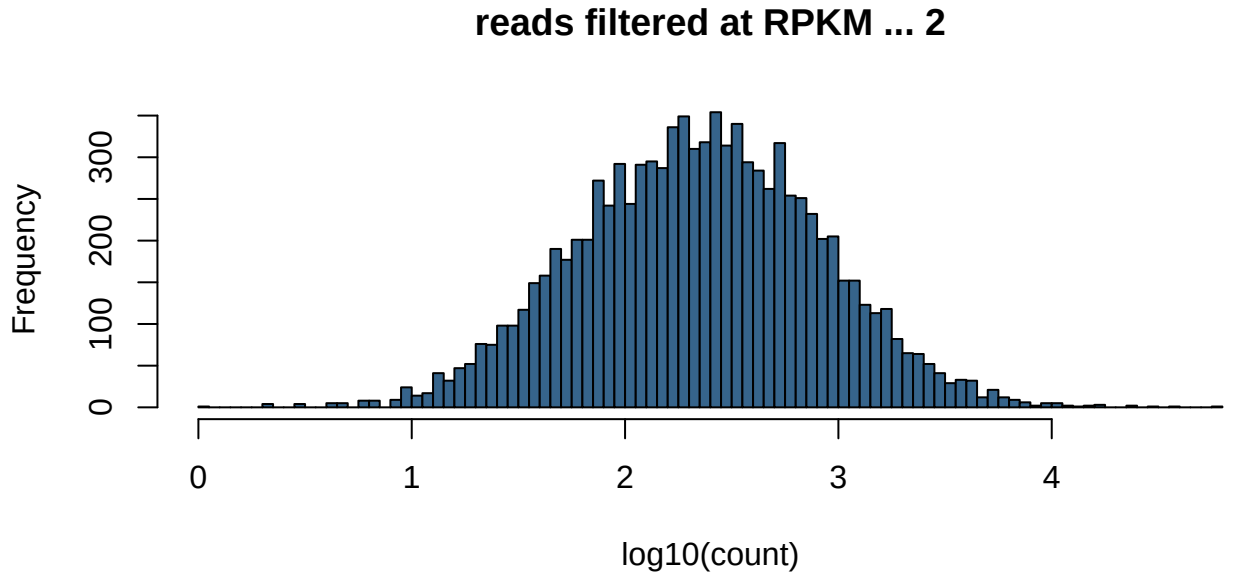
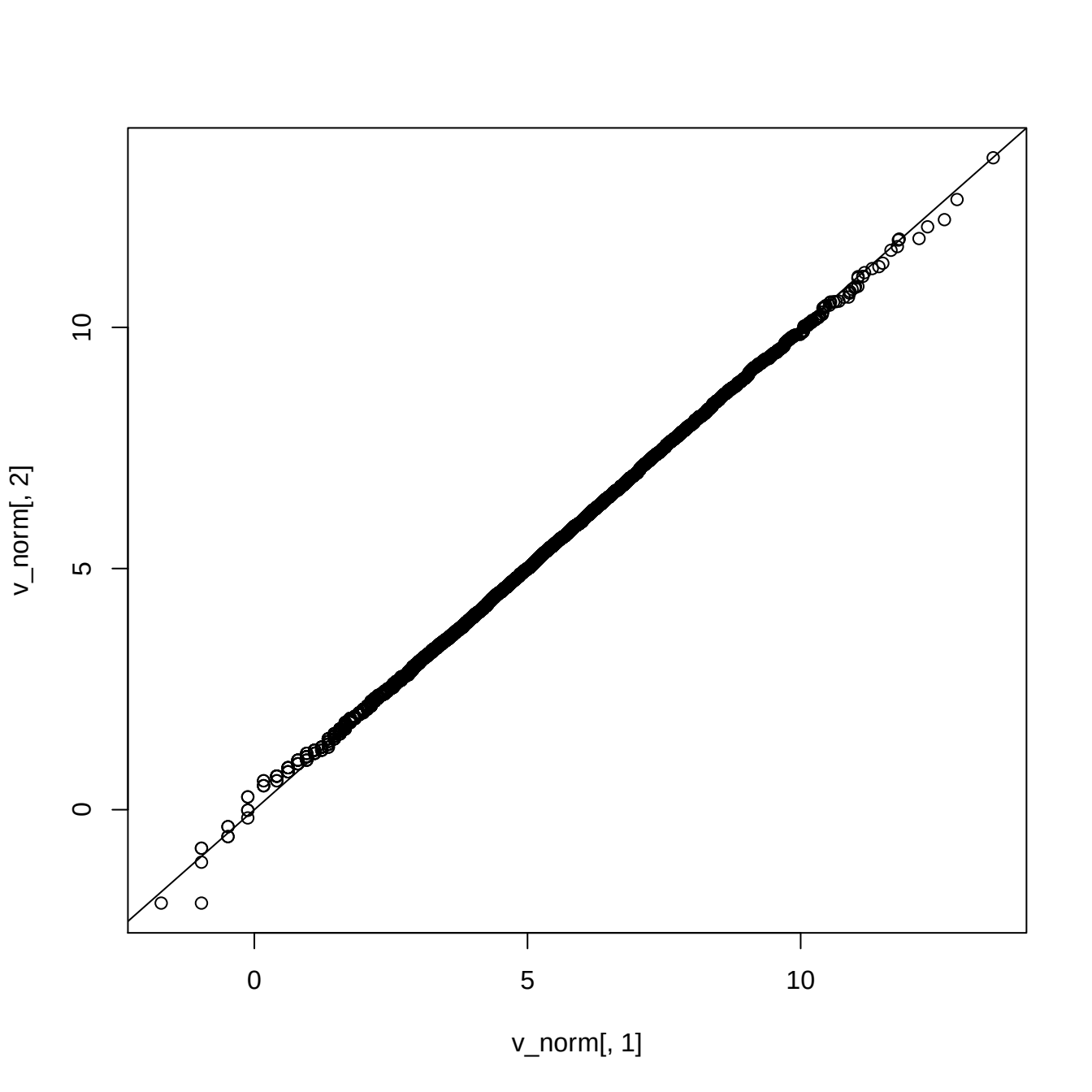
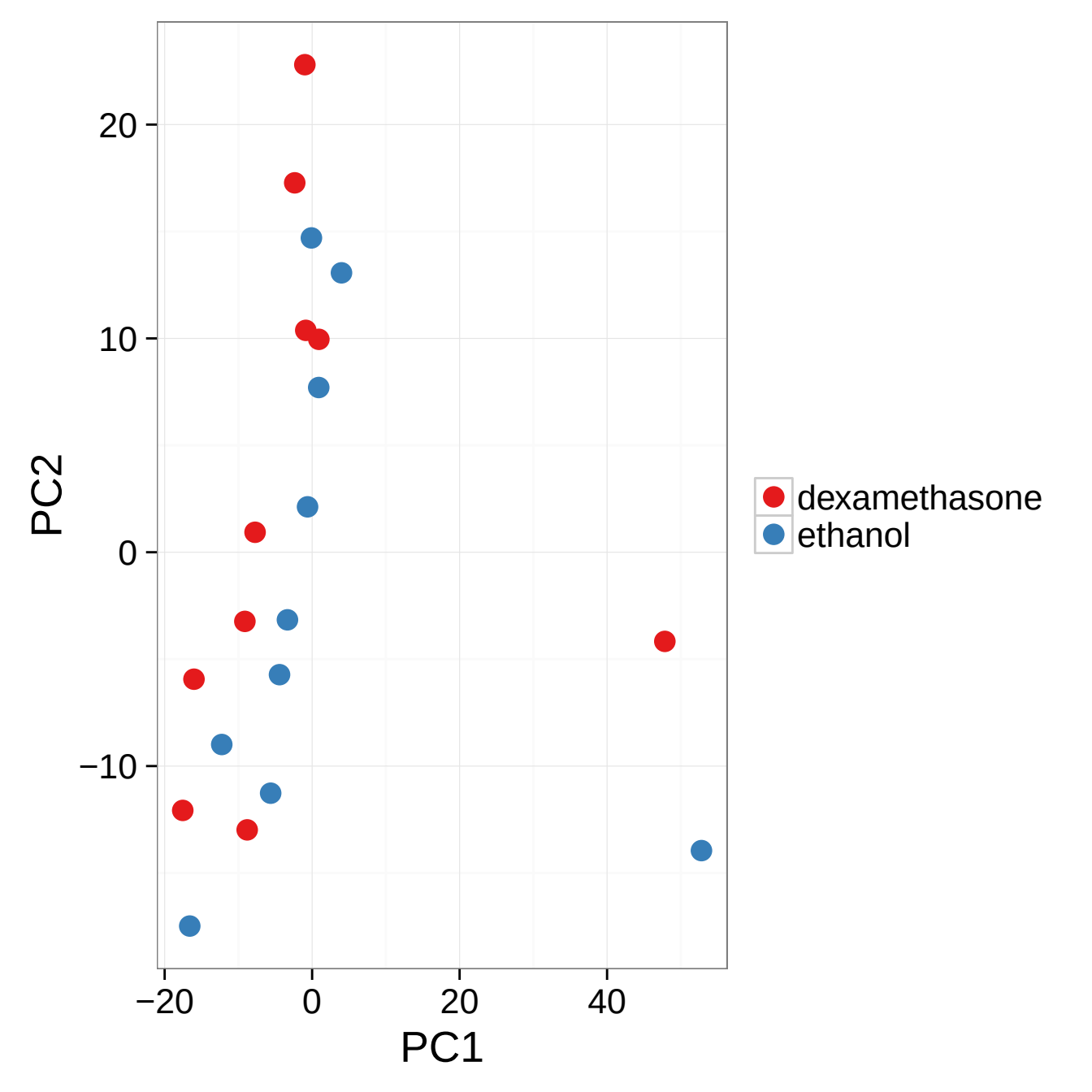
