16S 454 Sequencing Protocol
HMP Consortium

Authors: Jumpstart Consortium Human Microbiome Project Data Generation Working Group
Version: 4.2.2
Effective Date: October 27, 2010

1 Abstract

2 Introduction

This SOP describes the 16S 454 Sequencing Protocol used by the HMP Consortium. The protocol describes the procedure for the clinical sample pilot study using barcoded primers for the 16S variable regions V1-3 and V3-5.

3 Requirements

3.1 Production Specifications

1. No more than one sample per 16S region per barcode will be sequenced per machine run.
2. All amplification pools will include one negative control (water) reaction. Centers should attempt to rotate the primer pair used for the negative control so to not always use the same primer pair.
3. All amplification pools will include one positive control reaction. Centers should attempt to rotate the primer pair used for the positive control so to not always use the same primer pair. The choice of positive control template is at the discretion of the sequencing center.
4. To reduce the potential for primer contamination, working stocks for all primer pairs should be tested for contamination by using each primer pair in an amplification reaction that contains no template. No amplified product should be observed when reactions are examined by electrophoresis on an agarose gel. If working stocks are stamped in batches across numerous aliquot plates, each plate should provide less than one weeks' worth of reactions (e.g. one to five uses). A sample plate from each stamped batch should be tested for contamination.
5. Sequencing centers will quantify the samples received using a fluorescent based assay and record this information.
6. Two attempts will be made to amplify each sample. The attempts will differ in the amount of template used:
    a. Attempt 1: 2 µl of template

b. Attempt 2: 5 µl of template

c. After two attempts the sample can be considered a failure and no further work needs to be completed. However, it is up to the discretion of the center to make further attempts. It is also up to the discretion of the center as whether or not to attempt sequencing of weakly amplifying samples

7. 5,000 reads should be attempted for each amplicon from a HMP donor sample
8. Amplicons that produce fewer than 3,000 reads passing QC ("good reads") can be sequenced a second time to reach the deliverable of 3,000 reads passing QC. A center can choose to use the same amplicon, or produce a new amplicon for sequencing.
9. If the minimum number of reads (3,000 passing QC) from an amplicon has not been achieved after two sequencing attempts, no further sequencing needs to be completed.
10. Image capture and signal processing should use the most current version of the fragment processing software (V 2.3 as July 2010) as the default
11. Passing QC metrics for reads are:
    a. > 300 nt (raw read)
    b. Minimum of 300 Q20 bases
12. Technical replication between centers- 2% of HMP donor samples will be sequenced at two centers
13. A sample spreadsheet containing metadata and library construction information as set up by the DACC will be completed by all centers and will accompany the submission of the *.sff files.

3.2 Reagent Requirements

Material/Equipment	Vendor	Catalog Number
AccuPrime™ Taq DNA Polymerase High Fidelity	Invitrogen	12346-086
Forward and Reverse Primers premixed 96 well thermocyler plate clear adhesive plate seals	Operon	custom order
DNAse/RNAse free water	-	-
Thermo Cycler	-	-
Vortex	-	-
Pipettes	-	-

Aerosol resistant pipette tips MinElute PCR Purification Kit	Qiagen	28004
Ampure (SPRI) Beads (60mL kit) 1x low TE, pH 8.0	Agencourt	A29152
Quant-IT ds DNA Assay, high sensitivity	Invitrogen/Molecular Probes	Q33120

3.3 Additional Documentation

- Quant-iT ds DNA Assay protocol (manufacturer's specifications)
- SybrGreen Assay protocol (manufacturer's specifications)
- poolingCalculator.xls
- MinElute PCR Purification Kit Manual

4 Procedure

The PCR will be carried out using AccuPrime Taq High Fidelity. It is not necessary to setup this reaction on ice, however, it is recommended.

4.1 PCR Primer Setup

Set up of 10uM primer plates (combining barcoded A primer with non-barcoded B primer- see appendix below for primer & tag sequences):

- 1:10 dilution of the 100uM stocks:
- For each variable region, set up a working primer plate with 90ul of 1x low TE
- Add 5ul of each barcoded primer A from 100uM plate to corresponding well position in 10uM dilution plate.
- Add 5ul of the 100uM of corresponding B adapter to each well of the 96-well plate (final concentration 10uM primer pair). o Mix by pipetting up and down.
- Working concentration of 4uM (2uM each primer)
    - Dilute the 10uM primers 1:2.5 in 1x low TE (add 150ul of TE to each well of the 10uM primer stock plate and mix
    - Primers can be stamped out into multiple single use primer plates and stored at -20^{o}C until ready to use.

4.2 PCR Setup – Mastermix

4.2.1. MasterMix contains the following amounts per sample:

13.85uL	RNAase/DNAse free water
2uL	10X AccuPrime PCR Buffer II
0.15uL	AccuPrime Taq Hifi
16uL	Total Volume of master mix

4.2.2. Multiply all the volumes above by the amount of reactions needed plus 10%
4.2.3. Combine reagents in a 2mL micro centrifuge tube and vortex to mix completely. If more than 100 reactions are needed a 15mL tube should be used.
4.2.4. Using an automated pipette transfer 16uL of master mix into individual wells in the 96 well reaction plate.
4.2.5. Cover plate and spin in a centrifuge at 2000rpm to collect sample at the bottom of the wells.

4.3 PCR Setup

4.3.1. Transfer 2uL diluted DNA sample into the respective reaction wells.
4.3.2. Transfer 2uL of barcoded primers from primer plate to corresponding wells in 96 well PCR plate.
4.3.3. Securely seal with clear adhesive plate seal and vortex plate vigorously.
4.3.4. Spin briefly at 2000 rpm in a centrifuge.
4.3.5. Place in thermo cycler and cycle as follows:

95°C	2 min	
95°C	20 sec	} 30 cycles
50 or 56°C*	30 sec	
72°C	5min	
4°C	forever	

*56°C for V3-1, 50°C for V5-3

4.3.6. Clean PCR products using Agencourt AmPure Beads
   i. Use Agencourt protocol: 1.8x volume beads (36ul beads) – follow manufacturer's specifications.
4.3.7. Elute beads with 25ul 1x low TE, pH 8.0 and transfer to new 96 well plate

4.4 PCR Gel Analysis

(E-gel alternative using 1ul of PCR product - faster) - we will know from the Quantification step below if we have product so this step is actually optional.

