

Harvest the Amplified DNA Products

This step is adapted from “Using the C1™ Single-Cell Auto Prep System to Generate Single-Cell Libraries for DNA sequencing”.

1. Aliquot 10 µL of C1 DNA Dilution Reagent into each well of a 96-well PCR plate.
2. Pipet the entire volume (~3.5 µL) of the amplified transposed DNA out of the wells into the 10 µL of C1 DNA Dilution Reagent in each well of the PCR plate.
3. These samples can be stored at -20 °C.

Additional PCR and Library Preparation

1. To dual-indexing the harvested libraries, combine the following in each well of a 96-well PCR plate:
 - 10 µL harvested library
 - 10 µL Nuclease Free H₂O
 - 2.5 µL 25µM Customized Nextera PCR Primer 1* [Barcode]
 - 2.5 µL 25µM Customized Nextera PCR Primer 2* [Barcode]
 - 25 µL NEBNext High-Fidelity 2x PCR Master Mix (New England Labs Cat #M0541)
 - 50 µL Total

* Complete list of primers available in table below.

2. Cycling as follows:
 - (1) 72 °C, 5 min
 - (2) 98 °C, 30 sec
 - (3) 98 °C, 10 sec
 - (4) 72 °C, 30 sec
 - (5) 72°C, 1 min
 - (6) Repeat steps 3-5, 13x
 - (7) Hold at 4°C
3. Pool the PCR products from the 96-well plate into a 15 mL conical tube. The final volume of the pooled library is ~4.8 mL.
4. Purify the pooled library using a single MinElute PCR purification column (Qiagen MinElute Kit). Elute the purified library in 20 µL Elution Buffer (10mM Tris-HCl, pH 8). Be sure to dry the column before adding elution buffer.

VIII. Library Quantitation

We use qPCR-based methods to quantify our ATAC-seq libraries. We have found that other methods, such as Bioanalyzer and Qubit, can give misleading and inaccurate results due to the large distribution of insert sizes. We recommend quantifying libraries using the KAPA Library Quant Kit for Illumina Sequencing Platforms (KAPABiosystems).

C1 PCR primers:

v2_Ad1_NoMX TCGTCGGCAGCGTCAGATGTGTATAAGAGACAG
v2_Ad2_NoMX GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAG

Custom Barcodes Adapter 1 (index i5):

v2_Ad1.1_TAGATCGC AATGATACGGCGACCACCGAGATCTACACTAGATCGCTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.2_CTCTCTAT AATGATACGGCGACCACCGAGATCTACACCTCTCTATTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.3_TATCCTCT AATGATACGGCGACCACCGAGATCTACACTATCCTCTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.4_AGAGTAGA AATGATACGGCGACCACCGAGATCTACACAGAGTAGATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.5_GTAAGGAG AATGATACGGCGACCACCGAGATCTACACGTAAGGAGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.6_ACTGCATA AATGATACGGCGACCACCGAGATCTACACACTGCATATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.7_AAGGAGTA AATGATACGGCGACCACCGAGATCTACACAAGGAGTATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.8_CTAAGCCT AATGATACGGCGACCACCGAGATCTACACCTAAGCCTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.9_TGAAAATC AATGATACGGCGACCACCGAGATCTACACTGGAAATCTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.10_AACATGAT AATGATACGGCGACCACCGAGATCTACACAACATGATTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.11_TGATGAAA AATGATACGGCGACCACCGAGATCTACACTGATGAAATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.12_GTCGGACT AATGATACGGCGACCACCGAGATCTACACGTCGGACTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.13_TTTCTAGC AATGATACGGCGACCACCGAGATCTACACTTTCTAGCTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.14_TAACCAAG AATGATACGGCGACCACCGAGATCTACACTAACCAAGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.15_GTGTATCG AATGATACGGCGACCACCGAGATCTACACGTGTATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.16_TCCATCAA AATGATACGGCGACCACCGAGATCTACACTCCATCAATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.17_TTCGTGCA AATGATACGGCGACCACCGAGATCTACACTTCGTGCATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.18_AGGTTGCC AATGATACGGCGACCACCGAGATCTACACAGGTTGCCTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.19_CCTTATGT AATGATACGGCGACCACCGAGATCTACACCCTTATGTTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.20_CAGCAACG AATGATACGGCGACCACCGAGATCTACACCAGCAACGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.21_GGTTCAAT AATGATACGGCGACCACCGAGATCTACACGGTTCAATTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.22_ACATTCGT AATGATACGGCGACCACCGAGATCTACACACATTCGTTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.23_GATTCCCA AATGATACGGCGACCACCGAGATCTACACGATTCATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.24_CGGACTGC AATGATACGGCGACCACCGAGATCTACACCGACTGCTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.25_AGCCGTTC AATGATACGGCGACCACCGAGATCTACACAGCCGTTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.26_ATTGGGTC AATGATACGGCGACCACCGAGATCTACACATTGGGTCTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.27_TGCATACT AATGATACGGCGACCACCGAGATCTACACTGCATACTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.28_GGGCTTGG AATGATACGGCGACCACCGAGATCTACACGGGCTTGGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.29_GACGTGGC AATGATACGGCGACCACCGAGATCTACACGACGTGGCTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.30_GCAAATTT AATGATACGGCGACCACCGAGATCTACACGAAATTTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.31_GCAGCCTC AATGATACGGCGACCACCGAGATCTACACGCAGCCTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.32_TCCGAGTT AATGATACGGCGACCACCGAGATCTACACTCCGAGTTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.33_GCATTAAG AATGATACGGCGACCACCGAGATCTACACGCATTAAGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.34_ACGATAAC AATGATACGGCGACCACCGAGATCTACACACGATAACTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.35_CCTGCGGG AATGATACGGCGACCACCGAGATCTACACCCTGCGGGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.36_TGATTGTT AATGATACGGCGACCACCGAGATCTACACTGATTGTTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.37_GGCACGGA AATGATACGGCGACCACCGAGATCTACACGGCACGGATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.38_GATCATTC AATGATACGGCGACCACCGAGATCTACACGATCATTCTCGTCGGCAGCGTCAGATGTGTAT

