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A protocol for massively parallel diagnosis and genome sequencing of SARS-CoV-2

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Coronavirus Method Development Community



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ABSTRACT

Managing the current COVID-19 pandemic requires diagnostic testing at an unprecedented scale. However, the crisis has revealed severe deficiencies in our capacity to perform such testing. Here we build on the work of others (1-3) to develop a protocol that not only enables many thousand diagnostic tests to be run in parallel, but also provides near-whole genome sequencing data to facilitate phylogenetic analysis and contact tracing. One of the key features of our protocol is a magnetic bead-based strategy for RNA capture that may circumvent the need for SARS-CoV-2 RNA extraction, currently one of the major bottlenecks in both reagent supply and hands-on sample processing time. This approach also eliminates the requirement for per-sample reverse transcription, significantly reducing per-sample costs.

The major steps in our wet lab workflow can be summarised as follows. First, we generate a collection of bead-bound, single-stranded DNA probes tiling the entire SARS-CoV-2 genome. Multiple uniquely barcoded probe sets are prepared, each of which are used to capture viral RNA directly from patient swab samples via DNA/RNA hybridisation. Samples are combined together at this stage, enabling cDNA synthesis to be performed in a single pooled reaction. Finally, multiplex PCR is used to generate a library of overlapping amplicons ready for Illumina sequencing.

A schematic overview of the workflow is attached below, along with a more detailed figure depicting the various stages of library preparation.

References

- 1. https://docs.google.com/document/d/1kP2w_uTMSep2UxTCOnUhh1TMCjWvHEY0sUUpkJHPYV4/preview
- 2. https://www.protocols.io/view/ncov-2019-sequencing-protocol-bbmuik6w/abstract
- 3. https://www.biorxiv.org/content/10.1101/2020.03.20.001008v1.full.pdf

ATTACHMENTS

Workflow Overview.pdf Library Prep Schematic.pdf

MATERIALS TEXT

Reagents

ITEM	SUPPLIER	CATALOGUE NUMBER
	General consumables, chemicals	
	and equipment	

protocols.io

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EDTA	UltraPure 1M Tris-HCl pH 7.5	Invitrogen	15567027
UltraPure DNase/RNase-free distilled water (500 mL)	EDTA	Sigma-Aldrich	EDS-100G
water (500 mL) Ethanol, 200 proof for molecular biology (500 mL) Ethanol, 200 proof for molecular biology (500 mL) E7023-500mL DNA LOBind tubes, 1.5 mL (250 tubes) Eppendorf 30108051 D.2 mL MAXYMum Recovery Thin Wall PCR Tubes PCR-02-L-C 20X TE buffer - RNase-free Invitrogen T11493 Sodium citrate Sigma-Aldrich S8045-500G NaOH Sigma-Aldrich EP030129512-25EA (Eppendorf) EP030129512-25EA LICI Sigma-Aldrich L 9650-100G LIDS Sigma-Aldrich L 9781-5G DTT Sigma-Aldrich L 9781-5G DTT Sigma-Aldrich D 9779-250MG PCR foil Eppendorf 30127790 Step 1: Preparation of barcoded beads for RNA capture Dynabeads MyOne Streptavidin C1 Invitrogen 65001 Custom DNA oligos IDT - X B&W buffer See Buffer list - Y SSC buffer See Buffer list - PrimeSTAR GXL Polymerase TaKaRa R050A Step 2: Sample collection an	NaCl	Sigma-Aldrich	S3014-500G
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333 2413 253			
Step 5: Library amplification		Step 5: Library amplification	
Q5 Hot Start HiFi DNA Polymerase NEB M0493S	Q5 Hot Start HiFi DNA Polymerase	NEB	M0493S
Custom DNA oligos IDT -	Custom DNA oligos	IDT	-
Qubit dsDNA HS Assay Kit Invitrogen Q33230	Qubit dsDNA HS Assay Kit	Invitrogen	Q33230
PrimeSTAR GXL Polymerase TaKaRa R050A	PrimeSTAR GXL Polymerase	TaKaRa	R050A
SPRIselect beads Beckman Coulter B23318	SPRIselect beads	Beckman Coulter	B23318

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	Step 6: Library quantitation and sequencing	
Bioanalyzer HS dsDNA	Agilent	5067-4626
Qubit dsDNA HS	Invitrogen	Q33230

Buffer list

10 mM Tris-HCl (pH 7.5) 1 mM EDTA
1 mM EDTA
2 M NaCl
2.47.111.01
0.15 M NaCl
0.015 M sodium citrate
Adjust pH to 7.0 with NaOH
10 mM Tris-HCl (pH 7.5)
1 mM EDTA
100 mM Tris-HCl (pH 7.5)
500 mM LiCl
10 mM EDTA, pH 8
1% LiDS
5 mM dithiothreitol (DTT)
10 mM Tris-HCl (pH 7.5)
150 mM LiCl
1 mM EDTA
0.1% LiDS
10 mM Tris-HCl (pH 7.5)
150mM LiCl

Individual primers [version 1]

NAME	SEQUENCE

[Biotin]-barcoded bead tether_1	/5biosg/TCTAGAGCCACCAGCGGCATAGTAATCGTCGGCAG CGTCAGATGTGTATAAGAGACAGGAACGTAATCGGCTCGG GTCGTCTG
[Biotin]-barcoded bead tether_2	/5biosg/TCTAGAGCCACCAGCGGCATAGTAATCGTCGGCAG CGTCAGATGTGTATAAGAGACAGATTGATTACGGGCTCGG GTCGTCTG
[Biotin]-barcoded bead tether_3	/5biosg/TCTAGAGCCACCAGCGGCATAGTAATCGTCGGCAG CGTCAGATGTGTATAAGAGACAGTCCGTCATCTGGCTCGGG TCGTCTG
[Biotin]-barcoded bead tether_4	/5biosg/TCTAGAGCCACCAGCGGCATAGTAATCGTCGGCAG CGTCAGATGTGTATAAGAGACAGACTAGTTGCGGGCTCGG GTCGTCTG
[Biotin]-barcoded bead tether_5	/5biosg/TCTAGAGCCACCAGCGGCATAGTAATCGTCGGCAG CGTCAGATGTGTATAAGAGACAGACCATATAAGGGCTCGGG TCGTCTG
[Biotin]-barcoded bead tether_6	/5biosg/TCTAGAGCCACCAGCGGCATAGTAATCGTCGGCAG CGTCAGATGTGTATAAGAGACAGATCTCGATGAGGCTCGG GTCGTCTG
[Biotin]-barcoded bead tether_7	/5biosg/TCTAGAGCCACCAGCGGCATAGTAATCGTCGGCAG CGTCAGATGTGTATAAGAGACAGACTTATAGTTGGCTCGGG TCGTCTG
[Biotin]-bead tether	/5biosg/TCTAGAGCCACCAGCGGCATAGTAATCGTCGGCAGCGTC
Barcoded linker_1	CAGACGACCCGAGCCTACCATGCTTCTGTCTCTTATACACA TCTGACGCTGCCGACGA
Barcoded linker_2	CAGACGACCCGAGCCAATGGAGCCGCTGTCTCTTATACACA TCTGACGCTGCCGACGA
Barcoded linker_3	CAGACGACCCGAGCCCTAATCCGGTCTGTCTCTTATACACA TCTGACGCTGCCGACGA
Barcoded linker_4	CAGACGACCCGAGCCTGCCTAACTCCTGTCTCTTATACACA TCTGACGCTGCCGACGA
Barcoded linker_5	CAGACGACCCGAGCCAATAGTAGGCCTGTCTCTTATACACA TCTGACGCTGCCGACGA
Barcoded linker_6	CAGACGACCCGAGCCGCAACTTGGACTGTCTCTTATACACA TCTGACGCTGCCGACGA
Barcoded linker_7	CAGACGACCCGAGCCGAGATCGTCACTGTCTCTTATACACA TCTGACGCTGCCGACGA
Illumina P5 index primer_1	AATGATACGGCGACCACCGAGATCTACACTCGCTGAATCGT CGGCAGCGTC
Illumina P5 index primer_2	AATGATACGGCGACCACCGAGATCTACACCTCCAGGATCGT CGGCAGCGTC
Illumina P7 index primer_1	CAAGCAGAAGACGGCATACGAGATAACCGCGGGTGACTGG AGTTCAGACGTGTGCTCTTCCGATCT
Illumina P7 index primer_2	CAAGCAGAAGACGGCATACGAGATGGTTATAAGTGACTGGA GTTCAGACGTGTGCTCTTCCGATCT
Illumina P5 flow cell primer	AATGATACGGCGACCACCGAGATCTACAC

SARS-CoV-2 probe pool 1 [version 1]