4.4.1. In a new reaction plate add 1uL PCR product to 1uL 6X loading dye.
4.4.2. Cover, vortex to mix, briefly centrifuge to collect sample at the bottom of the well.

4.4.3. Prepare a 1% agarose 1X TAE gel with EtBr.
4.4.4. Load samples and run approximately 1 hour at 100V.
4.4.5. Capture gel image on gel-doc and retain for analysis.

4.5 PCR Product Quantification

4.5.1 Quantify PCR product using SYBR-Green Quantification or Quant-IT ds DNA high sensitivity assay according to the manufacturer's specifications.

4.6 PCR Pooling

4.6.1 Using values from the SYBR Green or Quant-IT quantification, calculate pooling amounts using the poolingCalculator.xls or according to the following formula:

Amount (uL) of each sample = ((vol/2)*(min)) / sampleconc
Where:
Vol = total volume of each sample
Min = concentration in ng/ul of the sample with the lowest concentration
Sampleconc = concentration in ng/uL of target sample

4.6.2 Pool samples using a minimum transfer volume of 1uL. If less than 1uL is called for, a dilution must be made. If using the poolingCalculator.xls this will be accounted for.

4.6.3 Using a Qiagen minElute column, purify the pool according to the manufacturer's protocol.
(The Broad normalizes by converting all concentrations to molecules/ul. Determine which sample has the lowest concentration and then dilute all other samples to the same concentration. Pool equal volume of each (5- 10ul) sample and then concentrate using a Qiagen MinElute column (elution with 30uL, 1x low TE, pH 8.0).

4.7 Sample Transfer for 454 Library Completion

4.7.1 Proceed directly to the qPCR library step.

4.7.2 *Optional:* Enter emPCR using 1⁄4 the recommended primer concentration to avoid too many molecules amplified on bead. *Higher primer concentrations may result in high signal intensities during run lead to higher mixed reads and shorter read lengths. Image software updates may reduce or eliminate this concern.*

5 Implementation

6 Discussion

Additional Information

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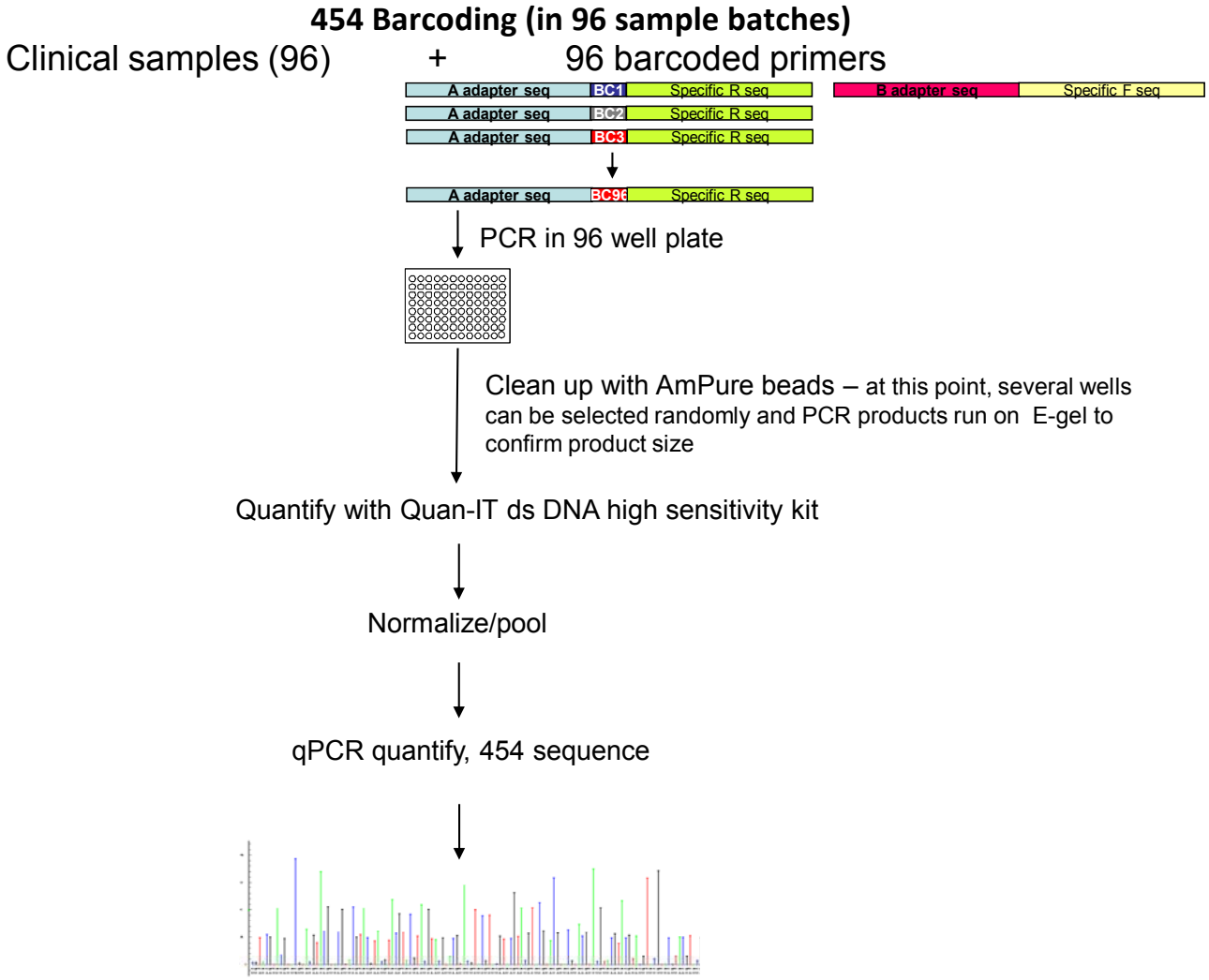
Broad institute primer sequences including tags

Purpose: In this approach, we will 454 barcode sequences designed internally by the Broad (Pablo Alvarez and Will Brockman) between the A adapter and primer specific sequence (see picture below). Barcoded primer sets have been tested by the Broad Institute.



