

Customer Collaboration - PacBio® Compatible Hiscox Protocol for SARS-CoV-2 Sequencing

A1. SARS-COV-2 Target-Specific Primers Tailed with M13 Sequences for First Round of PCR Amplification

The SARS-COV-2 target-specific sequences for each of the 30 primer pairs listed in Table A1 are based on work described in Moore, SC *et al.* and are designed to sequentially amplify roughly 1000 bp with an ~200 bp overlapping region. If you have any questions or need more information, please contact support@pacb.com.

Note: The primers listed in Table A1 have not been validated by PacBio but are shown as example primer sets that may be suitable for targeted PCR amplification of SARS-COV-2 cDNA samples.

For all oligos:

- Synthesis scale: 100 nmol
- Purification: Desalted
- 5' Modification: /5AmMC6/

Table A1.

| Primer Name | M13 Sequence (5' to 3') | SARS-COV-2 Target-Specific Sequence (5' to 3')* | Oligo Sequence to Order (5' to 3') |
|---------------------|-------------------------|---|---|
| Covid19_01_ Forward | GTAAACCGACGGCCAGT | GTGTGACCGAAAGGTAAGATGG | /5AmMC6/GTAAACCGACGGCCAGTGTGTGACCGAAAGGTAAGATGG |
| Covid19_01_ Reverse | CAGGAAACAGCTATGAC | TTGCATTCATTTGGTGACGC | /5AmMC6/CAGGAAACAGCTATGACTTGCATTCATTTGGTGACGC |
| Covid19_02_ Forward | GTAAACCGACGGCCAGT | GGTGTATACTGCTGCCGTGA | /5AmMC6/GTAAACCGACGGCCAGTGGTGTATACTGCTGCCGTGA |
| Covid19_02_ Reverse | CAGGAAACAGCTATGAC | GCCAATCAAGGACGGGTTTG | /5AmMC6/CAGGAAACAGCTATGACCCAATCAAGGACGGGTTTG |
| Covid19_03_ Forward | GTAAACCGACGGCCAGT | CCGCACCTCTTGAACCTGCTC | /5AmMC6/GTAAACCGACGGCCAGTCCGCACCTCTTGAACCTGCTC |
| Covid19_03_ Reverse | CAGGAAACAGCTATGAC | GCAGAAGTGGCACCAATTC | /5AmMC6/CAGGAAACAGCTATGACGAGAAGTGGCACCAATTC |
| Covid19_04_ Forward | GTAAACCGACGGCCAGT | ACACCCTGCGGATTGATTTAG | /5AmMC6/GTAAACCGACGGCCAGTACACCCTGCGGATTGATTTAG |
| Covid19_04_ Reverse | CAGGAAACAGCTATGAC | TTTCAGTAGTGCCACCAGCC | /5AmMC6/CAGGAAACAGCTATGACTTTCAGTAGTGCCACCAGCC |
| Covid19_05_ Forward | GTAAACCGACGGCCAGT | CTTCATCCAGATTCTGCCAC | /5AmMC6/GTAAACCGACGGCCAGTCTTCATCCAGATTCTGCCAC |
| Covid19_05_ Reverse | CAGGAAACAGCTATGAC | AGCAGGTGGATTAACTTCAACTC | /5AmMC6/CAGGAAACAGCTATGACAGCAGGTGGATTAACTTCAACTC |
| Covid19_06_ Forward | GTAAACCGACGGCCAGT | CAACATTAACCTCCACACGC | /5AmMC6/GTAAACCGACGGCCAGTCAACATTAACCTCCACACGC |
| Covid19_06_ Reverse | CAGGAAACAGCTATGAC | ATCAATAGCCACCACATCACC | /5AmMC6/CAGGAAACAGCTATGACATCAATAGCCACCACATCACC |
| Covid19_07_ Forward | GTAAACCGACGGCCAGT | AGAAACCTGCTTCAAGAGAGC | /5AmMC6/GTAAACCGACGGCCAGTAGAAACCTGCTTCAAGAGAGC |
| Covid19_07_ Reverse | CAGGAAACAGCTATGAC | ATTACAACCGTCTACAACATGCAC | /5AmMC6/CAGGAAACAGCTATGACATTACAACCGTCTACAACATGCAC |
| Covid19_08_ Forward | GTAAACCGACGGCCAGT | GTCACTATTGCAACCTACTGTAC | /5AmMC6/GTAAACCGACGGCCAGTGTCACTATTGCAACCTACTGTAC |
| Covid19_08_ Reverse | CAGGAAACAGCTATGAC | CTTGCCGAGCTGCTGAAATA | /5AmMC6/CAGGAAACAGCTATGACCTTGCCGAGCTGCTGAAATA |
| Covid19_09_ Forward | GTAAACCGACGGCCAGT | AATCAGCGTCTGTTTACTACAGTC | /5AmMC6/GTAAACCGACGGCCAGTAATCAGCGTCTGTTTACTACAGTC |
| Covid19_09_ Reverse | CAGGAAACAGCTATGAC | GTGTCAGGGCGTAACTTTC | /5AmMC6/CAGGAAACAGCTATGACGTGTCAGGGCGTAACTTTC |
| Covid19_10_ Forward | GTAAACCGACGGCCAGT | TTGTCGTGCCTGGTTTGC | /5AmMC6/GTAAACCGACGGCCAGTTTGTGTCGTGCCTGGTTTGC |
| Covid19_10_ Reverse | CAGGAAACAGCTATGAC | ACGTCATCAAGCCAAAGACC | /5AmMC6/CAGGAAACAGCTATGACACGTCATCAAGCCAAAGACC |
| Covid19_11_ Forward | GTAAACCGACGGCCAGT | AGTGGAGCAATGGATACAAC | /5AmMC6/GTAAACCGACGGCCAGTAGTGGAGCAATGGATACAAC |
| Covid19_11_ Reverse | CAGGAAACAGCTATGAC | AGCTACAGTGGCAAGAGAAG | /5AmMC6/CAGGAAACAGCTATGACAGCTACAGTGGCAAGAGAAG |

