



Bio-Plex Pro SARS-CoV-2 Multiplex Serology Assays



Detecting an antibody response to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus that causes COVID-19 disease, can provide useful information about the natural exposure and infection rates in a population or about vaccine immunogenicity.

Multiplex immunoassays enable the simultaneous profiling of qualitative antibody responses to SARS-CoV-2 nucleocapsid (N), receptor binding domain (RBD), spike 1 (S1), and spike 2 (S2) viral proteins in less than 3 hours (Figure 1). The assays can be read on any Bio-Plex Multiplex Immunoassay or Luminex System. Use the negative and positive control sample interpretation guide to classify a sample as seropositive or negative for antibodies against these proteins.

These precise assays are specific and sensitive to SARS-CoV-2. Compare median fluorescence intensities (MFI) of COVID-19 positive samples to understand both the strength of response and antibody levels at different time points after SARS-CoV-2 infection or vaccination (Figure 2). All reagents are provided for human assays. But stand-alone viral protein coupled beads can be used to assay for antibodies against multiple species. This may be useful for animal models in research and in preclinical studies.

For research use only. Not for use in diagnostic procedures.

Visit [bio-rad.com/SARSCoV2Serology](https://www.bio-rad.com/SARSCoV2Serology) for more information.



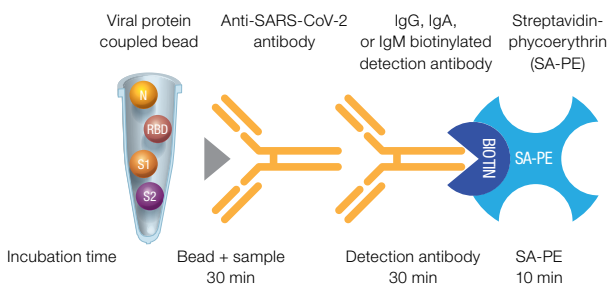


Fig. 1. Qualitative Bio-Plex Pro SARS-CoV-2 Assay format and incubation times. Four SARS-CoV-2 viral proteins, N, RBD, S1, and S2, were coated individually on magnetic beads to capture antibodies specific to these proteins. Simultaneous antibody response profiling against each viral protein through a biotinylated detection antibody against IgA, IgG, or IgM, followed by binding of SA-PE, results in an MFI readout that can be interpreted as positive or negative through assigned cutoff values.

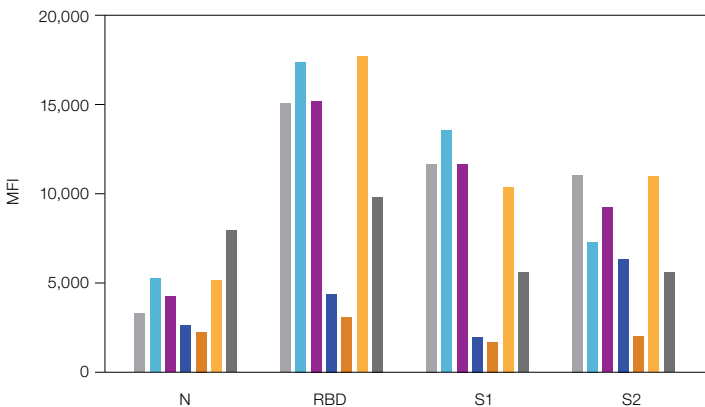


Fig. 2. Bio-Plex Pro Human IgG SARS-CoV-2 4-Plex Panel sample data. Six COVID-19 positive serum samples were assayed to evaluate levels of anti-SARS-CoV-2 IgG antibodies to N, RBD, S1, and S2 viral proteins. MFI levels vary for each sample, indicating varying antibody response profiles of each patient to each of these viral proteins. MFI cutoff values indicate the samples are positive for IgG antibodies against SARS-CoV-2. MFI cutoff: >450 (N); >250 (RBD); >250 (S1); >750 (S2). Positive control (■); sample 1 (▲); sample 2 (■); sample 3 (■); sample 4 (■); sample 5 (■); sample 6 (■); negative control (■); not visible on the graph because all negative control MFIs are <25. All controls and samples had a coefficient of variation (CV) <6%, with an average CV of 1.7%. MFI, median fluorescence intensity.

