**Additional file 1 - All of parameters used for analytic programs in each step.**

**1. Quality Control:**

fastq\_quality\_trimmer -Q 33 -t 30 -i [INFILE] –o [OUTFILE]

fastq\_quality\_filter -Q 33 -q 30 -p 70 -i [INFILE] -o [OUTFILE]

**2. Bowtie2 align to NT DB:**

bowtie2 –q -N 0 --no-hd --no-mixed --no-unal -x [NT\_DB] -U [INFILE] -S [OUTFILE]

**3. Bowtie2 align to silva SSU DB:**

bowtie2 -q -N 0 --no-hd -end-to-end --no-mixed --no-unal -x [SSU\_DB] -U [INFILE] -S [OUTFILE]

**4. Blast to AMP DB:**

blastx -query [INFILE] -db [AMP\_DB] -evalue 10 -matrix BLOSUM62 -outfmt 6 -out [OUTFILE]

**5. Trinity :**

--method edgeR -P 0.001 -C 2, FDR 0.001, fold change >=2