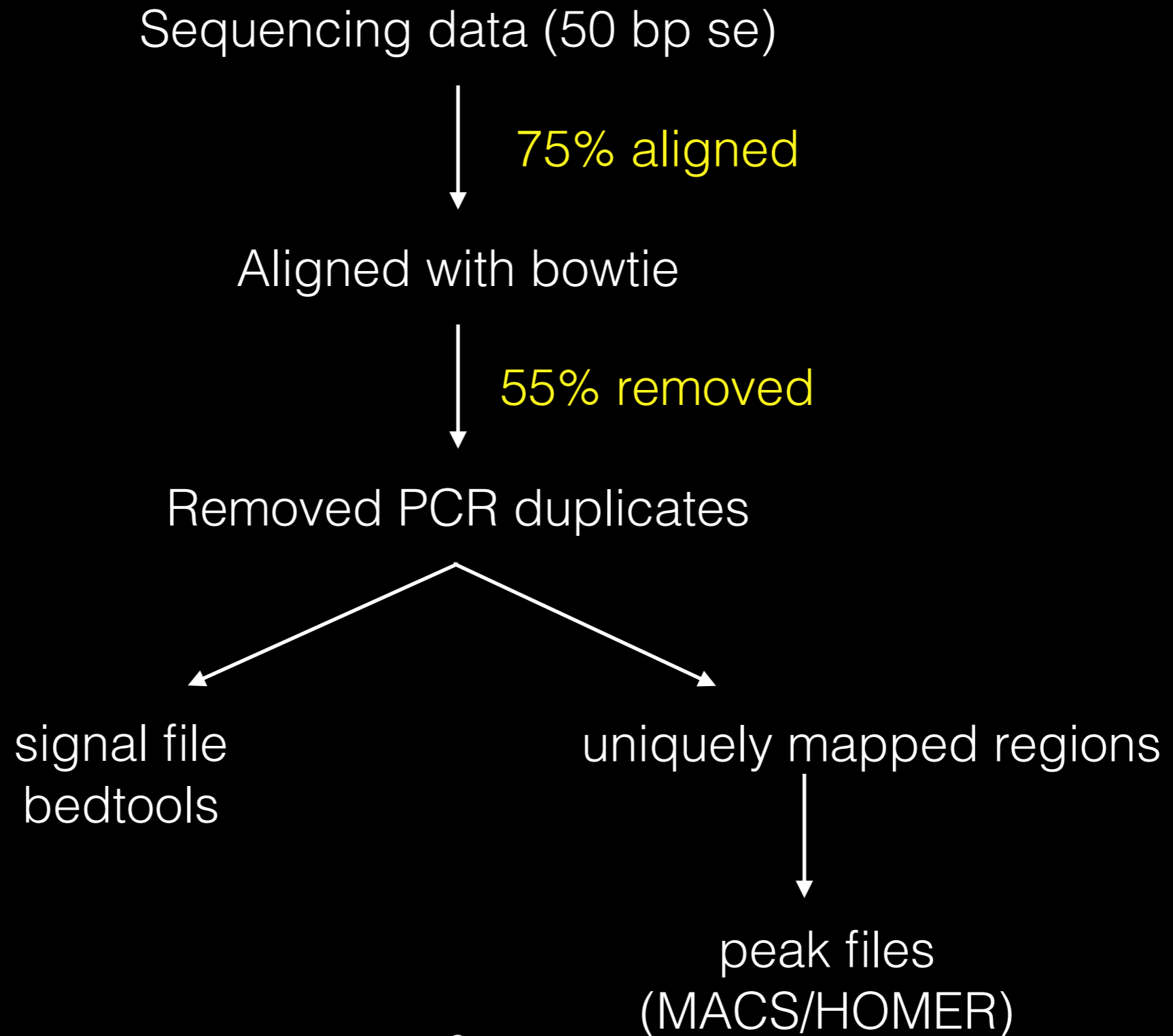


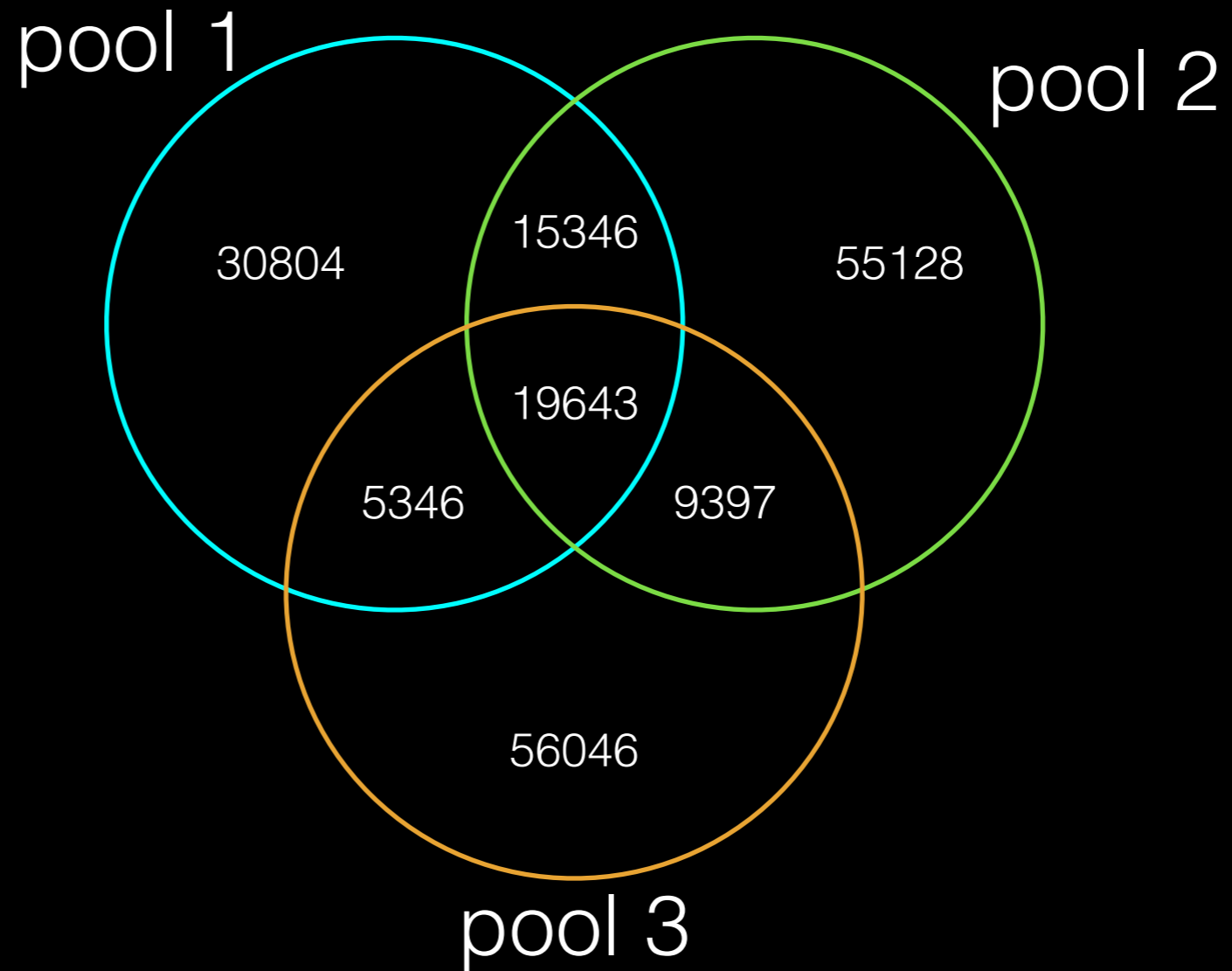
# Peak calling for Sutton Assay

Anurag Sethi  
May 2015

# Pipeline for analyzing each pool



# Comparison of peaks (MACS)



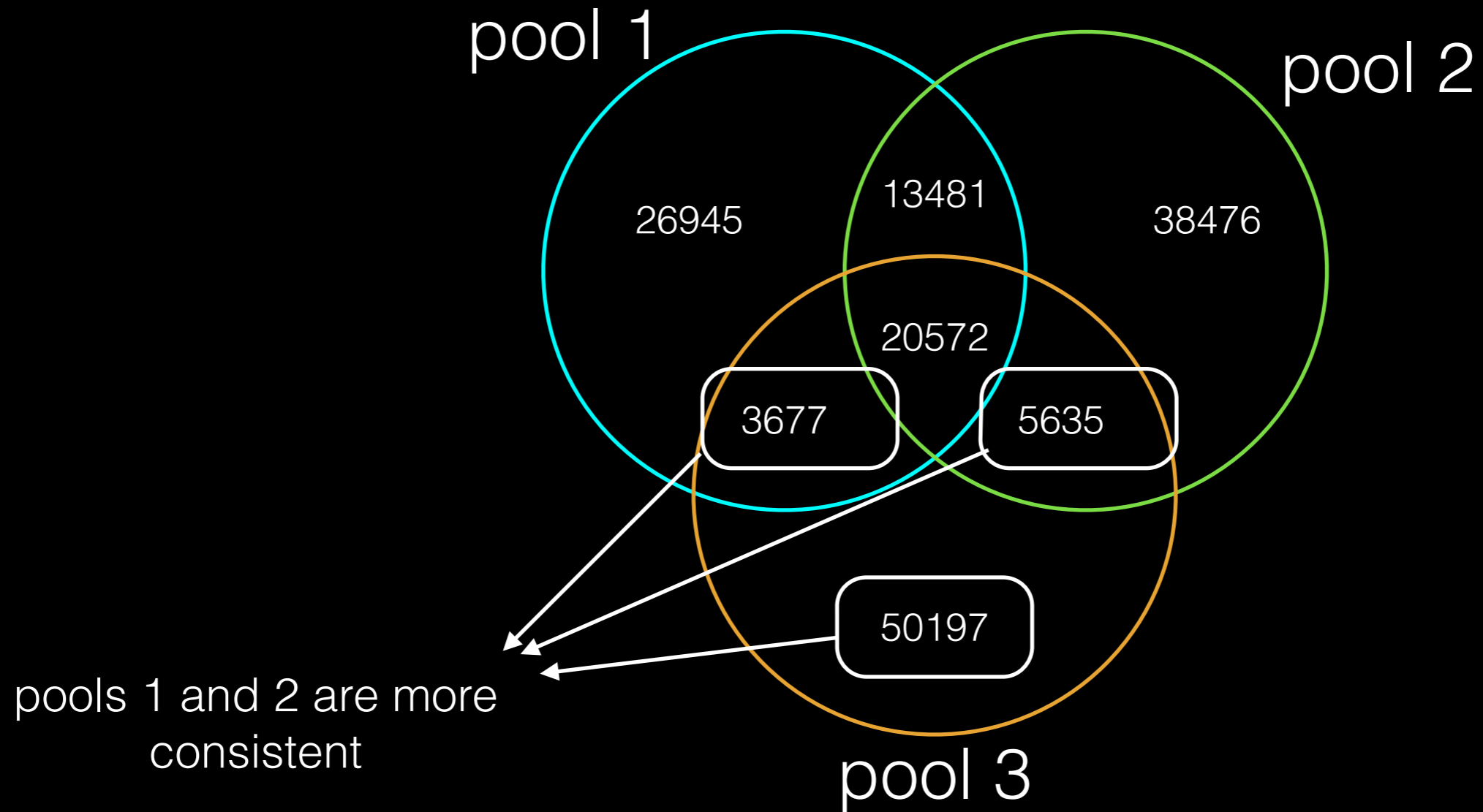
At least 20% overlap of peaks