Flexible Ordering Options

| Catalog # | Description |
|-----------------------|---|
| Multiplex Kits | |
| 12014634 | Bio-Plex Pro Human IgG SARS-CoV-2 N/RBD/S1/S2 4-Plex Panel , 1 x 96-well |
| 12014665* | Bio-Plex Pro Human IgA SARS-CoV-2 N/RBD/S1/S2 4-Plex Panel , 1 x 96-well |
| 12014666* | Bio-Plex Pro Human IgM SARS-CoV-2 N/RBD/S1/S2 4-Plex Panel , 1 x 96-well |

* Coming soon.

Create Your Own Assay with Singleplex Items

- 12014667 **Bio-Plex Pro SARS-CoV-2 N/RBD/S1/S2 4-Plex Coupled Beads**
- 12014668 **Bio-Plex Pro Human IgG Detection Antibody**
- 12014669* **Bio-Plex Pro Human IgA Detection Antibody**
- 12014670* **Bio-Plex Pro Human IgM Detection Antibody**
- 12014773 **Bio-Plex Pro SARS-CoV-2 Nucleocapsid Coupled Beads**
- 12015406 **Bio-Plex Pro SARS-CoV-2 Receptor Binding Domain Coupled Beads**
- 12014771 **Bio-Plex Pro SARS-CoV-2 Spike 1 Coupled Beads**
- 12014772 **Bio-Plex Pro SARS-CoV-2 Spike 2 Coupled Beads**
- 12014774 **Bio-Plex Pro Human IgG SARS-CoV-2 Positive and Negative Controls**
- 12014775* **Bio-Plex Pro Human IgA SARS-CoV-2 Positive and Negative Controls**
- 12014776* **Bio-Plex Pro Human IgM SARS-CoV-2 Positive and Negative Controls**
- 12014777 **Bio-Plex Pro Human Serology Reagent Kit**

* Coming soon.

Assay Development Reagents

- 1614916 **16-Tube SureBead Magnetic Rack**
- MC1-0026-01** **Bio-Plex Pro Magnetic COOH Beads**, 1 ml
- 171406001 **Bio-Plex Amine Coupling Kit**
- 171304501 **Bio-Plex Streptavidin-Phycoerythrin**
- 171304090M **Bio-Plex Pro Reagent Kit III with Flat Bottom Plate**, 1 x 96-well, for use with human and nonrodent species
- 12002798 **Bio-Plex Pro Reagent Kit V with Flat Bottom Plate**, 1 x 96-well, for use with mouse and rat

** MC1-00xx-01 (x = 26–29, 34–37, 43–46, 52–55, 62–65), x is the bead region.

Related Products for Studying Immune Response to SARS-CoV-2 Cytokine Kits

- 12007283 **Bio-Plex Pro Human Cytokine Screening 48-Plex Panel**
- M500KCAF0Y **Bio-Plex Pro Human Cytokine 27-Plex Panel**
- 12007975 **Bio-Plex Pro Human Immunotherapy 20-Plex Panel**

Bio-Plex Publications

- Cytokine Profiling**
Long QX et al. (2020). Clinical and immunological assessment of asymptomatic SARS-CoV-2 infections. *Nat Med* 26, 1,200–1,204.
- Seroprevalence**
Fenwick C et al. (2020). Changes in SARS-CoV-2 antibody responses impact the estimates of infections in population-based seroprevalence studies (not peer reviewed). *medRxiv* 2020.07.14.20153536.
Kammaing S (2018). Seroprevalence of fourteen human polyomaviruses determined in blood donors. *PLoS One* 13, e0206273.
- Vaccine**
Itell HL et al. (2018). Development and application of a multiplex assay for the simultaneous measurement of antibody responses elicited by common childhood vaccines. *Vaccine* 36, 5,600–5,608.
Trivedi SU et al. (2019). Development and evaluation of a multiplexed immunoassay for simultaneous detection of serum IgG antibodies to six human coronaviruses. *Sci Rep* 9, 1,390.

Visit [bio-rad.com/SARSCoV2Serology](https://www.bio-rad.com/SARSCoV2Serology) for more information.

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