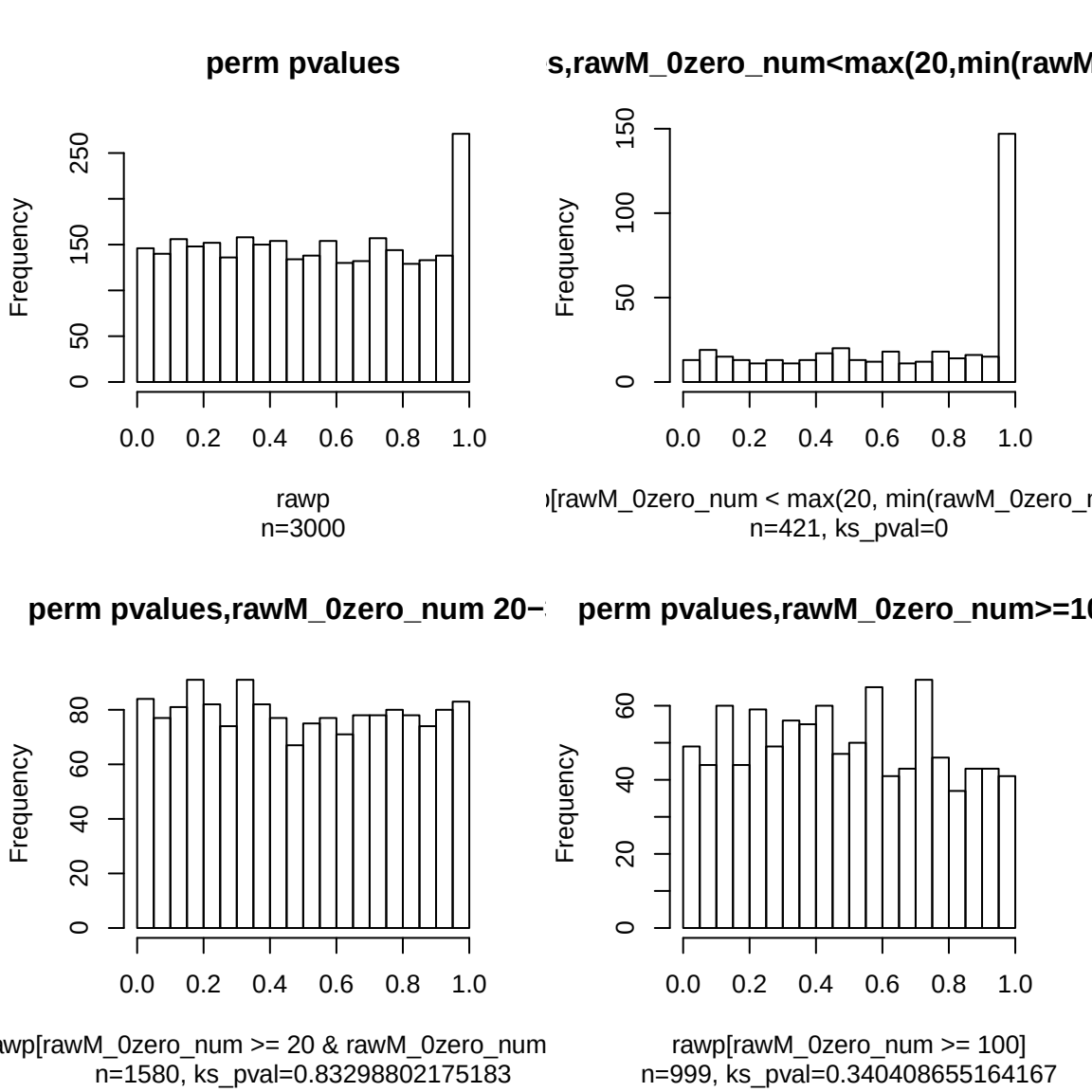
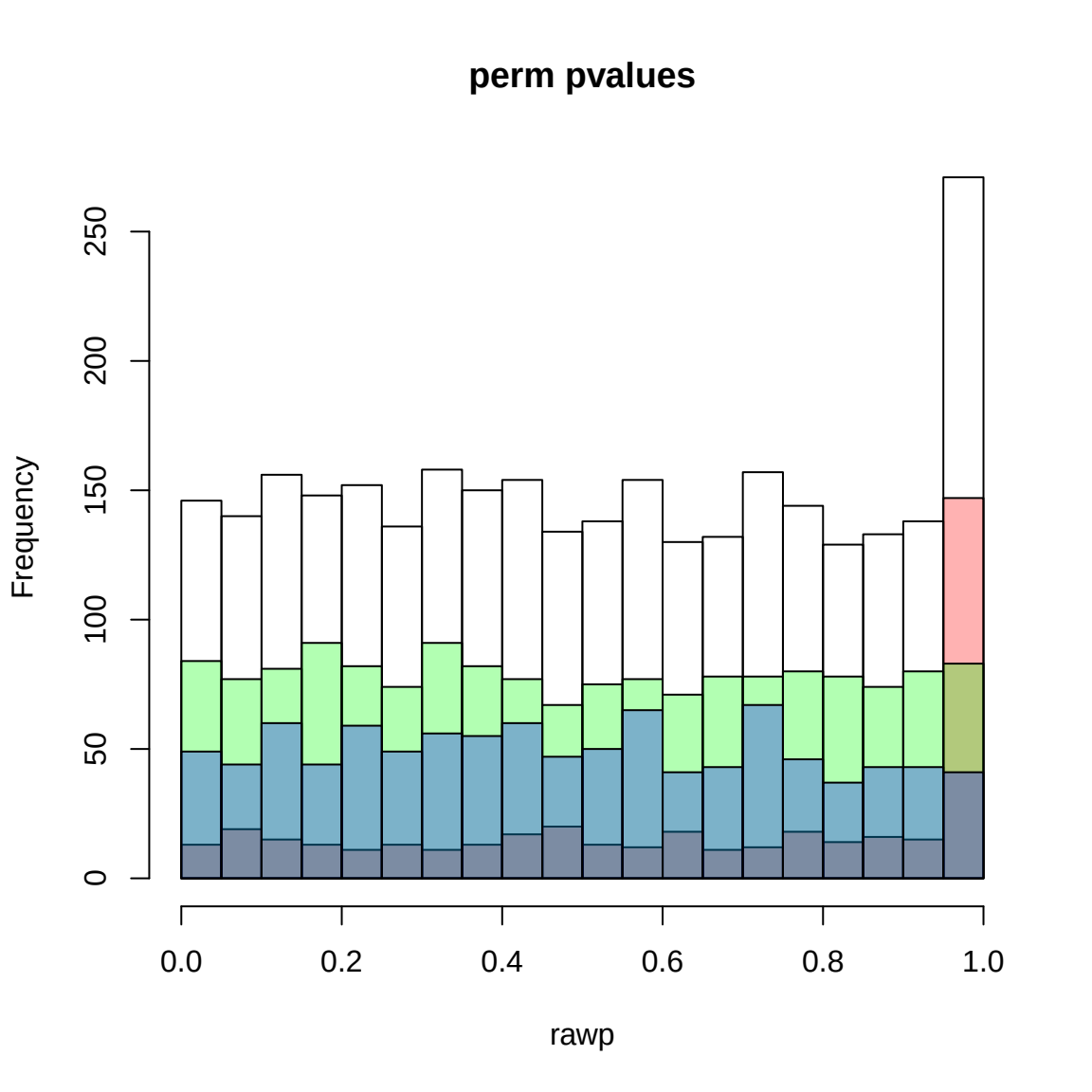
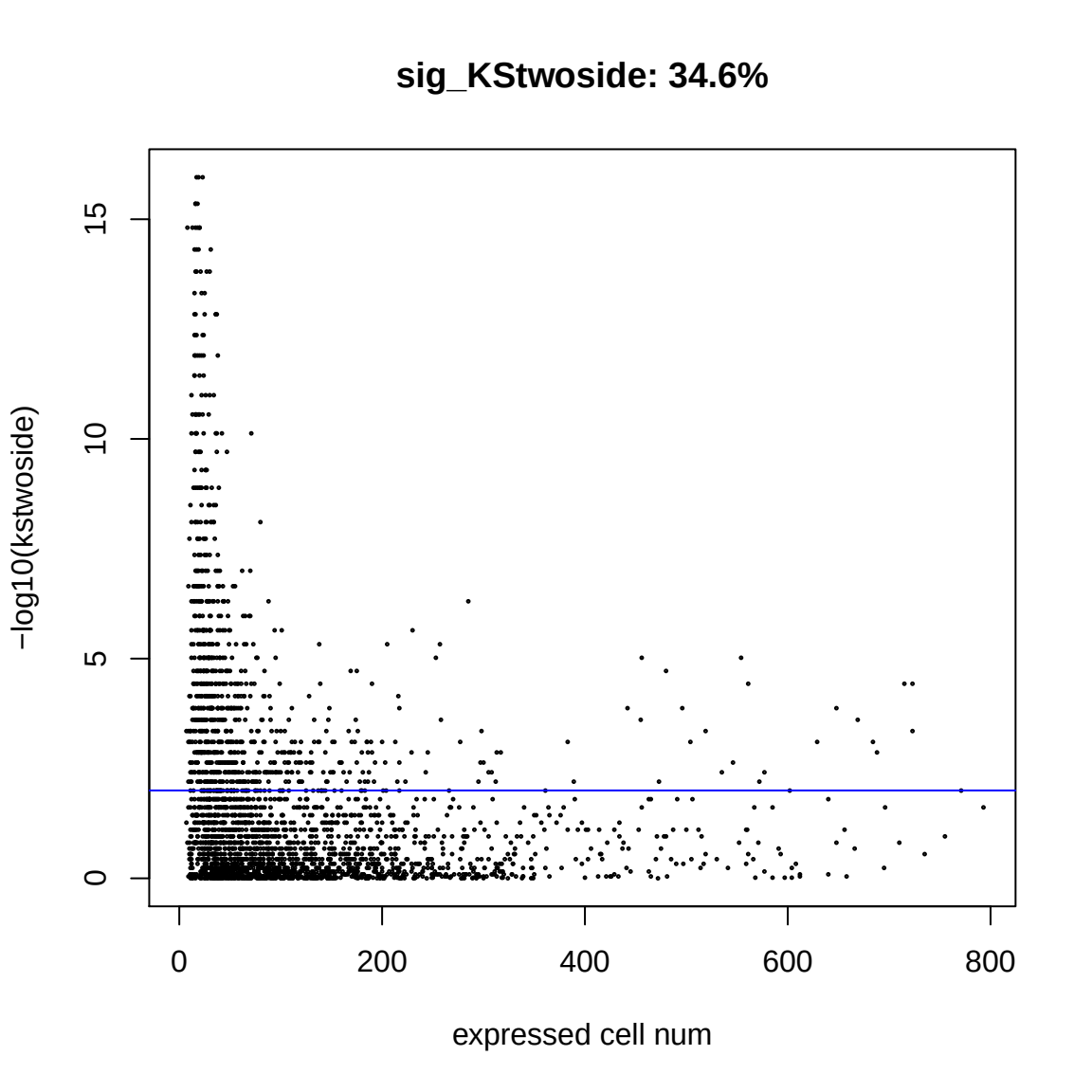
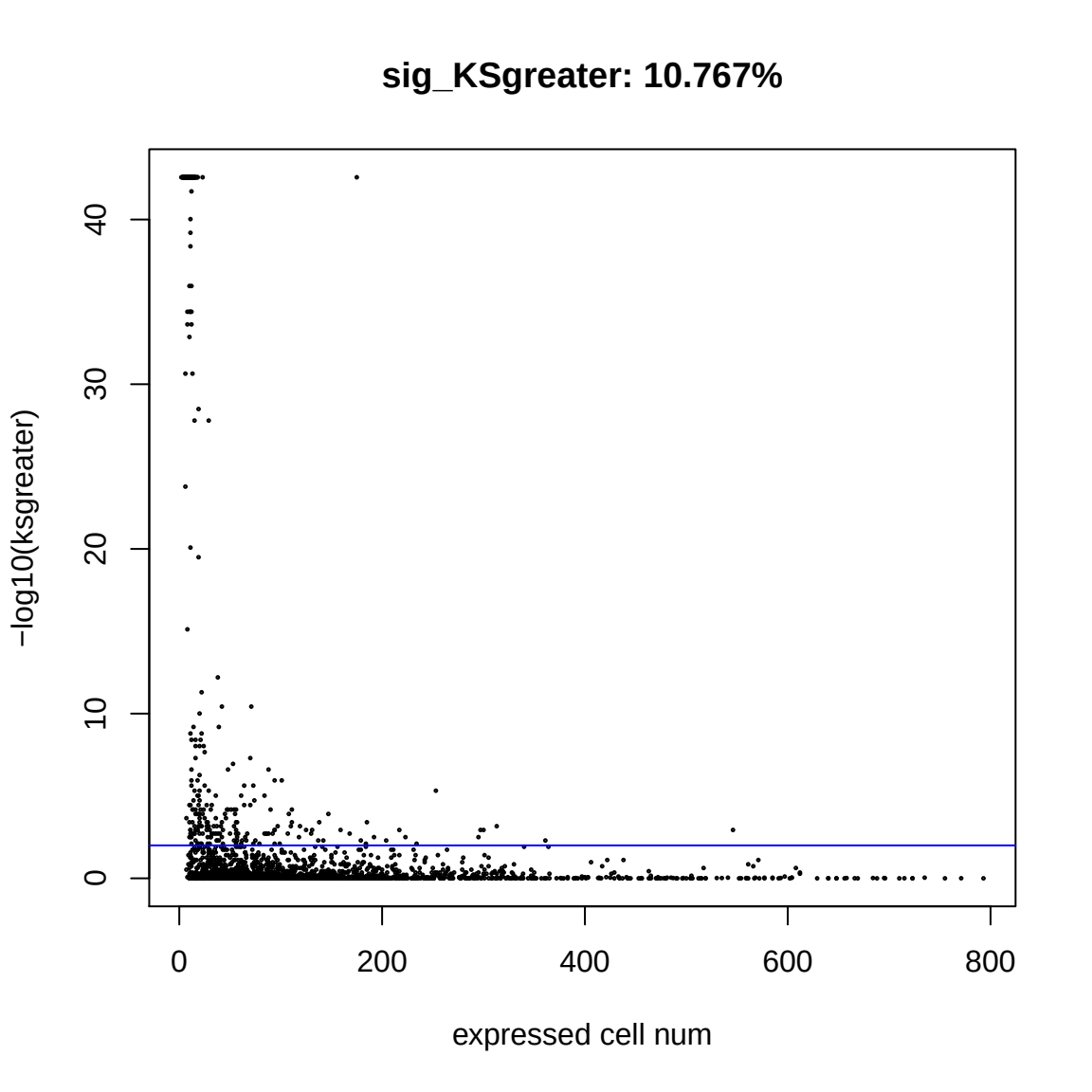
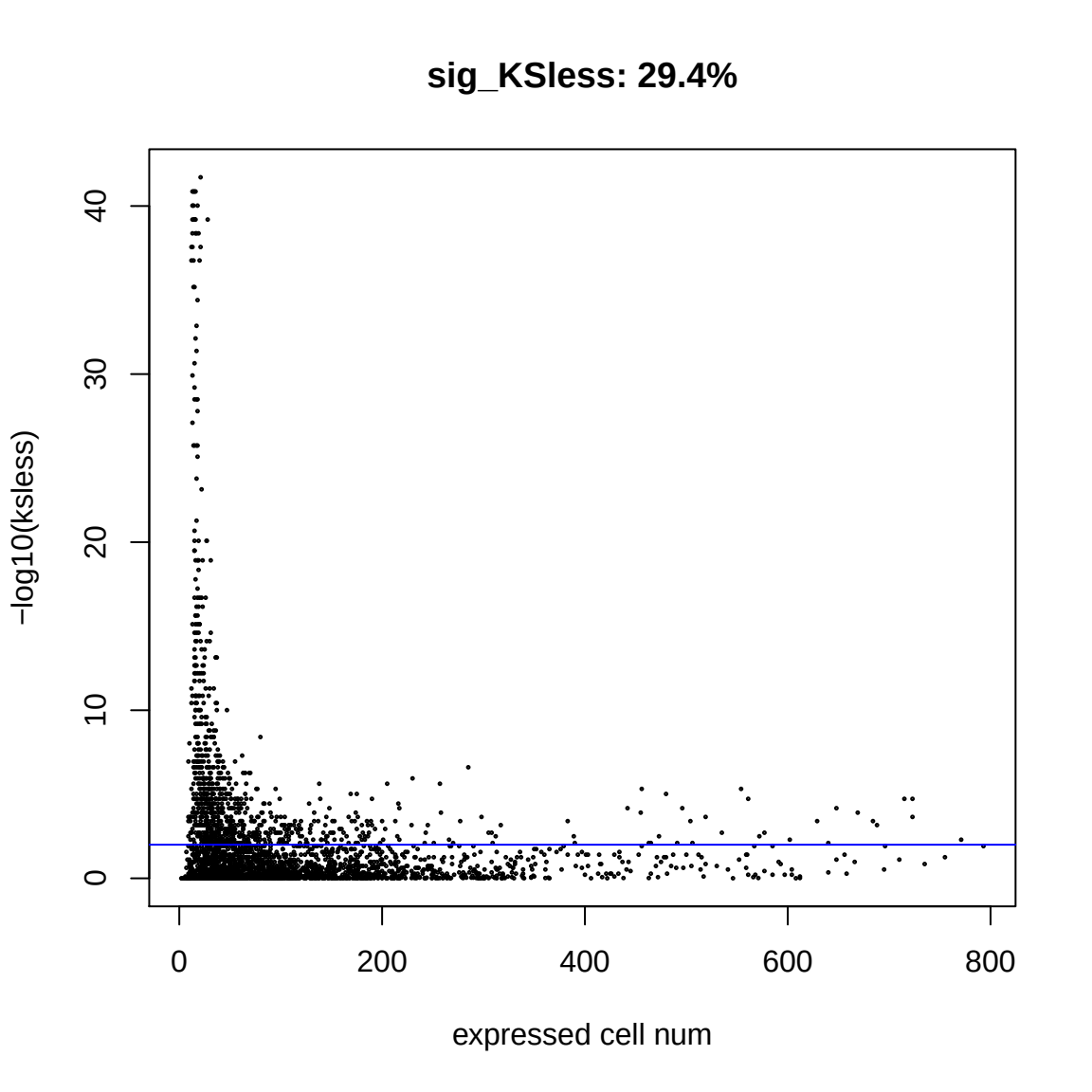
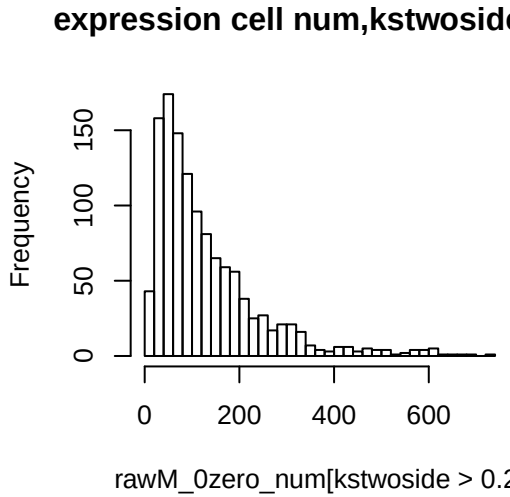

