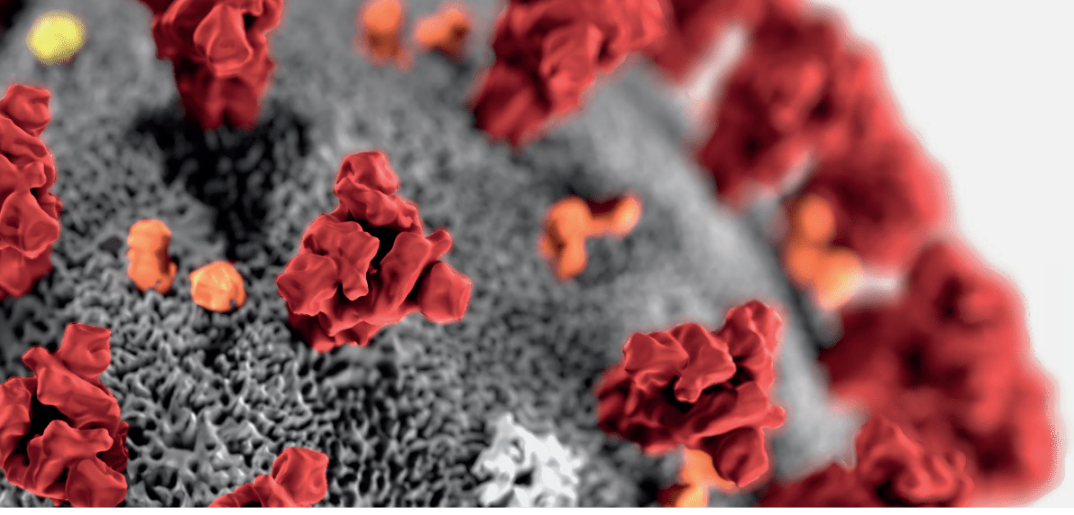

INNOVATIONS IN COVID-19

Bridging opportunities
at Oswaldo Cruz Institute

IN VITRO MODEL FOR THE STUDY OF SARS-COV-2 INVASIVENESS IN THE BLOOD-BRAIN AND PLACENTAL BARRIERS AND ANTIVIRAL DRUG TESTING

(COD. 2021.001)

COORDINATOR	Daniel Pedra Adesse
RESEARCH AREA	New Drugs
DEVELOPMENT STAGE	Level 3 - TRL - Analytical and experimental critical function and/or characteristic proof of concept. MRL - Manufacturing proof of concept developed.
PROPOSITION / APPLICATION	Our project aims to understand the mechanisms by which SARS-CoV-2 invades the Central Nervous System (CNS) and causes neurological changes, including strokes. Several reports in the literature point to severe impairment of the brain in patients with COVID-19, regardless of the severity of the respiratory disease, and its long-term consequences are unknown. Other more common symptoms include loss of taste and smell and point to CNS damage. The mechanisms by which the virus is able to overcome the Blood-Brain Barrier, which is a specialization that cerebral blood vessels present to protect the CNS from systemic insults, toxins, and infections, are also unknown. Recent clinical reports indicate that COVID-19 is increasingly affecting pregnant women and causing prenatal and postnatal complications.
INNOVATION	This project is innovative, as it will use primary human cells to assess relevant aspects of SARS-CoV-2 neuropathogenicity/teratogenicity. Thus, we can use this model to understand the pathophysiological mechanisms as well as test serum responses of patients to correlate with their clinical status (including neurological tests). This model can also be used to assess response to specific drugs or immunobiologicals targeted to contain transmission to the Central Nervous System or for the foetus, in order to alleviate severe cognitive or neurological sequelae resulting from COVID-19 or possible foetal malformations.
OPPORTUNITY	Substance testing and evaluation of SARS-CoV-2 effects on Blood-Brain Barrier or Placenta components
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