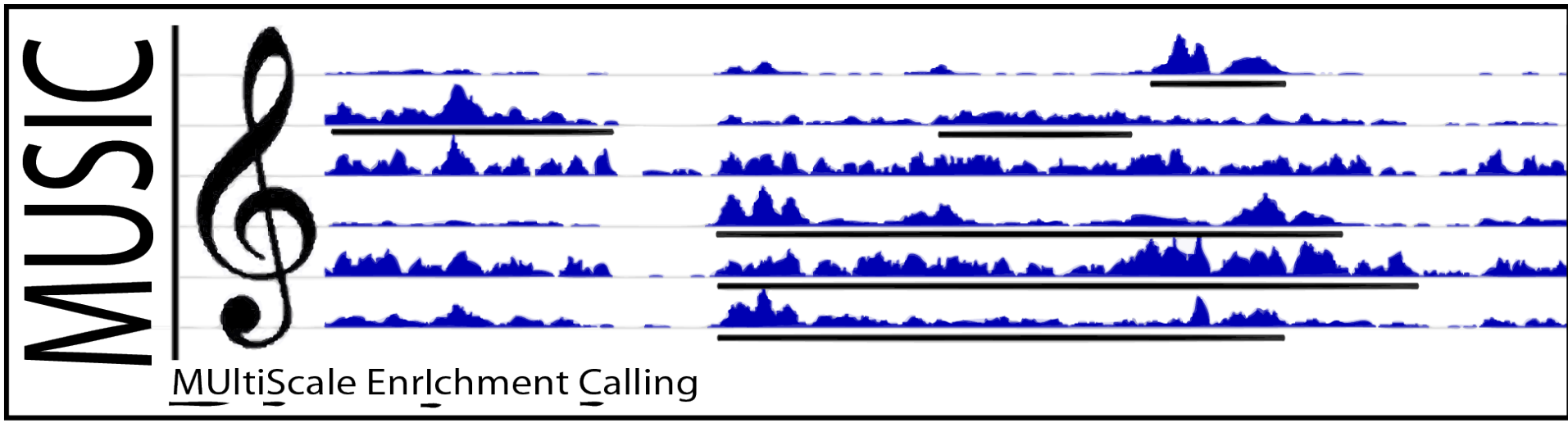
Multiscale Enrichment Calling with MUSIC