454 Protocol Figure 1: Depiction of generalized workflow for 454 sequencing at HMP sequencing centers.

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Barcoded oligos for V3->V1 directional sequencing. **Added the R specific primer sequence at 3' end of barcode on "A" adapter sequence** **Added the F specific primer sequence at the 3' end of the "B" adapter sequence**		
		"B" adapter oligo sequence +27F (AGAGTTTGATCCTGGCTCAG)
		CCTATCCCCTGTGTGCCTTGGCAGTCTCAGAGAGTTTGATCCTGGCTCAG
Oligo name	**Barcode**	**"A" adapter oligo sequence + barcode + 534R (ATTACCGCGGCTGCTGG)**
XLR_534R_v2bBar8L	CACGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCACGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar23L	CGCAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGCAACATTACCGCGGCTGCTGG
XLR_534R_v2bBar174L	TGAAGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGAAGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar602L	ACTTGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTTGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar212L	TCACAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCACACATTACCGCGGCTGCTGG
XLR_534R_v2bBar25L	CGTGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGTGACATTACCGCGGCTGCTGG
XLR_534R_v2bBar622L	ACGCGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGCGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar72L	CCTCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCCTCTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar600L	ACTCAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTCACATTACCGCGGCTGCTGG
XLR_534R_v2bBar559L	AGACAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGACACATTACCGCGGCTGCTGG
XLR_534R_v2bBar31L	CGACTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGACTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar551L	AGCTTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGCTTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar1149L	AAGCCGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAAGCCGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar15L	CAAGAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCAAGAACATTACCGCGGCTGCTGG
XLR_534R_v2bBar556L	AGTTGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTTGGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar144L	TATCAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATCAACATTACCGCGGCTGCTGG
XLR_534R_v2bBar575L	AGGCGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGGCGGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar48L	CGGTATC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGGTATCATTACCGCGGCTGCTGG
XLR_534R_v2bBar166L	TGACGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGACGACATTACCGCGGCTGCTGG
XLR_534R_v2bBar613L	ACAAGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACAAGGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar560L	AGACCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGACCTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar741L	ATACCAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGATACCACATTACCGCGGCTGCTGG
XLR_534R_v2bBar228L	TCGCGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGCGGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar807L	ATCTTAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGATCTTACATTACCGCGGCTGCTGG
XLR_534R_v2bBar1273L	AACCAGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACCAGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar441L	TTCGAGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCGAGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar1174L	AAGGTGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAAGGTGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar209L	TCTTGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTTGGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar153L	TAATCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTAATCTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar213L	TCACCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCACCTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar298L	TCCGCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCCGCTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar146L	TATTGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATTGACATTACCGCGGCTGCTGG
XLR_534R_v2bBar554L	AGTCGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTCGACATTACCGCGGCTGCTGG
XLR_534R_v2bBar646L	ACGGCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGGCTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar158L	TGCGTTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCGTTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar207L	TCTCGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTCGACATTACCGCGGCTGCTGG
XLR_534R_v2bBar77L	CCAGGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCCAGGACATTACCGCGGCTGCTGG
XLR_534R_v2bBar601L	ACTCCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTCCTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar481L	TTCCTGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCCTGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar419L	TTCATAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCATACATTACCGCGGCTGCTGG
XLR_534R_v2bBar26L	CGTCGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGTCGTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar1172L	AAGGCAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAAGGCACATTACCGCGGCTGCTGG
XLR_534R_v2bBar1210L	AACAACTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACAACTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar606L	ACACGGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACACGGACATTACCGCGGCTGCTGG
XLR_534R_v2bBar159L	TGCCGAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCCGAACATTACCGCGGCTGCTGG
XLR_534R_v2bBar147L	TATTCGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATTCGTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar141L	TAGGAATC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTAGGAATCATTACCGCGGCTGCTGG
XLR_534R_v2bBar119L	CCGGCCAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCCGGCCACATTACCGCGGCTGCTGG
XLR_534R_v2bBar1379L	AATGGTAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAATGGTACATTACCGCGGCTGCTGG
XLR_534R_v2bBar208L	TCTCCGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTCCGTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar1267L	AACCTGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACCTGGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar637L	ACGAAGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGAAGTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar435L	TTCGTGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCGTGGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar1202L	AACACAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACACAACATTACCGCGGCTGCTGG
XLR_534R_v2bBar413L	TTCTTGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCTTGACATTACCGCGGCTGCTGG
XLR_534R_v2bBar289L	TCCAAGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCCAAGTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar433L	TTCGCGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCGCGACATTACCGCGGCTGCTGG
XLR_534R_v2bBar121L	CCGGTCGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCCGGTCGCATTACCGCGGCTGCTGG

