

1 **Supplemental Material**

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3 **Supplemental Tables**

4 **Table S1.** Algorithms for determining SARS-CoV-2 IgG results for the three serological
 5 assays utilized in this study.

Assay and calculation	Cutoff value	Result
Tetracore FlexImmArray SARS-CoV-2 IgG multiplex bead assay: (Test sample MFI)/(Average Calibrator MFI)	≥1.2	SARS-CoV-2 Human IgG Positive
	≤0.9	SARS-CoV-2 Human IgG Negative
	>0.9 and <1.2	SARS-CoV-2 Human IgG Equivocal result. Perform a re-test using the same sample in duplicate wells. If the result is the same as before perform a re-test using sample collected after 7-10 days.
	If one or two of three targets show a ratio of >1.2 and one or two show a ratio of ≥0.9 and <1.2	SARS-CoV-2 Human IgG Equivocal result. Perform a re-test using the same sample in duplicate wells. If

		the result is same as before sample is negative.
Abbott SARS-CoV-2 IgG assay: Index (S/C)	≥ 1.4	Positive
	< 1.4	Negative
Ortho VITROS Anti-SARS- CoV-2 Total assay: (S/C)	≥ 1.0	Reactive
	< 1.0	Non-reactive

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8 **Table S2.** Characteristics of specimens with discrepant results between SARS-CoV-2 serological assays

