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Supplemental information

Engineered extracellular vesicles directed to the spike protein inhibit SARS-CoV-2

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Supplemental information

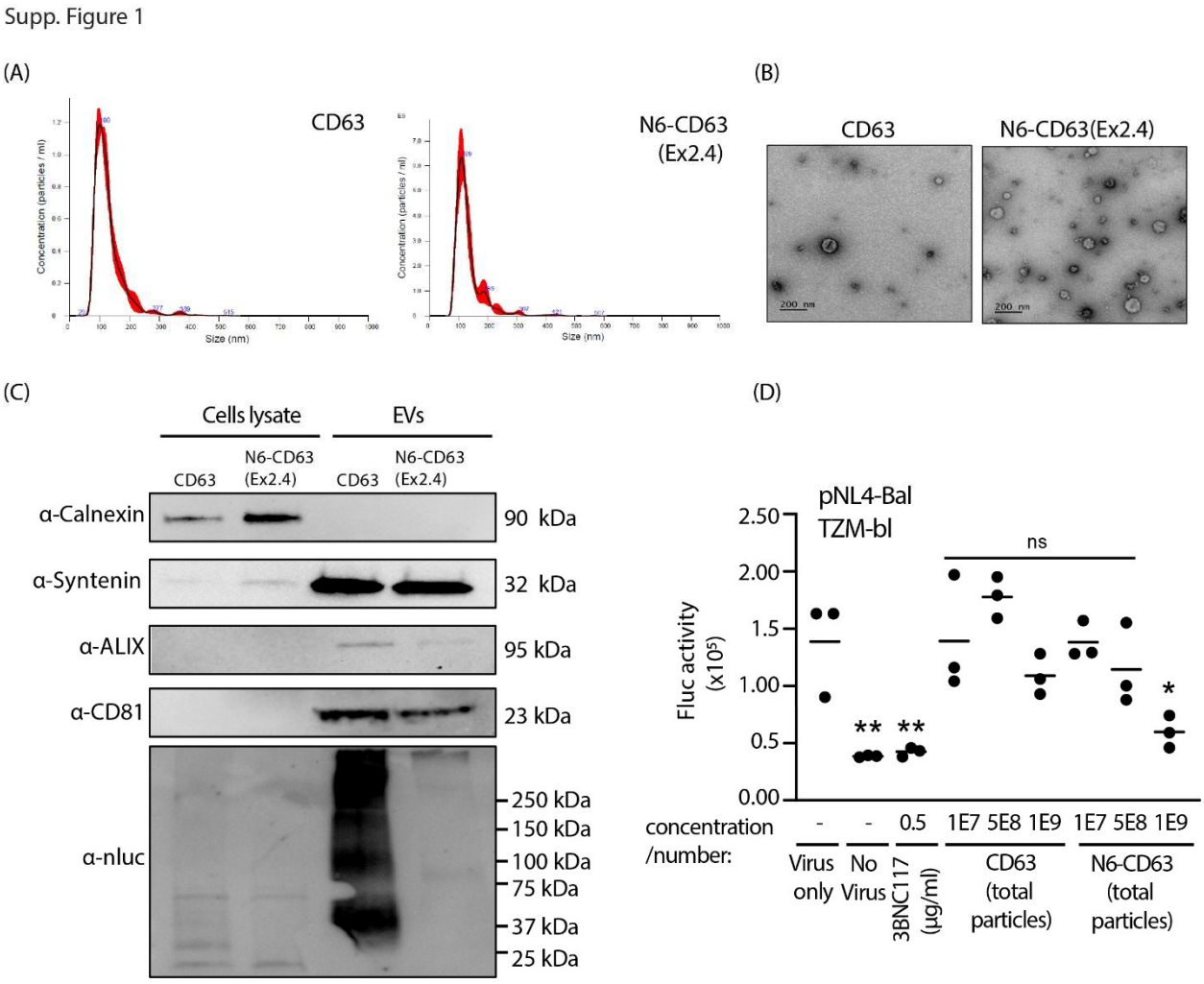

Figure S1: Characterization of the N6-CD63 EVs. **(A)** NTA and **(B)** TEM analysis for the CD63 control and N6-CD63 EVs. **(C)** EVs and cell lysates from CD63 and N6-CD63 samples were assessed by western blot for known EV markers (Syntenin, ALIX, CD81) and an exclusion marker, Calnexin, as well as Nluc, a component of the CD63 fusion protein. (D) Increasing amounts of the CD63 or N6-CD63 EVs were incubated with infectious pNL4-Bal HIV-1 (MOI 0.2) and then TZM-bl cells were infected with the EV:virus mixture. The levels of Fluc luciferase activity were assessed at 48 hrs post-infection. The line represents the mean from an experiment performed in

triplicate. The p-values were generated using a one-way ANOVA compared to the virus only control (D) (*$p<0.05$,**$p<0.01$).

