

**Supplementary information**

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**Broadly neutralizing antibodies to SARS-CoV-2 and other human coronaviruses**

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**Supplementary Table S1.** Detailed characteristics of some representative NTD-targeting neutralizing antibodies

nAb	Source	Binding epitope	Interacting residues in S of SARS-CoV-2	Mechanism of neutralization	Neutralizing breadth	Potency (IC <sub>50</sub> )	Refs
<b>4A8</b>	COVID-19 convalescent	Supersite	145-147, 149, 150, 152, 246, 258	Restrains the conformational changes of Spike	SARS-CoV-2	LV: SARS-CoV-2 0.61 µg/ml	27
<b>COV2-2676</b>	COVID-19 convalescent	Supersite	Around N3(141-156) and N5(246-260) loops of NTD	Unknown	SARS-CoV-2	LV: SARS-CoV-2 0.5 µg/ml	28
<b>COV2-2489</b>	COVID-19 convalescent	Supersite	Around N3(141-156) and N5(246-260) loops of NTD	Unknown	SARS-CoV-2	LV: SARS-CoV-2 0.2 µg/ml	28
<b>4-8</b>	COVID-19 convalescent	Supersite	144-148, 152, 154-158, 160-162, 246-254	Unknown	SARS-CoV-2 WT and Alpha variant	LV: SARS-CoV-2 0.009 µg/ml PV: Alpha ~0.005 µg/ml	29,34
<b>5-24</b>	COVID-19 convalescent	Supersite	144-148, 150, 152, 154-158, 161, 162, 246-254, 256	Unknown	SARS-CoV-2	LV: SARS-CoV-2 0.008 µg/ml	29,34
<b>5-7</b>	COVID-19 convalescent	Non-Supersite	104, 119, 126, 172, 175-177, 190, 192, 207, 224, 227	Restrains the conformational changes of Spike	SARS-CoV-2 WT and variants (Alpha, Beta, BA.1 and BA.3)	LV: SARS-CoV-2 0.033 µg/ml PV: Alpha ~0.25 µg/ml PV: Beta ~2.8 µg/ml PV: BA.1, BA.3 ~0.1 µg/ml	29,34
<b>S2M28</b>	COVID-19 convalescent	Supersite	Around 14-20, 140-158, 245-264	Prevents interaction with an auxiliary receptor, proteolytic activation, or membrane fusion	SARS-CoV-2	LV: SARS-CoV-2 0.011 µg/ml	33
<b>S2X28</b>	COVID-19 convalescent	Supersite	Around 14-20, 140-158, 245-264	Prevents interaction with an auxiliary receptor, proteolytic activation, or membrane fusion	SARS-CoV-2	LV: SARS-CoV-2 0.006 µg/ml	33
<b>S2X333</b>	COVID-19 convalescent	Supersite	Around 14-20, 140-158, 245-264	Prevents interaction with an auxiliary receptor, proteolytic activation, or membrane fusion	SARS-CoV-2	LV: SARS-CoV-2 0.002 µg/ml	33

<b>C1717</b>	COVID-19 convalescent	Non-Supersite	210-218, 278, 282, 286-303	Prevents access to the S2' cleavage site or destabilizes of S1	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma and BA.1)	LV: SARS-CoV-2 0.287µg/ml PV: Alpha 0.149µg/ml LV: Beta 0.118µg/ml PV: Gamma 0.232µg/ml PV:BA.1 0.507µg/ml	40
<b>C1520</b>	COVID-19 convalescent	Non-Supersite	97-102, 122, 149, 152-158, 178-188	Unknown	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta and BA.1)	LV: SARS-CoV-2 0.004µg/ml PV: Alpha 0.06µg/ml LV: Beta 0.002µg/ml PV: Gamma 0.536µg/ml PV: Delta 0.049µg/ml PV:BA.1 0.031µg/ml	40
<b>C1791</b>	COVID-19 convalescent	Non-Supersite	Unknown	Unknown	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta and BA.1)	LV: SARS-CoV-2 0.824µg/ml PV: Alpha 0.839µg/ml PV: Beta 0.249µg/ml PV: Gamma 0.099µg/ml PV: Delta 0.388µg/ml PV: BA.1 0.507µg/ml	40
<b>BLN14</b>	phage-display library of COVID-19 patients	Supersite	Around N3(141-156) loop of NTD	Unknown	SARS-CoV-2 WT and Alpha variant	LV: SARS-CoV-2 0.07 µg/ml LV: Alpha 0.04 µg/ml	37,38
<b>BLN12</b>	phage-display library of COVID-19 patients	Supersite	Around N3(141-156) loop of NTD	Unknown	SARS-CoV-2	LV: SARS-CoV-2 0.07 µg/ml	37,38
<b>ADI-56479</b>	COVID-19 convalescent	Supersite	145, 150, 152	Inhibits the attachment of ACE2	SARS-CoV-2	LV: SARS-CoV-2 144pM	39

