

# Deconvolute\_staggered

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## Compiling and Boost libraries

This program requires the C++ Boost libraries to be installed on the server.

Compiling with g++ (all on one line)

```
g++ Deconvolute_staggered.cpp Engine.cpp DataStore.cpp -I <path to boost installation> -L <path to boost libraries> -lboost_iostreams -o Deconvolute_staggered.exe 2> errors.txt
```

Any errors in the compiling will be saved to the errors.txt file. If this file has zero size the build as worked. If not look in the file and resolve the first error and then rebuild until it works.

## Command line arguments

Parameter on command line:

Read one filename with path,

Read two filename with path,

Primer file with path,

Index file with path,

Path to folder to save data in,

Minimum PCR length,

Maximum PCR length.

### Example primer file

```
GGATTGCGCTGTTATCC  
AGACGAGAAGACCCTAT
```

These sequences can contain degenerate bases: S, W, R or Y.

### Example index file

```
AACTGTAG  
ACACTAAG  
ACAGGCGC  
ACTCGTGT  
AGTACTCC  
ATTGTGAA  
CAATTAAC  
CATAGAGT  
CCATTCGA  
CCTTCACC  
GACGTCTT  
GCCACAGG  
GTCTACAC  
GTGAATAT
```

GTGTCGGA  
TAAGGTCA  
TGCGAGAC  
TGGCCGGT  
TTCCTGTT  
TTGCCTAG

These sequences can only contain standard bases: A, C, G or T.

Library production

The Sequence is PCR amplified with the primers of interest and the product cleaned up to remove primer dimer and primers. The amplicon is then used to make a whole genome library with a kit like the NEB NextUltra

Example of reads with Primers

Sequence	Comment
1)	
ATGGGGACTCGTGTGGATTGCGCTGTTATCCCTAGGGTA	Start of read with forward primer
-----GGATTGCGCTGTTATCC	Target primer sequence which is 14 to 17 bp from start
-----ACTCGTGT	Index sequence which before the target sequence
NNNNNN	Unique id and stagger to create difference offset to aid base calling
2)	
ATTCGTACACTAAGAGACGAGAAGACCCTATGGAGCTTT	Start of read with reverse prime
-----AGACGAGAAGACCCTAT	
-----ACACTAAG	
NNNNNN	
3)	
TTCAGTCCAATTAACGGATTGCGCTGTTATCCCTAGGGT	Start of read with forward primer with 7Ns
-----GGATTGCGCTGTTATCC	
-----CAATTAAC	
NNNNNNN	