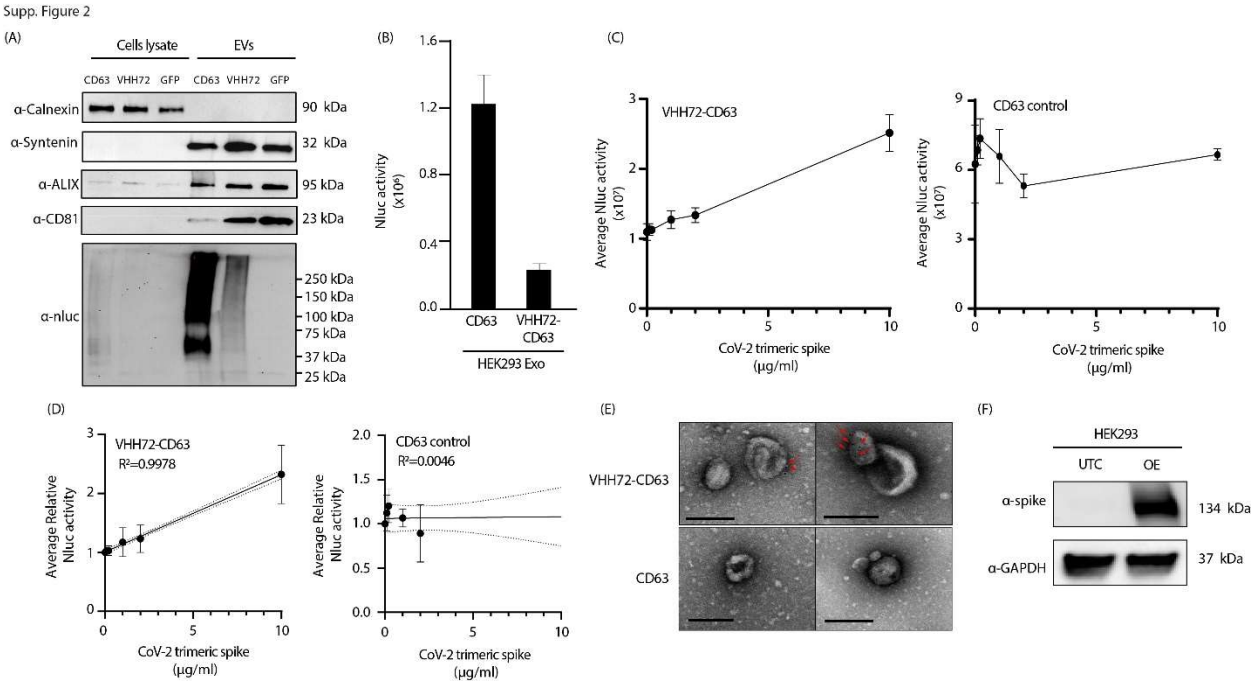

Figure S2: Characterization of the VHH72-CD63 EVs. **(A)** EVs and cell lysates from CD63 and VHH72-CD63 samples were assessed by western blot for inclusion EV markers (Syntenin, ALIX, CD81) and an exclusion marker, Calnexin, and a component of the CD63 fusion protein (Nluc). EVs generated from HEK293 cells transfected with a GFP vector were included as a Nluc detection control. **(B)** The levels of Nluc activity from equal amounts of CD63 and VHH72-CD63 EVs. Error bars were generated by samples detected in triplicate. **(C)** Average Nluc activity of EVs bound to spike beads and **(D)** non-linear line regression of Nluc activity versus the amount of CoV-2 trimeric spike. **(E)** Additional TEM images of the VHH72-CD63 and CD63 EVs bound to gold-nanoparticle labelled SARS-CoV-2 RBD. Red arrows highlight bound gold particles. Scale bar represents 200 nm. **(F)** HEK293 cells were transfected with a SARS-CoV-2 spike expression vector and western blot analysis was performed to detect protein levels compared to a untransfected (UTC) control. GAPDH was detected as a loading control.

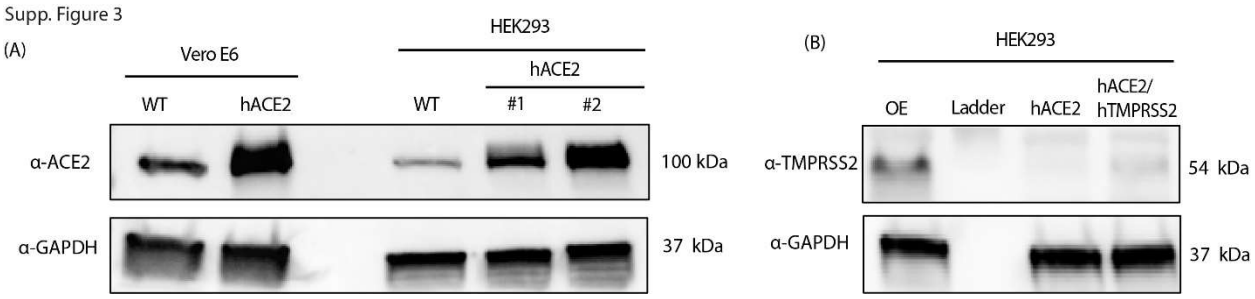

Figure S3: Detection of receptors in stable cell lines. Protein expression analysis on Vero E6 or HEK293 cells that stably expressing **(A)** hACE2 and **(B)** hTMPRSS2. HEK293-hACE2 #1 and #2 represent two different clones that stably expressing hACE. OE = cells transfected with an overexpression hTMPRSS2 vector. GAPDH was detected as a loading control. Expected molecular weights are indicated.