PV: pseudovirus; LV: live virus; SARS-CoV-2 WT: the SARS-CoV-2 Wuhan strain or in some cases the D614G variant. If the neutralizing potency was tested against both PV and LV, only IC<sub>50</sub> for neutralizing LV was listed in the table.

**Supplementary Table S2.** Detailed characteristics of some representative RBD-targeting neutralizing antibodies

nAb	Source	Binding epitope	Interacting residues in S of SARS-CoV-2	Mechanism of neutralization	Neutralizing breadth	Potency (IC <sub>50</sub> )	Refs
<b>1-20</b>	COVID-19 convalescent	Class 1	Unknown	Blocks the interaction between RBD and ACE2	SARS-CoV-2	LV: SARS-CoV-2 0.008 µg/ml	29
<b>4-20</b>	COVID-19 convalescent	Class 1	Unknown	Blocks the interaction between RBD and ACE2	SARS-CoV-2	LV: SARS-CoV-2 0.017 µg/ml	29
<b>910-30</b>	COVID-19 convalescent and yeast display	Class 1	415-417, 420, 421, 455, 457, 473, 475, 487, 498, 501, 505	Blocks the interaction between RBD and ACE2	SARS-CoV-2	LV: SARS-CoV-2 0.004 µg/ml	44
<b>CB6</b>	COVID-19 convalescent	Class 1	420, 421, 455-457, 473, 475, 486, 487, 489, 493	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha and Delta)	LV: SARS-CoV-2 0.036 µg/ml PV: Alpha 0.023 µg/ml PV: Delta 0.015 µg/ml	42,48
<b>CB1</b>	COVID-19 convalescent	Class 1	Unknown	Blocks the interaction between RBD and ACE2	SARS-CoV-2	LV: SARS-CoV-2 0.382 µg/ml	42
<b>CT-P59</b>	COVID-19 convalescent	Class 1	449, 450, 453, 456, 484-486, 489, 490, 492-495	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma and Delta)	LV: SARS-CoV-2 0.008 µg/ml PV: Alpha 0.006 µg/ml PV: Beta 0.066 µg/ml PV: Gamma 0.04 µg/ml PV: Delta 0.015 µg/ml	43,48
<b>REGN10933</b>	humanized mice and COVID-19 convalescent	Class 1	Unknown	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha, Delta and BA.2.75)	PV: SARS-CoV-2 0.006 µg/ml PV: Alpha 0.01 µg/ml PV: Delta 0.003 µg/ml PV: BA.2.75 0.278 µg/ml	48,53,62
<b>A23-58.1</b>	COVID-19 convalescent	Class 1	456, 473, 477, 478, 484, 486, 487, 489	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta, BA.1, BA.2 and BA.2.75)	LV: SARS-CoV-2 0.002 µg/ml PV: Alpha 0.002 µg/ml PV: Beta 0.005 µg/ml PV: Gamma 0.002 µg/ml PV: Delta 0.002 µg/ml PV: BA.1, BA.2, BA.2.75 0.01~0.36 µg/ml	48,58,81