CAGCACATCTAGGTTTCGTCAGACCACCCGACCC ROOV_Cap_2_RIGHT	NAME	SEQUENCE
NEOW_CBP_3_RIGHT	ncov_cap_1_RIGHT	CAGCACATCTAGGTTTCGTCCGCAGACGACCCGAGCC
ncov_cap_7_RIGHT GCAGACACCTTTTGAAATTAAATTGGCCAGACGACCCGAGC C GCAGACACCTTTTGCAGACGACGACGACGACCCGAGCC CCAGACGACGACGACGACGACCCCAGCC CCAGACGACGACGACGACCCCAGCC CCAGACGACGACGACCCCAGCC CCAGACGACGACCCCAGCC CCAGACGACGACCCCAGCC CCACAGTCCTCCACAGTCCTTTCCACAGCACCCCAGCC CCACAGTCCTTTACACAGACGACCCCAGCC CCACAGTCCTTTACACAGACGACCCCAGCC CCACAGTCCTTTACACAGACGACCCCAGCC CCACAGTCCTTTACACAGACGACCCCAGCC CCACACACTCCTTTACACAGACCCCCAGCC CCACACACTCCTTTACACACACCCCAGCC CCACACCCCAGCC CCACACCCCACCCCAGCC CCACACCCCACCCCAGCC CCACACCCCAGCC CCACACCCCACCCCAGCC CCACACCCCACCCCAGCC CCACACCCCACCCCAGCC CCACACCCCACCCCAGCC CCACACCCCACCCCAGCC CCACACCCCACCCCAGCC CCACCCCACCCCAGCC CCACCCCACCCCAGCC CCACCCCACCCCAGCC CCACCCCACCCCAGCC CCACCCCACCCCAGCCCCCAGCC CCACCCCACCCCAGCCCCCAGCC CCACCCCACCCCAGCCCCCAGCC CCACCCCACCCCAGCC CCACCCCACCCCAGCCCCCAGCC CCACCCCACCCCAGCCCCCAGCC CCACCCCACCCCAGCCCCCAGCC CCACCCCACCCCAGCCCCCAGCC CCACCCCACCCCAGCCCCAGCCCCAGCCCCAGCCCCCAGCCCCCAGCCCCCAGCCCCCAGCCCCCAGCCCCCAGCCCCCAGCCCCCAGCCCCCAGCCCCCAGCCCCAGCCCCCAGCCCCACCCCACCCCACCCCACCCCACCCCACCCCACCCCC	ncov_cap_3_RIGHT	CCTCATGGTCATGTTATGGTTGAGCCAGACGACCCGAGCC
C GTGAAACTTCATGGCAGACGGCAGACGACCCAGACC ncov_cap_1_RIGHT GTAAGGTGGTGCACATATTGCAGACGACCCGAGCC ncov_cap_13_RIGHT CTGCTTCCACAAGTGCTTTTGTCACACAGACCCCAGCC CTGCTTCCACAAGTGCTTTTGTCACACAGACCCCAGCC CTGCTTCCACAAGTGCTTTTGTCACACAGACCCCAGCC CTGCTTCCACAAGTGCTTTTGTCACACAGACCCCAGCC CTGCTTCACAAGTGCTTTTTTCACACACACCCCAGCC CTGCTTCACAAGTGCTTTTTTCACACACACCCCAGCC CTGCV_cap_15_RIGHT AGAACAAACTGGCCTACTCATGCCAGACCACCCAGCCC CCV_cap_21_RIGHT AGAACAAACTGCTCTCACCACACCCCAGCC CCV_cap_23_RIGHT ACCACTGGGCATTGATTTAGATGACAGACGACCCGAGCC CCV_cap_25_RIGHT ACCACTGGGCATTGATTTAGATGACAGACCCCGAGCC CCV_cap_25_RIGHT ACCACTGGGCATTGATTTAGATGACAGACACCCGAGCC CCV_cap_27_RIGHT ACCACTGAGCACACACACCCCCAGCC CCV_cap_27_RIGHT ACCACTGAGCACACACCCCCCAGCC CCV_cap_33_RIGHT ACCTTCAGTTCAACCACACACACCCCCAGCC CCV_cap_33_RIGHT ACCTTCAGTTCAACCACACACACCCCCAGCC CCV_cap_35_RIGHT ACCTCCAGTTGAACCAGACACACCCCGAGCC CCV_cap_35_RIGHT ACCTCCAGTTGAACCAGACCACCCCGAGCC CCV_cap_35_RIGHT ACCTCCAGTTGAACCAGACCACCCCGAGCC CCV_cap_37_RIGHT ACCCCCCCACCCCCACCCCCCCCCCCCCCCCCCCCCC	ncov_cap_5_RIGHT	GTTACCCGTGAACTCATGCGTGCAGACCGAGCC
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ncov_cap_13_RIGHT CTGCTTCCACAAGTGCTTTTGTCAGACGACCCGAGCC ncov_cap_15_RIGHT CGTGTTTTACAGAAGGCCGGTACAGAGGACCCCAGCC C ncov_cap_17_RIGHT AGAAGAACCTGGCCTACTCATGCCAGACGACCCGAGCC C ncov_cap_21_RIGHT AGAAGAACATACCTTCACACTCACAGACGACCCGAGCC C ncov_cap_21_RIGHT ACCACTGGGCATTGATTTAGATGACAGCACCCGAGCC ncov_cap_23_RIGHT ACCACTGGGCATTGATTTAGATGACAGACGACCCGAGCC ncov_cap_25_RIGHT ACCACTGGGCATTGATTTAGATGACAGACGACCCGAGCC C ncov_cap_25_RIGHT ACCACTGGGCATTGATTTAGATGACAGACGACCCGAGCC C ncov_cap_27_RIGHT ACCACTGGGCATTGATTTAGATGACAGACGACCCGAGCC C ncov_cap_32_RIGHT ACCACTGGGCATTGATTTAGATGACAGACGACCCGAGCC C ncov_cap_32_RIGHT ACCTTCAGTTCAACAGAGGAAAACAAAGCAGACGACCCGAGCC C ncov_cap_33_RIGHT ACCTTCAGTTGACACAGACGAACACACAGCCCGAGCC C ncov_cap_33_RIGHT ACCTTCAGTTGACACAGACGAACACACACCCGACCC C ncov_cap_37_RIGHT ACCTTCAGTTGACAACTTTATGCCCAGACGACCCCGAGCC C ncov_cap_37_RIGHT ACCTTCAGTTTTCTGGCACAGACGACCCCGAGCC C ncov_cap_37_RIGHT ACCTTCACTTTTCTGGCACAGACGACCCCGAGCC C ncov_cap_41_RIGHT TGATCCTAGTTTTTCTGGCACAGACGACCCCGAGCC C ncov_cap_41_RIGHT TGATCCTAGTTTTTCTGGCACAGACACACACACACCCGAGCC C ncov_cap_45_RIGHT CAAAGGTCCTTACTTTTCTGGCACCAGCACCCCGAGCC C ncov_cap_45_RIGHT CAAAGGTCCTTACTTTTCTGGCACCAGCACCCCGAGCC C ncov_cap_45_RIGHT CAAAGGTCCTTACTTTTCTGGCACCAGACCACCCGAGCC C ncov_cap_45_RIGHT CAAAGGTCCTATTAAGGATGTTCTCACACGACGACCCCGAGCC C ncov_cap_45_RIGHT CAAAGGTCCTATTAAGGATGTTCTCACACGACGACCCCGAGC C ncov_cap_55_RIGHT CAAAGGTCCTTAAACAAGTTCAACAGACGACCCCGAGC C ncov_cap_55_RIGHT TGCTGTTAATAGTGTCCTTGAGCACGACCCCGAGCC C ncov_cap_55_RIGHT TGCTGTTAATAGTGTCCTTGAGCACGACCCCGAGCC C ncov_cap_57_RIGHT TGCACTTTTTTCCCTGACTTAACTGAACACGACCCCGAGCC C ncov_cap_57_RIGHT TGCACTTTAAGGTCTTCATCATACAGACGACCCCGAGCC C ncov_cap_57_RIGHT TGCACTTTAAGGTCTTCATCATACAGACGACCCCGAGCC C ncov_cap_57_RIGHT TGCACTTTAAGGTCTTCATCATACAACACGACCCCCAGCC C ncov_cap_65_RIGHT TCAACTTGTATGATGTTTCACAACTTAACAGACCACCCCAACC C ncov_cap_65_RIGHT TGCACTTCATCATCATCATCATCAACAGACCACCCCAACC C ncov_cap_65_RIGHT TGCACTTCATCATCATCATCATCAACACCCCAACCC C ncov_cap_65_RIGHT TGCACTTCATCATCATCATCATCAACACCCCAACCC C ncov_cap_65_RIGHT TGCACTTCATCA	ncov_cap_9_RIGHT	GGTGAAACTTCATGGCAGACGGCAGACCAGCCC
ncov_cap_15_RIGHT cgTgTTTTACAGAAGGCCGTACAGACGACCCGAGCC cc_cap_17_RIGHT cdAGAGCGTTGGGAAATTGTTAAATTTCAGACGACCCGAGCC ncov_cap_19_RIGHT AGAGAAACTGGCTACTCATGCCAGACGACCCGAGCC ncov_cap_21_RIGHT ACCACTGGCATTGATTTACATGACGACGACCCGAGCC ncov_cap_22_RIGHT ACCACTGGCATTGATTTACATGACGACGACCCGAGCC ncov_cap_25_RIGHT ACCACTGGCATTGATTTACATGACGACCCGAGCC ncov_cap_27_RIGHT ACCACTGGCATTGATTTACATGACGACCCGAGCC ncov_cap_27_RIGHT ACGACGAAGTTCTACTTCACACTCACAGCACCCGAGCC ncov_cap_32_RIGHT ACGACGAAGTTCTACTTGCACCAGACGACCCGAGCC ncov_cap_31_RIGHT ACCTTCAGTTGAACAGACGAACACACACGACCCGAGCC ncov_cap_31_RIGHT ACCTTCAGTTGACACAGACGAACACCCGAGCC ncov_cap_31_RIGHT ACCACCGACCCACATGTTCAGACCAGACCCCGAGCC ncov_cap_31_RIGHT ACGCCGCACTACAGTTCTGACCAGACCCGAGCCC ncov_cap_37_RIGHT ACGCCCCACCTACAGTTCTGACCAGACCCCGAGCC ncov_cap_37_RIGHT ACGCCCCACCTACAGTTCTGACCAGACCCCGAGCC ncov_cap_37_RIGHT GTTATCACCTTTGACAATCTTAGACACAGACGACCCCGAGCC ncov_cap_41_RIGHT TGATCCTAGTTTTCTGGGTAGCACACAGCACCCCGAGCC ncov_cap_41_RIGHT TGATCCTAGTTTTCTGGGTAGCACACAGCACCCCGAGCC ncov_cap_42_RIGHT CACAGGCACACCTACAGTTTCTGGCACCAGCACCCCGAGCC ncov_cap_42_RIGHT CACAGGCTCTACCTTTTTCTGGCTAGACCACCCCGAGCC ncov_cap_41_RIGHT CACAGGCTCTACCTTTTCTGGCTAGACCACCCGAGCC ncov_cap_41_RIGHT CACAGGCTCTACCTTTTCTGGCTAGCACCACCCGAGCC ncov_cap_41_RIGHT CACAGGCTCTACCTTTTCTGGCTAGCACCACCCGAGCC ncov_cap_41_RIGHT CACAGGCTCTACCTTTTCTGGCTAGCACCACCCGAGCC ncov_cap_52_RIGHT CACAGGCTCTACCTTTTCTGGCTAGACCACCCGAGCC ncov_cap_53_RIGHT TGAGAGAAGACACCCGAGCC CC ncov_cap_53_RIGHT TGAGAGAAGTAGTGGAAAATATCTCAGACGACCCCGAGCC ncov_cap_53_RIGHT TGCTGTTAATAGTGTCCTTTGGCTAGACACCCCGAGCC ncov_cap_53_RIGHT TGCTGTTAATAGTGTTCCTTTCAGACAGACCCCGAGCC ncov_cap_53_RIGHT TGCAGTATACTTTTCCCTGACTTAAATGGTGACACCCCGAGCC ncov_cap_53_RIGHT TGCAGTATACTTTTTCACCAGACACCCCAACCC ncov_cap_53_RIGHT TGCAGTATACTGAGCACCCAACCCCAACCC CC ncov_cap_61_RIGHT ACAGTGACACCACTAATGGTTCACACCGACCCCAACCC CC ncov_cap_61_RIGHT ACACAGACCACCTAATGGTTCACACCAACCCCAACCC CC ncov_cap_61_RIGHT ACACAGACCACCTAATGGTTTCAACCAGACCCCAACCC ACCC ncov_cap	ncov_cap_11_RIGHT	GTAAGGGTGGTCGCACTATTGCCAGACGACCCGAGCC
ncov_cap_17_RIGHT AGAGACGTTGGGAAATTGTTAAATTTCAGACGACCCGAGC C ncov_cap_19_RIGHT TGGTAACAAACAATACCTTCACACTCACAGACGACCCGAGCC C ncov_cap_21_RIGHT TGGTAACAAACAATACCTTCACACTCACAGACGACCCGAGCC C ncov_cap_23_RIGHT AGAGCAAGAAGAATTGGTTAGATGACAGACGACCCGAGCC C ncov_cap_25_RIGHT AGAGCAAGAAGAATTGGTTAGATGACAACAACCACCGAGCC C ncov_cap_21_RIGHT AGAGCAAGAAGAATTGGTTAGATGACAACAACCACCGAGCC C ncov_cap_21_RIGHT ACCTCCAGTTGACACACCAACTCACCCGAGCC C ncov_cap_21_RIGHT ACCTCCAGTTCAACCACCAACCCCAACCCCAACCC C ncov_cap_31_RIGHT ACCTTCAGTTCAACCAGACGAACCACCCGAGCC ncov_cap_33_RIGHT AAAGCTGGTGGCACTACTGAACAAGACGACCCGAGCC ncov_cap_33_RIGHT AAAGCCCACCAAATTATATGCCCAGACGACCCGAGCC ncov_cap_37_RIGHT AAAGCCCACCACACTACTGAACAACACCCGAGCC ACCCCACCACACCCCAACCCCAACCCCAACCCCAACCCCAACCCC	ncov_cap_13_RIGHT	CTGCTTCCACAAGTGCTTTTGTCAGACGACCCGAGCC
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ncov_cap_23_Right	ncov_cap_17_RIGHT	
C ncov_cap_23_RIGHT ACCACTGGGCATTGATTTAGATGACAGACGACCCGAGCC ncov_cap_25_RIGHT AGAGCAAGAAGAAGAAGATTGTTAGATGACAGACCAACCCGAGC ncov_cap_27_RIGHT GTGGTTGTTAATGCAGCCAATGTCAGACGACCCGAGCC ncov_cap_29_RIGHT CAGCACGAAGATTCACTTGCACCAGACCACCCGAGCC ncov_cap_32_RIGHT ACCTTCAGTTGAACAGAGAAAACAAGCAGCCCGAGCC ncov_cap_33_RIGHT AAAGCTGGTGGCACATCTGAACAGACAACAACCAGCCCGAGCC ncov_cap_33_RIGHT AAAGCCTGACCACATTTATATGCCAGCAGACCCGAGCC ncov_cap_33_RIGHT AAAGCCTGACCACATTTATATGCCCAGACGACCCGAGCC ncov_cap_33_RIGHT AAGTCCCAGCTACCAGTTTTTGTCAGACGACCCCGAGCC ncov_cap_33_RIGHT GTTATCACCTTTGACAATCTTAAGACACTCAGACCCGAGCC ncov_cap_41_RIGHT GTATCCAGCTTTGGCAAACATCTTAAGACACTCAGACCCGAGCC ncov_cap_41_RIGHT GAAGCTGCTAACTTTTGTGCAACAGACCCCGAGCC ncov_cap_45_RIGHT CGTGTGGTAAACAAGCTACAAAATATCTCAGACGACCCGAGCC ncov_cap_47_RIGHT CAAAGGTCCTATTACGGATGTTTTCTACCAGACGACCCGAGCC ncov_cap_47_RIGHT CAAAGGTCCTATTACGGATGTTTTCTACCAGACGACCCGAGCC ncov_cap_49_RIGHT ACATTTTCCTGACTTAAATGGTGATGCAGACCCGAGCC ncov_cap_51_RIGHT TGAAGAGTAGTGGAAAATTCCTACCATCAGACGACCCGAGCC ncov_cap_51_RIGHT TGCGTTAAATAGTGTCCCTTGGGCAGACGACCCGAGCC ncov_cap_55_RIGHT TGCGTTTAATAGTGTCCCTTGGGCAGACCAGACCCCGAGCC ncov_cap_57_RIGHT TGCGTTTATATGGTTTTCACAACGACCACCCGAGCC ncov_cap_59_RIGHT TCAACCTTGTATGATGTTTCACAACGACCACCCGAGCC ncov_cap_51_RIGHT TCAACTTGTATGATGTTTCACAACGACCCCGAGCC ncov_cap_61_RIGHT ACAGTTATATGTTTTCACAACAGACCACCCGAGCC ncov_cap_61_RIGHT ACAGTTATATGTTTTCACAACCGTCCCAACCCCGAGCC ncov_cap_61_RIGHT ACAGTAACAACAATATGTTCAACACAACACACACCCGAGCC ncov_cap_61_RIGHT ACAGTAACACAATATCTTACAACACACACACCCGAGCC C ncov_cap_61_RIGHT ACAGTAACACAATATCCAACCAACCACCCGAGCC C ncov_cap_61_RIGHT ACAGTAACACAATATCCAACCAACCACCCGACCC AGCC ncov_cap_61_RIGHT ACAGTAACAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	ncov_cap_19_RIGHT	AGAAGAAACTGGCCTACTCATGCCAGACGACCCGAGCC
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ncov_cap_29_Right CAGCACGAAGTTCTACTTGCACCAGACGACCCCGAGCC ncov_cap_31_Right ACCTTCAGTTGAACAGAGAAAACAAGCAGACCCCGAGCC ncov_cap_33_Right AAAGGCTGTGGCACTACTGAACAGACGACCCCGAGCC ncov_cap_35_Right CAGAAGAACACGCAAATTAATGCCCAGACGACCCCGAGCC ncov_cap_37_Right AAGTGCCAGCTACCAGTTCTGTCAGACGACCCCGAGCC ncov_cap_39_Right GTTATCACCTTTGACAATCTTAAGACACTCAGACGACCCCGAGCC ncov_cap_41_Right TGATCCTAGTTTTCTGGGTAGGTACACAGACGACCCGAGCC ncov_cap_43_Right GAAGCTGCTAACTTTTTGTGCACTCAGACGACCCCGAGCC ncov_cap_45_Right CGTGTGGTAAACAAGCTACAAAATATCTCAGACGACCCCGAGC ncov_cap_47_Right CAAAGGTCCTATTACGGATGTTTTCTACCAGACGACCCCGAG ncov_cap_49_Right ACATTTTCCCTGACTTAAATGGTGATGCAGACGACCCGAGC ncov_cap_49_Right ACATTTTCCCTGACTTAAATGGTGACGACCCGAGCC ncov_cap_51_Right TGAAGAAGTAGTGGAAAATCCTACCATCAGACGACCCGAGC ncov_cap_51_Right TGCTGTTAATAGTGTCCCTTGGGCAGACCACCCGAGCC ncov_cap_52_Right TCCAACCGCTGTTTAGGTGTTCAGACGACCCCGAGCC ncov_cap_57_Right TGGTGTTATGATGTTTTCACAACGTAACAGACACCCGA ncov_cap_59_Right TCAACTTGTATGATGTGTTACAAACGTAACAGACGACCCGA ncov_cap_61_Right ACAGTGAACAAATAACGTAGTGTGTCAGACAGACCCGAGCC ncov_cap_62	ncov_cap_25_RIGHT	
ncov_cap_31_Right ACCTTCAGTTGAACAGAGAAAACAAGCAGACCCCGAGCC ncov_cap_33_Right AAAGGCTGTGGCACTACTGAACAGACGACCCCGAGCC ncov_cap_35_Right CAGAAGAAACACGCAAATTAATGCCCAGACGACCCCGAGCC ncov_cap_37_Right AAGTGCCAGCTACAGTTTCTGTCAGACGACCCCGAGCC ncov_cap_39_Right GTTATCACCTTTGACAATCTTAAGACACTCAGACGACCCGAGCC ncov_cap_41_Right TGATCCTAGTTTTCTGGGTAGGTACACAGACGACCCGAGCC ncov_cap_43_Right GAAGCTGCTAACTTTTGTGCACTCAGACGACCCCGAGCC ncov_cap_45_Right CGTGTGGTAAACAAGCTACAAAATATCTCAGACGACCCGAGC ncov_cap_47_Right CAAAGGTCCTATTACGGATGTTTTCTACCAGACGACCCGAGC ncov_cap_49_Right ACATTTTTCCCTGACTTAAATGGTGATGCAGACGACCCGAG ncov_cap_49_Right TGAAGAAGTAGTGGAAAAATCCTACCATCAGACGACCCGAGC ncov_cap_51_Right TGAAGAAGTAGTGGAAAATCCTACCATCAGACGACCCGAGC ncov_cap_53_Right TGCTGTTAATAGTGTCCCTTGGGCAGACGACCCGAGCC ncov_cap_55_Right CTCAACCGCTGCTTTTAGGTGTTCAGACGACCCGAGCC ncov_cap_57_Right TGGTTTTTGGCATATATTCTTTTCACTAGACGACCCGA ncov_cap_59_Right TCAACTTGTATGATGTGTTACAAACGTAACAGACACCCGA ncov_cap_61_Right TGTTACTAGACAGACCCGAGCC ncov_cap_65_Right ACAGTTAGTGTTCAGACGACCCGAGCC ncov_cap_65_Right AC	ncov_cap_27_RIGHT	GTGGTTGTTAATGCAGCCAATGTCAGACGACCCGAGCC
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ncov_cap_35_Right CAGAAGAAACACGCAAATTAATGCCCAGACGACCCGAGCC ncov_cap_37_Right AAGTGCCAGCTACAGTTTCTGTCAGACGACCCGAGCC ncov_cap_39_Right GTTATCACCTTTGACAATCTTAAGACACTCCAGACGACCCGA ncov_cap_41_Right TGATCCTAGTTTTCTGGGTAGGTACACAGACGACCCGAGCC ncov_cap_43_Right GAAGCTGCTAACTTTTGTGCACTCAGACGACCCGAGCC ncov_cap_45_Right CGTGTGGTAAACAAGCTACAAAATATCTCAGACGACCCGAG cc CCAAAGGTCCTATTACGGATGTTTTCTACCAGACGACCCGAG ncov_cap_47_Right ACATTTTTCCCTGACTTAAATGGTGATGCAGACGACCCGAG cc ACATTTTTCCCTGACTTAAATGGTGATGCAGACGACCCGAG ncov_cap_49_Right ACATTTTTCCCTGACTTAAATGGTGATGCAGACGACCCGAGC ncov_cap_51_Right TGCTGTTAATAGTGTCCCTTGGGCAGACGACCCGAGCC ncov_cap_53_Right TGCTGTTAATAGTGTCCCTTGGGCAGACGACCCGAGCC ncov_cap_55_Right TGCTGTTAATAGTGTCCCTTGGGCAGACGACCCGAGCC ncov_cap_55_Right TGGTTTTTGGCATATATTCTTTTCAGACGACCCGAGCC ncov_cap_59_Right TGGTTTTTGGCATATATTCTTTTCACTAGGCAGACCCGA ncov_cap_61_Right ACAGTGAAGAATGGTTCCATCCATCAGACGACCCGAGCC ncov_cap_61_Right ACAGTGAAGAATGGTTCCATCCATCAGACGACCCGAGC ncov_cap_65_Right TGTTACTAGATCAGGCATTAGTGTCTGCAGACGACCCGAGC ncov_cap_65_Right ACGAAAACAAATACGTAGTGTGCTGCAGACGACCCGAGC	ncov_cap_31_RIGHT	ACCTTCAGTTGAACAGAGAAAACAAGCAGACGACCCGAGCC
ncov_cap_37_RIGHT AAGTGCCAGCTACAGTTTCTGTCAGACGACCCGAGCC ncov_cap_39_RIGHT GTTATCACCTTTGACAATCTTAAGACACTCAGACGACCCGA ncov_cap_41_RIGHT TGATCCTAGTTTTCTGGGTAGGTACACAGACGACCCGAGCC ncov_cap_45_RIGHT GAAGCTGCTAACTTTTGTGCACTCAGACGACCCGAGCC ncov_cap_45_RIGHT CGTGTGGTAAACAAGCTACAAAATATCTCAGACGACCCGAG ncov_cap_47_RIGHT CAAAGGTCCTATTACGGATGTTTTCTACCAGACGACCCGAG ncov_cap_49_RIGHT ACATTTTTCCCTGACTTAAATGGTGATGCAGACGACCCGAG ncov_cap_51_RIGHT TGAAGAAGTAGTGGAAAATCCTACCATCAGACGACCCGAGC ncov_cap_53_RIGHT TGCTGTTAATAGTGTCCCTTGGGCAGACCGACCC ncov_cap_55_RIGHT TGCTGTTAATAGTGTCCCTTGGGCAGACGACCCGAGCC ncov_cap_57_RIGHT TGGTTTTTGGCATATATTCTTTTCACTAGGCAGACCCGA ncov_cap_59_RIGHT TCAACTTGTATGATGTGTTACAAACGTAACAGACGACCCGA ncov_cap_61_RIGHT ACAGTGAAGAATGGTTCCATCAGACGACCCGAGCC ncov_cap_63_RIGHT TGTTACTAGATCAGGCATTAGTGTCTGCAGACGACCCGAGC ncov_cap_65_RIGHT AGGTTACTGATCAGTCAGACGACCCGAGCC ncov_cap_65_RIGHT AGGTTTGTGATTCAGATGTGTCTGCAGACGACCCGAGCC ncov_cap_67_RIGHT ACGAAAACAAATACGTAGTGTGCCAGACGACCCGAGCC ncov_cap_67_RIGHT ACGAAAACAAATACGTAGTGTCTCAAGACGACCCGAGCC ncov_cap_69_RIGHT ACGAAAACAATACTGACTTTTCAAGCAGACCCCGAGCC <td>ncov_cap_33_RIGHT</td> <td>AAAGGCTGGTGGCACTACTGAACAGACGACCCGAGCC</td>	ncov_cap_33_RIGHT	AAAGGCTGGTGGCACTACTGAACAGACGACCCGAGCC
COV_Cap_39_RIGHT	ncov_cap_35_RIGHT	CAGAAGAAACACGCAAATTAATGCCCAGACGACCCGAGCC
GCC ncov_cap_41_RIGHT TGATCCTAGTTTTCTGGGTAGGTACACAGACGACCCGAGCC ncov_cap_43_RIGHT GAAGCTGCTAACTTTTGTGCACTCAGACGACCCGAGCC ncov_cap_45_RIGHT CGTGTGGTAAACAAGCTACAAAATATCTCAGACGACCCGAGCC ncov_cap_47_RIGHT CAAAGGTCCTATTACGGATGTTTTCTACCAGACGACCCGAG CC ncov_cap_49_RIGHT ACATTTTTCCCTGACTTAAATGGTGATGCAGACCCGAG CC ncov_cap_51_RIGHT TGAAGAAGTAGTGGAAAAATACCTACCATCAGACGACCCGAGCC ncov_cap_53_RIGHT TGCTGTTAATAGTGTCCCTTGGGCAGACGACCCGAGCC ncov_cap_55_RIGHT TGGTTTTTGGCATATATTCTTTTCACTAGACGACCCGAGCC ncov_cap_57_RIGHT TGGTTTTTGGCATATATTCTTTTCACTAGGCAGACCCGAGCC ncov_cap_59_RIGHT TCAACTTGTATGATGTTTACAAACGTAACAGACGACCCGAGCC ncov_cap_61_RIGHT ACAGTGAAGAATAGTTCCATCATCAGACGACCCGAGCC ncov_cap_65_RIGHT TGTTACTAGATCAGGCATTAGTTTCGCAGACGACCCGAGCC ncov_cap_665_RIGHT AGGGTTTGTTTGATTCAGATGTAGAAACCAGACCAGA	ncov_cap_37_RIGHT	AAGTGCCAGCTACAGTTTCTGTCAGACGACCCGAGCC
ncov_cap_43_RIGHT GAAGCTGCTAACTTTTGTGCACTCAGACGACCCGAGCC ncov_cap_45_RIGHT CGTGTGGTAAACAAGCTACAAAATATCTCAGACGACCCGAG ncov_cap_47_RIGHT CAAAGGTCCTATTACGGATGTTTTCTACCAGACGACCCGAG ncov_cap_49_RIGHT ACATTTTTCCCTGACTTAAATGGTGATGCAGACGACCCGAG ncov_cap_51_RIGHT TGAAGAAGTAGTGGAAAATCCTACCATCAGACGACCCGAGC ncov_cap_53_RIGHT TGCTGTTAATAGTGTCCCTTGGGCAGACGACCCGAGCC ncov_cap_55_RIGHT CTCAACCGCTGCTTTAGGTGTTCAGACGACCCGAGCC ncov_cap_57_RIGHT TGGTTTTTTGGCATTATTCTTTTCACTAGGCAGACCCCGAGCC ncov_cap_59_RIGHT TCAACTTGTATGATGTGTTACAAACGTAACAGACGACCCGA ncov_cap_61_RIGHT ACAGTGAAGAATAGTTCCATCCATCAGACGACCCGAGCC ncov_cap_63_RIGHT TGTTACTAGATCAGGCATTAGTGTCTGCAGACGACCCGAGC ncov_cap_65_RIGHT AGGGTTTGTTGATTCAGATGTAGAAACCAGACCAGACCCCGAGC ncov_cap_67_RIGHT ACGAAAACAAATACGTAGTGTCCAGCAGCACCCGAGCC ncov_cap_69_RIGHT TGTCATGTCTAAACATACTGACTTTTCAAGCAGACCCCGAGCC ncov_cap_69_RIGHT TGTCATGTCTAAACATACTGACTTTTCAAGCAGACCCCGAGCC ncov_cap_69_RIGHT TGTCATGTCTAAACATACTGACTTTTCAAGCAGACCCCGAGCC	ncov_cap_39_RIGHT	
ncov_cap_45_RIGHT CGTGTGGTAAACAAGCTACAAAATATCTCAGACGACCCGAG ncov_cap_47_RIGHT CAAAGGTCCTATTACGGATGTTTTCTACCAGACGACCCGAG ncov_cap_49_RIGHT ACATTTTTCCCTGACTTAAATGGTGATGCAGACCCGAG ncov_cap_51_RIGHT TGAAGAAGTAGTGGAAAATCCTACCATCAGACGACCCGAGC ncov_cap_53_RIGHT TGCTGTTAATAGTGTCCCTTGGGCAGACCACCCGAGCC ncov_cap_55_RIGHT CTCAACCGCTGCTTTAGGTGTTCAGACGACCCCGAGCC ncov_cap_57_RIGHT TGGTTTTTTGGCATATATTCTTTTCACTAGGCAGACCCCGAGCC ncov_cap_59_RIGHT TCAACTTGTATGATGTGTTACAAACGTAACAGACGACCCGA ncov_cap_61_RIGHT ACAGTGAAGAATGGTTCCATCCATCAGACGACCCGAGCC ncov_cap_63_RIGHT TGTTACTAGATCAGGCATTAGTGTCTGCAGACGACCCCGAGCC ncov_cap_63_RIGHT AGGGTTTGTTGATTCAGATGTAGAAACCAGACGACCCGAGC ncov_cap_65_RIGHT AGGAAAACAAATACGTAGTGTGCCAGACGACCCGAGCC ncov_cap_67_RIGHT ACGAAAACAAATACGTAGTGCTGCCAGACGACCCGAGCC ncov_cap_69_RIGHT TGTCATGTCTAAACATACTGACTTTTCAAGCAGACCCGAGCC ncov_cap_69_RIGHT TGTCATGTCTAAACATACTGACTTTTCAAGCAGACCCCGAGCC ncov_cap_69_RIGHT TGTCATGTCTAAACATACTGACTTTTCAAGCAGACCCCGAGCC ncov_cap_71_RIGHT ATTACGCACAACTAATGGTGACTTTTCAGACGACCCGAGCC	ncov_cap_41_RIGHT	TGATCCTAGTTTTCTGGGTAGGTACACAGACGACCCGAGCC
CC ncov_cap_47_RIGHT CAAAGGTCCTATTACGGATGTTTCTACCAGACGACCCGAG CC ncov_cap_49_RIGHT ACATTTTTCCCTGACTTAAATGGTGATGCAGACCCGAG CC ncov_cap_51_RIGHT TGAAGAAGTAGTGGAAAATCCTACCATCAGACGACCCGAGC C ncov_cap_53_RIGHT TGCTGTTAATAGTGTCCCTTGGGCAGACCCCGAGCC ncov_cap_55_RIGHT CTCAACCGCTGCTTTAGGTGTTCAGACGACCCCGAGCC ncov_cap_57_RIGHT TGGTTTTTGGCATATATTCTTTTCACTAGGCAGACCCCGAGCC ncov_cap_59_RIGHT TCAACTTGTATGATGTGTTACAAACGTAACAGACGACCCGA GCC ncov_cap_61_RIGHT ACAGTGAAGAATGGTTCCATCCATCAGACGACCCGAGCC ncov_cap_63_RIGHT TGTTACTAGATCAGGCATTAGTGTTCAGACGACCCGAGCC CC ncov_cap_65_RIGHT AGGGTTTGTTGATTCAGATGTAGAAACCAGACCAGAC	ncov_cap_43_RIGHT	GAAGCTGCTAACTTTTGTGCACTCAGACGACCCGAGCC
CC ncov_cap_49_RIGHT ACATTTTCCCTGACTTAAATGGTGATGCAGACGACCCGAG CC ncov_cap_51_RIGHT TGAAGAAGTAGTGGAAAATCCTACCATCAGACGACCCGAGC C ncov_cap_53_RIGHT TGCTGTTAATAGTGTCCCTTGGGCAGACGACCCGAGCC ncov_cap_55_RIGHT CTCAACCGCTGCTTTAGGTGTTCAGACGACCCGAGCC ncov_cap_57_RIGHT TGGTTTTTGGCATATATTCTTTTCACTAGGCAGACCCCGAGCC ncov_cap_59_RIGHT TCAACTTGTATGATGTGTTACAAACGTAACAGACGACCCGA GCC ncov_cap_61_RIGHT ACAGTGAAGAATGGTTCCATCCATCAGACGACCCGAGCC ncov_cap_63_RIGHT TGTTACTAGATCAGGCATTAGTGTTGCAGACGACCCGAGC C ncov_cap_65_RIGHT AGGGTTTGTTGATTCAGATGTAGAAACCAGACCAGAC	ncov_cap_45_RIGHT	
CC TGAAGAAGTAGTGGAAAATCCTACCATCAGACGACCCGAGC C TGCV_cap_51_RIGHT TGCTGTTAATAGTGTCCCTTGGGCAGACGACCCGAGCC TCOV_cap_55_RIGHT CTCAACCGCTGCTTTAGGTGTTCAGACGACCCGAGCC TCOV_cap_57_RIGHT TGGTTTTTGGCATATATTCTTTTCACTAGGCAGACCCGAGCC TCOV_cap_59_RIGHT TCAACTTGTATGATGTGTTACAAACGTAACAGACGACCCGAGCC TCOV_cap_61_RIGHT ACAGTGAAGAATGGTTCCATCCATCAGACGACCCGAGCC TCOV_cap_63_RIGHT TGTTACTAGATCAGGCATTAGTGTCTGCAGACGACCCGAGCC TCOV_cap_65_RIGHT AGGGTTTGTTGATTCAGATGTAGAAACCAGACCAGAC	ncov_cap_47_RIGHT	
C ncov_cap_53_RIGHT TGCTGTTAATAGTGTCCCTTGGGCAGACGACCCGAGCC ncov_cap_55_RIGHT CTCAACCGCTGCTTTAGGTGTTCAGACGACCCGAGCC ncov_cap_57_RIGHT TGGTTTTTGGCATATATTCTTTTCACTAGGCAGACCGAGCC ncov_cap_59_RIGHT TCAACTTGTATGATGTGTTACAAACGTAACAGACGACCCGAGCC ncov_cap_61_RIGHT ACAGTGAAGAATGGTTCCATCCATCAGACGACCCGAGCC ncov_cap_63_RIGHT TGTTACTAGATCAGGCATTAGTGTCTGCAGACGACCCGAGCC C ncov_cap_65_RIGHT AGGGTTTGTTGATTCAGATGTGTCGCAGACGACCCGAGCC C ncov_cap_67_RIGHT ACGAAAACAAATACGTAGTGTCTGCAGACGACCCGAGCC ncov_cap_69_RIGHT ACGAAAACAAATACGTAGTGTCTCCAGACGACCCCGAGCC ncov_cap_69_RIGHT ACGAAAACAAATACGTAGTGTCTCAGACGACCCCGAGCC ncov_cap_71_RIGHT ATTACGCACAACTAATGGTGACTTTTCAAGCAGACCACCCGAGCC ATTACGCACAACTAATGGTGACTTTTCAGACGACCCCGAGCC ATTACCGCACAACTAATGGTGACTTTTCAGACGACCCCGAGCC	ncov_cap_49_RIGHT	
ncov_cap_55_RIGHT CTCAACCGCTGCTTTAGGTGTTCAGACGACCCGAGCC ncov_cap_57_RIGHT TGGTTTTTGGCATATATTCTTTTCACTAGGCAGACGACCCGAGCC ncov_cap_59_RIGHT TCAACTTGTATGATGTGTTACAAACGTAACAGACGACCCGAGCC ncov_cap_61_RIGHT ACAGTGAAGAATGGTTCCATCCATCAGACGACCCGAGCC ncov_cap_63_RIGHT TGTTACTAGATCAGGCATTAGTGTCTGCAGACGACCCGAGC ncov_cap_65_RIGHT AGGGTTTGTTGATTCAGATGTAGAAACCAGACCAGACCCGAGC ncov_cap_67_RIGHT ACGAAAACAAATACGTAGTGCTGCCAGACGACCCGAGCC ncov_cap_69_RIGHT TGTCATGTCTAAACATACTGACTTTTCAAGCAGACCCCGAGCC ncov_cap_71_RIGHT ATTACGCACAACTAATGGTGACTTTTCAGACGACCCCGAGCC	ncov_cap_51_RIGHT	
ncov_cap_57_RIGHT TGGTTTTTGGCATATATTCTTTTCACTAGGCAGACGACCCG AGCC ncov_cap_59_RIGHT TCAACTTGTATGATGTTTACAAACGTAACAGACGACCCGA GCC ncov_cap_61_RIGHT ACAGTGAAGAATGGTTCCATCCATCAGACGACCCGAGCC ncov_cap_63_RIGHT TGTTACTAGATCAGGCATTAGTGTCTGCAGACGACCCGAGC C ncov_cap_65_RIGHT AGGGTTTGTTGATTCAGATGTAGAAACCAGACCAGCC C ncov_cap_67_RIGHT ACGAAAAACAAATACGTAGTGCTGCCAGACGACCCGAGCC ncov_cap_69_RIGHT TGTCATGTCTAAACATACTGACTTTTCAAGCAGACGACCCGAGCC AGCC ncov_cap_71_RIGHT ATTACGCACAACTAATGGTGACTTTTCAGACGACCCGAGCC	ncov_cap_53_RIGHT	TGCTGTTAATAGTGTCCCTTGGGCAGACGACCCGAGCC
AGCC ncov_cap_59_RIGHT TCAACTTGTATGATGTGTTACAAACGTAACAGACGACCCGA GCC ncov_cap_61_RIGHT ACAGTGAAGAATGGTTCCATCCATCAGACGACCCGAGCC ncov_cap_63_RIGHT TGTTACTAGATCAGGCATTAGTGTCTGCAGACGACCCGAGC C ncov_cap_65_RIGHT AGGGTTTGTTGATTCAGATGTAGAAACCAGACCCGAGC C ncov_cap_67_RIGHT ACGAAAACAAATACGTAGTGCTGCCAGACGACCCGAGCC ncov_cap_69_RIGHT TGTCATGTCTAAACATACTGACTTTTCAAGCAGACCACCCGAGCC AGCC ncov_cap_71_RIGHT ATTACGCACAACTAATGGTGACTTTTCAGACGACCCGAGCC	ncov_cap_55_RIGHT	CTCAACCGCTGCTTTAGGTGTTCAGACGACCCGAGCC
GCC ncov_cap_61_RIGHT ACAGTGAAGAATGGTTCCATCCATCAGACGACCCGAGCC ncov_cap_63_RIGHT TGTTACTAGATCAGGCATTAGTGTCTGCAGACGACCCGAGC C ncov_cap_65_RIGHT AGGGTTTGTTGATTCAGATGTAGAAACCAGACCAGAC	ncov_cap_57_RIGHT	
ncov_cap_63_RIGHT TGTTACTAGATCAGGCATTAGTGTCTGCAGACGACCCGAGC c C ncov_cap_65_RIGHT AGGGTTTGTTGATTCAGATGTAGAAACCAGACCAGACCCGAGC c C ncov_cap_67_RIGHT ACGAAAACAAATACGTAGTGCTGCCAGACGACCCGAGCC ncov_cap_69_RIGHT TGTCATGTCTAAACATACTGACTTTTCAAGCAGACCCGAGCC ncov_cap_71_RIGHT ATTACGCACAACTAATGGTGACTTTTCAGACGACCCGAGCC	ncov_cap_59_RIGHT	
C ncov_cap_65_RIGHT AGGGTTTGTTGATTCAGATGTAGAAACCAGACGACCCGAGC C ncov_cap_67_RIGHT ACGAAAACAAATACGTAGTGCTGCCAGACGACCCGAGCC ncov_cap_69_RIGHT TGTCATGTCTAAACATACTGACTTTTCAAGCAGACCCCG AGCC ncov_cap_71_RIGHT ATTACGCACAACTAATGGTGACTTTTCAGACGACCCGAGCC	ncov_cap_61_RIGHT	ACAGTGAAGAATGGTTCCATCCATCAGACGACCCGAGCC
C ncov_cap_67_RIGHT ACGAAAACAAATACGTAGTGCTGCCAGACGACCCGAGCC ncov_cap_69_RIGHT TGTCATGTCTAAACATACTGACTTTTCAAGCAGACGACCCG AGCC ncov_cap_71_RIGHT ATTACGCACAACTAATGGTGACTTTTCAGACGACCCGAGCC	ncov_cap_63_RIGHT	
ncov_cap_69_RIGHT TGTCATGTCTAAACATACTGACTTTTCAAGCAGACGACCCG AGCC ncov_cap_71_RIGHT ATTACGCACAACTAATGGTGACTTTTCAGACGACCCGAGCC	ncov_cap_65_RIGHT	
AGCC ncov_cap_71_RIGHT ATTACGCACAACTAATGGTGACTTTTCAGACGACCCGAGCC	ncov_cap_67_RIGHT	ACGAAAACAAATACGTAGTGCTGCCAGACGACCCGAGCC
·	ncov_cap_69_RIGHT	
ncov_cap_73_RIGHT ACGTTATGTGCTCATGGATGGCCAGACCAGCCC	ncov_cap_71_RIGHT	ATTACGCACAACTAATGGTGACTTTTCAGACGACCCGAGCC
	ncov_cap_73_RIGHT	ACGTTATGTGCTCATGGATGGCCAGACGACCCGAGCC

