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#!/usr/bin/perl
# TIF Program (Original version)
#Script name: tif.pl

$head = "TGTTAAATATATATACA"; # 5'-end sequence of Tos17
$tail = "TTGCAAGTTAGTTAAGA"; # 3'-end sequence of Tos17
$tsd_size= 5; # size of target site duplication

$tail_size= length($tail);

$file_list= "/directory_of_fastq_file/*.fastq";

open(IN, "cat $file_list|grep$headl");
while(<IN>){
    $pos= index($_, $head);
    $upstream =substr($_, 0, $pos);
    if (length($upstream) > 20){
        $tsd= substr($upstream, length($upstream) -$tsd_size, $tsd_size);
        if (length($head{$tsd}) < length($upstream)){
            $head{$tsd} = $upstream;
        }
    }
}
close(IN);

open(IN, "cat $file_list|grep$tail l");
while(<IN>){
    chomp;
    $pos= index($_, $tail);
    $downstream =substr($_, $pos+ $tail_size, 100);
    if (length($downstream) > 20){
        $tsd= substr($downstream, 0, $tsd_size);
        if (length($tail{$tsd}) < length($downstream)){
            $tail{$tsd} = $downstream;
        }
    }
}
close(IN);

foreach$tsd(sort keys %head){
    if ($tail{$tsd} ne ""){
        print ">TSD $tsdhead
$head{$tsd}
>TSD $tsdtail
$tail{$tsd}\n";
    }
}
```