perm pvalues
Frequency
0
50
150
250
0.0
0.2
0.4
0.6
0.8
1.0
rawp
n=3000
s,rawM_0zero_num<max(20,min(rawM
Frequency
0
50
100
150
0.0
0.2
0.4
0.6
0.8
1.0
[rawM_0zero_num < max(20, min(rawM_0zero_
n=421, ks_pval=0
perm pvalues,rawM_0zero_num 20−
Frequency
0
20
40
60
80
0.0
0.2
0.4
0.6
0.8
1.0
awp[rawM_0zero_num >= 20 & rawM_0zero_num
n=1580, ks_pval=0.83298802175183
perm pvalues,rawM_0zero_num>=10
Frequency
0
20
40
60
0.0
0.2
0.4
0.6
0.8
1.0
rawp[rawM_0zero_num >= 100]
n=999, ks_pval=0.340408655164167

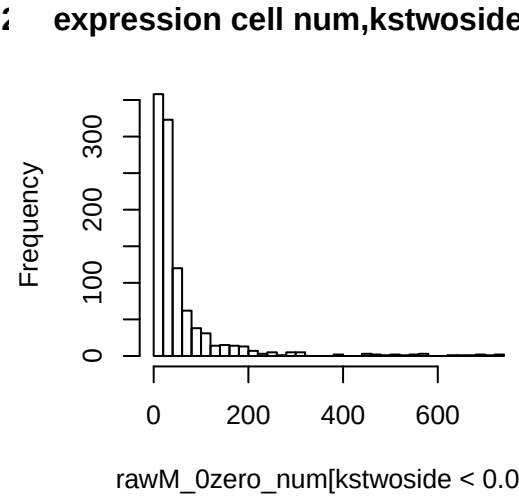

perm pvalues
Frequency
0
50
100
150
200
250
0.0
0.2
0.4
0.6
0.8
1.0
rawp

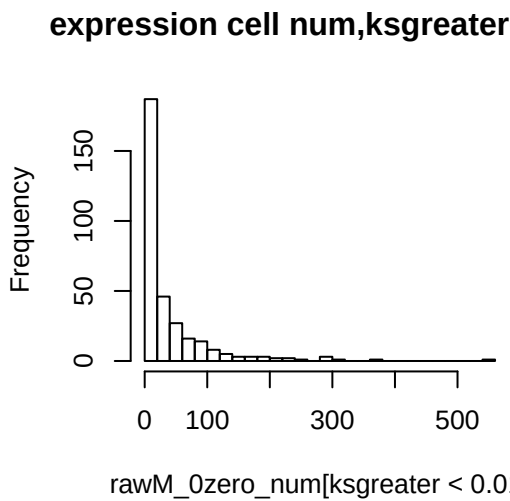

sig_KStwoside: 34.6%
−log10(kstwoside)
0
5
10
15
0
200
400
600
800
expressed cell num

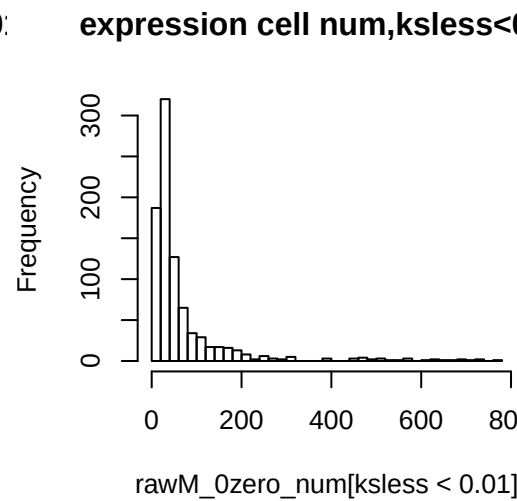

sig_KSgreater: 10.767%
−log10(ksgreater)
0
10
20
30
40
0
200
400
600
800
expressed cell num

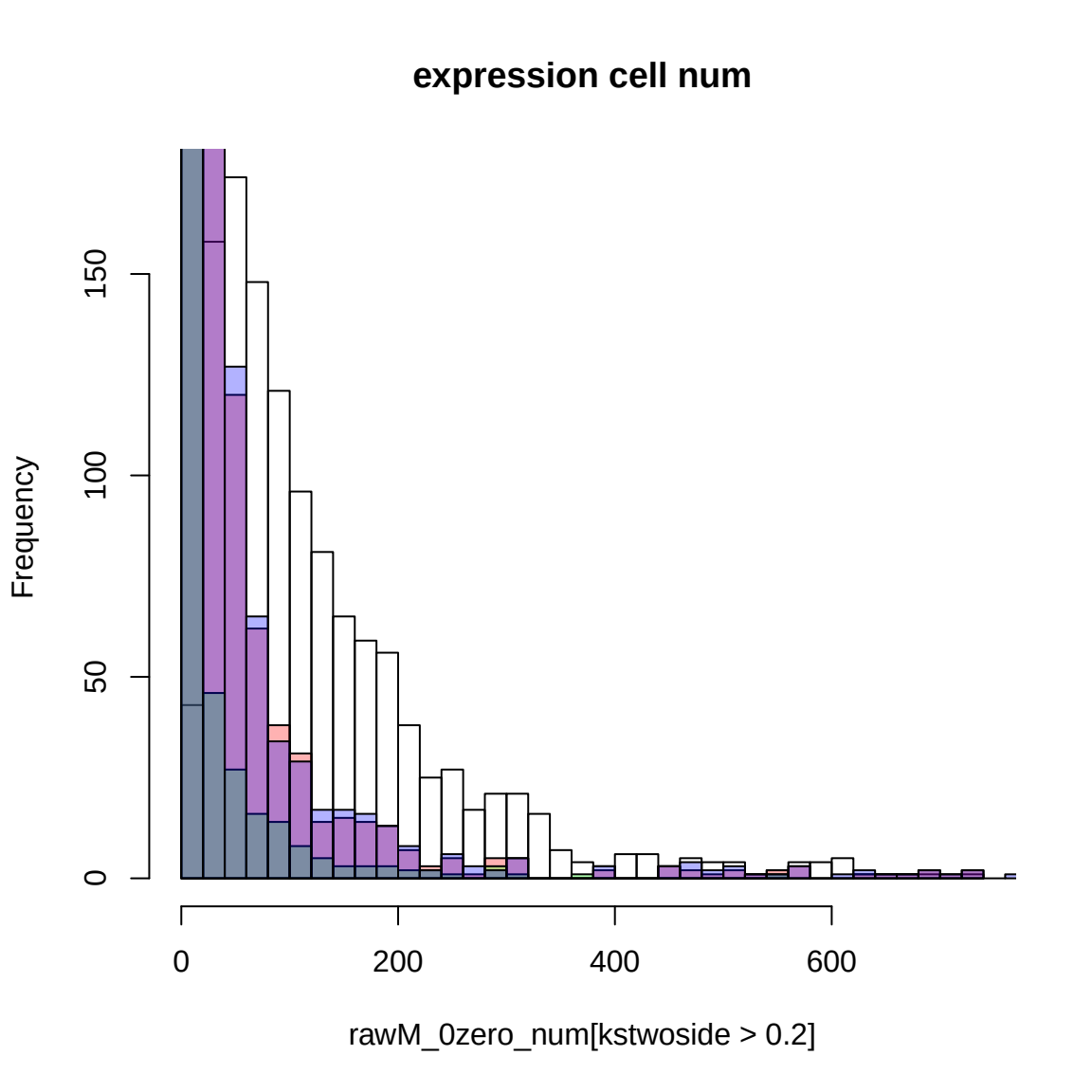

sig_KSless: 29.4%
−log10(ksless)
0
10
20
30
40
0
200
400
600
800
expressed cell num

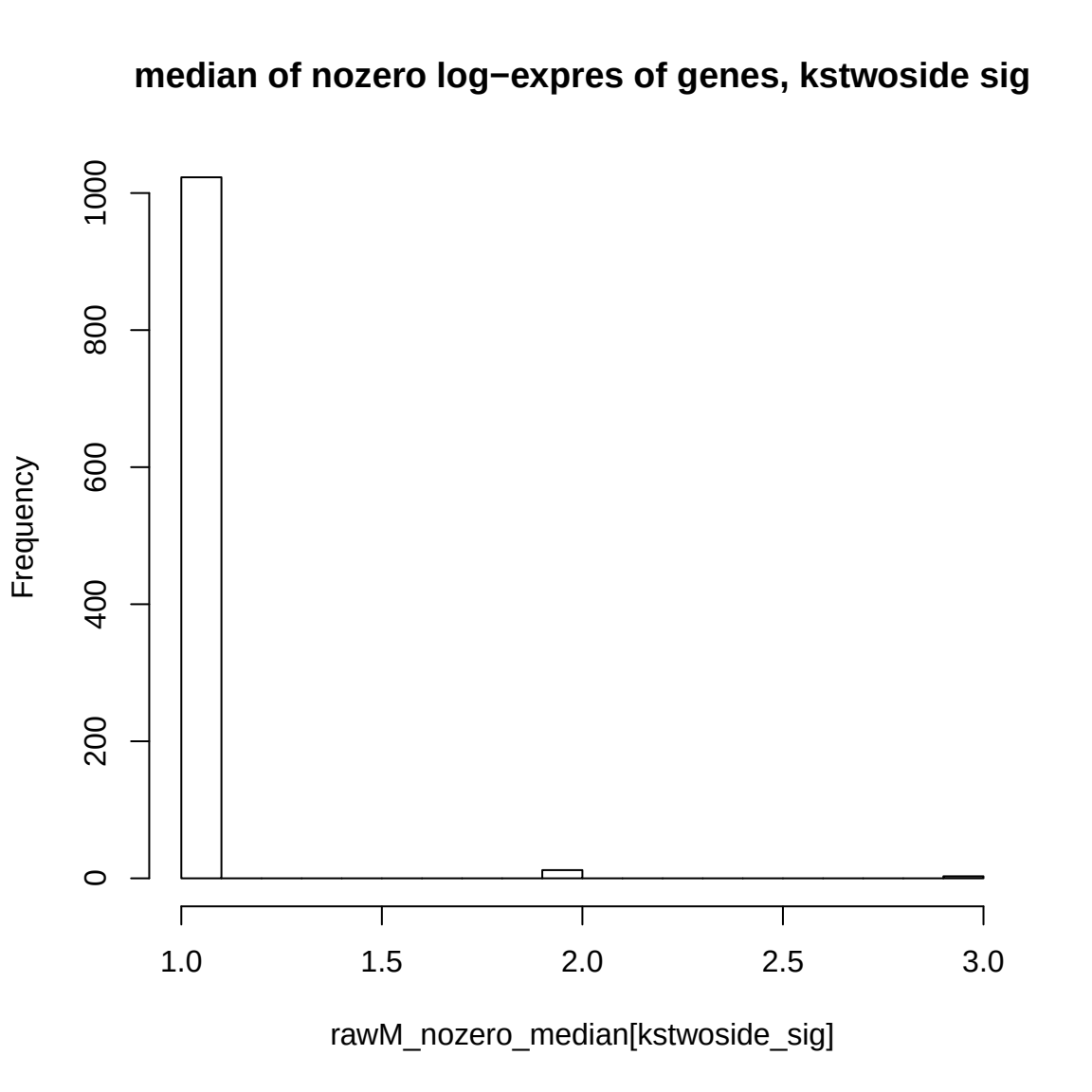

expression cell num,kstwoside>0.2
Frequency
0
50
100
150
0
200
400
600
rawM_0zero_num[kstwoside > 0.2]

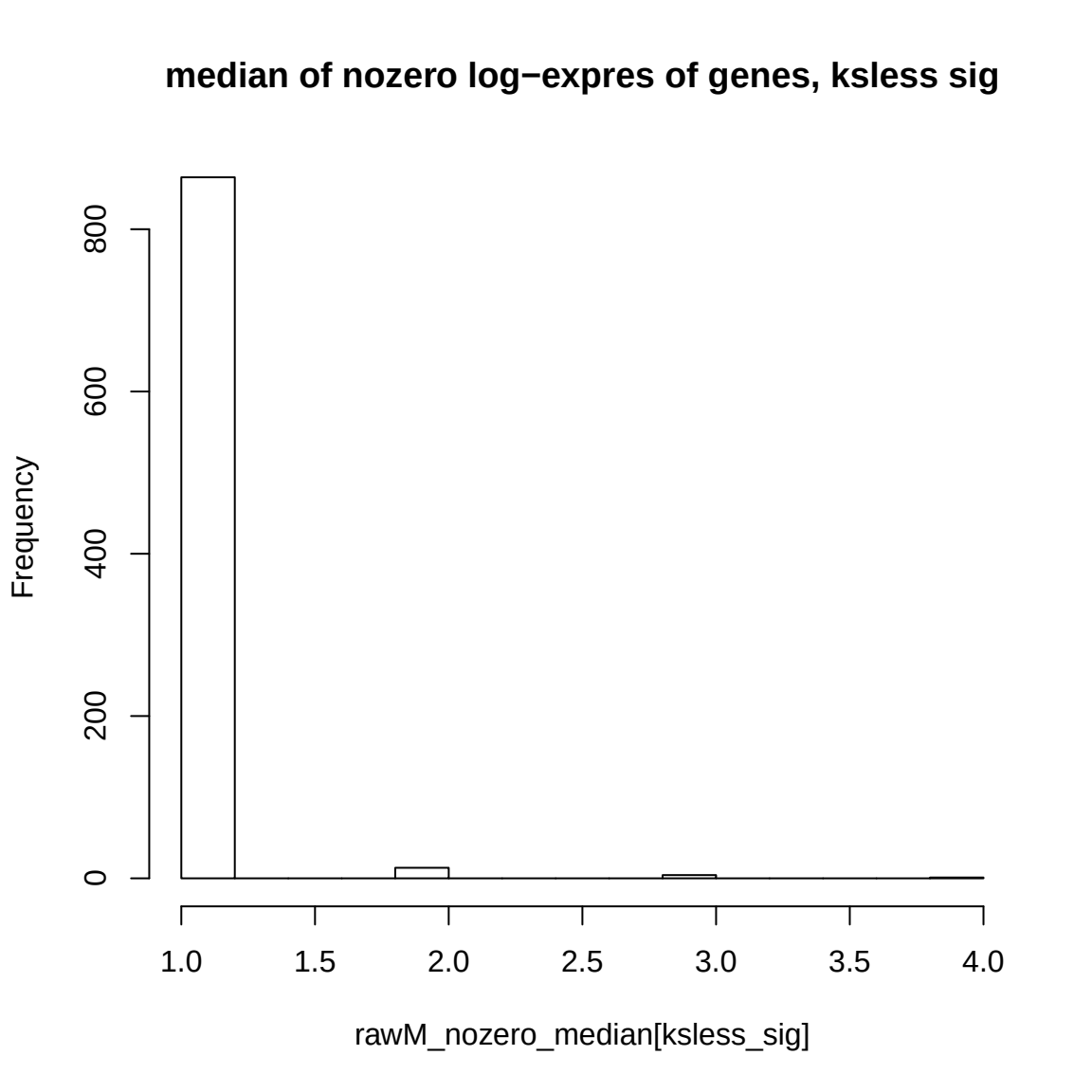

expression cell num,kstwoside<0.0
Frequency
0
100
200
300
0
200
400
600
rawM_0zero_num[kstwoside < 0.01]