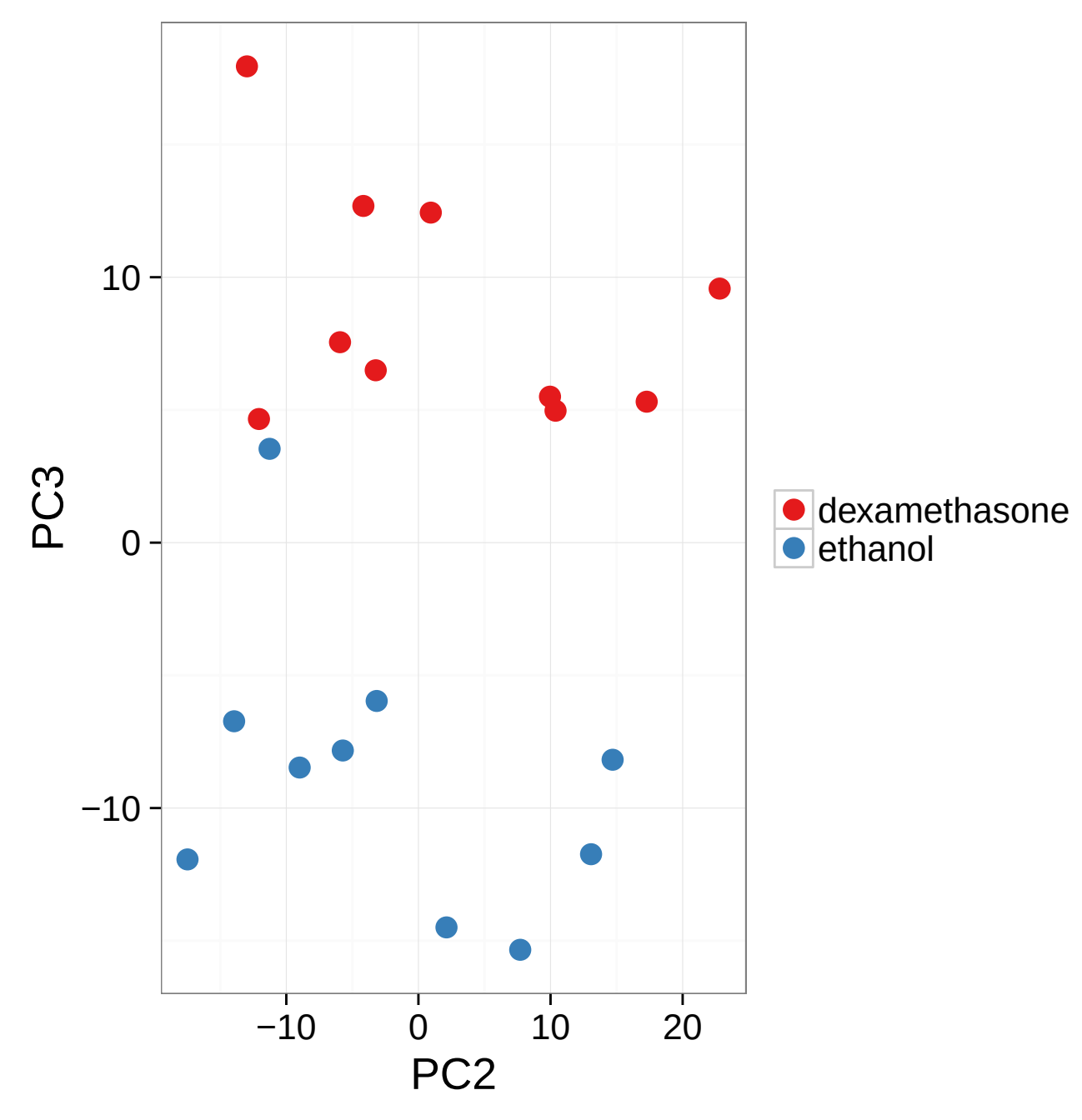
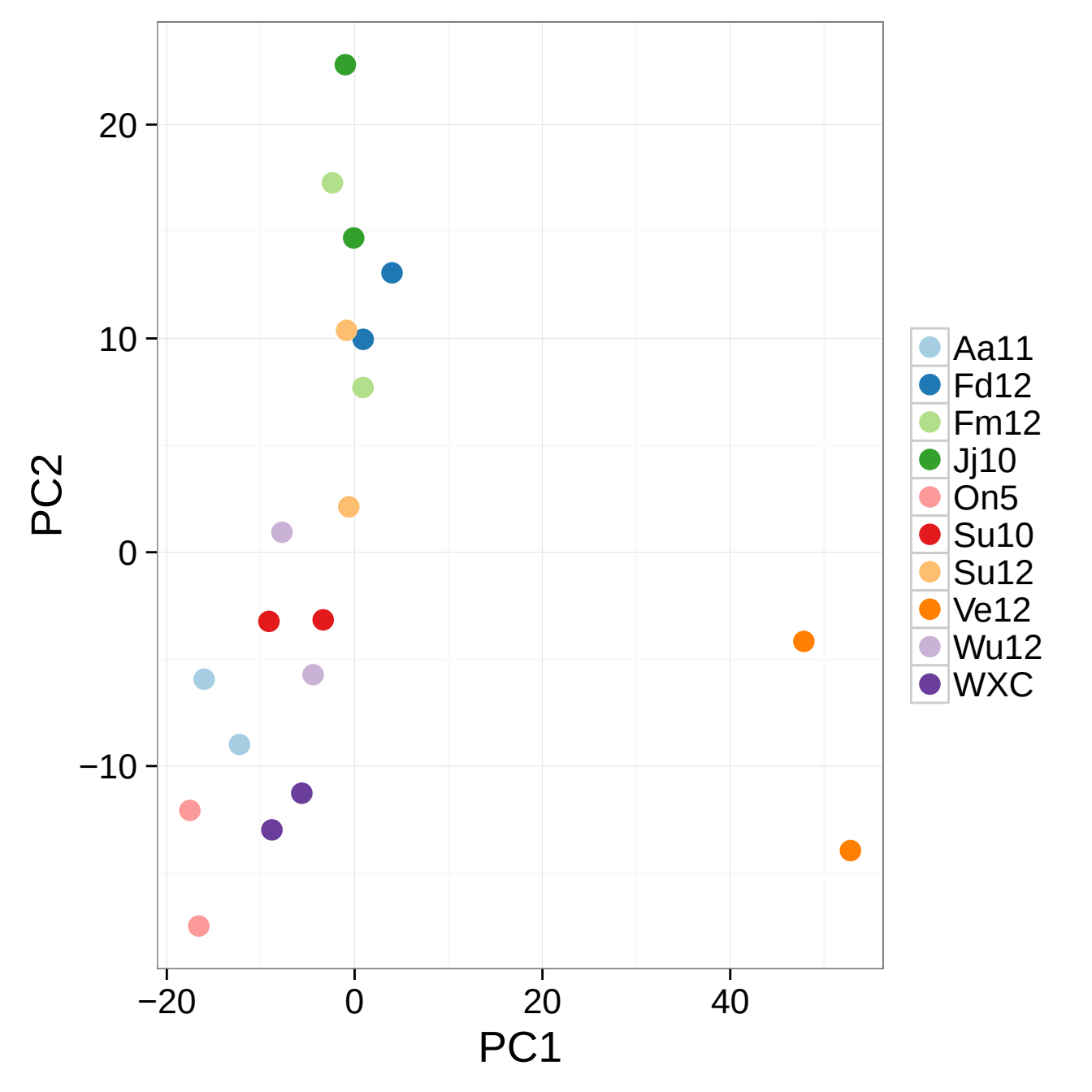
reads
Frequency
0
200
400
600
0
1
2
3
4
log10(count)

