**Vaccine(s) for COVID-19: A preliminary review of promising candidate vaccines and current clinical trials**

Alexander Lai, Ph.D., Kentucky State University, School of STEM, College of Agriculture, Community and The Sciences, Frankfort, KY 40601

**Abstract**

COVID-19 was declared a pandemic by WHO on March 11, 2020. The etiological agent, SARS-CoV-2, is a novel coronavirus first emerged in Wuhan, China. Genetic analysis suggested that this virus emerged as a result of recombination between a bat-associated virus and a pangolin virus. As of September 27, 2020, there were 32,730,945 confirmed cases with 991,224 fatalities globally. United States alone had more 200,000 deaths due to this emerging infectious disease. Non-pharmaceutical interventions such as wearing face mask and social distancing are effective measures, but a safe and effective vaccine that provides protection to the immunized and interrupts spreading of this virus is urgently needed. In addition to traditional vaccine technologies, such as inactivated virus vaccine, attenuated virus vaccine, and subunit vaccine, etc., novel technologies, such as use of messenger RNA, are being developed. Testing of vaccines involves at least Phase I to III clinical trials. We examine over twenty vaccine candidates that are undergoing clinical trials, and compare and contrast among these vaccine candidates. It is anticipated that this study provides an insight into COVID-19 vaccine development, and to identify protocols that facilitate rapid development of vaccines for emerging infectious diseases.