v2_Ad1.39_ATGGTCAT AATGATACGGCGACCACCGAGATCTACACATGGTCATTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.40_CGTACCAA AATGATACGGCGACCACCGAGATCTACACCGTACCAATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.41_CCAGTTTA AATGATACGGCGACCACCGAGATCTACACCCAGTTTATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.42_ACCGGCCC AATGATACGGCGACCACCGAGATCTACACACCGGCCCTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.43_CTAGAAGT AATGATACGGCGACCACCGAGATCTACACCTAGAAGTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.44_CGCCAGAT AATGATACGGCGACCACCGAGATCTACACCGCCAGATTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.45_TCACATGG AATGATACGGCGACCACCGAGATCTACACTCACATGGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.46_GAACTCGA AATGATACGGCGACCACCGAGATCTACACGAACTCGATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.47_CCACCGTT AATGATACGGCGACCACCGAGATCTACACCCACCGTTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.48_TAAGTTAC AATGATACGGCGACCACCGAGATCTACACTAAGTTACTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.49_GAGACGTG AATGATACGGCGACCACCGAGATCTACACGAGACGTGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.50_TTGCTAA AATGATACGGCGACCACCGAGATCTACACTTGCCTAATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.51_TTAAC TTG AATGATACGGCGACCACCGAGATCTACACTTAACTTGTGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.52_CTTTAAACA AATGATACGGCGACCACCGAGATCTACACCTTTAACATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.53_CGTAGACC AATGATACGGCGACCACCGAGATCTACACCGTAGACCTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.54_TATTTGCG AATGATACGGCGACCACCGAGATCTACACTATTTGCGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.55_ATCCAGGA AATGATACGGCGACCACCGAGATCTACACATCCAGGATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.56_TGTTCTG AATGATACGGCGACCACCGAGATCTACACTGTTCTGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.57_ACGCGCAG AATGATACGGCGACCACCGAGATCTACACACGCGCAGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.58_TCTGGCGA AATGATACGGCGACCACCGAGATCTACACTCTGGCGATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.59_AATCTACA AATGATACGGCGACCACCGAGATCTACACAATCTACATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.60_TACTGACC AATGATACGGCGACCACCGAGATCTACACTACTGACCTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.61_CGATAGGG AATGATACGGCGACCACCGAGATCTACACCGATAGGGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.62_ACTTAGAA AATGATACGGCGACCACCGAGATCTACACACTTAGAATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.63_AGAGATCT AATGATACGGCGACCACCGAGATCTACACAGAGATCTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.64_GGTGAAGG AATGATACGGCGACCACCGAGATCTACACGGTGAAGGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.65_ATCGAATG AATGATACGGCGACCACCGAGATCTACACATCGAATGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.66_TCAAGAGC AATGATACGGCGACCACCGAGATCTACACTCAAGAGCTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.67_GCCCACGT AATGATACGGCGACCACCGAGATCTACACGCCACGTTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.68_TGGGCGGT AATGATACGGCGACCACCGAGATCTACACTGGGCGGTTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.69_CCCTTGGA AATGATACGGCGACCACCGAGATCTACACCCCTTGATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.70_ATTACCGT AATGATACGGCGACCACCGAGATCTACACATTACCGTTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.71_AGTCCGAG AATGATACGGCGACCACCGAGATCTACACAGTCCGAGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.72_ACTTGTTG AATGATACGGCGACCACCGAGATCTACACACTTGTGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.73_GTAATACA AATGATACGGCGACCACCGAGATCTACACGTAATACATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.74_GGCGTCTA AATGATACGGCGACCACCGAGATCTACACGGCGTCTATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.75_GCGTGCT AATGATACGGCGACCACCGAGATCTACACGCGTGCTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.76_GTGCCATT AATGATACGGCGACCACCGAGATCTACACGTGCCATTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.77_TAGGTATG AATGATACGGCGACCACCGAGATCTACACTAGGTATGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.78_AACACCTA AATGATACGGCGACCACCGAGATCTACACAACACCTATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.79_CTCCGAAC AATGATACGGCGACCACCGAGATCTACACCTCCGAACTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.80_CAACGGCA AATGATACGGCGACCACCGAGATCTACACCAACGGCATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.81_CAATGTAG AATGATACGGCGACCACCGAGATCTACACCAATGTAGTCGTCGGCAGCGTCAGATGTGTAT

