

## Cas13d based antiviral platform to treat acute Bunyavirus infections

Initiative: Innovative Ansätze in der antiviralen Wirkstoffentwicklung

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The current SARS-CoV-2 pandemic has dramatically demonstrated the urgent need of effective antivirals to treat infected patients to save lives. More than 700 RNA-viruses are available that have a similar pathogenic potential to induce the next pandemic or epidemic for which neither vaccines nor antivirals are available. Among those viruses with the greatest risk potential to threaten our health are Bunyaviruses represented by Rift Valley Fever Virus (RVFV) and the Lassa Fever Virus (LASV) according to WHO. To combat these potential treats, the project team adapted the prokaryotic CRISPR/Cas13 system towards a universal, modular antiviral using SARS-CoV-2 as proof of concept. This system consists of a generic Cas13 riboendonuclease that together with the variable gRNAs forms an effector complex to target and degrade specific viral RNA genomes in a programmable fashion. Using this system, the researchers will develop a platform technology to provide fast and easy to access specific antivirals directed against Bunyaviruses such as RVFV, LASV, La Crosse Encephalitis Virus (LACV), the Hantaan Orthohantavirus (HTNV), and the Hazara Virus (HAZV) in vitro. The best delivery route of the antiviral aerosol will be determined and the strategy will be exemplary validated by in vivo RVFV infection models.

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