David Meyerhoff

St.Louis, MO

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Senior

Biological Sciences; Political Science

Faculty Mentor: Dr. Jeff Whyte, Biomedical Sciences; Dr. Jeff Adamovicz, Biomedial Sciences

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Repurposing chloroquine for the clinical treatment of COVID-19

David Meyerhoff, Jeff Adamovicz, and Jeff Whyte

SARS-CoV-2, the causative virus of COVID-19, and the pandemic it has resulted in has severely impacted daily life both socially and economically. While physicians struggled in the early days of the outbreak to discern appropriate and efficient medical treatment options, the novel nature of the virus proved a significant obstacle. This created an unprecedented need for rapid research efforts to generate data regarding the structure and mechanisms of pathogenesis of SARS-CoV-2 and, in turn, possible clinical treatments of COVID-19.

Dr. Jeff Adamovicz, Dr. Jeff Whyte, and I embarked on research with the purpose of contributing to the development of the latter need. Specifically, through a kinetic time-course Vero E6 cell culture assay performed on a Lionheart FX Automated Microscope, we investigated the effects of the anti-malarial drug chloroquine on SARS-CoV-2 proliferation in real time over a 48 hour period. The Vero E6 cell line, originally isolated from African green monkey cells, has unique properties that make it an ideal system for the propagation and study of pathogenic viruses. Chloroquine has been widely reported on by journalists in mass news media as potentially useful in the clinical treatment of COVID-19, and our results – expected in just over a week – will either corroborate or contradict many of these claims.

Ultimately, more investigation into the mechanism of action of chloroquine is required to truly make an informed, definitive statement about its efficacy as a clinical treatment for COVID-19. Both research utilizing human cell lines and representative animal models in vivo will better allow the scientific community to ascertain the potential of chloroquine in the treatment of COVID-19. However, both the scientific and medical communities' knowledge of the virus is increasing exponentially, a signal of immense promise in reaching the end of the COVID-19 pandemic.