v2_Ad1.82_GGCTACCC	AATGATACGGCGACCACCGAGATCTACACGGCTACCCCTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.83_AAAGTCCG	AATGATACGGCGACCACCGAGATCTACACAAAGTCCGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.84_TTCCGCGG	AATGATACGGCGACCACCGAGATCTACACTTCCGCGGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.85_AGGCACTT	AATGATACGGCGACCACCGAGATCTACACAGGCACTTTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.86_CTTCAAGT	AATGATACGGCGACCACCGAGATCTACACCTTCAAGTCTGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.87_GCCGGTAG	AATGATACGGCGACCACCGAGATCTACACGCCGGTAGTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.88_TTCAATCC	AATGATACGGCGACCACCGAGATCTACACTTCAATCCTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.89_CCACACAC	AATGATACGGCGACCACCGAGATCTACACCCACACACTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.90_ATATTATC	AATGATACGGCGACCACCGAGATCTACACATATTATCTCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.91_CCGAAGCA	AATGATACGGCGACCACCGAGATCTACACCCGAAGCATCGTCGGCAGCGTCAGATGTGTAT
v2_Ad1.92_GTATCGGT	AATGATACGGCGACCACCGAGATCTACACGTATCGGTTCTCGTCGGCAGCGTCAGATGTGTAT

Custom Barcodes Adapter 2 (index i7):

