



Deborah Fuller



[\(/people/faculty/deborah-fuller\)](/people/faculty/deborah-fuller)

Deborah Fuller

Professor, Microbiology

Associate Director of Research,
Washington National Primate Research Center

206 897-6197 |

fullerdh@uw.edu (<mailto:fullerdh@uw.edu>) |

Office: SLU F-461 | Mail Box: 358070 |

<https://sites.uw.edu/fullerlabuw/>

(<https://sites.uw.edu/fullerlabuw/>)

Accepting Graduate Students for:

Fall / Winter / Spring / Summer

Current Research

Recent Publications

Current Research

Vaccines and antivirals are the primary strategies used to combat viral infections in humans and emerging pandemics. HIV-1, influenza and more recently, the emergence of Zika and SARS-CoV-2, pose significant challenges. For HIV-1, infected individuals harbor a substantial array of HIV-1 variants, a situation that presents a daunting challenge for developing vaccines and therapies. Similarly, the worldwide variability of influenza and SARS-CoV-2 makes it difficult to predict which viral strain might acquire the ability to infect the human population, and due to the narrow timeframe

between detecting a human infection and the "predict and produce" method for generating the vaccine each season, current influenza and coronavirus vaccines will likely be inadequate for preventing the next pandemic. Other emerging threats for future epidemics and pandemics include vector-borne diseases, such as Zika virus that is transmitted through mosquitos and fungal pathogens that are emerging due to climate change. New vaccine and antiviral technologies capable of rapidly responding to these threats are urgently needed. In an effort to address these issues, we are investigating new vaccine and antiviral concepts aimed at achieving broader, more universal protection against highly variable viruses. Toward this goal, we have designed a therapeutic HIV DNA vaccine that when administered in combination with antiretroviral drugs to nonhuman primates infected with a primary isolate of SIV, induces profound control of viral replication that persists after antivirals are withdrawn. Viral control in this model correlated with strong mucosal CD8 responses localized in the gut, and this finding has more recently led us to investigate new DNA vaccine approaches that can more precisely focus CD8 against highly conserved epitopes and novel genetic adjuvants that can localize these responses to the gut, which is a primary source of residual virus. Similarly, using DNA and RNA vaccines and antivirals designed to precisely target highly conserved regions in influenza, we have shown significant protection against a wide range of strains in mice and nonhuman primates. More recently, we have shown that DNA and RNA vaccines can be rapidly developed in response to an emerging pandemic such as COVID-19. Studies currently in progress in the Fuller lab aim to investigate the potential for developing DNA or RNA vaccines for emerging infectious disease, strategies to increase and modulate their immunogenicity and and studies to elucidate the immune mechanisms mediated by DNA and RNA vaccines. Additional work in the Fuller lab includes investigating novel antivirals for influenza and coronaviruses and the development of new strategies to deliver these antivirals to the respiratory tract for improved protection. See publications tab for recent published and at <https://orcid.org/0000-0001-7315-2441> (<https://orcid.org/0000-0001-7315-2441>)