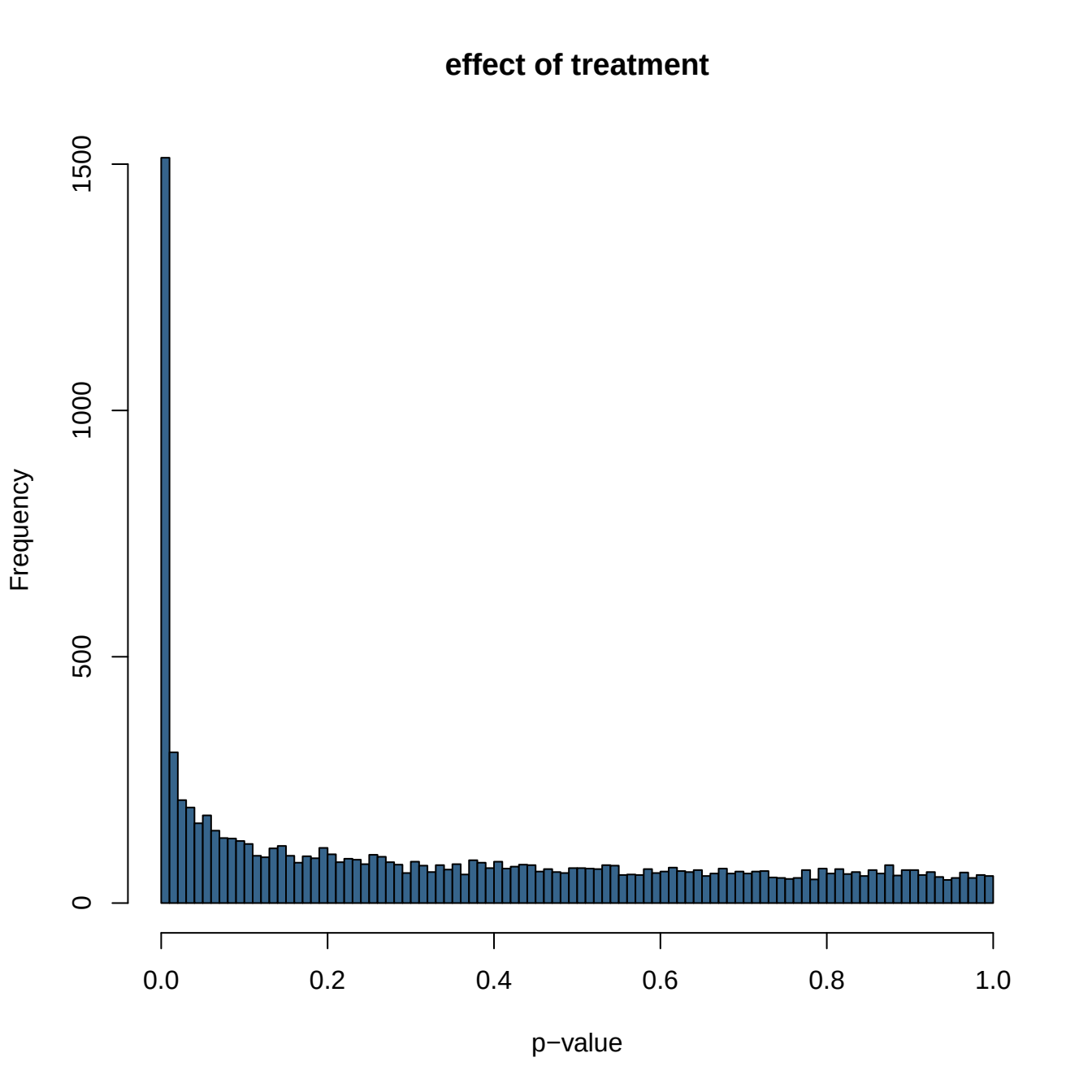

reads filtered at RPKM ... 2
Frequency
0
100
200
300
0
1
2
3
4
log10(count)