# Comparison of peaks (HOMER)



At least 20% overlap of peaks

# Comparison of peaks (HOMER)



At least 20% overlap of peaks

## Comparison of peaks (HOMER vs MACS)

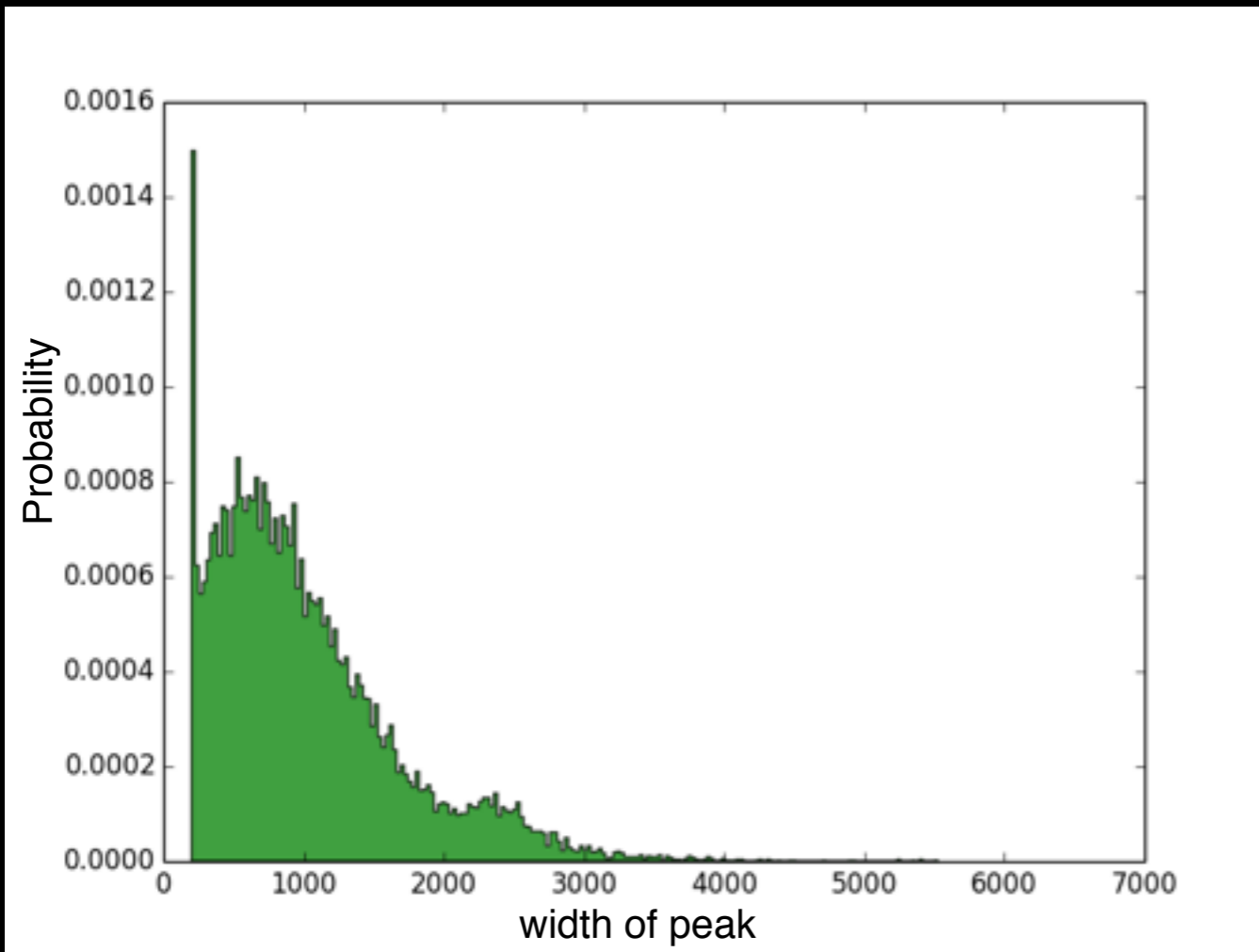
>90% peaks overlap in pools 1 and 2.  
67% of peaks overlap in pool 3.

14648/19643 peaks overlap between shared peaks.

