

Discovery of therapeutics for treating neurological complications of Central Nervous System SARS-CoV-2 infection

Initiative: Innovative Ansätze in der antiviralen Wirkstoffentwicklung

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Laufzeit: 3 Jahre

Patients with COVID-19 develop a wide range of neurologic symptoms. These include severe neurological diseases such as encephalopathy, viral encephalitis and virus-mediated acute neurodegeneration in the brain stem directly causing respiratory failure. While neurotropism of coronaviridae has well been documented, the disease mechanisms of central nervous system infection of SARS-CoV-2 are not understood. The project's hypothesis is that neuronal infection with SARS-CoV-2 induces a neuronal stress response that can lead to programmed cell death in neurons and that SARS-CoV-2-induced neuronal cell death shares phenotypic and functional features with the cell death pathways in acute neurodegeneration. Thus, the project team will investigate neuronal cell fate and cell death phenotypes using small molecule probes in High Content Analysis (HCA) of human pluripotent stem cell derived neurons and brain organoids upon SARS-CoV-2 infection or pseudotyped viral components, among others. The aim is to discover starting points for drug therapies to prevent acute neurodegeneration after SARS-CoV-2 infection. Therefore, phenotypic reverse chemical biology screening using HCA to discover neuroprotective compounds, and evaluation and chemical evolution of already established neuroprotectants will be performed.

Projektbeteiligte

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