

Flow Cytometry Applications for COVID-19 Research



The rapid spread of SARS-CoV-2 and the COVID-19 pandemic have underscored an urgent need to understand the mechanisms of infection, including the host immune response, and to devise strategies and therapeutics for mitigating the spread and impact of this strain of coronavirus. COVID-19 research is being performed on the molecular, protein, and cellular levels in many different environments.

Flow cytometry is a powerful analytical method that can be a valuable tool for many areas of COVID-19 research, such as:

Viral entry and infection mechanisms:

- Characterizing SARS-CoV-2
- Cell-virus interactions
- Impact on surface markers; ACE2 receptor expression
- · Anti-viral development; vaccine strain production

Viral function and its impact on the immune system:

- Phenotyping studies; reduction in absolute CD4 and CD8 T cell counts and population percentages
- T cell exhaustion, senescence, and differentiation
- Cellular inflammation; monitoring monocyte populations

The immune response:

- Response to stimulation with viral proteins/peptides
- Cytokine secretion
- Impact of drugs and treatments

Repurposing drugs for antiviral development:

- Drug screening in specific cell types
- · Modulation of viral activity and infectivity
- Identification of compounds
- Toxicity of antiviral compounds

Luminex offers a broad range of flow cytometry analyzers with unique capabilities to advance your COVID-19 research. Luminex flow cytometers and cellular analysis instruments give you instant access to all facets of cellular phenotypes and morphology.



The Guava[®] **Muse**[®] **Cell Analyzer** is a powerful, compact system that uses innovative Guava microcapillary technology to provide quick and accurate absolute cell counts, viability, and basic cell health analyses. Data from Guava[®] assays can be valuable for pre-screening and the evaluation of COVID-19 sample sets in a variety of environments. In particular, assays such as the Muse[®] Count and Viability Assay and the human immunology kits for CD4 T cell, CD 8 T cell, and B cell assessment can provide information on cell count and viability, as well as specific lymphocyte subsets, using a convenient, no-wash protocol.



The Guava[®] easyCyte[™] System is a versatile benchtop platform for multi-dimensional immunophenotyping and cell health assessment. Cellular analysis provides critical information on immune status, and enables labs to gain key insights into understanding immune response mechanisms. Drug repurposing studies are also important in identifying strategies against viral infectivity. The Guava easyCyte instrument allows multiparametric cellular analysis to be performed in plate- and tube-based formats with ease. The technology is based on microcapillary cytometry, which provides accurate absolute cell counts without reference beads, and utilizes smaller sample volumes, compared to traditional sheath-fluid based instruments.



To learn more, please visit us at luminexcorp.com/flow-cytometry-and-imaging/

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