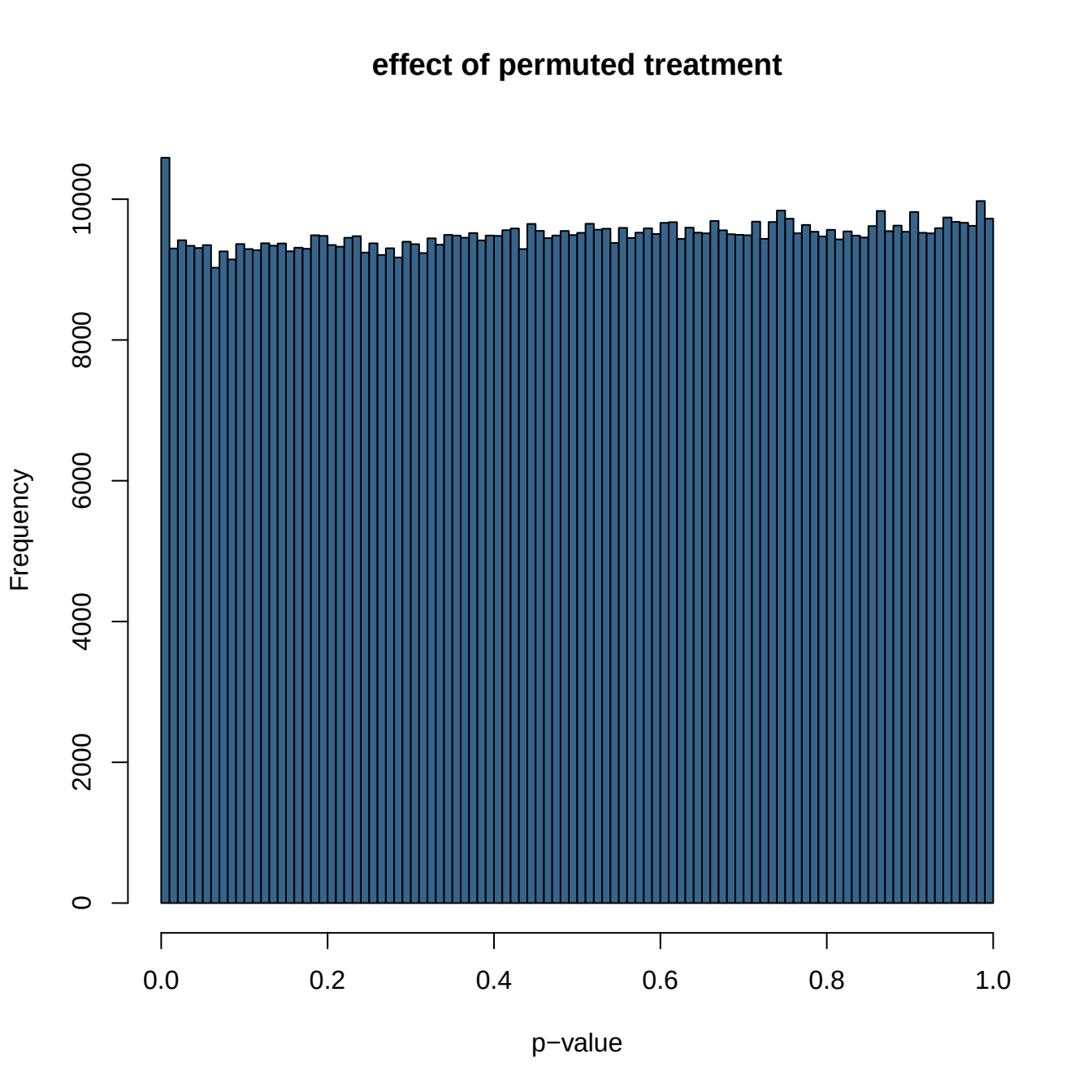

v_norm[, 2]
10
5
0
0
5
10
v_norm[, 1]