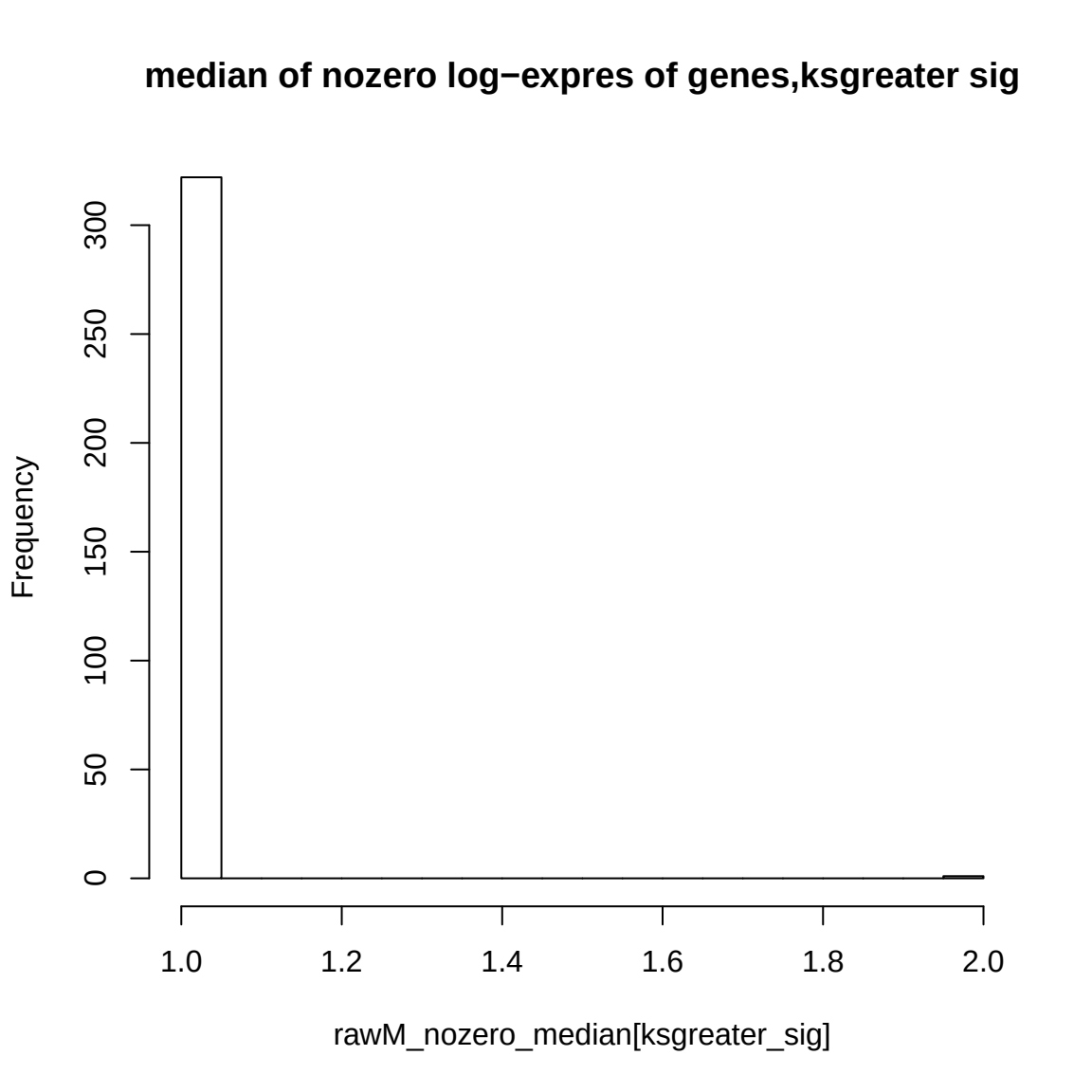

expression cell num,ksgreater<0.0
Frequency
0
50
100
150
0
100
300
500
rawM_0zero_num[ksgreater < 0.01]

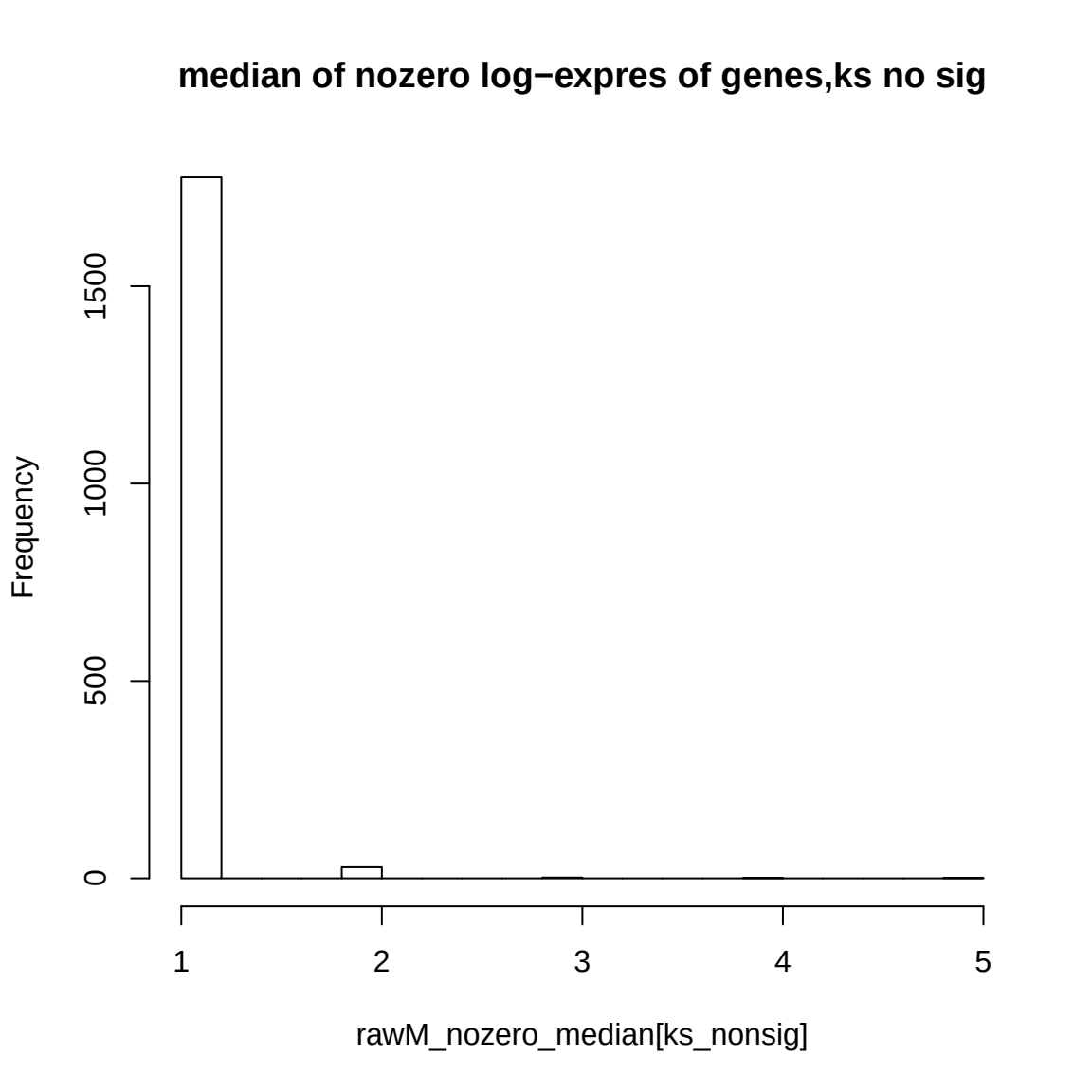

expression cell num,ksless<0.01
Frequency
0
100
200
300
0
200
400
600
800
rawM_0zero_num[ksless < 0.01]

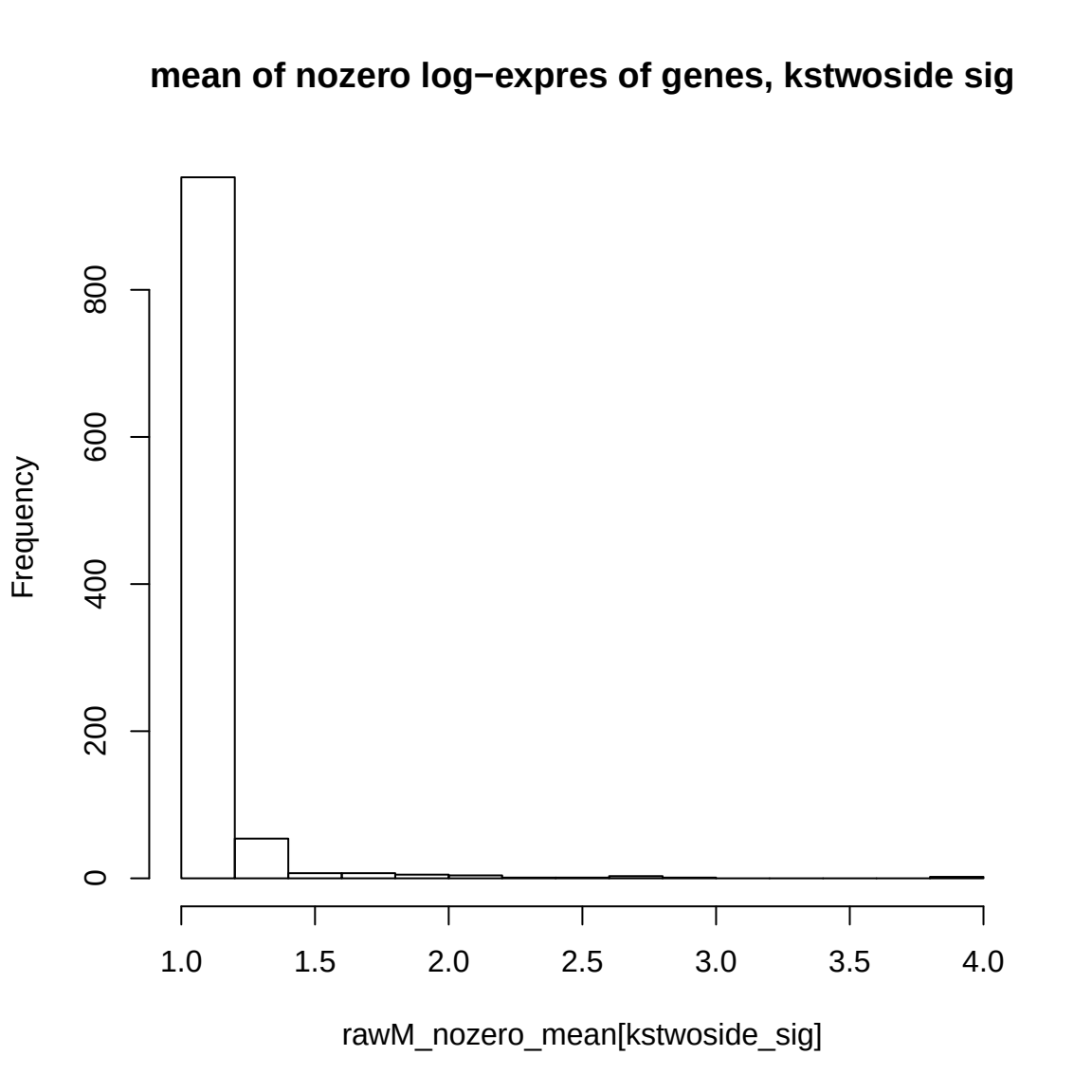

expression cell num
Frequency
0
50
100
150
0
200
400
600
rawM_0zero_num[kstwoside > 0.2]

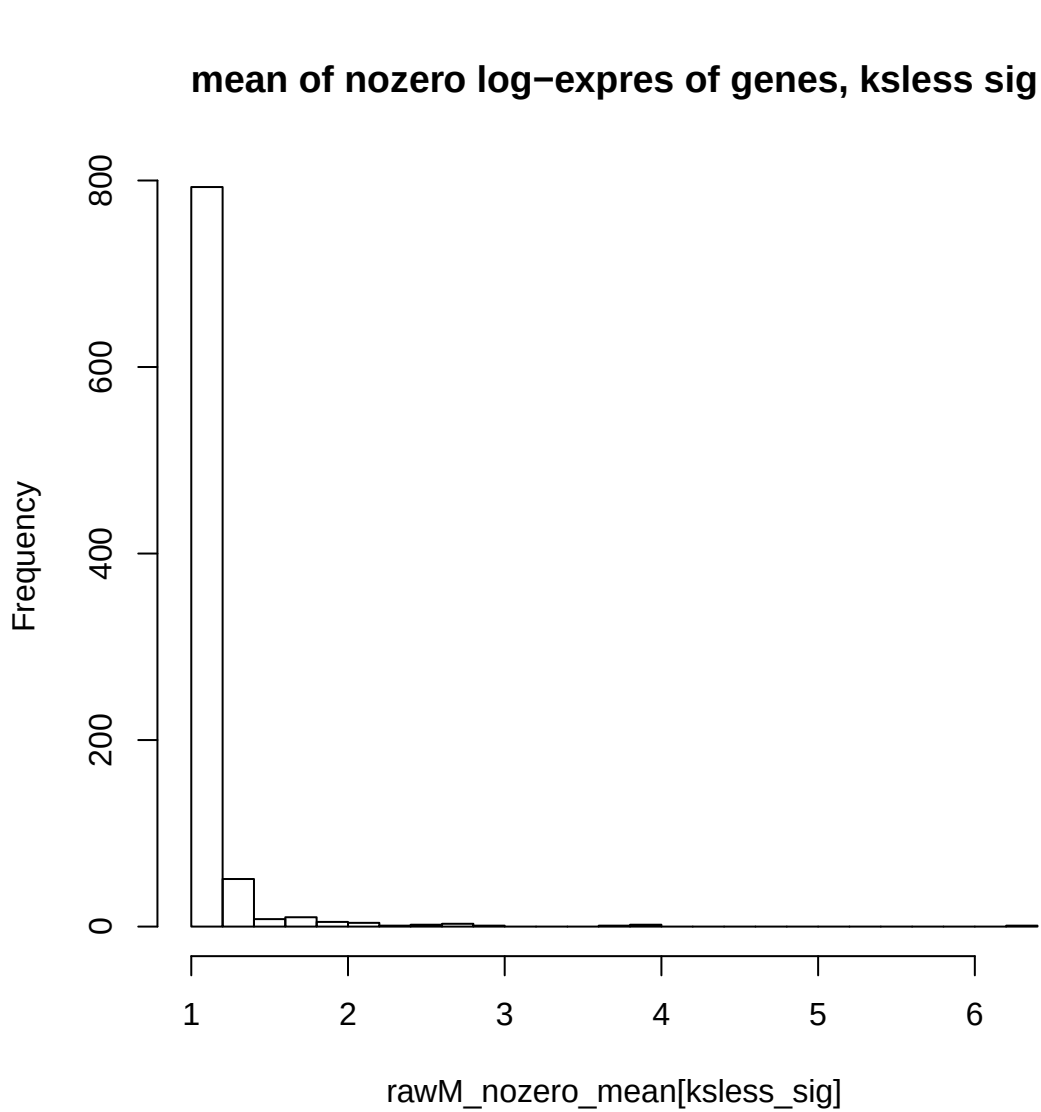

median of nozero log−expres of genes, kstwoside sig
Frequency
0
200
400
600
800
1000
1.0
1.5
2.0
2.5
3.0
rawM_nozero_median[kstwoside_sig]