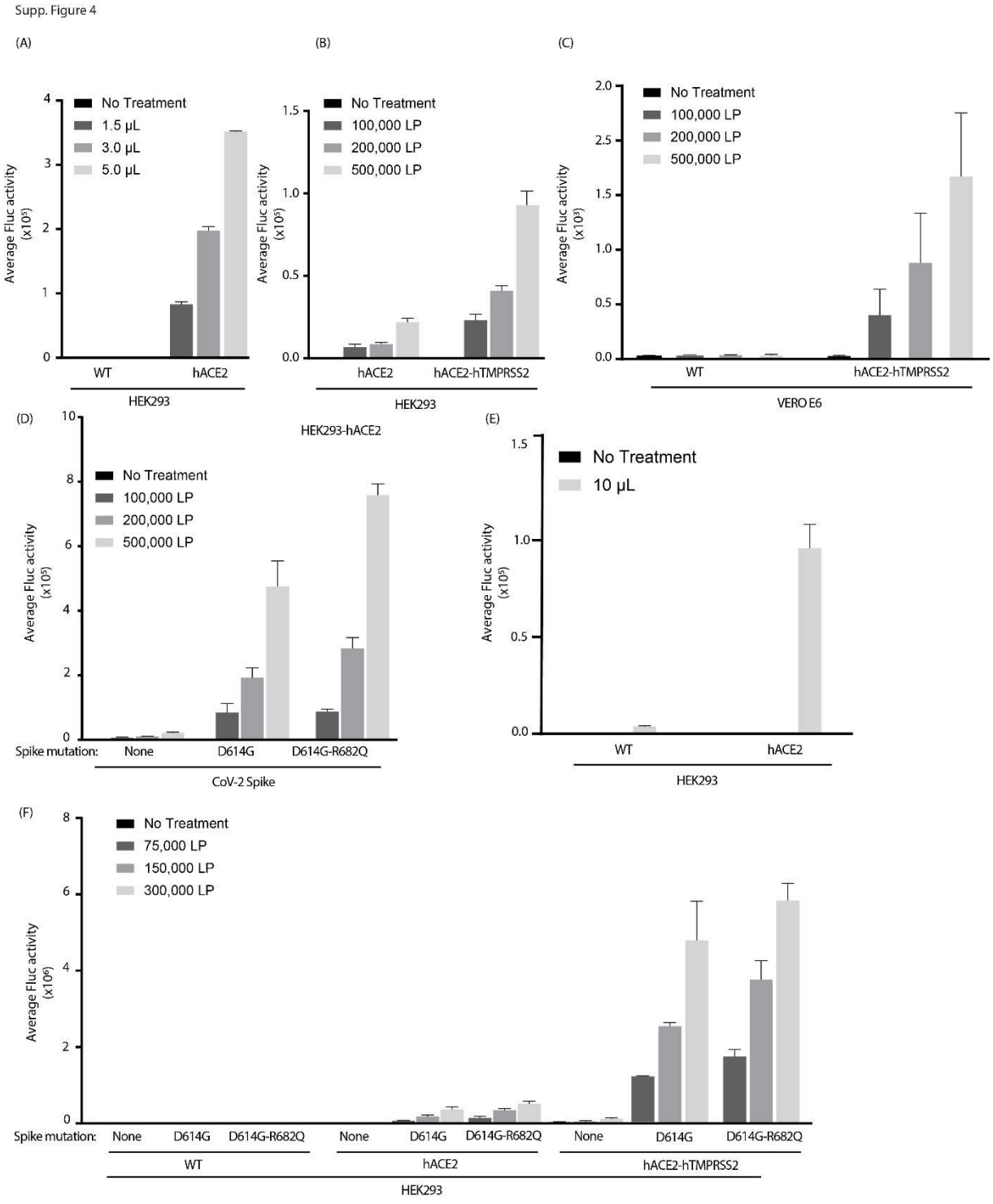

Figure S4: Optimization of transduction using COV-2 S pseudotyped vectors. (A) A lentiviral vector containing a GFP-Fluc pseudotyped with WT spike was transduced in increasing volumes

on WT HEK293 or HEK293-hACE2 cells. **(B)** Increasing amounts of WT spike lentiviral particles were used to transduced HEK293-hACE2 and HEK293-hACE2-hTMPRSS2. **(C)** Increasing amounts of WT spike lentiviral particles were used to transduced Vero E6-ACE2-TMPRSS2 cells. **(D)** A lentiviral vector was pseudotyped with WT spike, spike-D614G, or spike-D614G-R682Q and transduced in increasing lentiviral particles amounts on HEK293-hACE2 cells. **(E)** Lentiviral vectors pseudotyped with a C-terminal truncated spike protein were transduced on HEK293 WT or HEK293-hACE2 cells. **(F)** An experiment combining all the above relevant optimized conditions. In the above experiments, the lentiviral particles were packaged with a GFP-Fluc transgene and the levels of luciferase were assessed at 48 hrs after transduction. Error bars represent standard deviation generated by samples treated in quadruplicate.