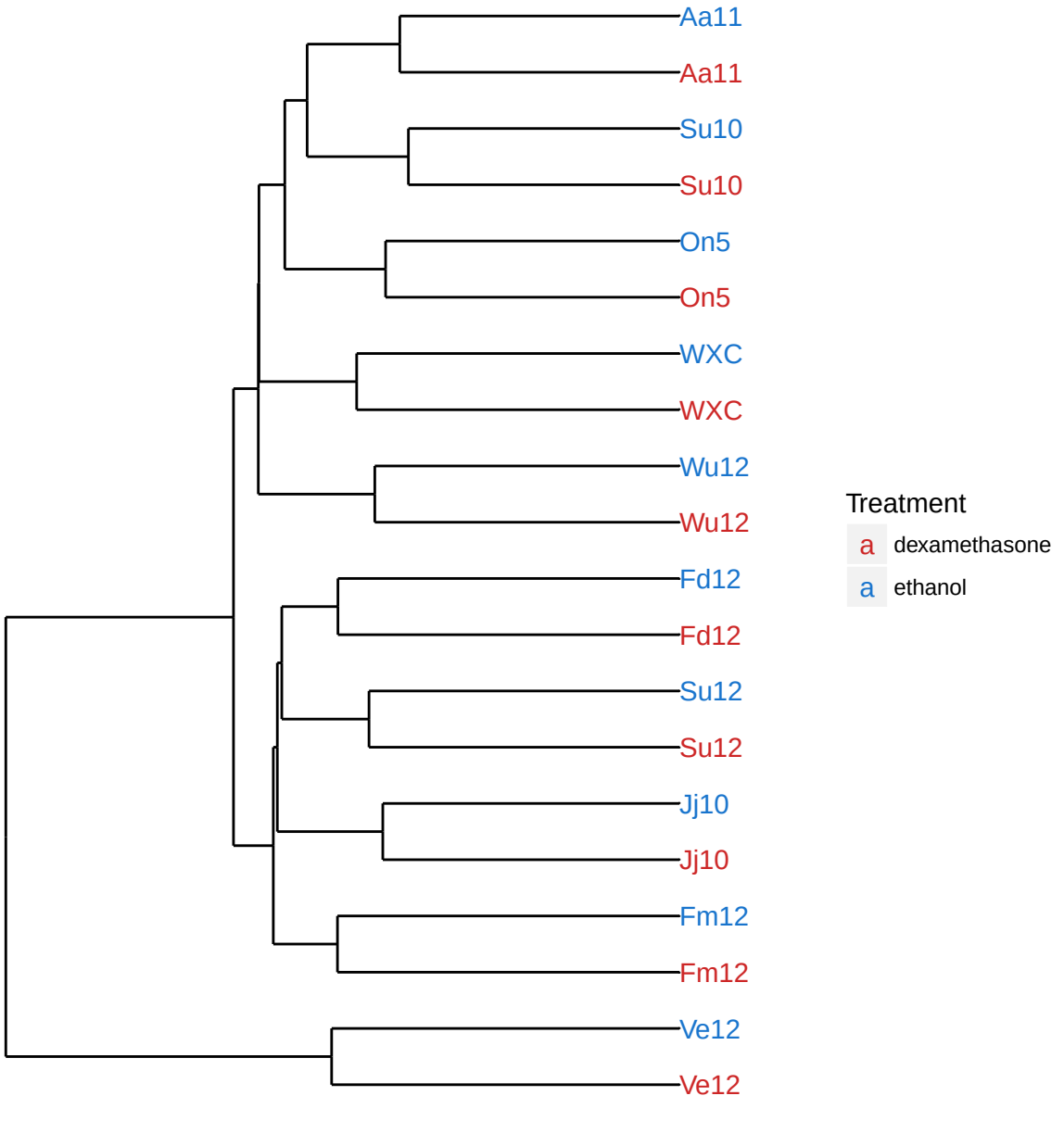

20
10
0
−10
PC2
−20
0
20
40
PC1
dexamethasone
ethanol

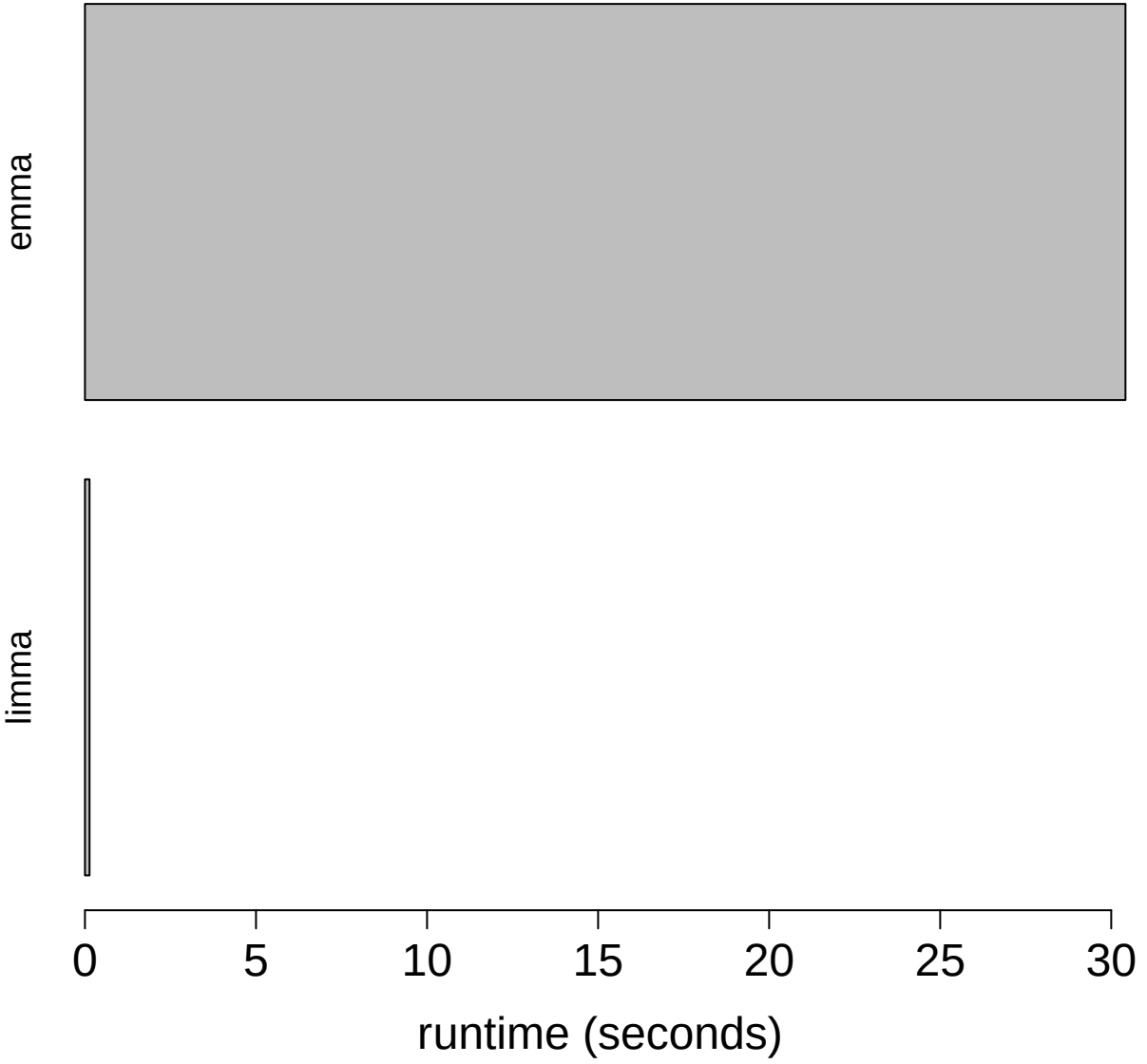

PC3
10
0
−10
−10
0
10
20
PC2
dexamethasone
ethanol

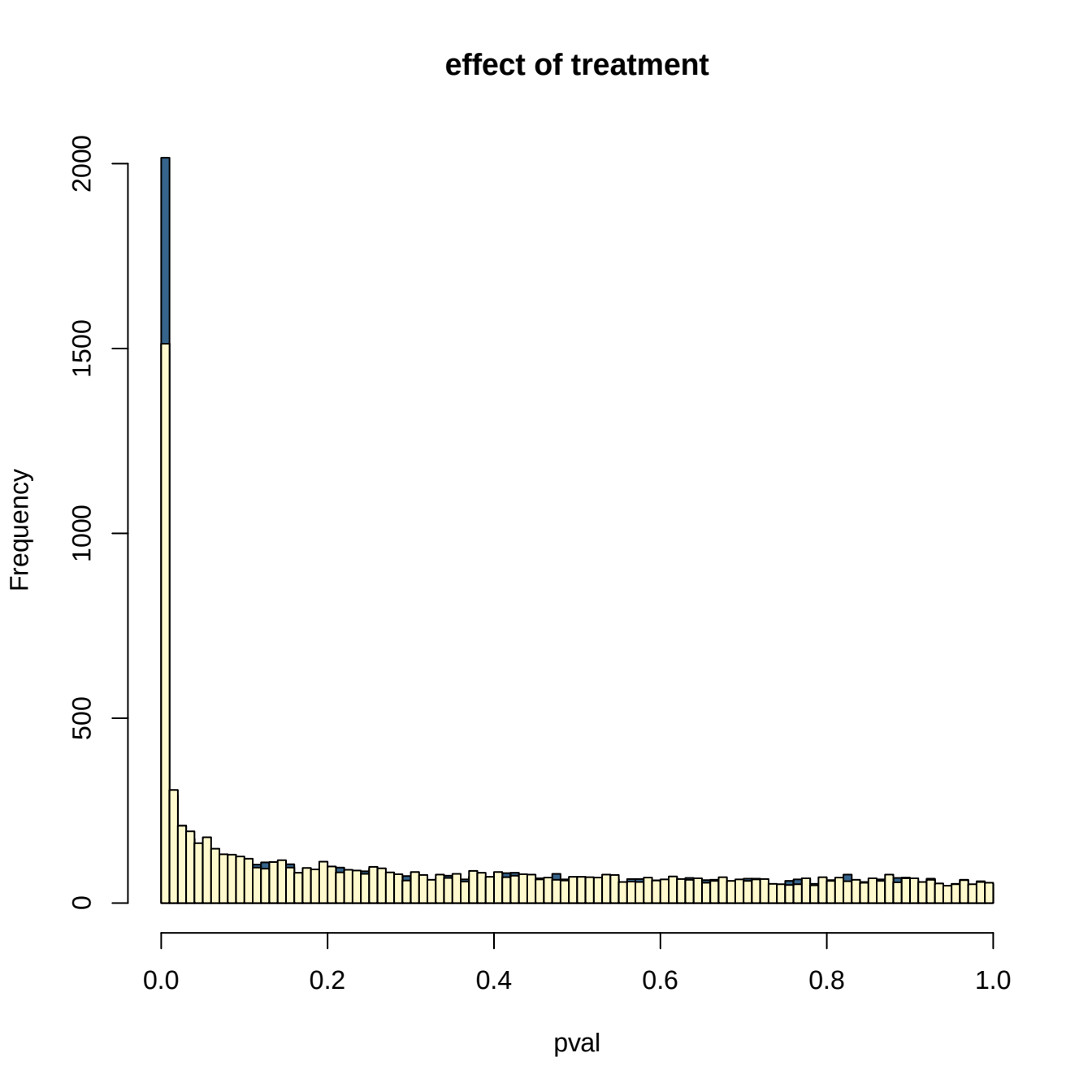

20
10
0
−10
PC2
−20
0
20
40
PC1
Aa11
Fd12
Fm12
Jj10
On5
