

High-Sensitivity SARS-CoV-2 Nucleoprotein Antibody Pair For Rapid COVID-19 Antigen Assays



In May 2020, the FDA announced the approval of the first antigen test to help in the rapid detection of the virus that causes COVID-19.

Molecular tests are typically more sensitive and can diagnose an infection early in the process, but they must be carried out by trained technicians in a laboratory and they take time to report a result.

Rapid antigen tests can provide a result in minutes and can be produced at a lower cost in large scales. Antigen tests are very specific for the virus but not as sensitive as PCR. A positive result by an antigen test is highly accurate, but a negative result does not rule out an infection.

The performance of a rapid antigen test is limited by the sensitivity of the antibodies used. Meridian's new pair of monoclonal antibodies are highly sensitive for the detection of SARS-CoV-2 Nucleoprotein and they do not cross-react with seasonal coronavirus strains. They are ideal for developing reliable and sensitive rapid lateral flow antigen assays for the detection of active COVID-19 infections.

SARS-CoV-2 Nucleoprotein Antibody Pair

- ✓ >95% purity (Protein G)
- ✓ Validated for Lateral Flow & ELISA
- ✓ This antibody pair does not cross-react with other coronaviruses, except SARS (2003)
- ✓ Proven to react with live virus
- ✓ Currently used in a commercial kit that has a detection limit of 2.8×10^3 TCID₅₀/mL

Capture Antibody:

Cat# 9548 MAb to SARS-CoV-2 NP

Detection Antibody:

Cat# 9547 MAb to SARS-CoV-2 NP

Test Protocol



ELISA #1:

Conjugate: COVID-19 MAb 9548 – HRP conjugate | Coating: COVID-19 MAb 9547 - 2µg/mL | Antigen: Rec. SARS-CoV-2 NP

Dilution	1/1,000		1/2,000		1/4,000		1/8,000		1/16,000		1/32,000	
Blank	0.017	0.020	0.017	0.018	0.014	0.015	0.010	0.010	0.012	0.009	0.008	0.010
10µg/mL	NaN	NaN	NaN	NaN	3.711	3.749	2.680	2.715	1.758	1.812	1.046	1.194
1µg/mL	3.881	NaN	3.482	3.586	3.033	3.077	2.249	2.259	1.397	1.414	0.869	0.920
500ng/mL	3.733	3.387	2.879	2.933	2.409	2.488	1.776	1.782	0.896	1.055	0.569	0.711
250ng/mL	2.970	2.692	2.290	2.334	1.865	1.956	1.333	1.330	0.814	0.806	0.447	0.481
100ng/mL	2.006	1.887	1.514	1.585	1.204	1.201	0.820	0.846	0.513	0.533	0.282	0.293
10ng/mL	0.254	0.241	0.143	0.192	0.138	0.135	0.080	0.087	0.050	0.054	0.029	0.028
1ng/mL	0.029	0.024	0.016	0.016	0.014	0.015	0.017	0.017	0.008	0.013	0.008	0.011

ELISA #2:

Conjugate: COVID-19 MAb 9548 – HRP conjugate | Coating: COVID-19 MAb 9547 – 8µg/mL | Antigen: Rec. SARS-CoV-2 NP

Dilution	1/1,000		1/2,000		1/4,000		1/8,000		1/16,000		1/32,000	
Blank	0.045	0.051	0.040	0.043	0.032	0.033	0.022	0.021	0.016	0.015	0.012	0.012
10ug/mL	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2.886	2.883	1.717	1.814
1ug/mL	NaN	NaN	NaN	NaN	NaN	NaN	3.833	3.833	2.719	2.705	1.641	1.704
500ng/mL	NaN	NaN	NaN	NaN	NaN	NaN	3.502	3.439	2.280	2.347	1.386	1.429
250ng/mL	NaN	NaN	NaN	NaN	3.715	3.567	2.817	2.836	1.816	1.726	1.004	1.075
100ng/mL	3.571	3.433	2.915	2.957	2.373	2.281	1.662	1.616	1.016	1.008	0.517	0.561
10ng/mL	0.475	0.445	0.347	0.349	0.240	0.232	0.152	0.150	0.088	0.088	0.042	0.047
1ng/mL	0.055	0.099	0.045	0.063	0.044	0.043	0.029	0.028	0.015	0.019	0.011	0.013

Live Virus Detection

Antibody pair 9547 and 9548 reacts with live virus. Antibodies were incorporated into a lateral flow assay and tested with approximately 2×10^3 TCID₅₀/mL inactivated COVID-19 virus (from Zeptomatrix, USA) and approx. 2×10^1 TCID₅₀/mL live COVID-19 virus.

Lateral Flow Result



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