| | | | |
|---------------------|-------------------|---------------------------------|--|
| Covid19_12_ Forward | GTAAACGACGGCCAGT | AGGGTACACACCACTGGTTG | /5AmMC6/GTAAACGACGGCCAGTAGGGTACACACCACTGGTTG |
| Covid19_12_ Reverse | CAGGAAACAGCTATGAC | CACCATTAGCAACAGCCTGC | /5AmMC6/CAGGAAACAGCTATGACCACCATTAGCAACAGCCTGC |
| Covid19_13_ Forward | GTAAACGACGGCCAGT | GTGAAGAAATGCTGGACAACAG | /5AmMC6/GTAAACGACGGCCAGTGTGAAGAAATGCTGGACAACAG |
| Covid19_13_ Reverse | CAGGAAACAGCTATGAC | GCACCACCAAAGGATTCTTG | /5AmMC6/CAGGAAACAGCTATGACGCACCACCAAAGGATTCTTG |
| Covid19_14_ Forward | GTAAACGACGGCCAGT | TAGTTTAGCTGCCACAGTACG | /5AmMC6/GTAAACGACGGCCAGTTAGTTTAGCTGCCACAGTACG |
| Covid19_14_ Reverse | CAGGAAACAGCTATGAC | AGTTAAAGCCCTGGTCAAGG | /5AmMC6/CAGGAAACAGCTATGACAGTTAAAGCCCTGGTCAAGG |
| Covid19_15_ Forward | GTAAACGACGGCCAGT | ATACGCCAACTTAGGTGAACG | /5AmMC6/GTAAACGACGGCCAGTATACGCCAACTTAGGTGAACG |
| Covid19_15_ Reverse | CAGGAAACAGCTATGAC | AACATGTTGTGCCAACCACC | /5AmMC6/CAGGAAACAGCTATGACAACATGTTGTGCCAACCACC |
| Covid19_16_ Forward | GTAAACGACGGCCAGT | TGAGTTATGAGGATCAAGATGCAC | /5AmMC6/GTAAACGACGGCCAGTTGAGTTATGAGGATCAAGATGCAC |
| Covid19_16_ Reverse | CAGGAAACAGCTATGAC | GCCTGTAAGACTGTATGCGG | /5AmMC6/CAGGAAACAGCTATGACGCTGTAAGACTGTATGCGG |
| Covid19_17_ Forward | GTAAACGACGGCCAGT | CCCAGATCCATCAAGAATCCTAG | /5AmMC6/GTAAACGACGGCCAGTCCCAGATCCATCAAGAATCCTAG |
| Covid19_17_ Reverse | CAGGAAACAGCTATGAC | TGCGAGCAGAAGGGTAGTAG | /5AmMC6/CAGGAAACAGCTATGACTGCGAGCAGAAGGGTAGTAG |
| Covid19_18_ Forward | GTAAACGACGGCCAGT | AAGGTGACTATGGTGATGCTG | /5AmMC6/GTAAACGACGGCCAGTAAGGTGACTATGGTGATGCTG |
| Covid19_18_ Reverse | CAGGAAACAGCTATGAC | GGTATGCCAGGTATGTCAACAC | /5AmMC6/CAGGAAACAGCTATGACGGTATGCCAGGTATGTCAACAC |
| Covid19_19_ Forward | GTAAACGACGGCCAGT | ACTCAAACCACCTGAAACAGCTC | /5AmMC6/GTAAACGACGGCCAGTACTCAAACCACCTGAAACAGCTC |
| Covid19_19_ Reverse | CAGGAAACAGCTATGAC | GTCACTACAAGGCTGTGCATC | /5AmMC6/CAGGAAACAGCTATGACGTACTACAAGGCTGTGCATC |
| Covid19_20_ Forward | GTAAACGACGGCCAGT | AGCTAGTTGTGATGCAATCATGAC | /5AmMC6/GTAAACGACGGCCAGTAGCTAGTTGTGATGCAATCATGAC |
| Covid19_20_ Reverse | CAGGAAACAGCTATGAC | CTTGTGGGACCTACAGATGG | /5AmMC6/CAGGAAACAGCTATGACCTTGTGGGACCTACAGATGG |
| Covid19_21_ Forward | GTAAACGACGGCCAGT | TTTGGGTGTGGACATTGCTG | /5AmMC6/GTAAACGACGGCCAGTTTGGGTGTGGACATTGCTG |
