

List of experimentally used primer-probe sets for RT-PCR of SARS-CoV-2 (Omicron) variants

Primer Name	Sequences (5'-3')	Probe Name	Sequences (5'-3')	References Pubmed ID
F22083 R22181	TTAAAATATATTCTAAGCACACGC [22083-22106] CATTTCGCTGATTTTGGGGTCC [22157-22181]	Ins214 S	FAM/ TATTATAGT/ZEN/ GCGTGAGCCAGAAGATCTCC/3IABkFQ [28215-28244]	35504376
nCoV_N2-F nCoV_N2-R	TTACAAACATTGGCCGCAAA [29164-29183] GCGCGACATTCCGAAGAA [29230-29213]	nCoV_N2-P	FAM/ACAATTTGCCCCAGCGCTTCAG/3IABkFQ [29188-29210]	
Improved N3-F N3-R	GGGAGCCTTGAATACACAAAAG [28681- 28703] TGTAGCACGATTGCAGCATTG [28752-28732]	Improved N3	FAM/TCACATTGGCACCCGCAATCCTGC/3IABkFQ [28705-28728]	
NTD fwd NTD rev	TCA ACT CAG GAC TTG TTC T(OMe-U)A C TGG TAG GAC AGG GTT AT(OMe-C) AAA C	A67V-del69- 70 probe	Atto425- TGG TCC CAG A(+G)A T(+A)(+A) C(+A)T -BHQ1	35337015
RBD-452 fwd RBD-484 fwd RBD-484-rev RBD-univ-rev	GAT T(+C)T AAG GTT GGT GG(2OMe-U) AAT CTA TCA GGC CGG TAR (2OMe-C)A GTC GGA AAC TAT ATG ATC GTA AA(OMe-G) G AGT TGC TGG TGC ATG TA(OMe-G) AA	E484A probe P681R probe N679K-P681H probe	YakYellow- AT(+G) GTG TT(+G) (+C)(+A)G (+G)TT -BHQ1 FAM- A(+T)T CT(+C) (+G)(+T)C GGC G -BHQ1 Atto620- A(+G)T CT(+C) (+A)(+T)C GG(+C) G -BHQ2	
FCS fwd FCS rev	TGC AGG TAT ATG CGC TAG T(OMe-U)A GTG ACA TAG TGT AGG CAA TGA (OMe-U)G			
OmN-F OmN-R	GGACCCTCAGATTCAACTGG GCAGTATTATTGGGTAAACCTTGG	OmNm-Pr	TexasRed-ATCGCGCCCCACCATTCT	
hCoV-Spike-D				
22,632S 22,659S 22,659S-Omi SP35AS SP36AS 22,687S 22,712S SP37AS SP38AS	GAATCAGCAACTGTGTTGCTG [22,632–22,652] CTGTCCTATATAATTCCGCATC [22,659–22,680] CTGTCCTATATAATCTCGCACC [22,659–22,680] TGACTAGCTACACTACGTGC [23,612–23,631] TTAGTCTGAGTCTGATAACTAG [23,577–23,598] CACTTTAAGTGTATGGAGTG [22,687–22,708] CCTACTAAATTAATGATCTCTG [22,712–22,734] GCATATACCTGCACCAATGG [23,556–23,575] TATGTCACACTCATATGAGTTG [23,533–23,554]	NA	NA	35458450
hCoV-full-a				
45S a-1-2 85S a-2-2	CAACTTTCGATCTCTTGTAGATCTGTTC [37–64] TGTA AACACGCACAGAATTTTGAGCAG [1926–1953] TTAAAATCTGTGTGGCTGTCACTCGG [77–102] CGGGAGAAAATTGATCGTACAACAC [1890–1914]			
