

Steps in a DNA methylation analysis

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Background on DNA Methylation

DNA

ACTGACCTAGATCAGTGTAGCGATCGTATACGAGACCGATTTCATCGGCAT



transcription

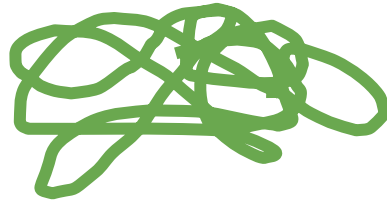
RNA

AUCAGUCGAUCACCGAU



translation

protein



DNA

ACTGACCGTTCGATCGATCGTATACGATTACAAAATCATCGGCAT

M

M

M



transcription

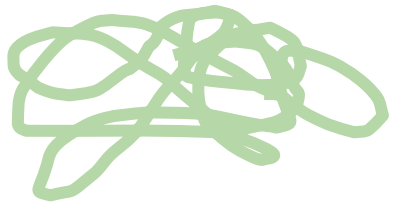
RNA

AUCAGUCGAUCACCGAU



translation

protein



M M
ACGACTACGC

M M
ACGACTACGC

Split DNA into two aliquots
(identical samples)

M M
ACGACTACGC

M M
ACGAUTACGU

Bisulfite conversion converts
unmethylated C to U

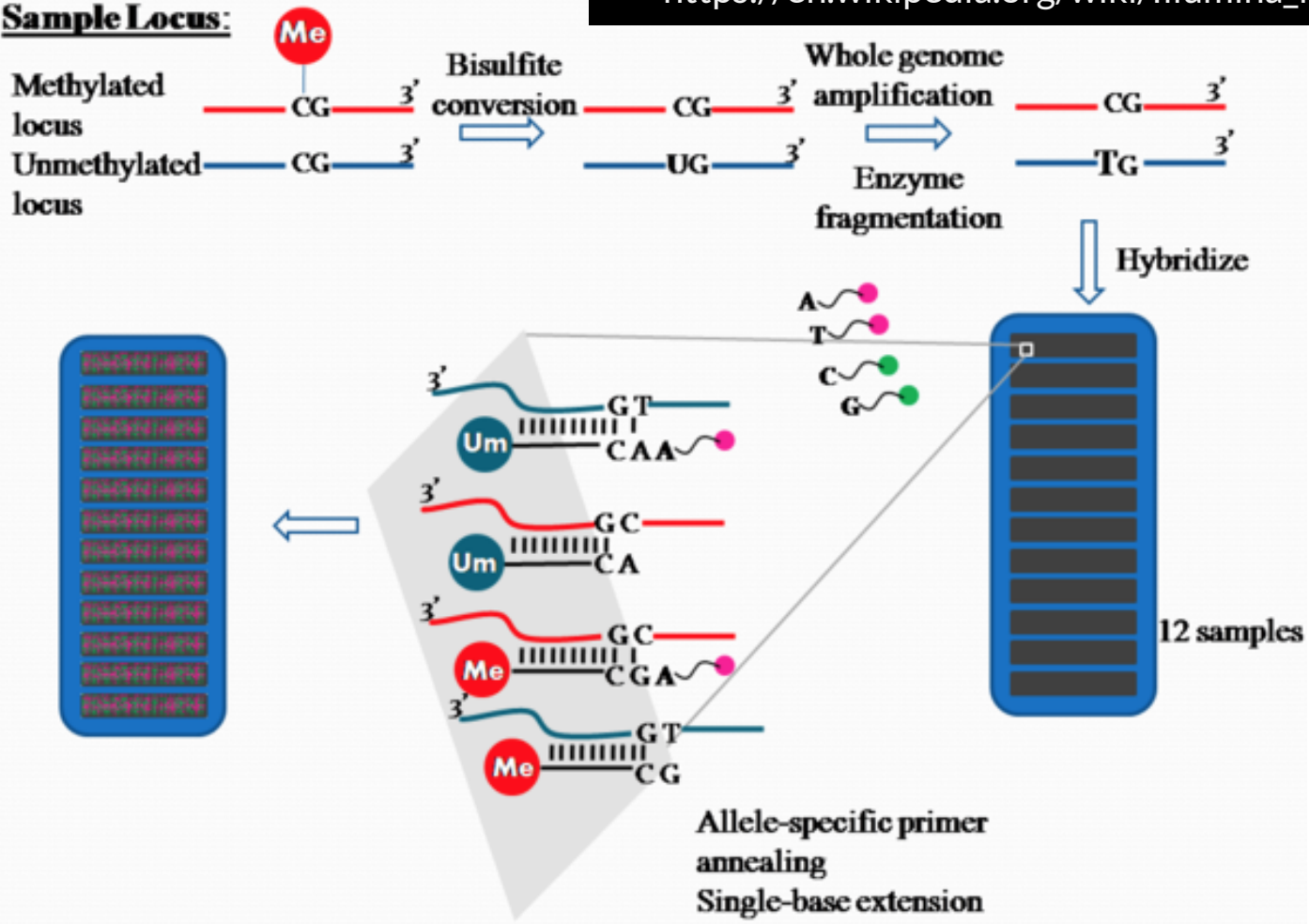
ACGACTACGC

ACGAUTACGU

Sequence and compare



Sample Locus:



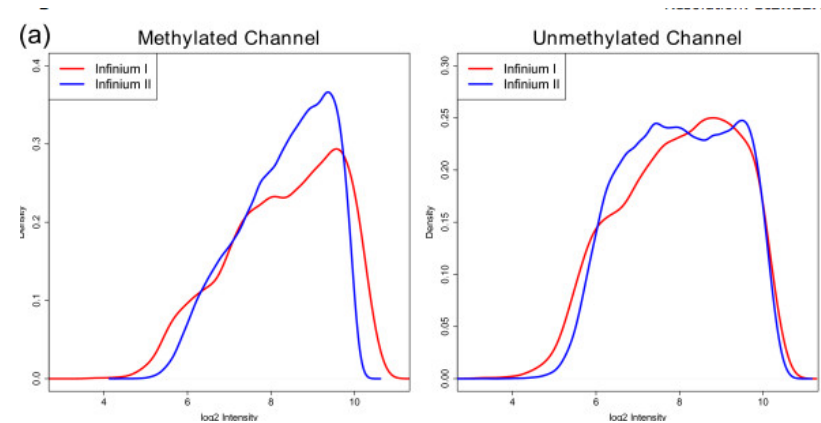
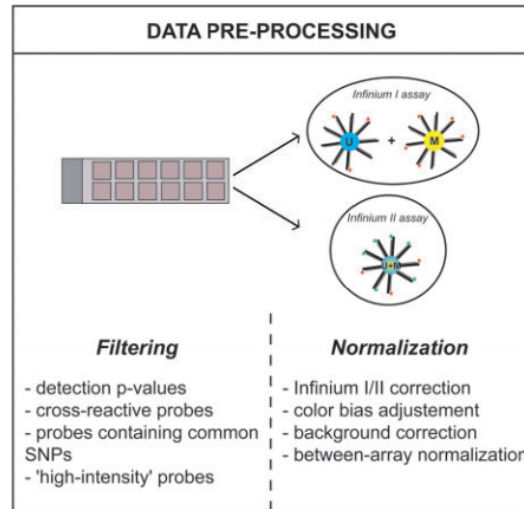
Steps

1. Normalization
2. Smoothing
3. Region finding
4. Annotation

Step 1: Normalization

Software:

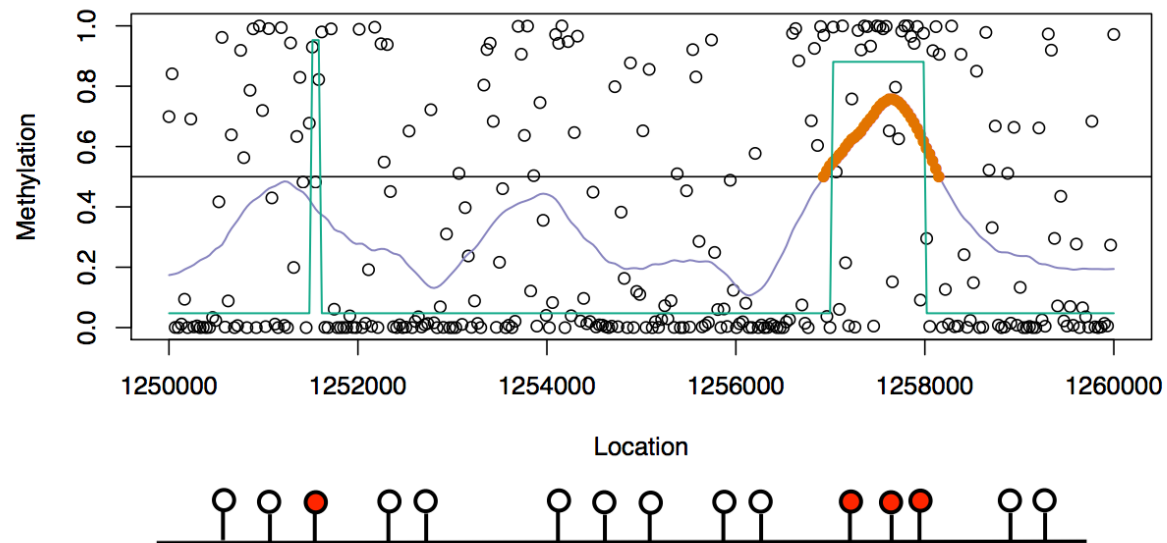
- [minfi](#) (bisulfite seq + array)
- [charm](#)



Step 2: Smoothing

Software:

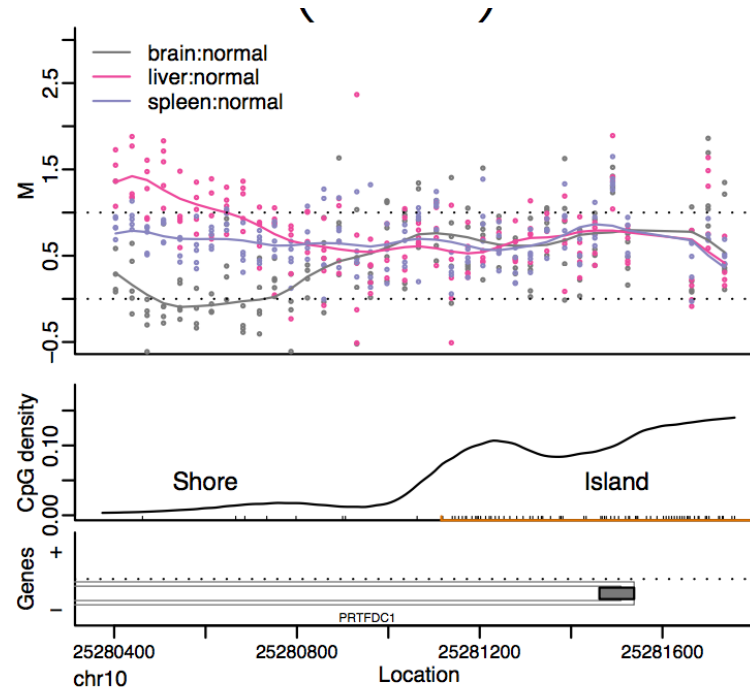
- [charm](#)
- [bsseq](#) (bisulfite seq)



Step 3: Region finding

Software:

- [charm](#)
- [bsseq](#) (bisulfite seq)



Step 4: Annotation

Software:

- [charm](#)
- [bsseq](#) (bisulfite seq)
- [BioC Annotation Workflow](#)