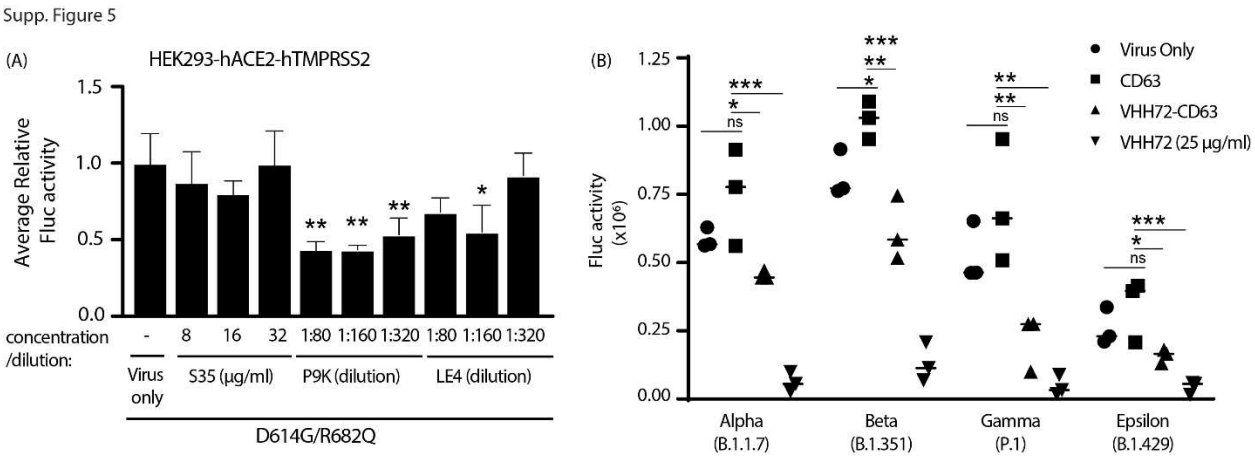

Figure S5: Neutralization assays using VHH72-CD63 EVs. **(A)** The lentiviral particles pseudotyped with the D614G-R682Q spike were incubated with the S35 mAb or CCP (P9K and LE4) at the described concentration/dilutions and then HEK293-hACE2-hTMPRSS2 cells were transduced. Error bars represent standard deviation from an experiment performed in triplicate. The p-values were generated using a one-way ANOVA compared to the virus only control (*<p0.05, **p<0.01). **(B)** The pseudotyped lentiviral particles with the spike proteins from the Alpha (B.1.1.7), Beta (B.1.351), Gamma (P.1), and Epsilon (B.1.429) variants were incubated with 2E8 EVs and then HEK293-hACE2-hTMPRSS2 cells were transduced. The line represents the mean from samples treated in triplicate. The p-values were generated using a one-way ANOVA compared to CD63 control (*<p0.05, **p<0.01, ***p<0.001). For **(A)** and **(B)**, the levels of Fluc were assessed at 48 hrs post-transduction.

Supplemental Table 1: Primer sequences used for cloning procedures.

oligomer	**Sequence (5'-3')**	**nt**
Spike-F	GCAGGGCAACTTCAAGAACCTGA	23
D614G-R	CAGGCACCTCAGTACAGTTCACtcCCTGGTAGAGCACAGCCACC	44
D614G-F	GTGAACTGTACTGAGGTGCCTG	22
Spike-R	TGTGCTGTCTCCACAGATATACATTGTAC	29
R682Q-F	CAGACCCAGACCAACAGCCCAcaGAGGGCAAGGTCTGTGGCAA	43
R682Q-R	GGGCTGTTGGTCTGGGTCTG	20
Spike-F2	CTGTCTCATCATTTTGGCAAAGAATTCGCCACCATGttcGTGTTTTT GGTCCTCTTGCC	59
Spike-R2	GTGTCCACTCCCAGGTCCAAGTTTAAACTTTAATACGACTCACTA TAGGGGCCGCCACCAAGCTTGGTACCATGTTTGTGTTCCTGGTGC TGC	93
tCD4-D1D2-CD63 F	AGCTGGCTAGCGTTTAAACTTAAGCTTGCCACCATGGTCCGAGGG GTACCGTTTCGAC	58
tCD4-D1D2-CD63-R	TTTCATTCCTCCTTCCACCGCCATGGACCCGCCTCCGCCGAAGAA GATGCCCAGGCCGA	59

Supplemental Table 2: gBlock sequences used for cloning procedures.