hCoV-full-b				
b-1-1 b-1-2 b-2-1	GCTTTTGTGGAACTGTGAAAGG [1721–1743] GCTTAACTTCCTCTTTAGGAATCTC [3878–3902] AAACAAATTGTTGAATCCTGTGG [1763–1785]			

b-2-2	CAACTTGCTTTTCACTCTTCATTCC [3838–3863]			
hCoV-full-c				
c-1-1	AAGACATTCAACTTCTTAAGAGTGC [3642–3666]			
c-1-2	AATAGGACCTTTGTATTCTGAGGAC [5830–5854]			
c-2-1	CAGCACGAAGTTCTACTTGACCA [3683–3706]			
c-2-2	TTATAGTGACCACACTGGTAATTACC [5750–5775]			
hCoV-full-d				
d-1-1	GTACATGGGCACACTTTCTTATGAAC [5572–5597]			
d-1-2	CAGCTTTATCAAAGTAAAGATGGATGG [7764–7790]			
d-2-1	GTGTTCCAGATACCTTGTACGTGTGG [5610–5634]			
d-2-2	CTGTAACACTATCAACGATGTAAGAAG [7725–7751]			
hCoV-full-e				
e-1-1	GTACAACATTGTTAATGGTGTTAGAAG [7533–7560]			
e-1-2	CTCTTTAGGTAATTACTAAAGAACC [9729–9753]			
e-2-1	TGTCTATGCTAATGGAGGTAAAGGC [7570–7594]			
e-2-2	GCTTTGTGGAAATACAAATGATATAAGC [9692–9719]			
hCoV-full-f				
f-1-1	TTCCTTATGTCATTCCTGACTCTG [9518–9543]			
f-1-2	ACACCAAGAGTCAGTCTAAAGTAGCG [11,669–11,694]			
f-2-1	ACTCATTCTTACCTGGTGTATTCTG [9558–9584]			
f-2-2	ACAAAAGAGGCCAAAGTAACAAGTAC [11,634–11,659]			
hCoV-full-g				
g-1-1	TCCATGTGGGCTCTTATAATCTCTG [11,459–11,483]			
g-1-2	CTTCGTCCTTTTCTTGAAGCGACAAC [13,598–13,624]			
g-2-1	CTACTCAGGTGTAGTTACAACCTGTC [11,494–11,518]			
g-2-2	TAGCAAAACCAGCTACTTTATCATTG [13,554–13,579]			
hCoV-full-h				
h-1-1	CGGTATGTGGAAAGGTTATGGCTG [13,384–13,407]			
h-1-2	ACTTATCGGCAATTTTGTACCATCAG [15,569–15,595]			
h-2-1	CAACTCCGCGAACCCATGCTTCAG [13,418–13,441]			
h-2-2	AAAAGTGCATTAACATTGGCCGTGAC [15,538–15,563]			
hCoV-full-i				
i-1-1	ATTATGGCCTCACTTGTCTTGCTCG [15,334–15,359]			
i-1-2	CTATAGTTTTTCATAAGTCTACACTCC [17,506–17,533]			
i-2-1	GCTTGTCACACCGTTTCTATAGATTAG [15,380–15,406]			
i-2-2	CTTAGTTAGCAATGTGCGTGGTGAC [17,453–17,478]			
hCoV-full-j				
j-1-1	GTGAATTCAACATTAGAACAGTATGTC [17,278–17,304]			
j-1-2	GCATGATGTCTACAGACAGCACCACC [19,477–19,502]			
j-2-1	AATGCATTGCCTGAGACGACAGCAG [17,317–17,341]			
j-2-2	ATTGCAACGTGTTATACACGTAGCAG [19,448–19,473]			

hCoV-full-k				
k-1-1	ATTTGACACTAGAGTGCTATCTAACC [19,239–19,264]			
