

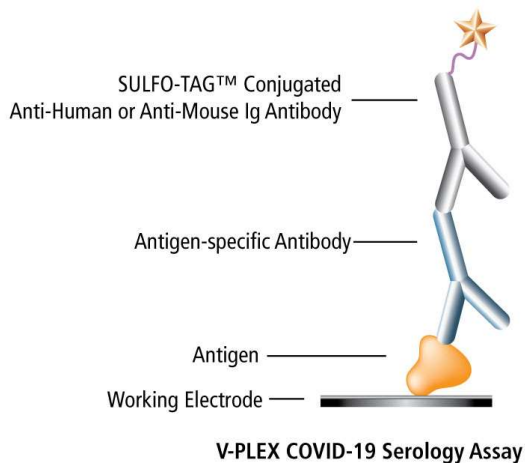


V-PLEX Serology Panels for SARS-CoV-2 Variants

V-PLEX[®] Serology Panels are now available for more than 35 SARS-CoV-2 variants, including the Alpha, Beta, Gamma, Delta, Lambda, Mu, and Omicron variants. These tests supplement MSD's V-PLEX SARS-CoV-2 Panel 2, which was chosen by Operation Warp Speed (OWS) as the basis of its standard binding assays for immunogenicity assessments in all funded Phase III clinical trials of vaccines.

Kits are available for use with human and mouse samples. All human V-PLEX Serology Panels are provided as complete kits, including the same reference standards and controls used in OWS laboratories to analyze clinical trial samples. The Reference Standard 1 in human V-PLEX Serology kits is calibrated against the WHO International Standard (NIBSC code: 20/136).

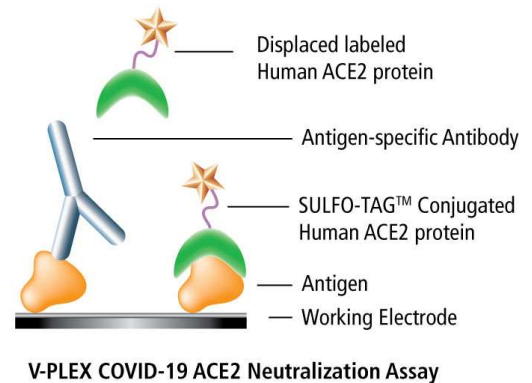
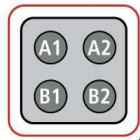
Human kits are available in 96- and 384-well formats for quantitative serological testing and functional testing (ACE2 blocking). Mouse kits are available in 96-well format for qualitative serological testing.



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96-Well 10-Spot Plate



MSD MULTI-SPOT[®]
384-Well 4-Spot Plate



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SARS-CoV-2 Spike Antigens

Lineages	Amino Acid Modifications	Common Designation
A.23.1	F157L, V367F, Q613H, P681R	Uganda
A.VOI.V2	D80Y, ΔY144, ΔI210, D215G, Δ246-248, L249M, W258L, R346K, T478R, E484K, H655Y, P681H, Q957H	Tanzania
AY.1	T19R, Δ157/158, K417N, L452R, T478K, D614G, P681R, D950N	Delta sublineage
AY.1	(Alt Seq 1): T19R, T95I, G142D, E156G, Δ157/158, W258L, K417N, L452R, T478K, D614G, P681R, D950N	Delta sublineage
AY.2	T19R, V70F, G142D, Δ157/158, A222V, K417N, L452R, T478K, D614G, P681R, D950N	Delta sublineage
AY.2	(Alt Seq 1): T19R, V70F, G142D, E156G, Δ157/158, A222V, K417N, L452R, T478K, D614G, P681R, D950N	Delta sublineage
AY.4.2	T19R, T95I, G142D, Y145H, Δ156/157, R158G, A222V, L452R, T478K, D614G, P681R, D950N	Delta sublineage
AY.12	T19R, Δ156/157, R158G, L452R, T478K, D614G, P681R, D950N	Delta sublineage
BA.1+L452R	A67V, Δ69-70, T95I, G142D/Δ143-145, Δ211/L212I, ins214EPE, G339D, S371L, S373P, S375F, K417N, N440K, L452R, G446S, S477N, T478K, E484A, Q493R, G496S, Q498R, N501Y, Y505H, T547K, D614G, H655Y, N679K, P681H, N764K, D796Y, N856K, Q954H, N969K, L981F	Omicron sublineage
BA.1+R346K; BA.1.1; BA.1.1.15	A67V, Δ69-70, T95I, G142D/Δ143-145, Δ211/L212I, ins214EPE, G339D, R346K, S371L, S373P, S375F, K417N, N440K, G446S, S477N, T478K, E484A, Q493R, G496S, Q498R, N501Y, Y505H, T547K, D614G, H655Y, N679K, P681H, N764K, D796Y, N856K, Q954H, N969K, L981F	Omicron sublineages
BA.2; BA.2.1; BA.2.2; BA.2.3; BA.2.5; BA.2.6; BA.2.7; BA.2.8; BA.2.10; BA.2.12	T19I, (L24-A27)toS, G142D, V213G, G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineages
BA.2+L452M	T19I(L24-A27)toS, G142D, V213G, G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452M, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
BA.2+L452R	T19I, (L24-A27)toS, G142D, V213G, G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
BA.2.12.1	T19I, (L24-A27)toS, G142D, V213G, G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452Q, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, S704LN764K, D796Y, Q954H, N969K	Omicron sublineage
BA.2.75	T19I, L24-A27>S, G142D, K147E, W152R, F157L, I210V, V213G, G257S, G339H, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, G446S, N460K, S477N, T478K, E484A, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
BA.2.75.2	T19I, L24-A27>S, G142D, K147E, W152R, F157L, I210V, V213G, G257S, G339H, R346T, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, G446S, N460K, S477N, T478K, E484A, F486S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K, D1199N	Omicron sublineage
BA.2.86	T19I, R21T, L24-A27>S, S50L, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, N211del, L212I, V213G, L216F, H245N, A264D, I332V, G339H, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, V445H, G446S, N450D, L452W, N460K, S477N, T478K, N481K, V483del, E484K, F486P, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, I670V, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, P1143L	Omicron sublineage
BA.3	A67V, H69-V70del, T95I, G142D, V143-Y145del, (N211-L212)tol, G339D, S371F, S373P, S375F, D405N, K417N, N440K, G446S, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
BA.4	T19I, (L24-A27)toS, del69/70, G142D, V213G, G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H, D614G, H655Y, N658S, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
BA.4.6	V3G, T19I, L24-A27>S, H69-V70del, G142D, V213G, G339D, R346T, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H, D614G, H655Y, N658S, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
BA.5	T19I, (L24-A27)toS, del69/70, G142D, V213G, G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
BF.7	T19I, L24-A27>S, H69-V70del, G142D, V213G, G339D, R346T, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
BN.1	T19I, L24-A27>S, G142D, K147E, W152R, F157L, I210V, V213G, G257S, G339H, R346T, K356T, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, G446S, N460K, S477N, T478K, E484A, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage