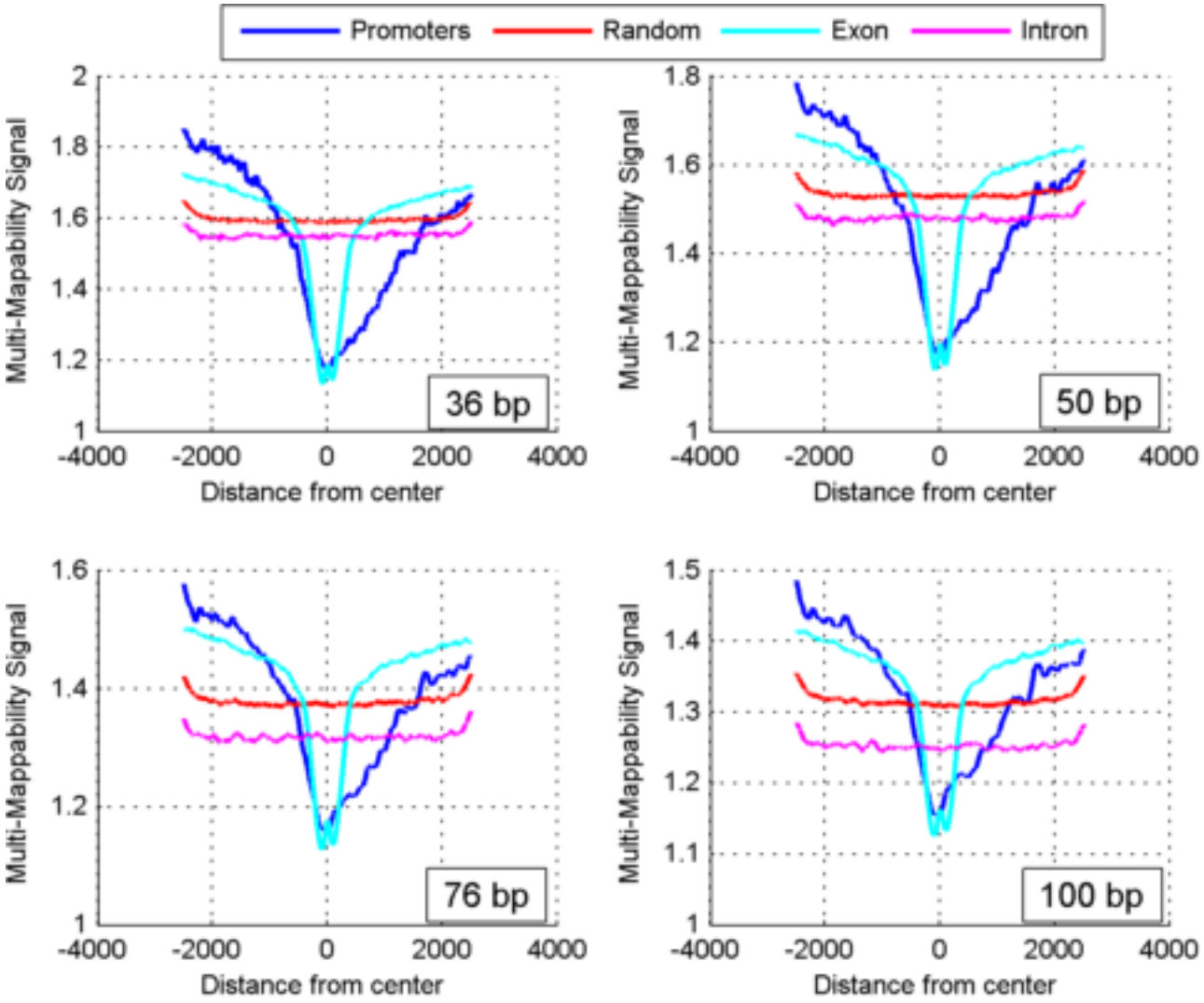
Arif Harmanci

Yale University

Motivation

- Broad enriched regions (ERs) are more tricky to process than punctate ERs
  - Mappability is not uniform over the genome
  - A large spectrum of length scales for the enriched regions in different experimental assays

