

IN BRIEF

ORGANOID IN COVID-19 RESEARCH

The cause of cardiac dysfunction

Cardiac injury has been reported in patients with COVID-19, and is related to an increased risk of mortality. However, it is not clear whether cardiac dysfunction is caused by direct SARS-CoV-2 infection of cardiac tissue or induced by inflammation. To investigate the mechanisms underlying cardiac dysfunction in patients with COVID-19, James Hudson and colleagues applied human pluripotent stem cell-derived cardiac organoids in combination with phosphoproteomics and single nuclei RNA sequencing. The multicellular organoid model, which contains a complex mixture of self-organizing cells, including epicardial cells, fibroblasts, pericytes, endothelial cells and cardiomyocytes, allows rapid screening of cytokine combinations and drug candidates. Using this model, the researchers showed that an inflammatory, COVID-19-induced cytokine storm causes diastolic dysfunction. A targeted drug screen then revealed bromodomain and extraterminal family (BET) inhibitors as candidates to prevent COVID-19-mediated cardiac damage.

ORIGINAL ARTICLE Mills, R. J. et al. BET inhibition blocks inflammation-induced cardiac dysfunction and SARS-CoV-2 infection. *Cell* **184**, 1–16 (2021)