gBlock	Sequence (5'-3')
hACE2-T2A-puromycin	CGAAAAAGAGGAAGCGGAGAGGGCAGGGGGAGTCTGTTGACCTGTGGGG ACGTAGAAGAGAACCCGGGTCCAATGACTGAGTACAAACCTACTGTTCGC TTGGCTACTCGAGATGATGTACCTAGAGCGGTTCGCACCCTGGCCGCGGC TTTCGCGGATTACCCAGCCACCAGGCACACGGTGGACCCAGACAGACACA TTGAGCGAGTGACTGAACTTCAGGAACTTTTCCTGACGCGGGTTGGACTC GACATCGGTAAAGTTTGGGTGGCAGATGACGGCGCAGCCGTCGCAGTTTG GACTACCCCTGAATCAGTCGAAGCAGGCGCAGTGTTTGCTGAAATCGGTC CGCGGATGGCCGAACTTAGTGGGTCACGACTCGCGGCACAACAACAGATG GAGGGTCTCCTTGCGCCACATCGACCTAAGGAACCCGCGTGGTTCCTTGC AACCGTAGGTGTCTCACCGGACCATCAAGGGAAAGGTCTTGGAAGTGCAG TGGTGCTGCCGGGCGTGGAAGCGGCTGAGCGGGCTGGGGTACCAGCCTTC CTGGAAACTTCTGCCCCAAGAAACCTGCCGTTTTACGAGAGGCTGGGGTT TACTGTGACAGCCGACGTGGAGGTACCCGAGGGACCGAGGACGTGGTGTA TGACGCGAAAGCCCGGTGCTTAGTAAGCGGCCGCCCCGGGCTGCAGGAAT TCGA
hTMPRSS2-T2A-Hygromycin	AGCGTTTAAACGGGCCCTCTAGAGCCACCATGGCGTTGAACTCAGGTAGC CCGCCCGCGATTGGTCCGTACTATGAGAACCACGGATACCAACCTGAGAA CCCTTACCCGGCACAGCCCACGGTCGTCCCGACCGTCTATGAAGTCCATCC CGCCCAATACTACCCTTCACCCGTCCCGCAGTATGCTCCGAGAGTTCTCAC ACAAGCTAGCAACCCAGTGGTATGCACTCAACCCAAGTCACCTAGTGGGA CCGTTTGTACCTCCAAAACTAAAAAGGCTCTTTGTATAACACTTACACTTG GAACGTTCTTGGTTGGGGCAGCTCTTGCGGCGGGCCTGCTCTGGAAATTTA TGGGAAGCAAGTGTAGTAATTCCGGAATTGAGTGCGACTCCAGCGGTACA TGCATAAATCCGTCCAACTGGTGTGACGGCGTTTCACATTGTCCCGGTGGC GAAGACGAGAATCGGTGTGTCAGGCTCTACGGACCTAATTTTATACTGCA AGTGTACAGCAGTCAGAGGAAGTCATGGCATCCCGTTTGCCAGGACGACT GGAATGAAAACTATGGTCGCGCTGCATGTCGAGATATGGGGTACAAAAAT AATTTTTATTCATCCCAGGGCATCGTAGATGACTCCGGTAGCACGAGCTTC ATGAAACTGAATACAAGCGCTGGGAACGTTGACATTTACAAGAAGCTGTA CCACTCTGACGCTTGTTCATCTAAGGCGGTGGTTAGCTTGCGCTGCATTGC CTGTGGAGTAAATTTGAATTCTAGCCGACAAAGTCGCATTGTTGGGGGAG AAAGTGCTTTGCCGGGCGCTTGGCCATGGCAGGTATCTTTGCATGTGCAG AACGTCCACGTGTGCGGGGGGAGTATCATAACCCCAGAATGGATTGTGAC GGCGGCGCATTGTGTGGAAAAGCCTCTGAACAATCCATGGCACTGGACTG CTTTCGCCGGGATCCTCAGGCAATCATTTATGTTCTATGGTGCCGGGTATC AAGTTGAGAAGGTCATTAGTCATCCGAACTACGATTCCAAAACTAAGAAC AACGACATCGCATTGATGAAGCTGCAGAAGCCTCTGACTTTCAACGACCT TGTAAAGCCAGTCTGCCTTCCTAATCCTGGAATGATGCTCCAGCCTGAACA ACTTTGCTGGATCAGCGGATGGGGCGCCACCGAGGAAAAGGGTAAGACTT CCGAAGTCCTTAATGCGGCTAAGGTACTCCTGATTGAGACTCAGAGATGC AATTCCAGATATGTATATGACAACCTGATCACTCCGGCGATGATTTGTGCC GGCTTCCTGCAAGGCAATGTAGACTCCTGTCAGGGCGATTCCGGTGGACC TTTGGTTACCTCAAAGAACAACATATGGTGGTTGATCGGCGATACTTCTTG GGGGAGCGGTTGTGCAAAGGCTTATCGGCCCGGTGTGTACGGGAATGTCA TGGTCTTTACGGACTGGATATATAGACAAATGAGGGCCGACGGCACTCGC CGAAAACGGGGTAGCGGCGAAGGTCGAGGCTCCTTGCTGACCTGTGGGGA TGTGGAAGAAAATCCGGGCCCGATGAAAAAGCCCGAACTCACCGCTACTT

