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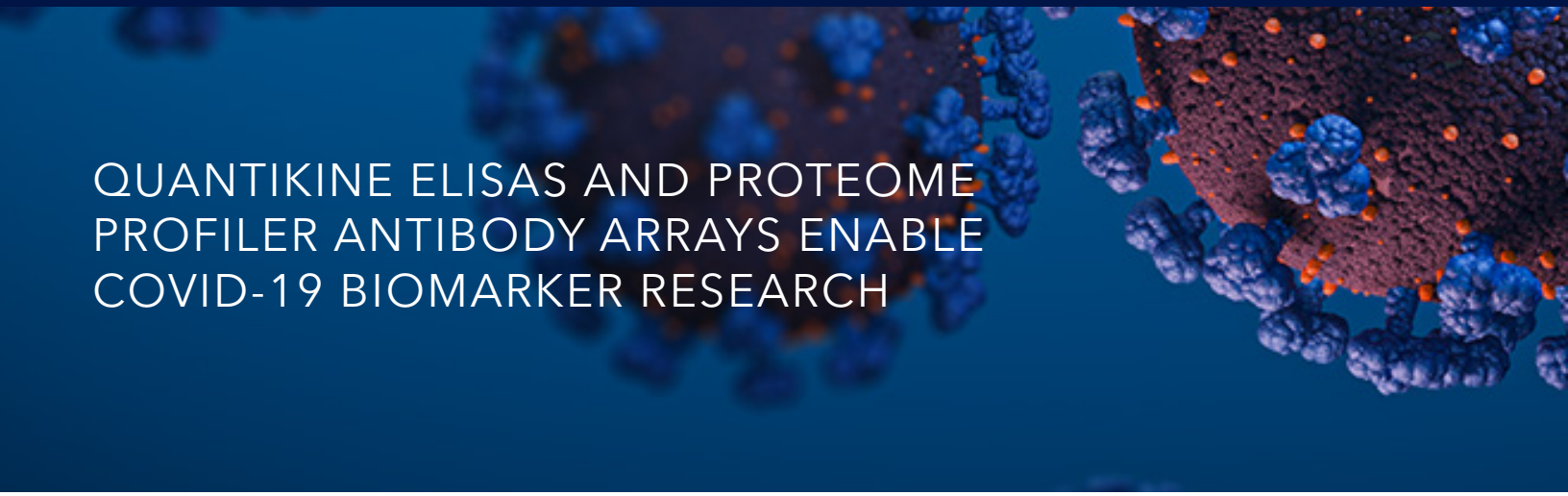
PUBLICATION SPOTLIGHT



QUANTIKINE ELISAS AND PROTEOME PROFILER ANTIBODY ARRAYS ENABLE COVID-19 BIOMARKER RESEARCH

WHY YOUR COVID-19 RESEARCH MATTERS TO US

Globally, there have been over 20 million confirmed cases of coronavirus disease 2019 (COVID-19) as of September 2020[1]. More than 800,000 of those cases are fatalities. As such, understanding disease etiology and developing safe and efficacious vaccines are global research and development priorities. Our understanding of the disease progression of COVID-19 has grown in recent months. We know that a subset of COVID-19 patients develop Cytokine Release Syndrome (CRS), also known as the "cytokine storm". CRS is an inflammatory response that is characterized by the excessive and uncontrolled release of cytokines. In the context of COVID-19, CRS patients can progress to Acute Respiratory Distress Syndrome (ARDS), which is respiratory failure, and eventually death. Given this insight into the progression from COVID-19 to death, the identification of severity biomarkers becomes paramount.

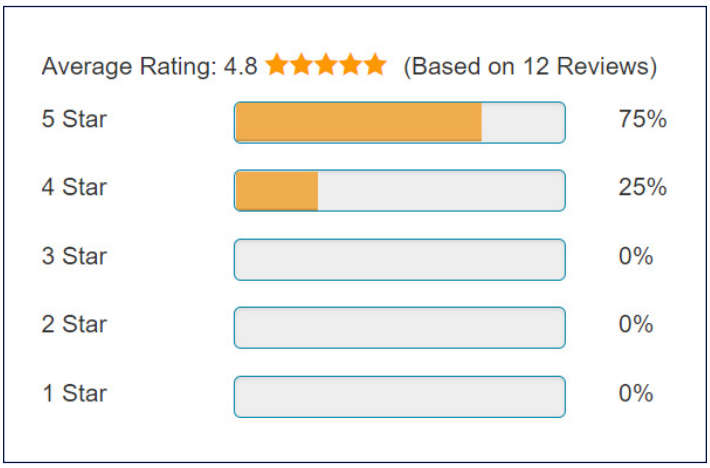
Read on to see how investigators use Bio-Techne immunoassays for COVID-19 research, specifically Quantikine™ ELISAs and Proteome Profiler™ Antibody Arrays to understand the relationship between a novel biomarker candidate, the cytokine storm, and COVID-19 severity.