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XLR_534R_v2bBar669L	ACCTGAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACCTGAACATTACCGCGGCTGCTGG
XLR_534R_v2bBar1156L	AAGAGTTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAAGAGTTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar370L	TTGACAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTGACAACATTACCGCGGCTGCTGG
XLR_534R_v2bBar281L	TCCAGAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCCAGAACATTACCGCGGCTGCTGG
XLR_534R_v2bBar49L	CGGTCTTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGGTCTTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar1173L	AAGGCCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAAGGCCTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar599L	ACTAATTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTAATTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar167L	TGACCGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGACCGTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar161L	TGTCGGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTCGGACATTACCGCGGCTGCTGG
XLR_534R_v2bBar580L	AGGTTGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGGTTGTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar629L	ACGAGAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGAGAACATTACCGCGGCTGCTGG
XLR_534R_v2bBar184L	TGGTGAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGGTGAACATTACCGCGGCTGCTGG
XLR_534R_v2bBar233L	TCGTTGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGTTGTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar364L	TTGTGTTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTGTGTTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar78L	CCACGGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCCACGGTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar393L	TTGGAGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTGGAGGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar350L	TTATCGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTATCGGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar1164L	AAGAAGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAAGAAGACATTACCGCGGCTGCTGG
XLR_534R_v2bBar1196L	AACTGTTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACTGTTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar411L	TTCTCAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCTCAACATTACCGCGGCTGCTGG
XLR_534R_v2bBar6L	CTTCCTTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTTCCTTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar1031L	ATTCGTAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGATTCGTACATTACCGCGGCTGCTGG
XLR_534R_v2bBar76L	CCTTCCGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCCTTCCGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar555L	AGTCCGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTCCGTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar378L	TTGAACTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTGAACTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar1225L	AACGAGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACGAGGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar99L	CCGTTCAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCCGTTCACATTACCGCGGCTGCTGG
XLR_534R_v2bBar236L	TCGAGGAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGAGGAACATTACCGCGGCTGCTGG
XLR_534R_v2bBar731L	ACCGGAAGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACCGGAAGCATTACCGCGGCTGCTGG
XLR_534R_v2bBar628L	ACGTTCCAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGTTCCACATTACCGCGGCTGCTGG
XLR_534R_v2bBar1250L	AACGGAGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACGGAGTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar438L	TTCGTTATC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCGTTATCATTACCGCGGCTGCTGG
XLR_534R_v2bBar693L	ACCGTAATC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACCGTAATCATTACCGCGGCTGCTGG
XLR_534R_v2bBar672L	ACCTTGGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACCTTGGTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar355L	TTAAGATTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTAAGATTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar187L	TGGTTGGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGGTTGGTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar162L	TGTCCGGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTCCGGTCATTACCGCGGCTGCTGG
XLR_534R_v2bBar1292L	AACCGTGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACCGTGTCATTACCGCGGCTGCTGG
27F/534R_000	CGTGTGACTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGTGTGACTGATTACCGCGGCTGCTGG
27F/534R_001	CAGATACGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCAGATACGACATTACCGCGGCTGCTGG
27F/534R_002	AGCTCGAGCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGCTCGAGCGATTACCGCGGCTGCTGG
27F/534R_003	CTATCGAGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTATCGAGAGATTACCGCGGCTGCTGG
27F/534R_004	CTGACTATCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTGACTATCGATTACCGCGGCTGCTGG
27F/534R_005	ATATATAGCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGATATATAGCGATTACCGCGGCTGCTGG
27F/534R_006	CAGTACGATG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCAGTACGATGATTACCGCGGCTGCTGG
27F/534R_007	ACTCGCTAGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTCGCTAGCATTACCGCGGCTGCTGG
27F/534R_008	TGAGTCTATC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGAGTCTATCATTACCGCGGCTGCTGG
27F/534R_009	TAGCACTACT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTAGCACTACTATTACCGCGGCTGCTGG
27F/534R_010	AGCGTACGTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGCGTACGTGATTACCGCGGCTGCTGG
27F/534R_011	ACTCGTGTAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTCGTGTACATTACCGCGGCTGCTGG
27F/534R_012	TCTACAGTAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTACAGTAGATTACCGCGGCTGCTGG
27F/534R_013	ACTATACATC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTATACATCATTACCGCGGCTGCTGG
27F/534R_014	TGCGCGAGTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCGCGAGTGATTACCGCGGCTGCTGG
27F/534R_015	TCGCACACGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGCACACGTATTACCGCGGCTGCTGG
27F/534R_016	AGCTATATCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGCTATATCGATTACCGCGGCTGCTGG
27F/534R_017	ACGATCGTAT	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGATCGTATATTACCGCGGCTGCTGG
27F/534R_018	TGCATATACG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCATATACGATTACCGCGGCTGCTGG
27F/534R_019	CGAGACACTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGAGACACTGATTACCGCGGCTGCTGG
27F/534R_020	TGTGCGCTAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTGCGCTAGATTACCGCGGCTGCTGG
27F/534R_021	TCGTCACGCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGTCACGCGATTACCGCGGCTGCTGG
27F/534R_022	CACTCACTAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCACTCACTAGATTACCGCGGCTGCTGG
27F/534R_023	TGTACAGCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTACAGCTCATTACCGCGGCTGCTGG
27F/534R_024	CTGTCTGACG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTGTCTGACGATTACCGCGGCTGCTGG
27F/534R_025	CACACTCGCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCACACTCGCGATTACCGCGGCTGCTGG
27F/534R_026	CGCTCGTCTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGCTCGTCTGATTACCGCGGCTGCTGG
27F/534R_027	AGCGACGTCT	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGCGACGTCTATTACCGCGGCTGCTGG
27F/534R_028	CTCACGACGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTCACGACGCATTACCGCGGCTGCTGG
27F/534R_029	ATGTCAGTCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGATGTCAGTCGATTACCGCGGCTGCTGG