Lineages	Amino Acid Modifications	Common Designation
BQ.1	T19I, L24-A27>S, H69-V70del, G142D, V213G, G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, K444T, L452R, N460K, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
BQ.1.1	T19I, L24-A27>S, H69-V70del, G142D, V213G, G339D, R346T, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, K444T, L452R, N460K, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
BV-1	ΔH69-V70, ΔY144, Q493R, N501Y, A570D, D614G, P681H, T716I, S982A, D1118H	Texas BV-1
B.1	D614G	-
B.1.1.519	T478K, D614G, P681H, T732A	Mexico/Texas BV-2
B.1.1.529; BA.1; BA.1.15	A67V, ΔH69-V70, T95I, G142D, Δ143-145, Δ211/L212I, ins214EPE, G339D, S371L, S373P, S375F, K417N, N440K, G446S, S477N, T478K, E484A, Q493R, G496S, Q498R, N501Y, Y505H, T547K, D614G, H655Y, N679K, P681H, N764K, D796Y, N856K, Q954H, N969K, L981F	Omicron sublineages
B.1.1.7	ΔH69-V70, ΔY144, N501Y, A570D, D614G, P681H, T716I, S982A, D1118H	Alpha
B.1.1.7+E484K	ΔH69-V70, ΔY144, E484K, N501Y, A570D, D614G, P681H, T716I, S982A, D1118H	U.K.
B.1.258.17	ΔH69-V70, L189F, N439K, D614G, V772I	Europe
B.1.351	L18F, D80A, D215G, Δ242-244, R246I, K417N, E484K, N501Y, D614G, A701V	Beta
B.1.351.1	D80A, D215G, K417N, E484K, N501Y, D614G, A701V	Botswana
B.1.429	S13I, W152C, L452R, D614G	Epsilon
B.1.466.2	W152R, N439K, D614G, P681R	Indonesia
B.1.525	Q52R, A67V, ΔH69-V70, ΔY144, E484K, Q677H, D614G, F888L	Eta
B.1.526	L5F, T95I, D253G, E484K, D614G, A701V	Iota
B.1.526.1	D80G, ΔY144, F157S, L452R, D614G, T859N, D950H	New York
B.1.617	L452R, E484Q, D614G	India
B.1.617.1	T95I, G142D, E154K, L452R, E484Q, D614G, P681R, Q1071H	Kappa
B.1.617.2	T19R, Δ157/158, L452R, T478K, D614G, P681R, D950N	Delta sublineage
B.1.617.2; AY.3; AY.5; AY.6; AY.7; AY.14	(Alt Seq 1): T19R, G142D, Δ156/157, R158G, L452R, T478K, D614G, P681R, D950N	Delta sublineages
B.1.617.2 +1	T19R, G142D, Δ156/157, R158G, L452R, T478K, E484K, D614G, P681R, D950N	Delta +1
B.1.617.2 +2	T19R, G142D, Δ156/157, R158G, L452R, T478K, E484K, N501Y, D614G, P681R, D950N	Delta +2
B.1.617.2 +3	T19R, G142D, Δ156/157, R158G, K417N, L452R, T478K, E484K, N501Y, D614G, P681R, D950N	Delta +3
B.1.617.2 +4	T19R, G142D, Δ156/157, R158G, K417N, N439K, L452R, T478K, E484K, N501Y, D614G, P681R, D950N	Delta +4
B.1.617.2; AY.4	(Alt Seq 2): T19R, T95I, G142D, Δ156/157, R158G, L452R, T478K, D614G, P681R, D950N	Delta sublineages
B.1.617.2+ΔY144	T19R, ΔY144, Δ157/158, L452R, T478K, D614G, P681R, D950N	Vietnam
B.1.617.3	T19R, G142D, L452R, E484Q, D614G, P681R, D950N	India
B.1.618	ΔY145/146, E484K, D614G	India
B.1.620	P26S, ΔH69-V70, V126A, ΔY144, Δ242-244, H245Y, S477N, E484K, D614G, P681H, T1027I, D1118H	Europe
B.1.621	T95I, Y144T, Y145S, ins146N, R346K, E484K, N501Y, D614G, P681H, D950N	Mu
B.1.640.2	P9L, E96Q, C136-Y144del, R190S, D215H, R346S, N394S, Y449N, E484K, F490S, N501Y, D614G, P681H, T859N, D1139H	France (IHU)
C.37	G75V, T76I, ΔR246, ΔS247, ΔY248, ΔL249, ΔT250, ΔP251, ΔG252, D253N, L452Q, F490S, D614G, T859N	Lambda
EG.5.1	T19I, L24-A27>S, Q52H, G142D, Y144del, H146Q, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, F456L, N460K, S477N, T478K, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
FL.1.5.1	T19I, L24-A27>S, G142D, Y144del, H146Q, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, F456L, N460K, S477N, T478R, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, A701V, N764K, D796Y, Q954H, N969K	Omicron sublineage
HV.1	T19I, L24-A27>S, Q52H, V83A, G142D, Y144del, H146Q, F157L, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, L452R, F456L, N460K, S477N, T478K, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage



Lineages	Amino Acid Modifications	Common Designation
JD.1.1	T19I, L24-A27>S, V83A, G142D, Y144del, H146Q, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, L455F, F456L, N460K, A475V, S477N, T478K, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
JN.1	T19I, R21T, L24-A27>S, S50L, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, N211del, L212I, V213G, L216F, H245N, A264D, I332V, G339H, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, V445H, G446S, N450D, L452W, L455S, N460K, S477N, T478K, N481K, V483del, E484K, F486P, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, P1143L	Omicron sublineage
P.1	L18F, T20N, P26S, D138Y, R190S, K417T, E484K, N501Y, D614G, H655Y, T1027I, V1176F	Gamma
P.2	E484K, D614G, V1176F	Zeta
P.3	Δ141-143, E484K, N501Y, D614G, P681H, E1092K, H1101Y, V1176F	Philippines
R.1	W152L, E484K, D614G, G769V	Kentucky
XBB.1	T19I, L24-A27>S, G142D, Y144del, H146Q, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, N460K, S477N, T478K, E484A, F486S, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
XBB.1.16	T19I, L24-A27>S, G142D, Y144del, H146Q, E180V, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, N460K, S477N, T478R, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
XBB.1.16.1	T19I, L24-A27>S, G142D, Y144del, H146Q, E180V, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, N460K, S477N, T478R, E484A, F486P, F490S, Q498R, N501Y, Y505H, T547I, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
XBB.1.16.6	T19I, L24-A27>S, G142D, Y144del, H146Q, E180V, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, F456L, N460K, S477N, T478R, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
XBB.1.5	T19I, L24-A27>S, G142D, Y144del, H146Q, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, N460K, S477N, T478K, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage
XBB.2.3	T19I, L24-A27>S, G142D, Y144del, H146Q, Q183E, V213E, D253G, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, N460K, S477N, T478K, E484A, F486P, F490S, Q498R, N501Y, Y505H, P521S, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	Omicron sublineage

- = Not applicable

Note: Alternative S-GENE mutations for Spike of AY.1, AY.2, and B.1.617.2 are listed as "Alt Seq #."

SARS-CoV-2 S1 RBD Antigens

Lineages	Amino Acid Modifications	Common Designation
A.23.1	V367F	Uganda
A.VOI.V2	R346K, T478R, E484K	Tanzania
AY.1; AY.2	K417N, L452R, T478K	Delta sublineages
AY.3; AY.4; AY.4.2; AY.5; AY.6; AY.7; AY.12; AY.14; B.1.617.2; B.1.617.2+ΔY144	L452R, T478K	Delta sublineages
BA.1.1; BA.1.1.15	G339D, R346K, S371L, S373P, S375F, K417N, N440K, G446S, S477N, T478K, E484A, Q493R, G496S, Q498R, N501Y, Y505H	Omicron sublineages
BA.2; BA.2.1; BA.2.2; BA.2.3; BA.2.5; BA.2.6; BA.2.7; BA.2.8; BA.2.10; BA.2.10.1; BA.2.12	G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H	Omicron sublineages
BA.2+L452M	G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452M, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H	Omicron sublineage
BA.2+L452R	G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H	Omicron sublineage
BA.2.12.1	G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452Q, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H	Omicron sublineage
BA.2.75	G339H, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, G446S, N460K, S477N, T478K, E484A, Q498R, N501Y, Y505H	Omicron sublineage
BA.2.75.2	G339H, R346T, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, G446S, N460K, S477N, T478K, E484A, F486S, Q498R, N501Y, Y505H	Omicron sublineage
BA.3	G339D, S371F, S373P, S375F, D405N, K417N, N440K, G446S, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H	Omicron sublineage