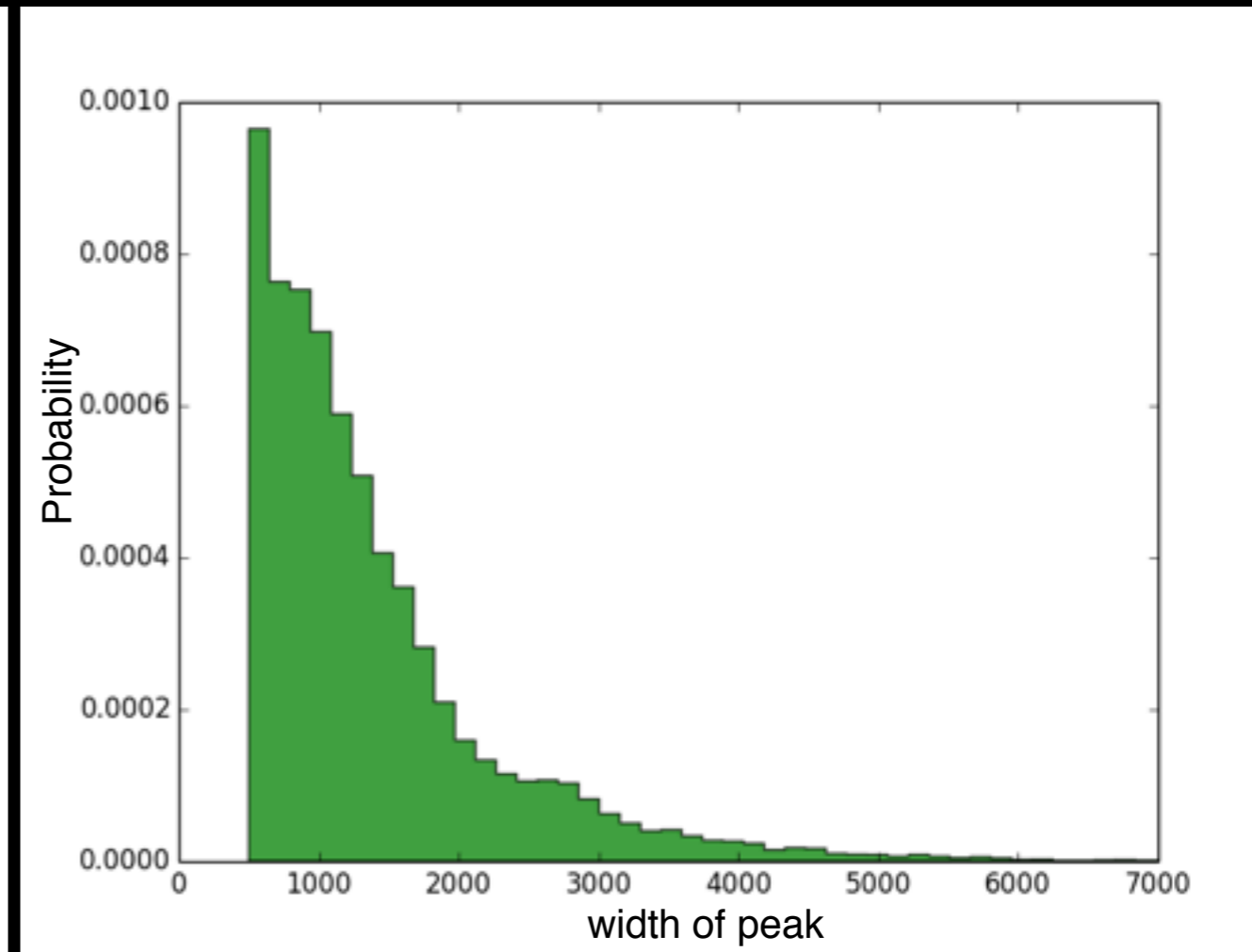
## Comparison of peaks (new vs old)

10696/20572 HOMER peaks overlap with old peaks.  
8683/19643 MACS peaks overlap with old peaks.

# Length distribution of peaks



MACS peaks

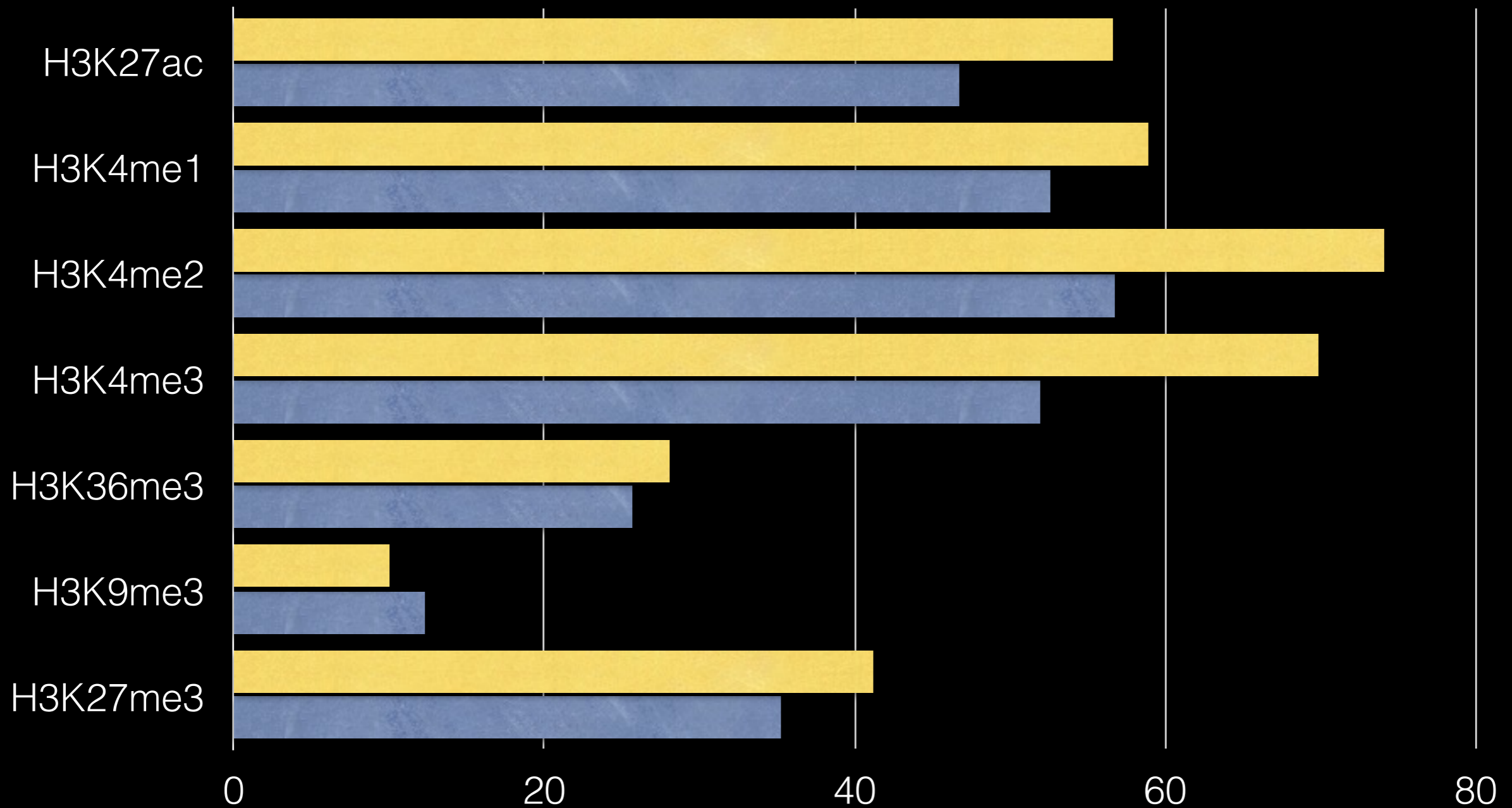


HOMER peaks

Mean size close to 900-1200 bp width.  
HOMER peaks are larger on average (1 peak of 30 kb width)