Su10
Su12
Ve12
Wu12
WXC

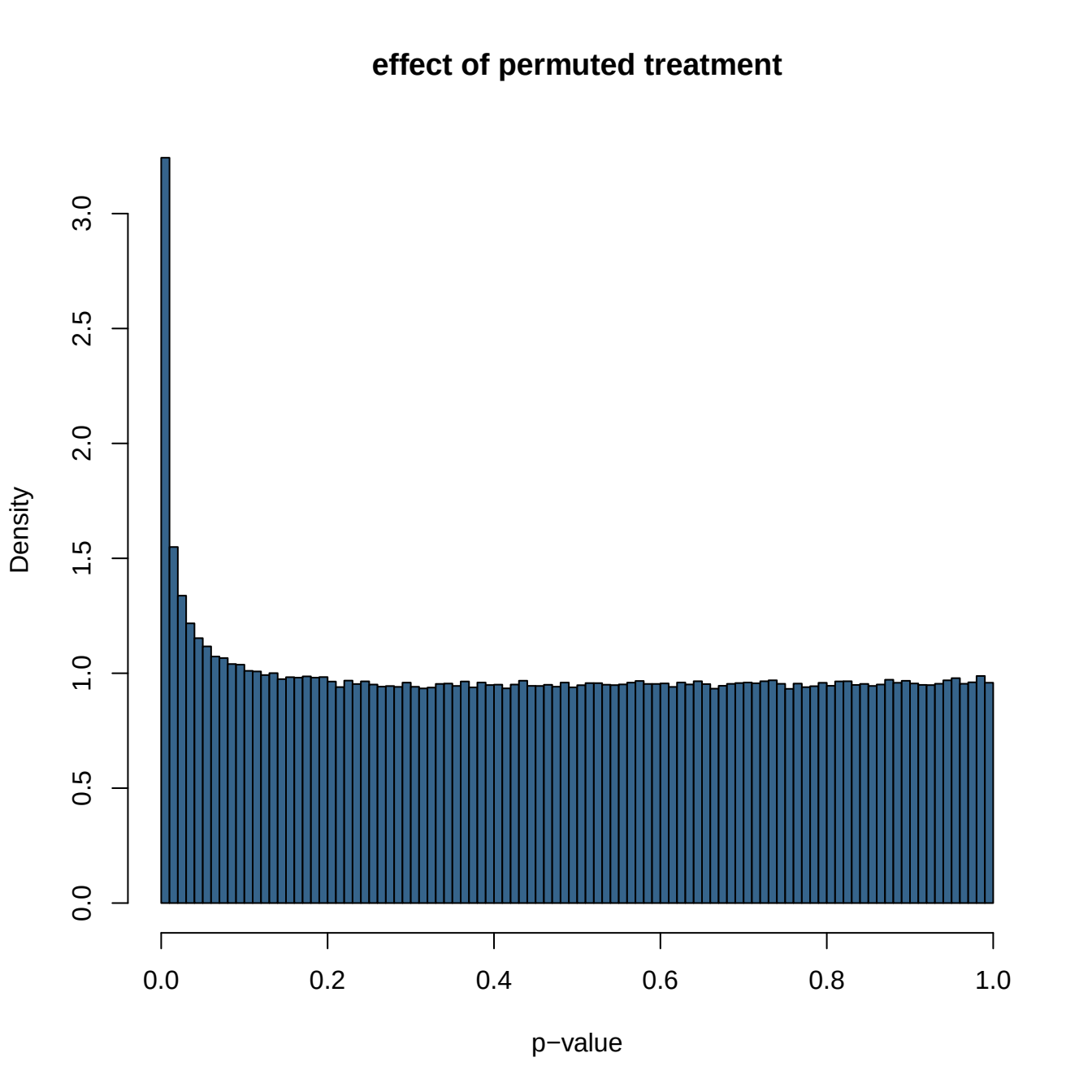

effect of treatment
Frequency
0
500
1000
1500
0.0
0.2
0.4
0.6
0.8
1.0
p−value

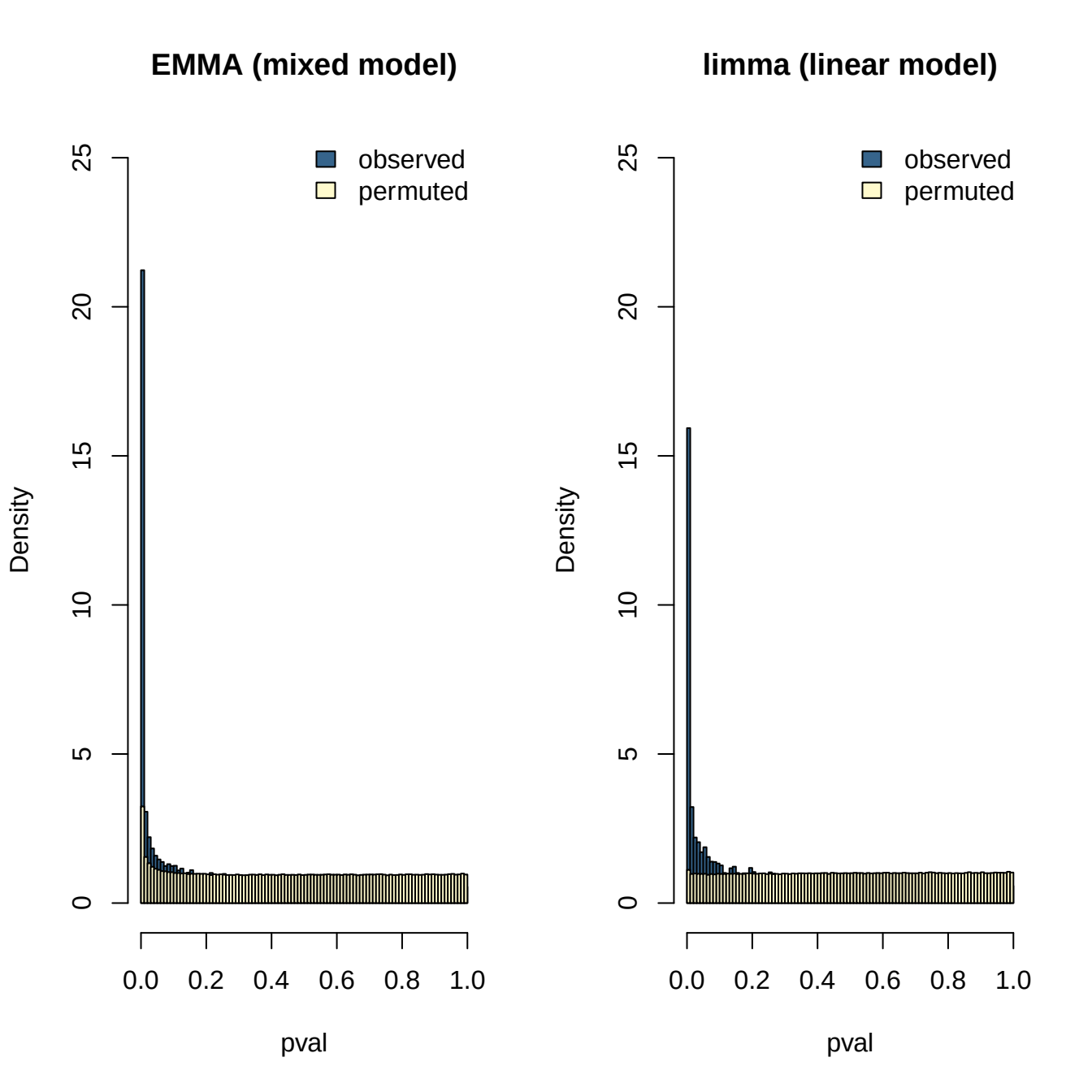

effect of permuted treatment
Frequency
0
2000
4000
6000
8000
10000
0.0
0.2
0.4
0.6
0.8
1.0
p−value

