

## From the Guest Editor

Eric B. Kmiec, PhD

Director, Gene Editing Institute, ChristianaCare

COVID-19 has disrupted life as we know it. As a pandemic, it affects us here in Delaware and is still thriving throughout the world. The virus responsible for causing COVID-19 is severe acute respiratory syndrome coronavirus 2, referred to as SARS-CoV-2 (defined by the World Health Organization). At the time of this writing, over 47 million cases and 771,000 deaths have been reported in the United States, with a case mortality rate of 6%.<sup>1</sup> It remains to be seen how effective public health safety measures will be to sidestep a subsequent wave of viral infections, perhaps caused by identical or similar viruses with genetic variants.

While the development, validation and distribution of effective diagnostic tests and physical separation measures have improved over the course of the last year, a rising tide of distrust within the population for the efficacy of vaccines is undeniable. Whether based in fact or fiction, it is a real problem and it is now suspected that a certain percent of the population, most specifically African Americans, will not automatically trust the vaccine. As such, it is critically important that health systems and public health agencies in Delaware and throughout the world provide effective diagnostics and therapies for the relief of this terrible infectious disease.

The breakthrough technology CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats) is revolutionizing every aspect of our lives by providing novel therapeutic modalities for the treatment of inherited diseases and cancer, accelerating drug discovery, and creating a brand-new class of diagnostics. The extraordinary versatility of CRISPR for gene modification and genetic detection will likely lead to new applications that have not yet been conceived. And very recently, CRISPR's ability to precisely target RNA and DNA sequences was employed to determine if someone is infected with this coronavirus. A CRISPR-based diagnostic kit for COVID-19 was once believed to be a fantasy, yet now the SHERLOCK test and its derivatives hold a special place in the world of COVID-19 testing. It is but one example on novel genetic applications being used to help in a public health crisis.

I am delighted to be a co-editor of this important issue of the Delaware Journal of Public Health, since information provided by these outstanding authors is both timely and appropriate. As we evolve clinal testing, the impact the genetic analyses have on our thinking both as a diagnostic and treatment platform is increasing rapidly. Right now, pharmaceutical and biotechnology companies are utilizing a variety of genetic tools to create cell lines that can help identify effective drugs and therapies for COVID-19 and other public health challenges. The application of CRISPR to drug discovery efforts is a platform improvement opportunity. The challenge of COVID itself is an opportunity for researchers worldwide to focus their attention on not only COVID, but on infectious diseases in general.

I hope you enjoy reading the articles assembled in this issue, where our investigators and authors describe and inform about the role that genetics and genetic analysis is having on advancing and improving our capability to diagnose, and perhaps treat, any form of external agent that poses a serious public health challenge.

## References

1. Centers for Disease Control and Prevention. (2021). COVID data tracker weekly review. Retrieved from <https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covidview/index.html>

---

Copyright (c) 2021 Delaware Academy of Medicine / Delaware Public Health Association.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc-nd/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.