# Overlap of shared peaks with histone marks

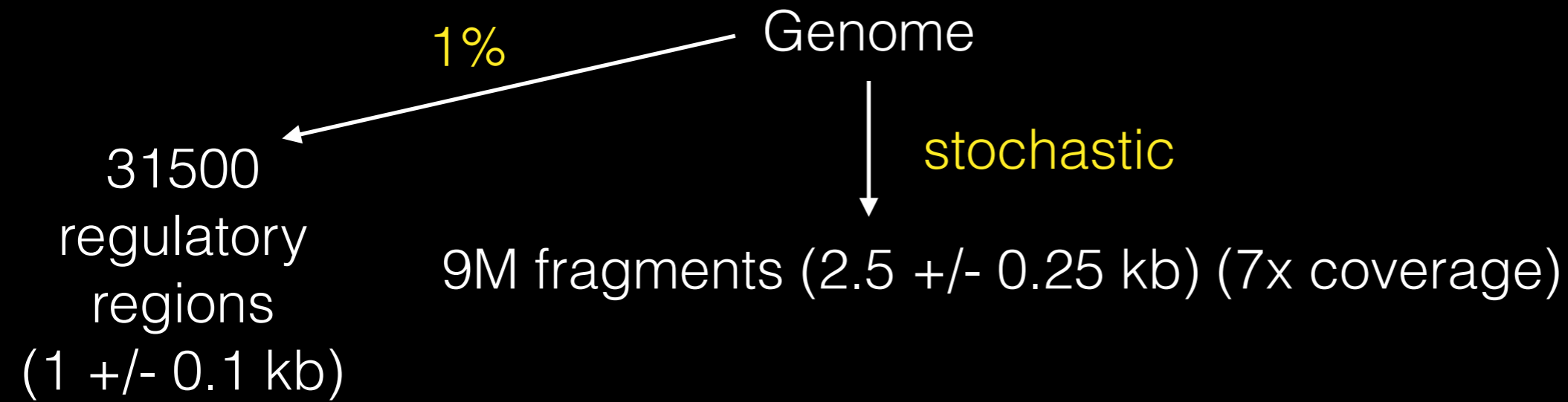
New versus old



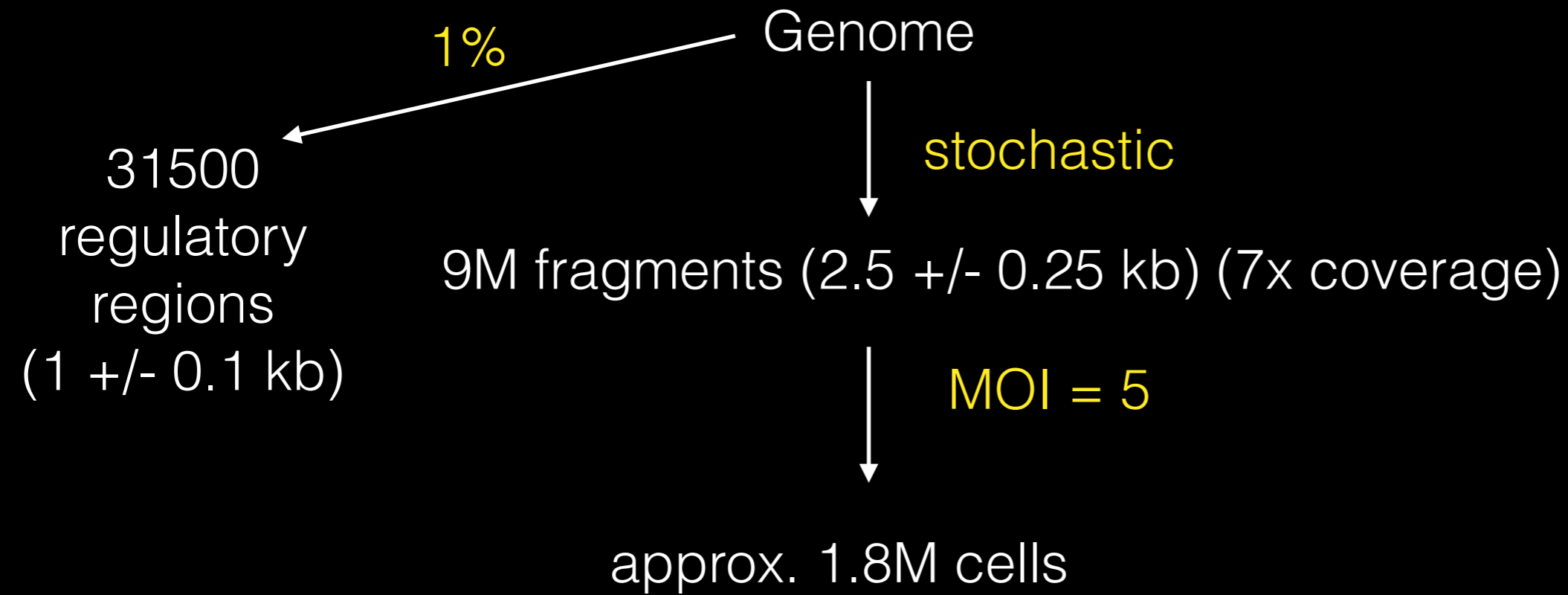
**10.3%** (**21.4%**) of peaks outside these histone peaks



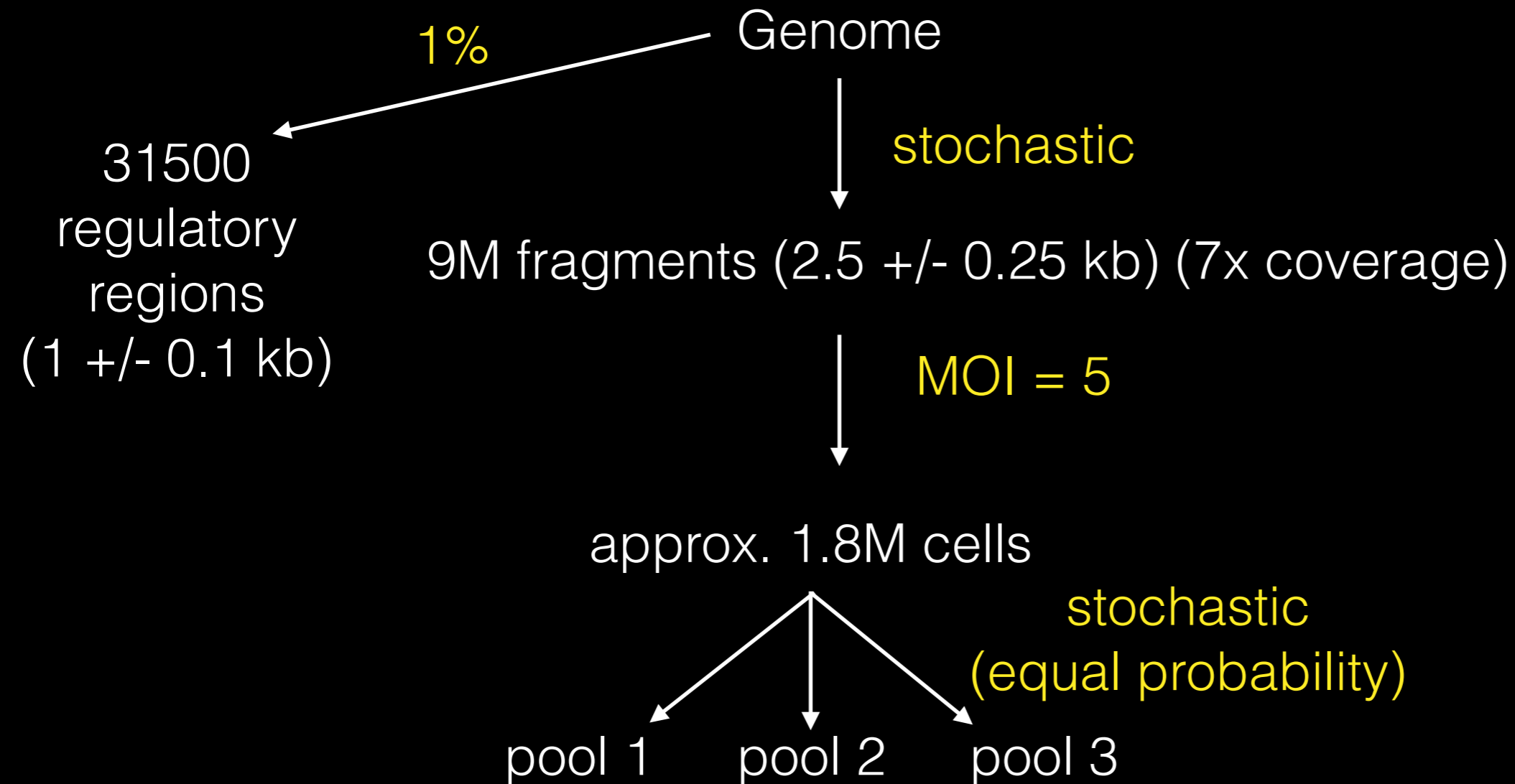
# Simulation pipeline (what I have done so far)