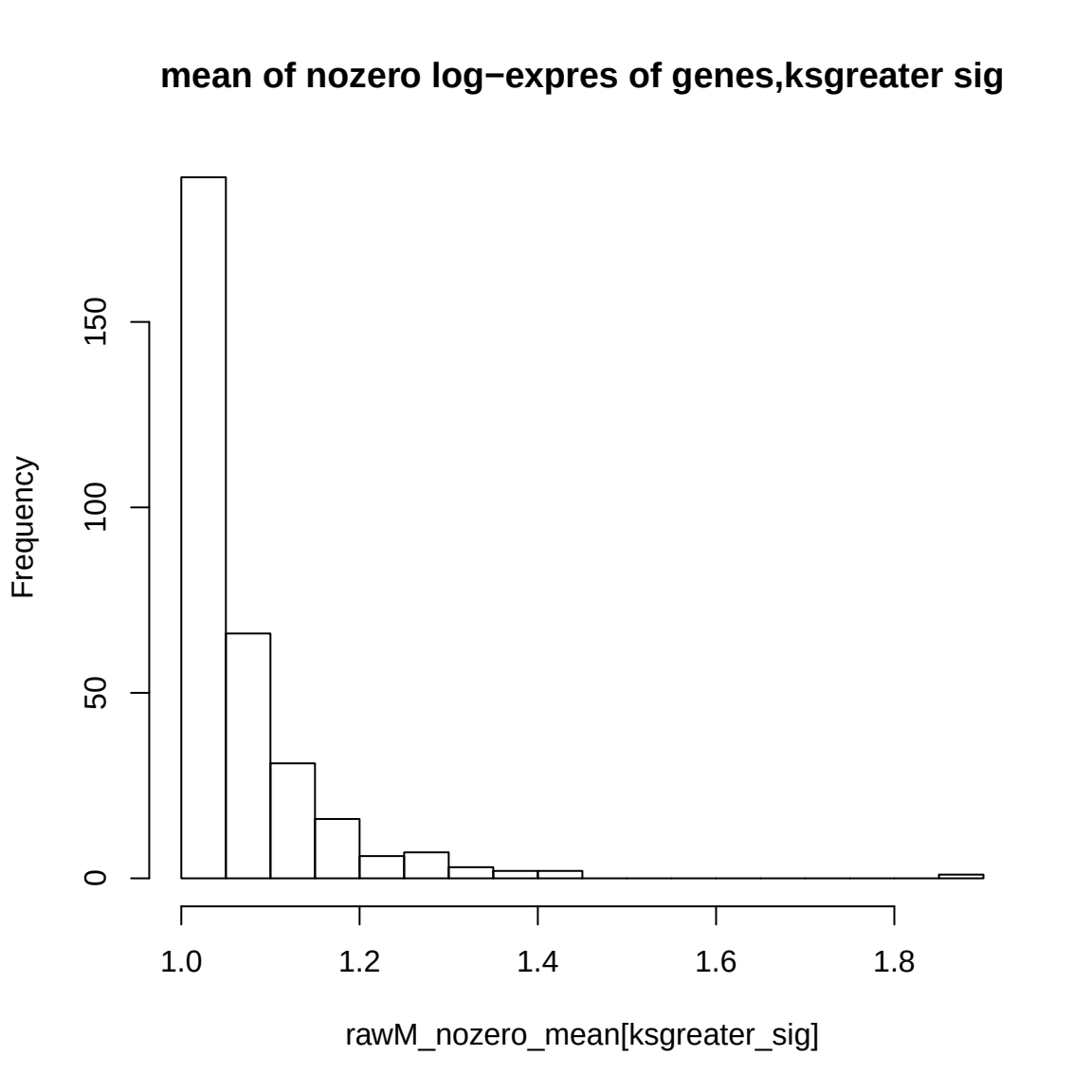

median of nozero log−expres of genes, ksless sig
Frequency
0
200
400
600
800
1.0
1.5
2.0
2.5
3.0
3.5
4.0
rawM_nozero_median[ksless_sig]

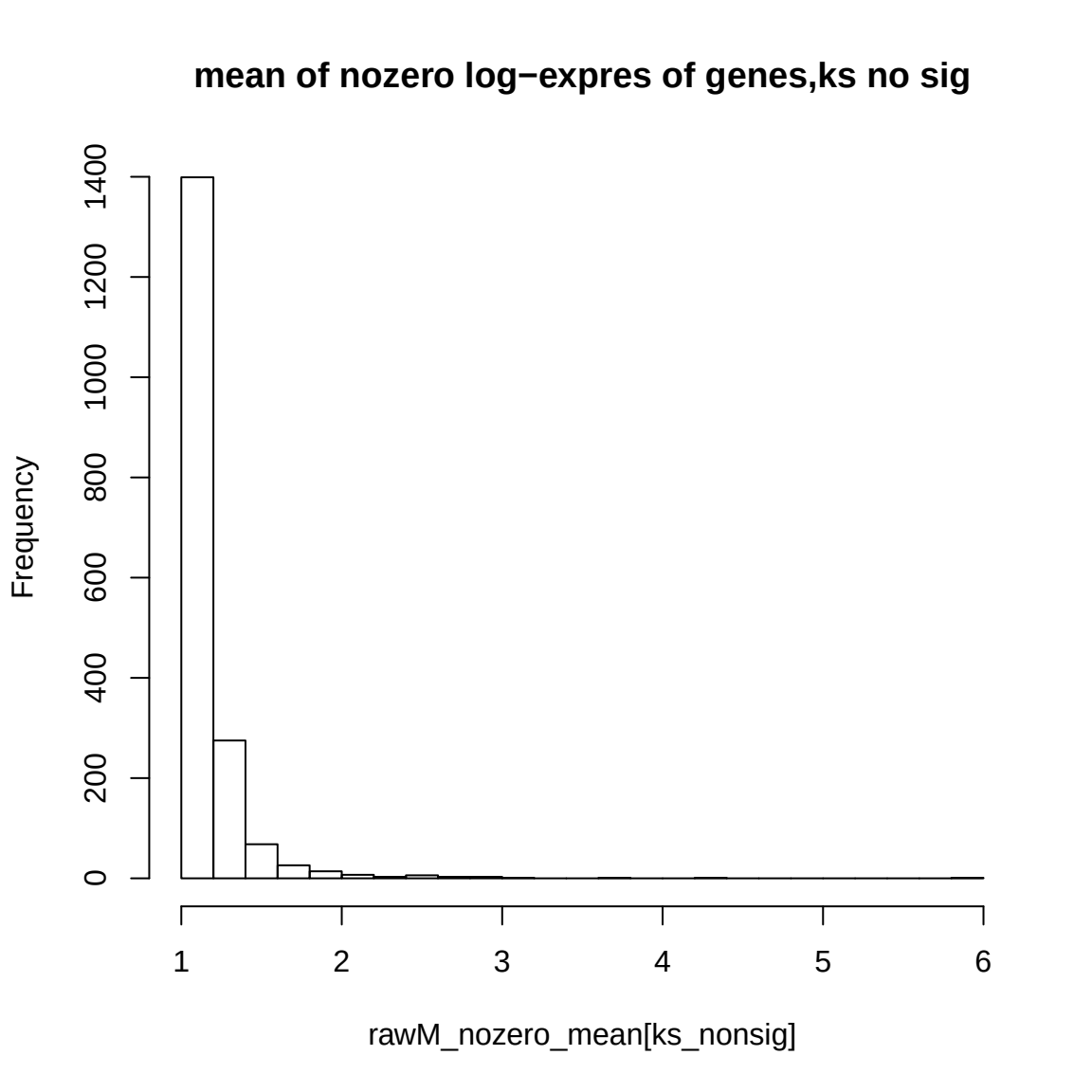

median of nozero log−expres of genes,ksgreater sig
Frequency
0
50
100
150
200
250
300
1.0
1.2
1.4
1.6
1.8
2.0
rawM_nozero_median[ksgreater_sig]

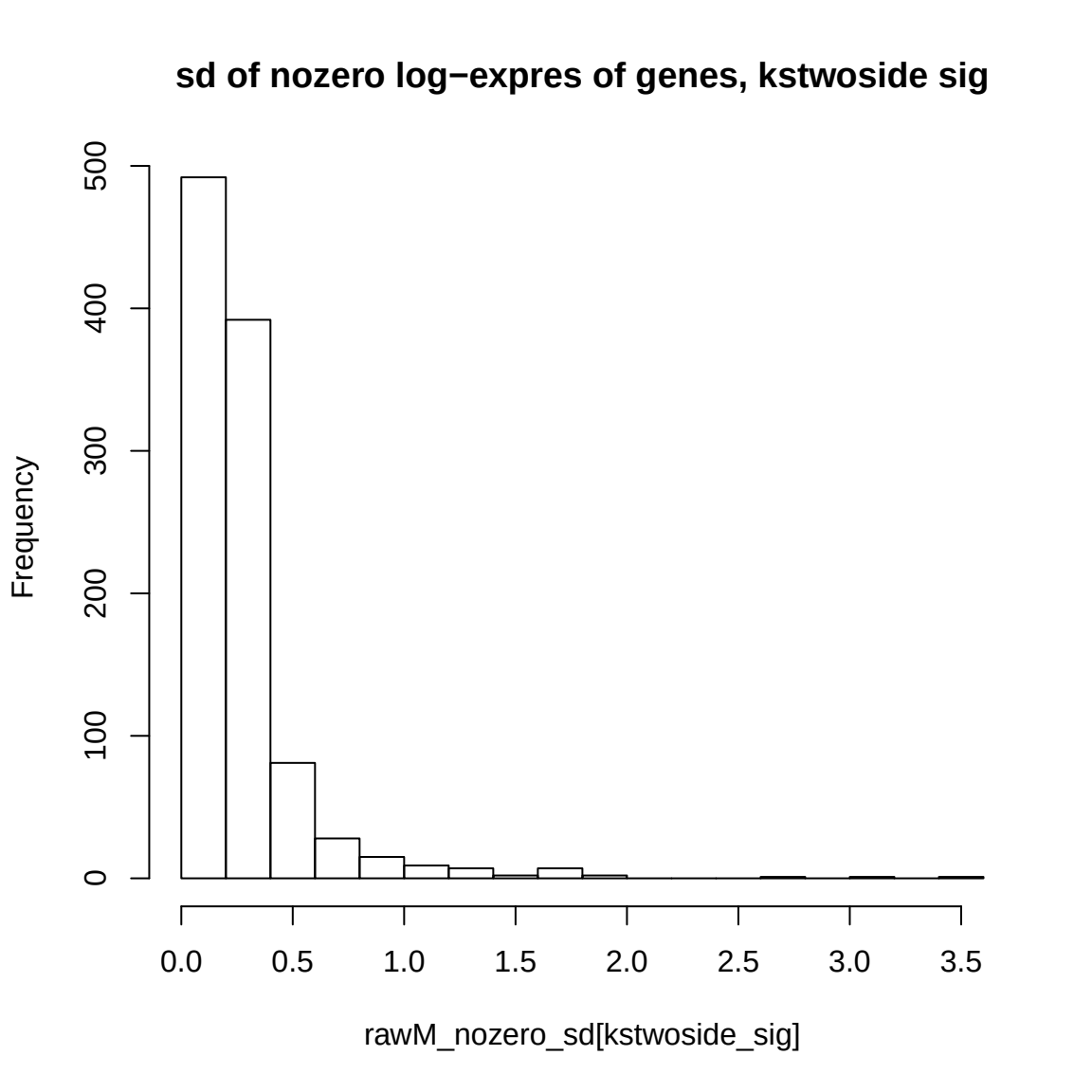

median of nozero log−expres of genes,ks no sig
Frequency
0
500
1000
1500
1
2
3
4
5
rawM_nozero_median[ks_nonsig]

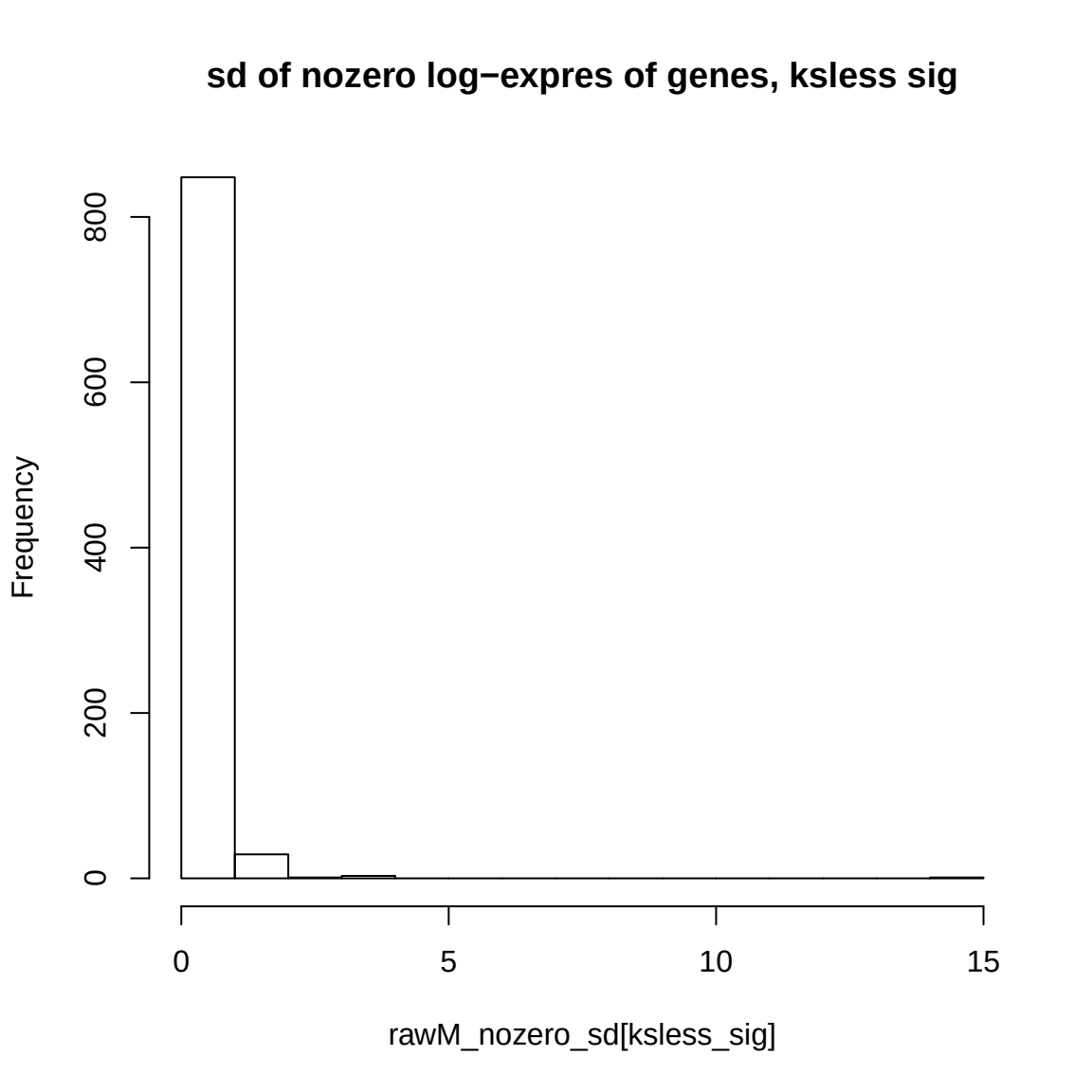

mean of nozero log−expres of genes, kstwoside sig
Frequency
0
200
400
600
800
1.0
1.5
2.0
2.5
3.0
3.5
4.0
rawM_nozero_mean[kstwoside_sig]