| Covid19_21_ Reverse | CAGGAAACAGCTATGAC | ATAGCCACGGAACCTCCAAG | /5AmMC6/CAGGAAACAGCTATGACATAGCCACGGAACCTCCAAG |
| Covid19_22_ Forward | GTAAACGACGGCCAGT | TAAGACAGTGGTTCCTACG | /5AmMC6/GTAAACGACGGCCAGTTAAGACAGTGGTTCCTACG |
| Covid19_22_ Reverse | CAGGAAACAGCTATGAC | TCTGAACTCACTTCCATCCAAC | /5AmMC6/CAGGAAACAGCTATGACTCTGAACTCACTTCCATCCAAC |
| Covid19_23_ Forward | GTAAACGACGGCCAGT | TTCGAAGACCCAGTCCCTAC | /5AmMC6/GTAAACGACGGCCAGTTTCGAAGACCCAGTCCCTAC |
| Covid19_23_ Reverse | CAGGAAACAGCTATGAC | TGGATCACGGACAGCATCAG | /5AmMC6/CAGGAAACAGCTATGACTGGATCACGGACAGCATCAG |
| Covid19_24_ Forward | GTAAACGACGGCCAGT | TTGAACTTCTACATGCACCAGC | /5AmMC6/GTAAACGACGGCCAGTTTGAACCTTCTACATGCACCAGC |
| Covid19_24_ Reverse | CAGGAAACAGCTATGAC | CCAGAAGTGATTGTACCCGC | /5AmMC6/CAGGAAACAGCTATGACCCAGAAGTGATTGTACCCGC |
| Covid19_25_ Forward | GTAAACGACGGCCAGT | TTGCTGTAGAGACCTCATTG | /5AmMC6/GTAAACGACGGCCAGTTTGTGTAGAGACCTCATTG |
| Covid19_25_ Reverse | CAGGAAACAGCTATGAC | GCAACTGGTCATACAGCAAAG | /5AmMC6/CAGGAAACAGCTATGACGCAACTGGTCATACAGCAAAG |
| Covid19_26_ Forward | GTAAACGACGGCCAGT | GGTGACATCTCTGGCATTAAATGC | /5AmMC6/GTAAACGACGGCCAGTGGTGACATCTCTGGCATTAAATGC |
| Covid19_26_ Reverse | CAGGAAACAGCTATGAC | TGCTTACAAAGGCACGCTAG | /5AmMC6/CAGGAAACAGCTATGACTGCTTACAAAGGCACGCTAG |
| Covid19_27_ Forward | GTAAACGACGGCCAGT | ACCAGCTGTAICTCAACTCAATTG | /5AmMC6/GTAAACGACGGCCAGTACCAGCTGTAICTCAACTCAATTG |
| Covid19_27_ Reverse | CAGGAAACAGCTATGAC | CTGCTACTGGAATGGTCTGTG | /5AmMC6/CAGGAAACAGCTATGACCTGCTACTGGAATGGTCTGTG |
| Covid19_28_ Forward | GTAAACGACGGCCAGT | TGACCAGACCGCTTCTAGAAAG | /5AmMC6/GTAAACGACGGCCAGTTGACCAGACCGCTTCTAGAAAG |
| Covid19_28_ Reverse | CAGGAAACAGCTATGAC | GCCTCATCCACGCACAATTC | /5AmMC6/CAGGAAACAGCTATGACGCTCATCCACGCACAATTC |
| Covid19_29_ Forward | GTAAACGACGGCCAGT | TGTCACGCCTAAACGAACATG | /5AmMC6/GTAAACGACGGCCAGTTGTCACGCCTAAACGAACATG |
| Covid19_29_ Reverse | CAGGAAACAGCTATGAC | GATTTCTTAGTGACAGTTGGCC | /5AmMC6/CAGGAAACAGCTATGACGATTTCTTAGTGACAGTTGGCC |
| Covid19_30_ Forward | GTAAACGACGGCCAGT | CGAATTCGTGGTGGTGACG | /5AmMC6/GTAAACGACGGCCAGTCAATTCGTGGTGGTGACG |
| Covid19_30_ Reverse | CAGGAAACAGCTATGAC | GGTGGCTCTTTCAAGTCCTC | /5AmMC6/CAGGAAACAGCTATGACGGTGGCTCTTTCAAGTCCTC |