<b>S2E12</b>	COVID-19 convalescent	Class 1	Around 486	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta, BA.1, BA.2 and BA.2.75)	LV: SARS-CoV-2, 0.004 µg/ml LV: Alpha, 0.003 µg/ml LV: Beta, 0.002 µg/ml PV: Gamma, 0.002 µg/ml LV: Delta, 0.002 µg/ml PV: BA.1, BA.2, BA.2.75 0.01~0.08 µg/ml	47-49,81
<b>S2K146</b>	COVID-19 convalescent	Class 1	417, 449, 455, 485-487, 489, 492-494, 498, 502	Blocks the interaction between RBD and ACE2	SARS-CoV; SARS-CoV-2 WT and variants (Alpha, Beta, Delta, BA.1, BA.2, BA.3, BA.4/5 and BA.2.75)	PV: SARS-CoV 0.108 µg/ml LV: SARS-CoV-2 0.01 µg/ml LV: Alpha 0.009 µg/ml LV: Beta 0.009 µg/ml LV: Delta 0.008 µg/ml PV: BA.1, BA.2, BA.3, BA.4/5, BA.2.75 0.01~0.22 µg/ml	49,50,80,81
<b>CC12.3</b>	COVID-19 patients	Class 1	415, 417, 420, 421, 453, 455-457, 473, 475, 487, 489	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha and Delta)	PV: SARS-CoV-2 0.012 µg/ml PV: Alpha 0.029 µg/ml PV: Delta 0.012 µg/ml	67,72
<b>B38</b>	COVID-19 convalescent	Class 1	415, 417, 420, 421, 455-457, 473, 475, 487, 489	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and Beta variant	LV: Beta 0.177 µg/ml	73
<b>2-15</b>	COVID-19 convalescent	Class 2	Around 484, 490	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and Alpha variant	LV: SARS-CoV-2 0.001 µg/ml PV: Alpha 0.003 µg/ml	29,32
<b>LY-CoV555</b>	COVID-19 convalescent	Class 2	484, 486, 490, 493, 494	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and Alpha variant	LV: SARS-CoV-2 ~0.02µg/ml PV: Alpha 0.008µg/ml	48,51
<b>COV2-2196</b>	COVID-19 convalescent	Class 2	Around 486, 487	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta, BA.1, BA.2, BA.3 and BA.2.75)	LV: SARS-CoV-2 0.015 µg/ml PV: Alpha 0.003 µg/ml PV: Beta 0.004 µg/ml PV: Gamma 0.002 µg/ml PV: Delta 0.001 µg/ml PV: BA.1, BA.2, BA.3, BA.2.75 0.12~5.6 µg/ml	48,54,61,62,80

<b>C121</b>	COVID-19 convalescent	Class 2	Unknown	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and Alpha variant	LV: SARS-CoV-2 0.002 µg/ml PV: Alpha ~0.001 µg/ml	32,74
<b>C144</b>	COVID-19 convalescent	Class 2	Unknown	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and Alpha variant	LV: SARS-CoV-2 0.003 µg/ml PV: Alpha ~0.006 µg/ml	48,74
<b>A19-46.1</b>	COVID-19 convalescent	Class 2	Around 449, 450, 452	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha, Beta, and Gamma)	LV: SARS-CoV-2 0.005 µg/ml PV: Alpha 0.039 µg/ml PV: Beta 0.057 µg/ml PV: Gamma 0.04 µg/ml	48,58
<b>P2B-2F6</b>	COVID-19 convalescent	Class 2	444, 446-450, 452, 483-485, 490, 494	Blocks the interaction between RBD and ACE2	SARS-CoV-2	LV: SARS-CoV-2 0.41 µg/ml	77
<b>S309</b>	SARS-CoV convalescent	Class 3	334, 337, 346, 356	Leads to S trimer cross-linking, steric hindrance or aggregates virions	SARS-CoV; SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta, BA.1, BA.2, BA.3 BA.4/5 and BA.2.75)	LV: SARS-CoV 0.12 µg/ml LV: SARS-CoV-2 0.079 µg/ml PV: Alpha 0.031 µg/ml PV: Beta 0.028 µg/ml PV: Gamma 0.042 µg/ml PV: Delta 0.045 µg/ml PV: BA.1, BA.2, BA.3, BA.4/5, BA.2.75 0.1~1 µg/ml	36,48,56,61,62
<b>LY-CoV1404</b>	COVID-19 convalescent	Class 3	345, 346, 439-441, 443-450, 498-502	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta, BA.1, BA.2, BA.3, BA.4/5 and BA.2.75)	LV: SARS-CoV-2 0.011 µg/ml LV: Alpha 0.004 µg/ml LV: Beta 0.007 µg/ml PV: Gamma 0.012 µg/ml LV: Delta 0.008 µg/ml PV: BA.1, BA.2, BA.3, BA.4/5, BA.2.75 ~0.002 µg/ml	36,48,57,61,62
<b>COV2-2130</b>	COVID-19 convalescent	Class 3	Around 444, 447	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta, BA.1, BA.2, BA.3, BA.4/5 and BA.2.75)	LV: SARS-CoV-2 0.107 µg/ml PV: Alpha 0.014 µg/ml PV: Beta 0.005 µg/ml PV: Gamma 0.014 µg/ml PV: Delta 0.025 µg/ml PV: BA.1, BA.2, BA.3, BA.4/5, BA.2.75 0.01~5.85 µg/ml	48,54,61,62,80