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C	ncov_cap_75_RIGHT	GGTGCTTTGGACATATCAGCATCTCAGACGACCCGAGCC
TCTAMAGTTECGTAGTGATGTGCTACAGACGACCCGAGCC	ncov_cap_77_RIGHT	AGCACATATTCAGTGGATGGTTATGTTCAGACGACCCGAGC
ncov_cap_81_RIGHT ncov_cap_85_RIGHT ncov_cap_85_RIGHT GCTTAAGGTTGATACAGCCAATCCTCAGACGACCCCGAGCC ncov_cap_85_RIGHT TCTTTTTGTTACATCCACATCCTCAGACGACCCCGAGCC ncov_cap_85_RIGHT CCTCTAACACAGACCATATGAATCCACAGACCCCGAGCC ncov_cap_87_RIGHT CCACACCATGTTGTTACTCACACAGACCACAGCCCGAGCC ncov_cap_98_RIGHT CCACACCACTGTTGTTACTCACACAGACCACACCCGAGCC ncov_cap_91_RIGHT TCCTGTTACTTCACACTACTCAGACGACCCGAGCC ncov_cap_95_RIGHT ACTGCTTACTTCACTACTACTCAGACGACCCGAGCC ncov_cap_95_RIGHT ACTGCTCATCTCACTACTCACACACACCCGAGCC ncov_cap_97_RIGHT ACTGCTCATTCTACTTCACTACTCAGGTGTACCAGACCGCAGCC ncov_cap_97_RIGHT ACTGCTCATTGTGTTCCAGTTACCACACACCCGAGCC ncov_cap_97_RIGHT ACTGCTCATTGTTCAGTTCACTACACACACCCGAGCC ncov_cap_107_RIGHT ACCCACCCCACTGTTCACACACACCCGAGCC ACCCACCCCAC		C
neov_cap_85_RIGHT CCTTAACGTTGATACAGCCAATCCTCAGACGACCCCGAGCC neov_cap_85_RIGHT CCTTTTTGTTACATGCACCAATATGGAATTCAGACGACCCCGAGCC neov_cap_85_RIGHT CCTCTAACACAAGACCATGTTGACACAGACGACCCCGAGCC neov_cap_98_RIGHT CCTCTAACCAAGACCATGTTGACACAGACGACCCCGAGCC neov_cap_98_RIGHT CACACCACTGGTTGTTACTCACACAGACGACCCCGAGCC neov_cap_98_RIGHT TCCTGTTACTTCAACTACTACGACGACCACCCGAGCC neov_cap_98_RIGHT CTCTGTTACTTCAACTACTACGACGACCACCCGAGCC neov_cap_95_RIGHT ACGCACCTTTGGTGTTTATGATTACTACAGCACCCCGAGCC neov_cap_95_RIGHT ACGCACCTTTGGTGTTTATGATTACTTACGACCACCCGAGCC neov_cap_97_RIGHT GGGCTCAATGTGTCCAGTTACACAGAGCACCCGAGCC neov_cap_107_RIGHT GCAAGAGTGTTTCTAACTACTACAGAGCACCCGAGCC neov_cap_108_RIGHT GCAAGAGTGTTTATGTTATACTACAGACCACCCGAGCC neov_cap_108_RIGHT ACACCACTGGTACTATTGTATACAGCACCCGAGCC neov_cap_108_RIGHT ACACCACTGGTACTATTGTATACAGCACCCGAGCC neov_cap_108_RIGHT ACACCACTGGTACTATTCATACAGCACCCCGAGCC neov_cap_108_RIGHT ACACCACTGGTACTATTCATACAGCACCCCGAGCC neov_cap_111_RIGHT ACACCACTGGTACTGGTCCAGCACCCCGAGCC neov_cap_111_RIGHT ACACCACCTGGTACCTGTACCGTCTGCCCAGACCACCCGAGCC ACCC neov_cap_111_RIGHT ACACCACTGGTACTATTCATACAACCCAGACCACCCGAGCC ACCC neov_cap_111_RIGHT ACACCACTGGTACTGTACCGTCTGCCCAGACCACCCGAGCC ACCC neov_cap_111_RIGHT GCATTTTGATGAAGGTACAATTTAATTGATTCTTCAGACCACCCGAGCC ACCC neov_cap_111_RIGHT GCATTTTGATGAAGGTACAATTTCATACAAACCCCAGACCCCGAGCC ACCC GCATTTTGATGAAGAGATACCAATTTCATACAAACCCAGACCAACCCCGAGCC ACCC GCATTTTGATGAACAGACAACTTCCAACACCAGACCACCCGAGCC ACCC neov_cap_112_RIGHT GCTATACTGTTTGGATGACCAACACACACCCCGAGCC ACCC neov_cap_112_RIGHT TGTTACTGTTGTACTCACTACAAACCCCAGACCCCGAGCC ACCC neov_cap_112_RIGHT TGTTACTCTCTCACTGTACTCAACACCACACCCCGAGCC ACCC neov_cap_112_RIGHT CGTATATTCTTACCTGTATTCACAACCACACCCCGAGCC ACCC neov_cap_112_RIGHT ACACCCCTTATTTCACACCACCTTCACACACACCCCGAGCC ACCC neov_cap_113_RIGHT ACACCCCTACACTTTTATCTACACACCACACCCCGAGCC neov_cap_113_RIGHT ACACCCCTACACACTTTTATGACCACACACCACCCCGAGCC neov_cap_133_RIGHT ACACCCCTACTTTTATCACCCTTTTACACACCACCCGAGCC neov_cap_133_RIGHT ACACCCCCTACTTTTA	ncov_cap_79_RIGHT	TCTAAAGTTGCGTAGTGATGTGCTACAGACGACCCGAGCC
TCTTTTGTTACATGCACCATATGGAATTCAGACGACCCCGA SCC	ncov_cap_81_RIGHT	CCCATCTGGTAAAGTTGAGGGTTGCAGACCACCCGAGCC
GCC CCTCTAACACAAGACCATGTTGACACAGACGACCCGAGCC CCACACCACTGTTGTTACTCACACAGACGACCCCAGCCC CACACCACTGTTGTTACTCACACAGACGACCCCAGCCC CCACACCACTGTTGTTACTCACACAGACGACCCCAGCCC CCACACCACTGTTGTTACTTCACTACACACAGACGACCCCGAGCC TCCACCCACTGTTACTTCTACTACTACTCACGACGACCCCGAGCC TCCACCCACTGTTACTTCTACTACTACTCAGACCACCCGAGCC TCCACCCACTGTTTACTTCTACTACTCACGACCACCCGAGCC TCCACCCACCCACTGTTTATGATTACTTAGACCACCCCGAGCC TCCACCCACCCACCCCAC	ncov_cap_83_RIGHT	GCTTAAGGTTGATACAGCCAATCCTCAGACGACCCGAGCC
neov_cap_87_RIGHT CCTCTAACACAAGACCATGTTGACACAGACGACCCGAGCC neov_cap_187_RIGHT CACACCACCATGGTTGATACTCACACAGACCAACCCGAGCC neov_cap_193_RIGHT TCTCTGTTACTTCTAACTACTCAGACGACCCGAGCC neov_cap_93_RIGHT TCTCTGTTACTTCTAACTACTCAGACGACCCGAGCC neov_cap_95_RIGHT ACGCC neov_cap_95_RIGHT ACGCC neov_cap_95_RIGHT GGCCTCAATGTGTCTCAGATTCAGACGACCCGAGCC neov_cap_97_RIGHT GGCCTCAATGTGTCCAGATTACACAGACGACCCGAGCC neov_cap_99_RIGHT TGCTAATGGTGATTCTGAAGTTGTTCCAGACGACCCGAGCC neov_cap_101_RIGHT GCAAGAGATGGTTCTCTAACAGACGACCCGAGCC neov_cap_102_RIGHT GCAAGACGATGGTTCTCAGACGACCCGAGCC neov_cap_105_RIGHT ACACCACCTGGTACTCTATACAGACGACCCGAGCC neov_cap_105_RIGHT ACACCACCTGGTACTGTACACAGACGACCCGAGCC neov_cap_107_RIGHT ACACCACCTGGTACTGGTCAGGACGACCCGAGCC neov_cap_107_RIGHT ACACCACCTGGTACTGGTCAGGACGACCCGAGCC neov_cap_111_RIGHT ACACCACACTGGTACTGGTCAGGACGACCCGAGCC neov_cap_111_RIGHT AGACCGAAGATTTAATTGATTCTTCAGACGACCCGAGCC neov_cap_111_RIGHT AGACCGAAGATTTCAGTACAGCACCCGAGCC neov_cap_111_RIGHT GGATTTTGATGAAGGTAACAATTTTAATTGATTCTTCAGACGACCCGAGCC neov_cap_115_RIGHT GGATTTTGATGAAGGTAACAATTTTAATTGATTCTTCAGACGACCCGAGCC neov_cap_115_RIGHT TGTTAACTGTTTTGGTGAACCACAGAGCGACCCGAGCC neov_cap_117_RIGHT TGTTAACTGTTTTGGTGATTTCATACAGACCCCGAGCC AGCC neov_cap_117_RIGHT TGTTAACTGTTTTGGTGATACCAGAACCACAGACGACCCGAGCC AGCC neov_cap_121_RIGHT CGTAATGTTCATCATAACTCAAAACCCAGACGACCCGAGCC AGCC neov_cap_121_RIGHT CGTAATGTTTACTCACACAACTACTCAGACGACCCGAGCC AGCC neov_cap_121_RIGHT CGTAATGTTCATCATAACTCAAAACCACAGACGACCCGAGCC AGCC neov_cap_121_RIGHT CGTAATGTTATCTTCTTCTTGCTCAGACGACCCGAGCC AGCC neov_cap_131_RIGHT AGCACCTGATTATCATTAAGTCAGACACCACAGACGACCCGAGCC AGCC neov_cap_132_RIGHT AATGCACTTTATCTTACACGACACCTTCACACCAGACCCCGAGCC AGCC neov_cap_132_RIGHT ACACACCACGATTACATTTAATTCACACACACACACCCGAGCC AGCC neov_cap_131_RIGHT ACACACCACATTTATGTTACACCACACATACTCAGACCACCCGAGCC AGCC AGC	ncov_cap_85_RIGHT	TCTTTTTGTTACATGCACCATATGGAATTCAGACGACCCGA
CACACCACTGGTTGTTACTCACACAGAGCACCCGAGCC		GCC
neov_cap_91_RIGHT TGCTAGTTGGGTGATCCGATCTCAGACGACCCGAGCC neov_cap_93_RIGHT GCC neov_cap_93_RIGHT TCTCTGTTACTTCTAACTACTCAGGTGTACAGACGACCCGAGCC neov_cap_95_RIGHT ACTGACTCTTGGTGTTTATGATTACTTACTAGTCAGACGACCCGAGCC AGCC	ncov_cap_87_RIGHT	CCTCTAACACAAGACCATGTTGACACAGACGACCCGAGCC
neov_eap_95_RIGHT TCTCTGTTACTTCTAACTACTCAGGTGTACAGACGACCCCGA GCC ACTGACTCTTGGTGTTTATGATTACTTAGTAGACGACCCCGA GCC ACTGACTCTTGGTGTTTATGATTACTTAGTAGACGACCCCGAGCC AGCC	ncov_cap_89_RIGHT	CACACCACTGGTTGTTACTCACACAGACGACCCGAGCC
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ncov_cap_133_RIGHT ACACACCGCATACAGTCTTACAGCAGACCGAGCC ncov_cap_135_RIGHT TGTGCTAATGGACAAGTTTTTGGTTCAGACGACCCGAGCC ncov_cap_137_RIGHT TGCTGTCTGACAGAGAATTACATCTTCAGACGACCCGAGCC ncov_cap_139_RIGHT GCCATTAAGTGCACCTACACTAGTCAGACGACCCGAGCC ncov_cap_141_RIGHT CGCTGTTGATGCACTATGTGAGACAGACCAGACCCGAGCC ncov_cap_143_RIGHT CAATGCCAGATTACGTGCTAAGCCAGACCAGACCCGAGCC ncov_cap_145_RIGHT AGGGTGTTATCACGCATGATGTCAGACGACCCGAGCC CCACTCACTCTTGTAATGTAA	ncov_cap_129_RIGHT	
ncov_cap_135_RIGHT TGTGCTAATGGACAAGTTTTTGGTTCAGACGACCCGAGCC ncov_cap_137_RIGHT TGCTGTCTGACAGAGAATTACATCTTCAGACGACCCGAGCC ncov_cap_139_RIGHT GCCATTAAGTGCACCTACACTAGTCAGACGACCCGAGCC ncov_cap_141_RIGHT CGCTGTTGATGCACTATGTGAGACAGACCAGACCCGAGCC ncov_cap_143_RIGHT CAATGCCAGATTACGTGCTAAGCCAGACCAGACCCGAGCC ncov_cap_145_RIGHT AGGGTGTTATCACGCATGATGTCAGACGACCCGAGCC ncov_cap_147_RIGHT CAGCTCACTCTTGTAATGTAAACAGATTCAGACGACCCGAG	ncov_cap_131_RIGHT	GGTACACTTATGATTGAACGGTTCGCAGACGACCCGAGCC
ncov_cap_137_RIGHT TGCTGTCTGACAGAGAATTACATCTTCAGACGACCCGAGCC ncov_cap_139_RIGHT GCCATTAAGTGCACCTACACTAGTCAGACGACCCGAGCC ncov_cap_141_RIGHT CGCTGTTGATGCACTATGTGAGACAGACCCGAGCC ncov_cap_143_RIGHT CAATGCCAGATTACGTGCTAAGCCAGACCCCGAGCC ncov_cap_145_RIGHT AGGGTGTTATCACGCATGATGTCAGACGACCCGAGCC ncov_cap_147_RIGHT CAGCTCACTCTTGTAATGTAAACAGATTCAGACGACCCGAG	ncov_cap_133_RIGHT	ACACACCGCATACAGTCTTACAGCAGACCGAGCC
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ncov_cap_143_RIGHT CAATGCCAGATTACGTGCTAAGCCAGACGACCCGAGCC ncov_cap_145_RIGHT AGGGTGTTATCACGCATGATGTCAGACGACCCGAGCC ncov_cap_147_RIGHT CAGCTCACTCTTGTAATGTAAACAGATTCAGACGACCCGAG	ncov_cap_139_RIGHT	GCCATTAAGTGCACCTACACTAGTCAGACGACCCGAGCC
ncov_cap_145_RIGHT AGGGTGTTATCACGCATGATGTCAGACGACCCGAGCC ncov_cap_147_RIGHT CAGCTCACTCTTGTAATGTAAACAGATTCAGACGACCCGAG	ncov_cap_141_RIGHT	CGCTGTTGATGCACTATGTGAGACAGACCAGACCCGAGCC
ncov_cap_147_RIGHT CAGCTCACTCTTGTAATGTAAACAGATTCAGACGACCCGAG	ncov_cap_143_RIGHT	CAATGCCAGATTACGTGCTAAGCCAGACGACCCGAGCC
ncov_cap_147_RIGHT CAGCTCACTCTTGTAATGTAAACAGATTCAGACGACCCGAG	ncov_cap_145_RIGHT	AGGGTGTTATCACGCATGATGTCAGACGACCCGAGCC
·	ncov_cap_147_RIGHT	CAGCTCACTCTTGTAATGTAAACAGATTCAGACGACCCGAG
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neov_cap_151_RIGHT CC CC neov_cap_152_RIGHT GCTTTGAGTTGACATCTATGAGTATTTTCAGACGACCCG ACCC neov_cap_152_RIGHT GGCTTTGAGTTGACATCTATGAGTATTTTCAGACGACCCG ACCC neov_cap_155_RIGHT GTAGAATGGAAGTTCATGAGTCAGACGAGCCGAGCC neov_cap_155_RIGHT GTAGAATGGAAGTTCATGAGTCAGACGAGCCGAGCC neov_cap_156_RIGHT CATTCCACACACCAGGTTTTGATACAACAGACGACCGAGCC neov_cap_151_RIGHT AGCTTGTGGGTTTACAAACAATTTGAACGACCAGCCGAGCC neov_cap_165_RIGHT AGCTTGTGGGTTTACAAACAATTTGAAGCACCCGAGCC neov_cap_165_RIGHT AGCTATGGATTTATACAATCAATTTGAACGACCGAGCC neov_cap_165_RIGHT AGCTATGGATGATTCATTGAACGACGACCCGAGCC neov_cap_166_RIGHT CC neov_cap_167_RIGHT CCCAAGATTTATCTGTAGTTCAACAGCACCCGAGCC neov_cap_172_RIGHT GCCCAAGATTTATCTGAACGACTCACGAGCACCCGAGCC neov_cap_172_RIGHT GTCGCAAAATTACTCAACTGTGTCCACAGCAGCACCCGAGCC neov_cap_172_RIGHT GATCTCATTATTAGTGATATGTACGACAACGACCCCGAGCC neov_cap_172_RIGHT GATCTCATTATTAGTGATATGTACGACAACCACCAGACCCCGAGCC neov_cap_172_RIGHT AATTGGATGTAATTATCTTGGCAAACCACAGACGACCCGAGCC neov_cap_172_RIGHT AATTGGATGTAATTATCTTGGCAAACCACAGACGACCCGAGCC neov_cap_172_RIGHT TGAGTGTCATTATTAGTGATATGTACGACCACAGACCACCAGACCCCGAGCC neov_cap_172_RIGHT TGAGTGTCATTATTAGTGATATGAACCACAGACCACAGACCCCGAGCC neov_cap_172_RIGHT TGAGTGTCATTATATCTTGGCAAACCACAGACCACAGACCCCGAGCC neov_cap_172_RIGHT TGAGTGTCATTATATCTTGTTAACAAACAAACAAACAACACACAGACCCCCGAGCC neov_cap_172_RIGHT TGAGACCAATGGTACTAAAACGAAACCACAGACCCCGAGCC neov_cap_182_RIGHT ACAAAACTTGCATCATTATTGTTTCAACACAGACCACCCGAACCC neov_cap_183_RIGHT ACAAAACTTTACTTTGTTAACAACAACAAACACAACAC	ncov_cap_149_RIGHT	TCAAAACTGAAGGTTTATGTGTTGACACAGACGACCCGAGC
AGCC NEON_Cap_155_RIGHT	ncov_cap_151_RIGHT	
neov_cap_157_RIGHT GTAGAATGGAAGTTCATGATGCACAGCAGACGACCGAGC C neov_cap_159_RIGHT ACTIOCACACACCACCAGTTTTGATAACAGACGACCCGAGCC neov_cap_161_RIGHT ACTITGAGTTTGAGACACACCAGCCTACCACCACCCAGCC neov_cap_161_RIGHT ACTITGAGTTTGAGCACACCACCACCCGAGCC neov_cap_162_RIGHT ACTITGAGTGTTTCAGACGACCACCACCACCCGAGCC neov_cap_167_RIGHT ACTITGATGCTATTGATCTAGACGACCCGAGCC neov_cap_167_RIGHT ACCCACACACCACCTAGTTTTCAACGACCACCCGAGCC neov_cap_176_RIGHT CCCACACATTTATCTTGAGTTTCAACGACGACCCCGAGCC neov_cap_171_RIGHT GTCCACACATTTATCTTAGATTTCAACGTTCAGACGACCCCGAGCC neov_cap_172_RIGHT GACTCATTTATCTTAGATTTCAACGTTGCACAGACGACCCCGAGCC neov_cap_172_RIGHT GATCTCATTTATCTTAGACGACCCCGAGCC neov_cap_172_RIGHT ACTITGATATTCTTGGACACCACAGACGACCCCGAGCC neov_cap_172_RIGHT TACTTGTTATAGACCTAGACGACCCCGAGCC neov_cap_172_RIGHT TACTTGTTATAGACACTAACGAACCACAGACGACCCCGAGCC neov_cap_172_RIGHT TAGAGCACTAACGAACCACAGACGACCCCGAGCC neov_cap_181_RIGHT TAGAGCACACAGACGACCCCGAGCC neov_cap_181_RIGHT ACTAGGTTCACACAGACGACCCCGAGCC neov_cap_181_RIGHT ACTAGGTTCACAACAGACGACCCCGAGCC neov_cap_181_RIGHT ACTAGGTTCACAACAGACGACCCGAGCC neov_cap_181_RIGHT ACTAGGTTCACAACAACAGACGACCCGAGCC neov_cap_181_RIGHT ACTAGGTTCACAACAACAACAACAACAACAACAACAACCCGAGCC neov_cap_181_RIGHT ACCACACCAACAACAACAACAACAACAACAACAACAACCCGAGCC neov_cap_181_RIGHT ACCACACCAACAACAACAACAACAACAACAACAACCCGAGCC neov_cap_181_RIGHT ACCACACCACACCAACAACAACAACAACAACAACAACAA	ncov_cap_153_RIGHT	
C CATTCCACACACCAGCTTTTGATACAGAGCACCCGAGCC COCV_Cap_159_RIGHT CATTCCACACACACCAGCTTTTGATACAGAGCACCCCGAGCC COCV_Cap_169_RIGHT AGCTTGTGGGTTTACAACACATTTGACAGACGACCCCGAGCC CCC_Cap_169_RIGHT AGCTATGGATGATTTCAGGCTTTGGGCCAGACCACCCGAGCC CCC_Cap_169_RIGHT AGCTATGGATGATTCATTGACTTTGACACGACCGACCCGAGCC CCC_Cap_169_RIGHT CCCAAGATTTATCTGTAGATTTCAAGGTACGACCGAGCC AGCC CCC_Cap_179_RIGHT CCCAAGATTTATCTGTAGTTTCAAGGTTGCAGACGACCCGAGCC AGCC CCC_Cap_179_RIGHT GTCGCAAAATATACTCAACTGTGTCACAGACGACCCCGAGCC AGCC CCC C	ncov_cap_155_RIGHT	AGCTAGTTGTGATGCAATCATGACTCAGACGACCCGAGCC
ncov_cap_161_RIGHT AGCTTGTGGGTTTACAAACAATTTGACAGACCAGACC	ncov_cap_157_RIGHT	
ncov_cap_163_RIGHT ncov_cap_165_RIGHT ACAMATGCCGTAATGGTGTTCAGACGACCCGAGCC ncov_cap_167_RIGHT ACCAAGATTCATTGAACTTTCAGACGATCAGACCCGAGCC ncov_cap_169_RIGHT CCCAAGATTTATCTGTAGTTTCTAAGGTTCCAGACGACCCCGAGCC ncov_cap_171_RIGHT CCCAAGATTTATCTGTAGTTTCTAAGGTTCCAGACGACCCCGAGCC ACCC ncov_cap_171_RIGHT GTCGCAAAATATCTCAACTGTGTCACAGACCACCCGAGCC ncov_cap_175_RIGHT GATCTCATTATTAGTGATATTATCTGCAACCCCAAGCACCCCCAGCC ncov_cap_175_RIGHT TGATGTTCTTGTTAACACTAAACCAACAGACGACCCGAGC ncov_cap_179_RIGHT TGATGTTCTTGTTAACACTAAACGAACACACAGACGACCCGAGCC ncov_cap_181_RIGHT CAAAACTTCGATGTAACACTAAACGAACACACAGACGACCCGAGCC ncov_cap_183_RIGHT ACTAGGTTCAACACACAACAGATCTTTACACAGACGACCCCGAGCC ncov_cap_184_RIGHT ACAGATTCAATTGTATTATCTGCTTTACACAGACGACCCCGAGCC ncov_cap_187_RIGHT GCAGATTCAATTGTATTATCTGCTTTACACAGACGACCCCGAGCC ncov_cap_187_RIGHT GCAGATTCAATTGTATATATCTGCTTTACACAGACGACCCCGAGCC ncov_cap_187_RIGHT GCAGATTCAATTGTAATTATATGTGATGACGACCCCGAGCC ncov_cap_187_RIGHT ACAAAACCTTCTGTTAAACACTACACACAGACGACCCCGAGCC ncov_cap_187_RIGHT ACAAAAAGTTTCTGCCTTTCCAACACAGACGACCCCGAGCC ncov_cap_198_RIGHT ACAAAAAGTTTCTGCCTTTTCCAACACAGACGACCCCGAGCC ncov_cap_197_RIGHT ACAAAAAGTTTCTGCCTTTTCCAACACAGACGACCCCGAGCC ncov_cap_197_RIGHT ACAAAAACTTTCTGCCTTTTCCAACACAGACGACCCCGAGCC ncov_cap_197_RIGHT CCAACACGTGCAGCCTTTTAACACAGACGACCCCGAGCC ncov_cap_197_RIGHT CCATCAAAAACCATCGGACCCTTTTAACACACAGACGACCCCGAGCC ncov_cap_197_RIGHT CCATCAAAAACCATCGGACCCTAAGACCAACACAGACGACCCCGAGCC ncov_cap_197_RIGHT CCATCAAAAACCATCGGACCCTAAGACCAAGACCACCCGAGCC ncov_cap_197_RIGHT CCATCAAAAACCATCGTGTCTATGACCAAGACCACAGACGACCCCGAGCC ncov_cap_197_RIGHT CCATCAACAGTGTAACTTTGGTCCACAAGACACACAGACGACCCCGAGCC ncov_cap_197_RIGHT CCATCACAGTGTACTTTGGTCCACAAGACACACAGACCACCCGAGCC ncov_cap_201_RIGHT CCATCACAGTGTACTTTGATCCCACAGACCAACACCCGACCC ncov_cap_201_RIGHT CTCATCGATCTCCAACAGACCACACCCGACCC ncov_cap_211_RIGHT ACAACCTCCTTTTACCTCTCCACACAGACCACCCGACCC ncov_cap_211_RIGHT ACAACCTCCTTTTTACCTTTTTCCCCACACAGACCACCCGACCC CCOV_cap_211_RIGHT ACACCTCCTTTTTACCTTTTTCCCCACACAGACCACCCGAC	ncov_cap_159_RIGHT	CATTCCACACCAGCTTTTGATAACAGACGACCCGAGCC
ncov_cap_165_RIGHT	ncov_cap_161_RIGHT	AGCTTGTGGGTTTACAAACAATTTGACAGACGACCCGAGCC
ncov_cap_167_RIGHT AGCTATGATGATGATTCATGAACGTACAGACGACCCGAGC C ncov_cap_171_RIGHT GTCGCAAAATTATCTGAACTGTTCAAGATGACCAGACCCGAGCC ncov_cap_173_RIGHT GTCGCAAAATTATCTCAACTGTGTCACAGACGACCCGAGCC ncov_cap_173_RIGHT GATCTCATTATTAGTGATATGTACGACCCTCAGACGACCCGAGCC ncov_cap_175_RIGHT AATTGGATGTAATTATCTTGGCAAACCAGACGACCCGAGC ncov_cap_177_RIGHT TGATGTTCTTGTTAACAACTAAACGAACCAGACGACCCGAGC ncov_cap_177_RIGHT TGGGACCAATGGTACTAAGAGGTTCAGAGCACCCGAGCC ncov_cap_181_RIGHT CAAAAGTTGGATGGAAAGTGAAGTTCACAGACGACCCGAGCC ncov_cap_181_RIGHT AGAGTCCAACCAACAGAATCTATCTTGCTTTACAAGACGACCCGAGCC ncov_cap_182_RIGHT AGAGTCCAACCAACAGAATCTATTGTCAGACGACCCGAGCC ncov_cap_187_RIGHT AGAGTCCAACCAACAGAATCTATTGTCAGACGACCCGAGCC ncov_cap_187_RIGHT GCAGATTCATTTGAACTTTACTTGCTTTACAGACGACCCGAGCC ncov_cap_187_RIGHT GCAGATTCATTTGTAATTAGAGGTGACAGACCAGACC	ncov_cap_163_RIGHT	AATGTAGCATTTGAGCTTTGGGCCAGACCACCCGAGCC
C \[\text{rocv_cap_169_RIGHT} \text{CCCAAGATTTATCTGTAGTTTCTAAGGTTGCAGACGACCCCG AGCC} \text{AGCC} \text{Rocv_cap_173_RIGHT} \text{GTCGCAAAATATACTCAACTGTGTCACAGAGCGACCCGAGCC} \text{Rocv_cap_173_RIGHT} \text{GATCCATTATTAGTGATATGTACACCGACCCGAGCC} \text{AGCC} \text{Rocv_cap_175_RIGHT} \text{AATTGGATGAACCACAGAACCACAGACCACCGAGCC} \text{Rocv_cap_177_RIGHT} \text{RofGATGTTTTGTTAACAACTAAACGAACACAGACGACCCGAGCC} \text{Rocv_cap_179_RIGHT} \text{RofGATGGATGGAAACTAAGAGGATCCAGACCCGAGCC} \text{Rocv_cap_181_RIGHT} \text{RofGATGGAAGTGAGTTCACAGACGACCCGAGCC} \qquad	ncov_cap_165_RIGHT	AGAAATGCCCGTAATGGTGTTCTCAGACGACCCGAGCC
AGCC NOW_CBD_171_RIGHT	ncov_cap_167_RIGHT	
ncov_cap_173_RIGHT CC ncov_cap_175_RIGHT AATTGGATGTAATTACTTGGCAAACCACAGACGACCCGAG CC ncov_cap_177_RIGHT TGATGTTCTTGTTAACAACTAAACGAACACAGACGACCCGAG GCC ncov_cap_181_RIGHT CAAAAGTTGGATGAATTACTTGGCAAACCACAGACGACCCGAGCC ncov_cap_183_RIGHT CAAAAGTTGAACTAAACTAACGAACGACCAGACCCGAGCC ncov_cap_183_RIGHT ACAGGTTCAAACTTTACTTGCTTACACAGACGACCCGAGCC ncov_cap_183_RIGHT AGAGTCCAACCAACAGAATCTATTGCAGACGACCCGAGCC ncov_cap_185_RIGHT AGAGTCCAACCAACAGAATCTATTGTCAGACGACCCGAGCC ncov_cap_189_RIGHT ACAAAAAGTTTCTGCTTTACACAGACGACCCGAGCC ncov_cap_191_RIGHT ACAAAAAGTTTCTGCCTTTCCAACACAGACGACCCGAGCC ncov_cap_192_RIGHT ACAAAAAGTTTCTGCCTTTCCAACACAGACGACCCGAGCC ncov_cap_193_RIGHT CAAACACGTGCAGGCCTTTAACAGACGACCCGAGCC ncov_cap_191_RIGHT CCACCAACACAGACCAACAGACCACAGACGACCCGAGCC ncov_cap_191_RIGHT CCACCACAACACAGACCAACAGACCACAGACGACCCGAGCC ncov_cap_192_RIGHT CCACCACAACCAACAGACCACAGACGACCCCGAGCC ncov_cap_192_RIGHT CCACCACAACCAGCCAACCAGACGACCCCGAGCC ncov_cap_192_RIGHT CCACCACAACCAGCCCAACCCAACCAGCCCCCCCCCC	ncov_cap_169_RIGHT	
AGCC ncov_cap_175_RIGHT ATTGGATGTAATTATCTTGGCAAACCACAGACGACCCGAG CC ncov_cap_177_RIGHT TGATGTTCTTGTTAACAACTAAACGAACACAGACGACCCGAG GCC ncov_cap_179_RIGHT TGGGACCAATGGTACTAAGAGGTTCAGACGACCCGAGCC ncov_cap_181_RIGHT CAAAAGTTGGATGGAAGGAACTAGAGAGTTCACAGACGACCCGAGCC ncov_cap_183_RIGHT ACTAGGTTTCAAACTTTACTTGCTTTACACAGACGACCCGAGCC ncov_cap_185_RIGHT AGAGTCCAACCAACAGAATCTATTGTCAGACGACCCCGAGCC ncov_cap_187_RIGHT ACTATCATTTGTAATTAGAGGTGATGAACGACCCGAGCC ncov_cap_189_RIGHT ATCTATCAGGCCGGTAGCACCACAGACGACCCGAGCC ncov_cap_191_RIGHT ACAAAAAGTTTCTGCTTTCACACCAGACGACCCGAGCC ncov_cap_195_RIGHT ACAACACCTGCAGGCCTTTCCAACCACAGACGACCCGAGCC ncov_cap_195_RIGHT CCATCAAAACCAGGCAGGACCACAGACGACCCGAGCC ncov_cap_197_RIGHT CCATCAAAACCAAGGACGACCAGACGACCCGAGCC ncov_cap_192_RIGHT TCTGGTTGGACCTTTGGTGCAGCAGACCAGACGACCCGAGCC ncov_cap_201_RIGHT ACGCTTGTTAAACAACTTAGCTCCCAGACGACCCGAGCC ncov_cap_201_RIGHT TGGAAAGGGTATCATCTTATGTCCCAGACGACCCGAGCC ncov_cap_201_RIGHT TGGAAAGGGTATCATCTTATGTCCCAGACGACCCGAGCC ncov_cap_205_RIGHT TGGAAAGGGTATCATCTTATGTCCCCAGACGACCCGAGCC ncov_cap_205_RIGHT TGGAACGGTGAACTTTGTATATGACAAGACAACGACCCGAGCC ncov_cap_205_RIGHT TGCATCGATCTCCAAGAACTTTGACCAAGACGACCCGAGCC ncov_cap_205_RIGHT TGCATCGATCTCCAAGAACTTTGACCAAGACGACCCGAGCC ncov_cap_205_RIGHT TGCATCGATCTCCAAGAACTTTGCCCAGACGACCCGAGCC ncov_cap_205_RIGHT TGCATCGATCTCCAAGAACTTTGCCCAGACGACCCGAGCC ncov_cap_205_RIGHT TCTATCGATCTCCAAGAACTTTGACCAAGACGACCCGAGCC ncov_cap_211_RIGHT ACACTTTTATGTCCCAGACGACCCCAGCC ncov_cap_211_RIGHT ACACTTTTATGTTCCACACCTTTTGCTCCAGACGACCCCGAGCC ncov_cap_215_RIGHT TCATTCACATCTCACACCTTTTTACTCCCAGACGACCCCGAGCC ncov_cap_211_RIGHT TCATTACTTCAGGTGATGTGACAACAAGACGACCCGAGCC ncov_cap_211_RIGHT TCATTACTTCAGGTGATGTGCACAACAAGACGACCCCGAGCC ncov_cap_211_RIGHT TCATTACTTCACACCTTTTTACCTCTCAGACGACCCCGAGCC ncov_cap_211_RIGHT TCATTACTTCACACCTTTTTACCTCTCAGACGACCCCGAGCC ncov_cap_211_RIGHT TCATTACTTCACACTTTTTACCTCTCTCAGACGACCCCGAGCC ncov_cap_211_RIGHT TGTCTTCAACGTGCCACTATGCCACAGACCACACACACCCCGAGCC ncov_cap_211_RIGHT TGTCTTCAACG	ncov_cap_171_RIGHT	GTCGCAAAATATACTCAACTGTGTCACAGACGACCCGAGCC
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ncov_cap_197_RIGHT CCATCAAAACCAAGCAAGAGGTCACAGACGACCCGAGCC ncov_cap_199_RIGHT TCTGGTTGGACCTTTGGTGCAGCAGACGACCCGAGCC ncov_cap_201_RIGHT ACGCTTGTTAAACAACTTAGCTCCCAGACGACCCGAGCC ncov_cap_203_RIGHT TGGAAAGGGCTATCATCTTATGTCCTCAGACGACCCGAGCC ncov_cap_205_RIGHT GTCTGGTAACTGTGATGTTGTAATAGGACAGACCAGACC	ncov_cap_193_RIGHT	CAAACACGTGCAGGCTGTTTAACAGACGACCCGAGCC
ncov_cap_199_RIGHT TCTGGTTGGACCTTTGGTGCAGCAGACGACCCGAGCC ncov_cap_201_RIGHT ACGCTTGTTAAACAACTTAGCTCCCAGACGACCCGAGCC ncov_cap_203_RIGHT TGGAAAGGGCTATCATCTTATGTCCTCAGACGACCCGAGCC ncov_cap_205_RIGHT GTCTGGTAACTGTGATGTTGTAATAGGACAGACCCGAG ncov_cap_207_RIGHT CTCATCGATCTCCAAGAACTTGGACAGACGACCCGAGCC ncov_cap_209_RIGHT GGAACTGTAACTTTGAAGCAAGGTGCAGACGACCCGAGCC ncov_cap_211_RIGHT AACAGTTTACTCACACCTTTTGCTCCAGACGACCCCGAGCC ncov_cap_213_RIGHT TCATTACTTCAGGTGATGGCACAACAGACGACCCGAGCC ncov_cap_215_RIGHT CCAATTTATGATGAACCGACGACGACGACCCGAGCC ncov_cap_217_RIGHT AAAACCTTCTTTTTACGTTTACTCTCGTCAGACGACCCGAGCC ncov_cap_219_RIGHT TGTCTTCTACAATTTGCCTATGCCACAGACGACCCGAGCC ncov_cap_221_RIGHT CTTCTCAACGTGCCACTCCATGCAGACGACCCGAGCC ncov_cap_223_RIGHT GTCGCTACAGGATTGGCAACTATCAGACGACCCGAGCC	ncov_cap_195_RIGHT	TCTACCAGTGTCTATGACCAAGACACAGACGACCCGAGCC
ncov_cap_201_RIGHT ACGCTTGTTAAACAACTTAGCTCCCAGACGACCCGAGCC ncov_cap_203_RIGHT TGGAAAGGGCTATCATCTTATGTCCTCAGACGACCCGAGCC ncov_cap_205_RIGHT GTCTGGTAACTGTGATGTTGTAATAGGACAGACCGAGCC ncov_cap_207_RIGHT CTCATCGATCTCCAAGAACTTGGACAGACGACCCGAGCC ncov_cap_209_RIGHT GGAACTGTAACTTTGAAGCAAGGTGCAGACGACCCGAGCC ncov_cap_211_RIGHT AACAGTTTACTCACACCTTTTGCTCCAGACGACCCGAGCC ncov_cap_213_RIGHT TCATTACTTCAGGTGATGGCACAACAGACGACCCGAGCC ncov_cap_215_RIGHT CCAATTTATGATGAACCGACGACGCAGACGACCCGAGCC ncov_cap_217_RIGHT AAAACCTTCTTTTTACTTCTCGTCAGACGACCCGAGCC ncov_cap_219_RIGHT TGTCTTCTACAATTTGCCTATGCCACAGACGACCCGAGCC ncov_cap_221_RIGHT CTTCTCAACGTGCCACTCCATGCAGACGACCCGAGCC ncov_cap_223_RIGHT GTCGCTACAGGATTGGCAACTATCAGACGACCCGAGCC	ncov_cap_197_RIGHT	CCATCAAAACCAAGCAAGAGGTCACAGACGACCCGAGCC
ncov_cap_203_RIGHT TGGAAAGGGCTATCATCTTATGTCCTCAGACGACCCGAGCC ncov_cap_205_RIGHT GTCTGGTAACTGTGATGTTGTAATAGGACAGACCGAGCC ncov_cap_207_RIGHT CTCATCGATCTCCAAGAACTTGGACAGACGACCCGAGCC ncov_cap_209_RIGHT GGAACTGTAACTTTGAAGCAAGGTGCAGACGACCCGAGCC ncov_cap_211_RIGHT AACAGTTTACTCACACCTTTTGCTCCAGACGACCCGAGCC ncov_cap_213_RIGHT TCATTACTTCAGGTGATGGCACAACAGACGACCCGAGCC ncov_cap_215_RIGHT CCAATTTATGATGAACCGACGACGACCAGACCCGAGCC ncov_cap_217_RIGHT AAAACCTTCTTTTTACGTTTACTCTCGTCAGACGACCCGAGCC ncov_cap_219_RIGHT TGTCTTCTACAATTTGCCTATGCCACAGACGACCCGAGCC ncov_cap_221_RIGHT TGTCTTCTACAATTTGCTATGCCACAGACGACCCGAGCC ncov_cap_221_RIGHT GTCTTCTCAACGTGCCACTCCATGCAGACGACCCGAGCC ncov_cap_223_RIGHT GTCGCTACAGGATTGGCAACTATCAGACGACCCGAGCC	ncov_cap_199_RIGHT	TCTGGTTGGACCTTTGGTGCAGCAGACCAGCCC
ncov_cap_205_RIGHT GTCTGGTAACTGTGATGTTGTAATAGGACAGACCCGAG CC ncov_cap_207_RIGHT CTCATCGATCTCCAAGAACTTGGACAGACGACCCGAGCC ncov_cap_209_RIGHT GGAACTGTAACTTTGAAGCAAGGTGCAGACGACCCGAGCC ncov_cap_211_RIGHT AACAGTTTACTCCACACCTTTTGCTCCAGACGACCCGAGCC ncov_cap_213_RIGHT TCATTACTTCAGGTGATGGCACAACAGACGACCCGAGCC ncov_cap_215_RIGHT CCAATTTATGATGAACCGACGACGACGACCCGAGCC ncov_cap_217_RIGHT AAAACCTTCTTTTTACGTTTACTCTCGTCAGACGACCCGAGC ncov_cap_219_RIGHT TGTCTTCTACAATTTGCCTATGCCACAGACGACCCGAGCC ncov_cap_221_RIGHT CTTCTCAACGTGCCACTCCATGCAGACGACCCGAGCC ncov_cap_223_RIGHT GTCGCTACAGGATTGGCAACTATCAGACGACCCGAGCC	ncov_cap_201_RIGHT	ACGCTTGTTAAACAACTTAGCTCCCAGACGACCCGAGCC
CC ncov_cap_207_RIGHT CTCATCGATCTCCAAGAACTTGGACAGACGACCCGAGCC ncov_cap_209_RIGHT GGAACTGTAACTTTGAAGCAAGGTGCAGACCAGACCC ncov_cap_211_RIGHT AACAGTTTACTCACACCTTTTGCTCCAGACGACCCGAGCC ncov_cap_213_RIGHT TCATTACTTCAGGTGATGGCACAACAGACGACCCGAGCC ncov_cap_215_RIGHT CCAATTTATGATGAACCGACGACGACCCGAGCC ncov_cap_217_RIGHT AAAACCTTCTTTTTACGTTTACTCTCGTCAGACGACCCGAGCC ncov_cap_219_RIGHT TGTCTTCTACAATTTGCCTATGCCACAGACGACCCGAGCC ncov_cap_221_RIGHT CTTCTCAACGTGCCACTCCATGCAGACGACCCGAGCC ncov_cap_223_RIGHT GTCGCTACAGGATTGGCAACTATCAGACGACCCGAGCC	ncov_cap_203_RIGHT	TGGAAAGGGCTATCATCTTATGTCCTCAGACGACCCGAGCC
ncov_cap_209_RIGHT GGAACTGTAACTTTGAAGCAAGGTGCAGACCAGACCC ncov_cap_211_RIGHT AACAGTTTACTCACACCTTTTGCTCCAGACGACCCGAGCC ncov_cap_213_RIGHT TCATTACTTCAGGTGATGGCACAACAGACGACCCGAGCC ncov_cap_215_RIGHT CCAATTTATGATGAACCGACGACGACGACCCGAGCC ncov_cap_217_RIGHT AAAACCTTCTTTTTACGTTTACTCTCGTCAGACGACCCGAGC CC ncov_cap_219_RIGHT TGTCTTCTACAATTTGCCTATGCCACAGACGACCCGAGCC ncov_cap_221_RIGHT CTTCTCAACGTGCCACTCCATGCAGACGACCCGAGCC ncov_cap_223_RIGHT GTCGCTACAGGATTGGCAACTATCAGACGACCCGAGCC	ncov_cap_205_RIGHT	
ncov_cap_211_RIGHT AACAGTTTACTCACACCTTTTGCTCCAGACGACCCGAGCC ncov_cap_213_RIGHT TCATTACTTCAGGTGATGGCACAACAGACGACCCGAGCC ncov_cap_215_RIGHT CCAATTTATGATGAACCGACGACGACGACGACCCGAGCC ncov_cap_217_RIGHT AAAACCTTCTTTTTACGTTTACTCTCGTCAGACGACCCGAG CC ncov_cap_219_RIGHT TGTCTTCTACAATTTGCCTATGCCACAGACGACCCGAGCC ncov_cap_221_RIGHT CTTCTCAACGTGCCACTCCATGCAGACGACCCGAGCC ncov_cap_223_RIGHT GTCGCTACAGGATTGGCAACTATCAGACGACCCGAGCC	ncov_cap_207_RIGHT	CTCATCGATCTCCAAGAACTTGGACAGACGACCCGAGCC
ncov_cap_213_RIGHT TCATTACTTCAGGTGATGGCACAACAGACGACCCGAGCC ncov_cap_215_RIGHT CCAATTTATGATGAACCGACGACGACGACGACCCGAGCC ncov_cap_217_RIGHT AAAACCTTCTTTTTACGTTTACTCTCGTCAGACGACCCGAG CC ncov_cap_219_RIGHT TGTCTTCTACAATTTGCCTATGCCACAGACGACCCGAGCC ncov_cap_221_RIGHT CTTCTCAACGTGCCACTCCATGCAGACGACCCGAGCC ncov_cap_223_RIGHT GTCGCTACAGGATTGGCAACTATCAGACGACCCGAGCC	ncov_cap_209_RIGHT	GGAACTGTAACTTTGAAGCAAGGTGCAGACCGACCCGAGCC
ncov_cap_215_RIGHT CCAATTTATGATGAACCGACGACGACGACGACCCCGAGCC ncov_cap_217_RIGHT AAAACCTTCTTTTTACGTTTACTCTCGTCAGACGACCCGAG cc CC ncov_cap_219_RIGHT TGTCTTCTACAATTTGCCTATGCCACAGACGACCCGAGCC ncov_cap_221_RIGHT CTTCTCAACGTGCCACTCCATGCAGACGACCCGAGCC ncov_cap_223_RIGHT GTCGCTACAGGATTGGCAACTATCAGACGACCCGAGCC	ncov_cap_211_RIGHT	AACAGTTTACTCACACCTTTTGCTCCAGACGACCCGAGCC
ncov_cap_217_RIGHT AAAACCTTCTTTTTACGTTTACTCTCGTCAGACGACCCGAG CC ncov_cap_219_RIGHT TGTCTTCTACAATTTGCCTATGCCACAGACGACCCGAGCC ncov_cap_221_RIGHT CTTCTCAACGTGCCACTCCATGCAGACGACCCGAGCC ncov_cap_223_RIGHT GTCGCTACAGGATTGGCAACTATCAGACGACCCGAGCC	ncov_cap_213_RIGHT	TCATTACTTCAGGTGATGGCACAACAGACGACCCGAGCC
CC ncov_cap_219_RIGHT TGTCTTCTACAATTTGCCTATGCCACAGACGACCCGAGCC ncov_cap_221_RIGHT CTTCTCAACGTGCCACTCCATGCAGACGACCCGAGCC ncov_cap_223_RIGHT GTCGCTACAGGATTGGCAACTATCAGACGACCCGAGCC	ncov_cap_215_RIGHT	CCAATTTATGATGAACCGACGACGCAGACCAGACCCGAGCC
ncov_cap_221_RIGHT CTTCTCAACGTGCCACTCCATGCAGACGACCCGAGCC ncov_cap_223_RIGHT GTCGCTACAGGATTGGCAACTATCAGACGACCCGAGCC	ncov_cap_217_RIGHT	
ncov_cap_223_RIGHT GTCGCTACAGGATTGGCAACTATCAGACGACCCGAGCC	ncov_cap_219_RIGHT	TGTCTTCTACAATTTGCCTATGCCACAGACGACCCGAGCC
·	ncov_cap_221_RIGHT	CTTCTCAACGTGCCACTCCATGCAGACGACCCGAGCC
·	ncov_cap_223_RIGHT	GTCGCTACAGGATTGGCAACTATCAGACGACCCGAGCC
ncov_cap_zz5_kiGHT TGAAGAGCAACCAATGGAGATTGACAGACGACCCGAGCC	ncov_cap_225_RIGHT	TGAAGAGCAACCAATGGAGATTGACAGACGACCCGAGCC