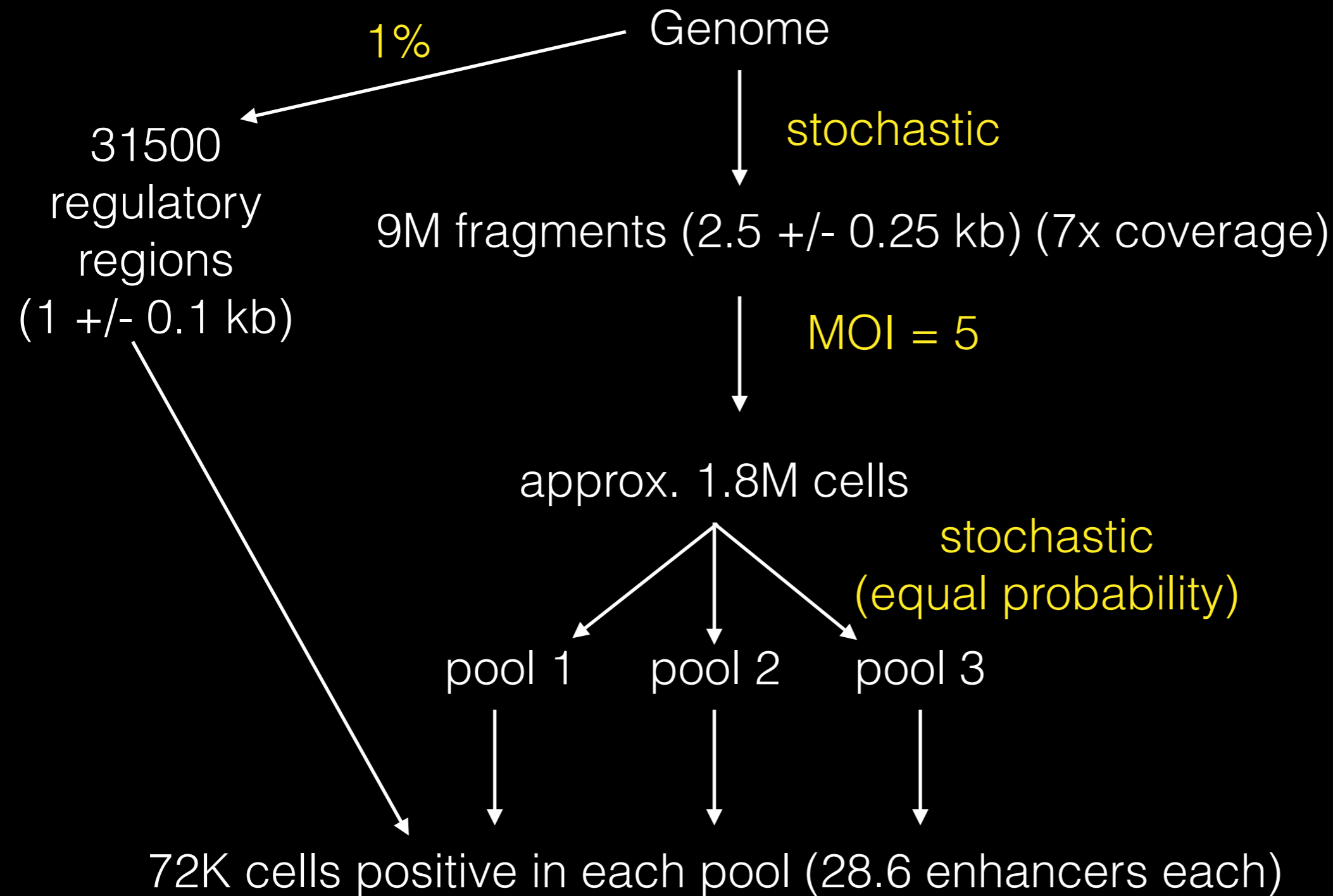
# Simulation pipeline (what I have done so far)



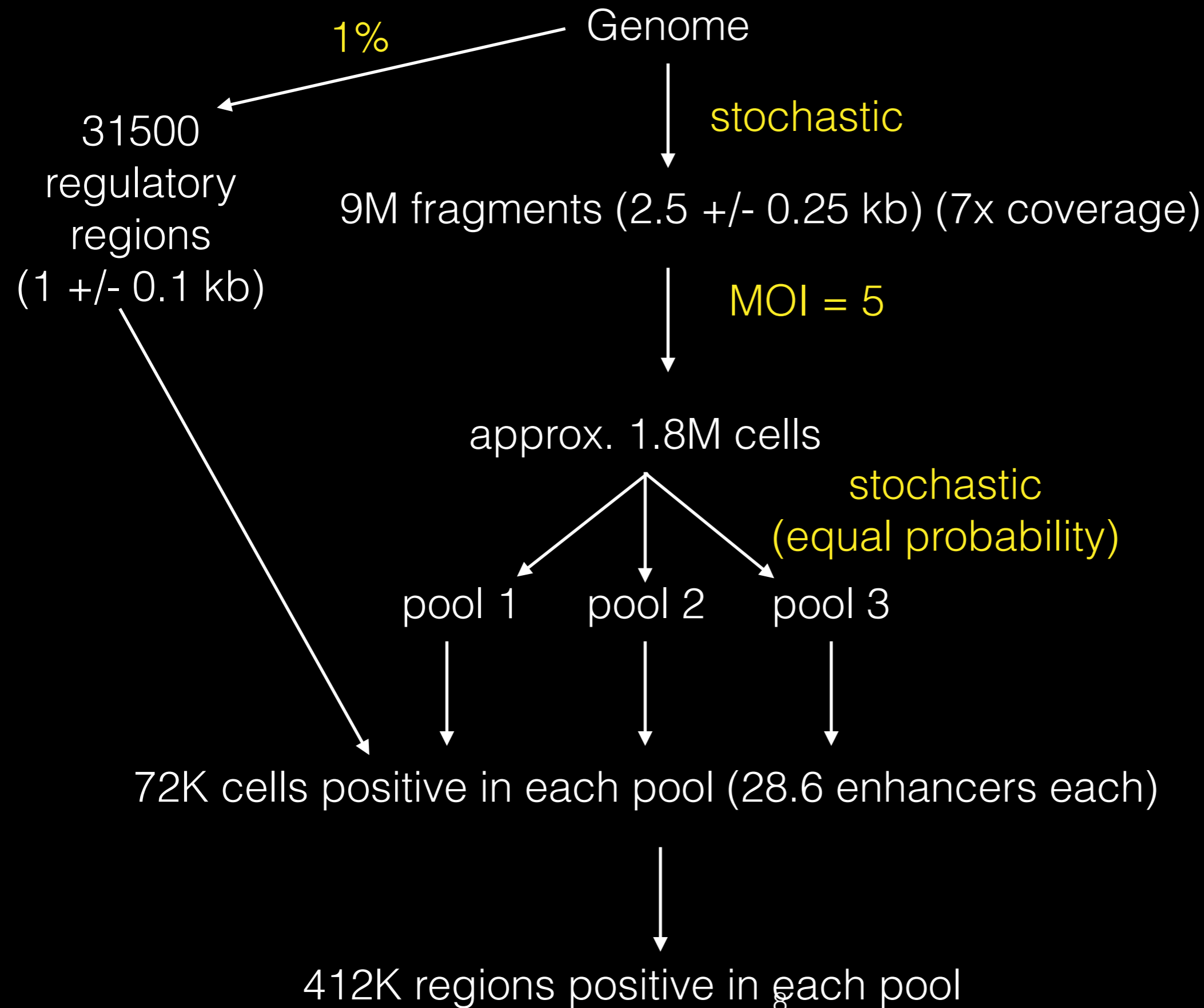
# Simulation pipeline (what I have done so far)



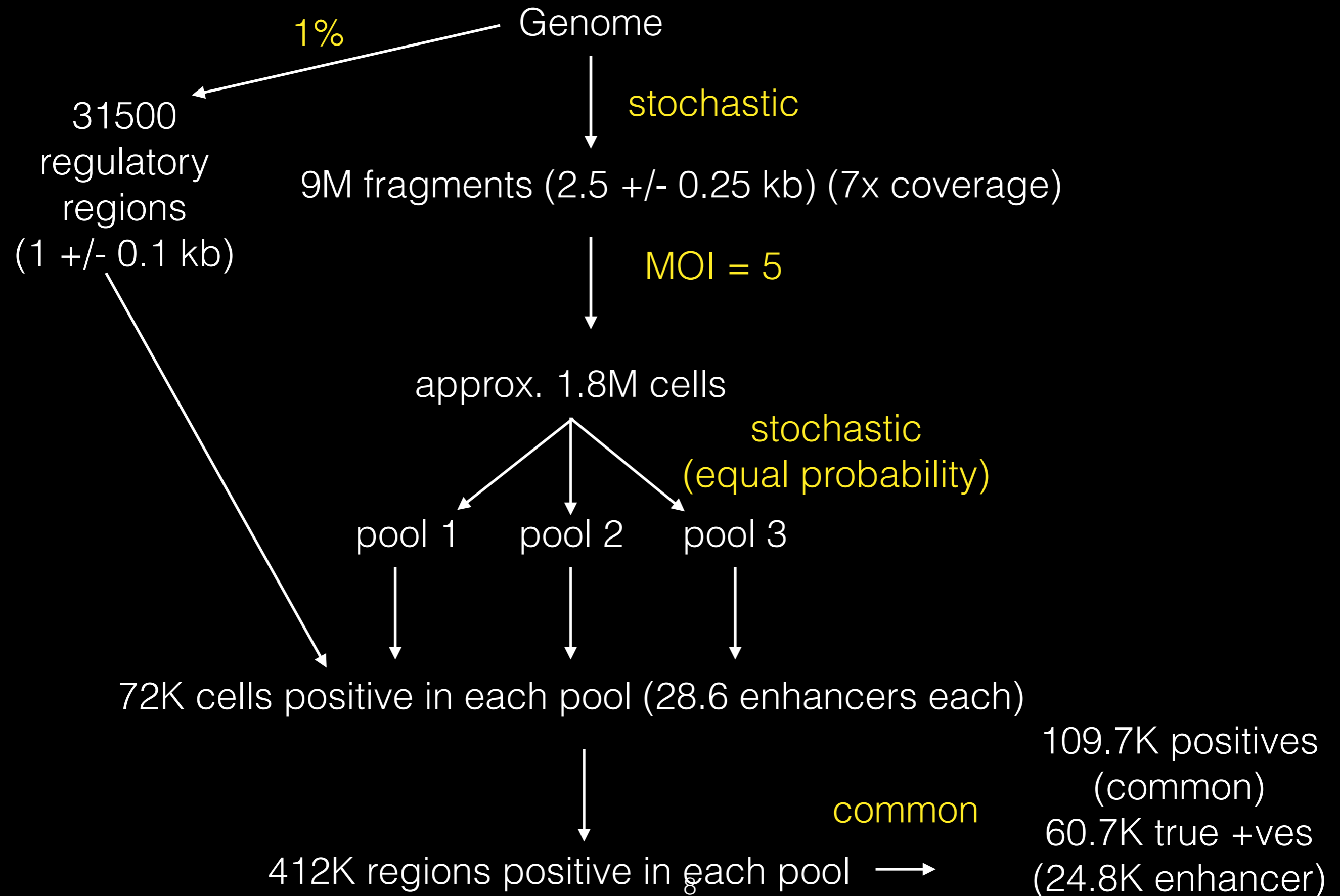
# Simulation pipeline (what I have done so far)



