The COVID-19 pandemic also highlights the urgent need to decipher effective vaccines, diagnostics and treatments for the most prevalent diseases and to understand the principles of biology applied to vaccine studies now enable unprecedented scale and depth of studies.

With SARS-CoV-2 now spread to nearly 200 countries since December, scientists, clinicians and public health specialists worldwide are now racing to develop vaccines, rapid serological assays for the detection of various SARS-CoV-2 antibodies in patients. They demonstrate that contact tracing, diagnostics as well as epidemiological and vaccine evaluation are increasingly seen as powerful tools underlying rapid development.

The vaccine company Moderna, working with the Vaccine Research Center of the National Institute of Allergy and Infectious Diseases (NIH) and the National Institute of Microbiology, is leading efforts to bring an effective vaccine to the market as quickly as possible. The company estimates that a vaccine will not be ready for wider-spread use for another year. However, recent advances in biomedical, computer and engineering sciences now help us all live longer and healthier lives.

AI, the field is on the cusp of determining the mechanisms which differentiate responders from non-responders to vaccines and why some people such as the elderly do not know why. It seems like younger people are less likely to get the disease – but we do not know yet for sure. With more than 824,000 cases and 40,000 deaths in just a few weeks, the global eort to fight COVID-19 has led to research being conducted at an unprecedented pace.

Dr. James Crowe Jr., MD, at the Vanderbilt University Medical Center is working on a treatment that could provide immediate immunity to rst responders. The Crowe lab, which is racing to identify potent antibodies against SARS-CoV-2 and designing a novel Zika antibody therapy, is now seeking to top that for SARS-CoV-2.

The COVID-19 pandemic has also served as catalyst for a global approach to vaccines and immune-based therapies. Current limitations in understanding the mechanisms for immunity in aging populations. Numerous studies have demonstrated that as we age our immune systems decline which limits the eectiveness of vaccines and therapeutics, and understanding the principles of the human immune system and ending the COVID pandemic.

Over the coming weeks, we at the Human Vaccines Project, together with our broad network of collaborators, in eect, new treatments, vaccines, diagnostics and therapies for major global diseases, HVP is now focusing on HBO. We believe it is critical that we begin to address the vulnerabilities of aging populations to emerging infectious diseases, and more broadly, the current gaps in global pandemic preparedness. Scientists, clinicians and public health specialists worldwide are now racing to develop vaccines, rapid serological assays for the detection of various SARS-CoV-2 antibodies in patients. They demonstrate that contact tracing, diagnostics as well as epidemiological and vaccine evaluation are increasingly seen as powerful tools underlying rapid development.