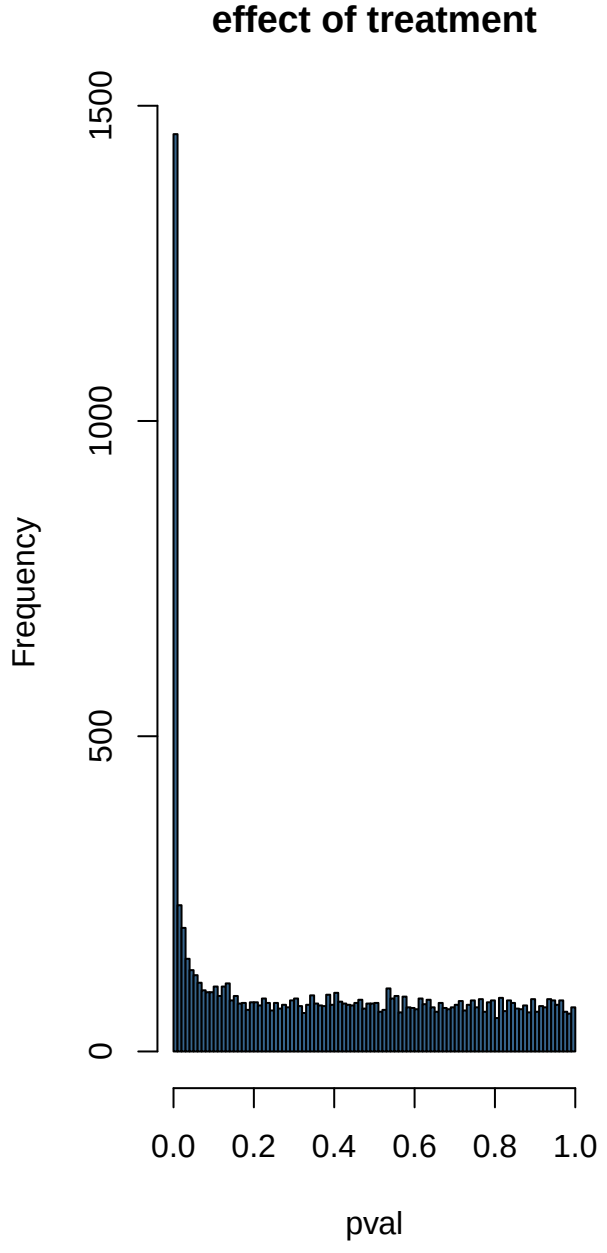

Aa11
Aa11
Su10
Su10
On5
On5
WXC
WXC
Wu12
Wu12
Fd12
Fd12
Su12
Su12
Jj10
Jj10
Fm12
Fm12
Ve12
Ve12
Treatment
a dexamethasone
a ethanol

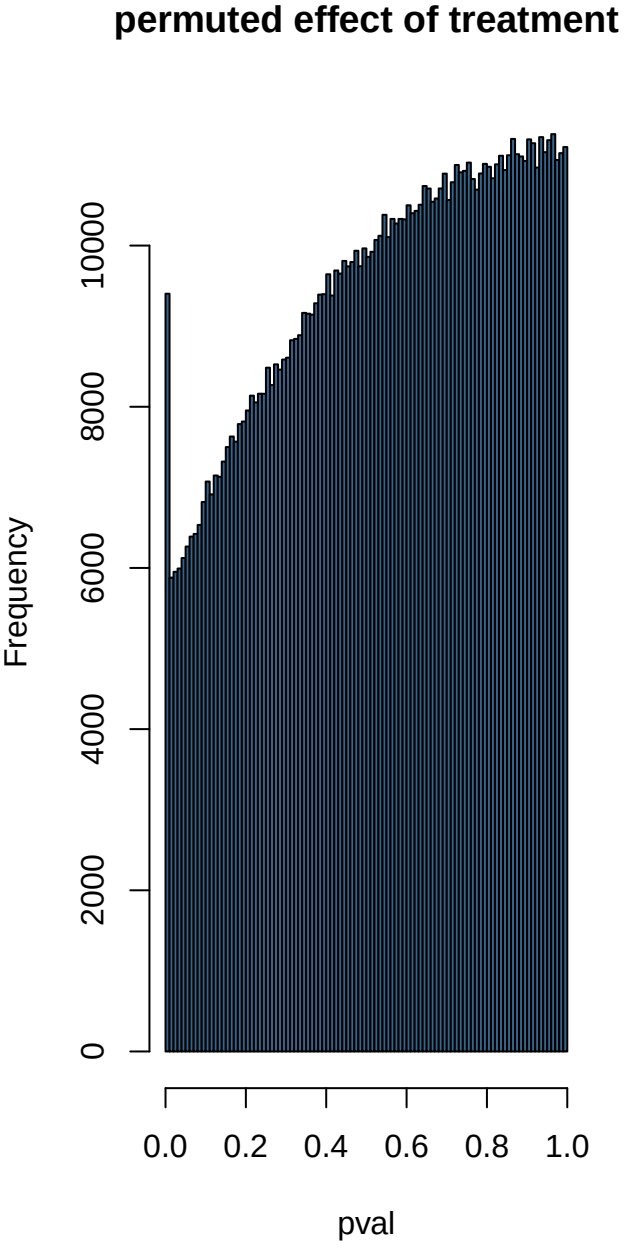

emma
limma
0
5
10
15
20
25
30
runtime (seconds)