<b>REGN10987</b>	humanized mice and COVID-19 convalescent	Class 3	Unknown	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta, BA.1, BA.2 and BA.4/5)	PV: SARS-CoV-2 0.02 µg/ml PV: Alpha 0.014 µg/ml PV: Beta 0.024 µg/ml PV: Gamma 0.007 µg/ml PV: Delta 0.455 µg/ml PV: BA.1, BA.2, BA.4/5, 1~10 µg/ml	48,53,61,62
<b>SP1-77</b>	V <sub>H</sub> 1-2/V <sub>κ</sub> 1-33-rearranging humanized mouse model	Class 3	343, 345, 346, 440-442, 444, 445	Prevents the shedding of S1 and blocks the membrane fusion	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta, BA.1, BA.2, BA.3 and BA.4/5)	LV: SARS-CoV-2 0.001 µg/ml LV: Alpha 0.001 µg/ml LV: Beta 0.001 µg/ml LV: Gamma 0.001 µg/ml LV: Delta 0.01 µg/ml PV: BA.1, BA.2, BA.3, BA.4/5 0.007~0.033 µg/ml	63
<b>A19-61.1</b>	COVID-19 convalescent	Class 3	Around 444, 446, 494	Causes the steric hindrance between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma and Delta)	LV: SARS-CoV-2 0.002 µg/ml PV: Alpha 0.031 µg/ml PV: Beta 0.011 µg/ml PV: Gamma 0.007 µg/ml PV: Delta 0.019 µg/ml	48,58
<b>2-7</b>	COVID-19 convalescent	Class 3	440, 444, 445, 447, 450, 499-501	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, BA.1, BA.2 and BA.4/5)	LV: SARS-CoV-2 0.003 µg/ml PV: Alpha ~0.01 µg/ml PV: Beta ~0.01 µg/ml PV: Gamma ~0.01 µg/ml PV: BA.1, BA.2, BA.4/5 0.1~1 µg/ml	29,32,46,55,61
<b>1-57</b>	COVID-19 convalescent	Class 3	351, 444, 446, 447, 450, 452, 470, 484, 490, 492-494, 498	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha, Beta, and Gamma)	LV: SARS-CoV-2 0.009 µg/ml PV: Alpha ~0.01 µg/ml PV: Beta ~0.01 µg/ml PV: Gamma ~0.01 µg/ml	29,32,46,55
<b>002-S21F2</b>	COVID-19 convalescent	Class 3	345, 346, 440, 448	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta, BA.1 and BA.2)	LV: SARS-CoV-2 0.05 µg/ml LV: Alpha 0.02 µg/ml LV: Beta 0.02 µg/ml LV: Gamma 0.03 µg/ml LV: Delta 0.03 µg/ml LV: BA.1, BA.2 ~0.05 µg/ml	76