k-1-2	TCTTTTAAAGACATAACAGCAGTACCC [21,423–21,449]			
k-2-1	TGGTTGTGATGGTGGCAGTTTGTATG [19,275–19,300]			
k-2-2	GGGGAAATTTACTCATGTCAAATAAAG [21,386–21,412]			
hCoV-full-l				
l-1-1	ATTACATTACACATAAACGAACTTATGG [25,369–25,396]			
l-1-2	GCTCACAAGTAGCGAGTGTTATCAGTG [27,416–27,442]			
l-2-1	TTTGTTTATGAGAATCTTCACAATTGG [25,398–25,424]			
l-2-2	ATCAATCTCCATTGGTTGCTCTTCATC [27,358–27,384]			
hCoV-full-m				
m-1-1	CTTTGCTTGACAGTAAGTGACAACAG [27,175–27,201]			
m-1-2	CTTCTGCGTAGAAGCCTTTTGGCAATG [28,771–28,797]			
m-2-1	CTCGTTGACTTTCAGGTTACTATAGC [27,211–27,236]			
m-2-2	TTGAGGAAGTTGTAGCACGATTGCAGC [28,737–28,763]			
hCoV-full-n				
n-1-1	AGAGCTACCAGACGAATTCGTGGTG [28,539–28,563]			
n-1-2	TTTTTTTTTTGTCTTCTCCTAAGAAGC [29,854–29,882]			
n-2-1	ATGGTATTTCTACTACCTAGGAAGTGG [28,595–28,621]			
n-2-2	ATTAATAATCATGTTGGGATAGCACTAC [29,826–29,852]			
hCoV-full-S1				
20,963S	TCTTAATGACTTTGTCTCTGATGCAG [20,955–20,980]			
21,018S	GTACATACAGCTAATAAATGGGATC [21,010–21,034]			
23,504AS	CCCTATTAACAGCCTGCACGTG [23,496–23,518]			
21,050S	TAGTGATATGTACGAC CCTAAGAC [21,042–21,065]			
21,018S	GTACATACAGCTAATAAATGGGATC [21,010–21,034]			
23,461AS	TGTAGAATAAACACGCCAAGTAGG [23,453–23,476]			
hCoV-full-S2				
23,254S	TTYCAACAATTTGGCAGAGACATTG [23,246–23,270]			
25,666AS	CGAGCAAAAGGTGTGAGTAAACTG [25,658–25,681]			
23,283S	CACTACTGATGCTGTCCGTGATC [23,275–23,297]			
25,619AS	AAACAAAGTGAACACCCTTGGAG [25,611–25,633]			
E_Sarbeco-F	ATAGGTACGTTAATAGTTAATAGCGT	E_Sarbeco-P	ACACTAGCCATCCTTACTGCGCTTCG	
E_Sarbeco-R	TGTGTGCGTACTGCTGCAATAT			
nCoV_IP2-F	ATGAGCTTAGTCCTGTTG	nCoV_IP2-P	AGATGTCTTGTGCTGCCGGTA	
nCoV_IP2-R	ACAACACAACAAAGGGAG/ACAACACAACAAAGGGAT			35218386
nCoV_IP4-F	GGTAACTGGTATGATTTTCG	nCoV_IP4-P	TCATACAAACCACGCCAGG/TCGTACAAACCACGCCAGG	
nCoV_IP4-R	CCTATATTAACCTTGACCAG/ CCTATATTAACCTTGACTAG			

RdRp-CoV-19-F RdRp-CoV-19-R	GTGAAATGGTCATGTGTGGCGG/ GTGAAATGGTCATGTGTGGCRG TATGCTAATAGTGTTTTAACATTTG/ TATGCTAATAGTGTTTATAACATTTG	RdRp-CoV-19-P	CAGGTGGAACCTCATCAGGAGATGC/