ACETYLATED K676 TGFBIP AS A SEVERITY DIAGNOSTIC BLOOD BIOMARKER FOR SARS-COV-2 PNEUMONIA

Park *et. al*,[2], set out to identify a biomarker that could simultaneously predict COVID-19 disease severity and serve as a therapeutic target. The authors demonstrated that circulating transforming growth factor-beta (TGF-β)-induced protein (TGFBIp) and acetylated 676th lysine TGFBIp (TGFBIp K676Ac) were elevated in patients with COVID-19 pneumonia. Furthermore, COVID-19 patients that were in the intensive care unit (ICU) had the highest levels of TGFBIp and TGFBIp K676Ac. The authors subsequently demonstrate that TGFBIp stimulates CRS via nuclear factor kappa B (NF-κB).

COVID-19 INFECTION AND INFLAMMATORY CYTOKINE PROFILE

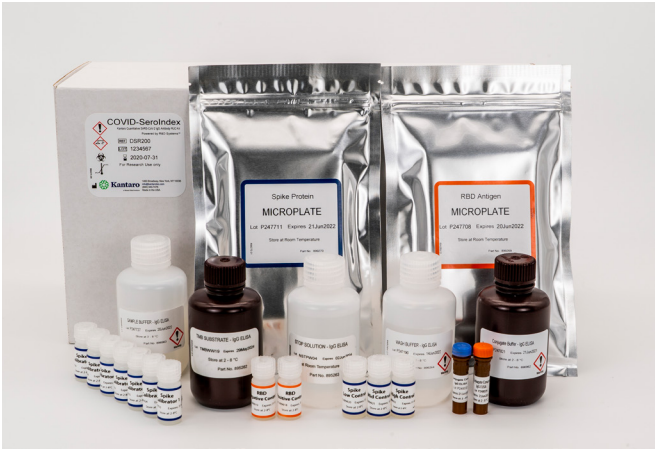
Using the R&D Systems Human XL Cytokine Array, the authors confirmed that a number of cytokines were particularly elevated in plasma from ICU COVID-19 patients. Elevated cytokines included interleukin 1β (IL-1β), IL-4, IL-6, and IL-8 and interferon gamma (IFN-γ). These cytokines are commonly elevated in CRS.



Proteome profiler antibody arrays are highly reviewed and published. Measure up to 102 analytes in a single sample. No special equipment is needed. See what your peers are saying about the Human Proteome Profiler Antibody Array.

NEW PRODUCT FOR COVID RESEARCH:

COVID-SEROINDEX – A QUANTITATIVE TOOL FOR THE MEASUREMENT OF SARS-COV-2 ANTIBODIES



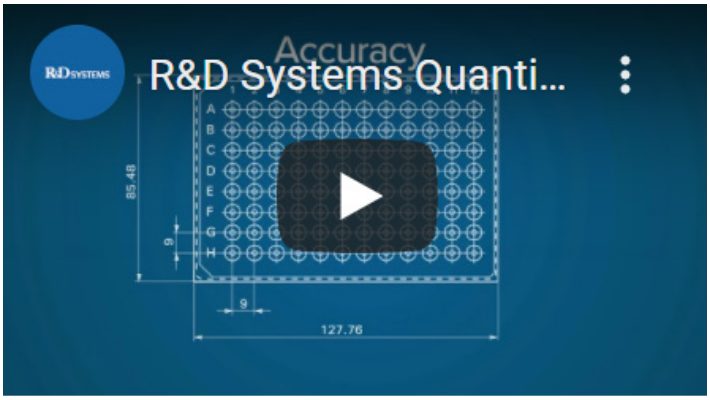
COVID-SeroIndex is a quantitative ELISA kit that enables an objective measurement of SARS-CoV-2 IgG antibodies which is indicative of a prior COVID-19 infection. This kit is configured and optimized to support research associated with the development of vaccines for COVID-19, serving as a tool to provide performance data during research and development phases. Validation studies have demonstrated a specificity of 99.8% and a sensitivity of 97.8%.

COVID-SeroIndex is a research use only two phase ELISA assay from Kantaro Biosciences and powered by R&D Systems.

TGFBIP NEUTRALIZATION INCREASES PBMC VIABILITY AND DAMPENS INFLAMMATORY CYTOKINE RELEASE

The authors also observed a decreased lymphocyte count as well as decreased peripheral blood mononuclear cell (PBMC) viability in the COVID-19 ICU patients. Co-culturing PBMCs with TGFBIp neutralizing antibodies was found to improve PBMC viability and reduce NF-κB activation. Finally, using Quantikine ELISAs, the authors demonstrated that coculture with TGFBIp neutralizing antibodies was also associated with decreased IL-1β, IL-4, IL-6, IL-10, IFN-γ, and tumor necrosis factor alpha (TNF-α). Taken together, the authors provide compelling evidence that TGFBIp holds promise as a biomarker for COVID-19.

R&D Systems, a Bio-Techne brand, takes pride in enabling investigators to gain insight into this global pandemic.



R&D Systems Quantikine ELISAs are accurate and precise. These most cited ELISA kits are built on a foundation of quality and optimized to for accurate detection of your target of interest. Furthermore, our lot-to-lot reproducibility is unparalleled. Learn more about R&D Systems Quantikine ELISAs

REFERENCES

1. https://covid19.who.int/

2. Park, H.H. *et. al.*, (2020) Acetylated K676 TGFBIp as a severity diagnostic blood biomarker for SARS-CoV-2 pneumonia. Science Advances **6**:31