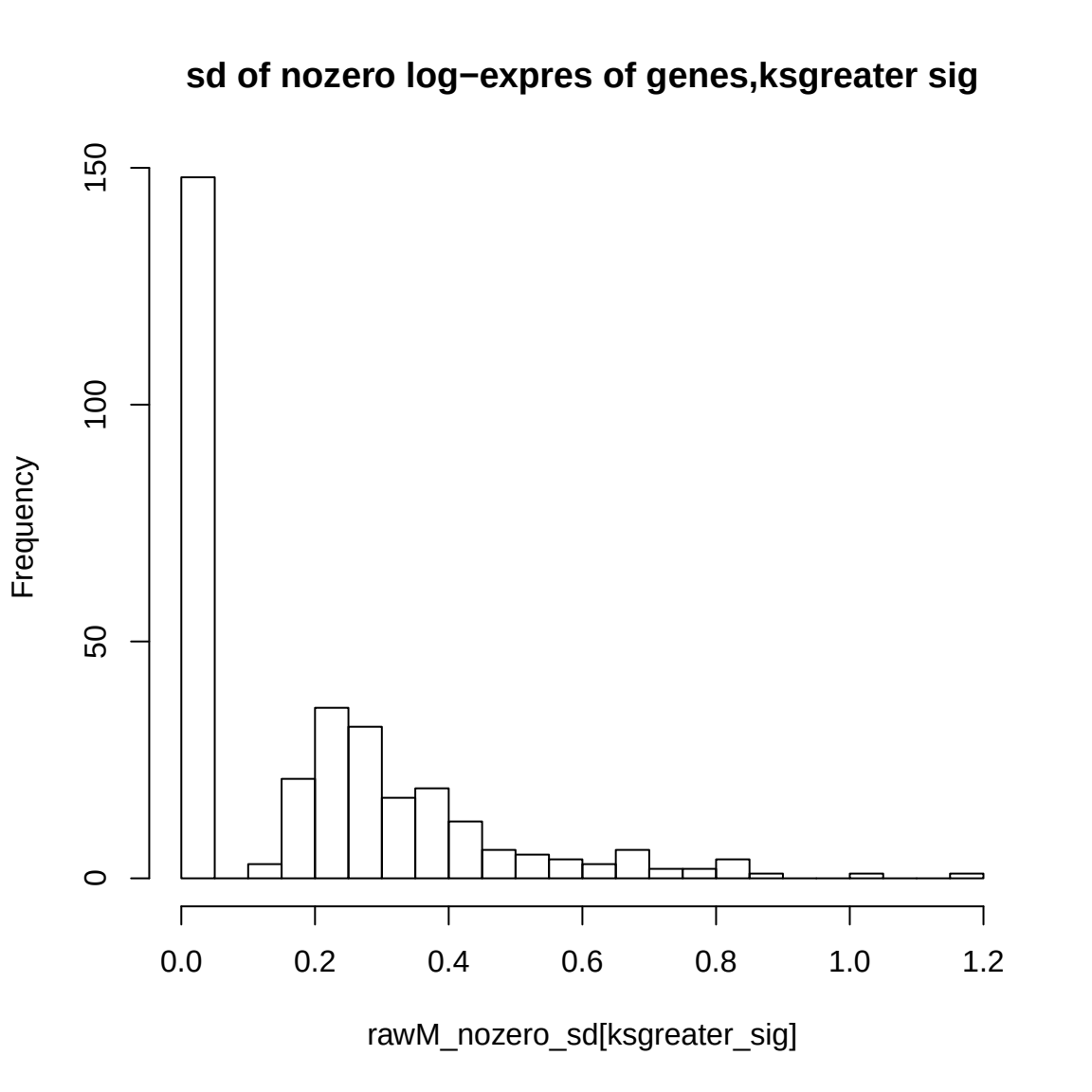

mean of nozero log−expres of genes, ksless sig
Frequency
0
200
400
600
800
1
2
3
4
5
6
rawM_nozero_mean[ksless_sig]

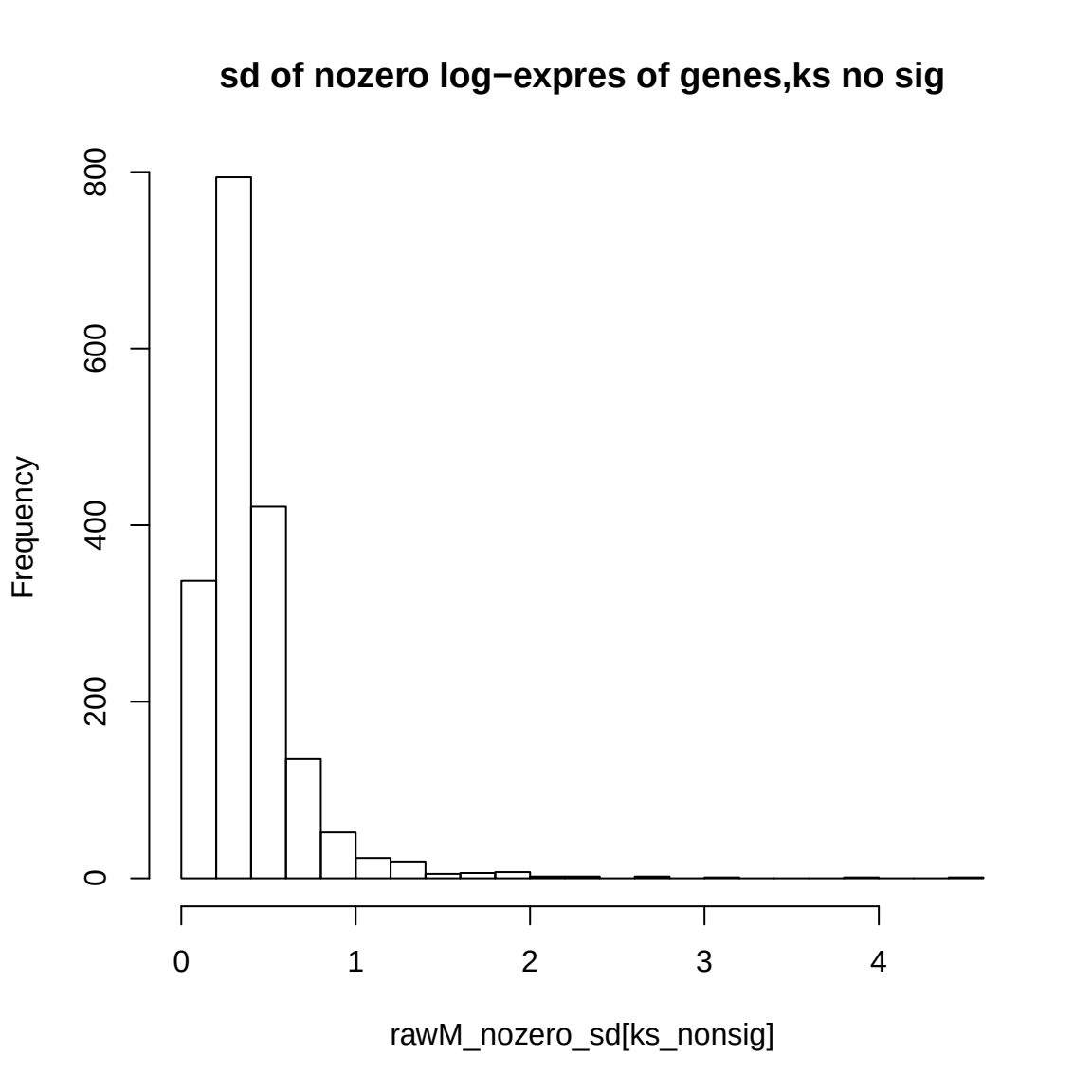

mean of nozero log−expres of genes,ksgreater sig
Frequency
0
50
100
150
1.0
1.2
1.4
1.6
1.8
rawM_nozero_mean[ksgreater_sig]

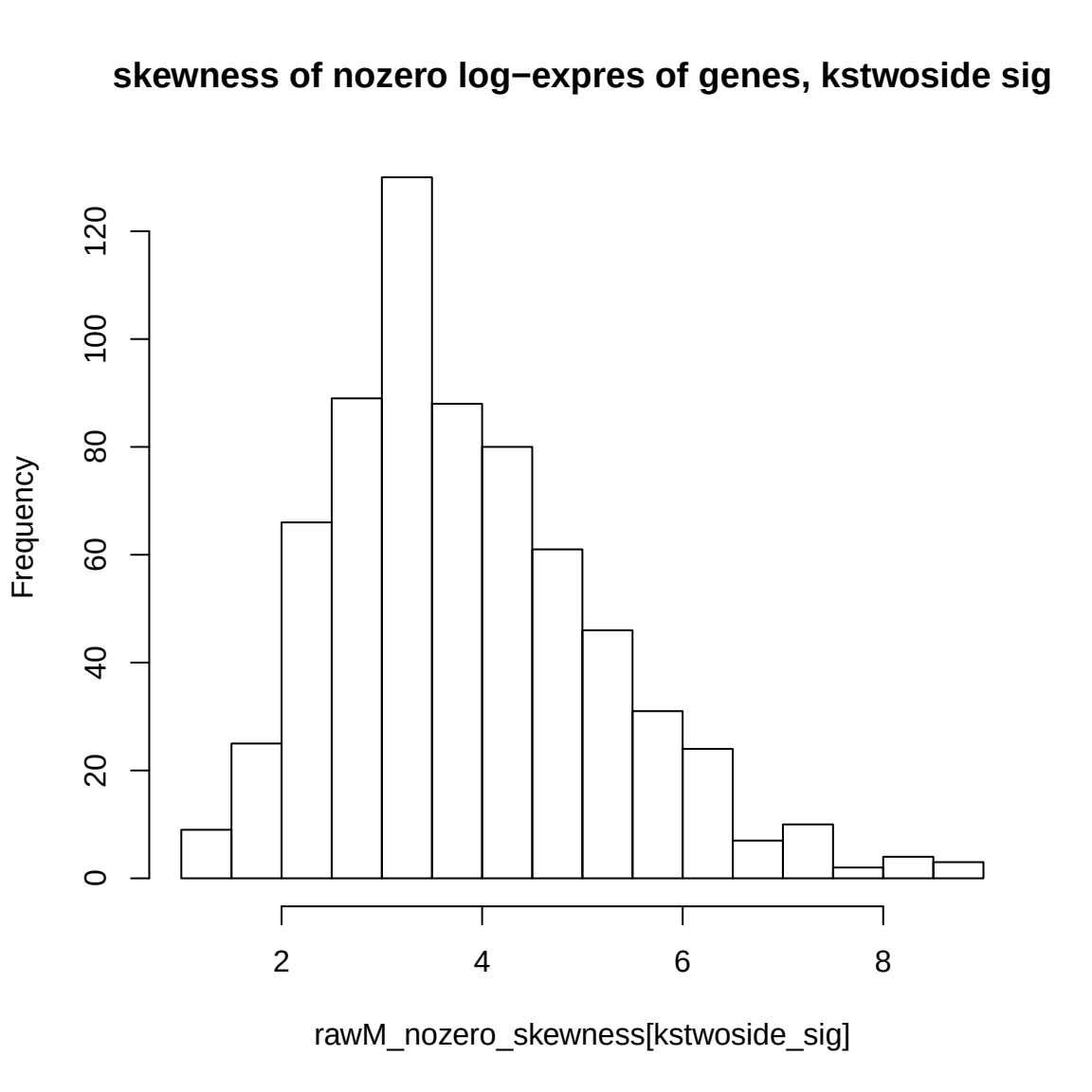

mean of nozero log−expres of genes,ks no sig
Frequency
0
200
400
600
800
1000
1200
1400
1
2
3
4
5
6
rawM_nozero_mean[ks_nonsig]

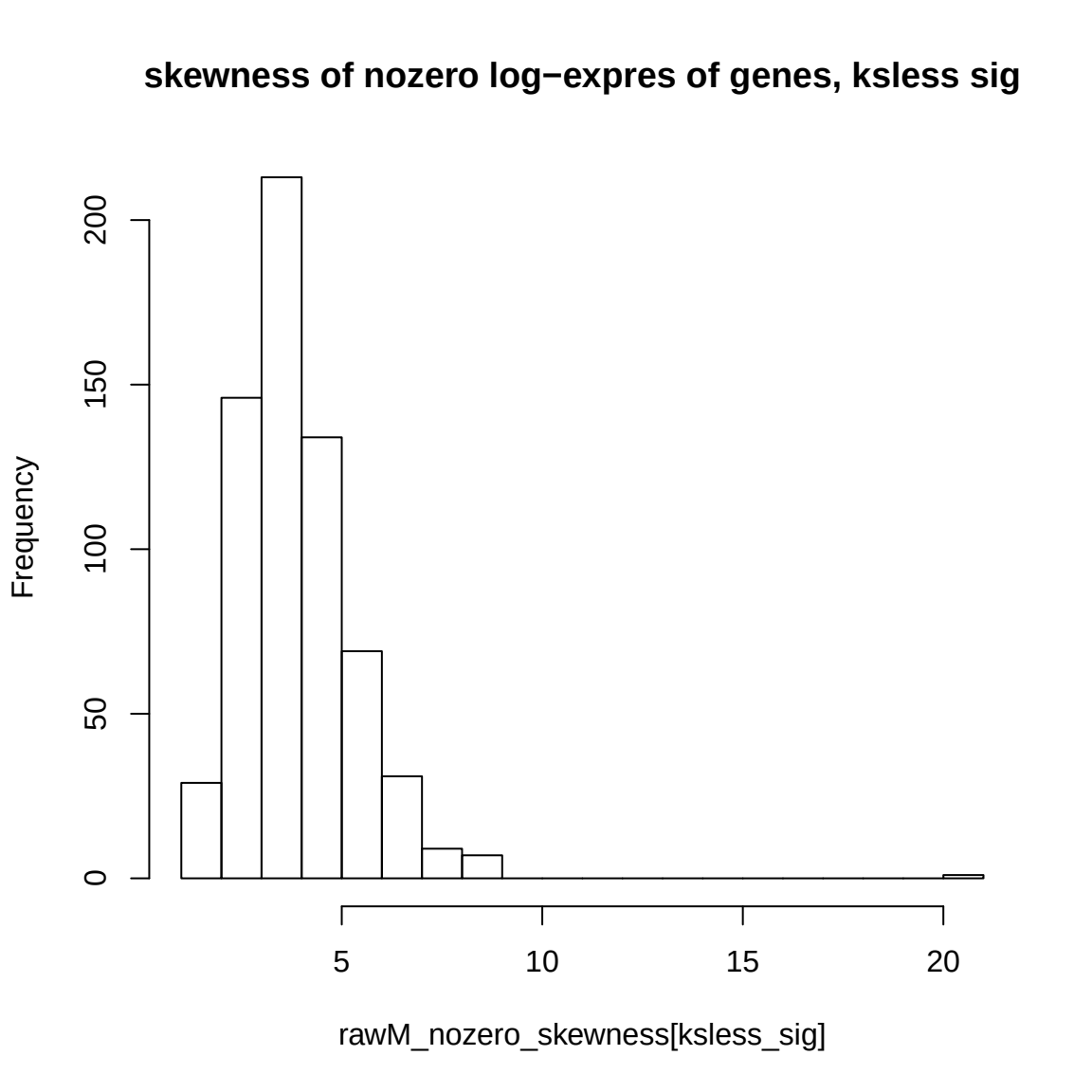

sd of nozero log−expres of genes, kstwoside sig
Frequency
0
100
200
300
400
500
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
rawM_nozero_sd[kstwoside_sig]