ORF1ab-F ORF1ab-R	CCCTGTGGGTTTTACACTTAA/ CCCTGTGGGTTTTATACTTAA TCAGCTGATGCACAATCGT	ORF1ab-P	CCGTCTGCGGTATGTGGAAAGGTTATGG/ CTGTCTGCGGTATGTGGAAAGGTTATGG
ORF1b-nsp14-F ORF1b-nsp14-R	TGGGGTTTTACAGGTAACCT/ TGGGGTTTTATAGGTAACCT GAGTGCTTTGTTAAGCGTGTT	ORF1b-nsp14-P	TAGTTGTGATGCAATCATGACTAG
HKU-N-F HKU-N-R	TAATCAGACAAGGAAGTATT CATGGAAGTCACACCTTCG/ CATGGAAGTCACACCTTCT/ CATGGAAGTCACACCTTTG	HKU-N-P	CCGCAAATTGCACAATTTGC
NIID_2019-nCoV_2-F NIID_2019-nCoV_2-R	AAATTTTGGGGACCAGGAAC/ AAATTTTGGGGACCACGAAC GTTGACCTACACAGGTGCCA	NIID_2019-nCoV_2-P	ATGTCGCGCATTGGCATGGA/ATGTCTCGCATTGGCATGGA
N-F N-R	GGGGAACCTTCTCCTGCTAGAAT CAGCTTGAGAGCAAAATGTCTG	N-P	TTGCTGCTGCTTGACAGATT/TTGCTGCTACTTGACAGATT/ TTGCTGTTACTTGACAGATT
2019-nCoV_N1-F 2019-nCoV_N1-R	GACCCCAAAATCAGCGAAAT/ WRSCCAAAATCAGCGAAAT CAGATTCAACTGGCAGTAACCAGA/ CAGATTCAATTGGCAGTAACCAGA/ CAGATTCTACTGGCAGTAACCAGA	2019-nCoV_N1-P	ACTCCGCATTACGTTTGGTGGACC/ ACCCCGCATTACGTTTGGTGGACC/ ACYCCGCATTACGTTTGGTGGACC/ ACTCCGCATTACGTTTGGTGGACT/
2019-nCoV_N2-F 2019-nCoV_N2-R	TTACAAACATTGGCCGCAAA/ TTACAAATATTGGCCGCAAA TTATAAACATTGGCCGCAAA TTCTTCGGAATGTGCGCG/ TTCTTCGGAATGTCTCGC	2019-nCoV_N2-P	ACAATTTGCCCCAGCGCTTCAG/ ACAATTTGCCCTAGCGCTTCAG
2019-nCoV_N3-F 2019-nCoV_N3-R	GGGAGCCTTGAATACACCAAAA/ GGGAGCCTTGAATATACCAAAA/ TGGAGCCTTGAATACACCAAAA/ GGGGCCTTGAATACACCAAAA/ CAATGCTGCAATCGTGCTACA	2019-nCoV_N3-P	ATCACATTGGCACCCGCAATCCTG/ ATCATATTGGCACCCGCAATCCTG/ TTCATATTGGCACCCGCAATCCTG
WH-NIC N-F	CGTTTTGGTGGACCCTCAGAT/ CGTTTTGGTGGACTCTCAGAT/ CKTTTTGGTGGACCCTCAGAT	WH-NIC N-P	CAACTGGCAGTAACCA/CAATTGGCAGTAACCA/ CTACTGGCAGTAACCA

WH-NIC N-R	AATGGAGAACGCAGTGGGG/ AATGGTGAACGAAGTGGGG			
N501Y-F N501Y-R	TGTTACTTTCCTTTACAATCATATGGTTT GAAAGTACTACTACTCTGTATGGTTGGTA	N501Y-P	FAM/CCAACCCAC/ZEN/TTATGGTGTGG/3IABkFQ	35196812
69-70-F 69-70-R	TCAACTCAGGACTTGTTCTTAC TGGTAGGACAGGGTTATCAAAC	69-70-P	FAM/GTCCCAGAG/ZEN/ACATGTATAGCAT/3IABkFQ	
K417N-F K417N-R	TGCAGATTCATTTGTAATTAGAGG ATAACGCAGCCTGTAAAATCATC	K417N-P	FAM/GCAAACCTGG/ZEN/AAATATTGCT/3IABkFQ	
P681H-F P681H-R	CCCATTGGTGCAGGTATATG TAGTGTAGGCAATGATGGATTGA	P681H-P	FAM/ACTCAGACT/ZEN/AATTCTCATCG/3IABkFQ	