Lineages	Amino Acid Modifications	Common Designation
BA.4; BA.5	G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H	Omicron sublineages
BA.4.6; BF.7	G339D, R346T, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H	Omicron sublineages
BQ.1	G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, K444T, L452R, N460K, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H	Omicron sublineage
BQ.1.1	G339D, R346T, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, K444T, L452R, N460K, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H	Omicron sublineage
BV-1	Q493R, N501Y	Texas BV-1
B.1.1.519	T478K	Mexico/Texas BV-2
B.1.1.529; BA.1; BA.1.15	G339D, S371L, S373P, S375F, K417N, N440K, G446S, S477N, T478K, E484A, Q493R, G496S, Q498R, N501Y, Y505H	Omicron sublineages
B.1.1.7	N501Y	Alpha
B.1.1.7+E484K; P.3	E484K, N501Y	U.K.; Philippines
B.1.214.2	Q414K, N450K	Belgium
B.1.258.17; B.1.466.2	N439K	Europe; Indonesia
B.1.351; B.1.351.1	K417N, E484K, N501Y	Beta; Botswana
B.1.427; B.1.429; B.1.526.1	L452R	Epsilon lineages; New York
B.1.525; B.1.526; B.1.618; P.2; R.1	E484K	Eta; Iota; India; Zeta; Kentucky
B.1.526.2	S477N	New York
B.1.617; B.1.617.1; B.1.617.3	L452R, E484Q	India; Kappa; India
B.1.620	S477N, E484K	Europe
C.37	L452Q, F490S	Lambda
P.1	K417T, E484K, N501Y	Gamma
XBB.1	G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, N460K, S477N, T478K, E484A, F486S, F490S, Q498R, N501Y, Y505H	Omicron sublineage

SARS-CoV-2 Variant Focus Panels

SARS-CoV-2 384 Panel 2	Spot Location	Lineages	Antigens	Common Designation
Human K25420U (IgG) K25421U (IgM) K25422U (IgA) K25423U (ACE2)	Spot A1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot A2	A (WT)	SARS-CoV-2 Nucleocapsid	Wuhan
	Spot B1	B.1.351; B.1.351.1	SARS-CoV-2 S1 RBD (B.1.351; B.1.351.1)	Beta; Botswana
	Spot B2	B.1.351	SARS-CoV-2 Spike (B.1.351)	Beta

SARS-CoV-2 Panel 5	Spot Location	Lineages	Antigens	Common Designation
Human K15429U (IgG) K15430U (IgM) K15431U (IgA) K15432U (ACE2) Mouse K15478U (IgG) K15479U (IgM) K15480U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	-	BSA	-
	Spot 3	A (WT)	SARS-CoV-2 Nucleocapsid	Wuhan
	Spot 4	-	BSA	-
	Spot 5	-	BSA	-
	Spot 6	-	BSA	-
	Spot 7	P.1	SARS-CoV-2 Spike (P.1)	Gamma
	Spot 8	B.1.1.7	SARS-CoV-2 Spike (B.1.1.7)	Alpha
	Spot 9	B.1.351	SARS-CoV-2 Spike (B.1.351)	Beta
	Spot 10	-	BSA	-



SARS-CoV-2 Panel 6	Spot Location	Lineages	Antigens	Common Designation
Human K15433U (IgG) K15434U (IgM) K15435U (IgA) K15436U (ACE2) Mouse K15481U (IgG) K15482U (IgM) K15483U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	B.1	SARS-CoV-2 Spike (D614G)	-
	Spot 3	A (WT)	SARS-CoV-2 Nucleocapsid	Wuhan
	Spot 4	-	BSA	-
	Spot 5	-	BSA	-
	Spot 6	-	BSA	-
	Spot 7	P.1	SARS-CoV-2 Spike (P.1)	Gamma
	Spot 8	B.1.1.7	SARS-CoV-2 Spike (B.1.1.7)	Alpha
	Spot 9	B.1.351	SARS-CoV-2 Spike (B.1.351)	Beta
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan

SARS-CoV-2 Panel 7	Spot Location	Lineages	Antigens	Common Designation
Human K15437U (IgG) K15438U (IgM) K15439U (IgA) K15440U (ACE2) Mouse K15484U (IgG) K15485U (IgM) K15486U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	B.1.351; B.1.351.1	SARS-CoV-2 S1 RBD (B.1.351; B.1.351.1)	Beta; Botswana
	Spot 3	A (WT)	SARS-CoV-2 Nucleocapsid	Wuhan
	Spot 4	P.1	SARS-CoV-2 S1 RBD (P.1)	Gamma
	Spot 5	-	BSA	-
	Spot 6	B.1.1.7	SARS-CoV-2 S1 RBD (B.1.1.7)	Alpha
	Spot 7	P.1	SARS-CoV-2 Spike (P.1)	Gamma
	Spot 8	B.1.1.7	SARS-CoV-2 Spike (B.1.1.7)	Alpha
	Spot 9	B.1.351	SARS-CoV-2 Spike (B.1.351)	Beta
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan

SARS-CoV-2 Panel 8	Spot Location	Lineages	Antigens	Common Designation
Human K15444U (IgG) K15445U (IgM) K15446U (IgA) K15447U (ACE2) Mouse K15487U (IgG) K15488U (IgM) K15489U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	B.1.427; B.1.429; B.1.526.1	SARS-CoV-2 S1 RBD (B.1.427; B.1.429; B.1.526.1)	Epsilon lineages; New York
	Spot 3	A (WT)	SARS-CoV-2 Nucleocapsid	Wuhan
	Spot 4	B.1.525; B.1.526; B.1.618; P.2; R.1	SARS-CoV-2 S1 RBD (B.1.525; B.1.526; B.1.618; P.2; R.1)	Eta; Iota; India; Zeta; Kentucky
	Spot 5	-	BSA	-
	Spot 6	B.1.526.2	SARS-CoV-2 S1 RBD (B.1.526.2)	New York
	Spot 7	-	BSA	-
	Spot 8	B.1.526	SARS-CoV-2 Spike (B.1.526)	Iota
	Spot 9	B.1.429	SARS-CoV-2 Spike (B.1.429)	Epsilon
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan

SARS-CoV-2 Variant Screening Panels

SARS-CoV-2 Panel 9	Spot Location	Lineages	Antigens	Common Designation
Human K15448U (IgG) K15449U (IgM) K15450U (IgA) K15451U (ACE2) Mouse K15490U (IgG) K15491U (IgM) K15492U (IgA)	Spot 1	B.1.427; B.1.429; B.1.526.1	SARS-CoV-2 S1 RBD (L452R)	Epsilon, California, New York
	Spot 2	B.1.351; B.1.351.1	SARS-CoV-2 S1 RBD (K417N, E484K, N501Y)	Beta, Botswana
	Spot 3	B.1.525; B.1.526; B.1.618; P.2; R.1	SARS-CoV-2 S1 RBD (E484K)	Eta, Iota, India, Zeta, Kentucky
	Spot 4	P.1	SARS-CoV-2 S1 RBD (K417T, E484K, N501Y)	Gamma
	Spot 5	B.1.526.2	SARS-CoV-2 S1 RBD (S477N)	New York
	Spot 6	B.1.1.7	SARS-CoV-2 S1 RBD (N501Y)	Alpha
	Spot 7	B.1.1.7+E484K; P.3	SARS-CoV-2 S1 RBD (E484K, N501Y)	U.K., Philippines
	Spot 8	B.1.617; B.1.617.1; B.1.617.3	SARS-CoV-2 S1 RBD (L452R, E484Q)	Kappa, India
	Spot 9	B.1.214.2	SARS-CoV-2 S1 RBD (Q414K, N450K)	Belgium
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan



SARS-CoV-2 Panel 11	Spot Location	Lineages	Antigens	Common Designation
Human K15455U (IgG) K15456U (IgM) K15457U (IgA) K15458U (ACE2) Mouse K15495U (IgG) K15496U (IgM) K15497U (IgA)	Spot 1	B.1.427; B.1.429; B.1.526.1	SARS-CoV-2 S1 RBD (L452R)	Epsilon, California, New York
	Spot 2	B.1.351; B.1.351.1	SARS-CoV-2 S1 RBD (K417N, E484K, N501Y)	Beta, Botswana
	Spot 3	B.1.525; B.1.526; B.1.618; P.2; R.1	SARS-CoV-2 S1 RBD (E484K)	Eta, Iota, India, Zeta, Kentucky
	Spot 4	P.1	SARS-CoV-2 S1 RBD (K417T, E484K, N501Y)	Gamma
	Spot 5	B.1.526.2	SARS-CoV-2 S1 RBD (S477N)	New York
	Spot 6	B.1.1.7	SARS-CoV-2 S1 RBD (N501Y)	Alpha
	Spot 7	B.1.1.7+E484K; P.3	SARS-CoV-2 S1 RBD (E484K, N501Y)	U.K., Philippines
	Spot 8	B.1.617; B.1.617.1; B.1.617.3	SARS-CoV-2 S1 RBD (L452R, E484Q)	Kappa, India
	Spot 9	AY.3; AY.4; AY.4.2; AY.5; AY.6; AY.7; AY.12; AY.14; B.1.617.2; B.1.617.2+Δ144	SARS-CoV-2 S1 RBD (L452R, T478K)	Delta sublineages, Vietnam
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan

SARS-CoV-2 Panel 12	Spot Location	Lineages	Antigens	Common Designation
Human K15459U (IgG) K15460U (IgM) K15461U (IgA) K15462U (ACE2) Mouse K15503U (IgG) K15504U (IgM) K15505U (IgA)	Spot 1	A.23.1	SARS-CoV-2 S1 RBD (V367F)	Uganda
	Spot 2	C.37	SARS-CoV-2 S1 RBD (L452Q, F490S)	Lambda
	Spot 3	B.1.525; B.1.526; B.1.618; P.2; R.1	SARS-CoV-2 S1 RBD (E484K)	Eta, Iota, India, Zeta, Kentucky
	Spot 4	BV-1	SARS-CoV-2 S1 RBD (Q493R, N501Y)	Texas BV-1
	Spot 5	B.1.1.519	SARS-CoV-2 S1 RBD (T478K)	Mexico/Texas BV-2
	Spot 6	A.VOI.V2	SARS-CoV-2 S1 RBD (R346K, T478R, E484K)	Tanzania
	Spot 7	B.1.1.7+E484K; P.3	SARS-CoV-2 S1 RBD (E484K, N501Y)	U.K., Philippines
	Spot 8	B.1.617; B.1.617.1; B.1.617.3	SARS-CoV-2 S1 RBD (L452R, E484Q)	Kappa, India
	Spot 9	AY.3; AY.4; AY.4.2; AY.5; AY.6; AY.7; AY.12; AY.14; B.1.617.2; B.1.617.2+Δ144	SARS-CoV-2 S1 RBD (L452R, T478K)	Delta sublineages, Vietnam
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan

SARS-CoV-2 Panel 13	Spot Location	Lineages	Antigens	Common Designation
Human K15463U (IgG) K15464U (IgM) K15465U (IgA) K15466U (ACE2) Mouse K15506U (IgG) K15507U (IgM) K15508U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	P.2	SARS-CoV-2 Spike (P.2)	Zeta
	Spot 3	B.1.617.1	SARS-CoV-2 Spike (B.1.617.1)	Kappa
	Spot 4	B.1.617.2	SARS-CoV-2 Spike (B.1.617.2)	Delta sublineage
	Spot 5	B.1.617.3	SARS-CoV-2 Spike (B.1.617.3)	India
	Spot 6	B.1.617	SARS-CoV-2 Spike (B.1.617)	India
	Spot 7	P.1	SARS-CoV-2 Spike (P.1)	Gamma
	Spot 8	B.1.1.7	SARS-CoV-2 Spike (B.1.1.7)	Alpha
	Spot 9	B.1.351	SARS-CoV-2 Spike (B.1.351)	Beta
	Spot 10	B.1.526.1	SARS-CoV-2 Spike (B.1.526.1)	New York

SARS-CoV-2 Panel 14	Spot Location	Lineages	Antigens	Common Designation
Human K15468U (IgG) K15469U (IgM) K15470U (IgA) K15471U (ACE2) Mouse K15509U (IgG) K15510U (IgM) K15511U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	A.23.1	SARS-CoV-2 Spike (A.23.1)	Uganda
	Spot 3	A.VOI.V2	SARS-CoV-2 Spike (A.VOI.V2)	Tanzania
	Spot 4	B.1.617.2; AY.3; AY.5; AY.6; AY.7; AY.14	SARS-CoV-2 Spike (B.1.617.2; AY.3; AY.5; AY.6; AY.7; AY.14) Alt Seq 1	Delta sublineages
	Spot 5	C.37	SARS-CoV-2 Spike (C.37)	Lambda
	Spot 6	R.1	SARS-CoV-2 Spike (R.1)	Kentucky
	Spot 7	P.3	SARS-CoV-2 Spike (P.3)	Philippines
	Spot 8	B.1.525	SARS-CoV-2 Spike (B.1.525)	Eta
	Spot 9	B.1.1.519	SARS-CoV-2 Spike (B.1.1.519)	Mexico/Texas BV-2
	Spot 10	BV-1	SARS-CoV-2 Spike (BV-1)	Texas BV-1

Note: Alternative S-GENE mutations for Spike of B.1.617.2 are listed as "Alt Seq #."



SARS-CoV-2 Panel 15	Spot Location	Lineages	Antigens	Common Designation
Human K15499U (IgG) K15500U (IgM) K15501U (IgA) K15502U (ACE2) Mouse K15512U (IgG) K15513U (IgM) K15514U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	AY.1	SARS-CoV-2 Spike (AY.1)	Delta sublineage
	Spot 3	AY.2	SARS-CoV-2 Spike (AY.2)	Delta sublineage
	Spot 4	B.1.617.2+ΔY144	SARS-CoV-2 Spike (B.1.617.2+ΔY144)	Vietnam
	Spot 5	B.1.620	SARS-CoV-2 Spike (B.1.620)	Europe
	Spot 6	B.1.258.17	SARS-CoV-2 Spike (B.1.258.17)	Europe
	Spot 7	B.1.466.2	SARS-CoV-2 Spike (B.1.466.2)	Indonesia
	Spot 8	B.1.1.7+E484K	SARS-CoV-2 Spike (B.1.1.7+E484K)	U.K.
	Spot 9	B.1.351.1	SARS-CoV-2 Spike (B.1.351.1)	Botswana
	Spot 10	B.1.618	SARS-CoV-2 Spike (B.1.618)	India

SARS-CoV-2 Panel 16	Spot Location	Lineages	Antigens	Common Designation
Human K15516U (IgG) K15517U (IgM) K15518U (IgA) K15519U (ACE2) Mouse K15520U (IgG) K15521U (IgM) K15522U (IgA)	Spot 1	AY.1; AY.2	SARS-CoV-2 S1 RBD (K417N, L452R, T478K)	Delta sublineages
	Spot 2	B.1.351; B.1.351.1	SARS-CoV-2 S1 RBD (K417N, E484K, N501Y)	Beta, Botswana
	Spot 3	B.1.525; B.1.526; B.1.618; P.2; R.1	SARS-CoV-2 S1 RBD (E484K)	Eta, Iota, India, Zeta, Kentucky
	Spot 4	B.1.620	SARS-CoV-2 S1 RBD (S477N, E484K)	Europe
	Spot 5	-	BSA	-
	Spot 6	-	BSA	-
	Spot 7	B.1.1.7+E484K; P.3	SARS-CoV-2 S1 RBD (E484K, N501Y)	U.K., Philippines
	Spot 8	B.1.258.17; B.1.466.2	SARS-CoV-2 S1 RBD (N439K)	Indonesia
	Spot 9	AY.3; AY.4; AY.4.2; AY.5; AY.6; AY.7; AY.12; AY.14; B.1.617.2; B.1.617.2+Δ144	SARS-CoV-2 S1 RBD (L452R, T478K)	Delta sublineages, Vietnam
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan

SARS-CoV-2 Panel 17	Spot Location	Lineages	Antigens	Common Designation
Human K15524U (IgG) K15525U (IgM) K15526U (IgA) K15527U (ACE2) Mouse K15528U (IgG) K15529U (IgM) K15530U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	B.1	SARS-CoV-2 Spike (D614G)	-
	Spot 3	A (WT)	SARS-CoV-2 Nucleocapsid	Wuhan
	Spot 4	B.1.617.2; AY.3; AY.5; AY.6; AY.7; AY.14	SARS-CoV-2 Spike (B.1.617.2; AY.3; AY.5; AY.6; AY.7; AY.14) Alt Seq 1	Delta sublineages
	Spot 5	-	BSA	-
	Spot 6	-	BSA	-
	Spot 7	P.1	SARS-CoV-2 Spike (P.1)	Gamma
	Spot 8	B.1.1.7	SARS-CoV-2 Spike (B.1.1.7)	Alpha
	Spot 9	B.1.351	SARS-CoV-2 Spike (B.1.351)	Beta
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan

Note: Alternative S-GENE mutations for Spike of B.1.617.2 are listed as "Alt Seq #."

SARS-CoV-2 Panel 18	Spot Location	Lineages	Antigens	Common Designation
Human K15532U (IgG) K15533U (IgM) K15534U (IgA) K15535U (ACE2) Mouse K15536U (IgG) K15537U (IgM) K15538U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	P.2	SARS-CoV-2 Spike (P.2)	Zeta
	Spot 3	B.1.617.1	SARS-CoV-2 Spike (B.1.617.1)	Kappa
	Spot 4	B.1.617.2; AY.4	SARS-CoV-2 Spike (B.1.617.2; AY.4) Alt Seq 2	Delta sublineages
	Spot 5	B.1.617.3	SARS-CoV-2 Spike (B.1.617.3)	India
	Spot 6	B.1.617	SARS-CoV-2 Spike (B.1.617)	India
	Spot 7	P.1	SARS-CoV-2 Spike (P.1)	Gamma
	Spot 8	B.1.1.7	SARS-CoV-2 Spike (B.1.1.7)	Alpha
	Spot 9	B.1.351	SARS-CoV-2 Spike (B.1.351)	Beta
	Spot 10	B.1.526.1	SARS-CoV-2 Spike (B.1.526.1)	New York

Note: Alternative S-GENE mutations for Spike of B.1.617.2 are listed as "Alt Seq #."



SARS-CoV-2 Panel 19	Spot Location	Lineages	Antigens	Common Designation
Human K15540U (IgG) K15541U (IgM) K15542U (IgA) K15543U (ACE2) Mouse K15544U (IgG) K15545U (IgM) K15546U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	B.1.621	SARS-CoV-2 Spike (B.1.621)	Mu
	Spot 3	AY.2	SARS-CoV-2 Spike (AY.2) Alt Seq 1	Delta sublineage
	Spot 4	B.1.617.2; AY.4	SARS-CoV-2 Spike (B.1.617.2; AY.4) Alt Seq 2	Delta sublineages
	Spot 5	C.37	SARS-CoV-2 Spike (C.37)	Lambda
	Spot 6	AY.12	SARS-CoV-2 Spike (AY.12)	Delta sublineage
	Spot 7	P.1	SARS-CoV-2 Spike (P.1)	Gamma
	Spot 8	AY.1	SARS-CoV-2 Spike (AY.1) Alt Seq 1	Delta sublineage
	Spot 9	B.1.351	SARS-CoV-2 Spike (B.1.351)	Beta
	Spot 10	B.1.617.2; AY.3; AY.5; AY.6; AY.7; AY.14	SARS-CoV-2 Spike (B.1.617.2; AY.3; AY.5; AY.6; AY.7; AY.14) Alt Seq 1	Delta sublineages

Note: Alternative S-GENE mutations for Spike of AY.1, AY.2, and B.1.617.2 are listed as "Alt Seq #."

SARS-CoV-2 Panel 20	Spot Location	Lineages	Antigens	Common Designation
Human K15551U (IgG) K15552U (IgM) K15553U (IgA) K15554U (ACE2) Mouse K15555U (IgG) K15556U (IgM) K15557U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	B.1.617.2 +4	SARS-CoV-2 Spike (B.1.617.2 +4)	Delta +4
	Spot 3	B.1.617.2 +3	SARS-CoV-2 Spike (B.1.617.2 +3)	Delta +3
	Spot 4	B.1.617.2; AY.4	SARS-CoV-2 Spike (B.1.617.2; AY.4) Alt Seq 2	Delta sublineages
	Spot 5	B.1.617.2 +2	SARS-CoV-2 Spike (B.1.617.2 +2)	Delta +2
	Spot 6	B.1.617.2 +1	SARS-CoV-2 Spike (B.1.617.2 +1)	Delta +1
	Spot 7	P.1	SARS-CoV-2 Spike (P.1)	Gamma
	Spot 8	B.1.1.7	SARS-CoV-2 Spike (B.1.1.7)	Alpha
	Spot 9	B.1.351	SARS-CoV-2 Spike (B.1.351)	Beta
	Spot 10	B.1.617.2; AY.3; AY.5; AY.6; AY.7; AY.14	SARS-CoV-2 Spike (B.1.617.2; AY.3; AY.5; AY.6; AY.7; AY.14) Alt Seq 1	Delta sublineages

Note: Alternative S-GENE mutations for Spike of B.1.617.2 are listed as "Alt Seq #."

SARS-CoV-2 Panel 22	Spot Location	Lineages	Antigens	Common Designation
Human K15559U (IgG) K15560U (IgM) K15561U (IgA) K15562U (ACE2) Mouse K15563U (IgG) K15564U (IgM) K15565U (IgA)	Spot 1	B.1.1.529; BA.1; BA.1.15	SARS-CoV-2 S1 RBD (G339D, S371L, S373P, S375F, K417N, N440K, G446S, S477N, T478K, E484A, Q493R, G496S, Q498R, N501Y, Y505H)	Omicron sublineages
	Spot 2	B.1.351; B.1.351.1	SARS-CoV-2 S1 RBD (K417N, E484K, N501Y)	Beta, Botswana
	Spot 3	-	BSA	-
	Spot 4	P.1	SARS-CoV-2 S1 RBD (K417T, E484K, N501Y)	Gamma
	Spot 5	-	BSA	-
	Spot 6	B.1.1.7	SARS-CoV-2 S1 RBD (N501Y)	Alpha
	Spot 7	-	BSA	-
	Spot 8	-	BSA	-
	Spot 9	AY.3; AY.4; AY.4.2; AY.5; AY.6; AY.7; AY.12; AY.14; B.1.617.2; B.1.617.2+Δ144	SARS-CoV-2 S1 RBD (L452R, T478K)	Delta sublineages, Vietnam
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan

SARS-CoV-2 Panel 23	Spot Location	Lineages	Antigens	Common Designation
Human K15567U (IgG) K15568U (IgM) K15569U (IgA) K15570U (ACE2) Mouse K15571U (IgG) K15572U (IgM) K15573U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	B.1.1.529; BA.1; BA.1.15	SARS-CoV-2 Spike (B.1.1.529; BA.1; BA.1.15)	Omicron sublineages
	Spot 3	AY.4.2	SARS-CoV-2 Spike (AY.4.2)	Delta sublineage
	Spot 4	B.1.617.2; AY.4	SARS-CoV-2 Spike (B.1.617.2; AY.4) Alt Seq 2	Delta sublineages
	Spot 5	-	BSA	-
	Spot 6	-	BSA	-
	Spot 7	P.1	SARS-CoV-2 Spike (P.1)	Gamma
	Spot 8	B.1.1.7	SARS-CoV-2 Spike (B.1.1.7)	Alpha
	Spot 9	B.1.351	SARS-CoV-2 Spike (B.1.351)	Beta
	Spot 10	B.1.617.2; AY.3; AY.5; AY.6; AY.7; AY.14	SARS-CoV-2 Spike (B.1.617.2; AY.3; AY.5; AY.6; AY.7; AY.14) Alt Seq 1	Delta sublineages

Note: Alternative S-GENE mutations for Spike of B.1.617.2 are listed as "Alt Seq #."