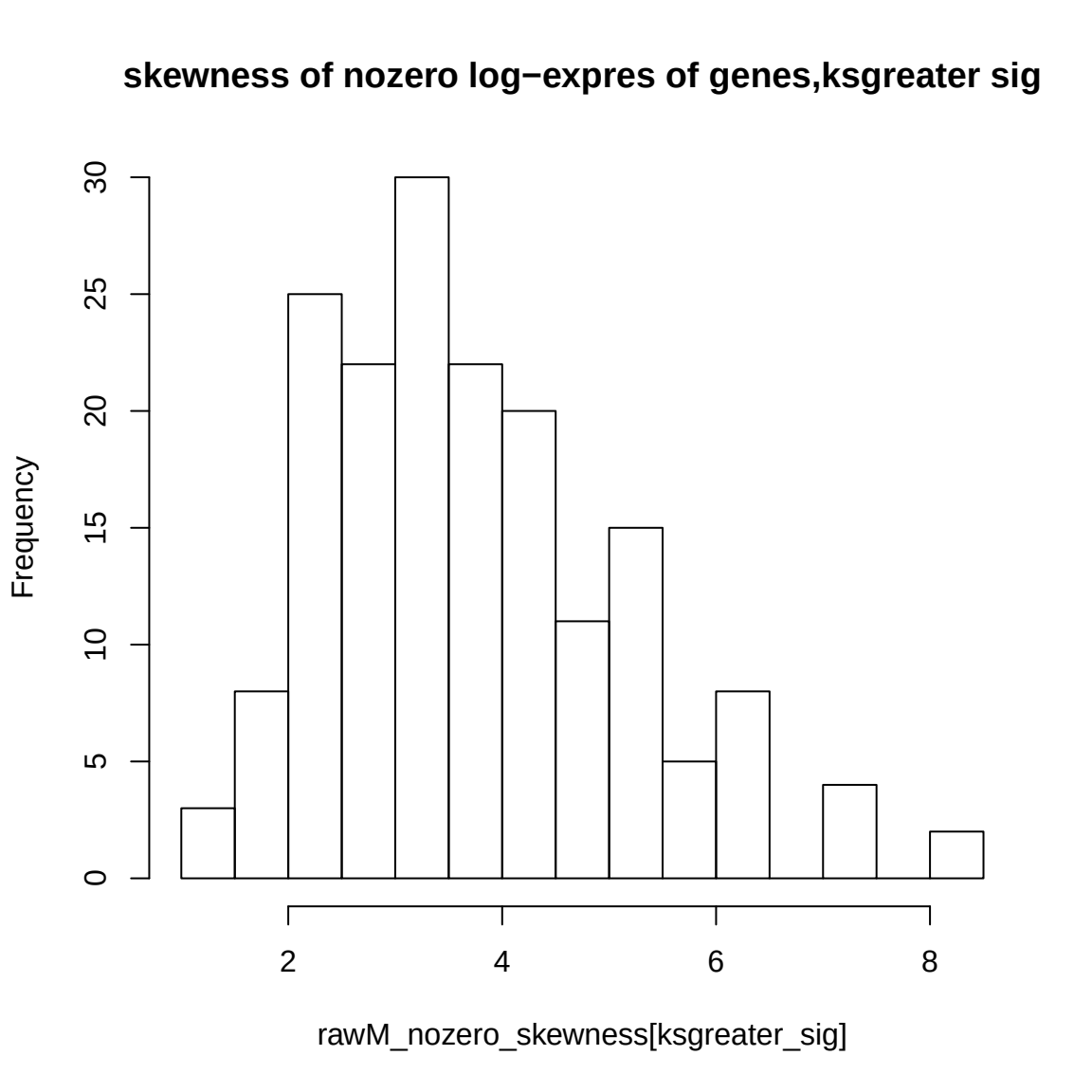

sd of nozero log−expres of genes, ksless sig
Frequency
0
200
400
600
800
0
5
10
15
rawM_nozero_sd[ksless_sig]

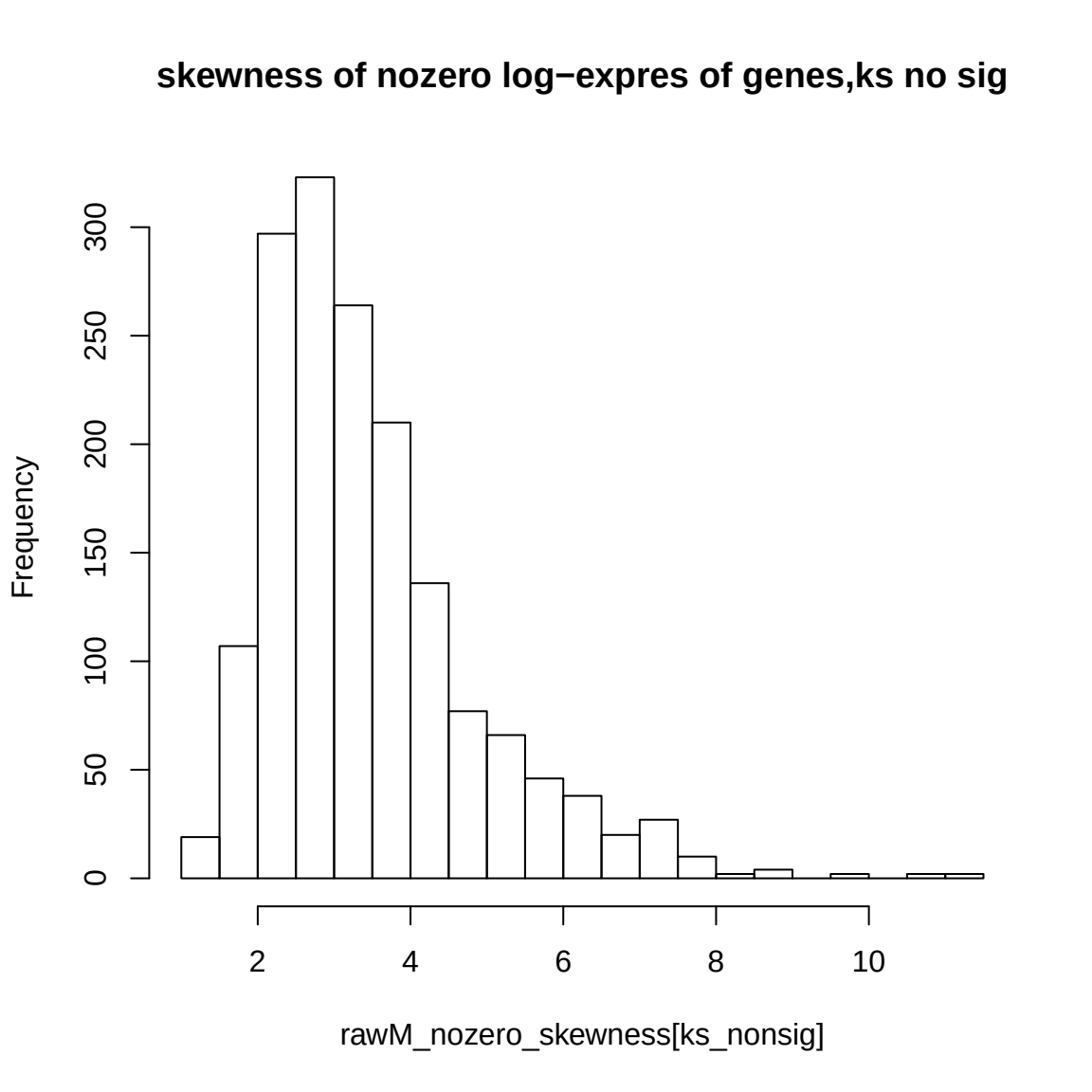

sd of nozero log−expres of genes,ksgreater sig
Frequency
0
50
100
150
0.0
0.2
0.4
0.6
0.8
1.0
1.2
rawM_nozero_sd[ksgreater_sig]

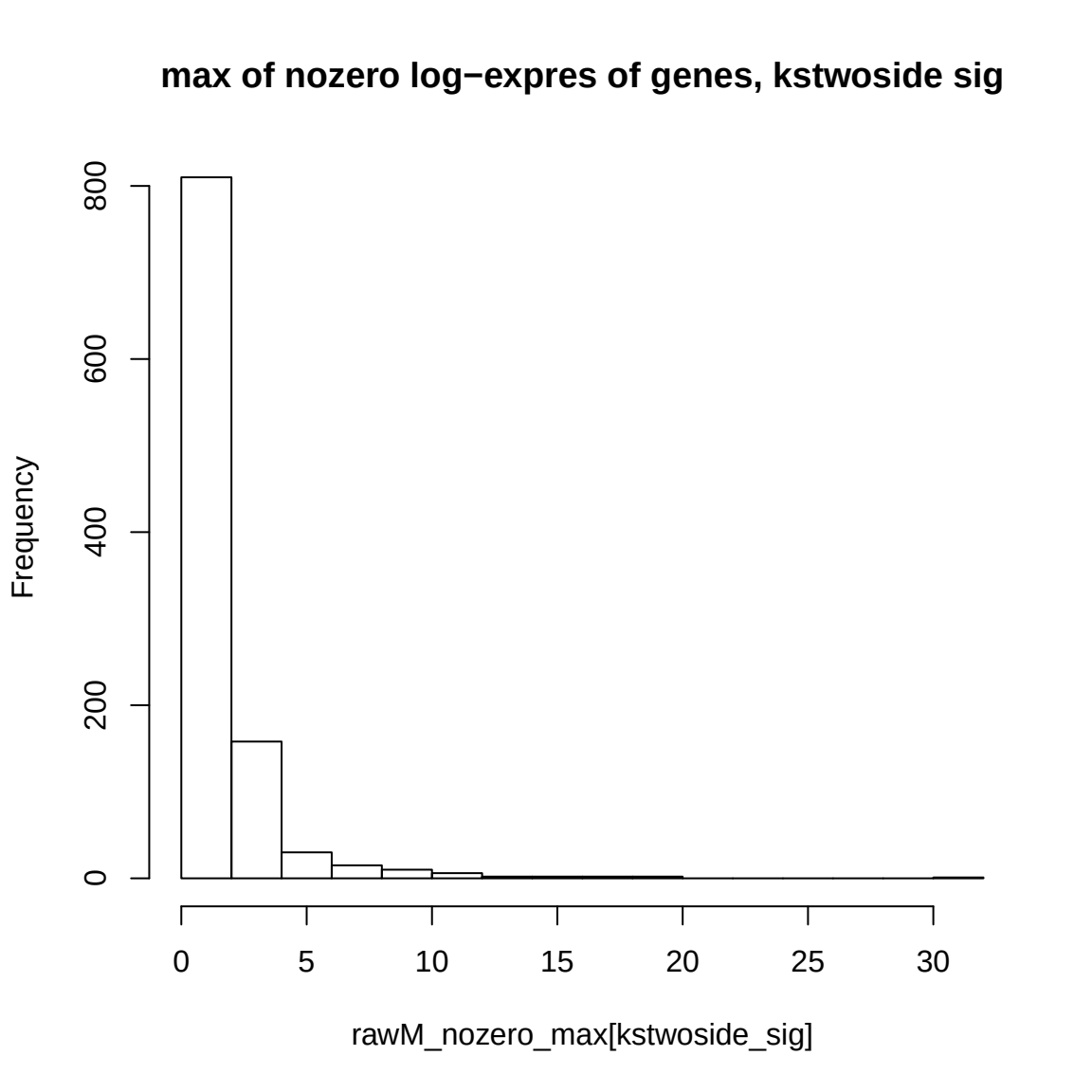

sd of nozero log−expres of genes,ks no sig
Frequency
0
200
400
600
800
0
1
2
3
4
rawM_nozero_sd[ks_nonsig]

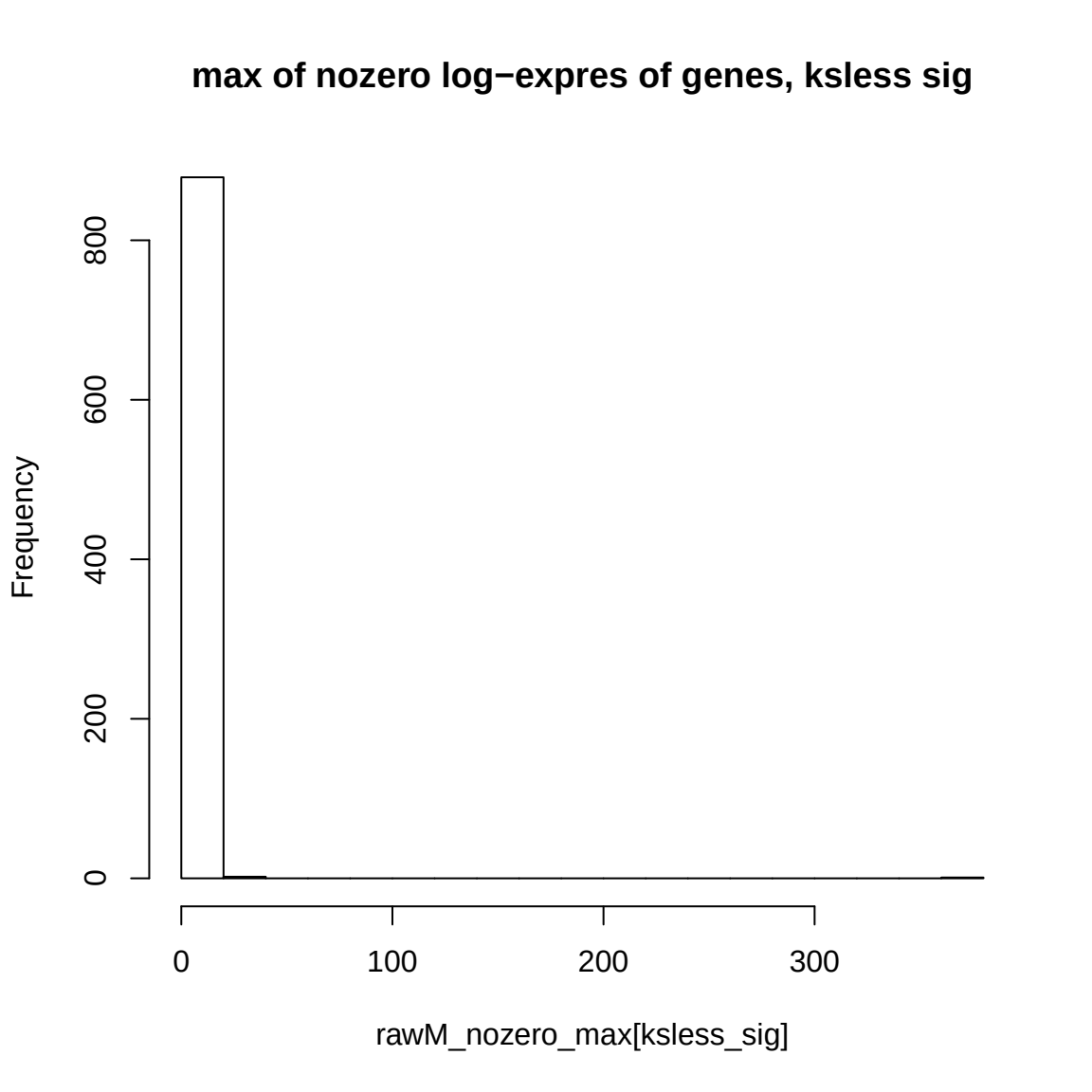

skewness of nozero log−expres of genes, kstwoside sig
Frequency
0
20
40
60
80
100
120
2
4
6
8
rawM_nozero_skewness[kstwoside_sig]

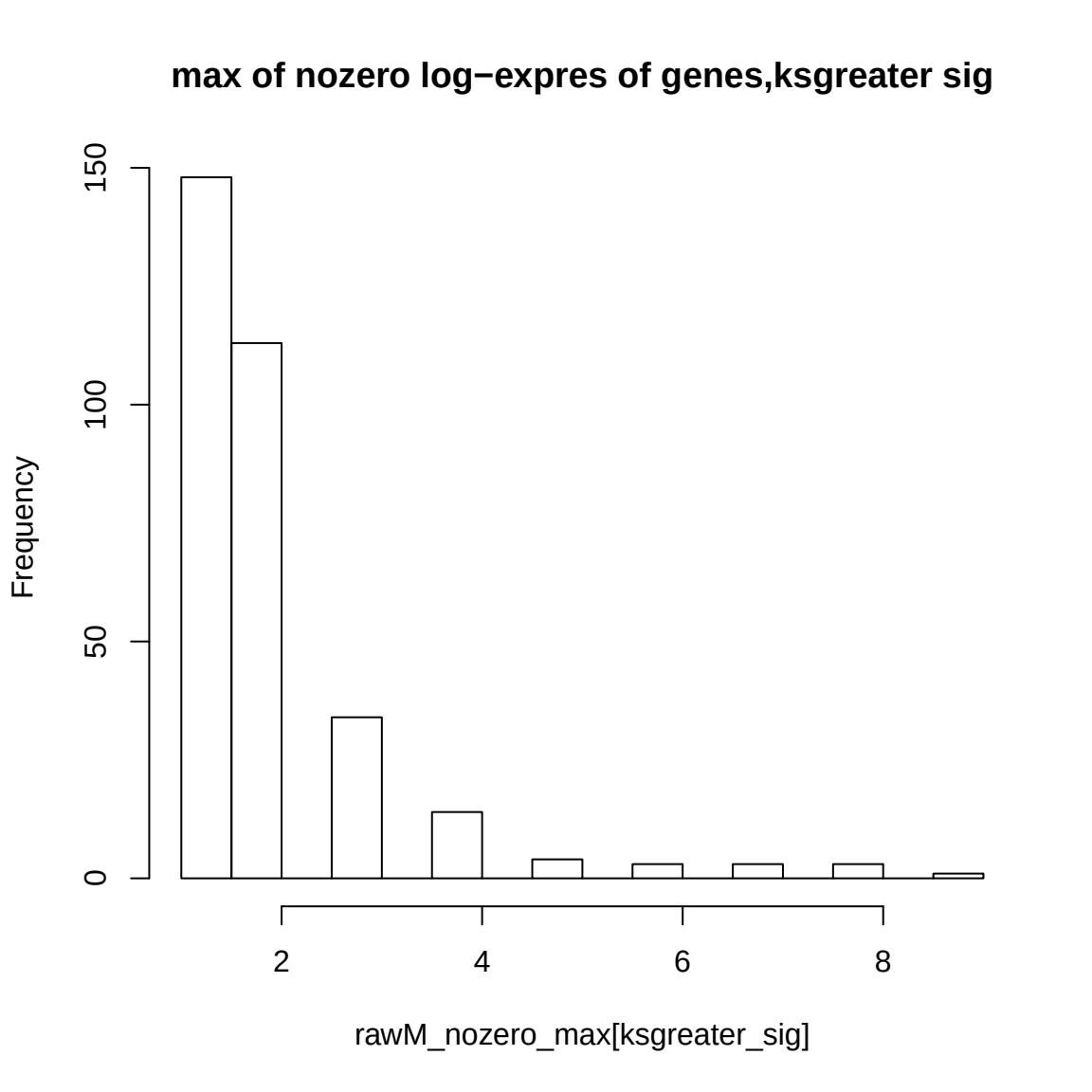

skewness of nozero log−expres of genes, ksless sig
Frequency
0
50
100
150
200
5
10
15
20
rawM_nozero_skewness[ksless_sig]