	CAGTAGAAAAATTCCTGATAGAGAAGTTTGATTCAGTTTCTGATCTCATGC AGCTTTCTGAAGGTGAAGAATCTCGGGCTTTTTCATTCGATGTAGGTGGCC GGGGATATGTTCTCCGAGTGAATTCTTGCGCTGACGGTTTCTACAAAGACC GATACGTATATCGACATTTCGCTAGTGCGGCCCTCCCCATCCCGGAAGTCC TGGATATTGGGGAATTTTCCGAGTCCCTTACATACTGTATCTCCCGACGAG CACAAGGTGTCACACTCCAAGACCTCCCGGAGACCGAGCTGCCAGCTGTT CTGCAACCCGTAGCCGAGGCAATGGATGCGATTGCCGCTGCGGATTTGAG CCAGACGAGCGGCTTTGGACCATTCGGACCGCAGGGTATCGGTCAATATA CGACCTGGCGCGACTTTATTTGCGCAATAGCTGACCCCCACGTGTACCATT GGCAAACTGTGATGGACGACACAGTCTCTGCTTCCGTAGCACAGGCACTG GACGAACTCATGCTTTGGGCTGAAGACTGTCCGGAGGTGCGGCATCTGGT GCATGCCGACTTTGGATCAAACAACGTTCTGACAGACAATGGAAGGATTA CGGCAGTGATAGATTGGAGTGAGGCTATGTTTGGGGATTCCCAGTACGAG GTTGCAAACATTTTCTTCTGGAGGCCATGGTTGGCCTGTATGGAGCAACAG ACACGATATTTCGAGCGCAGGCACCCTGAGCTTGCTGGATCCCCCCGATT GAGAGCATACATGTTGCGGATAGGGCTCGATCAGCTGTATCAATCCCTGG TAGACGGCAATTTCGACGACGCGGCCTGGGCGCAGGGTAGGTGTGATGCC ATAGTCCGCTCCGGTGCAGGAACTGTTGGTCGCACGCAGATTGCTCGCAG GTCCGCTGCGGTGTGGACTGATGGATGCGTCGAAGTTTTGGCCGACTCAG GTAATAGGCGGCCAAGCACACGCCCCCGCGCTAAGTAGTAAGCGGCCGCC CCGGGCTGCAGGAATTCGATATCAAGC
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N6-Ex2.4	CCAAGCTGGCTAGCGTTTAAACTTAAGCTTGCCACCATGGCGGTGGAAGGAGGAATGAAAT GTGTGAAGTTCTTGCTCTACGTCCTCCTGCTGGCCTTTTGCGCCTGTGCAGTGGGACTGATT GCCGTGGGTGTCGGGGCACAGCTTGTCCTGAGTCAGACCATAATCCAGGGGGCTACCCCTG GCTCTCTGTTGCCAGTGGTCATCATCGCAGTGGGTGTCTTCCTCTTCCTGGTGGCTTTTGTGG GCTGCTGCGGGGCCTGCAAGGAGAACTATTGTCTTATGATCACGTTTGCCATCTTTCTGTCT CTTATCATGTTGGTGGAGGTGGCCGCAGCCATTGCTGGCTATGTGTTTAGAGATAAGGTGA TGTCAGAGTTTAATAACAACTTCCGGCAGCAGATGGAGAATTACCCGAAAAACAACCACAC TGCTTCGATCCTGGACAGGATGCAGGCAGATTTTAAGTGCTGTGGGGCTGCTAACTACACA GATTGGGAGAAAATCCCTTCCATGTCGAAGAACCGAGTCCCCGACTCCTGCTGCGGAGGCG GAAGTGGAGGCGGTTCTGGTGGAGGATCAGGGGGTGGTAGTAGGGCTCACCTTGTACAAT CCGGAACTGCGATGAAAAAGCCGGGGGCATCTGTGCGGGTATCTTGTCAAACTTCAGGATA CACATTTACCGCACATATTTTGTTCTGGTTCCGGCAGGCCCCGGGTAGGGGATTGGAATGG GTAGGTTGGATCAAACCTCAATACGGAGCTGTCAACTTTGGAGGTGGTTTCAGGGATAGGG TCACATTGACTAGAGATGTCTACCGCGAAATTGCGTATATGGACATTCGCGGCCTTAAGCCA GACGACACTGCAGTCTATTATTGTGCGCGAGACAGATCATATGGGGACAGCAGCTGGGCGC TTGATGCGTGGGGGCAGGGGACCACAGTGGTCGTCTCCGCAGGCGGAGGTAGTGGGGGT GGGTCCGGGGGTGGAAGTGGCGGTGGGAGCTATATACACGTTACTCAATCCCCAAGCAGC CTGTCTGTCAGTATTGGGGATAGAGTTACAATTAACTGCCAAACCTCACAGGGCGTTGGGTC CGATCTCCACTGGTACCAGCATAAACCAGGCAGGGCGCCAAAACTGCTTATACACCATACCA GCTCCGTCGAAGACGGAGTCCCTAGTCGGTTCAGTGGATCAGGGTTCCACACAAGCTTTAA CCTGACCATCAGTGACCTTCAGGCGGATGACATAGCGACATACTACTGCCAGGTGCTGCAA TTCTTCGGTCGAGGATCCCGACTGCACATAAAAGGCGGCGGCAGTGGCGGCGGTAGTGGG GGAGGAAGCGGAGGAGGCTCGGGCTGTGTGGAGAAGATTGGGGGCTGGCTGAGGAAAA ATGTGCTGGTGGTAGCTGCA
VHH72-CD63-Ex2.4 gBLOCK1	CCAAGCTGGCTAGCGTTTAAACTTAAGCTTGCCACCATGGCGGTGGAAGGAGGAATGAAAT GTGTGAAGTTCTTGCTCTACGTCCTCCTGCTGGCCTTTTGCGCCTGTGCAGTGGGACTGATT GCCGTGGGTGTCGGGGCACAGCTTGTCCTGAGTCAGACCATAATCCAGGGGGCTACCCCTG GCTCTCTGTTGCCAGTGGTCATCATCGCAGTGGGTGTCTTCCTCTTCCTGGTGGCTTTTGTGG GCTGCTGCGGGGCCTGCAAGGAGAACTATTGTCTTATGATCACGTTTGCCATCTTTCTGTCT CTTATCATGTTGGTGGAGGTGGCCGCAGCCATTGCTGGCTATGTGTTTAGAGATAAGGTGA TGTCAGAGTTTAATAACAACTTCCGGCAGCAGATGGAGAATTACCCGAAAAACAACCACAC TGCTTCGATCCTGGACAGGATGCAGGCAGATTTTAAGTGCTGTGGGGCTGCTAACTACACA GATTGGGAGAAAATCCCTTCCATGTCGAAGAACCGAGTCCCCGACTCCTGCTGCGGAGGCG GAAGTGGAGGCGGTTCTGGTGGAGGATCAGGGGGTGGTAGTCAAGTGCAGCTGCAGGAG AGCGGCGGAGGCCTGGTGCAGGCCGGCGGATCTCTGAGACTGAGCTGCGCCGCTTCTGGC AGAACCTTTAGCGAGTACGCCATGGGCTGGTTCCGGCAGGCCCCTGGCAAGGAACGGGAA TTCGTGGCCACCATCAGCTGGTCCGGAGGCAGCACCTACTACACCGACAGCGTGAAGGGCA GATTCACAATCAGCAGAGATAATGCCAAAAACACCGTGTACCTGCAGATGAACAGCCTGAA GCCCGACGACACCGCCGTGTATTACTGTGCCGCTGCTGGCCTGGGCACCGTCGTTTCTGAGT GGGACTACGACTACGATTACTGGGGCCAGGGCACACAGGTGACAGTGTCCAGCGGCGGCG GTAGTGGTGGTGGGTCTGGGGGTGGTAGTGGAGGAGGGAGT
VHH72-CD63-Ex2.4 gBLOCK2	GGGGTGGTAGTGGAGGAGGGAGTCAAGTGCAGCTGCAGGAGAGCGGCGGAGGCCTGGT GCAGGCCGGCGGATCTCTGAGACTGAGCTGCGCCGCTTCTGGCAGAACCTTTAGCGAGTAC GCCATGGGCTGGTTCCGGCAGGCCCCTGGCAAGGAACGGGAATTCGTGGCCACCATCAGCT GGTCCGGAGGCAGCACCTACTACACCGACAGCGTGAAGGGCAGATTCACAATCAGCAGAG ATAATGCCAAAAACACCGTGTACCTGCAGATGAACAGCCTGAAGCCCGACGACACCGCCGT GTATTACTGTGCTGCCGCTGGCCTGGGCACCGTCGTTTCTGAGTGGGACTACGACTACGATT ACTGGGGCCAGGGCACACAGGTGACAGTGTCCAGCGGCGGCGGCAGTGGCGGCGGTAGT

