

Vital Solutions to Support COVID-19 Research

Many research institutes and pharmaceutical companies are now actively engaged in COVID-19 research and treatment development, which makes some supportive reagents, services, and consultations in high demand around the world.

This article briefly summarizes several relatively important solutions that can greatly facilitate COVID-19 research.

COVID-19 mRNA Vaccine Development Support

The global outbreak of COVID-19 in early 2020 caused a large amount of investment and research attention to developing preventive vaccines. Among the massive achievements made by using published genomes, mRNA vaccines against SARS-CoV-2 stand out because of their better performance in efficiency and cost-effectiveness. Currently, mRNA vaccine is publicly deemed as a very useful strategy in anti-SARS-CoV-2 campaigns, thereby demanding reliable technology support to drive the pressing needs in research and commercial manufacturing.

Many biotech corporations like BOC Sciences have become significant contributors to the campaign by providing advanced mRNA technologies ranging from [mRNA design & synthesis](#), *in vivo* delivery solutions, to mRNA vaccine production.

As the crux of successful mRNA vaccine production, the nucleic acid sequences should be synthesized with a variety of modifications so that they can be applied to different antigens. Vaccine researchers or manufacturers who call for mRNA synthesis services usually provide the DNA templates for their partners who are able to generate mRNAs later. Occasionally, mRNA is also synthesized from scratch if no templates are available.

Liposome Drug Delivery Support

Research about COVID-19 drugs is also proceeding in full swing. With the aid of liposome-based drug delivery systems, the faster and safer delivery of drugs becomes possible which tremendously speeds up the process of COVID-19 drugs from trials to market.

[Liposome-based mRNA delivery](#) solutions span from custom liposome production, characterization to application. The encapsulation of mRNA into liposomes can ensure the safety and effectiveness of delivery. It has been demonstrated that cationic liposome formulations greatly promote the functional delivery of negatively charged nucleic acids to cells.

Oligo Synthesis Services For COVID-19 Research

Researchers may have [custom oligo synthesis](#) requirements for their COVID-19 research. Some may need RNA molecules with multiple chemical modifications, while others demand custom synthesis and labeling of RNA oligonucleotides.

The renowned Dim-Dmoc technology is now usually applied for custom-made synthetic RNA. There is also a broad portfolio of fluorescent dye modifications and chemical modifications for the

fluorescent labeling of siRNA and RNA control oligonucleotides.

On the one hand, targeting the SARS-CoV-2 research, siRNA synthesis is used to study human gene function involving cell entry and host-pathogen interaction or designed to silence viral genes to ensure that off-target suppression of human genes is minimized. On the other hand, for SARS-CoV-2 diagnosis, RNA control techniques help confirm whether researchers' diagnostic test is effective when they amplify the region of interest RNA or DNA, monitor the performance of PCR master mix, and verify that the virus detection primers are valid.

Conclusion

Many biotech companies have focused on the mRNA vaccine, drug, and therapy development programs during the pandemic. With their consistent contribution, more advanced and effective solutions to mitigate the plague are to be explored in the near future.