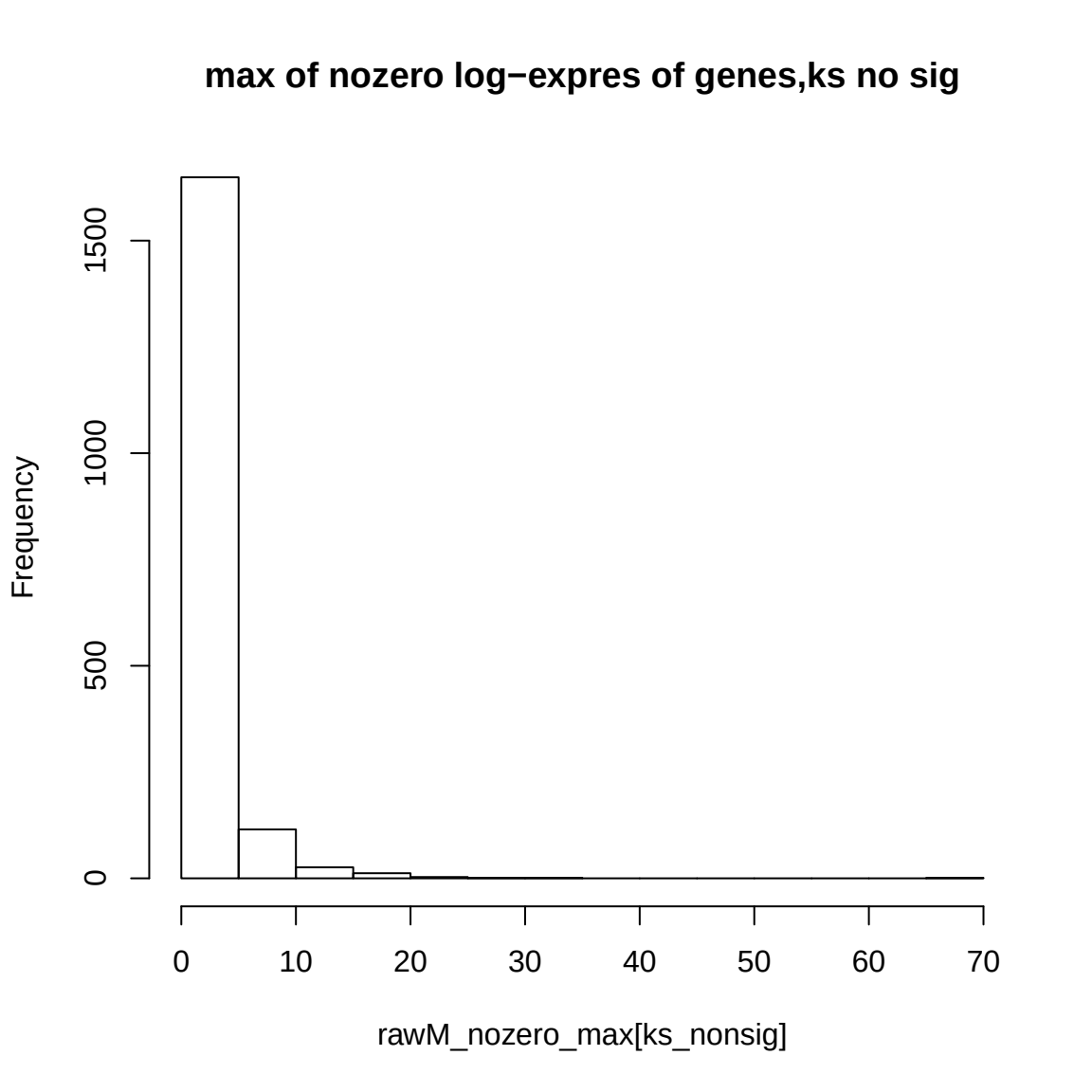

skewness of nozero log−expres of genes,ksgreater sig
Frequency
0
5
10
15
20
25
30
2
4
6
8
rawM_nozero_skewness[ksgreater_sig]

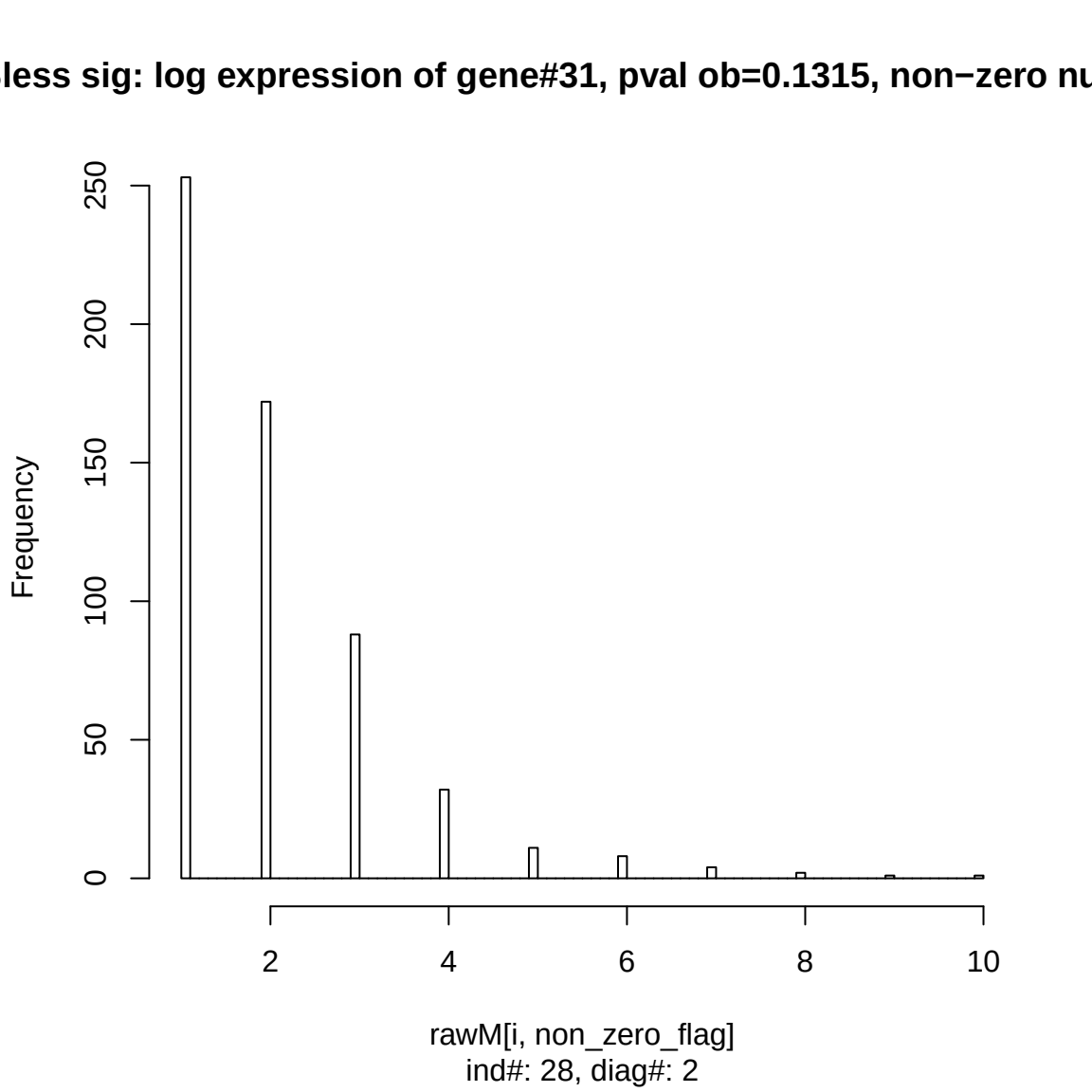

skewness of nozero log−expres of genes,ks no sig
Frequency
0
50
100
150
200
250
300
2
4
6
8
10
rawM_nozero_skewness[ks_nonsig]

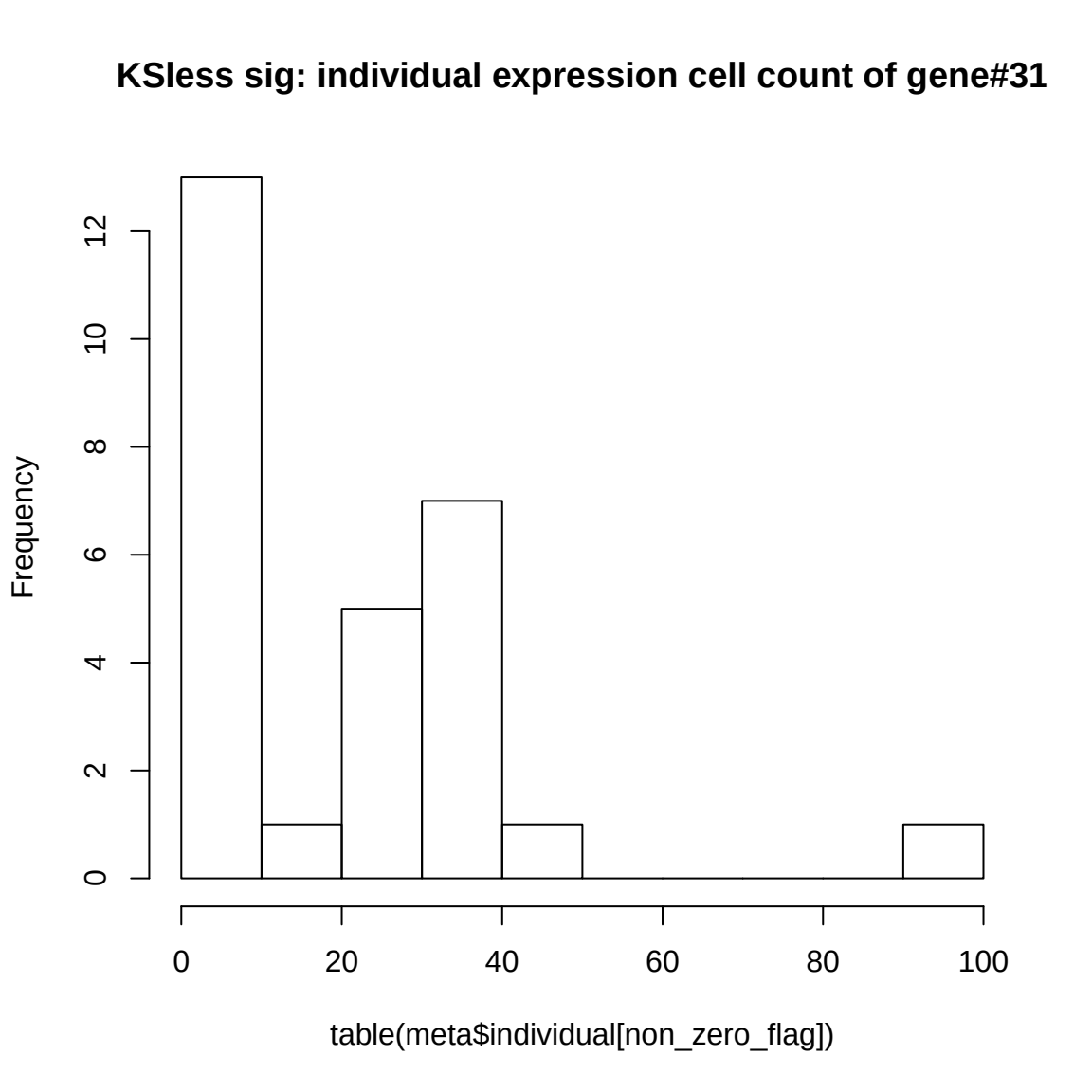

max of nozero log−expres of genes, kstwoside sig
Frequency
0
200
400
600
800
0
5
10
15
20
25
30
rawM_nozero_max[kstwoside_sig]

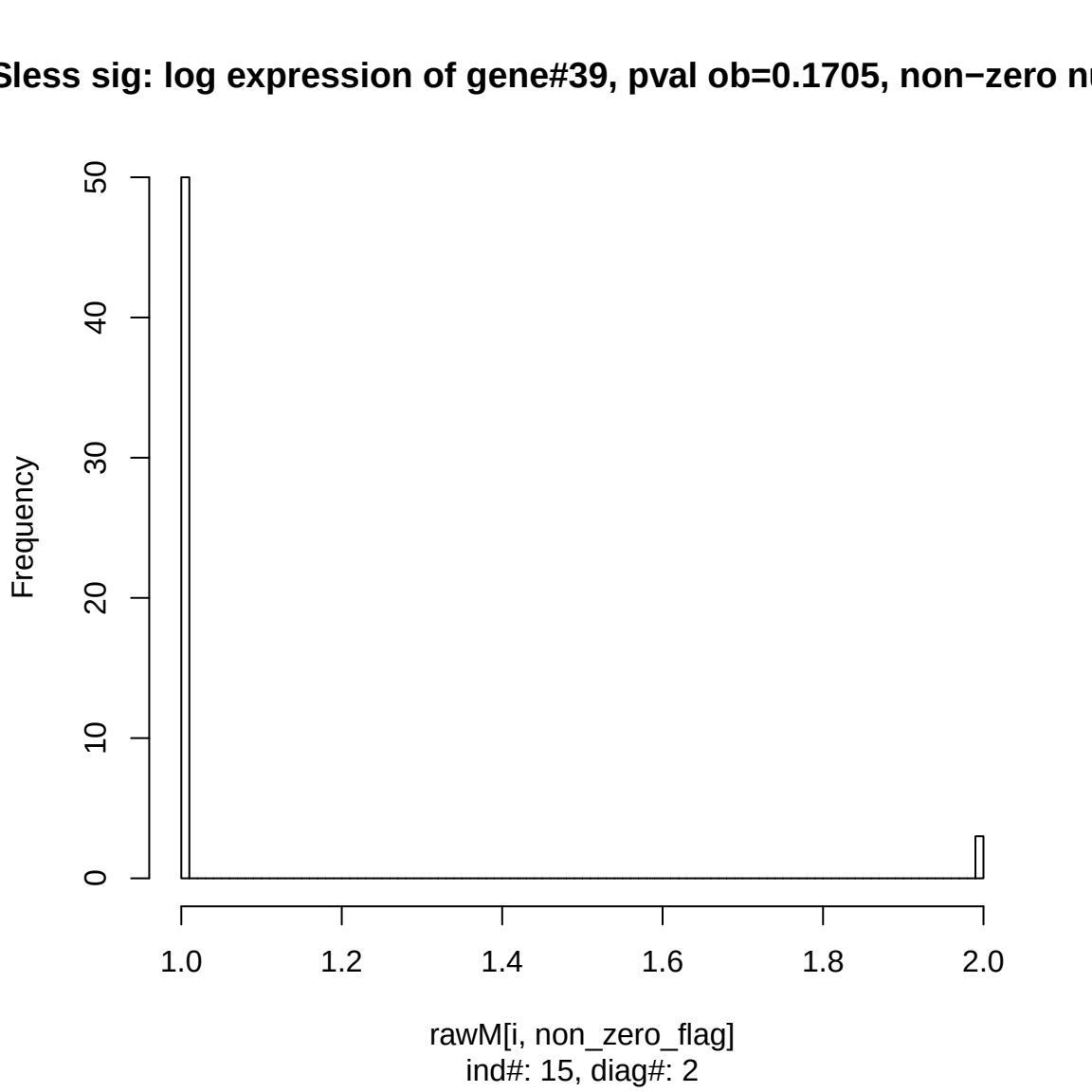

max of nozero log−expres of genes, ksless sig
Frequency
0
200
400
600
800
0
100
200
300
rawM_nozero_max[ksless_sig]