	GGGGGAGGAAGCGGAGGAGGCTCGGGCTGTGTGGAGAAGATTGGGGGCTGGCTGAGGA AAAATGTGCTGGTGGTAGCTGCA

Supplemental Table 3: Amino Acid sequence of the CD63 fusion proteins expressed from the fusion vectors. Bold sequence denotes GS linkers, Underlined sequences denotes the N6 Hv sequence, underlined and italicized sequences denote the VHH723 sequence, and all other sequences reflect the CD63 sequence.

Vector	Amino acid sequence
N6-Ex1.1	MAVEGGMKCVKFLLYVLLLAFCACAVGLIAVGVGAQLVL**GGGSGGGSGGGSGGGS**RAHLVQSGTA MKKPGASVRVSCQTSGYTFTAHILFWFRQAPGRGLEWVGWIKPQYGAVNFGGGFRDRVTLTRDVY REIAYMDIRGLKPDDTAVYYCARDRSYGDSSWALDAWGQGTTVVVSA**GGGSGGGSGGGSGGGS**<u>**YI HVTQSPSSLSVSIGDRVTINCQTSQGVGSDLHWYQHKPGRAPKLLIHHTSSVEDGVPSRFSGSGFHT SFNLTISDLQADDIATYYCQVLQFFGRGSRLHIK**</u>**GGGSGGGSGGGSGGGS**IIQGATPGSLLPVVIIAVG VFLFLVAFVGCCGACKENYCLMITFAIFLSLIMLVEVAAAIAGYVFRDKVMSEFNNNFRQQMENYPKN NHTASILDRMQADFKCCGAANYTDWEKIPSMSKNRVPDSCCINVTVGCGINFNEKAIHKEGCVEKIG GWLRKNVLVVAAAALGIAFVEVLGIVFACCLVKSIRSGYEVM**EFGGGGS***MVFTLEDFVGDWRQTAG YNLDQVLEQGGVSSLFQNLGVSVTPIQRIVLSGENGLKIDIHVIIPYEGLSGDQMGQIEKIFKVVYPVDD HHFKVILHYGTLVIDGVTPNMIDYFGRPYEGIAVFDGKKITVTGTLWNGNKIIDERLINPDGSLLFRVTI NGVTGWRLCERILA*
N6-Ex2.2	MAVEGGMKCVKFLLYVLLLAFCACAVGLIAVGVGAQLVLSQTIIQGATPGSLLPVVIIAVGVFLFLVAFV GCCGACKENYCLMITFAIFLSLIMLVEVAAAIAGYVFRDKVMSEFNNNFRQQMENYPKNNHTASILDR MQADFKCC**GGGGSGGGSGGGSGGGS**<u>RAHLVQSGTAMKKPGASVRVSCQTSGYTFTAHILFWFRQ APGRGLEWVGWIKPQYGAVNFGGGFRDRVTLTRDVYREIAYMDIRGLKPDDTAVYYCARDRSYGDS SWALDAWGQGTTVVVSA</u>**GGGSGGGSGGGSGGGS**<u>**YIHVTQSPSSLSVSIGDRVTINCQTSQGVGS DLHWYQHKPGRAPKLLIHHTSSVEDGVPSRFSGSGFHTSFNLTISDLQADDIATYYCQVLQFFGRGS RLHIK**</u>**GGGSGGGSGGGSGGGS**GCVEKIGGWLRKNVLVVAAAALGIAFVEVLGIVFACCLVKSIRSGYE VM**EFGGGGS***MVFTLEDFVGDWRQTAGYNLDQVLEQGGVSSLFQNLGVSVTPIQRIVLSGENGLKIDI HVIIPYEGLSGDQMGQIEKIFKVVYPVDDHHFKVILHYGTLVIDGVTPNMIDYFGRPYEGIAVFDGKKIT VTGTLWNGNKIIDERLINPDGSLLFRVTINGVTGWRLCERILA*
N6-Ex2.3	MAVEGGMKCVKFLLYVLLLAFCACAVGLIAVGVGAQLVLSQTIIQGATPGSLLPVVIIAVGVFLFLVAFV GCCGACKENYCLMITFAIFLSLIMLVEVAAAIAGYVFRDKVMSEFNNNFRQQMENYPKNNHTASILDR MQADFKCC**GGGGSGGGSGGGSGGGS**<u>RAHLVQSGTAMKKPGASVRVSCQTSGYTFTAHILFWFRQ APGRGLEWVGWIKPQYGAVNFGGGFRDRVTLTRDVYREIAYMDIRGLKPDDTAVYYCARDRSYGDS SWALDAWGQGTTVVVSA**GGGSGGGSGGGSGGGS**YIHVTQSPSSLSVSIGDRVTINCQTSQGVGS DLHWYQHKPGRAPKLLIHHTSSVEDGVPSRFSGSGFHTSFNLTISDLQADDIATYYCQVLQFFGRGS RLHIK**</u>**GGGSGGGSGGGSGGGS**CCINVTVGCGINFNEKAIHKEGCVEKIGGWLRKNVLVVAAAALGIA FVEVLGIVFACCLVKSIRSGYEVM**EFGGGGS***MVFTLEDFVGDWRQTAGYNLDQVLEQGGVSSLFQNL GVSVTPIQRIVLSGENGLKIDIHVIIPYEGLSGDQMGQIEKIFKVVYPVDDHHFKVILHYGTLVIDGVTPN MIDYFGRPYEGIAVFDGKKITVTGTLWNGNKIIDERLINPDGSLLFRVTINGVTGWRLCERILA*