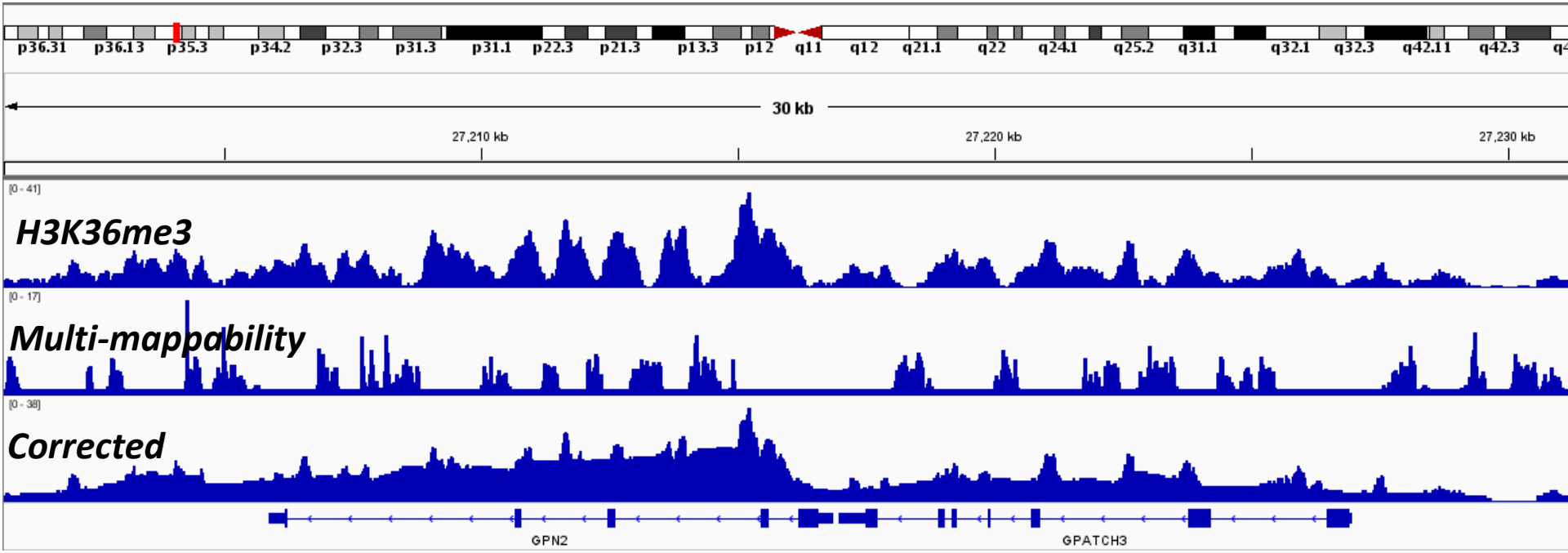
Multi-mappability Profile



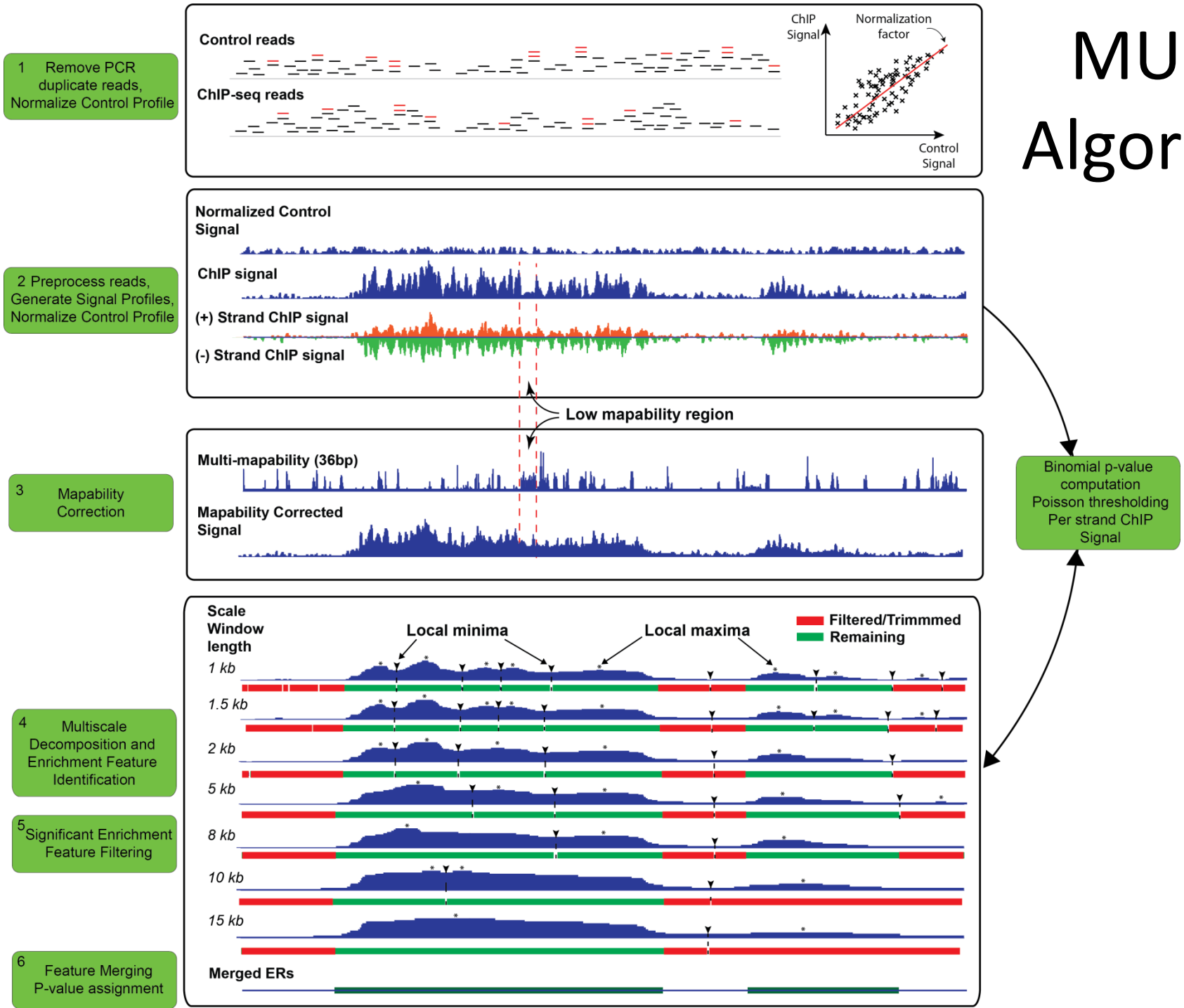
- "Number of reads mapping at a position from uniformly sampled genome"

Multi-Mappability Correction

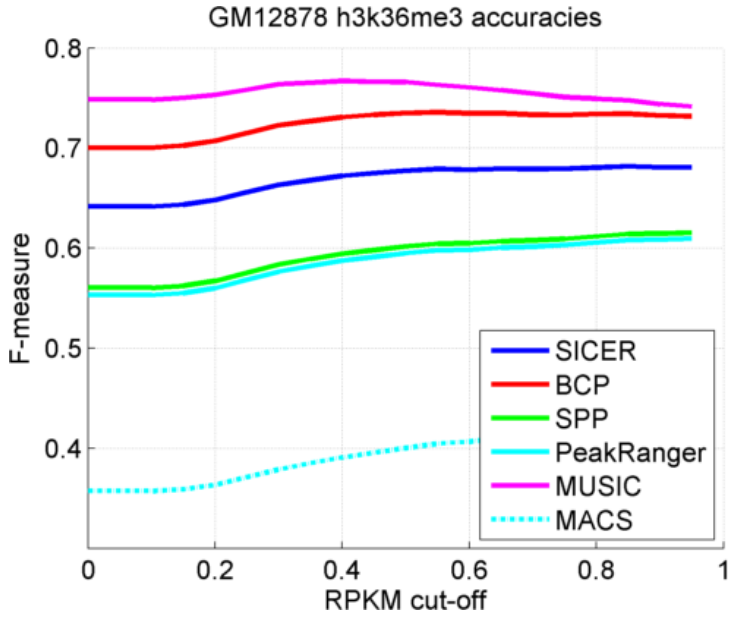
- At each position, use the surrounding highly mappable positions to update and smooth the signal