27F/534R_030	TCATAGACAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCATAGACACATTACCGCGGCTGCTGG
27F/534R_031	ATGTACGTGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGATGTACGTGTATTACCGCGGCTGCTGG
27F/534R_032	ATAGCGTGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGATAGCGTGAGATTACCGCGGCTGCTGG
27F/534R_033	TCTGTAGCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTGTAGCTCATTACCGCGGCTGCTGG
27F/534R_034	TGATATCGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGATATCGTCATTACCGCGGCTGCTGG
27F/534R_035	TCACTACATG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCACTACATGATTACCGCGGCTGCTGG
27F/534R_036	AGATACGCAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGATACGCAGATTACCGCGGCTGCTGG
27F/534R_037	TATGACTGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATGACTGAGATTACCGCGGCTGCTGG
27F/534R_038	AGCTGACTAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGCTGACTAGATTACCGCGGCTGCTGG
27F/534R_039	CGCTACGCGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGCTACGCGCATTACCGCGGCTGCTGG
27F/534R_040	ACTGAGTGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTGAGTGAGATTACCGCGGCTGCTGG
27F/534R_041	AGACGCTACT	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGACGCTACTATTACCGCGGCTGCTGG
27F/534R_042	TATCTAGACG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATCTAGACGATTACCGCGGCTGCTGG
27F/534R_043	TCGTACTATC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGTACTATCATTACCGCGGCTGCTGG
27F/534R_044	TACAGTGAGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTACAGTGAGCATTACCGCGGCTGCTGG
27F/534R_045	ATCGATAGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGATCGATAGACATTACCGCGGCTGCTGG
27F/534R_046	AGCAGAGACG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGCAGAGACGATTACCGCGGCTGCTGG
27F/534R_047	CGACGTGCGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGACGTGCGCATTACCGCGGCTGCTGG
27F/534R_048	CACTCTATCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCACTCTATCGATTACCGCGGCTGCTGG
27F/534R_049	TGCTCAGACG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCTCAGACGATTACCGCGGCTGCTGG
27F/534R_050	ACGATGCTCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGATGCTCGATTACCGCGGCTGCTGG
27F/534R_051	TCGTAGCACG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGTAGCACGATTACCGCGGCTGCTGG
27F/534R_052	TCGCGCATCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGCGCATCGATTACCGCGGCTGCTGG
27F/534R_053	TCGACGCTCT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGACGCTCTATTACCGCGGCTGCTGG
27F/534R_054	CGACGCACAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGACGCACAGATTACCGCGGCTGCTGG
27F/534R_055	TGCGTAGACT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCGTAGACTATTACCGCGGCTGCTGG
27F/534R_056	AGTGTACTGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTGTACTGCATTACCGCGGCTGCTGG
27F/534R_057	CTAGACTCAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTAGACTCAGATTACCGCGGCTGCTGG
27F/534R_058	AGCGCTGTAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGCGCTGTAGATTACCGCGGCTGCTGG
27F/534R_059	TCTCGAGCAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTCGAGCAGATTACCGCGGCTGCTGG
27F/534R_060	CGAGTCGAGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGAGTCGAGTATTACCGCGGCTGCTGG
27F/534R_061	TAGCTAGTAT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTAGCTAGTATATTACCGCGGCTGCTGG
27F/534R_062	AGAGTCGCGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGAGTCGCGCATTACCGCGGCTGCTGG
27F/534R_063	CTCGTCAGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTCGTCAGTCATTACCGCGGCTGCTGG
27F/534R_064	AGTCTAGTCT	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTCTAGTCTATTACCGCGGCTGCTGG
27F/534R_065	TGTACTCACT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTACTCACTATTACCGCGGCTGCTGG
27F/534R_066	CTATGTACAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTATGTACAGATTACCGCGGCTGCTGG
27F/534R_067	TCGTGATAGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGTGATAGTATTACCGCGGCTGCTGG
27F/534R_068	TGTGTACGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTGTACGAGATTACCGCGGCTGCTGG
27F/534R_069	ATCTAGTCAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGATCTAGTCACATTACCGCGGCTGCTGG
27F/534R_070	TATGAGAGTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATGAGAGTGATTACCGCGGCTGCTGG
27F/534R_071	TACTGCTCAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTACTGCTCAGATTACCGCGGCTGCTGG
27F/534R_072	CTATACTACT	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTATACTACTATTACCGCGGCTGCTGG
27F/534R_073	ACAGTGCTAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACAGTGCTACATTACCGCGGCTGCTGG
27F/534R_074	AGTATAGAGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTATAGAGCATTACCGCGGCTGCTGG
27F/534R_075	ACATCGCGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGACATCGCGAGATTACCGCGGCTGCTGG
27F/534R_076	ATGACGACTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGATGACGACTCATTACCGCGGCTGCTGG
27F/534R_077	TGTATGTACT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTATGTACTATTACCGCGGCTGCTGG
27F/534R_078	CGCGAGATAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGCGAGATACATTACCGCGGCTGCTGG
27F/534R_079	CTACAGTGTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTACAGTGTGATTACCGCGGCTGCTGG
27F/534R_080	TATCACGATG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATCACGATGATTACCGCGGCTGCTGG
27F/534R_081	TGCTACGTCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCTACGTCGATTACCGCGGCTGCTGG
27F/534R_082	CGTCACGTGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGTCACGTGCATTACCGCGGCTGCTGG
27F/534R_083	TCAGCACTCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCAGCACTCGATTACCGCGGCTGCTGG
27F/534R_084	CGTGACTGCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGTGACTGCGATTACCGCGGCTGCTGG
27F/534R_085	ACTATAGTAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTATAGTACATTACCGCGGCTGCTGG
27F/534R_086	ATATGTCGTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGATATGTCGTGATTACCGCGGCTGCTGG
27F/534R_087	TACTAGATGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTACTAGATGTATTACCGCGGCTGCTGG
27F/534R_088	TGTCTGTCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTCTGTCTCATTACCGCGGCTGCTGG
27F/534R_089	CGTGACGATC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGTGACGATCATTACCGCGGCTGCTGG
27F/534R_090	CGCGTGTCAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGCGTGTCACATTACCGCGGCTGCTGG
27F/534R_091	TCACGTATCT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCACGTATCTATTACCGCGGCTGCTGG
27F/534R_092	TAGAGACTAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTAGAGACTAGATTACCGCGGCTGCTGG
27F/534R_093	TATGCGCGCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATGCGCGCGATTACCGCGGCTGCTGG
27F/534R_094	CATATACACG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCATATACACGATTACCGCGGCTGCTGG
27F/534R_095	TCGACTCGAT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGACTCGATATTACCGCGGCTGCTGG
27F/534R_096	ACACAGTCGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGACACAGTCGTATTACCGCGGCTGCTGG
27F/534R_097	AGTACACGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTACACGTCATTACCGCGGCTGCTGG

27F/534R_098	TAGCGATGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTAGCGATGACATTACCGCGGCTGCTGG
27F/534R_099	TGCGTATAGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCGTATAGCATTACCGCGGCTGCTGG
27F/534R_100	CGACGCGATG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGACGCGATGATTACCGCGGCTGCTGG
27F/534R_101	ACGCACTGCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGCACTGCGATTACCGCGGCTGCTGG
27F/534R_102	ACTGTGACTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTGTGACTCATTACCGCGGCTGCTGG
27F/534R_103	TGATCGACAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGATCGACAGATTACCGCGGCTGCTGG
27F/534R_104	TAGTATCGAT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTAGTATCGATATTACCGCGGCTGCTGG
27F/534R_105	TAGACGCATC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTAGACGCATCATTACCGCGGCTGCTGG
27F/534R_106	TATCGATCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATCGATCTCATTACCGCGGCTGCTGG
27F/534R_107	TATCAGTCGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATCAGTCGTATTACCGCGGCTGCTGG
27F/534R_108	ACAGCTATAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGACAGCTATAGATTACCGCGGCTGCTGG
27F/534R_109	CACTCTCGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCACTCTCGACATTACCGCGGCTGCTGG
27F/534R_110	AGCTACTCTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGCTACTCTGATTACCGCGGCTGCTGG
27F/534R_111	ATACGAGAGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGATACGAGAGCATTACCGCGGCTGCTGG
27F/534R_112	ACGTCGCAGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGTCGCAGTATTACCGCGGCTGCTGG
27F/534R_113	ATGTCGTACT	CCATCTCATCCCTGCGTGTCTCCGACTCAGATGTCGTACTATTACCGCGGCTGCTGG
27F/534R_114	CATGTACGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCATGTACGTCATTACCGCGGCTGCTGG
27F/534R_115	CACGCGTCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCACGCGTCTCATTACCGCGGCTGCTGG
27F/534R_116	CGCTATCGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGCTATCGAGATTACCGCGGCTGCTGG
27F/534R_117	ACGACACGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGACACGAGATTACCGCGGCTGCTGG
27F/534R_118	TGCGCGTCGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCGCGTCGCATTACCGCGGCTGCTGG
27F/534R_119	TCAGCTCGTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCAGCTCGTGATTACCGCGGCTGCTGG
27F/534R_120	AGACGACTGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGACGACTGTATTACCGCGGCTGCTGG
27F/534R_121	CACAGTATAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCACAGTATACATTACCGCGGCTGCTGG
27F/534R_122	ACGTCATCTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGTCATCTGATTACCGCGGCTGCTGG
27F/534R_123	AGACTGTGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGACTGTGAGATTACCGCGGCTGCTGG
27F/534R_124	TACACATCAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTACACATCACATTACCGCGGCTGCTGG
27F/534R_125	ATAGCTCGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGATAGCTCGACATTACCGCGGCTGCTGG

