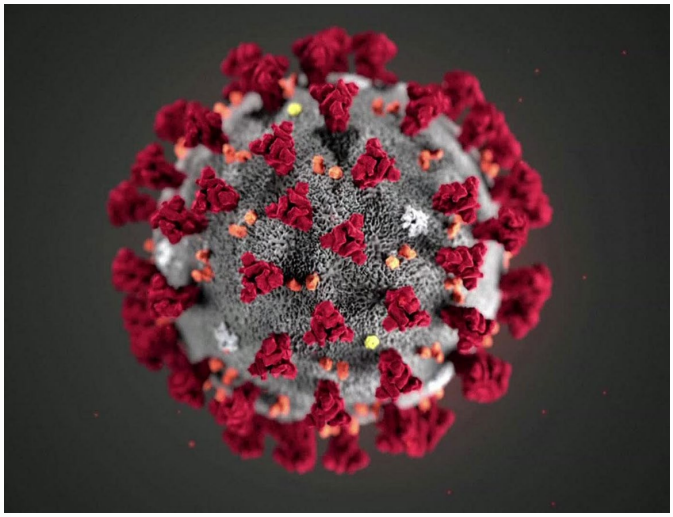
Highly Modifiable Anti-Viral Scaffold

VTIP 21-108: "A Highly Modifiable Scaffold for Creation of Anti-virals"

THE CHALLENGE

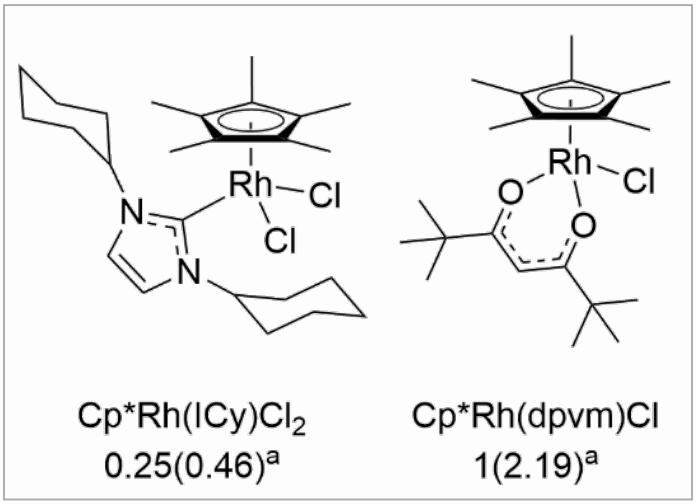
New infectious diseases for which there are no effective pharmaceuticals available are a significant threat to the global population. Infections that are more difficult to treat, such as Mycobacterium tuberculosis (TB), methicillin-resistant Staphylococcus aureus (MRSA), and SARS-CoV-2 (causative agent of COVID-19) present a unique challenge. New vaccines are a critically important step in the process of fighting a new disease, but having an arsenal of therapeutics to fight the early stages of a pandemic would be invaluable. As demonstrated by the COVID-19 pandemic, having little to no pharmaceuticals available at the beginning of a pandemic leaves the population vulnerable.



Popular artist's rendering of the SARS-CoV-2 coronavirus responsible for the COVID-19 pandemic.

OUR SOLUTION

Joseph Merola and his colleagues at Virginia Tech have developed new classes of organometallic compounds of transition metals that display impressive antiviral capabilities and very low toxicity to human cells. These antivirals could provide crucial treatment options during the time between disease emergence and vaccine approval, saving countless lives. Metals have been used in medicine before, though the focus has largely been on their use in anti-cancer drugs. With highly pathogenic viruses and drug-resistant strains of bacteria becoming more threatening, exploring and utilizing the anti-viral capabilities of transition metals is imperative.



Organometallic complexes with the most promising virucidal activity against SARS-CoV-2.

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