SARS-CoV-2 Panel 24	Spot Location	Lineages	Antigens	Common Designation
Human K15575U (IgG) K15576U (IgM) K15577U (IgA) K15578U (ACE2) Mouse K15579U (IgG) K15580U (IgM) K15581U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	B.1.1.529; BA.1; BA.1.15	SARS-CoV-2 Spike (B.1.1.529; BA.1; BA.1.15)	Omicron sublineages
	Spot 3	A (WT)	SARS-CoV-2 Nucleocapsid	Wuhan
	Spot 4	B.1.617.2; AY.4	SARS-CoV-2 Spike (B.1.617.2; AY.4) Alt Seq 2	Delta sublineages
	Spot 5	-	BSA	-
	Spot 6	-	BSA	-
	Spot 7	P.1	SARS-CoV-2 Spike (P.1)	Gamma
	Spot 8	B.1.1.7	SARS-CoV-2 Spike (B.1.1.7)	Alpha
	Spot 9	B.1.351	SARS-CoV-2 Spike (B.1.351)	Beta
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan

Note: Alternative S-GENE mutations for Spike of B.1.617.2 are listed as "Alt Seq #."

SARS-CoV-2 Panel 25	Spot Location	Lineages	Antigens	Common Designation
Human K15583U (IgG) K15584U (IgM) K15585U (IgA) K15586U (ACE2) Mouse K15587U (IgG) K15588U (IgM) K15589U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	B.1.1.529; BA.1; BA.1.15	SARS-CoV-2 Spike (B.1.1.529; BA.1; BA.1.15)	Omicron sublineages
	Spot 3	BA.2; BA.2.1; BA.2.2; BA.2.3; BA.2.5; BA.2.6; BA.2.7; BA.2.8; BA.2.10; BA.2.12	SARS-CoV-2 Spike (BA.2; BA.2.1; BA.2.2; BA.2.3; BA.2.5; BA.2.6; BA.2.7; BA.2.8; BA.2.10; BA.2.12)	Omicron sublineages
	Spot 4	B.1.617.2; AY.4	SARS-CoV-2 Spike (B.1.617.2; AY.4) Alt Seq 2	Delta sublineages
	Spot 5	BA.3	SARS-CoV-2 Spike (BA.3)	Omicron sublineage
	Spot 6	BA.1+R346K; BA.1.1; BA.1.1.15	SARS-CoV-2 Spike (BA.1+R346K; BA.1.1; BA.1.1.15)	Omicron sublineages
	Spot 7	BA.1+L452R	SARS-CoV-2 Spike (BA.1+L452R)	Omicron sublineage
	Spot 8	B.1.1.7	SARS-CoV-2 Spike (B.1.1.7)	Alpha
	Spot 9	B.1.351	SARS-CoV-2 Spike (B.1.351)	Beta
	Spot 10	B.1.640.2	SARS-CoV-2 Spike (B.1.640.2)	France (IHU)

Note: Alternative S-GENE mutations for Spike of B.1.617.2 are listed as "Alt Seq #."

SARS-CoV-2 Panel 26	Spot Location	Lineages	Antigens	Common Designation
Human K15593U (IgG) K15594U (IgM) K15595U (IgA) K15596U (ACE2) Mouse K15597U (IgG) K15598U (IgM) K15599U (IgA)	Spot 1	B.1.1.529; BA.1; BA.1.15	SARS-CoV-2 S1 RBD (G339D, S371L, S373P, S375F, K417N, N440K, G446S, S477N, T478K, E484A, Q493R, G496S, Q498R, N501Y, Y505H)	Omicron sublineages
	Spot 2	B.1.351; B.1.351.1	SARS-CoV-2 S1 RBD (K417N, E484K, N501Y)	Beta, Botswana
	Spot 3	BA.2; BA.2.1; BA.2.2; BA.2.3; BA.2.5; BA.2.6; BA.2.7; BA.2.8; BA.2.10; BA.2.10.1; BA.2.12	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H)	Omicron sublineages
	Spot 4	P.1	SARS-CoV-2 S1 RBD (K417T, E484K, N501Y)	Gamma
	Spot 5	-	BSA	-
	Spot 6	B.1.1.7	SARS-CoV-2 S1 RBD (N501Y)	Alpha
	Spot 7	-	BSA	-
	Spot 8	BA.1.1; BA.1.1.15	SARS-CoV-2 S1 RBD (G339D, R346K, S371L, S373P, S375F, K417N, N440K, G446S, S477N, T478K, E484A, Q493R, G496S, Q498R, N501Y, Y505H)	Omicron sublineages
	Spot 9	AY.3; AY.4; AY.4.2; AY.5; AY.6; AY.7; AY.12; AY.14; B.1.617.2; B.1.617.2+Δ144	SARS-CoV-2 S1 RBD (L452R, T478K)	Delta sublineages, Vietnam
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan



SARS-CoV-2 Panel 27	Spot Location	Lineages	Antigens	Common Designation
Human K15606U (IgG) K15607U (IgM) K15608U (IgA) K15609U (ACE2) Mouse K15610U (IgG) K15611U (IgM) K15612U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	BA.2.12.1	SARS-CoV-2 Spike (BA.2.12.1)	Omicron sublineage
	Spot 3	BA.2; BA.2.1; BA.2.2; BA.2.3; BA.2.5; BA.2.6; BA.2.7; BA.2.8; BA.2.10; BA.2.12	SARS-CoV-2 Spike (BA.2; BA.2.1; BA.2.2; BA.2.3; BA.2.5; BA.2.6; BA.2.7; BA.2.8; BA.2.10; BA.2.12)	Omicron sublineages
	Spot 4	B.1.617.2; AY.4	SARS-CoV-2 Spike (B.1.617.2; AY.4) Alt Seq 2	Delta sublineages
	Spot 5	BA.3	SARS-CoV-2 Spike (BA.3)	Omicron sublineage
	Spot 6	BA.2+L452M	SARS-CoV-2 Spike (BA.2+L452M)	Omicron sublineage
	Spot 7	BA.2+L452R	SARS-CoV-2 Spike (BA.2+L452R)	Omicron sublineage
	Spot 8	BA.4	SARS-CoV-2 Spike (BA.4)	Omicron sublineage
	Spot 9	B.1.351	SARS-CoV-2 Spike (B.1.351)	Beta
	Spot 10	BA.5	SARS-CoV-2 Spike (BA.5)	Omicron sublineage

Note: Alternative S-GENE mutations for Spike of B.1.617.2 are listed as "Alt Seq #."