v2_Ad2.1_TAAGGCGA	CAAGCAGAAGACGGCATAACGAGATTCGCCTTAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.2_CGTACTAG	CAAGCAGAAGACGGCATAACGAGATCTAGTACGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.3_AGGCAGAA	CAAGCAGAAGACGGCATAACGAGATTTCTGCCTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.4_TCCTGAGC	CAAGCAGAAGACGGCATAACGAGATGCTCAGGAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.5_GGACTCCT	CAAGCAGAAGACGGCATAACGAGATAGGAGTCCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.6_TAGGCATG	CAAGCAGAAGACGGCATAACGAGATCATGCCTAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.7_CTCTCTAC	CAAGCAGAAGACGGCATAACGAGATGTAGAGAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.8_CAGAGAGG	CAAGCAGAAGACGGCATAACGAGATCCTCTGCTGCTCGTGGGCTCGGAGATGTG
v2_Ad2.9_GCTACGCT	CAAGCAGAAGACGGCATAACGAGATAGCGTAGCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.10_CGAGGCTG	CAAGCAGAAGACGGCATAACGAGATCAGCCTCGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.11_AAGAGGCA	CAAGCAGAAGACGGCATAACGAGATTCCTCTTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.12_GTAGAGGA	CAAGCAGAAGACGGCATAACGAGATTCCTCTACGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.13_TGGATCTG	CAAGCAGAAGACGGCATAACGAGATCAGATCCAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.14_CCGTTTGT	CAAGCAGAAGACGGCATAACGAGATACAAACGGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.15_TGCTGGGT	CAAGCAGAAGACGGCATAACGAGATACCCAGCAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.16_AGTTGGG	CAAGCAGAAGACGGCATAACGAGATCCCAACCTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.17_GTGTGGTG	CAAGCAGAAGACGGCATAACGAGATCACACACGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.18_TGGGTTTC	CAAGCAGAAGACGGCATAACGAGATGAAACCCAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.19_TGGTCACA	CAAGCAGAAGACGGCATAACGAGATTGTGACCAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.20_TTGACCCT	CAAGCAGAAGACGGCATAACGAGATAGGGTCAAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.21_CGCGGACA	CAAGCAGAAGACGGCATAACGAGATTGTCCGCGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.22_TTCCATAT	CAAGCAGAAGACGGCATAACGAGATATATGGAAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.23_AATTCTGT	CAAGCAGAAGACGGCATAACGAGATAACGAATTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.24_GGCGTCGA	CAAGCAGAAGACGGCATAACGAGATTCGACGCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.25_ACAAAGTG	CAAGCAGAAGACGGCATAACGAGATCACTTTGTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.26_TACTTGAA	CAAGCAGAAGACGGCATAACGAGATTTCAAGTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.27_GTGATAGC	CAAGCAGAAGACGGCATAACGAGATGCTATCACGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.28_AGTAGATT	CAAGCAGAAGACGGCATAACGAGATAATCTACTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.29_ATTGCCGG	CAAGCAGAAGACGGCATAACGAGATCCGGCAATGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.30_TTGCTAAG	CAAGCAGAAGACGGCATAACGAGATCTTAGCAAGTCTCGTGGGCTCGGAGATGTG

v2_Ad2.31_ATAAGTTA CAAGCAGAAGACGGCATAACGAGATTAACCTTATGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.32_ATCACTCG CAAGCAGAAGACGGCATAACGAGATCGAGTGATGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.33_GTTAACAG CAAGCAGAAGACGGCATAACGAGATCTGTTAACGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.34_AATGGTAG CAAGCAGAAGACGGCATAACGAGATCTACCATTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.35_GAGCACGT CAAGCAGAAGACGGCATAACGAGATACGTGCTCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.36_TTTCGTCA CAAGCAGAAGACGGCATAACGAGATTGACGAAAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.37_CAAGAATT CAAGCAGAAGACGGCATAACGAGATAATTCTTGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.38_GAAATGCC CAAGCAGAAGACGGCATAACGAGATGGCATTTCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.39_AACGCCAT CAAGCAGAAGACGGCATAACGAGATATGGCGTTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.40_CCTCGCAG CAAGCAGAAGACGGCATAACGAGATCTGCGAGGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.41_TACACCTC CAAGCAGAAGACGGCATAACGAGATGAGGTGTAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.42_GGTCATTT CAAGCAGAAGACGGCATAACGAGATAAATGACCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.43_CAATCTTA CAAGCAGAAGACGGCATAACGAGATTAAGATTGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.44_TGTGCCTT CAAGCAGAAGACGGCATAACGAGATAAGGCACAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.45_TCTTATTA CAAGCAGAAGACGGCATAACGAGATTAATAAGAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.46_GACTTAGT CAAGCAGAAGACGGCATAACGAGATACTAAGTCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.47_AGACCAGC CAAGCAGAAGACGGCATAACGAGATGCTGGTCTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.48_AAATACAG CAAGCAGAAGACGGCATAACGAGATCTGTATTTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.49_TTATGAAA CAAGCAGAAGACGGCATAACGAGATTTTCATAAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.50_CTTGGGTC CAAGCAGAAGACGGCATAACGAGATGACCCAAGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.51_CCAAATAA CAAGCAGAAGACGGCATAACGAGATTTATTTGGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.52_GCGTAAAA CAAGCAGAAGACGGCATAACGAGATTTTAACGCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.53_CATCCTGT CAAGCAGAAGACGGCATAACGAGATACAGGATGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.54_GGAGTAAG CAAGCAGAAGACGGCATAACGAGATCTTACTCCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.55_GACGCTCC CAAGCAGAAGACGGCATAACGAGATGGAGCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.56_TTCGCGGC CAAGCAGAAGACGGCATAACGAGATGCCGGAAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.57_CGGTTCCT CAAGCAGAAGACGGCATAACGAGATGGGAACCGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.58_ACCGGCTA CAAGCAGAAGACGGCATAACGAGATTAGCCGGTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.59_CTCATGGG CAAGCAGAAGACGGCATAACGAGATCCCATGAGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.60_TTTAATGC CAAGCAGAAGACGGCATAACGAGATGCATTAAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.61_AAACGGTC CAAGCAGAAGACGGCATAACGAGATGACCGTTTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.62_GATCCAAA CAAGCAGAAGACGGCATAACGAGATTTTGGATCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.63_ATGATGAT CAAGCAGAAGACGGCATAACGAGATATCATCATGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.64_CCAACACG CAAGCAGAAGACGGCATAACGAGATCGTGTGGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.65_TAACAACA CAAGCAGAAGACGGCATAACGAGATTGTTGTTAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.66_GGTAAACC CAAGCAGAAGACGGCATAACGAGATGGTTTACCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.67_CATCGACC CAAGCAGAAGACGGCATAACGAGATGGTTCGATGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.68_ATGGGAAC CAAGCAGAAGACGGCATAACGAGATGTTCCCATGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.69_CGGCCAAT CAAGCAGAAGACGGCATAACGAGATATTGGCCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.70_GGGAATGA CAAGCAGAAGACGGCATAACGAGATTCATCCCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.71_GTATTCGG CAAGCAGAAGACGGCATAACGAGATCCGAATACGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.72_TCAGCTAT CAAGCAGAAGACGGCATAACGAGATATAGCTGAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.73_ATTTATCT CAAGCAGAAGACGGCATAACGAGATAGATAAATGTCTCGTGGGCTCGGAGATGTG