Authors: Jumpstart Consortium Human Microbiome Project Data Generation Working Group

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Barcoded oligos for V5->V3 directional sequencing. **Added the R specific primer sequence at 3' end of barcode on "A" adapter sequence** **Added the F specific primer sequence at the 3' end of the "B" adapter sequence**		
		"B" adapter oligo sequence +357F (CCTACGGGAGGCAGCAG)
		CCTATCCCCTGTGTGCCTTGGCAGTCTCAGCCTACGGGAGGCAGCAG
Oligo name	**Barcode**	**"A" adapter oligo sequence + barcode +926R (CCGTCAATTCMTTTRAGT)**
XLR_926R_v2bBar8L	CACGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCACGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar23L	CGCAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGCAACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar174L	TGAAGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGAAGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar602L	ACTTGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTTGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar212L	TCACAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCACACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar25L	CGTGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGTGACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar622L	ACGCGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGCGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar72L	CCTCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCCTCTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar600L	ACTCAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTCACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar559L	AGACAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGACACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar31L	CGACTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGACTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar551L	AGCTTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGCTTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1149L	AAGCCGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAAGCCGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar15L	CAAGAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCAAGAACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar556L	AGTTGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTTGGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar144L	TATCAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATCAACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar575L	AGGCGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGGCGGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar48L	CGGTATC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGGTATCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar166L	TGACGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGACGACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar613L	ACAAGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACAAGGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar560L	AGACCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGACCTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar741L	ATACCAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGATACCACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar228L	TCGCGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGCGGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar807L	ATCTTAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGATCTTACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1273L	AACCAGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACCAGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar441L	TTCGAGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCGAGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1174L	AAGGTGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAAGGTGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar209L	TCTTGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTTGGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar153L	TAATCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTAATCTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar213L	TCACCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCACCTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar298L	TCCGCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCCGCTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar146L	TATTGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATTGACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar554L	AGTCGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTCGACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar646L	ACGGCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGGCTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar158L	TGCGTTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCGTTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar207L	TCTCGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTCGACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar77L	CCAGGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCCAGGACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar601L	ACTCCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTCCTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar481L	TTCCTGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCCTGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar419L	TTCATAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCATACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar26L	CGTCGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGTCGTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1172L	AAGGCAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAAGGCACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1210L	AACAACTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACAACTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar606L	ACACGGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACACGGACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar159L	TGCCGAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCCGAACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar147L	TATTCGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATTCGTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar141L	TAGGAATC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTAGGAATCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar119L	CCGGCCAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCCGGCCACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1379L	AATGGTAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAATGGTACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar208L	TCTCCGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTCCGTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1267L	AACCTGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACCTGGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar637L	ACGAAGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGAAGTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar435L	TTCGTGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCGTGGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1202L	AACACAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACACAACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar413L	TTCTTGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCTTGACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar289L	TCCAAGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCCAAGTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar433L	TTCGCGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCGCGACCCGTCAATTCMTTTRAGT