Type of Discrepancy	Study sample number	COVID-19 previous infection status (determined by positive qRT-PCR)	Abbott qualitative result (cutoff 1.4)	Abbott quantitative result (index S/C)	Ortho qualitative result (cutoff 1.0)	Ortho quantitative result (S/C)	Tetracore overall qualitative result (based on three antigens)	Tetracore antigen qualitative results (cutoff 1.2)			Tetracore antigen quantitative results (ratio to calibrator)			Commercial Source	Date of symptom onset	Date of serum collection	Days between symptom onset and serum collection	Age	Sex	Race	Ethnicity	Symptoms	Previous qRT-PCR testing
								RBD	NP	RBD/NP Fusion	RBD	NP	RBD/NP Fusion										
Abbott false negative	118	Positive	Negative	0.4	Positive	61.8	Positive	Positive	Positive	Positive	7.5	10.3	6.6	iSpecimen	3/22/2020	5/8/2020	47	70	M	Caucasian	Non Hispanic/Latino	Difficulty breathing / shortness of breath, Wheezing, Dry cough, Fever or chills, Sore throat, Aches and pains, Headache	n/a
	258	Positive	Negative	1.4	Positive	26.8	Positive	Positive	Positive	Positive	11.1	15.5	6.1	iSpecimen	5/13/2020	6/3/2020	21	31	F	Caucasian	Non Hispanic/Latino	Loss of smell or taste, Fever or chills, Aches and pains, Headache	Positive
	287	Positive	Negative	0.6	Positive	34.5	Positive	Positive	Positive	Positive	4.5	5.5	1.5	iSpecimen	6/15/2020	7/2/2020	17	23	M	Caucasian	Hispanic	Difficulty breathing / shortness of breath, Dry cough, Loss of smell or taste, Fever or chills, Aches and pains, Loss of appetite	Positive
	315	Positive	Negative	0.9	Positive	9.2	Positive	Positive	Positive	Positive	6.9	9.7	4.7	iSpecimen	6/23/2020	7/12/2020	19	39	F	Caucasian	Hispanic	Dry cough, Loss of smell or taste, Fever or chills, Sore throat, Aches and pains	Positive
	319	Positive	Negative	0.5	Positive	108.0	Positive	Positive	Positive	Positive	5.2	7.0	2.2	iSpecimen	6/27/2020	7/12/2020	15	21	M	Caucasian	Hispanic	Nasal congestion, Loss of smell or taste, Fever or chills, Sore throat, Aches and pains	Positive
323	Positive	Negative	0.6	Positive	114.0	Positive	Positive	Positive	Positive	5.3	6.5	2.2	iSpecimen	6/26/2020	7/13/2020	17	64	M	Caucasian	Hispanic	Loss of smell or taste, Fever or chills, Diarrhea, Headache, Loss of appetite	Positive	
Ortho false negative	285	Positive	Positive	3.0	Negative	0.8	Positive	Positive	Positive	Positive	4.8	6.3	11.8	iSpecimen	6/16/2020	7/2/2020	16	74	M	Caucasian	Hispanic	Nasal congestion, Runny nose, Fatigue, Aches and pains, Nausea or vomiting, Confusion, Loss of appetite	Positive
	210	Positive	Positive	4.7	Positive	6.8	Negative	Equivocal	Positive	Positive	1.0	1.2	14.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Not Reported	n/a	
Tetracore false negative	292	Positive	Positive	2.5	Positive	11.7	Negative	Equivocal	Positive	Positive	1.1	1.4	1.7	iSpecimen	6/11/2020	6/22/2020	21	39	F	Caucasian	Hispanic	Productive cough, loss of smell or taste, Fever or chills, Sore throat	Positive
	279*	Positive	Negative	0.6	Negative	0.4	Positive	Positive	Positive	Positive	4.8	6.4	4.3	iSpecimen	6/15/2020	7/1/2020	16	66	F	Caucasian	Hispanic	Nasal congestion, Loss of smell or taste, Sweating, Fatigue, Aches and pains, Diarrhea	Positive
Tetracore and Abbott false negative	270	Positive	Negative	0.4	Positive	1.2	Negative	Negative	Equivocal	Negative	0.8	1.0	0.8	iSpecimen	6/10/2020	6/24/2020	14	66	F	Caucasian	Hispanic	Difficulty breathing / shortness of breath, Productive cough, Dry cough, Loss of smell or taste, Fever or chills, Sweating, Chest pain or pressure, Fatigue, Diarrhea, Headache, Confusion, Loss of appetite	Positive
	302	Positive	Negative	0.3	Positive	5.7	Negative	Negative	Negative	Negative	0.2	0.3	0.2	iSpecimen	5/22/2020	6/6/2020	15	28	M	Caucasian	Hispanic	Productive cough, Nasal congestion, Fever or chills, Fatigue, Aches and pains, Nausea or vomiting, Diarrhea, Headache	Positive
	307	Positive	Negative	0.8	Positive	3.0	Negative	Positive	Positive	Negative	1.4	2.4	0.8	iSpecimen	6/20/2020	7/11/2020	21	28	F	Caucasian	Hispanic	Fever or chills, Fatigue, Aches and pains, Headache	Positive
	312	Positive	Negative	0.3	Positive	27.9	Negative	Positive	Positive	Equivocal	2.1	2.6	1.0	iSpecimen	6/25/2020	7/12/2020	17	36	M	Caucasian	Hispanic	Loss of smell or taste, Sore throat, Fatigue, Headache	Positive
	317	Positive	Negative	0.3	Positive	4.4	Negative	Positive	Positive	Negative	1.5	2.1	0.4	iSpecimen	6/27/2020	7/12/2020	15	41	F	Caucasian	Hispanic	Loss of smell or taste, Sore throat, Chest pain or pressure, Aches and pains, Headache	Positive
	321	Positive	Negative	0.5	Positive	1.0	Negative	Negative	Negative	Equivocal	0.6	0.7	1.0	iSpecimen	6/27/2020	7/12/2020	15	21	F	Caucasian	Hispanic	Dry cough, Loss of smell or taste, Headache, Loss of appetite	Positive
	322	Positive	Negative	0.2	Positive	4.2	Negative	Positive	Positive	Negative	2.5	3.5	0.7	iSpecimen	6/26/2020	7/13/2020	17	62	F	Caucasian	Hispanic	Dry cough, Loss of smell or taste, Aches and pains, Headache, Loss of appetite	Positive
Tetracore and Ortho false negative	308	Positive	Positive	2.3	Negative	0.7	Negative	Negative	Negative	Negative	0.4	0.4	0.6	iSpecimen	6/11/2020	7/11/2020	30	60	F	Caucasian	Hispanic	Difficulty breathing / shortness of breath, Runny nose, Loss of smell or taste, Sore throat, Chest pain or pressure, Aches and pains, Headache, Loss of appetite	Positive
	166	Negative	Positive	1.7	Negative	0.0	Negative	Negative	Negative	Negative	0.2	0.1	0.1	Bio/VT	n/a	9/10/2019	n/a	43	M	Caucasian	n/a	Not Tested for COVID-19	n/a
Tetracore RBD and NP false positive (overall call negative)	126	Negative	Negative	0.0	Negative	0.0	Negative	Equivocal	Positive	Negative	1.1	2.7	0.1	iSpecimen	5/7/2020	5/21/2020	14	56	F	Caucasian	Non Hispanic/Latino	n/a	Negative
	38*	Negative	Negative	0.3	Negative	0.0	Negative	Positive	Positive	Negative	3.6	2.2	0.2	Bio/VT	n/a	9/17/2019	n/a	46	M	African American	n/a	Not Tested for COVID-19	n/a
	80*	Negative	Negative	0.1	Negative	0.0	Negative	Positive	Positive	Negative	2.0	3.0	0.5	Bio/VT	n/a	9/16/2019	n/a	23	M	African American	n/a	Not Tested for COVID-19	n/a
	161*	Negative	Negative	0.1	Negative	0.0	Negative	Positive	Positive	Negative	3.4	2.9	0.2	Bio/VT	n/a	9/12/2019	n/a	26	M	African American	n/a	Not Tested for COVID-19	n/a
	169*	Negative	Negative	0.1	Negative	0.0	Negative	Positive	Positive	Equivocal	4.3	5.2	1.1	Bio/VT	n/a	9/23/2019	n/a	54	M	Caucasian	n/a	Not Tested for COVID-19	n/a
184*	Negative	Negative	0.1	Negative	0.0	Negative	Positive	Positive	Negative	1.4	3.1	0.1	Bio/VT	n/a	9/10/2019	n/a	26	M	Caucasian	n/a	Not Tested for COVID-19	n/a	