* SARS-COV-2 Target-Specific Sequences are from medRxiv preprint doi: <https://doi.org/10.1101/2020.03.05.20032011> Moore, SC et al. Amplicon based MiniON sequencing of SARS-CoV-2 and metagenomic characterization of nasopharyngeal swabs from patients with COVID-19. PacBio would like to thank Prof. Julian A. Hiscox for development and sharing of the PCR protocol and primer sequences. The US Food and Drug Administration kindly funded this research with support from the Health Protection Research Unit in Emerging and Zoonotic Infections (Liverpool) and the Liverpool Malawi COVID-19 Consortium. Prof. Julian A. Hiscox is the Chair in Infection and Global Health, Research Strategy Lead, Institute of Infection and Global Health, University of Liverpool.

A2. First Round PCR Reaction Conditions: Recommendations for SARS-COV-2 Target Specific Primers Tailed with M13 Sequence

Note: Perform RT-PCR on each SARS-COV-2 sample using SuperScript IV reverse transcriptase (Thermo Fisher P/N 18091050) with random hexamers to generate single-strand cDNA suitable for SMRTbell library construction.

For each SARS-CoV-2 sample to be sequenced, 30 individual PCR reactions are required.

Use the primer sets listed in Table A1 to generate 30 overlapping amplicons (~1 kb) from the cDNA using the following cycling parameters:

| Step | Temperature | Time |
|------|---------------------------------------|---|
| 1 | 95°C | 3 minutes (KAPA HiFi HotStart) – OR – 30 seconds (Phusion) |
| 2 | 98°C | 30 seconds |
| 3 | 98°C | 10 seconds |
| 4 | 66°C | 30 seconds |
| 5 | 72°C | 50 seconds |
| 6 | Repeat steps 3 to 5 (35 cycles total) | |
| 7 | 72°C | 2 minutes |
| 8 | 4°C | Hold |

A3. M13 Primers Tailed with Asymmetric Barcodes for Second Round of PCR Amplification

PacBio recommends ordering M13 primers tailed with PacBio barcodes from any oligo synthesis company. Dilute Barcoded M13 primers in nuclease-free buffer (10mM Tris-HCl pH 7.5) to 3.0 µM and aliquot into a 96-well plate as shown in the example layout below.