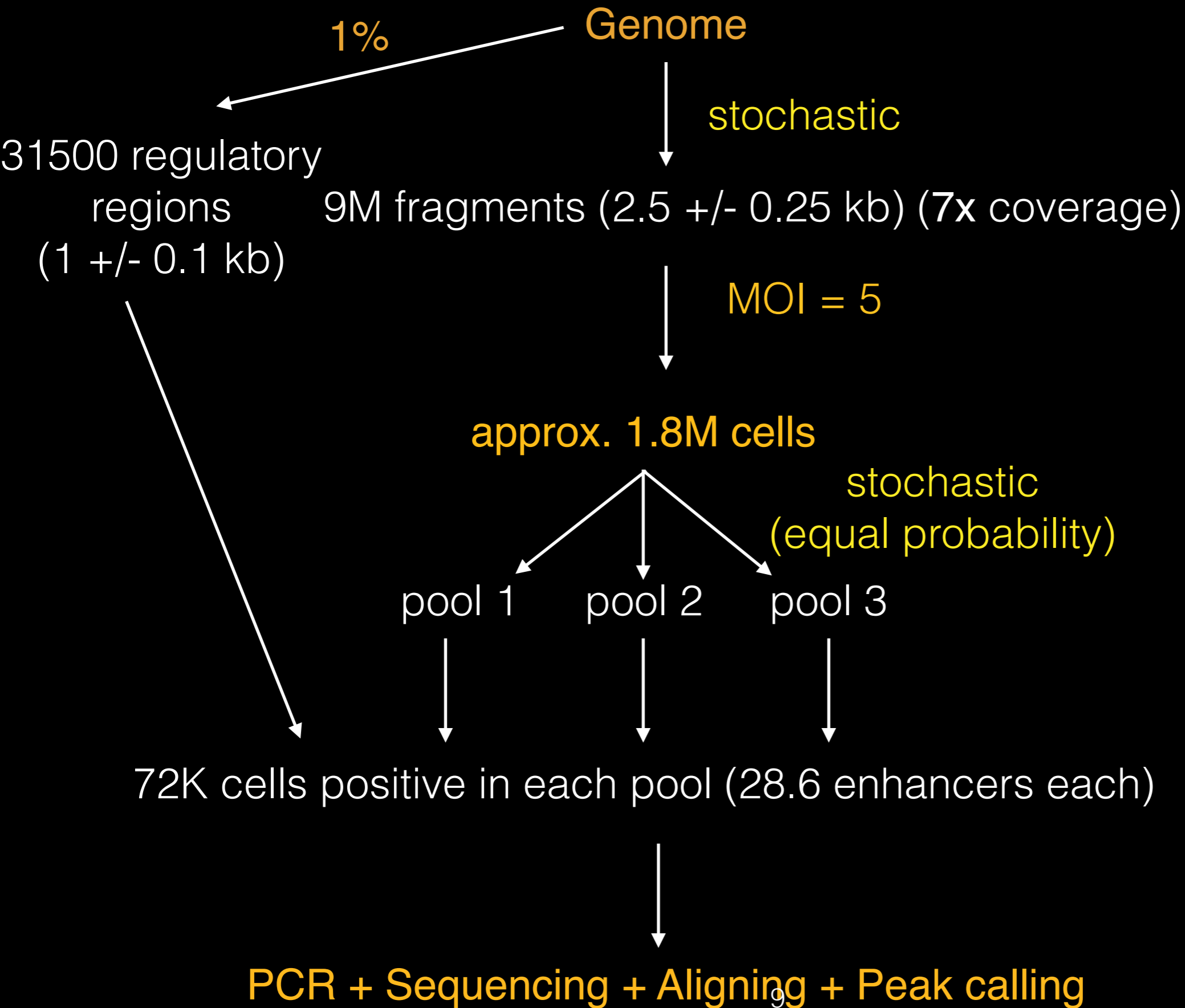
# Simulation pipeline (what I have done so far)



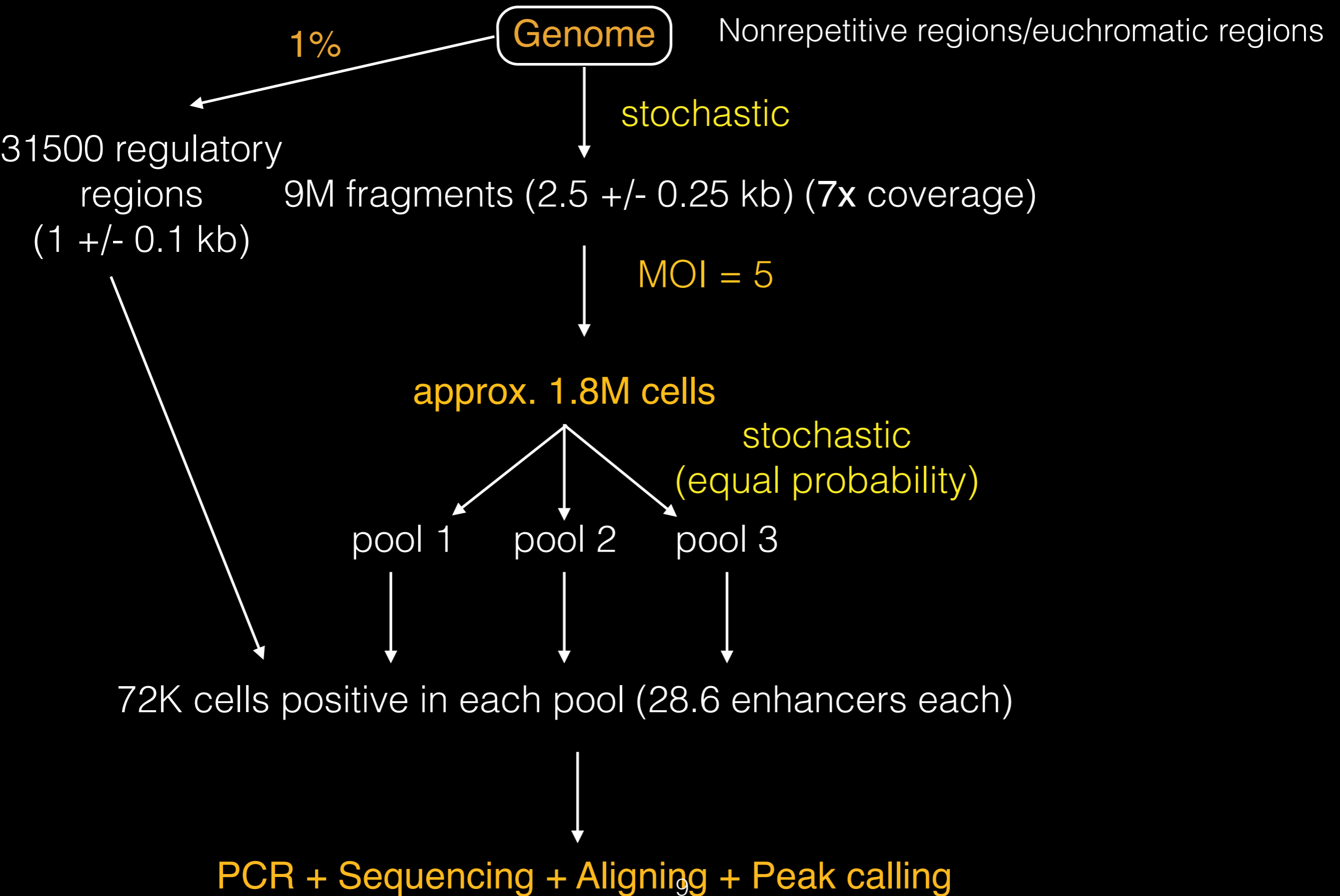
# Simulation pipeline (what I have done so far)