<b>P2G3</b>	COVID-19 patient	Class 3	346, 440, 442, 444-446, 448, 451	Blocks the interaction between RBD and ACE2	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta, BA.1, BA.2 and BA.4/5)	LV: SARS-CoV-2 ~0.02 µg/ml LV: Alpha ~0.005 µg/ml LV: Beta ~0.01 µg/ml LV: Gamma ~0.01 µg/ml LV: Delta 0.011 µg/ml LV: BA.1, BA.2, BA.4/5 ~0.02 µg/ml	59,60
<b>n3113v</b>	phage-display naïve single-domain antibody library	Class 3	340, 341, 344-349, 351, 352, 443, 444, 448-450, 452, 466, 468-472, 482, 490, 492-494	Inhibits SARS-CoV-2 S mediated membrane fusion	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta and BA.1)	PV: SARS-CoV-2 0.06 µg/ml	78,79
<b>CR3022</b>	SARS-CoV convalescent	Class 4	369, 372, 374, 377, 378, 380, 382, 390, 392, 430, 515, 517	Unknown	SARS-CoV	LV: SARS-CoV ~50 µg/ml	64
<b>2-36</b>	COVID-19 convalescent	Class 4	369, 377-380, 408, 414, 427	Causes the steric hindrance between RBD and ACE2	SARS-CoV; SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta and BA.1)	LV: SARS-CoV ~7.5 µg/ml LV: SARS-CoV-2 ~0.1 µg/ml LV: Alpha ~0.03 µg/ml LV: Beta ~0.2 µg/ml LV: Gamma ~0.06 µg/ml PV: BA.1 ~1 µg/ml	29,36,65
<b>S2X259</b>	COVID-19 convalescent	Class 4	369, 377-380, 383, 385, 405, 408	Blocks the interaction between RBD and ACE2	SARS-CoV; SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta and BA.1)	PV: SARS-CoV ~0.1 µg/ml LV: SARS-CoV-2 0.144 µg/ml PV: Alpha ~0.1 µg/ml PV: Beta ~0.2 µg/ml PV: Gamma ~0.3 µg/ml PV: BA.1 ~0.6 µg/ml	50,66
<b>ADG20</b>	SARS-CoV convalescent and yeast display	Class 4	403, 405, 408, 498, 500-503, 505, 506	Competes with ACE2 for RBD binding	SARS-CoV; SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta and BA.1)	PV: SARS-CoV 0.002 µg/ml PV: SARS-CoV-2 0.012 µg/ml PV: Alpha 0.009 µg/ml PV: Beta 0.015 µg/ml PV: Gamma 0.013 µg/ml PV: Delta 0.014 µg/ml PV: BA.1 1.203 µg/ml	67,68
<b>DH1047</b>	COVID-19 convalescent and SARS-CoV convalescent	Class 4	Unknown	Unknown	SARS-CoV; SARS-CoV-2 WT and variants (Alpha,	LV: SARS-CoV 0.028 µg/ml LV: SARS-CoV-2 0.397 µg/ml LV: Alpha 0.081 µg/ml LV: Beta 0.111 µg/ml	61,69



					Beta, Gamma, Delta and BA.1)	PV: Gamma 0.163 µg/ml PV: Delta 0.16 µg/ml PV: BA.1 ~7 µg/ml	
<b>COVA1-16</b>	COVID-19 convalescent	Class 4	369, 371, 378, 379, 408, 414, 427, 429	Causes the steric hindrance between RBD and ACE2	SARS-CoV; SARS-CoV-2	PV: SARS-CoV 2.5 µg/ml PV: SARS-CoV-2 0.13 µg/ml	70
<b>H014</b>	phage-display library of SARS-CoV RBD immunized mice	Class 4	368-386, 405-408, 411-413, 439, 503, 508	Prevents attachment of SARS-CoV-2 to ACE2	SARS-CoV; SARS-CoV-2 WT and Beta variant	PV: SARS-CoV 1nM PV: SARS-CoV-2 3nM LV: Beta 38nM	71
<b>EY6A</b>	COVID-19 convalescent	Class 4	369, 377-386, 392, 412, 427, 429, 482, 517	Interferes with ACE2 attachment	SARS-CoV-2	LV: SARS-CoV-2 0.39 µg/ml	75
<b>n3130v</b>	phage-display naïve single-domain antibody library	Class 4	355, 357, 393, 394, 396, 426-430, 462-465, 514-519, 521, 523	Induces S trimer to adopt unstable 'up' states	SARS-CoV-2 WT and variants (Alpha, Beta, Gamma, Delta, and BA.1)	PV: SARS-CoV-2 0.747 µg/ml	78

PV: pseudovirus; LV: live virus; SARS-CoV-2 WT: the SARS-CoV-2 Wuhan strain or in some cases the D614G variant. If the neutralizing potency was tested against both PV and LV, only IC<sub>50</sub> for neutralizing LV was listed in the table.