XLR_926R_v2bBar121L	CCGGTCGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCCGGTCGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar669L	ACCTGAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACCTGAACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1156L	AAGAGTTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAAGAGTTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar370L	TTGACAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTGACAACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar281L	TCCAGAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCCAGAACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar49L	CGGTCTTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGGTCTTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1173L	AAGGCCTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAAGGCCTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar599L	ACTAATTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTAATTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar167L	TGACCGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGACCGTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar161L	TGTCGGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTCGGACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar580L	AGGTTGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGGTTGTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar629L	ACGAGAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGAGAACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar184L	TGGTGAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGGTGAACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar233L	TCGTTGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGTTGTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar364L	TTGTGTTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTGTGTTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar78L	CCACGGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCCACGGTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar393L	TTGGAGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTGGAGGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar350L	TTATCGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTATCGGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1164L	AAGAAGAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAAGAAGACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1196L	AACTGTTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACTGTTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar411L	TTCTCAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCTCAACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar6L	CTTCCTTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTTCCTTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1031L	ATTCGTAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGATTCGTACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar76L	CCTTCCGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCCTTCCGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar555L	AGTCCGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTCCGTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar378L	TTGAACTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTGAACTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1225L	AACGAGGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACGAGGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar99L	CCGTTCAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGCCGTTCACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar236L	TCGAGGAAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGAGGAACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar731L	ACCGGAAGC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACCGGAAGCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar628L	ACGTTCCAC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGTTCCACCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1250L	AACGGAGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACGGAGTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar438L	TTCGTTATC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTCGTTATCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar693L	ACCGTAATC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACCGTAATCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar672L	ACCTTGGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGACCTTGGTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar355L	TTAAGATTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTTAAGATTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar187L	TGGTTGGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGGTTGGTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar162L	TGTCCGGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTCCGGTCCCGTCAATTCMTTTRAGT
XLR_926R_v2bBar1292L	AACCGTGTC	CCATCTCATCCCTGCGTGTCTCCGACTCAGAACCGTGTCCCGTCAATTCMTTTRAGT
357F/926R_000	TCATAGACAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCATAGACAGCCGTCAATTCMTTTRAGT
357F/926R_001	TATCACTACG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATCACTACGCCGTCAATTCMTTTRAGT
357F/926R_002	AGCGTCAGTA	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGCGTCAGTACCGTCAATTCMTTTRAGT
357F/926R_003	CTGTACGTAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTGTACGTAGCCGTCAATTCMTTTRAGT
357F/926R_004	AGTCTCTAGA	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTCTCTAGACCGTCAATTCMTTTRAGT
357F/926R_005	AGATACACAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGATACACAGCCGTCAATTCMTTTRAGT
357F/926R_006	ACTCTAGTCT	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTCTAGTCTCCGTCAATTCMTTTRAGT
357F/926R_007	AGTCAGTGTA	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTCAGTGTACCGTCAATTCMTTTRAGT
357F/926R_008	CTACGTCTGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTACGTCTGTCCGTCAATTCMTTTRAGT
357F/926R_009	CGACTACGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGACTACGAGCCGTCAATTCMTTTRAGT
357F/926R_010	TAGCACACTA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTAGCACACTACCGTCAATTCMTTTRAGT
357F/926R_011	TACGAGTACA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTACGAGTACACCGTCAATTCMTTTRAGT
357F/926R_012	TGCTACTGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCTACTGAGCCGTCAATTCMTTTRAGT
357F/926R_013	CACGATAGCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCACGATAGCGCCGTCAATTCMTTTRAGT
357F/926R_014	TATATCGACA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATATCGACACCGTCAATTCMTTTRAGT
357F/926R_015	TGTACTACAT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTACTACATCCGTCAATTCMTTTRAGT
357F/926R_016	AGAGCGCGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGAGCGCGAGCCGTCAATTCMTTTRAGT
357F/926R_017	CGTAGATCGA	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGTAGATCGACCGTCAATTCMTTTRAGT
357F/926R_018	TGATGACGCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGATGACGCGCCGTCAATTCMTTTRAGT
357F/926R_019	TCTCTCGAGA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTCTCGAGACCGTCAATTCMTTTRAGT
357F/926R_020	TAGTGTAGCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTAGTGTAGCGCCGTCAATTCMTTTRAGT
357F/926R_021	TCACGACGTA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCACGACGTACCGTCAATTCMTTTRAGT
357F/926R_022	TGTAGAGTAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTAGAGTAGCCGTCAATTCMTTTRAGT
357F/926R_023	TGCGTACTCA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCGTACTCACCGTCAATTCMTTTRAGT
357F/926R_024	ACGCACACGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGCACACGTCCGTCAATTCMTTTRAGT
357F/926R_025	TGAGTATGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGAGTATGAGCCGTCAATTCMTTTRAGT
357F/926R_026	TCTATACGCT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTATACGCTCCGTCAATTCMTTTRAGT
357F/926R_027	CAGTGAGACG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCAGTGAGACGCCGTCAATTCMTTTRAGT

357F/926R_028	CTAGTATGCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTAGTATGCGCCGTCAATTCMTTTRAGT
357F/926R_029	TCTACAGCGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTACAGCGTCCGTCAATTCMTTTRAGT
357F/926R_030	ATCGCTAGTA	CCATCTCATCCCTGCGTGTCTCCGACTCAGATCGCTAGTACCGTCAATTCMTTTRAGT
357F/926R_031	AGCAGCTACG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGCAGCTACGCCGTCAATTCMTTTRAGT
357F/926R_032	TCGCTATATA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGCTATATACCGTCAATTCMTTTRAGT
357F/926R_033	TCGCTACGCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGCTACGCGCCGTCAATTCMTTTRAGT
357F/926R_034	TGAGATCTCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGAGATCTCGCCGTCAATTCMTTTRAGT
357F/926R_035	CGTGAGTGCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGTGAGTGCGCCGTCAATTCMTTTRAGT
357F/926R_036	TCGAGCACGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGAGCACGTCCGTCAATTCMTTTRAGT
357F/926R_037	AGACATATCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGACATATCGCCGTCAATTCMTTTRAGT
357F/926R_038	TCTCGTGTGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTCGTGTGTCCGTCAATTCMTTTRAGT
357F/926R_039	ATATACGCGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGATATACGCGTCCGTCAATTCMTTTRAGT
357F/926R_040	ACGTCTCGCT	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGTCTCGCTCCGTCAATTCMTTTRAGT
357F/926R_041	CGCGCTACGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGCGCTACGTCCGTCAATTCMTTTRAGT
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357F/926R_049	TGAGACGAGA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGAGACGAGACCGTCAATTCMTTTRAGT
357F/926R_050	TATCTGTATA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATCTGTATACCGTCAATTCMTTTRAGT
357F/926R_051	TAGCGTGATG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTAGCGTGATGCCGTCAATTCMTTTRAGT
357F/926R_052	ACTGTATATG	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTGTATATGCCGTCAATTCMTTTRAGT
357F/926R_053	CATATAGACG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCATATAGACGCCGTCAATTCMTTTRAGT
357F/926R_054	ACGTATGACT	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGTATGACTCCGTCAATTCMTTTRAGT
357F/926R_055	TGTCGTAGCA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTCGTAGCACCGTCAATTCMTTTRAGT
357F/926R_056	AGTGACTAGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTGACTAGTCCGTCAATTCMTTTRAGT
357F/926R_057	TCTATCTAGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTATCTAGTCCGTCAATTCMTTTRAGT
357F/926R_058	CTAGAGTGTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTAGAGTGTGCCGTCAATTCMTTTRAGT
357F/926R_059	TAGCTACTGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTAGCTACTGTCCGTCAATTCMTTTRAGT
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357F/926R_063	TCGACGAGCT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGACGAGCTCCGTCAATTCMTTTRAGT
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357F/926R_065	CGTCAGCACG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGTCAGCACGCCGTCAATTCMTTTRAGT
357F/926R_066	TCGCTGATAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGCTGATAGCCGTCAATTCMTTTRAGT
357F/926R_067	ACATACTGTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGACATACTGTGCCGTCAATTCMTTTRAGT
357F/926R_068	TCATCGAGTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCATCGAGTGCCGTCAATTCMTTTRAGT
357F/926R_069	ACTATATCTA	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTATATCTACCGTCAATTCMTTTRAGT
357F/926R_070	ACTGTCTGTA	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTGTCTGTACCGTCAATTCMTTTRAGT
357F/926R_071	CGTGTCGCAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGTGTCGCAGCCGTCAATTCMTTTRAGT
357F/926R_072	CTAGTGCACG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTAGTGCACGCCGTCAATTCMTTTRAGT
357F/926R_073	TATACACGCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATACACGCGCCGTCAATTCMTTTRAGT
357F/926R_074	AGTCTAGTAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTCTAGTAGCCGTCAATTCMTTTRAGT
357F/926R_075	CTCGTGACGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTCGTGACGTCCGTCAATTCMTTTRAGT
357F/926R_076	TACACAGTCA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTACACAGTCACCGTCAATTCMTTTRAGT
357F/926R_077	CTACAGAGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTACAGAGAGCCGTCAATTCMTTTRAGT
357F/926R_078	TGACGTGACA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGACGTGACACCGTCAATTCMTTTRAGT
357F/926R_079	TCTGTGACAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTGTGACAGCCGTCAATTCMTTTRAGT
357F/926R_080	TCTGCAGTAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCTGCAGTAGCCGTCAATTCMTTTRAGT
357F/926R_081	TGTACGCACG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTACGCACGCCGTCAATTCMTTTRAGT
357F/926R_082	CTAGCTCGTA	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTAGCTCGTACCGTCAATTCMTTTRAGT
357F/926R_083	ATACGCACGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGATACGCACGTCCGTCAATTCMTTTRAGT
357F/926R_084	TGTCTGCTAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTCTGCTAGCCGTCAATTCMTTTRAGT
357F/926R_085	AGTCGAGCGA	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTCGAGCGACCGTCAATTCMTTTRAGT
357F/926R_086	TATGACAGTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATGACAGTGCCGTCAATTCMTTTRAGT
357F/926R_087	ACATAGTAGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGACATAGTAGTCCGTCAATTCMTTTRAGT
357F/926R_088	TATGATACTA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATGATACTACCGTCAATTCMTTTRAGT
357F/926R_089	TCGACGCATA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGACGCATACCGTCAATTCMTTTRAGT
357F/926R_090	ACGCGAGATA	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGCGAGATACCGTCAATTCMTTTRAGT
357F/926R_091	ACGATGATCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGATGATCGCCGTCAATTCMTTTRAGT
357F/926R_092	ATCGTAGTGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGATCGTAGTGTCCGTCAATTCMTTTRAGT
357F/926R_093	TATAGCGTCT	CCATCTCATCCCTGCGTGTCTCCGACTCAGTATAGCGTCTCCGTCAATTCMTTTRAGT
357F/926R_094	ACTCTGTGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGACTCTGTGAGCCGTCAATTCMTTTRAGT