* indicates that specimen had discrepant results for both assay comparisons (Tetracore vs. Abbott and Tetracore vs. Ortho)

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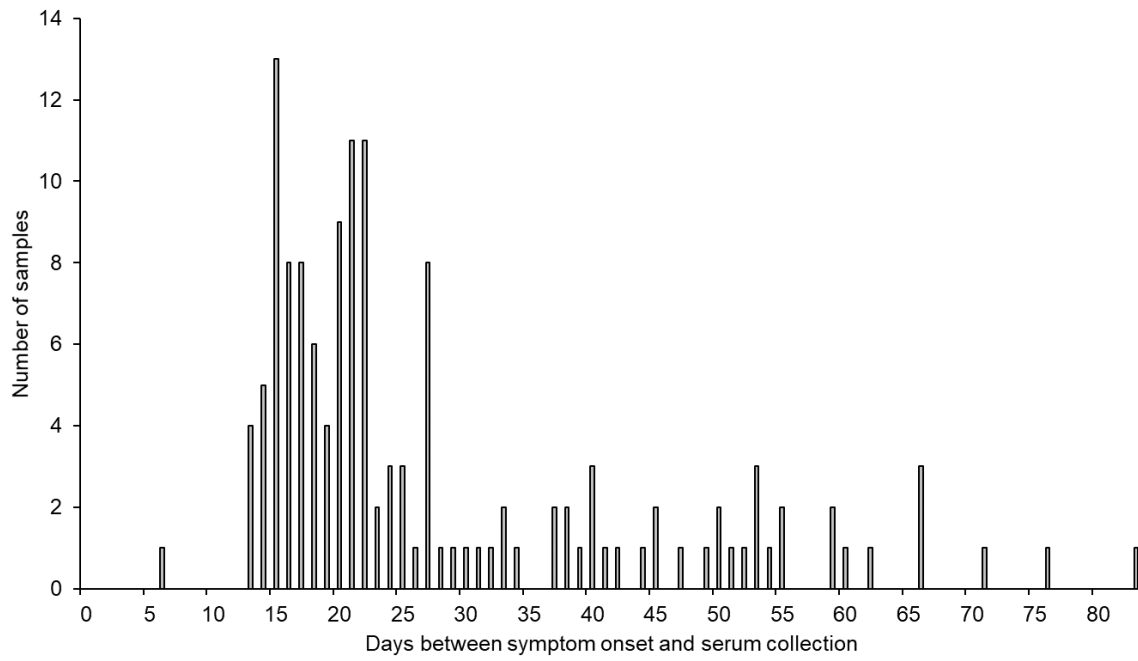
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15 **Supplemental Figures**

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17 **Figure S1.** Distribution of time between COVID-19 symptom onset and date of serum
18 collection.



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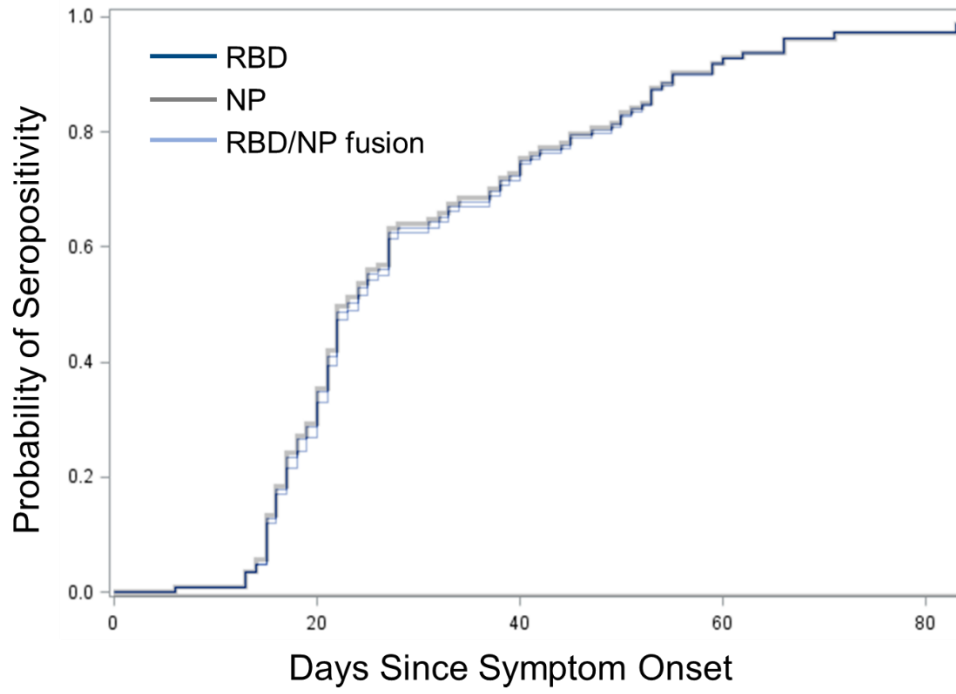
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30 **Figure S2.** Time to seropositivity by individual targets in multiplex assay.

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