# Improvements in pipeline

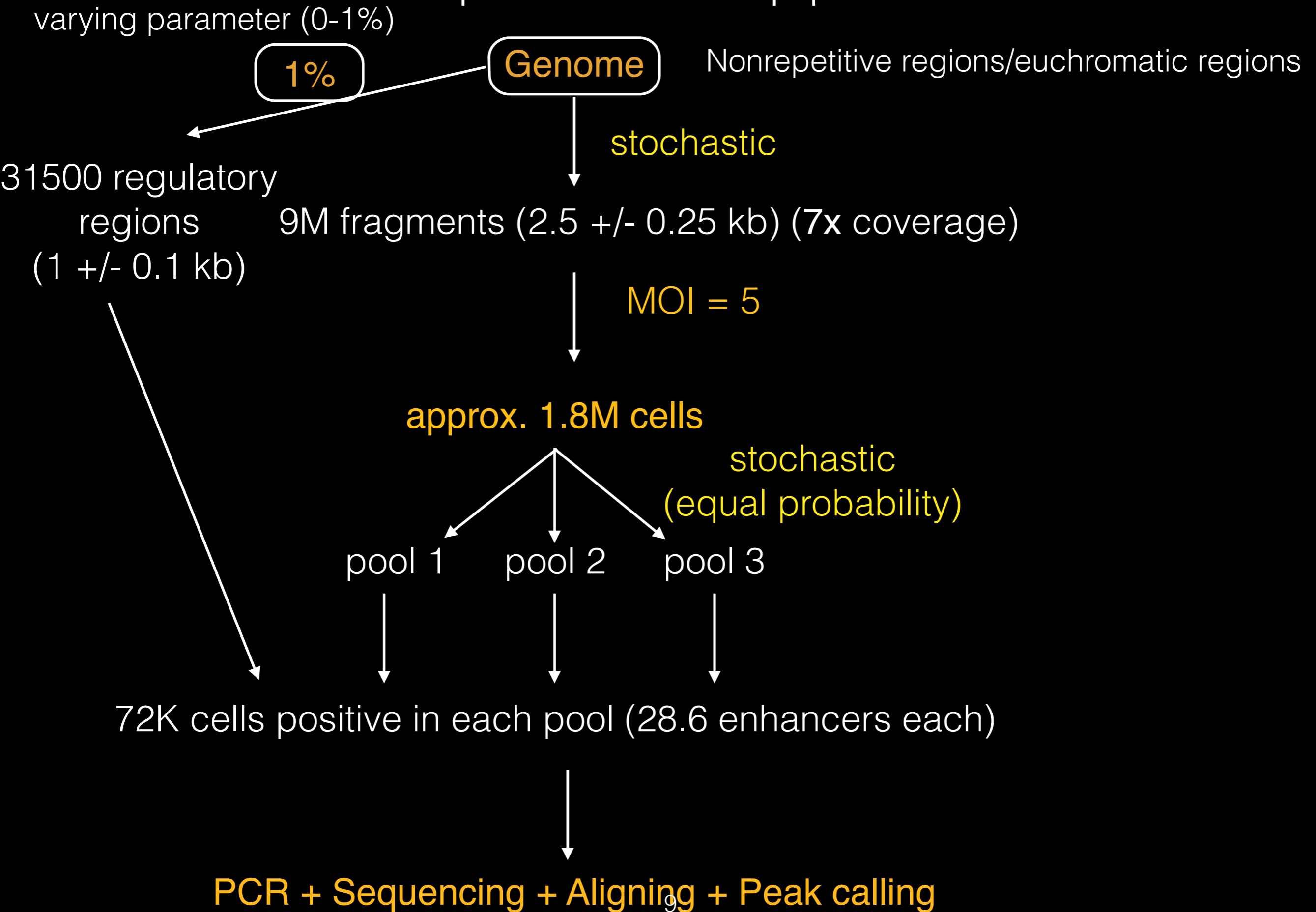


# Improvements in pipeline

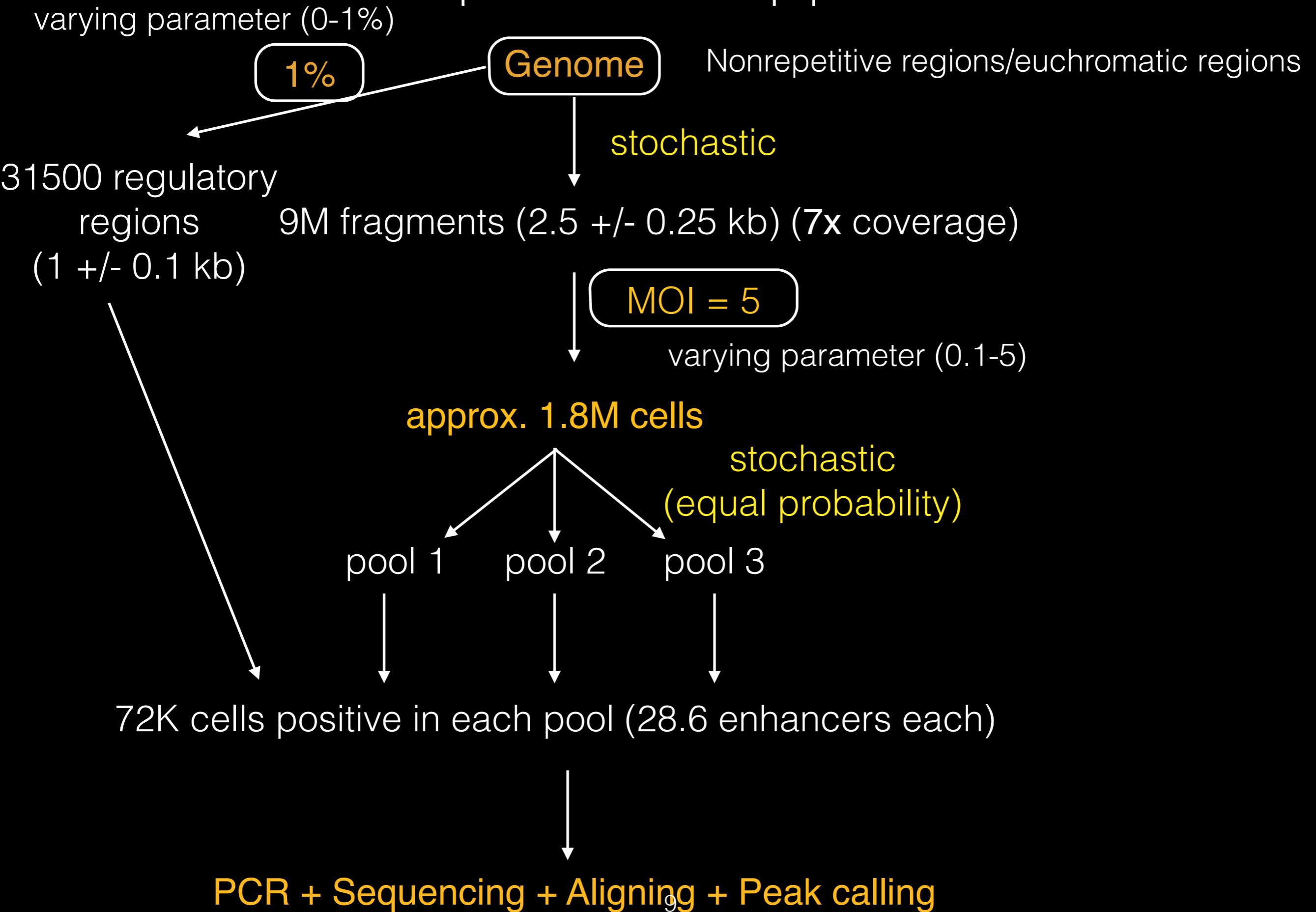




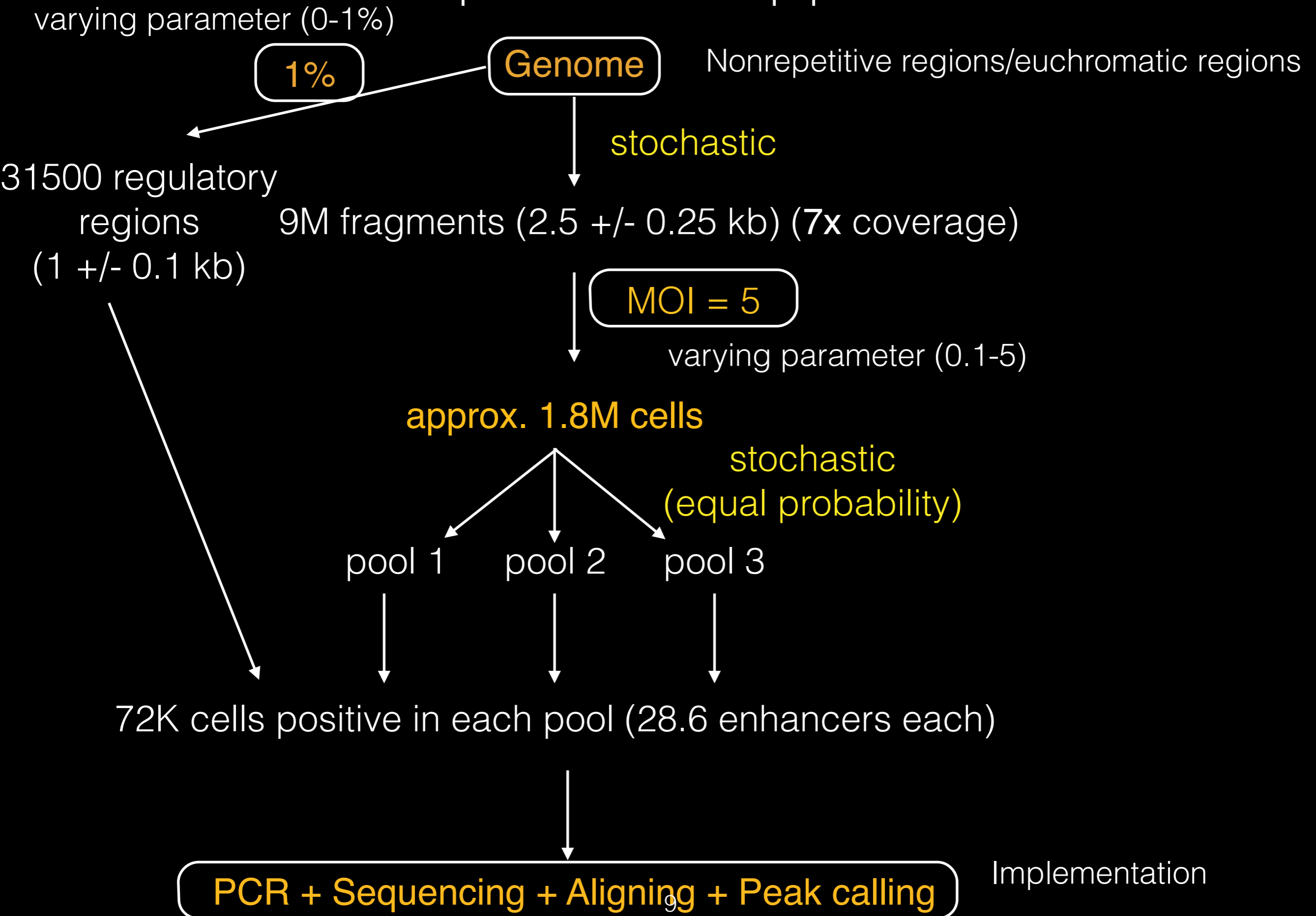
# Improvements in pipeline



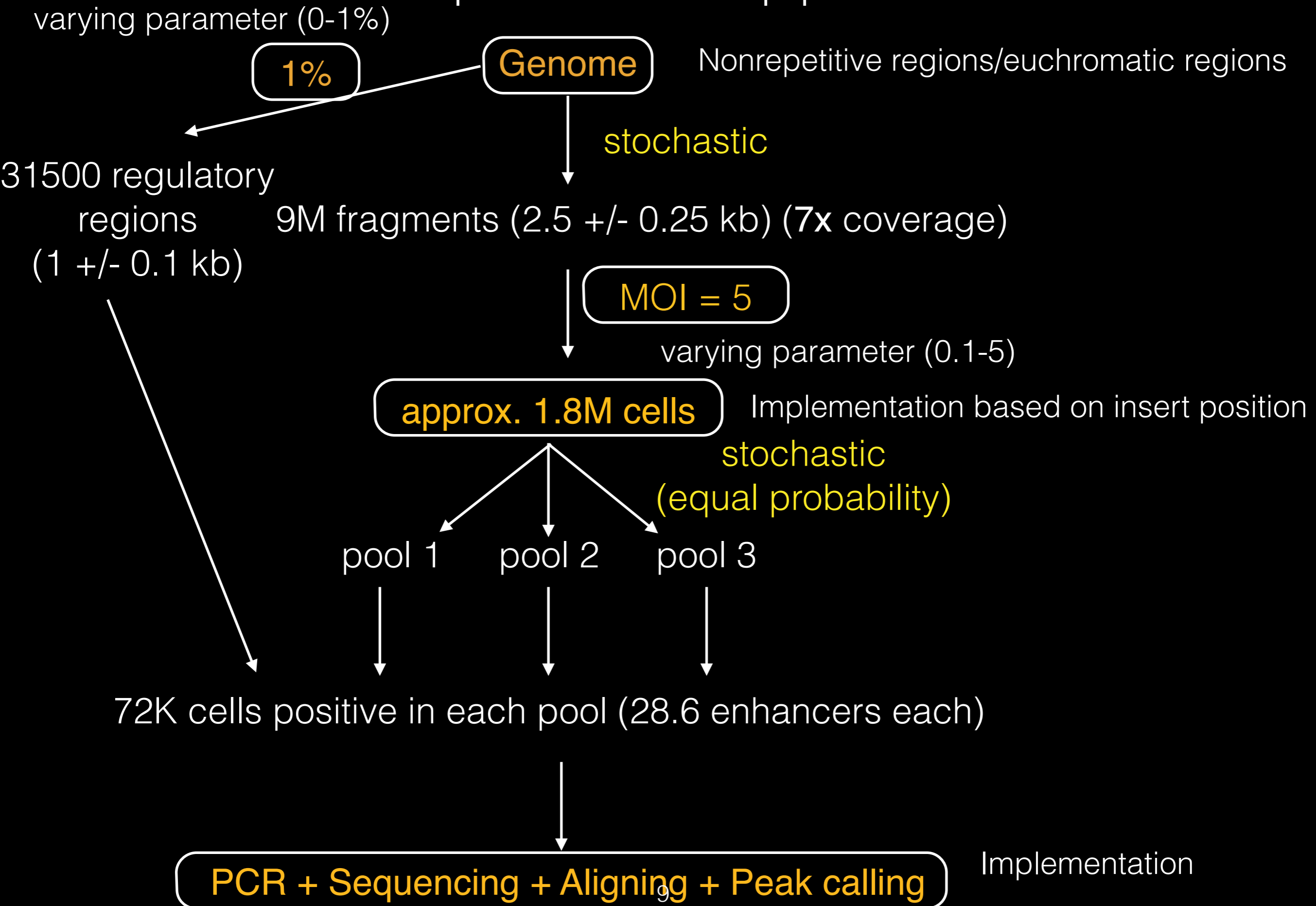
# Improvements in pipeline



# Improvements in pipeline



# Improvements in pipeline



# Future Work

Most of the work is related to the simulation method.

This can probably help decide threshold (5% FDR currently) for peak calling.

Postprocessing Analysis:

TF binding peaks on enhancers/promoters to better define enhancer elements.

TF motifs on enhancers/promoters.

Does this assay work better with certain kinds of promoters/enhancers?

A few slides about our method for predicting enhancers