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357F/926R_095	AGTAGCGTGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTAGCGTGTCCGTCAATTCMTTTRAGT
357F/926R_096	CGCGACGTGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGCGACGTGTCCGTCAATTCMTTTRAGT
357F/926R_097	CTGTGTAGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTGTGTAGAGCCGTCAATTCMTTTRAGT
357F/926R_098	CTCTGTCTCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTCTGTCTCGCCGTCAATTCMTTTRAGT
357F/926R_099	AGACGTCTCT	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGACGTCTCTCCGTCAATTCMTTTRAGT
357F/926R_100	TCGAGAGTCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGAGAGTCGCCGTCAATTCMTTTRAGT
357F/926R_101	CTCTCGCGTA	CCATCTCATCCCTGCGTGTCTCCGACTCAGCTCTCGCGTACCGTCAATTCMTTTRAGT
357F/926R_102	ACGTGTACTA	CCATCTCATCCCTGCGTGTCTCCGACTCAGACGTGTACTACCGTCAATTCMTTTRAGT
357F/926R_103	TGCTGCGTCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCTGCGTCGCCGTCAATTCMTTTRAGT
357F/926R_104	CATACTACTA	CCATCTCATCCCTGCGTGTCTCCGACTCAGCATACTACTACCGTCAATTCMTTTRAGT
357F/926R_105	AGTATCTCAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTATCTCAGCCGTCAATTCMTTTRAGT
357F/926R_106	TACTGCACAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTACTGCACAGCCGTCAATTCMTTTRAGT
357F/926R_107	CGCGCACGCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGCGCGCACGCGCCGTCAATTCMTTTRAGT
357F/926R_108	TCACACTATA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCACACTATACCGTCAATTCMTTTRAGT
357F/926R_109	TGACGCGCTA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGACGCGCTACCGTCAATTCMTTTRAGT
357F/926R_110	TGTACGTGTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGTACGTGTGCCGTCAATTCMTTTRAGT
357F/926R_111	TCGTGATACA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCGTGATACACCGTCAATTCMTTTRAGT
357F/926R_112	ACACTATCAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGACACTATCAGCCGTCAATTCMTTTRAGT
357F/926R_113	ATCGACGTCA	CCATCTCATCCCTGCGTGTCTCCGACTCAGATCGACGTCACCGTCAATTCMTTTRAGT
357F/926R_114	TGATCTAGTA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGATCTAGTACCGTCAATTCMTTTRAGT
357F/926R_115	ATGACTGTCG	CCATCTCATCCCTGCGTGTCTCCGACTCAGATGACTGTCGCCGTCAATTCMTTTRAGT
357F/926R_116	ATCGACAGAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGATCGACAGAGCCGTCAATTCMTTTRAGT
357F/926R_117	AGTATATGTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTATATGTGCCGTCAATTCMTTTRAGT
357F/926R_118	AGACTGACAG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGACTGACAGCCGTCAATTCMTTTRAGT
357F/926R_119	AGCGCGTAGT	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGCGCGTAGTCCGTCAATTCMTTTRAGT
357F/926R_120	AGACGATGTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGACGATGTGCCGTCAATTCMTTTRAGT
357F/926R_121	TCAGTAGTGA	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCAGTAGTGACCGTCAATTCMTTTRAGT
357F/926R_122	TGCAGTCGTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCAGTCGTGCCGTCAATTCMTTTRAGT
357F/926R_123	TGCGTACATG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTGCGTACATGCCGTCAATTCMTTTRAGT
357F/926R_124	TCAGATGACG	CCATCTCATCCCTGCGTGTCTCCGACTCAGTCAGATGACGCCGTCAATTCMTTTRAGT
357F/926R_125	AGTGTGAGTG	CCATCTCATCCCTGCGTGTCTCCGACTCAGAGTGTGAGTGCCGTCAATTCMTTTRAGT

7 Related Documents & References

8 Revision History

Version	Author/Reviewer	Date	Change Made
4.2		10/27/2010	Revised for Protocol
4.2.2		05/09/2012	Convert SOP to standard template