v2_Ad2.74_ACAGTTGC	CAAGCAGAAGACGGCATAACGAGATGCAACTGTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.75_CCCGAGAT	CAAGCAGAAGACGGCATAACGAGATATCTCGGGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.76_TAATGTCT	CAAGCAGAAGACGGCATAACGAGATAGACATTAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.77_GCCAATTC	CAAGCAGAAGACGGCATAACGAGATGAATTGGCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.78_CGCCGTGC	CAAGCAGAAGACGGCATAACGAGATGCACGGCGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.79_CTGACCGA	CAAGCAGAAGACGGCATAACGAGATTCGGTCAGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.80_CATTTCGA	CAAGCAGAAGACGGCATAACGAGATTCGAAATGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.81_GCTTGCCA	CAAGCAGAAGACGGCATAACGAGATTGGCAAGCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.82_TTCTACCA	CAAGCAGAAGACGGCATAACGAGATTGGTAGAAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.83_ACGTGACG	CAAGCAGAAGACGGCATAACGAGATCGTCACGTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.84_TGTCCGCG	CAAGCAGAAGACGGCATAACGAGATCGCGGACAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.85_TTAAACTT	CAAGCAGAAGACGGCATAACGAGATAAGTTTAAAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.86_ACCACAAC	CAAGCAGAAGACGGCATAACGAGATGTTGTGGTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.87_GCCTCTGG	CAAGCAGAAGACGGCATAACGAGATCCAGAGGCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.88_TCGCCAC	CAAGCAGAAGACGGCATAACGAGATGTGGGCGAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.89_CACTAGGC	CAAGCAGAAGACGGCATAACGAGATGCCTAGTGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.90_TCGAAGCC	CAAGCAGAAGACGGCATAACGAGATGGCTTCGAGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.91_GCATGTAC	CAAGCAGAAGACGGCATAACGAGATGTACATGCGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.92_GTTTCGAGT	CAAGCAGAAGACGGCATAACGAGATACTCGAACGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.93_CCGGGCGC	CAAGCAGAAGACGGCATAACGAGATGCGCCCGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.94_AGATTTAA	CAAGCAGAAGACGGCATAACGAGATTTAAATCTGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.95_CACCATTG	CAAGCAGAAGACGGCATAACGAGATCAATGGTGGTCTCGTGGGCTCGGAGATGTG
v2_Ad2.96_AATAAGAC	CAAGCAGAAGACGGCATAACGAGATGTCTTATTGTCTCGTGGGCTCGGAGATGTG