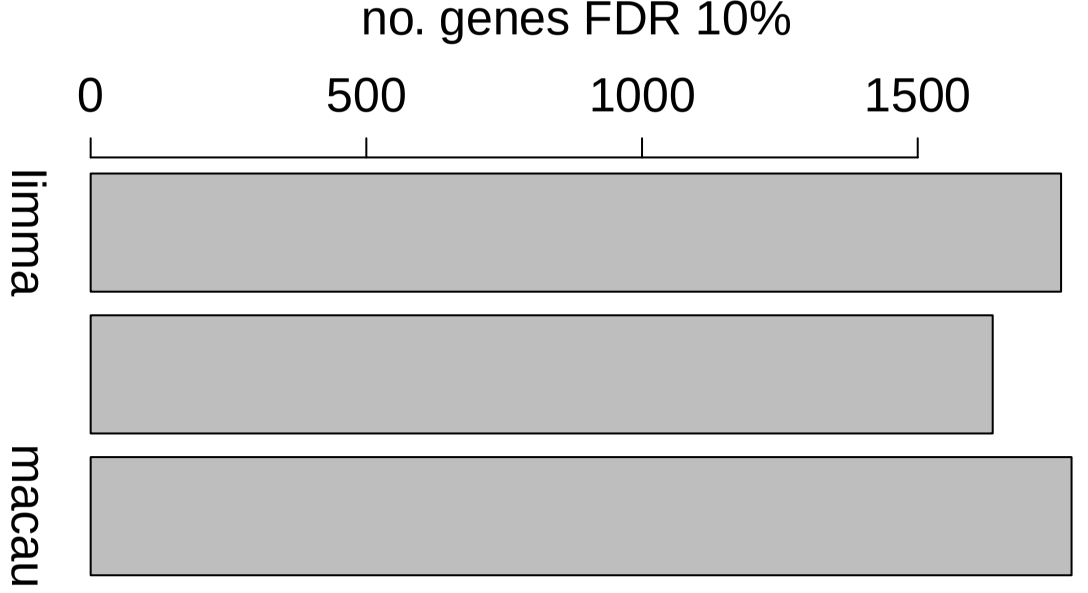

effect of treatment
Frequency
0
500
1000
1500
2000
0.0
0.2
0.4
0.6
0.8
1.0
pval

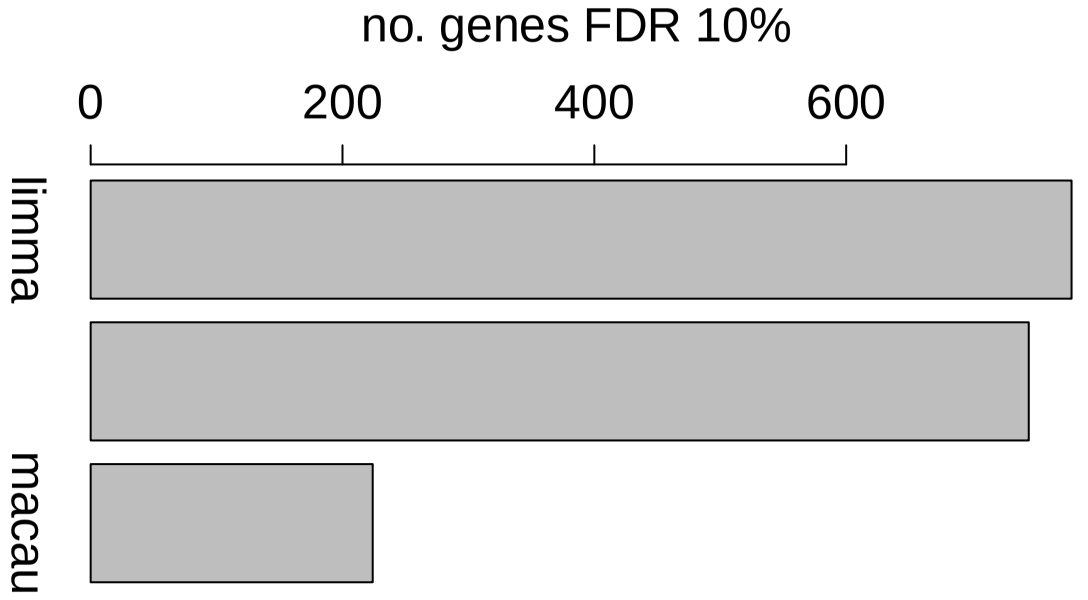

effect of permuted treatment
Density
0.0
0.5
1.0
1.5
2.0
2.5
3.0
0.0
0.2
0.4
0.6
0.8
1.0
p−value

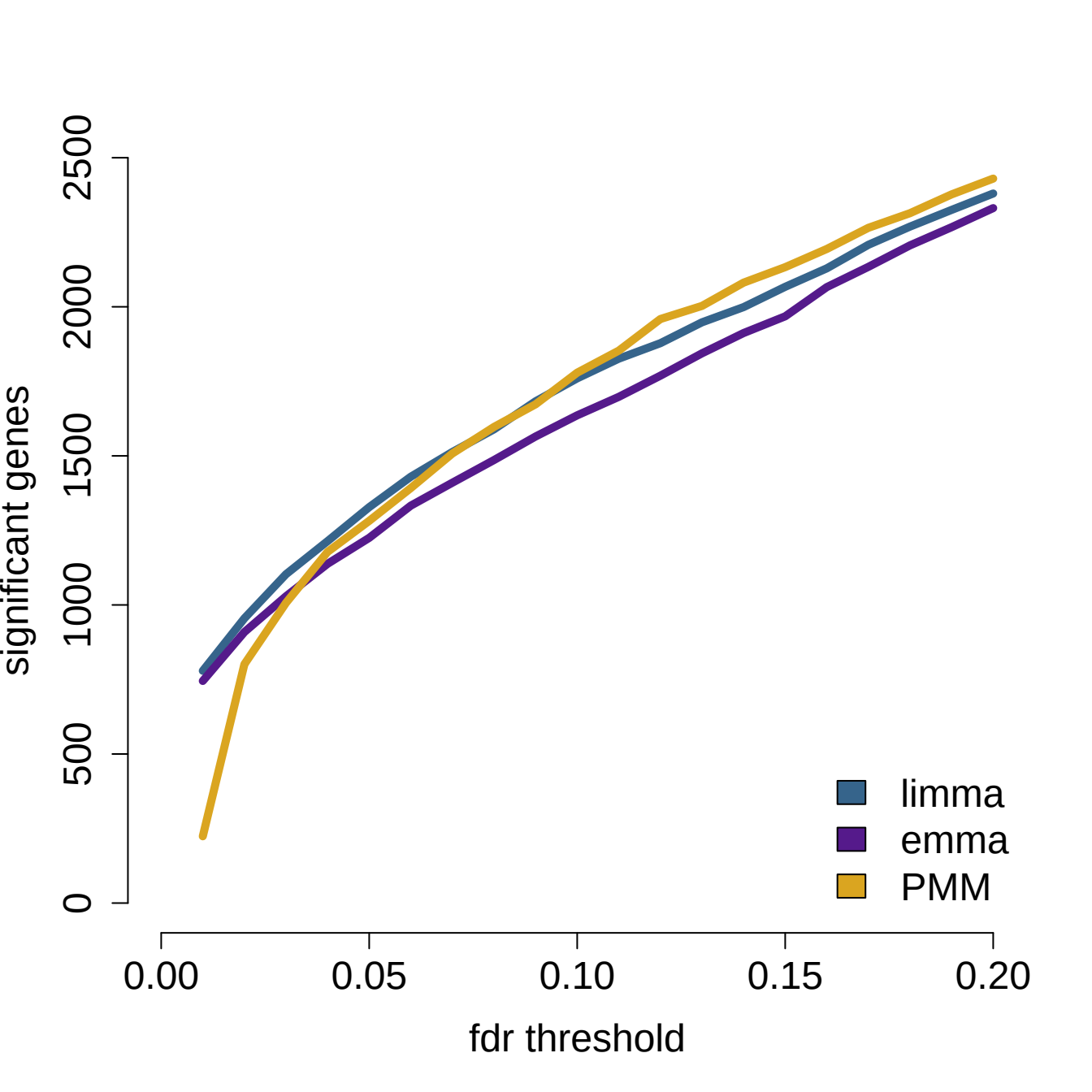

EMMA (mixed model)
observed
permuted
Density
0
5
10
15
20
25
0.0
0.2
0.4
0.6
0.8
1.0
pval
limma (linear model)
observed
permuted
Density
0
5
10
15
20
25
0.0
0.2
0.4
0.6
0.8
1.0
pval


effect of treatment
Frequency
0
500
1000
1500
0.0
0.2
0.4
0.6
0.8
1.0
pval


permuted effect of treatment
Frequency
0
2000
4000
6000
8000
10000
0.0
0.2
0.4
0.6
0.8
1.0
pval


no. genes FDR 10%
0
500
1000
1500
limma
macau


no. genes FDR 10%
0
200
400
600
limma
macau


significant genes
0
500
1000
1500
2000
2500
0.00
0.05
0.10
0.15
0.20
fdr threshold
limma
emma
PMM