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ncov_cap_227_RIGHT	TGTTCATCAGACAAGAGGAAGTTCACAGACGACCCGAGCC
ncov_cap_229_RIGHT	TTTTCTTAGGAATCATCACAACTGTAGCCAGACGACCCGAG
	CC
ncov_cap_231_RIGHT	TGCCAGGAACCTAAATTGGGTAGCAGACGACCCGAGCC
ncov_cap_233_RIGHT	GGCCCCAAGGTTTACCCAATAATCAGACGACCCGAGCC
ncov_cap_235_RIGHT	TGGACTTCCCTATGGTGCTAACAACAGACGACCCGAGCC
ncov_cap_237_RIGHT	TTCAACTCCAGGCAGCAGTAGGCAGACGACCCGAGCC
ncov_cap_239_RIGHT	GGTCCAGAACAAACCCAAGGAACAGACGACCCGAGCC
ncov_cap_241_RIGHT	CGCATACAAAACATTCCCACCAACCAGACGACCCGAGCC
ncov_cap_243_RIGHT	CGTTTTCGCTTTTCCGTTTACGACAGACCACCCGAGCC
ncov_cap_245_RIGHT	TGGAAGAGCCCTAATGTGTAAAATTAATTTCAGACGACCCG
	AGCC
RNAse_P_bead_rev	GTGGAGACAGCCGCTCACAGACGACCCGAGCC