Example Plate Layout of for 32 Forward and 32 Reverse PacBio-Barcoded M13 Primers.:

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|------|------|------|------|---|---|------|------|------|------|----|----|
| A | 1001 | 1009 | 1017 | 1025 | x | x | 1049 | 1057 | 1065 | 1073 | x | x |
| B | 1002 | 1010 | 1018 | 1026 | x | x | 1050 | 1058 | 1066 | 1074 | x | x |
| C | 1003 | 1011 | 1019 | 1027 | x | x | 1051 | 1059 | 1067 | 1075 | x | x |
| D | 1004 | 1012 | 1020 | 1028 | x | x | 1052 | 1060 | 1068 | 1076 | x | x |
| E | 1005 | 1013 | 1021 | 1029 | x | x | 1053 | 1061 | 1069 | 1077 | x | x |
| F | 1006 | 1014 | 1022 | 1030 | x | x | 1054 | 1062 | 1070 | 1078 | x | x |
| G | 1007 | 1015 | 1023 | 1031 | x | x | 1055 | 1063 | 1071 | 1079 | x | x |
| H | 1008 | 1016 | 1024 | 1032 | x | x | 1056 | 1064 | 1072 | 1082 | x | x |

Columns 1-4 are M13 forward primers tailed with PacBio barcode 1001 to barcode 1032.

Columns 7-10 are M13 reverse primers tailed with PacBio barcode 1049 to barcode 1079 and barcode 1082.

Any / all of the 32 forward primers may be combined with any / all of the 32 reverse primers to create asymmetrically barcoded pairs. Plan your specific barcoding strategy prior to preparing PCR reaction mixes.

For all oligos:

- Synthesis scale: 100 nmol
- Purification: Desalted
- 5' Modification: /5phos/
- 5' Padding: GGTAG

Table A2.