N6-Ex2.4	MAVEGGMKCVKFLLYVLLLAFCACAVGLIAVGVGAQLVLSQTIIQGATPGSLLPVVIIAVGVFLFLVAFV GCCGACKENYCLMITFAIFLSLIMLVEVAAAIAGYVFRDKVMSEFNNNFRQQMENYPKNNHTASILDR MQADFKCCGAANYTDWEKIPSMSKNRVPDSCC**GGGSGGGSGGGSGGGS**RAHLVQSGTAMKKPG ASVRVSCQTSGYTFTAHILFWFRQAPGRGLEWVGWIKPQYGAVNFGGGFRDRVTLTRDVYREIAYM DIRGLKPDDTAVYYCARDRSYGDSSWALDAWGQGTTVVVSA**GGGSGGGSGGGSGGGSYIHVTQSP SSLSVSIGDRVTINCQTSQGVGSDLHWYQHKPGRAPKLLIHHTSSVEDGVPSRFSGSGFHTSFNLTIS DLQADDIATYYCQVLQFFGRGSRLHIKGGGSGGGSGGGSGGGS**GCVEKIGGWLRKNVLVVAAAAL GIAFVEVLGIVFACCLVKSIRSGYEVM**EFGGGGS***MVFTLEDFVGDWRQTAGYNLDQVLEQGGVSSLF QNLGVSVTPIQRIVLSGENGLKIDIHVIIPYEGLSGDQMGQIEKIFKVVYPVDDHHFKVILHYGTLVIDGV TPNMIDYFGRPYEGIAVFDGKKITVTGTLWNGNKIIDERLINPDGSLLFRVTINGVTGWRLCERILA***
VHH-72-ex2.4	MAVEGGMKCVKFLLYVLLLAFCACAVGLIAVGVGAQLVLSQTIIQGATPGSLLPVVIIAVGVFLFLVAFV GCCGACKENYCLMITFAIFLSLIMLVEVAAAIAGYVFRDKVMSEFNNNFRQQMENYPKNNHTASILDR MQADFKCCGAANYTDWEKIPSMSKNRVPDSCC**GGGSGGGSGGGSGGGS***QVQLQESGGGLVQAG GSLRLSCAASGRTFSEYAMGWFRQAPGKEREFVATISWSGGSTYYTDSVKGRFTISRDNAKNTVYLQ MNSLKPDDTAVYYCAAAGLGTVVSEWDYDYDYWGQGTQVTVSS***GGGSGGGSGGGSGGGS***QVQL QESGGGLVQAGGSLRLSCAASGRTFSEYAMGWFRQAPGKEREFVATISWSGGSTYYTDSVKGRFTIS RDNAKNTVYLQMNSLKPDDTAVYYCAAAGLGTVVSEWDYDYDYWGQGTQVTVSS***GGGSGGGSG GGSGGGS**GCVEKIGGWLRKNVLVVAAAALGIAFVEVLGIVFACCLVKSIRSGYEVM**EFGGGGS***MVFT LEDFVGDWRQTAGYNLDQVLEQGGVSSLFQNLGVSVTPIQRIVLSGENGLKIDIHVIIPYEGLSGDQM GQIEKIFKVVYPVDDHHFKVILHYGTLVIDGVTPNMIDYFGRPYEGIAVFDGKKITVTGTLWNGNKIIDE RLINPDGSLLFRVTINGVTGWRLCERILA***