SARS-CoV-2 probe pool 2 [version 1]

NAME	SEQUENCE
ncov_cap_2_RIGHT	TCTTAAAGATGGCACTTGTGGCTTCAGACGACCCGAGCC
ncov_cap_4_RIGHT	AGGAGCTGGTGGCCATAGTTACCAGACGACCCGAGCC
ncov_cap_6_RIGHT	GCTTCATGCACTTTGTCCGAACCAGACGACCCGAGCC
ncov_cap_8_RIGHT	TGATGGCTTTATGGGTAGAATTCGACAGACGACCCGAGCC
ncov_cap_10_RIGHT	GCTGTTGTTAAAATTTATTGTCCAGCATCAGACGACCCGAG CC
ncov_cap_12_RIGHT	TGGAGAAGGTTCCGAAGGTCTTCAGACGACCCGAGCC
ncov_cap_14_RIGHT	GGAATATTGGTGAACAGAAATCAATACTGACAGACGACCCG AGCC
ncov_cap_16_RIGHT	AGGTGGTGTTCAGTTGACTCAGACGACCCGAGCC
ncov_cap_18_RIGHT	TTTGGCTTTGTGTGCTGACTCTCAGACGACCCGAGCC
ncov_cap_20_RIGHT	TTAGAACAACCTACTAGTGAAGCTGTTCAGACGACCCGAGC
ncov_cap_22_RIGHT	GCCTATACAGTTGAACTCGGTACAGCAGACGACCCGAGCC
ncov_cap_24_RIGHT	TGTGAAGAAGAAGATTTGAGCCACAGACGACCCGAGCC
ncov_cap_26_RIGHT	GGAACTTACACCAGTTGTTCAGACTCAGACGACCCGAGCC
ncov_cap_28_RIGHT	CTTAAAGTGGGTGGTAGTTGTGTTTTCAGACGACCCGAGCC
ncov_cap_30_RIGHT	CACAAATGTCTACTTAGCTGTCTTTGATCAGACGACCCGAG CC
ncov_cap_32_RIGHT	CAATCTTCATCCAGATTCTGCCACTCAGACGACCCGAGCC
ncov_cap_34_RIGHT	CAGTGCTTAAAAAGTGTAAAAGTGCCCAGACGACCCGAGCC
ncov_cap_36_RIGHT	GTAAAACAACTGTAGCGTCACTTATCACAGACGACCCGAGC C
ncov_cap_38_RIGHT	GTTCCTATAAAGATTGGTCCTATTCTGGACAGACGACCCGA GCC
ncov_cap_40_RIGHT	ACTTATTTGGATGGAGCTGATGTTACTAACAGACGACCCGA GCC
ncov_cap_42_RIGHT	CTTCTATTAAATGGGCAGATAACAACTGTCAGACGACCCGA GCC
ncov_cap_44_RIGHT	AAGAGTCTTGAACGTGGTGTCTCAGACGACCCGAGCC
ncov_cap_46_RIGHT	TGGTACATTTACTTGTGCTAGTGAGTACAGACGACCCGAGC C
ncov_cap_48_RIGHT	AACCAACCATATCCAAACGCAAGCAGACGACCCGAGCC
ncov_cap_50_RIGHT	CCTGGTGTATACGTTGTCTTTGGACAGACGACCCGAGCC
ncov_cap_52_RIGHT	CACACAGATCTAATGGCTGCTTATGTCAGACGACCCGAGCC

	ncov_cap_54_RIGHT	GCAAAGAATACTGTTAAGAGTGTCGGTACAGACCGAGCCCGAGCCC
neov_cap_62_RIGHT	ncov_cap_56_RIGHT	
GCC AGCTAATAACACTAAAGGTTCATTGCCTACAGACGACCCGA GCC ncov_cap_62_RIGHT ACTCAAAACACTAGTTGCACTGCCAGACGACCCGACC	ncov_cap_58_RIGHT	ATGGCCCCGATTTCAGCTATGGCAGACGACCCGAGCC
GCC ncov_cap_64_RIGHT ncov_cap_66_RIGHT GCTTGTATTGACTGTAGTGCCCAGACGACCCGAGCC ncov_cap_66_RIGHT GCTGTATTGACTGTAGTGCCCCAGACGACCCCGAGCC ncov_cap_70_RIGHT AGCACTTAAGGGTGGTAAAATTGTTAATCAGACGACCCGAGCC ncov_cap_72_RIGHT GCTGTTTTGGCTGCTGCAAAATTGTTAACCCAGACGACCCGAGCC ncov_cap_72_RIGHT GCTGTTTTGGCTGCTGAATGTAACCAGACGACCCGAGCC ncov_cap_76_RIGHT GCACAAAGCATTTCTATCAGTGGAACGACCCGAGCC ncov_cap_76_RIGHT CC ncov_cap_76_RIGHT GCACAAAGCATTTCTATTGGTTACTAGCAGACGACCCGAGCC CC ncov_cap_80_RIGHT GCTTGTTGTCTATCTAGTGGAACGACCCGAGCC CC ncov_cap_80_RIGHT GCTTGTTGTCTATCTCAGACGACGACCCGAGCC ncov_cap_80_RIGHT GCTTAGAGACATTCTATTGAGCAAAGCACCCGAGCC ncov_cap_80_RIGHT TTTTAGCTTGGTTAACCCTAATTTAGAAGACCACGAGCC AGCC	ncov_cap_60_RIGHT	
ncov_cap_66_RIGHT ncov_cap_66_RIGHT ncov_cap_66_RIGHT ncov_cap_66_RIGHT ncov_cap_76_RIGHT ncov_cap_86_RIGHT ncov_cap_96_RIGHT ncov_cap_106_RIGHT ncov_cap_106_RIGH	ncov_cap_62_RIGHT	
ncov_cap_68_RIGHT AGCACTTAAGGGTGTAAAATTGTTAATCAGACGACCCGAGCC CC ncov_cap_70_RIGHT GCTGATTTTGACACATGGTTTAGCCCAGACGACCCGAGCC ncov_cap_72_RIGHT GTGTTTTGGCTGCTGAATGTACACAGACGACCCGAGCC ncov_cap_74_RIGHT GAGCTTTTGGTGATACACAGACGACCGAGCC ncov_cap_76_RIGHT GAGCTTTTGGTGAATCACTAGTGCAGACGACCCGAGCC ncov_cap_78_RIGHT TCCACAAAGCATTTCTATTGGTTCTTTCAGACGACGACCCGAGCC ncov_cap_80_RIGHT GCTTGTTGTCATCTGGCAAAGGCAGACCAGACCCGAGCC ncov_cap_80_RIGHT GCTTGTTGTCATCTCGCAAAGGCAGACGACCCGAGCC ncov_cap_80_RIGHT TGAAGACATGCTTAACCCTAATTATGAAGACAGACCAGACCCGAGCC ncov_cap_80_RIGHT TGCTATGAGGCCCAATTTCACTCAGACGACCCGAGCC ncov_cap_80_RIGHT TGCTATGAGGCCCAATTTCACTCAGACGACCCGAGCC ncov_cap_80_RIGHT TGCTATGAGGCCCAATTTTACCTCAGACGACCCGAGCC ncov_cap_90_RIGHT TGCTGTGTTTTGCATCAGCTGCAAAGGACCCGAGCC ncov_cap_90_RIGHT TGCTGTGTTTTGCATGATGTTTTACAGACGACCCGAGCC ncov_cap_90_RIGHT TGCTGTGTTTTTCATCAGACGACCCGAGCC AGCC ncov_cap_90_RIGHT TGCCCTATTTTCTTCAATCAGACGACACCCGAGCC AGCC ncov_cap_90_RIGHT TGCCCTATTTTCTTCATACCTGGAAAGAATCACAGACGACCCGAGCC AGCC ncov_cap_90_RIGHT TGCCCTATTTTCTTCATAACTGGTAATACACAGACGACCCGAGCC AGCC ncov_cap_90_RIGHT GGCAAACCTTGTATCAAAGTAGCCCAGACCCAGACCC AGCC ncov_cap_90_RIGHT GGCAAACCTTGTATCAAAGTAGCCCAGACCCAGACCC AGCC ncov_cap_100_RIGHT TGACCCAAATTGATGAAGAATGCCGAACCCGAGCC ncov_cap_100_RIGHT TGACCCAAATTGATGAACAATGACACAGACGACCCGAGCC ncov_cap_100_RIGHT TGACCCAAATTTACTTCAGACGACCCGAGCC ncov_cap_100_RIGHT TGACCCAAATTTACTTCAGACGACCCGAGCC ncov_cap_100_RIGHT TGACCCAAATTTACTTCACACAGACGACCCCGAGCC ncov_cap_104_RIGHT CTTGGTAGTTTAGCTGCACACAGACGACCCCGAGCC ncov_cap_104_RIGHT CTTGGTAGTTTAGCTGCACACAGACGACCCGAGCC ncov_cap_110_RIGHT TGACCCAACTTAGGTGACACAGACGACCCGAGCC ncov_cap_110_RIGHT CTTGGTAGTTTAGCTGCACAAGCGACCCGAGCC ncov_cap_110_RIGHT TGTGACCAACTTGTTGACACACAGCGACCCGAGCC ncov_cap_110_RIGHT CTTGGTAGTTTAGCTGCACAGACGACCCGAGCC ncov_cap_110_RIGHT TGTGACCACTTTAGTTGACACACAGCACCCCAGCCC ncov_cap_111_RIGHT CGCCAACTTAGGTGACACAGACGACCCCAAGCC ncov_cap_112_RIGHT GTTACACAGCAAATTCTATGGTGGCACACAGCACCCCAGCC ncov_cap_112_R	ncov_cap_64_RIGHT	ACTCAAAACACTAGTTGCAACTGCCAGACGACCCGAGCC
CC NEOW_CAP_7O_RIGHT	ncov_cap_66_RIGHT	GCTTGTATTGACTGTAGTGCGCCAGACCACCCGAGCC
ncov_cap_74_RIGHT ncov_cap_74_RIGHT ncov_cap_74_RIGHT ncov_cap_76_RIGHT ncov_cap_76_RIGHT ncov_cap_76_RIGHT ncov_cap_78_RIGHT ncov_cap_78_RIGHT ncov_cap_78_RIGHT ncov_cap_80_RIGHT ncov_cap_90_RIGHT ncov_cap_100_RIGHT ncov_cap_10	ncov_cap_68_RIGHT	
ncov_cap_74_RIGHT GCTGGTGTTTGTGTATCTACTAGTGGCAGACGACCCGAGCC ncov_cap_76_RIGHT TCCACAAAGCATTTCTATTGGTTCTTTCAGACGACCACCGAGC ncov_cap_80_RIGHT GCTGTTTGCACTAAGCCAAAGCAACCCCGAGC ncov_cap_80_RIGHT GCTGTTGCACTAACCCTAATTATGAAGACAACCCCGAGC ncov_cap_84_RIGHT TGAAGACATGCTTAACCCTAATTATGAAGACAGACCCGAGCC ncov_cap_84_RIGHT TGTATGAGGCCCAATTTCACCCTAAGCACCCGAGCC ncov_cap_84_RIGHT TTTTAGCTTGGTTGTACCCTAGACGACCCCGAGCC ncov_cap_84_RIGHT TTTTAGCTTGGTTGTACCCTAGACCAGACCCCGAGCC ncov_cap_84_RIGHT TGTCTGCTTTTGAATGATGATGTTTATAGAAGATGCAGACCCGAGCC ncov_cap_90_RIGHT TGTCTGCTTTTGCAATGATGTTTTATAGAAGATGCAGCCCGAGCC ncov_cap_92_RIGHT TGCCCTATTTTCTCATAACTGGTAGTTTGTCAGACGACCCGAGCC ncov_cap_94_RIGHT TGCCCTATTTTCTTCATAACTGGTAATACACAGACGACCCGAGCC ncov_cap_94_RIGHT GGCAAACCTTGTATCAAAGTAGCCCAGACGACCCGAGCC ncov_cap_98_RIGHT GCTTTGTGAAGAAAATGCTGGACACAGACCACAGCCCGAGCC ncov_cap_100_RIGHT TGACCCAAATGTATAAACAGGCTAGACCAGACCACGACCCGAGCC ncov_cap_102_RIGHT ACAAACTGCTTGACCAGACGACCAACGACCCGAGCC ncov_cap_104_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_104_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_104_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_104_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_104_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_114_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_114_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_114_RIGHT ACAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_114_RIGHT ACAACACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_114_RIGHT GCCCAACTTAGGTGACACAGACGACCCCGAGCC ncov_cap_114_RIGHT GTGAACAAAAAATATTTGTTAACAAGCGTTACAACGACCCGAGCC ncov_cap_114_RIGHT GTGAACAAAAAAAATATTTGTTAACAAGCGTTACAACGACCCGAGCC ncov_cap_114_RIGHT GTGAACAAAAAAAATATTTGTTAACAAGCGTTACAACACGACCCGAGCC ncov_cap_114_RIGHT GTGAACAAAAAAAAAAAAAAAAAAAAAAAACCGGTTACAAACCCGAACCCCAACCCAACCCCAACCCC	ncov_cap_70_RIGHT	GCTGATTTTGACACATGGTTTAGCCCAGACGACCCGAGCC
ncov_cap_76_RIGHT GAGCTTTTGGTGAATACAGTCATGTAGCAGACGACCCGAGC C ncov_cap_80_RIGHT GCTTGTTGTCATCTCGCAAAGCACTCTATAGACGACCCGAGCC TCACACAAAGCATTCTATTGGTTCTTTCAGACGACCCGAGCC TCACACACAGCTTAACCCTAATTATGAACACACCCGAGCC TCACACACAGCCTTAACCCTAATTATGAAGACAACACCCGAGCC TCACACACCCCACCC	ncov_cap_72_RIGHT	GTGTTTTGGCTGCTGAATGTACACAGACGACCCGAGCC
C ncov_cap_78_RIGHT TCCACAAAGCATTTCTATTGGTTCTTTCAGACGACCCGAGC C ncov_cap_80_RIGHT GCTTGTTGTCATCTCGCAAAGGCAGCACCCGAGCC ncov_cap_82_RIGHT TGAAGACATGCTTAACCCTAATTATGAAGACAGACCCGAGCC ncov_cap_84_RIGHT TGCTATGAGGCCCAATTTCACTCAGACGACCCGAGCC ncov_cap_88_RIGHT TTTTAGCTTGGTTGTTCATCAGACGACCCGAGCC ncov_cap_88_RIGHT CCATATTGGGTAGTCTTTATTAGAAGATGCAGACCCGAGCC ncov_cap_90_RIGHT TGTCTGCTTTTGCATGAGTGTTTTTTCAGACGACCCGAGCC ncov_cap_92_RIGHT ACTGTGTATGATGATGGTGTCTAGACGACCCGAGCC ncov_cap_94_RIGHT TGCCCTATTTTCTTCATAACTGGTAATACACAGACGACCCGAGCC ncov_cap_94_RIGHT GGCAAACCTTGTATCAAATGAGTAGACCAGACCCGAGCC ncov_cap_98_RIGHT GGCAAACCTTGTATCAAAATGGCCCAGACCACCAGACCCCGAGCC ncov_cap_104_RIGHT GGCAAACCTTGTATCAAAATGGCCCAGACCACCAGACCCCGAGCC ncov_cap_102_RIGHT TGACCCAAATGTATAAACAGGCTAGACAGACCAGACC	ncov_cap_74_RIGHT	GCTGGTGTTTGTGTATCTACTAGTGGCAGACGACCCGAGCC
C ncov_cap_80_RIGHT GCTTGTTGTCATCTCGCAAAGGCAGCCCGAGCC ncov_cap_82_RIGHT TGAAGACATGCTTAACCCTAATTATGAAGACAGACCCGAGCC AGCC	ncov_cap_76_RIGHT	GAGCTTTTGGTGAATACAGTCATGTAGCAGACGACCCGAGC C
ncov_cap_82_RIGHT TGAAGACATGCTTAACCCTAATTATGAAGACAGACCCGAGCC ncov_cap_84_RIGHT TGCTATGAGGCCCAATTTCACTCAGACGACCCGAGCC ncov_cap_86_RIGHT TTTTAGCTTGGTTGTAGCGTGCCAGACGACCCGAGCC ncov_cap_88_RIGHT CCATATTGGGTAGTGCTTTATTAGAAGATGCACGACCCGAGCC ncov_cap_90_RIGHT TGTCTGCTTTTGCAATGATGTTTGCAGCGACGACCCGAGCC ncov_cap_92_RIGHT ACTGTGTATGATGATGATGGTGCTAGGCAGACGACCCGAGCC ncov_cap_94_RIGHT TGCCCTATTTTCTCATAACTGGTAATACACAGACGACCCGAGCC ncov_cap_96_RIGHT GGCAAACCTTGTATCAAAGTAGCCCAGACGACCCGAGCC ncov_cap_96_RIGHT GGCAAACCTTGTATCAAAGTAGCCCAGACGACCCGAGCC ncov_cap_98_RIGHT GGCAAACCTTGTATCAAAGTAGCCCAGACGACCCGAGCC ncov_cap_102_RIGHT TGACCCAAATGTATAAACAGGCTAGACGACCACGACCC ncov_cap_102_RIGHT AAATACGTGTGATGATGAACAATTTACTTCAGACGACCGAC	ncov_cap_78_RIGHT	
AGCC ncov_cap_84_RIGHT TGCTATGAGGCCCAATTTCACTCAGACGACCCGAGCC ncov_cap_86_RIGHT TTTTAGCTTGGTTGTACGCTGCCAGACGACCCCGAGCC ncov_cap_88_RIGHT CCATATTGGGTAGTGCTTTATTAGAAGATGCAGACCCGAGCC ncov_cap_90_RIGHT TGTCTGCTTTTGCAATGATGTTTGTCAGACGACCCGAGCC ncov_cap_90_RIGHT TGCCCTATTTTCTCATAACTGGTAGCAGCACCCGAGCC ncov_cap_94_RIGHT GCCCTATTTTCTTCATAACTGGTAATACACAGACGACCCGAGCC ncov_cap_96_RIGHT GGCAAACCTTGTATCAAAGTAGCCCAGACCACCGAGCC ncov_cap_98_RIGHT GCTTTGTGAAGAAATGCTGGACACAGACCAGACCCGAGCC ncov_cap_100_RIGHT TGACCCAAATGTATAAACAGGCTAGACAGACGACCCGAGCC ncov_cap_100_RIGHT AAATACGTGTGATGACAACATTTACTTCAGACGACCCGAGCC ncov_cap_104_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_106_RIGHT TTTGGTAGTTTTAGCTGCACCAGTCAGACGACCCGAGCC ncov_cap_108_RIGHT TTTGGTGGTAGTTTTACACAGTGACCACAGACGACCCGAGCC ncov_cap_110_RIGHT GTATACAGGGCTTTTGACATCTACAATGCAGACGACCCGAGCC ncov_cap_110_RIGHT GTATACAGGGCTTTTGACATCTACAATGCAGACGACCCGAGCC ncov_cap_111_RIGHT GTATACAGGGCTTTTGACATCTACAATGCAGACGACCCGAGCC ncov_cap_111_RIGHT GTATACAGGGCTTTTGACATCTACAATGCAGACGACCCGAGCC ncov_cap_111_RIGHT GTATACAGGGCTTTTGACATCTACAATGCAGACGACCCGAGCC ncov_cap_111_RIGHT GTGTAGCACTGACTTAACAAAGCCTTCAGACGACCCCGAGCC ncov_cap_111_RIGHT GTGTAGCACTGACTTAACAAAGCCTTCAGACGACCCCGAGCC ncov_cap_111_RIGHT GTGTAGCACTGACTTAACAAAGCCTTCCAGACGACCCCGAGCC ncov_cap_111_RIGHT GTGTAGCACTGACTTAACAAAGCCTTCCAGACGACCCCGAGCC ncov_cap_111_RIGHT GTGTGACACTGACTTAACAAAGCCTTCCAGACGACCCCGAGCC ncov_cap_112_RIGHT GTGTGACACTGACTTAACAAACCCGGCAGCCC ncov_cap_112_RIGHT GTGTGACACTGCTTTCCAAACCCGGCAGCCC ncov_cap_112_RIGHT GTGTGACACTGACTTAACAACCCGGCAGCCC ncov_cap_112_RIGHT GTGGACAAATTTTTTTTTTTTTTTTTTTTTTTTTTTT	ncov_cap_80_RIGHT	GCTTGTTGTCATCTCGCAAAGGCAGACCGAGCC
ncov_cap_88_RIGHT CCATATTGGTTGTACGCTGCCAGACGACCCGAGCC ncov_cap_88_RIGHT CCATATTGGTAGTGTTATTAGAAGATGCAGACCCGAGCC AGCC	ncov_cap_82_RIGHT	
ncov_cap_88_RIGHT CCATATTGGGTAGTGCTTTATTAGAAGATGCAGACGACCCG AGCC ncov_cap_90_RIGHT TGTCTGCTTTTGCAATGATGTTTGTCAGACGACCCGAGCC ncov_cap_92_RIGHT ACTGTGTATGATGATGATGGTCTAGGCAGACCACCGAGCC ncov_cap_94_RIGHT TGCCCTATTTTCTTCATAACTGGTAATACACAGACGACCCGAGCC ncov_cap_96_RIGHT GGCAAACCTTGTATCAAAGTAGCCCAGACCCGAGCC ncov_cap_98_RIGHT GCTTTGTGAAGAAATGCTGGACACAGACGACCCGAGCC ncov_cap_100_RIGHT TGACCCAAATGTATAAACAGGCTAGACAGACGACCCGAGCC ncov_cap_102_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_104_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_106_RIGHT CTTGGTAGTTTAGCTCCACAGTCAGACGACCCGAGCC ncov_cap_108_RIGHT TTTGGTGGTGCATCGTGTGCACAGTCAGACGACCCGAGCC ncov_cap_110_RIGHT GTATACAGGGCTTTTGACACTCACAGACGACCCGAGCC ncov_cap_110_RIGHT GTATACAGGGTGACACGACCCCAGCC ncov_cap_1112_RIGHT AATAGACGGTGACATGGTACCACCAGACGACCCGAGCC ncov_cap_1112_RIGHT CGCCAACTTAGGTGACACAGACGACCCGAGCC ncov_cap_114_RIGHT CGCCAACTTAGCTGACACAGACGACCCCGAGCC ncov_cap_114_RIGHT GGTGACCAGACGACCTTCAGACGACCCCGAGCC ncov_cap_114_RIGHT GTGACCACAGTTAACAAAGCCTTCAGACGACCCCGAGCC ncov_cap_118_RIGHT GTGAGCACAGACTAACCACGACGACCCCGAGCC ncov_cap_118_RIGHT GCTTTTCAAACTGTCAAACCCGCCGAGCC ncov_cap_112_RIGHT GCTTTTCAAACTGTCAAACCCGCCGAGCC ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_122_RIGHT TTGGAACAAACCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_122_RIGHT TTGGAACAAACCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAACCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAACCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAACCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGACCAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGACCAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGACCAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGACCAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGACCAGACAATTCTATGGTGGCAGACCCAGACCCCAGCC ncov_cap_124_RIGHT TTGGACAAACCAGGTGGAACCCAGACCCCAGACCACCCGAGCC Ncov_cap_124_RIGHT TTGGACAAACCAGACCAGACCCAGACCCAGACCACCCAGACCACC	ncov_cap_84_RIGHT	TGCTATGAGGCCCAATTTCACTCAGACGACCCGAGCC
AGCC ncov_cap_90_RIGHT TGTCTGCTTTTGCAATGATGTTTGTCAGACGACCCGAGCC ncov_cap_92_RIGHT ACTGTGTAGTGATGATGATGGTGCTAGGCAGACCCGAGCC ncov_cap_94_RIGHT TGCCCTATTTTCTTCATAACTGGTAATACACAGACGACCCGAGCC ncov_cap_96_RIGHT GGCAAACCTTGTATCAAAGTAGCCCAGACCACCAGACCC ncov_cap_98_RIGHT GCTTTGTGAAGAAATGCTGGACACAGACGACCCGAGCC ncov_cap_100_RIGHT TGACCCAAATGTATAAACAGGCTAGACAGACGACCCGAGCC ncov_cap_102_RIGHT AAATACGTGTGATGATCAAACATTTACTTCAGACGACCCGAGCC ncov_cap_104_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_106_RIGHT CTTGGTAGTTTAGCTGCACAGATCAGACGACCCGAGCC ncov_cap_108_RIGHT TTTGGTGGTGCATCGTGTTGTCCAGACGACCCCGAGCC ncov_cap_108_RIGHT TTTGGTGGTGCATCGTGTTTGCACTCACAGCGACCCCGAGCC ncov_cap_110_RIGHT GTATACAGGGCTTTTGACATCTACAATGCAGACGACCCGAGCC ncov_cap_111_RIGHT CGCCAACTTAGGTGACCACAGACGACCCCGAGCC ncov_cap_114_RIGHT CGCCAACTTAGGTGACCTACACAGACGACCCCGAGCC ncov_cap_116_RIGHT GTGTGACACTGACTTACACAGCGACCCCGAGCC ncov_cap_118_RIGHT GTGTGACACTGACTTACACAGACGACCCCGAGCC ncov_cap_118_RIGHT GTGTGACACTGACTTACACACAGACGACCCCGAGCC ncov_cap_118_RIGHT GTGTGACACTGACTTACACACAGACGACCCCGAGCC ncov_cap_118_RIGHT GTGTGACACTGACTTACACACCGGCAGCCC ncov_cap_112_RIGHT GTGTGACACAAATTTTGTTGATGGTGTTCCCAGACGACCCCGAGCC ncov_cap_122_RIGHT GTTTCAAACTGTCAAACCCGGCAGCCC ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCACAGACGACCCCGAGCC ncov_cap_124_RIGHT TTGGACACAAATCAGCTGGTTTTCACACAGACGACCCCGAGCC ncov_cap_124_RIGHT TTGGACACAAATCAGCTGGTTTTCACACAGACGACCCCGAGCC ncov_cap_124_RIGHT TTGGACACAAATCAGCTGGTTTTCACACAGACGACCCCGAGCC ncov_cap_124_RIGHT TTGGACACAAATCAGCTGGTTTTCACACAGACGACCCCGAGCC ncov_cap_124_RIGHT TTGGACACAAATCAGCTGGTTTTCACACAGACGACCCCGAGCC ncov_cap_124_RIGHT TTGGACACAAATCAGCTGGTTTTCACACAGACGACCCCGAGCC ncov_cap_124_RIGHT TTGGACACAAATCAGCTGGTTTTCACAGACGACCCCGAGCC ncov_cap_124_RIGHT TTGCACTATATGTTAAACCAGGTGGAACCCCGAGCC TCOV_cap_124_RIGHT	ncov_cap_86_RIGHT	TTTTAGCTTGGTTGTACGCTGCCAGACGACCCGAGCC
ncov_cap_92_RIGHT ncov_cap_94_RIGHT TGCCCTATTTTCTTCATAACTGGTAATACACAGACCCCGAGCC ncov_cap_94_RIGHT GGCAAACCTTGTATCAAAGTAGCCCAGACCCCAGCCC ncov_cap_96_RIGHT GGCAAACCTTGTATCAAAGTAGCCCAGACGACCCCGAGCC ncov_cap_98_RIGHT GCTTTGTGAAGAAATGCTGGACACAGACGACCCGAGCC ncov_cap_100_RIGHT TGACCCAAATGTATAAACAGGCTAGACAGACGACCCGAGCC ncov_cap_102_RIGHT AAATACGTGTGATGATGAACAACATTTACTTCAGACGACCCGAGCC ncov_cap_104_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_106_RIGHT CTTGGTAGTTTAGCTGCACAGATGACAGACGACCCGAGCC ncov_cap_108_RIGHT TTTGGTGGTGCACTGTTGCACTGATGACACAGACCGACCCCGAGCC ncov_cap_110_RIGHT GTATACAGGGCTTTTGACATCTACAATGCAGACCGAGCC ncov_cap_1112_RIGHT AATAGACGGTGACATGGTACACACAGACCAGACCCGAGCC ncov_cap_114_RIGHT CGCCAACTTAGGTGAACCACAGACCACAGACCCGAGCC ncov_cap_116_RIGHT TGTTGACACTGACTTAACAAAGCCTTCAGACGACCCGAGCC ncov_cap_118_RIGHT GTGAGACAAATATTTGTTGATGGTGTTCCCAGACGACCCGAGCC ncov_cap_118_RIGHT GTGAGACAAATACTTTGTTGATGGTGTTCCCAGACGACCCGAGCC ncov_cap_112_RIGHT GTGAGACAAATACTTTTGTTGATGGTGTTCCCAGACGACCCGAGCC ncov_cap_112_RIGHT GCTTTTCAAACTGTCAAACCCGGCAGACCCCGAGCC ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATTCATGTGTGGCAGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATTCATGTGTGGCAGACCCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCCAAATTCATGTGTGGCAGACCCCGAGCC ncov_cap_124_RIGHT TCACTATATGTTAAACCAGGTGGAACCCCGAGCC TCACACTATATGTTAAACCAGGTGGAACCCCGAGCC TCACACTATATGTTAAACCAGGTGGAACCCCGAGCC TCACACTATATGTTAAACCAGGTGGAACCCCGAGCC TCACACTATATGTTAAACCAGGTGGAACCCCAACCCCGAGCC TCACACTATATGTTAAACCAGGTGGAACCCCAACCCCGAGCC TCACACTATATGTTAAACCAGGTGGAACCCCAACCCCGAGCC TCACACTATATGTTAAACCAGGTGGAACCCAACCC	ncov_cap_88_RIGHT	
ncov_cap_94_RIGHT TGCCCTATTTTCTTCATAACTGGTAATACACAGACGACCCG AGCC ncov_cap_96_RIGHT GGCAAACCTTGTATCAAAGTAGCCCAGACGACCCGAGCC ncov_cap_98_RIGHT GCTTTGTGAAGAAATGCTGGACACAGACGACCCGAGCC ncov_cap_100_RIGHT TGACCCAAATGTATAAACAGGCTAGACGACCAGACCGACC	ncov_cap_90_RIGHT	TGTCTGCTTTTGCAATGATGTTTGTCAGACGACCCGAGCC
AGCC ncov_cap_96_RIGHT GGCAAACCTTGTATCAAAGTAGCCCAGACGACCCGAGCC ncov_cap_98_RIGHT GCTTTGTGAAGAAATGCTGGACACAGACGACCCGAGCC ncov_cap_100_RIGHT TGACCCAAATGTATAAACAGGCTAGACAGACGACCCGAGCC ncov_cap_102_RIGHT AAATACGTGTGATGGTACAACATTTACTTCAGACGACCCGAGCC ncov_cap_104_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_106_RIGHT CTTGGTAGTTTAGCTGCACTGATGACACAGACGACCCGAGCC ncov_cap_108_RIGHT TTTGGTGGTGCATCGATTGACACAGACGACCCGAGCC ncov_cap_110_RIGHT GTACAGGGCTTTTGACATCTACAATGCAGACGACCCGAGCC ncov_cap_1112_RIGHT AATAGACGGTGACATGGTACCACCAGACGACCCGAGCC ncov_cap_114_RIGHT CGCCAACTTAGGTGACCACCAGACGACCCGAGCC ncov_cap_114_RIGHT CGCCAACTTAGGTGACACGACCCTAGACCGACCCGAGCC ncov_cap_116_RIGHT TGTTGACACTGACTTAACAAAGCCTTCAGACGACCCGAGCC ncov_cap_118_RIGHT GTGAGAAAAAATATTTGTTGATGGTGTTCCCAGACGACCCGAGCC ncov_cap_120_RIGHT GCTTTTCAAACTGTCAAACCCGGCAGACCCGAGCC ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGACACAGCAAATTCATGTGGACGACCCGAGCC ncov_cap_124_RIGHT TTGGACACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGACCAAATTCATGTGGACAACCCGACCCGAGCC ncov_cap_124_RIGHT TTGGACCAAATTCATGTTGACCAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGACCAGACCAAATTCATGTGGGCAGACCCCGAGCC ncov_cap_124_RIGHT TTGGACCAGACCAAATTCATGGTGGCCAGACCCCGAGCC CCACCTATATGTTAAACCAGGTGGAACCCCGAGCC CCACCTATATGTTAAACCAGGTGGAACCCCGACCCCGAGCC CCACCTATATGTTAAACCAGGTGGAACCCCGACCCGA	ncov_cap_92_RIGHT	ACTGTGTATGATGGTGCTAGGCAGACCGACCC
ncov_cap_98_RIGHT GCTTTGTGAAGAAATGCTGGACACAGACGACCCGAGCC ncov_cap_100_RIGHT TGACCCAAATGTATAAACAGGCTAGACAGACGACCCGAGCC ncov_cap_102_RIGHT AAATACGTGTGATGGTACAACATTTACTTCAGACGACCCGA ncov_cap_104_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_106_RIGHT CTTGGTAGTTTAGCTGCCACAGTCAGACGACCCGAGCC ncov_cap_108_RIGHT TTTGGTGGTGCATCGTGTTGTCCAGACGACCCGAGCC ncov_cap_110_RIGHT GTATACAGGGCTTTTGACATCTACAATGCAGACGACCCGAGCC ncov_cap_112_RIGHT AATAGACGGTGACCATGGTACCACCAGACGACCCGAGCC ncov_cap_114_RIGHT CGCCAACTTAGGTGAACGTGTACAGACGACCCGAGCC ncov_cap_116_RIGHT TGTTGACACTGACTTAACAAAGCCTTCAGACGACCCGAGCC ncov_cap_118_RIGHT GTGAGAAAAATATTTTGTTGATGGTGTTCCCAGACGACCCGA ncov_cap_120_RIGHT GCTTTTCAAACTGTCAAACCCGGCAGCCC ncov_cap_121_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATTCTATGGTGGCAGACCCGAGCC ncov_cap_124_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACCCCGAGCC ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACCCCGAGCC	ncov_cap_94_RIGHT	
ncov_cap_100_RIGHT TGACCCAAATGTATAAACAGGCTAGACAGACGACCCGAGCC ncov_cap_102_RIGHT AAATACGTGTGATGGTACAACATTTACTTCAGACGACCCGA ncov_cap_104_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_106_RIGHT CTTGGTAGTTTAGCTGCCACAGTCAGACGACCCGAGCC ncov_cap_108_RIGHT TTTGGTGGTGCATCGTGTTGTCCAGACGACCCGAGCC ncov_cap_110_RIGHT GTATACAGGGCTTTTGACATCTACAATGCAGACGACCCGAGC ncov_cap_112_RIGHT AATAGACGGTGACATGGTACCACCAGACGACCCGAGCC ncov_cap_114_RIGHT CGCCAACTTAGGTGAACGTGTACAGACGACCCGAGCC ncov_cap_116_RIGHT TGTTGACACTGACTTAACAAAGCCTTCAGACGACCCGAGCC ncov_cap_118_RIGHT GTGAGAAAAATATTTGTTGATGGTGTTCCCAGACGACCCGA ncov_cap_120_RIGHT GCTTTTCAAACTGTCAAACCCGGCAGCCC ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATTCATGTGTGCAGACCAGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATTCATTATGGTGGCAGACCCGAGCC ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACCCGAGCC ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACCCGAGCC	ncov_cap_96_RIGHT	GGCAAACCTTGTATCAAAGTAGCCCAGACGACCCGAGCC
ncov_cap_102_RIGHT AAATACGTGTGATGGTACAACATTTACTTCAGACGACCCGA GCC ncov_cap_104_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_106_RIGHT CTTGGTAGTTTAGCTGCCACAGTCAGACGACCCGAGCC ncov_cap_108_RIGHT TTTGGTGGTGCATCGTGTTGTCCAGACGACCCGAGCC ncov_cap_110_RIGHT GTATACAGGGCTTTTGACATCTACAATGCAGACGACCCGAGCC ncov_cap_112_RIGHT AATAGACGGTGACATGGTACCACCAGACGACCCGAGCC ncov_cap_114_RIGHT CGCCAACTTAGGTGAACGTGTACAGACGACCCGAGCC ncov_cap_116_RIGHT TGTTGACACTGACTTAACAAAGCCTTCAGACGACCCGAGCC ncov_cap_118_RIGHT GTGAGAAAAATATTTGTTGATGGTGTTCCCAGACGACCCGAGCC ncov_cap_120_RIGHT GCTTTTCAAACTGTCAAACCCGGCAGACCCCGAGCC ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAATCATGTTAAACCAGGTGGCAGACCCGAGCC ncov_cap_126_RIGHT TTGGAACAAATCTATGTTAAACCAGGTGGAACCCCGAGCC TCOV_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACCCCGAGCC TCACTATATGTTAAACCAGGTGGAACCCAGACCCCGAGCC TCACTATATGTTAAACCAGGTGGAACCCAGACCCCGAGCC TCACTATATGTTAAACCAGGTGGAACCCAGACCCCGAGCC TCACTATATGTTAAACCAGGTGGAACCCAGACCCCGAGCC TCACTATATGTTAAACCAGGTGGAACCCAGACCCCGAGCC	ncov_cap_98_RIGHT	GCTTTGTGAAGAAATGCTGGACACAGACGACCCGAGCC
GCC ncov_cap_104_RIGHT ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC ncov_cap_106_RIGHT CTTGGTAGTTTAGCTGCCACAGTCAGACGACCCGAGCC ncov_cap_108_RIGHT TTTGGTGGTGCATCGTGTTGTCCAGACGACCCGAGCC ncov_cap_110_RIGHT GTATACAGGGCTTTTGACATCTACAATGCAGACGACCCGAGCC ncov_cap_112_RIGHT AATAGACGGTGACATGGTACCACCAGACGACCCGAGCC ncov_cap_114_RIGHT CGCCAACTTAGGTGAACGTGTACAGACGACCCGAGCC ncov_cap_116_RIGHT TGTTGACACTGACTTAACAAAGCCTTCAGACGACCCGAGCC ncov_cap_118_RIGHT GTGAGAAAAATATTTGTTGATGGTGTTCCCAGACGACCCGAGCC ncov_cap_120_RIGHT GCTTTTCAAACTGTCAAACCCGGCAGACCCCGAGCC ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATCATGTTATGGTGGCAGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATTCTATGGTGGCAGACCCGAGCC ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACCCCGAGCC CC	ncov_cap_100_RIGHT	TGACCCAAATGTATAAACAGGCTAGACAGACGACCCGAGCC
ncov_cap_106_RIGHT CTTGGTAGTTTAGCTGCCACAGTCAGACGACCCGAGCC ncov_cap_108_RIGHT TTTGGTGGTGCATCGTGTTGTCCAGACGACCCGAGCC ncov_cap_110_RIGHT GTATACAGGGCTTTTGACATCTACAATGCAGACGACCCGAGC ncov_cap_112_RIGHT AATAGACGGTGACATGGTACCACCAGACGACCCGAGCC ncov_cap_114_RIGHT CGCCAACTTAGGTGAACGTGTACAGACGACCCGAGCC ncov_cap_116_RIGHT TGTTGACACTGACTTAACAAAGCCTTCAGACGACCCGAGCC ncov_cap_118_RIGHT GTGAGAAAAATATTTGTTGATGGTGTTCCCAGACGACCCGA GCC GCC ncov_cap_120_RIGHT GCTTTTCAAACTGTCAAACCCGGCAGACGACCCGAGCC ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATTCTATGGTGGCAGACGACCCGAGCC ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACCCGAGCC ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACCAGACCCGAGCC	ncov_cap_102_RIGHT	
ncov_cap_108_RIGHT TTTGGTGGTGCATCGTGTTGTCCAGACGACCCGAGCC ncov_cap_110_RIGHT GTATACAGGGCTTTTGACATCTACAATGCAGACCACCGAG CC ncov_cap_112_RIGHT AATAGACGGTGACATGGTACCACCAGACGACCCGAGCC ncov_cap_114_RIGHT CGCCAACTTAGGTGAACGTGTACAGACGACCCGAGCC ncov_cap_116_RIGHT TGTTGACACTGACTTAACAAAGCCTTCAGACGACCCGAGCC ncov_cap_118_RIGHT GTGAGAAAAATATTTGTTGATGGTGTTCCCAGACGACCCGA GCC ncov_cap_120_RIGHT GCTTTTCAAACTGTCAAACCCGGCAGACCCCGAGCC ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATTCTATGGTGGCAGACCCCGAGCC ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACCACCCGAGCC CC TCACTATATGTTAAACCAGGTGGAACCCAGACCACCCGAGCC CC	ncov_cap_104_RIGHT	ACAAACTGCTTGCACTGATGACACAGACGACCCGAGCC
ncov_cap_110_RIGHT GTATACAGGGCTTTTGACATCTACAATGCAGACCACCGAG CC ncov_cap_112_RIGHT AATAGACGGTGACATGGTACCACCAGACGACCCGAGCC ncov_cap_114_RIGHT CGCCAACTTAGGTGAACGTGTACAGACGACCCGAGCC ncov_cap_116_RIGHT TGTTGACACTGACTTAACAAAGCCTTCAGACGACCCGAGCC ncov_cap_118_RIGHT GTGAGAAAAATATTTGTTGATGGTGTTCCCAGACGACCCGAGCC ncov_cap_120_RIGHT GCTTTTCAAACTGTCAAACCCGGCAGACCCGAGCC ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATTCTATGGTGGCAGACCCCGAGCC ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACCCGAGCC CC	ncov_cap_106_RIGHT	CTTGGTAGTTTAGCTGCCACAGTCAGACGACCCGAGCC
CC ncov_cap_112_RIGHT AATAGACGGTGACATGGTACCACCAGACGACCCGAGCC ncov_cap_114_RIGHT CGCCAACTTAGGTGAACGTGTACAGACGACCCGAGCC ncov_cap_116_RIGHT TGTTGACACTGACTTAACAAAGCCTTCAGACGACCCGAGCC ncov_cap_118_RIGHT GTGAGAAAAATATTTGTTGATGGTGTTCCCAGACGACCCGAGCC ncov_cap_120_RIGHT GCTTTTCAAACTGTCAAACCCGGCAGACCACCCGAGCC ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATTCTATGGTGGCAGACCCCGAGCC ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACGACCCGAGC C	ncov_cap_108_RIGHT	TTTGGTGGTGCATCGTGTTGTCCAGACGACCCGAGCC
ncov_cap_114_RIGHT CGCCAACTTAGGTGAACGTGTACAGACGACCCGAGCC ncov_cap_116_RIGHT TGTTGACACTGACTTAACAAAGCCTTCAGACGACCCGAGCC ncov_cap_118_RIGHT GTGAGAAAAATATTTGTTGATGGTGTTCCCAGACGACCCGA GCC ncov_cap_120_RIGHT GCTTTTCAAACTGTCAAACCCGGCAGACGACCCGAGCC ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATTCTATGGTGGCAGACCACCCGAGCC ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACCACCCGAGC C	ncov_cap_110_RIGHT	
ncov_cap_116_RIGHT TGTTGACACTGACTTAACAAAGCCTTCAGACGACCCGAGCC ncov_cap_118_RIGHT GTGAGAAAAATATTTGTTGATGGTGTTCCCAGACGACCCGA GCC ncov_cap_120_RIGHT GCTTTCAAACTGTCAAACCCGGCAGACGACCCGAGCC ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATCTATGGTGGCAGACCCCGAGCC ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACCACCCGAGC C	ncov_cap_112_RIGHT	AATAGACGGTGACATGGTACCACCAGACGACCCGAGCC
ncov_cap_118_RIGHT GTGAGAAAAATATTTGTTGATGGTGTTCCCAGACGACCCGA GCC ncov_cap_120_RIGHT GCTTTTCAAACTGTCAAACCCGGCAGACGACCCGAGCC ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATTCTATGGTGGCAGACCCCGAGCC ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACCACCCGAGC C	ncov_cap_114_RIGHT	CGCCAACTTAGGTGAACGTGTACAGACGACCCGAGCC
GCC ncov_cap_120_RIGHT ncov_cap_122_RIGHT ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATTCATGGTGGCAGACCCCGAGCC ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACCAGCC C	ncov_cap_116_RIGHT	TGTTGACACTGACTTAACAAAGCCTTCAGACGACCCGAGCC
ncov_cap_122_RIGHT CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC ncov_cap_124_RIGHT TTGGAACAAGCAAATTCTATGGTGGCAGACCCGAGCC ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACGACCCGAGC C	ncov_cap_118_RIGHT	
ncov_cap_124_RIGHT TTGGAACAAGCAAATTCTATGGTGGCAGACGACCCGAGCC ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACGACCCGAGC C	ncov_cap_120_RIGHT	GCTTTTCAAACTGTCAAACCCGGCAGACGACCCGAGCC
ncov_cap_126_RIGHT TCACTATATGTTAAACCAGGTGGAACCCAGACGACCCGAGC C	ncov_cap_122_RIGHT	CCTAGACAAATCAGCTGGTTTTCCACAGACGACCCGAGCC
C	ncov_cap_124_RIGHT	TTGGAACAAGCAAATTCTATGGTGGCAGACGACCCGAGCC
ncov_cap_128_RIGHT AGACTTTGTGAATGAGTTTTACGCATCAGACGACCCGAGCC	ncov_cap_126_RIGHT	
	ncov_cap_128_RIGHT	AGACTTTGTGAATGAGTTTTACGCATCAGACGACCCGAGCC