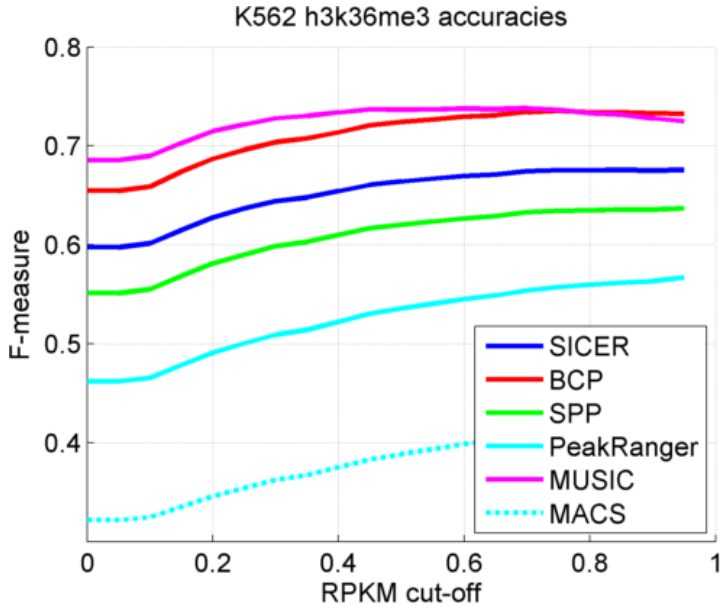


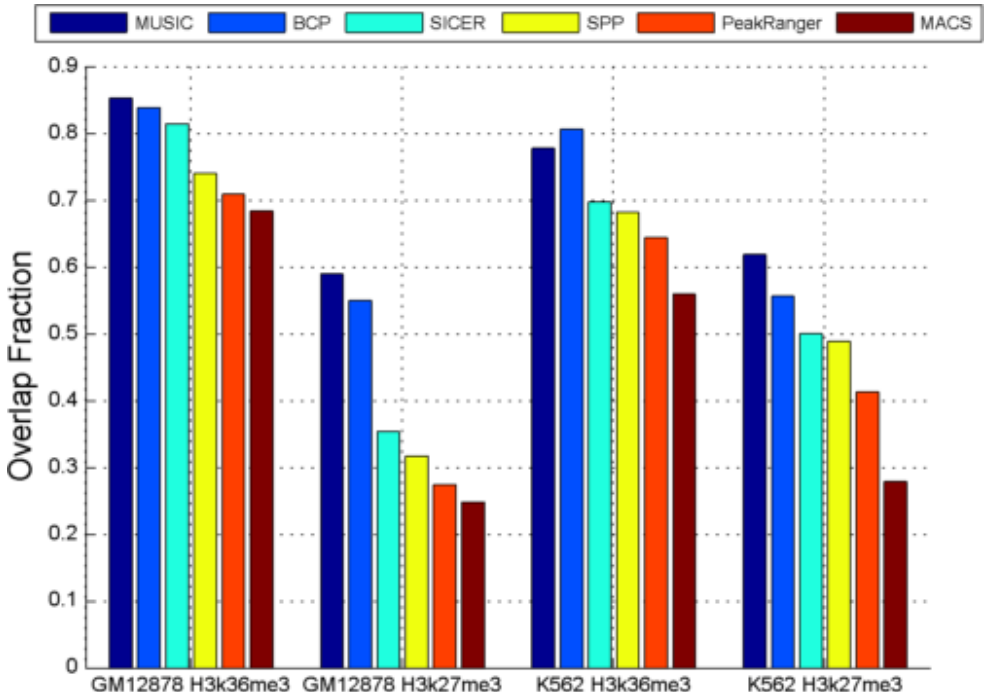
MUSIC Algorithm



Comparison with Other Methods







Feature Pileup Signal: Another way to look at multiscale features

- Rather than merging the enrichment features, pileup the features and count the number of features at each nucleotide
- Small scale pileup signal: Punctate features
- Large scale pileup signal: Broad features