**Supplementary Table S3.** Detailed characteristics of some representative S2-targeting neutralizing antibodies

nAb	Source	Binding epitope	Interacting residues in S of SARS-CoV-2	Mechanism of neutralization	Neutralizing breadth	Potency (IC <sub>50</sub> )	Refs
<b>S2P6</b>	COVID-19 convalescent	S2-stem helix	1148, 1149, 1151, 1152, 1155, 1156	Inhibits the membrane fusion	BetaCoV (sarbecovirus, merbecovirus and embecovirus)	PV: SARS-CoV 2.4 µg/ml PV: SARS-CoV-2 1.4 µg/ml PV: MERS-CoV 17.1 µg/ml PV: HCoV-OC43 1.3 µg/ml	83
<b>CC40.8</b>	COVID-19 convalescent	S2-stem helix	1142-1146, 1148, 1151-1156, 1158, 1159	Inhibits the membrane fusion	BetaCoV (sarbecovirus, HCoV-HKU1)	PV: SARS-CoV 1~10 µg/ml PV: SARS-CoV-2 WT, Alpha, Beta, Gamma, and Delta variants 1~10 µg/ml	84
<b>WS6</b>	SARS-CoV-2 Spike mRNA-immunized mouse	S2-stem helix	1148, 1149, 1152, 1153, 1155, 1156	Inhibits the membrane fusion	BetaCoV (sarbecovirus)	PV: SARS-CoV 1.93 µg/ml PV: SARS-CoV-2 WT, Alpha, Beta, Gamma, Delta, and BA.1 variants 2.46-26.52 µg/ml	85
<b>COV44-62</b>	COVID-19 convalescent	S2-fusion peptide	814-816, 818-820, 822-824	Inhibits the membrane fusion	AlphaCoV and BetaCoV	PV: SARS-CoV 6.37 µg/ml PV: SARS-CoV-2 WT, Alpha, Beta, Gamma, Delta, BA.1 and BA.2 variants 9.8-20.26 µg/ml PV: MERS-CoV 25.48 µg/ml PV: HCoV-NL63 1.06 µg/ml PV: HCoV-229E 2.11 µg/ml LV: HCoV-OC43 22.87 µg/ml	86
<b>COV44-79</b>	COVID-19 convalescent	S2-fusion peptide	815, 816, 818-820, 822, 823	Inhibits the membrane fusion	AlphaCoV and BetaCoV (except MERS-CoV)	PV: SARS-CoV 20.91 µg/ml PV: SARS-CoV-2 WT, Alpha, Beta, Gamma, Delta, BA.1 and BA.2 variants 16.51-55.44 µg/ml PV: HCoV-NL63 3.24 µg/ml PV: HCoV-229E 56.19 µg/ml LV: HCoV-OC43 28.4 µg/ml	86
<b>VN01H1</b>	SARS-CoV-2 vaccinee	S2-fusion peptide	813, 815, 816, 820-824	Inhibits the membrane fusion	AlphaCoV and BetaCoV	PV: SARS-CoV ~10 µg/ml PV: SARS-CoV-2 ~20 µg/ml PV: MERS-CoV ~20 µg/ml	87

						PV: HCoV-229E ~2 µg/ml PV: HCoV-NL63 ~2 µg/ml	
<b>VP12E7</b>	SARS-CoV-2 vaccinee	S2-fusion peptide	Unknown	Inhibits the membrane fusion	AlphaCoV and BetaCoV	PV: SARS-CoV ~30 µg/ml PV: SARS-CoV-2 ~100 µg/ml PV: MERS-CoV ~90 µg/ml PV: HCoV-229E ~10 µg/ml PV: HCoV-NL63 ~6 µg/ml	87
<b>C77G12</b>	COVID-19 convalescent	S2-fusion peptide	812, 814, 815, 817, 818, 820-824	Inhibits the membrane fusion	BetaCoV	PV: SARS-CoV ~40 µg/ml PV: SARS-CoV-2 ~7 µg/ml PV: MERS-CoV ~100 µg/ml	87
<b>76E1</b>	COVID-19 convalescent	S2-fusion peptide	815, 816, 819, 820, 822, 823, 825	Inhibits the membrane fusion	AlphaCoV and BetaCoV	PV: SARS-CoV 4.821µg/ml LV: SARS-CoV-2 0.343 µg/ml PV: MERS-CoV 3.825 µg/ml LV: HCoV-OC43 4.655µg/ml LV: HCoV-229E 1.595µg/ml LV: HCoV-NL63 3.943 µg/ml	88

PV: pseudovirus; LV: live virus. SARS-CoV-2 WT: the SARS-CoV-2 Wuhan strain or in some cases the D614G variant. If the neutralizing potency was tested against both PV and LV, only IC<sub>50</sub> for neutralizing LV was listed in the table.