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ncov_cap_130_RIGHT	CTCTCAACATACAATGCTAGTTAAACAGGCAGACGACCCGA
ncov_cap_132_RIGHT	AAGCTACATGATGAGTTAACAGGACACAGACGACCCGAGCC
ncov_cap_134_RIGHT	TCTTGTCTGTTAATCCGTATGTTTGCCAGACGACCCGAGCC
ncov_cap_136_RIGHT	TTTAGCTAACACCTGTACTGAAAGACTCAGACGACCCGAGC
***** *** 100 DIOLIT	C
ncov_cap_138_RIGHT	CAAATAGGAGAGTACACCTTTGAAAAAGGCAGACCCGA GCC
ncov_cap_140_RIGHT	AAGGTTGGTATGCAAAAGTATTCTACACCAGACGACCCGAG
	CC
ncov_cap_142_RIGHT	GTACTGTAAATGCATTGCCTGAGACCAGACCAGACCCGAGCC
ncov_cap_144_RIGHT	TAGGTCCAGACATGTTCCTCGGCAGACGACCCGAGCC
ncov_cap_146_RIGHT	GCCTCAAAGATTTTGGGACTACCACAGACGACCCGAGCC
ncov_cap_148_RIGHT	CGTAGGAATGTGGCAACTTTACAAGCAGACGACCCGAGCC
ncov_cap_150_RIGHT	CCCGCGAAGAAGCTATAAGACACAGACGACCCGAGCC
ncov_cap_152_RIGHT	CCTCATACCACTTATGTACAAAGGACTCAGACGACCCGAGC
ncov_cap_154_RIGHT	GCATCATTCTATTGGATTTGATTACGTCTCAGACGACCCGA GCC
ncov_cap_156_RIGHT	CTTGTAGAAAGGTTCAACACATGGTTCAGACGACCCGAGCC
ncov_cap_158_RIGHT	TGCAATGTCGATAGATATCCTGCTAACAGACGACCCGAGCC
ncov_cap_160_RIGHT	CCACTAAAGTCTGCTACGTGTATAACACAGACGACCCGAGC
	С
ncov_cap_162_RIGHT	TGATGGACAACAGGGTGAAGTACCAGACGACCCGAGCC
ncov_cap_164_RIGHT	CTCCAGCACATATATCTACTATTGGTGTCAGACGACCCGAG CC
ncov_cap_166_RIGHT	AGAAGCCGTAAAAACACAGTTCAATTCAGACGACCCGAGCC
ncov_cap_168_RIGHT	TGGTTTACATCTACTGATTGGACTAGCCAGACGACCCGAGC
ncov_cap_170_RIGHT	AATCTAGTCAAGCGTGGCAACCCAGACGACCCGAGCC
ncov_cap_172_RIGHT	TTGCACCAGGTACAGCTGTTTTCAGACGACCCGAGCC
ncov_cap_174_RIGHT	TGGAGGTTCCGTGGCTATAAAGATCAGACGACCCGAGCC
ncov_cap_176_RIGHT	CAAATCCAATTCAGTTGTCTTCCTATTCTCAGACGACCCGA
	GCC
ncov_cap_178_RIGHT	CAGTGTGTTAATCTTACAACCAGAACTCCAGACGACCCGAG CC
ncov_cap_180_RIGHT	TTCGAAGACCCAGTCCCTACTTCAGACGACCCGAGCC
ncov_cap_182_RIGHT	GCCTATTAATTTAGTGCGTGATCTCCCAGACGACCCGAGCC
ncov_cap_184_RIGHT	TGAAAATGGAACCATTACAGATGCTGCAGACGACCCGAGCC
ncov_cap_186_RIGHT	ACTGTGTTGCTGATTATTCTGTCCTCAGACGACCCGAGCC
ncov_cap_188_RIGHT	CGTTATAGCTTGGAATTCTAACAATCTTGACAGACGACCCG
near can 100 DICHT	AGCC TTCTTTTGAACTTCTACATGCACCAGCAGACGACCCGAGCC
ncov_cap_190_RIGHT	
ncov_cap_192_RIGHT	AACAAATACTTCTAACCAGGTTGCTGCAGACGACCCGAGCC
ncov_cap_194_RIGHT	ACGTAGTGTAGCTAGTCAATCCATCACAGACGACCCGAGCC
ncov_cap_196_RIGHT	ACTGGAATAGCTGTTGAACAAGACACAGACGACCCGAGCC
ncov_cap_198_RIGHT	ATTGCTGCTAGAGACCTCATTTGTCAGACCACCCGAGCC
ncov_cap_200_RIGHT	GAACCAAAAATTGATTGCCAACCAATCAGACGACCCGAGCC
ncov_cap_202_RIGHT	AAGTTTGCAGACATTTGGTGACTCAACCAGACGACCCGAGCC
ncov_cap_204_RIGHT	TGGAAAAGCACACTTTCCTCGTCAGACGACCCGAGCC
ncov_cap_206_RIGHT	TTGATTTAGGTGACATCTCTGGCACAGACGACCCGAGCC
ncov_cap_208_RIGHT	GCTGTATGACCAGTTGCTGTAGTCAGACGACCCGAGCC