| Well Position | Primer Name | Oligo Sequence to Order (5' to 3') |
|---------------|--------------------------------|---|
| A01 | M13_PCR_Primer_bc_1001_Forward | /5phos/GGTAGCACATATCAGAGTGC GG TAAAACGACGGCCAGT |
| B01 | M13_PCR_Primer_bc_1002_Forward | /5phos/GGTAGACACACAGACTGTGAGGTAAAACGACGGCCAGT |
| C01 | M13_PCR_Primer_bc_1003_Forward | /5phos/GGTAGACACATCTCGTGAGAGGTAAAACGACGGCCAGT |
| D01 | M13_PCR_Primer_bc_1004_Forward | /5phos/GGTAGCACGCACACACGCGCGGTAAAACGACGGCCAGT |
| E01 | M13_PCR_Primer_bc_1005_Forward | /5phos/GGTAGCACTCGACTCTCGCGTGTAAAACGACGGCCAGT |
| F01 | M13_PCR_Primer_bc_1006_Forward | /5phos/GGTAGCATATATATCAGCTGTGTAAAACGACGGCCAGT |
| G01 | M13_PCR_Primer_bc_1007_Forward | /5phos/GGTAGTCTGTATCTCTATGTGGTAAAACGACGGCCAGT |
| H01 | M13_PCR_Primer_bc_1008_Forward | /5phos/GGTAGACAGTCGAGCGCTGCGGTAAAACGACGGCCAGT |
| A02 | M13_PCR_Primer_bc_1009_Forward | /5phos/GGTAGACACACGCGAGACAGGTAAAACGACGGCCAGT |
| B02 | M13_PCR_Primer_bc_1010_Forward | /5phos/GGTAGACGCGCTATCTCAGAGGTAAAACGACGGCCAGT |
| C02 | M13_PCR_Primer_bc_1011_Forward | /5phos/GGTAGCTATACGTATATCTATGTAAAACGACGGCCAGT |
| D02 | M13_PCR_Primer_bc_1012_Forward | /5phos/GGTAGACACTAGATCGCGTGTGTAAAACGACGGCCAGT |
| E02 | M13_PCR_Primer_bc_1013_Forward | /5phos/GGTAGCTCTCGCATACGCGAGGTAAAACGACGGCCAGT |
| F02 | M13_PCR_Primer_bc_1014_Forward | /5phos/GGTAGCTCACTACGCGCGGTGTAAAACGACGGCCAGT |
| G02 | M13_PCR_Primer_bc_1015_Forward | /5phos/GGTAGCGCATGACACGTGTGTGTAAAACGACGGCCAGT |
| H02 | M13_PCR_Primer_bc_1016_Forward | /5phos/GGTAGCATAGAGAGATAGTATGTAAAACGACGGCCAGT |
| A03 | M13_PCR_Primer_bc_1017_Forward | /5phos/GGTAGCACACGCGCGCTATATGTAAAACGACGGCCAGT |
| B03 | M13_PCR_Primer_bc_1018_Forward | /5phos/GGTAGTCACGTGCTCACTGTGGTAAAACGACGGCCAGT |
| C03 | M13_PCR_Primer_bc_1019_Forward | /5phos/GGTAGACACACTCTATCAGATGTAAAACGACGGCCAGT |
| D03 | M13_PCR_Primer_bc_1020_Forward | /5phos/GGTAGCACGACACGACGATGTGTAAAACGACGGCCAGT |
| E03 | M13_PCR_Primer_bc_1021_Forward | /5phos/GGTAGCTATACATAGTGTGTGTAAAACGACGGCCAGT |
| F03 | M13_PCR_Primer_bc_1022_Forward | /5phos/GGTAGCACTACGTGTGATATGTAAAACGACGGCCAGT |
| G03 | M13_PCR_Primer_bc_1023_Forward | /5phos/GGTAGCAGAGAGATATCTCTGGTAAAACGACGGCCAGT |
| H03 | M13_PCR_Primer_bc_1024_Forward | /5phos/GGTAGCATGTAGAGCAGAGAGGTAAAACGACGGCCAGT |
| A04 | M13_PCR_Primer_bc_1025_Forward | /5phos/GGTAGCGGACACGCTCGCGCGTAAAACGACGGCCAGT |
| B04 | M13_PCR_Primer_bc_1026_Forward | /5phos/GGTAGCACAGAGACACGCACAGTAAAACGACGGCCAGT |
| C04 | M13_PCR_Primer_bc_1027_Forward | /5phos/GGTAGCTCACACTCTCTCACAGTAAAACGACGGCCAGT |
| D04 | M13_PCR_Primer_bc_1028_Forward | /5phos/GGTAGCTCTGCTCTGACTCTCGTAAAACGACGGCCAGT |
| E04 | M13_PCR_Primer_bc_1029_Forward | /5phos/GGTAGTATATATGTCTATAGAGTAAAACGACGGCCAGT |
| F04 | M13_PCR_Primer_bc_1030_Forward | /5phos/GGTAGTCTCTCTATCGCGCTCGTAAAACGACGGCCAGT |
| G04 | M13_PCR_Primer_bc_1031_Forward | /5phos/GGTAGGATGTCTGAGTGTGTGGTAAAACGACGGCCAGT |
| H04 | M13_PCR_Primer_bc_1032_Forward | /5phos/GGTAGGAGACTAGAGATAGTGGTAAAACGACGGCCAGT |
| A07 | M13_PCR_Primer_bc_1049_Reverse | /5phos/GGTAGACACGTGTGCTCTCTCCAGGAAACAGCTATGAC |
| B07 | M13_PCR_Primer_bc_1050_Reverse | /5phos/GGTAGGATATACGCGAGAGAGCAGGAAACAGCTATGAC |
| C07 | M13_PCR_Primer_bc_1051_Reverse | /5phos/GGTAGCGTGTCTAGCGCGCCAGGAAACAGCTATGAC |
| D07 | M13_PCR_Primer_bc_1052_Reverse | /5phos/GGTAGGTGTGAGATATATATCCAGGAAACAGCTATGAC |
| E07 | M13_PCR_Primer_bc_1053_Reverse | /5phos/GGTAGCTCACGTACGTACACACCAGGAAACAGCTATGAC |
| F07 | M13_PCR_Primer_bc_1054_Reverse | /5phos/GGTAGGCGCAGCACTACAGACAGGAAACAGCTATGAC |
| G07 | M13_PCR_Primer_bc_1055_Reverse | /5phos/GGTAGCACACGAGATCTCATCCAGGAAACAGCTATGAC |