SARS-CoV-2 Panel 28	Spot Location	Lineages	Antigens	Common Designation
Human K15614U (IgG) K15615U (IgM) K15616U (IgA) K15617U (ACE2) Mouse K15618U (IgG) K15619U (IgM) K15620U (IgA)	Spot 1	BA.2.12.1	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452Q, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H)	Omicron sublineage
	Spot 2	B.1.351; B.1.351.1	SARS-CoV-2 S1 RBD (K417N, E484K, N501Y)	Beta, Botswana
	Spot 3	BA.2; BA.2.1; BA.2.2; BA.2.3; BA.2.5; BA.2.6; BA.2.7; BA.2.8; BA.2.10; BA.2.10.1; BA.2.12	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H)	Omicron sublineages
	Spot 4	BA.2+L452M	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452M, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H)	Omicron sublineage
	Spot 5	BA.2+L452R	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H)	Omicron sublineage
	Spot 6	B.1.1.7	SARS-CoV-2 S1 RBD (N501Y)	Alpha
	Spot 7	BA.4; BA.5	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H)	Omicron sublineages
	Spot 8	BA.3	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, D405N, K417N, N440K, G446S, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H)	Omicron sublineage
	Spot 9	AY.3; AY.4; AY.4.2; AY.5; AY.6; AY.7; AY.12; AY.14; B.1.617.2; B.1.617.2+Δ144	SARS-CoV-2 S1 RBD (L452R, T478K)	Delta sublineages, Vietnam
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan

SARS-CoV-2 Panel 29	Spot Location	Lineages	Antigens	Common Designation
Human K15624U (IgG) K15625U (IgM) K15626U (IgA) K15627U (ACE2) Mouse K15628U (IgG) K15629U (IgM) K15630U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	BA.2.12.1	SARS-CoV-2 Spike (BA.2.12.1)	Omicron sublineage
	Spot 3	BA.2; BA.2.1; BA.2.2; BA.2.3; BA.2.5; BA.2.6; BA.2.7; BA.2.8; BA.2.10; BA.2.12	SARS-CoV-2 Spike (BA.2; BA.2.1; BA.2.2; BA.2.3; BA.2.5; BA.2.6; BA.2.7; BA.2.8; BA.2.10; BA.2.12)	Omicron sublineages
	Spot 4	B.1.617.2; AY.4	SARS-CoV-2 Spike (B.1.617.2; AY.4) Alt Seq 2	Delta sublineages
	Spot 5	-	BSA	-
	Spot 6	-	BSA	-
	Spot 7	BA.2.75	SARS-CoV-2 Spike (BA.2.75)	Omicron sublineage
	Spot 8	BA.4	SARS-CoV-2 Spike (BA.4)	Omicron sublineage
	Spot 9	B.1.351	SARS-CoV-2 Spike (B.1.351)	Beta
	Spot 10	BA.5	SARS-CoV-2 Spike (BA.5)	Omicron sublineage

Note: Alternative S-GENE mutations for Spike of B.1.617.2 are listed as "Alt Seq #."



SARS-CoV-2 Panel 30	Spot Location	Lineages	Antigens	Common Designation
Human K15632U (IgG) K15633U (IgM) K15634U (IgA) K15635U (ACE2) Mouse K15636U (IgG) K15637U (IgM) K15638U (IgA)	Spot 1	BA.2.12.1	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452Q, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H)	Omicron sublineage
	Spot 2	B.1.351; B.1.351.1	SARS-CoV-2 S1 RBD (K417N, E484K, N501Y)	Beta, Botswana
	Spot 3	BA.2; BA.2.1; BA.2.2; BA.2.3; BA.2.5; BA.2.6; BA.2.7; BA.2.8; BA.2.10; BA.2.10.1; BA.2.12	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H)	Omicron sublineages
	Spot 4	-	BSA	-
	Spot 5	-	BSA	-
	Spot 6	B.1.1.7	SARS-CoV-2 S1 RBD (N501Y)	Alpha
	Spot 7	BA.4; BA.5	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H)	Omicron sublineages
	Spot 8	BA.2.75	SARS-CoV-2 S1 RBD (G339H, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, G446S, N460K, S477N, T478K, E484A, Q498R, N501Y, Y505H)	Omicron sublineage
	Spot 9	AY.3; AY.4; AY.4.2; AY.5; AY.6; AY.7; AY.12; AY.14; B.1.617.2; B.1.617.2+Δ144	SARS-CoV-2 S1 RBD (L452R, T478K)	Delta sublineages, Vietnam
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan

SARS-CoV-2 Panel 31	Spot Location	Lineages	Antigens	Common Designation
Human K15642U (IgG) K15643U (IgM) K15644U (IgA) K15645U (ACE2) Mouse K15646U (IgG) K15647U (IgM) K15648U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	-	BSA	-
	Spot 3	A (WT)	SARS-CoV-2 Nucleocapsid	Wuhan
	Spot 4	-	BSA	-
	Spot 5	-	BSA	-
	Spot 6	-	BSA	-
	Spot 7	-	BSA	-
	Spot 8	BA.5	SARS-CoV-2 Spike (BA.5)	Omicron sublineage
	Spot 9	BA.4; BA.5	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H)	Omicron sublineages
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan

SARS-CoV-2 Panel 32	Spot Location	Lineages	Antigens	Common Designation
Human K15668U (IgG) K15669U (IgM) K15670U (IgA) K15671U (ACE2) Mouse K15672U (IgG) K15673U (IgM) K15674U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	B.1.1.529; BA.1; BA.1.15	SARS-CoV-2 Spike (B.1.1.529; BA.1; BA.1.15)	Omicron sublineages
	Spot 3	XBB.1	SARS-CoV-2 Spike (XBB.1)	Omicron sublineage
	Spot 4	BF.7	SARS-CoV-2 Spike (BF.7)	Omicron sublineage
	Spot 5	BA.2.75.2	SARS-CoV-2 Spike (BA.2.75.2)	Omicron sublineage
	Spot 6	BQ.1.1	SARS-CoV-2 Spike (BQ.1.1)	Omicron sublineage
	Spot 7	BA.2.75	SARS-CoV-2 Spike (BA.2.75)	Omicron sublineage
	Spot 8	BA.4.6	SARS-CoV-2 Spike (BA.4.6)	Omicron sublineage
	Spot 9	BQ.1	SARS-CoV-2 Spike (BQ.1)	Omicron sublineage
	Spot 10	BA.5	SARS-CoV-2 Spike (BA.5)	Omicron sublineage



SARS-CoV-2 Panel 33	Spot Location	Lineages	Antigens	Common Designation
Human K15676U (IgG) K15677U (IgM) K15678U (IgA) K15679U (ACE2) Mouse K15680U (IgG) K15681U (IgM) K15682U (IgA)	Spot 1	B.1.1.529; BA.1; BA.1.15	SARS-CoV-2 S1 RBD (G339D, S371L, S373P, S375F, K417N, N440K, G446S, S477N, T478K, E484A, Q493R, G496S, Q498R, N501Y, Y505H)	Omicron sublineages
	Spot 2	BQ.1.1	SARS-CoV-2 S1 RBD (G339D, R346T, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, K444T, L452R, N460K, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H)	Omicron sublineage
	Spot 3	BA.2.75.2	SARS-CoV-2 S1 RBD (G339H, R346T, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, G446S, N460K, S477N, T478K, E484A, F486S, Q498R, N501Y, Y505H)	Omicron sublineage
	Spot 4	BA.4.6; BF.7	SARS-CoV-2 S1 RBD (G339D, R346T, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H)	Omicron sublineages
	Spot 5	-	BSA	-
	Spot 6	XBB.1	SARS-CoV-2 S1 RBD (G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, N460K, S477N, T478K, E484A, F486S, F490S, Q498R, N501Y, Y505H)	Omicron sublineage
	Spot 7	BA.4; BA.5	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H)	Omicron sublineages
	Spot 8	BA.2.75	SARS-CoV-2 S1 RBD (G339H, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, G446S, N460K, S477N, T478K, E484A, Q498R, N501Y, Y505H)	Omicron sublineage
	Spot 9	BQ.1	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, K444T, L452R, N460K, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H)	Omicron sublineage
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan

SARS-CoV-2 Panel 34	Spot Location	Lineages	Antigens	Common Designation
Human K15690U (IgG) K15691U (IgM) K15693U (ACE2) Mouse K15694U (IgG) K15695U (IgM) K15696U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	B.1.1.529; BA.1; BA.1.15	SARS-CoV-2 Spike (B.1.1.529; BA.1; BA.1.15)	Omicron sublineages
	Spot 3	XBB.1	SARS-CoV-2 Spike (XBB.1)	Omicron sublineage
	Spot 4	BF.7	SARS-CoV-2 Spike (BF.7)	Omicron sublineage
	Spot 5	XBB.1.5	SARS-CoV-2 Spike (XBB.1.5)	Omicron sublineage
	Spot 6	BQ.1.1	SARS-CoV-2 Spike (BQ.1.1)	Omicron sublineage
	Spot 7	BA.2.75	SARS-CoV-2 Spike (BA.2.75)	Omicron sublineage
	Spot 8	BN.1	SARS-CoV-2 Spike (BN.1)	Omicron sublineage
	Spot 9	BQ.1	SARS-CoV-2 Spike (BQ.1)	Omicron sublineage
	Spot 10	BA.5	SARS-CoV-2 Spike (BA.5)	Omicron sublineage

SARS-CoV-2 Panel 36	Spot Location	Lineages	Antigens	Common Designation
Human K15715U (IgG) K15716U (ACE2)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	B.1.1.529; BA.1; BA.1.15	SARS-CoV-2 Spike (B.1.1.529; BA.1; BA.1.15)	Omicron sublineages
	Spot 3	A (WT)	SARS-CoV-2 Nucleocapsid	Wuhan
	Spot 4	XBB.1.16.1	SARS-CoV-2 Spike (XBB.1.16.1)	Omicron sublineage
	Spot 5	XBB.1.5	SARS-CoV-2 Spike (XBB.1.5)	Omicron sublineage
	Spot 6	BQ.1.1	SARS-CoV-2 Spike (BQ.1.1)	Omicron sublineage
	Spot 7	XBB.1.16	SARS-CoV-2 Spike (XBB.1.16)	Omicron sublineage
	Spot 8	XBB.2.3	SARS-CoV-2 Spike (XBB.2.3)	Omicron sublineage
	Spot 9	XBB.1	SARS-CoV-2 Spike (XBB.1)	Omicron sublineage
	Spot 10	BA.5	SARS-CoV-2 Spike (BA.5)	Omicron sublineage



SARS-CoV-2 Panel 37	Spot Location	Lineages	Antigens	Common Designation
Human K15721U (IgG) K15722U (ACE2)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	FL.1.5.1	SARS-CoV-2 Spike (FL.1.5.1)	Omicron sublineage
	Spot 3	A (WT)	SARS-CoV-2 Nucleocapsid	Wuhan
	Spot 4	BA.2.86	SARS-CoV-2 Spike (BA.2.86)	Omicron sublineage
	Spot 5	XBB.1.5	SARS-CoV-2 Spike (XBB.1.5)	Omicron sublineage
	Spot 6	EG.5.1	SARS-CoV-2 Spike (EG.5.1)	Omicron sublineage
	Spot 7	XBB.1.16	SARS-CoV-2 Spike (XBB.1.16)	Omicron sublineage
	Spot 8	XBB.2.3	SARS-CoV-2 Spike (XBB.2.3)	Omicron sublineage
	Spot 9	XBB.1.16.6	SARS-CoV-2 Spike (XBB.1.16.6)	Omicron sublineage
	Spot 10	BA.5	SARS-CoV-2 Spike (BA.5)	Omicron sublineage

NEW!

SARS-CoV-2 Panel 38	Spot Location	Lineages	Antigens	Common Designation
Human K15725U (IgG) K15726U (IgA) K15727U (ACE2)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan
	Spot 2	FL.1.5.1	SARS-CoV-2 Spike (FL.1.5.1)	Omicron sublineage
	Spot 3	A (WT)	SARS-CoV-2 Nucleocapsid	Wuhan
	Spot 4	BA.2.86	SARS-CoV-2 Spike (BA.2.86)	Omicron sublineage
	Spot 5	XBB.1.5	SARS-CoV-2 Spike (XBB.1.5)	Omicron sublineage
	Spot 6	EG.5.1	SARS-CoV-2 Spike (EG.5.1)	Omicron sublineage
	Spot 7	JN.1	SARS-CoV-2 Spike (JN.1)	Omicron sublineage
	Spot 8	JD.1.1	SARS-CoV-2 Spike (JD.1.1)	Omicron sublineage
	Spot 9	HV.1	SARS-CoV-2 Spike (HV.1)	Omicron sublineage
	Spot 10	BA.5	SARS-CoV-2 Spike (BA.5)	Omicron sublineage

SARS-CoV-2 Key Variant Focus Panels

SARS-CoV-2 Key Variant Spike Panel 1	Spot Location	Lineages	Antigens	Common Designation
Human K15651U (IgG) K15652U (IgM) K15653U (IgA) K15654U (ACE2) Mouse K15655U (IgG) K15656U (IgM) K15657U (IgA)	Spot 1	A (WT)	SARS-CoV-2 Spike	Wuhan A (WT)
	Spot 2	BA.2.12.1	SARS-CoV-2 Spike (BA.2.12.1)	Omicron sublineage
	Spot 3	A (WT)	SARS-CoV-2 Nucleocapsid	Wuhan A (WT)
	Spot 4	BA.2.75	SARS-CoV-2 Spike (BA.2.75)	Omicron sublineage
	Spot 5	BA.2; BA.2.1; BA.2.2; BA.2.3; BA.2.5; BA.2.6; BA.2.7; BA.2.8; BA.2.10; BA.2.12	SARS-CoV-2 Spike (BA.2; BA.2.1; BA.2.2; BA.2.3; BA.2.5; BA.2.6; BA.2.7; BA.2.8; BA.2.10; BA.2.12)	Omicron sublineages
	Spot 6	B.1.1.529; BA.1; BA.1.15	SARS-CoV-2 Spike (B.1.1.529; BA.1; BA.1.15)	Omicron sublineages
	Spot 7	B.1.617.2; AY.4	SARS-CoV-2 Spike (B.1.617.2; AY.4) Alt Seq 2	Delta sublineages
	Spot 8	B.1.1.7	SARS-CoV-2 Spike (B.1.1.7)	Alpha
	Spot 9	B.1.351	SARS-CoV-2 Spike (B.1.351)	Beta
	Spot 10	BA.5	SARS-CoV-2 Spike (BA.5)	Omicron sublineage

Note: Alternative S-GENE mutations for Spike of B.1.617.2 are listed as "Alt Seq #."



SARS-CoV-2 Key Variant RBD Panel 1	Spot Location	Lineages	Antigens	Common Designation
Human K15659U (IgG) K15660U (IgM) K15661U (IgA) K15662U (ACE2) Mouse K15663U (IgG) K15664U (IgM) K15665U (IgA)	Spot 1	BA.2.12.1	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452Q, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H)	Omicron sublineage
	Spot 2	B.1.351; B.1.351.1	SARS-CoV-2 S1 RBD (K417N, E484K, N501Y)	Beta, Botswana
	Spot 3	A (WT)	SARS-CoV-2 Nucleocapsid	Wuhan A (WT)
	Spot 4	B.1.1.529; BA.1; BA.1.15	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, S477N, T478K, E484A, Q493R, G496S, Q498R, N501Y, Y505H)	Omicron sublineages
	Spot 5	BA.2; BA.2.1; BA.2.2; BA.2.3; BA.2.5; BA.2.6; BA.2.7; BA.2.8; BA.2.10; BA.2.12	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H)	Omicron sublineages
	Spot 6	B.1.1.7	SARS-CoV-2 S1 RBD (N501Y)	Alpha
	Spot 7	AY.3; AY.4; AY.4.2; AY.5; AY.6; AY.7; AY.12; AY.14; B.1.617.2; B.1.617.2+Δ144	SARS-CoV-2 S1 RBD (L452R, T478K)	Delta sublineages, Vietnam
	Spot 8	BA.2.75	SARS-CoV-2 S1 RBD (G339H, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, G446S, N460K, S477N, T478K, E484A, Q498R, N501Y, Y505H)	Omicron sublineage
	Spot 9	BA.4; BA.5	SARS-CoV-2 S1 RBD (G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H)	Omicron sublineages
	Spot 10	A (WT)	SARS-CoV-2 S1 RBD	Wuhan A (WT)

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