschungszentrum für Gesundheit und Umwelt Gmbh
- Eurice – European Research and Project Office GmbH

Finland

- Helsingin Yliopisto

Italy

- Fondazione Human Technopole
- Università degli studi di Milano

Israel

- Ben-Gurion University of the Negev

Sweden

- UMEA Universitet

The Netherlands

- Stichting VUmc

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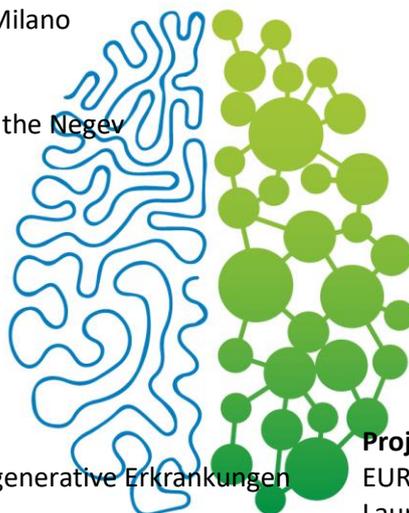
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