H07 M13_PCR_Primer_bc_1056_Reverse /5phos/GGTAGAGACACACACGCACATCAGGAAACAGCTATGAC
A08 M13_PCR_Primer_bc_1057_Reverse /5phos/GGTAGGACGAGCGTCTGAGAGCAGGAAACAGCTATGAC
B08 M13_PCR_Primer_bc_1058_Reverse /5phos/GGTAGTGTGTCTCTGAGAGTACAGGAAACAGCTATGAC
C08 M13_PCR_Primer_bc_1059_Reverse /5phos/GGTAGCACACGCACTGAGATACAGGAAACAGCTATGAC
D08 M13_PCR_Primer_bc_1060_Reverse /5phos/GGTAGGATGAGTATAGACACACAGGAAACAGCTATGAC
E08 M13_PCR_Primer_bc_1061_Reverse /5phos/GGTAGGCTGTGTGTGCTCGTCCAGGAAACAGCTATGAC
F08 M13_PCR_Primer_bc_1062_Reverse /5phos/GGTAGTCTCAGATAGTCTATACAGGAAACAGCTATGAC
G08 M13_PCR_Primer_bc_1063_Reverse /5phos/GGTAGACACGCATGACACACTCAGGAAACAGCTATGAC
H08 M13_PCR_Primer_bc_1064_Reverse /5phos/GGTAGTATATACAGAGTCGAGCAGGAAACAGCTATGAC
A09 M13_PCR_Primer_bc_1065_Reverse /5phos/GGTAGGCGCTCTCTCACATACCAGGAAACAGCTATGAC
B09 M13_PCR_Primer_bc_1066_Reverse /5phos/GGTAGTATATGCTCTGTGTGACAGGAAACAGCTATGAC
C09 M13_PCR_Primer_bc_1067_Reverse /5phos/GGTAGCTCTATATATCTCGTCCAGGAAACAGCTATGAC
D09 M13_PCR_Primer_bc_1068_Reverse /5phos/GGTAGAGAGAGCTCTCTCATCCAGGAAACAGCTATGAC
E09 M13_PCR_Primer_bc_1069_Reverse /5phos/GGTAGGCGAGAGTGAGACGCACAGGAAACAGCTATGAC
F09 M13_PCR_Primer_bc_1070_Reverse /5phos/GGTAGTGCTCTCGTGTACTGTACAGGAAACAGCTATGAC
G09 M13_PCR_Primer_bc_1071_Reverse /5phos/GGTAGAGCGCTGCGACACGCGCAGGAAACAGCTATGAC
H09 M13_PCR_Primer_bc_1072_Reverse /5phos/GGTAGAGACGCGAGCGGTAGCAGGAAACAGCTATGAC
A10 M13_PCR_Primer_bc_1073_Reverse /5phos/GGTAGGCGTGTGTGAGTGTACAGGAAACAGCTATGAC
B10 M13_PCR_Primer_bc_1074_Reverse /5phos/GGTAGTGTACGCTCTCTATATCAGGAAACAGCTATGAC
C10 M13_PCR_Primer_bc_1075_Reverse /5phos/GGTAGTAGAGAGCGTCGCGTGCAGGAAACAGCTATGAC
D10 M13_PCR_Primer_bc_1076_Reverse /5phos/GGTAGGTGCACTCGCGCTCTCCAGGAAACAGCTATGAC
E10 M13_PCR_Primer_bc_1077_Reverse /5phos/GGTAGTATCTCTCGAGTCCGCGCAGGAAACAGCTATGAC
F10 M13_PCR_Primer_bc_1078_Reverse /5phos/GGTAGCTCACACATACAGTCCAGGAAACAGCTATGAC
G10 M13_PCR_Primer_bc_1079_Reverse /5phos/GGTAGATAGTACACTCTGTGTACAGGAAACAGCTATGAC
H10 M13_PCR_Primer_bc_1082_Reverse /5phos/GGTAGGTGACACACAGAGCACCAGGAAACAGCTATGAC

Customer Collaboration Draft

| Revision History (Description) | Version | Date |
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