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ncov_cap_210_RIGHT	CTTATTGTTGGCGTTGCACTTCTTCAGACGACCCGAGCC
ncov_cap_212_RIGHT	GCCGTTCCAAAAACCCATTACTTCAGACGACCCGAGCC
ncov_cap_214_RIGHT	TGTATTACACAGTTACTTCACTTCAGACTCAGACGACCCGA GCC
ncov_cap_216_RIGHT	TTCTTGCTTTCGTGGTATTCTTGCCAGACGACCCGAGCC
ncov_cap_218_RIGHT	CATGGCAGATTCCAACGGTACTCAGACGACCCGAGCC
ncov_cap_220_RIGHT	GGATCACCGGTGGAATTGCTATCAGACGACCCGAGCC
ncov_cap_222_RIGHT	ACGCTGTGACATCAAGGACCTGCAGACCACCCGAGCC
ncov_cap_224_RIGHT	GTTGACTTTCAGGTTACTATAGCAGAGACAGACCGAGCCCGAGCCCGAGCCCGAGCCCGAGCCCGAGCCCGAGCCCGAGACCACACACACACACACACACACACACACACACACACACA
ncov_cap_226_RIGHT	ATTCACCATTTCATCCTCTAGCTGATCAGACGACCCGAGCC
ncov_cap_228_RIGHT	ATTTGTGCTTTTTAGCCTTTCTGCTACAGACGACCCGAGCC
ncov_cap_230_RIGHT	CGTGTCCTATTCACTTCTATTCTAAATGGCAGACGACCCGA GCC
ncov_cap_232_RIGHT	CCCAAAATCAGCGAAATGCACCCAGACGACCCGAGCC
ncov_cap_234_RIGHT	GCAGTCCAGATGACCAAATTGGCCAGACGACCCGAGCC
ncov_cap_236_RIGHT	CCTCAAGGAACAACATTGCCAAACAGACGACCCGAGCC
ncov_cap_238_RIGHT	ACAACAACAAGGCCAAACTGTCCAGACGACCCGAGCC
ncov_cap_240_RIGHT	ATTGGCATGGAAGTCACACCTTCAGACGACCCGAGCC
ncov_cap_242_RIGHT	TTCTTCCTGCTGCAGATTTGGACAGACGACCCGAGCC
ncov_cap_244_RIGHT	AGTGTGTAACATTAGGGAGGACTTGCAGACGACCCGAGCC
RNAse_P_bead_rev	GTGGAGACAGCCGCTCACAGACGACCCGAGCC

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NAME	SEQUENCE
ncov_cap_1_LEFT	ACGTGTGCTCTTCCGATCTTCTCTTGTAGATCTGTTCTCTA
	AACGAAC
ncov_cap_3_LEFT	ACGTGTGCTCTTCCGATCTCTGTTTTACAGGTTCGCGACGT
ncov_cap_5_LEFT	ACGTGTGCTCTTCCGATCTCCTCATGTGGGCGAAATACCAG
ncov_cap_7_LEFT	ACGTGTGCTCTTCCGATCTATGGCTACCCTCTTGAGTGCAT
ncov_cap_9_LEFT	ACGTGTGCTCTTCCGATCTGGGGAATGTCCAAATTTTGTAT
	TTCCC
ncov_cap_11_LEFT	ACGTGTGCTCTTCCGATCTCCACTTGCGAATTTTGTGGCAC
ncov_cap_13_LEFT	ACGTGTGCTCTTCCGATCTCTATTGGGTTCCACGTGCTAGC
ncov_cap_15_LEFT	ACGTGTGCTCTTCCGATCTTCAAACAAATTGTTGAATCCTG
	TGGT
ncov_cap_17_LEFT	ACGTGTGCTCTTCCGATCTTGTTCACATCTGATTTGGCTAC
	TAACA
ncov_cap_19_LEFT	ACGTGTGCTCTCCGATCTCCTGTGCAAAGGAAATTAAGGA
	GAGT
ncov_cap_21_LEFT	ACGTGTGCTCTTCCGATCTTCCCACAGAAGTGTTAACAGAG
	GA
ncov_cap_23_LEFT	ACGTGTGCTCTTCCGATCTAGTGCAAGGTTACAAGAGTGTG
	A
ncov_cap_25_LEFT	ACGTGTGCTCTTCCGATCTGGCTTCACATATGTATTGTTCT
	TTCTACC
ncov_cap_27_LEFT	ACGTGTGCTCTTCCGATCTAGGACAATCAGACAACTACTAT
	TCAAACA
ncov_cap_29_LEFT	ACGTGTGCTCTTCCGATCTGGCTACTAACAATGCCATGCAA
	G

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ncov_cap_31_LEFT	ACGTGTGCTCTTCCGATCTTAAGAGTTTGTGTAGATACTGT TCGCA
ncov_cap_33_LEFT	ACGTGTGCTCTTCCGATCTTCTGGAAGAAACTAAGTTCCTC ACAG
ncov_cap_35_LEFT	ACGTGTGCTCTTCCGATCTTTATATAACCACTTACCCGGGT CAGG
ncov_cap_37_LEFT	ACGTGTGCTCTTCCGATCTACAAGAGGGTGTGGTTGATTAT GG
ncov_cap_39_LEFT	ACGTGTGCTCTTCCGATCTACTTCTTCTTCTAAAACACCTGA AGAACA
ncov_cap_41_LEFT	ACGTGTGCTCTTCCGATCTCGCAAGTTGTGGACATGTCAAT G
ncov_cap_43_LEFT	ACGTGTGCTCTTCCGATCTTGTCAGCATTAAATCACACTAA AAAGTGG
ncov_cap_45_LEFT	ACGTGTGCTCTTCCGATCTAATGAGTTACTTGTTTCAACAT GCCA
ncov_cap_47_LEFT	ACGTGTGCTCTTCCGATCTACCTTTTGTTATGATGTCAGCA CCA
ncov_cap_49_LEFT	ACGTGTGCTCTTCCGATCTAGAAAGACAATTCTTATTTCAC AGAGCAA
ncov_cap_51_LEFT	ACGTGTGCTCTTCCGATCTTGTTTGGCATGTTAACAATGCA ACT
ncov_cap_53_LEFT	ACGTGTGCTCTTCCGATCTACCGAAGTTGTAGGAGACATTA TACTTAA
ncov_cap_55_LEFT	ACGTGTGCTCTTCCGATCTAATTCTAGAATTAAAGCATCTA TGCCGAC
ncov_cap_57_LEFT	ACGTGTGCTCTTCCGATCTTTGAACTCTACTAATGTCACTA TTGCAACC
ncov_cap_59_LEFT	ACGTGTGCTCTTCCGATCTGCAATTGTTTTTCAGCTATTTT GCAGT
ncov_cap_61_LEFT	ACGTGTGCTCTTCCGATCTTGTCTATGCTAATGGAGGTAAA GGC
ncov_cap_63_LEFT	ACGTGTGCTCTTCCGATCTAAGACTTATGAAAGACATTCTC TCTCTCA
ncov_cap_65_LEFT	ACGTGTGCTCTTCCGATCTTAGTGCGGAAGTTGCAGTTAAA ATG
ncov_cap_67_LEFT	ACGTGTGCTCTTCCGATCTGCGATAGTTGTAATAACTATAT GCTCACC
ncov_cap_69_LEFT	ACGTGTGCTCTTCCGATCTACTTACCTTTTAAGTTGACATG TGCAA
ncov_cap_71_LEFT	ACGTGTGCTCTTCCGATCTTCACTCGTGACATAGCATCTAC AGA
ncov_cap_73_LEFT	ACGTGTGCTCTTCCGATCTAACATCTGTTACACACCATCAAA ACTT
ncov_cap_75_LEFT	ACGTGTGCTCTTCCGATCTTTCTGAGTACTGTAGGCACGGC
ncov_cap_77_LEFT	ACGTGTGCTCTTCCGATCTATGAGGTTTAGAAGAGCTTTTG GTGA
ncov_cap_79_LEFT	ACGTGTGCTCTTCCGATCTTGTTCACACCTTTAGTACCTTT CTGG
ncov_cap_81_LEFT	ACGTGTGCTCTTCCGATCTAGTACAAGTATTTTAGTGGAGC AATGGA
ncov_cap_83_LEFT	ACGTGTGCTCTTCCGATCTAACGGTCTTTGGCTTGATGACG
ncov_cap_85_LEFT	ACGTGTGCTCTTCCGATCTTAAGTTTGTTCGCATTCAACCA GGA

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ncov_cap_87_LEFT	ACGTGTGCTCTTCCGATCTTGGACCTTTTGTTGACAGGCAA
ncov_cap_89_LEFT	ACGTGTGCTCTTCCGATCTGGAATTGCCGTTTTAGATATGT GTGC
ncov_cap_91_LEFT	ACGTGTGCTCTTCCGATCTGTCCAGAGTACTCAATGGTCTT TGT
ncov_cap_93_LEFT	ACGTGTGCTCTTCCGATCTACTGTGTTATGTATGCATCAGC TGT
ncov_cap_95_LEFT	ACGTGTGCTCTTCCGATCTACAACTGTCATGTTTTTGGCCA
ncov_cap_97_LEFT	ACGTGTGCTCTTCCGATCTACTACTCCCACCCAAGAATAGC
ncov_cap_99_LEFT	ACGTGTGCTCTTCCGATCTTGGTTTCACTACTTTCTGTTTT GCTT
ncov_cap_101_LEFT	ACGTGTGCTCTTCCGATCTAATTTGACCGTGATGCAGCCAT
ncov_cap_103_LEFT	ACGTGTGCTCTTCCGATCTACCTCTTACAACAGCAGCCAAA
ncov_cap_105_LEFT	ACGTGTGCTCTCCGATCTGCTTAGTCCTGTTGCACTACGA
ncov_cap_107_LEFT	ACGTGTGCTCTTCCGATCTGGTATGGTACTTGGTAGTTTAG CTGC
ncov_cap_109_LEFT	ACGTGTGCTCTTCCGATCTTCAGGCAATAACAGTTACACCG
ncov_cap_111_LEFT	ACGTGTGCTCTTCCGATCTAGTCAGCTGATGCACAATCGTT
ncov_cap_113_LEFT	ACGTGTGCTCTTCCGATCTACACTTTCTCTAACTACCAACAT GAAGA
ncov_cap_115_LEFT	ACGTGTGCTCTTCCGATCTAAGGACTGGTATGATTTTGTAG AAAACCC
ncov_cap_117_LEFT	ACGTGTGCTCTTCCGATCTTGTTAATGCCTATATTAACCTT GACCAGG
ncov_cap_119_LEFT	ACGTGTGCTCTTCCGATCTTGTTTTATTCTCTACAGTGTTC CCACC
ncov_cap_121_LEFT	ACGTGTGCTCTTCCGATCTTGTTGCTTTTCAAACTGTCAAA
ncov_cap_123_LEFT	ACGTGTGCTCTTCCGATCTGATAAGTACTTTGATTGTTACG ATGGTGG
ncov_cap_125_LEFT	ACGTGTGCTCTTCCGATCTTCAAAAATTATTGAAATCAATA GCCGCCA
ncov_cap_127_LEFT	ACGTGTGCTCTTCCGATCTTGTAGCTTGTCACACCGTTTCT
ncov_cap_129_LEFT	ACGTGTGCTCTTCCGATCTTGTCCGCAATTTACAACACAGA CT
ncov_cap_131_LEFT	ACGTGTGCTCTTCCGATCTATGTCTGAAGCAAAATGTTGGA CTG
ncov_cap_133_LEFT	ACGTGTGCTCTTCCGATCTATGCTTACCCACTTACTAAACAT CCT
ncov_cap_135_LEFT	ACGTGTGCTCTTCCGATCTGTTGTAAATGCTGTTACGACCA TGT
ncov_cap_137_LEFT	ACGTGTGCTCTTCCGATCTAGCGATAATGTTACTGACTTTA ATGCAA
ncov_cap_139_LEFT	ACGTGTGCTCTTCCGATCTCCACTTAACCGAAATTATGTCT TTACTGG
ncov_cap_141_LEFT	ACGTGTGCTCTTCCGATCTACCCAACACTCAATATCTCAGAT GAG

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ncov_cap_143_LEFT	ACGTGC ACGTGC
ncov_cap_145_LEFT	ACGTGTGCTCTTCCGATCTACCAGAATATTTCAATTCAGTG TGTAGAC
ncov_cap_147_LEFT	ACGTGTGCTCTTCCGATCTGGTAAGAGAATTCCTTACACGT AACCC
ncov_cap_149_LEFT	ACGTGTGCTCTTCCGATCTCTGATAGAGACCTTTATGACAA GTTGCA
ncov_cap_151_LEFT	ACGTGTGCTCTTCCGATCTAGGACATGACCTATAGAAGACT CATCT
ncov_cap_153_LEFT	ACGTGTGCTCTTCCGATCTTTTTCCAGAGTTAGTGCTAAAC CACC
ncov_cap_155_LEFT	ACGTGTGCTCTTCCGATCTTAGACGTGCCACATGCTTTTCC
ncov_cap_157_LEFT	ACGTGTGCTCTTCCGATCTTGTTAAGCGTGTTGACTGGACT
ncov_cap_159_LEFT	ACGTGTGCTCTTCCGATCTCTATTCTTATGCCACACATTCT GACAAA
ncov_cap_161_LEFT	ACGTGTGCTCTTCCGATCTTCTGACAGTCCATGTGAGTCTC
ncov_cap_163_LEFT	ACGTGTGCTCTTCCGATCTTGGAACACTTTTACAAGACTTC AGAGT
ncov_cap_165_LEFT	ACGTGTGCTCTTCCGATCTGGGTGTGGACATTGCTGCTAAT
ncov_cap_167_LEFT	ACGTGTGCTCTTCCGATCTAACAAGCTAGTCTTAATGGAGT CACA
ncov_cap_169_LEFT	ACGTGTGCTCTTCCGATCTTCTACTGATTGGACTAGCTAAA CGTTT
ncov_cap_171_LEFT	ACGTGTGCTCTTCCGATCTTGGTGTAAAGATGGCCATGTAG AA
ncov_cap_173_LEFT	ACGTGTGCTCTTCCGATCTCATTTTGGTGCTGGTTCTGATA AAGG
ncov_cap_175_LEFT	ACGTGTGCTCTTCCGATCTTTCACTTACATTTGTGGGTTTA TACAACA
ncov_cap_177_LEFT	ACGTGTGCTCTTCCGATCTACAAATCCAATTCAGTTGTCTT CCTATTC
ncov_cap_179_LEFT	ACGTGTGCTCTTCCGATCTAGTCAGTGTGTTAATCTTACAA CCAGA
ncov_cap_181_LEFT	ACGTGTGCTCTTCCGATCTTTTGCTTCCACTGAGAAGTCTA ACA
ncov_cap_183_LEFT	ACGTGTGCTCTTCCGATCTACCTTGAAGGAAAACAGGGTAA
ncov_cap_185_LEFT	ACGTGTGCTCTTCCGATCTTGCTGCAGCTTATTATGTGGGT
ncov_cap_187_LEFT	ACGTGTGCTCTTCCGATCTAGTTTTTAACGCCACCAGATTT GC
ncov_cap_189_LEFT	ACGTGTGCTCTTCCGATCTGGCAAACTGGAAAGATTGCTGA
ncov_cap_191_LEFT	ACGTGTGCTCTTCCGATCTACCCACTAATGGTGTTGGTTAC
ncov_cap_193_LEFT	ACGTGTGCTCTTCCGATCTTCTTGACATTACACCATGTTCT TTTGG
ncov_cap_195_LEFT	ACGTGTGCTCTTCCGATCTAGGTATATGCGCTAGTTATCAG ACTCA
ncov_cap_197_LEFT	ACGTGTGCTCTTCCGATCTCAATCTTTTGTTGCAATATGGC AGTTT
ncov_cap_199_LEFT	ACGTGTGCTCTTCCGATCTAAGTGACACTTGCAGATGCTGG

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ncov_cap_201_LEFT	ACGTGTGCTCTTCCGATCTTGGCTTATAGGTTTAATGGTAT TGGAGT
ncov_cap_203_LEFT	ACGTGTGCTCTTCCGATCTACAAAGTTGAGGCTGAAGTGCA
ncov_cap_205_LEFT	ACGTGTGCTCTTCCGATCTACTTATGTCCCTGCACAAGAAA AGA
ncov_cap_207_LEFT	ACGTGTGCTCTTCCGATCTTGATCCTTTGCAACCTGAATTA GACT
ncov_cap_209_LEFT	ACGTGTGCTCTTCCGATCTTGGTGACAATTATGCTTTGCTG TATG
ncov_cap_211_LEFT	ACGTGTGCTCTTCCGATCTGTTCGCGCTACTGCAACGATAC
ncov_cap_213_LEFT	ACGTGTGCTCTTCCGATCTATGCTTTAGTCTACTTCTTGCA GAGT
ncov_cap_215_LEFT	ACGTGTGCTCTTCCGATCTACACAGTTACTTCACTTCAGAC TATTACC
ncov_cap_217_LEFT	ACGTGTGCTCTTCCGATCTACAAGCTGATGAGTACGAACTT ATGT
ncov_cap_219_LEFT	ACGTGTGCTCTTCCGATCTTCTAGAGTTCCTGATCTTCTGG TCT
ncov_cap_221_LEFT	ACGTGTGCTCTTCCGATCTGGCCAGTAACTTTAGCTTGTTT TGT
ncov_cap_223_LEFT	ACGTGTGCTCTTCCGATCTGTAATCGGAGCTGTGATCCTTC
ncov_cap_225_LEFT	ACGTGTGCTCTTCCGATCTTGCTTGTACAGTAAGTGACAAC AGA
ncov_cap_227_LEFT	ACGTGTGCTCTTCCGATCTACAACAGTACTTTTAAAAGAAC CTTGCT
ncov_cap_229_LEFT	ACGTGTGCTCTTCCGATCTTGCTTCACACTCAAAAGAAAG
ncov_cap_231_LEFT	ACGTGTGCTCTTCCGATCTTGTAGTTGATGACCCGTGTCCT
ncov_cap_233_LEFT	ACGTGTGCTCTTCCGATCTAGAGTATCATGACGTTCGTGTT GT
ncov_cap_235_LEFT	ACGTGTGCTCTTCCGATCTAGGAAGACCTTAAATTCCCTCG AGG
ncov_cap_237_LEFT	ACGTGTGCTCTTCCGATCTTGAGGGAGCCTTGAATACACCA
ncov_cap_239_LEFT	ACGTGTGCTCTCCGATCTCTTGCTTTGCTGCTGCTTGA
ncov_cap_241_LEFT	ACGTGTGCTCTTCCGATCTCATTGGCCGCAAATTGCACAAT
ncov_cap_243_LEFT	ACGTGTGCTCTTCCGATCTAGGCTGATGAAACTCAAGCCTT
ncov_cap_245_LEFT	ACGTGTGCTCTTCCGATCTTGAATTCTCGTAACTACATAGC ACAAGT
RNAse_P_LEFT	ACGTGTGCTCTTCCGATCTGATTTGGACCTGCGAGCG

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NAME	SEQUENCE
ncov_cap_2_LEFT	ACGTGTGCTCTTCCGATCTTCAGCACATCTAGGTTTCGTCC
ncov_cap_4_LEFT	ACGTGTGCTCTTCCGATCTCATCAAACGTTCGGATGCTCGA
ncov_cap_6_LEFT	ACGTGTGCTCTTCCGATCTTGGCACTGATCCTTATGAAGAT TTTCA
ncov_cap_8_LEFT	ACGTGTGCTCTTCCGATCTGCATGAAATTGCTTGGTACACG G
ncov_cap_10_LEFT	ACGTGTGCTCTTCCGATCTGCGTCACCAAATGAATGCAACC
ncov_cap_12_LEFT	ACGTGTGCTCTTCCGATCTACCTGAGCATAGTCTTGCCGAA

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	GATCGCC
ncov_cap_16_LEFT	ACGTGTGCTCTTCCGATCTTGTACGATCAATTTTCTCCCGC
ncov_cap_18_LEFT	ACGTGTGCTCTTCCGATCTAAACCCGTCCTTGATTGGCTTG
ncov_cap_20_LEFT	ACGTGTGCTCTTCCGATCTTTTGTCACGCACTCAAAGGGAT
ncov_cap_22_LEFT	ACGTGTGCTCTTCCGATCTGCCCTTGCACCTAATATGATGG
ncov_cap_24_LEFT	ACGTGTGCTCTTCCGATCTTGCTGTCATAAAAACTTTGCAA
ncov_cap_26_LEFT	ACGTGTGCTCTTCCGATCTGGTAAACCTTTGGAATTTGGTG
ncov_cap_28_LEFT	ACGTGTGCTCTTCCGATCTACATTAAAAATGCAGACATTGT GGAAGA
ncov_cap_30_LEFT	ACGTGTGCTCTTCCGATCTTGTCTTCATGTTGTCGGCCCAA
ncov_cap_32_LEFT	ACGTGTGCTCTTCCGATCTAAGATCGCTGAGATTCCTAAAG AGG
ncov_cap_34_LEFT	ACGTGTGCTCTTCCGATCTGTGGGTGATGTTGTTCAAGAG GG
ncov_cap_36_LEFT	ACGTGTGCTCTTCCGATCTTGGAACTGTTTCTTGGAATTTG CG
ncov_cap_38_LEFT	ACGTGTGCTCTTCCGATCTTGTAACACATGGCTTAAATTTG GAAGAA
ncov_cap_40_LEFT	ACGTGTGCTCTTCCGATCTTCCTACCACATTCCACCTAGAT GG
ncov_cap_42_LEFT	ACGTGTGCTCTTCCGATCTAACCTCATAATTCACATGAAGG TAAAACA
ncov_cap_44_LEFT	ACGTGTGCTCTTCCGATCTAGAGTTTAATCCACCT GCT
ncov_cap_46_LEFT	ACGTGTGCTCTTCCGATCTCCTTAAGGGTGTAGAAGCTGTT ATGT
ncov_cap_48_LEFT	ACGTGTGCTCTTCCGATCTCCTCAGAATACAAAGGTCCTAT TACGG
ncov_cap_50_LEFT	ACGTGTGCTCTTCCGATCTAGAAACCTGCTTCAAGAGAGCT
ncov_cap_52_LEFT	ACGTGTGCTCTTCCGATCTGGGAATGGATAATCTTGCCTGC G
ncov_cap_54_LEFT	ACGTGTGCTCTTCCGATCTTGCTAAGCCTTTTCTTAACAAA GTTGT
ncov_cap_56_LEFT	ACGTGTGCTCTTCCGATCTTGGTTTTTACTATTAAGTGTTT GCCTAGGT
ncov_cap_58_LEFT	ACGTGTGCTCTTCCGATCTAATGGGATTTAACTGCTTTTGG CTT
ncov_cap_60_LEFT	ACGTGTGCTCTTCCGATCTGCATGTTGTAGACGGTTGTAAT TCA
ncov_cap_62_LEFT	ACGTGTGCTCTTCCGATCTGACTTGTCACTACAGTTTAAAA GACCAA
ncov_cap_64_LEFT	ACGTGTGCTCTTCCGATCTAGAATCATCTGCAAAATCAGCG TCT
ncov_cap_66_LEFT	ACGTGTGCTCTTCCGATCTCTACTTTTATTTCAGCAGCTCG GC
ncov_cap_68_LEFT	ACGTGTGCTCTTCCGATCTGCGCAGGTAGCAAAAAGTCACA
ncov_cap_70_LEFT	ACGTGTGCTCTTCCGATCTGCAGTTAATTAAAGTTACACTT GTGTTCC

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ncov_cap_72_LEFT	ACGTGTGCTCTTCCGATCTTGCTGCAGTCATAACAAGAGAA GT
ncov_cap_74_LEFT	ACGTGTGCTCTTCCGATCTACCAATGTACTAGAAGGTTCTG TTGC
ncov_cap_76_LEFT	ACGTGTGCTCTTCCGATCTGATCTTTACCAGGAGTTTTCTG TGGT
ncov_cap_78_LEFT	ACGTGTGCTCTTCCGATCTACTGTACTCTGTTTAACACCAG TTTACT
ncov_cap_80_LEFT	ACGTGTGCTCTTCCGATCTCCTTTAGTACTTTTGAAGAAGC TGCG
ncov_cap_82_LEFT	ACGTGTGCTCTTCCGATCTCCACAAACCTCTATCACCTCAGC
ncov_cap_84_LEFT	ACGTGTGCTCTTCCGATCTGGCTGGTAATGTTCAACTCAGG
ncov_cap_86_LEFT	ACGTGTGCTCTTCCGATCTTGGTTCATGTGGTAGTGTTGGT
ncov_cap_88_LEFT	ACGTGTGCTCTTCCGATCTACCACAACTCTTAATGACTTTAACCTTTGT
ncov_cap_90_LEFT	ACGTGTGCTCTTCCGATCTACAATGCTCAGGTGTTACTTTC CA
ncov_cap_92_LEFT	ACGTGTGCTCTTCCGATCTTTACCTTCTCTTGCCACTGTAG CT
ncov_cap_94_LEFT	ACGTGTGCTCTTCCGATCTACACTTATGAATGTCTTGACAC TCGT
ncov_cap_96_LEFT	ACGTGTGCTCTTCCGATCTTGTACTTTGTTACTTTGGCCTCT
ncov_cap_98_LEFT	ACGTGTGCTCTTCCGATCTAGTCTTACTCTCAGTTTTGCAA CAACT
ncov_cap_100_LEFT	ACGTGTGCTCTTCCGATCTGTTCCCTTCCATCATATGCAGC
ncov_cap_102_LEFT	ACGTGTGCTCTTCCGATCTGGGCAAAAGTTACTAGTGCTAT GCA
ncov_cap_104_LEFT	ACGTGTGCTCTTCCGATCTCAGGTTGTAGATGCAGATAGTA AAATTGT
ncov_cap_106_LEFT	ACGTGTGCTCTTCCGATCTTGCACTGTTATCCGATTTACAG GA
ncov_cap_108_LEFT	ACGTGTGCTCTTCCGATCTAAGTGCCTGCCAATTCAACTGT
ncov_cap_110_LEFT	ACGTGTGCTCTTCCGATCTAAAAACACAGTCTGTACCGTCT GC
ncov_cap_112_LEFT	ACGTGTGCTCTTCCGATCTAATTCCTAAAAACTAATTGTTG TCGCTTCC
ncov_cap_114_LEFT	ACGTGTGCTCTTCCGATCTTCAACGTCTTACTAAATACACAA TGGCA
ncov_cap_116_LEFT	ACGTGTGCTCTTCCGATCTCGAAATGCTGGTATTGTTGGTG
ncov_cap_118_LEFT	ACGTGTGCTCTTCCGATCTTGACTTCACGGAAGAGAGAGGTTA AAAC
ncov_cap_120_LEFT	ACGTGTGCTCTTCCGATCTCCACTTCAGAGAGCTAGGTGTT G
ncov_cap_122_LEFT	ACGTGTGCTCTTCCGATCTCACTTCTTTGCTCAGGATG GT
ncov_cap_124_LEFT	ACGTGTGCTCTTCCGATCTCGCATATACAAAACGTAATGTC ATCCC

