

```
tar -xf g1e.tar.xz
bowtie2-build -f chr19.fa chr19
```

```
conda create -n macs2 macs2
source activate macs2
```

```
bowtie2 -p 8 -q input_ER4.fastq -x chr19 -S input_ER4.sam
bowtie2 -p 8 -q input_G1E.fastq -x chr19 -S input_G1E.sam
bowtie2 -p 8 -q CTCF_G1E.fastq -x chr19 -S CTCF_G1E.sam
bowtie2 -p 8 -q CTCF_ER4.fastq -x chr19 -S CTCF_ER4.sam
```

```
macs2 callpeak -t CTCF_ER4.sam -c input_ER4.sam -f SAM --
outdir ER4 --name ER4
macs2 callpeak -t CTCF_G1E.sam -c input_G1E.sam -f SAM --
outdir G1E --name G1E
source deactivate
```

```
bedtools intersect -a /Users/cmdm/qbb2018-answers/lab6/
G1E/G1E_peaks.narrowPeak -b /Users/cmdm/qbb2018-answers/
lab6/ER4/ER4_peaks.narrowPeak -v > peakslost
```

```
bedtools intersect -a /Users/cmdm/qbb2018-answers/lab6/ER4/
ER4_peaks.narrowPeak -b /Users/cmdm/qbb2018-answers/lab6/
G1E/G1E_peaks.narrowPeak -v > peaksgained
./barplots.py peaksgained peakslost
Mus_musculus.GRCm38.94_features.bed G1E/
G1E_peaks.narrowPeak ER4/ER4_peaks.narrowPeak
```