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ncov_cap_126_LEFT	ACGTGTGCTCTTCCGATCTATGGGTTGGGATTATCCTAAAT GTGA
ncov_cap_128_LEFT	ACGTGTGCTCTTCCGATCTTCAGGAGATGCCACAACTGCTT
ncov_cap_130_LEFT	ACGTGTGCTCTTCCGATCTTACTCTCTGACGATGCTGTTGT
ncov_cap_132_LEFT	ACGTGTGCTCTTCCGATCTAGATCCATCAAGAATCCTAGGG GC
ncov_cap_134_LEFT	ACGTGTGCTCTTCCGATCTGGAACCTGAGTTTTATGAGGCT ATGT
ncov_cap_136_LEFT	ACGTGTGCTCTTCCGATCTACTCAACTTTACTTAGGAGGTA TGAGCT
ncov_cap_138_LEFT	ACGTGTGCTCTTCCGATCTACGCTCAAAGCTACTGAGGAGA
ncov_cap_140_LEFT	ACGTGTGCTCTTCCGATCTACCGAGGTACAACAACTTACAA ATTAAAT
ncov_cap_142_LEFT	ACGTGTGCTCTTCCGATCTCTCTACTACCCTTCTGCTCGCA
ncov_cap_144_LEFT	ACGTGTGCTCTTCCGATCTCTTTGATGAAATTTCAATGGCC ACAAA
ncov_cap_146_LEFT	ACGTGTGCTCTTCCGATCTGCACATAAAGACAAATCAGCTC AATGC
ncov_cap_148_LEFT	ACGTGTGCTCTTCCGATCTGTTGATTCATCACAGGGCTCAG
ncov_cap_150_LEFT	ACGTGTGCTCTTCCGATCTTGGGTTACATCCTACACAGGCA
ncov_cap_152_LEFT	ACGTGTGCTCTTCCGATCTGTCGAGGGGTGTCATGCTACTA
ncov_cap_154_LEFT	ACGTGTGCTCTTCCGATCTAGTGACACACTTAAAAATCTCT CTGACA
ncov_cap_156_LEFT	ACGTGTGCTCTTCCGATCTCAGGTAACCTACAAAGCAACCA
ncov_cap_158_LEFT	ACGTGTGCTCTTCCGATCTCCCAGTTCTTCACGACATTGGT
ncov_cap_160_LEFT	ACGTGTGCTCTTCCGATCTAACTTGCCTGGTTGTGATGGTG
ncov_cap_162_LEFT	ACGTGTGCTCTTCCGATCTTGTAGACATCATGCTAATGAGT ACAGAT
ncov_cap_164_LEFT	ACGTGTGCTCTTCCGATCTCACAAAAGTTGATGGTGTTGATGTAGA
ncov_cap_166_LEFT	ACGTGTGCTCTTCCGATCTACTGAAACGATTTGTGCACCAC
ncov_cap_168_LEFT	ACGTGTGCTCTTCCGATCTCCAACAATTACCTGAAACTTACT TTACTCA
ncov_cap_170_LEFT	ACGTGTGCTCTTCCGATCTGGTTCATCTAAGTGTGTGTTTCTGT
ncov_cap_172_LEFT	ACGTGTGCTCTTCCGATCTAGAATGCTATTAGAAAAGTGTG ACCTTCA
ncov_cap_174_LEFT	ACGTGTGCTCTTCCGATCTTGATGCAGATTCAACTTTGATT GGTG
ncov_cap_176_LEFT	ACGTGTGCTCTTCCGATCTGCTGATCTTTATAAGCTCATGG GACA
ncov_cap_178_LEFT	ACGTGTGCTCTTCCGATCTAGGGGGTACTGCTGTTATGTCTT TAAA
ncov_cap_180_LEFT	ACGTGTGCTCTTCCGATCTAGGACTTGTTCTTACCTTTCTT TTCCA
ncov_cap_182_LEFT	ACGTGTGCTCTTCCGATCTGTTGGATGGAAAGTGAGTTCAG AGT
ncov_cap_184_LEFT	ACGTGTGCTCTTCCGATCTTCGGCTTTAGAACCATTGGTAG ATT

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ncov_cap_186_LEFT	ACGTGTGCTCTTCCGATCTAGTGTACGTTGAAATCCTTCAC
ncov_cap_188_LEFT	ACGTGTGCTCTTCCGATCTACTTTTAAGTGTTATGGAGTGT CTCCT
ncov_cap_190_LEFT	ACGTGTGCTCTTCCGATCTAGATTGTTTAGGAAGTCTAATC TCAAACCT
ncov_cap_192_LEFT	ACGTGTGCTCTTCCGATCTATGGTTTAACAGGCACAGGTGT
ncov_cap_194_LEFT	ACGTGTGCTCTTCCGATCTATCAACTTACTCCTACTTGGCG TG
ncov_cap_196_LEFT	ACGTGTGCTCTTCCGATCTAACTCTATTGCCATACCCACAAA TTTT
ncov_cap_198_LEFT	ACGTGTGCTCTTCCGATCTAGTCAAACAAATTTACAAAACAC CACCA
ncov_cap_200_LEFT	ACGTGTGCTCTTCCGATCTTTGCCACCCTTTGCTCACAGATG
ncov_cap_202_LEFT	ACGTGTGCTCTTCCGATCTGCACTTGGAAAACTTCAAGATG TGG
ncov_cap_204_LEFT	ACGTGTGCTCTTCCGATCTTGCTGCTACTAAAATGTCAGAG TGT
ncov_cap_206_LEFT	ACGTGTGCTCTTCCGATCTTGTAACACAAAGGAATTTTTAT GAACCACA
ncov_cap_208_LEFT	ACGTGTGCTCTTCCGATCTGTAAACATTCAAAAAGAAATTG ACCGCC
ncov_cap_210_LEFT	ACGTGTGCTCTTCCGATCTGCTCAAAGGAGTCAAATTACAT TACACA
ncov_cap_212_LEFT	ACGTGTGCTCTTCCGATCTCCAAGGGTGTTCACTTTGTTTG
ncov_cap_214_LEFT	ACGTGTGCTCTTCCGATCTGCCAACTATTTTCTTTGCTGGC
ncov_cap_216_LEFT	ACGTGTGCTCTTCCGATCTTTCACACAATCGACGGTTCATC
ncov_cap_218_LEFT	ACGTGTGCTCTTCCGATCTCCTTACTGCGCTTCGATTGTGT
ncov_cap_220_LEFT	ACGTGTGCTCTTCCGATCTAAGCTCCTTGAACAATGGAACC T
ncov_cap_222_LEFT	ACGTGTGCTCTTCCGATCTTTCTTTCAGACTGTTTGCGCGT
ncov_cap_224_LEFT	ACGTGTGCTCTTCCGATCTAACGCTTTCTTATTACAAATTG GGAGC
ncov_cap_226_LEFT	ACGTGTGCTCTTCCGATCTTCTCAATTAGATGAAGAGCAAC CAATGG
ncov_cap_228_LEFT	ACGTGTGCTCTTCCGATCTCGTCTATCAGTTACGTGCCAGA
ncov_cap_230_LEFT	ACGTGTGCTCTTCCGATCTATTATCTTTTGGTTCTCACTTG AACTGC
ncov_cap_232_LEFT	ACGTGTGCTCTTCCGATCTACATCGATATCGGTAATTATAC AGTTTCCT
ncov_cap_234_LEFT	ACGTGTGCTCTTCCGATCTACCCTCAGATTCAACTGGCAGT
ncov_cap_236_LEFT	ACGTGTGCTCTTCCGATCTAATGAAAGATCTCAGTCCAAGA TGGT
ncov_cap_238_LEFT	ACGTGTGCTCTTCCGATCTGCAGTCAAGCCTCTTCTCGTTC
ncov_cap_240_LEFT	ACGTGTGCTCTTCCGATCTGCAAAAACGTACTGCCACTAAA
	GC
ncov_cap_242_LEFT	ACGTGTGCTCTTCCGATCTACACAGGTGCCATCAAATTGGA
ncov_cap_244_LEFT	ACGTGTGCTCTTCCGATCTTGCTGACTCAACTCAGGCCTAA
RNAse_P_LEFT	ACGTGTGCTCTTCCGATCTGATTTGGACCTGCGAGCG

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The first stage in our workflow is the preparation of bead-bound DNA probes that will facilitate subsequent viral RNA capture, cDNA synthesis and multiplex PCR to generate ~200 nt amplicons covering the entire SARS-CoV-2 genome. We use two distinct sets of probes for this, requiring two independent bead preparations for each sample to be processed. Ultimately, this enables library preparation to be performed in two parallel reactions, designed such that neighbouring amplicons do not overlap within the same library PCR. This strategy protects against preferential amplification of short overlap products, and has been successfully developed and employed elsewhere (Quick *et al.* [2017] *Nat Protoc.* 12: 1261; https://www.protocols.io/view/ncov-2019-sequencing-protocol-bbmuik6w/abstract). Throughout the protocol we use the generic terms "pool 1" and "pool 2" to refer to our two capture probe sets, as well as the corresponding primer sets needed for library amplification.

We envisage that capture beads could be prepared in bulk in advance and supplied to testing labs in 96-well or 384-well format. Each uniquely barcoded bead preparation could thus be used for multiple sample batches, provided each batch is sequenced independently. The protocol below is for a small-scale preparation of up to 10 uniquely barcoded bead sets, to be used in development and evaluation of a prototype. We also provide an alternative, lower-cost bead preparation method at the end of this page.

Wash **200** µI of streptavidin-coated Dynabeads™ MyOne™ C1 magnetic beads as per the manufacturer's instructions:

- 1.1 Resuspend the Dynabeads™ magnetic beads in the vial (vortex for > ⊙ 00:00:30).
- 1.2 Transfer **200** µl of Dynabeads™ magnetic beads to a tube.
- 1.3 Add an equal volume of 1X B&W buffer and resuspend.
- 1.4 Place the tube on a magnet for **© 00:01:00** and discard the supernatant.
- 1.5 Remove the tube from the magnet and resuspend the washed magnetic beads in 200 µl of 1X B&W buffer.
- 1.6 Repeat steps 1.4–1.5 twice, for a total of 3 washes.
- 1.7 Pellet beads once more, and resuspend in 400 µl of 2X B&W buffer.
- For each unique barcode, take an aliquot of the prepared beads and immobilise an oligonucleotide of the structure 5'-[biotin][spacer][partial Illumina p5 adapter][sample barcode][generic stub]-3' onto the beads as follows:
- 2.1 Add **40 μl** of 5 μM oligonucleotide ([Biotin]-barcoded bead tether) to **40 μl** of washed beads.
- 2.2 Incubate for **© 00:15:00** at room temperature using gentle rotation.
- 2.3 Separate the biotinylated DNA coated beads with a magnet for 2-3 min.

- 2.4 Wash the coated beads 2-3 times with $\square 100 \mu I$ 1X B&W buffer.
- 2.5 Resuspend in $\boxed{120 \mu l}$ of nuclease-free water.
- 3 For each barcoded sample, generate two distinct libraries of bead-bound SARS-CoV-2 probes by annealing separate oligonucleotide pools with the general structure 3'-[generic stub complement][SARS-CoV-2 target]-5' and performing strand extension:
- 3.1 Mix the following components in 0.2 mL PCR tubes:

Component	Pool 1	Pool 2
Bead-bound template (previous step)	□ 60 μl	□ 60 µl
5X PrimeSTAR GXL buffer	⊒20 μl	⊒ 20 μl
dNTP mixture (2.5 mM each)	⊒8 µl	⊒ 8 μl
SARS-CoV-2 probe pool 1 or 2 (10 μM)	□ 10 μl	⊒10 μl
PrimeSTAR GXL DNA polymerase	⊒ 2 μl	⊒2 μl

3.2 Incubate the reaction as follows:

Step	Temperature	Time	Cycles
Denaturation	8 98 °C	© 00:00:10	1
Annealing	8 55 °C	© 00:00:15	1
Extension	8 68 °C	© 00:02:00	1
Hold	& 4 °C	Indefinite	1

- 4 For each bead sample, dissociate and remove the non-biotinylated strand as follows:
- 4.1 Pellet the beads on a magnet and wash once in **□50 µl** 1X SSC.
- 4.2 Resuspend the beads in 20 µl of freshly prepared 0.15 M NaOH and incubate at room temperature for 300:10:00.
- 4.3 Pellet the beads on a magnet and discard the supernatant containing the non-biotinylated strand.
- 4.4 Wash the beads once with 30 μl 0.1M NaOH, once with 50 μl of 1X B&W buffer and once with 50 μl TE buffer.

- 4.5 Resuspend beads in **□50 μl** TE buffer.
 - The above steps are designed to produce two libraries of single-stranded, bead-bound SARS-CoV-2 probes for each sample barcode, with the general structure 5'-[biotin][spacer][partial Illumina p5 adapter][sample barcode][generic stub][SARS-CoV-2 target]-3'. Once the method has been suitably tested and is ready for deployment at scale, we envisage that these steps could be simplified substantially by synthesising the biotinylated probe sets in full for each sample barcode and immobilising these directly onto the streptavidin-coated beads.

Sample collection and preparation

- 5 Collect nasopharyngeal swabs in a **1.5 ml** volume of transport medium.
 - We are currently testing a range of media with the aim of identifying a formulation that optimally preserves viral RNA and supports hybridisation with our bead-bound probes in the following step. These include UTM, Lysis/binding buffer and a combination of the two (see Materials). Alternatively, kit-extracted RNA or synthetic control RNA can be used.
- Quantify $\mathbf{10} \mu$ of swab diluent using the Qubit RNA HS assay or similar.

RNA capture

- 7 For each sample to be tested, transfer 2 x **25 μl** of unique barcoded beads (one for each probe set) into separate 0.2 mL PCR tubes.
 - Alternatively, use multi-well PCR plates. For 384-well plates, sample volumes will need to be scaled down in subsequent steps.
- 8 Pellet the beads on a magnet and discard the supernatant.
- 9 Add **50 μl** of swab diluent directly to each bead pellet (i.e. 2 x **50 μl** per swab sample) and resuspend completely by pipette mixing. Alternatively, use purified or synthetic control RNA in a buffer suitable for probe hybridisation e.g. 1X SSC.
- Place reactions in a preheated thermal cycler with a heated lid and incubate at § 75 °C for © 00:02:00, then ramp to § 25 °C at a rate of -0.1 °C/s and proceed immediately to the next step.
- 11 Pellet the beads on a magnet and discard the supernatant.

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- 12 Resuspend each reaction in **20 μl** of Washing buffer A.
- 13 Combine all "pool 1" samples together into a fresh tube and repeat this process for "pool 2".



For large sample batches it should only be necessary to pool a small aliquot of each reaction. The combined samples will be used as input for cDNA synthesis. We are currently testing whether there is a limit to the amount of beads that can be tolerated in the reverse transcription reaction, as well as the subsequent library amplification.

cDNA synthesis

- 14 Wash each pooled bead sample once with an equivalent volume of Washing buffer A and twice with the same volume of Washing buffer B, using a magnet to separate the beads from the solution between each washing step. After the final wash, leave the beads suspended in Washing buffer B at room temperature and proceed immediately to the next step.
- 15 Prepare a reverse transcriptase master mix by combining the following components from the SuperScript™ IV First-Strand Synthesis System:

Component	Volume
5X SSIV buffer	⊒20 μl
10 mM dNTP mix (10 mM each)	⊒ 5 µl
100 mM DTT	⊒ 5 μl
Ribonuclease inhibitor (40 U/μL)	⊒ 5 μl
DEPC-treated water	⊒ 60 µl

- Pellet beads from step 14 on a magnet and discard the supernatant. Pulse spin tubes for 5 s, return to the magnet and discard any remaining liquid to ensure all the Washing buffer B has been removed (residual buffer may inhibit the reverse transcriptase reaction).
- Perform one final wash in **25 μl** of reverse transcriptase master mix. Again pellet beads on a magnet and discard the supernatant.
- Resuspend each pooled bead sample in **□19 μI** of reverse transcriptase master mix and add **□1 μI** of SuperScript™ IV Reverse Transcriptase (200 U/μL). Mix well by pipetting and briefly centrifuge.
- 19 Incubate the reactions at § 55 °C for © 00:10:00.
- 20 Inactivate by incubating at § 80 °C for © 00:10:00.
- 21 Pellet beads by placing each tube on a magnet. Discard the supernatant and wash once in TE buffer.



Here we generate amplicon libraries from each pooled cDNA sample by multiplex PCR. We also incorporate Illumina sequencing adapters and additional barcodes at this stage, producing sequence-ready samples that could potentially be combined with additional library pools for further scalability. Sequencing adapters are added over two sequential rounds of PCR, although we envisage that a single step protocol may also be feasible.

Pellet the "pool 1" and "pool 2" cDNA-coated bead samples from the previous step on a magnet, discard the supernatant and resuspend each in $28 \, \mu$ of nuclease-free water.

23 Combine the first-round PCR components in separate 0.2 mL PCR tubes:

Component	Pool 1	Pool 2
cDNA-coated beads (pool 1 or 2)	⊒26.7 µl	⊒ 26.7 μl
5X Q5 reaction buffer	⊒10 μl	⊒10 μl
10 mM dNTPs	⊒1 µl	□ 1 μl
Illumina P5 index primer (10 μM)	⊒2.5 μl	⊒ 2.5 μl
SARS-CoV-2 primer pool 1 or 2 (10 μM)	⊒ 9.3 µl	⊒ 9.3 μl
Q5 Hot Start High-Fidelity Polymerase	□ 0.5 μl	□ 0.5 μl



The SARS-CoV-2 primer pools contain 124 (pool 1) and 123 (pool 2) individual primer sequences. The concentration of each primer in the final reaction is $0.015 \,\mu\text{M}$, as recommended in previous studies (Quick *et al.* [2017] *Nat Protoc.* 12: 1261).

24 Mix well by pipetting and briefly centrifuge.

25 Incubate the *first-round* PCR reactions as follows:

Step	Temperature	Time	Cycles
Heat activation	8 98 °C	© 00:00:30	1
Denaturation	8 98 °C	© 00:00:15	25-35
Annealing/extension	8 65 °C	© 00:05:00	25-35
Hold	л 4 °C	Indefinite	1

- 26 For each reaction, pellet the cDNA-coated beads on a magnet and transfer the supernatant containing the amplified product to a new tube.
- 27 Clean up each reaction by performing a left side size selection with a 1.2X volume of SPRIselect beads as per the manufacturer's instructions (Beckman Coulter). Elute the sample in 40 µl of nuclease-free water.
- 28 Quantify 11 pl of each purified sample using the Qubit dsDNA HS assay or similar.
- 29 Combine the second-round PCR components in separate 0.2 mL PCR tubes:

Component	Pool 1	Pool 2
Purified template (previous step)	□ 10 ng	□ 10 ng
5X PrimeSTAR GXL buffer	⊒10 μl	□ 10 μl
dNTP mixture (2.5 mM each)	⊒4 μl	⊒ 4 μl
Illumina P5 flow cell primer (10 μM)	□ 1.25 μl	⊒ 1.25 μl
Illumina P7 index primer (10 μM)	□ 1.25 μl	□ 1.25 μl
PrimeSTAR GXL DNA polymerase	□ 1 μl	□ 1 µl
Nuclease-free water	to ⊒50 μl	to □50 μl

30 Mix well by pipetting and briefly centrifuge.

31 Incubate the *second-round* PCR reactions as follows:

Step	Temperature	Time	Cycles
Denaturation	8 98 °C	© 00:00:10	6
Annealing	8 60 °C	© 00:00:15	6
Extension	8 68 °C	© 00:01:00	6
Hold	л 4 °С	Indefinite	1

32 Clean up each reaction by performing a left side size selection with a 0.8X volume of SPRIselect beads as per the manufacturer's instructions (Beckman Coulter). Elute the sample in 40 µl of nuclease-free water.

Library quantitation and sequencing

- 33 Determine the concentration of the final "pool 1" and "pool 2" multiplexed libraries in ng/μL using the Qubit dsDNA HS assay or similar.
- Assess the fragment size distribution of each library and determine the average fragment length using an Agilent 2100 Bioanalyzer or similar.
- 35 Calculate sample molarity using the following formula:

Concentration in nM = [(concentration in ng/ μ L) / (660 g/mol x average size in bp)] x 10⁶

36 Combine an equimolar amount of each library and mix.



If sequencing additional samples, quantitate them as above and combine at the desired relative molarity.

37 Sequence the final pooled library using an Illumina instrument, generating 2 x 150 nt paired end reads

Alternative bead preparation method

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This alternative method enables the production of multiple uniquely barcoded bead preparations from a single biotinylated template oligo. This reduces oligo synthesis costs, but does introduce an additional level of protocol complexity.

Wash **200** µI of streptavidin-coated Dynabeads™ MyOne™ C1 magnetic beads as per the manufacturer's instructions:

38.1 Resuspend the Dynabeads™ magnetic beads in the vial (vortex for > ⊙ 00:00:30).

38.2 Transfer **200** µl of Dynabeads[™] magnetic beads to a tube. Add an equal volume of 1X B&W buffer and resuspend. 38.3 38.4 Place the tube on a magnet for © 00:01:00 and discard the supernatant. 38.5 Remove the tube from the magnet and resuspend the washed magnetic beads in ■200 µl of 1X B&W buffer. Repeat steps 38.4-38.5 twice, for a total of 3 washes. 38.6 38.7 Pellet beads once more, and resuspend in 400 µl of 2X B&W buffer. Immobilise a generic oligonucleotide of the structure 5'-[biotin][spacer][partial Illumina p5 adapter]-3' onto the beads as 39.1 Add 400 μl of 5 μM oligonucleotide ([Biotin]-bead tether) to 400 μl of washed beads. 39.2 Incubate for © **00:15:00** at room temperature using gentle rotation. Separate the biotinylated DNA coated beads with a magnet for 2-3 min. 39.3 Wash the coated beads 2-3 times with 1X B&W buffer. 39.4 39.5 Resuspend in **1.2 ml** of nuclease-free water. For each unique barcode, generate two libraries of bead-bound SARS-CoV-2 probes via a two-stage annealing and extension process using a barcoded linker oligonucleotide of the structure 3'-[partial Illumina p5 adapter complement][sample barcode][generic stub complement]-5' and two separate oligonucleotide pools with the general structure 3'-[generic stub complement][SARS-CoV-2 target]-5': Mix the following components in a 0.2 mL PCR tube: 40.1

Component	Pool 1	Pool 2
Bead-bound template (previous step)	⊒ 60 μl	⊒ 60 μl
5X PrimeSTAR GXL buffer	⊒ 20 μl	⊒20 μl
dNTP mixture (2.5 mM each)	⊒8 µl	⊒8 µl
Barcoded linker (10 μM)	⊒ 5 μl	⊒ 5 μl
SARS-CoV-2 probe pool 1 or 2 (10 μM)	⊒ 5 μl	⊒ 5 μl
PrimeSTAR GXL DNA polymerase	⊒2 μl	⊒2 μl

40.2 Incubate the reaction as follows:

Step	Temperature	Time	Cycles
Denaturation	8 98 °C	© 00:00:10	4
Annealing	8 55 °C	© 00:00:15	4
Extension	8 68 °C	© 00:02:00	4
Hold	8 4 °C	Indefinite	4

- 41 For each bead sample, dissociate and remove the non-biotinylated strand as follows:
- 41.1 Pellet the beads on a magnet and wash once in **□50 μl** 1X SSC.
- 41.2 Resuspend the beads in $20 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH and incubate at room temperature for $0.15 \,\mu$ of freshly prepared 0.15 M NaOH an
- 41.3 Pellet the beads on a magnet and discard the supernatant containing the non-biotinylated strand.
- 41.4 Wash the beads once with \Box 50 μ I 0.1M NaOH, once with \Box 50 μ I of 1X B&W buffer and once with \Box 50 μ I TE buffer.
- 41.5 Resuspend beads in **50 µl** TE buffer.

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