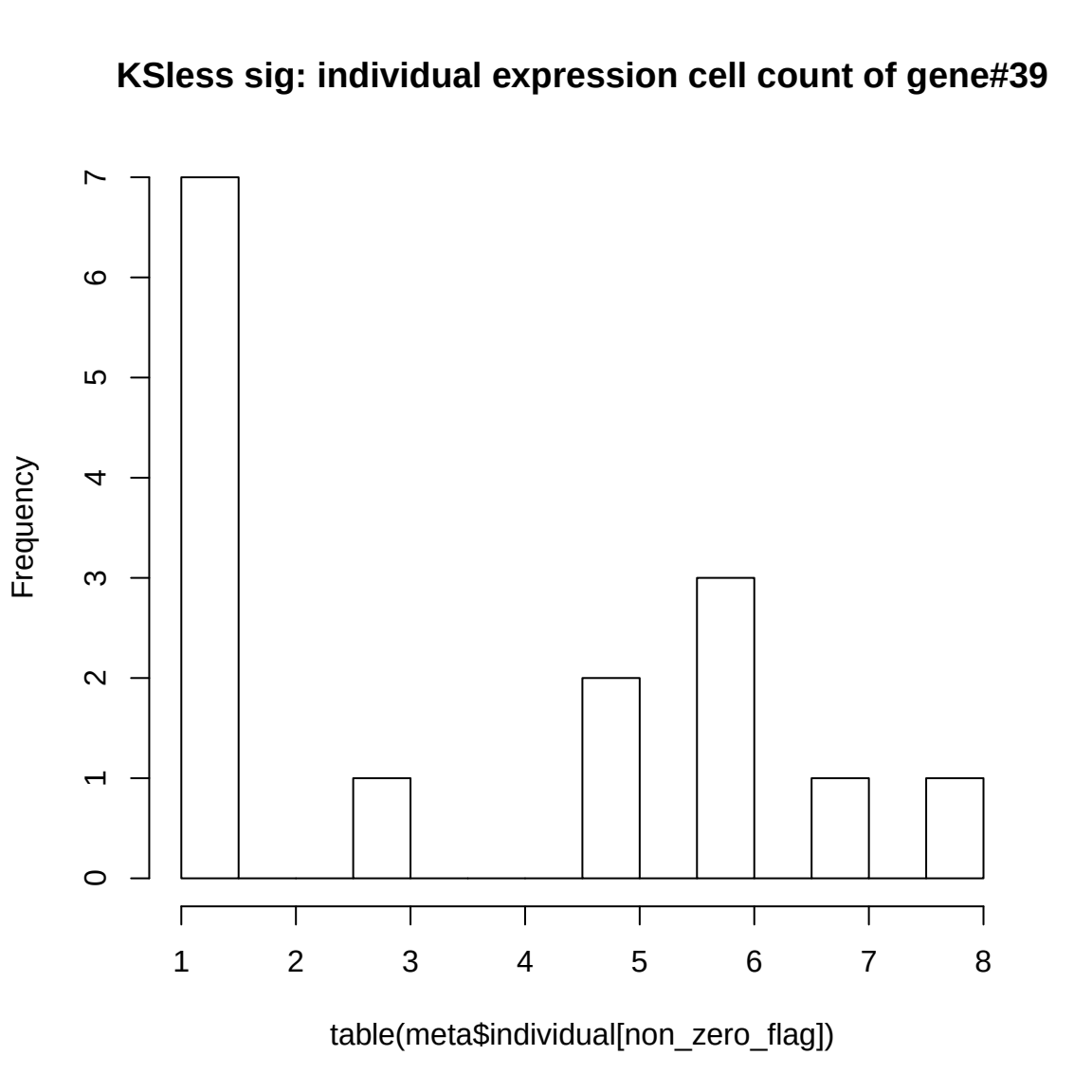

max of nozero log−expres of genes,ksgreater sig
Frequency
0
50
100
150
2
4
6
8
rawM_nozero_max[ksgreater_sig]

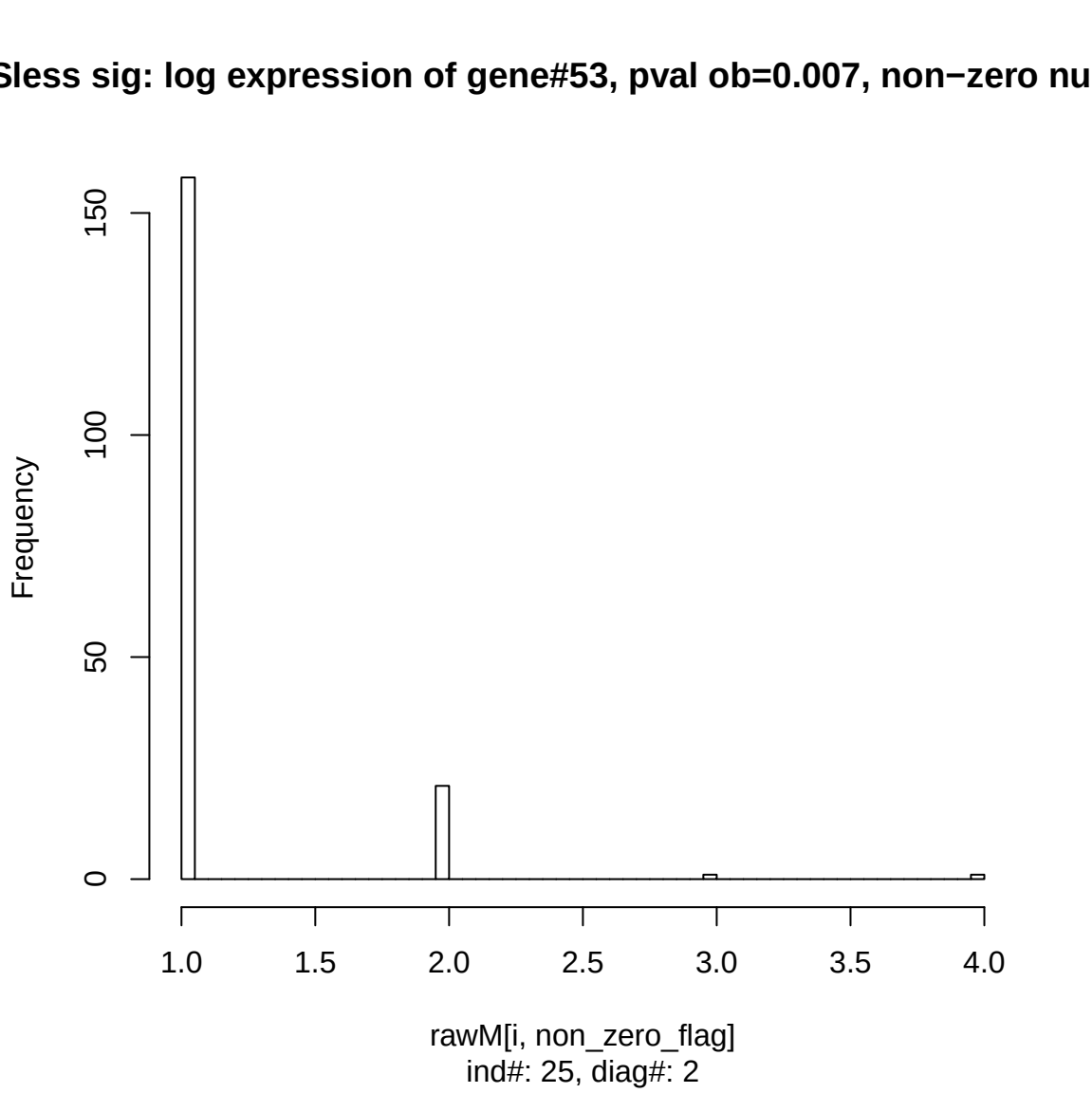

max of nozero log−expres of genes,ks no sig
Frequency
0
500
1000
1500
0
10
20
30
40
50
60
70
rawM_nozero_max[ks_nonsig]

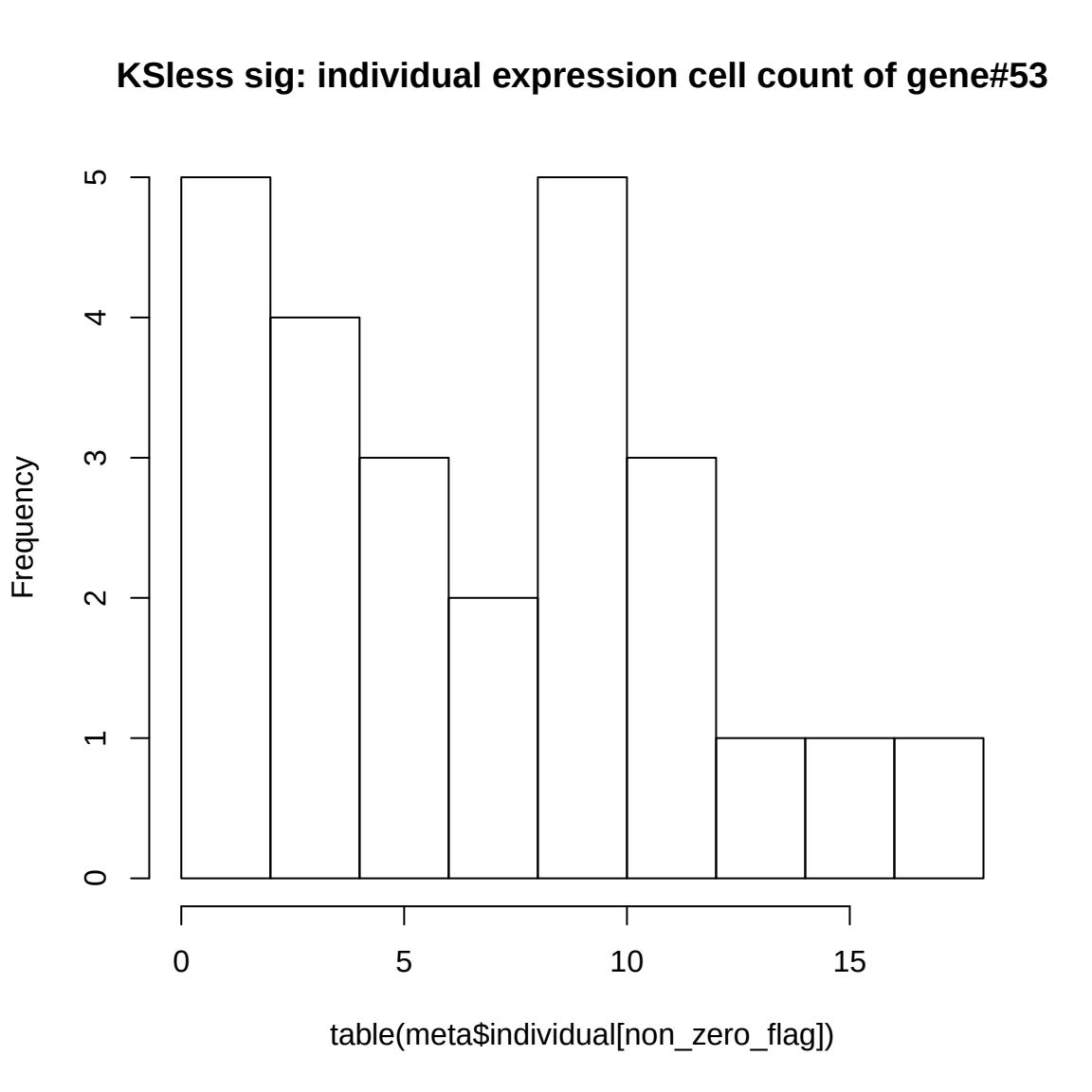

less sig: log expression of gene#31, pval ob=0.1315, non−zero nu
Frequency
0
50
100
150
200
250
2
4
6
8
10
rawM[i, non_zero_flag]
ind#: 28, diag#: 2

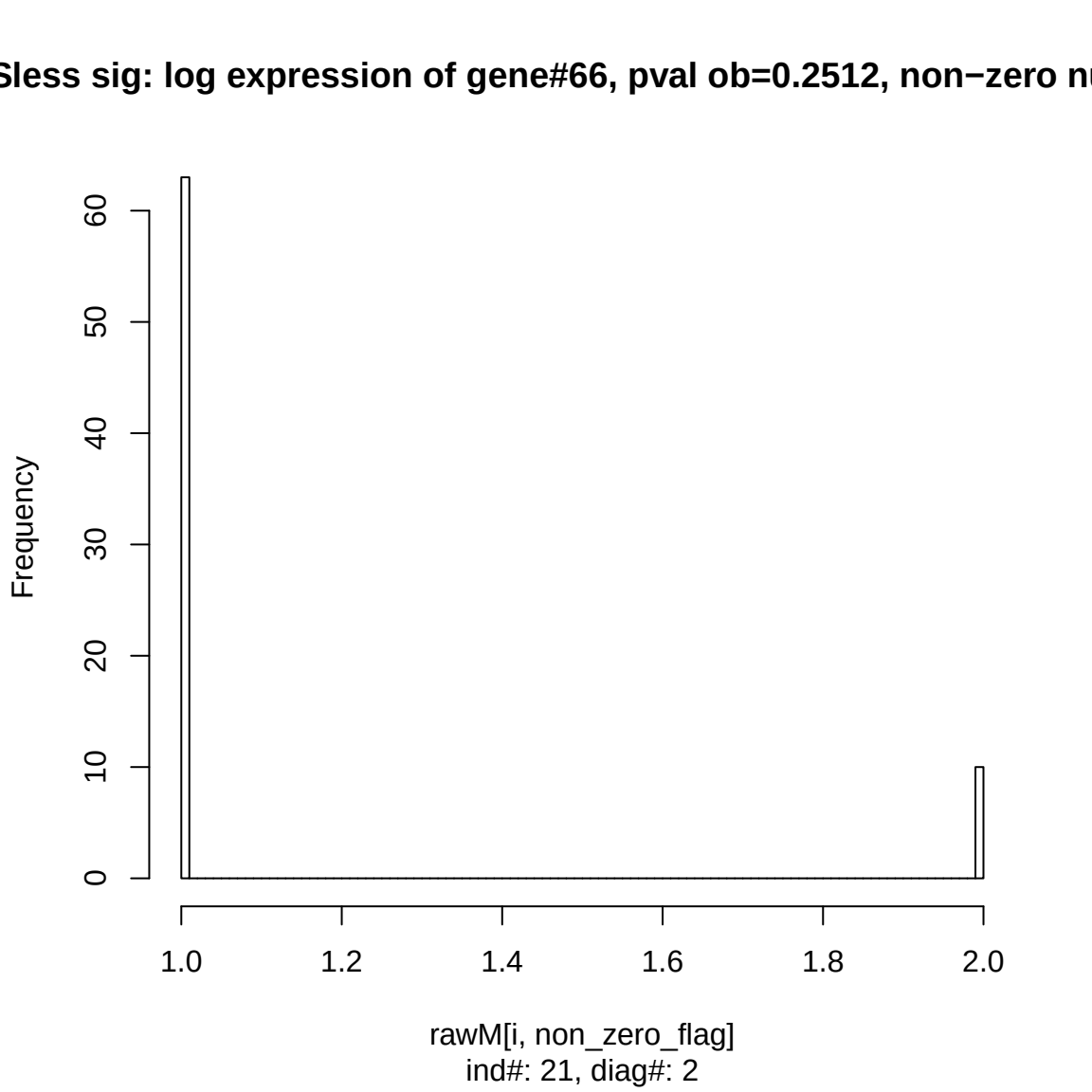

KSless sig: individual expression cell count of gene#31
Frequency
0
2
4
6
8
10
12
0
20
40
60
80
100
table(meta$individual[non_zero_flag])

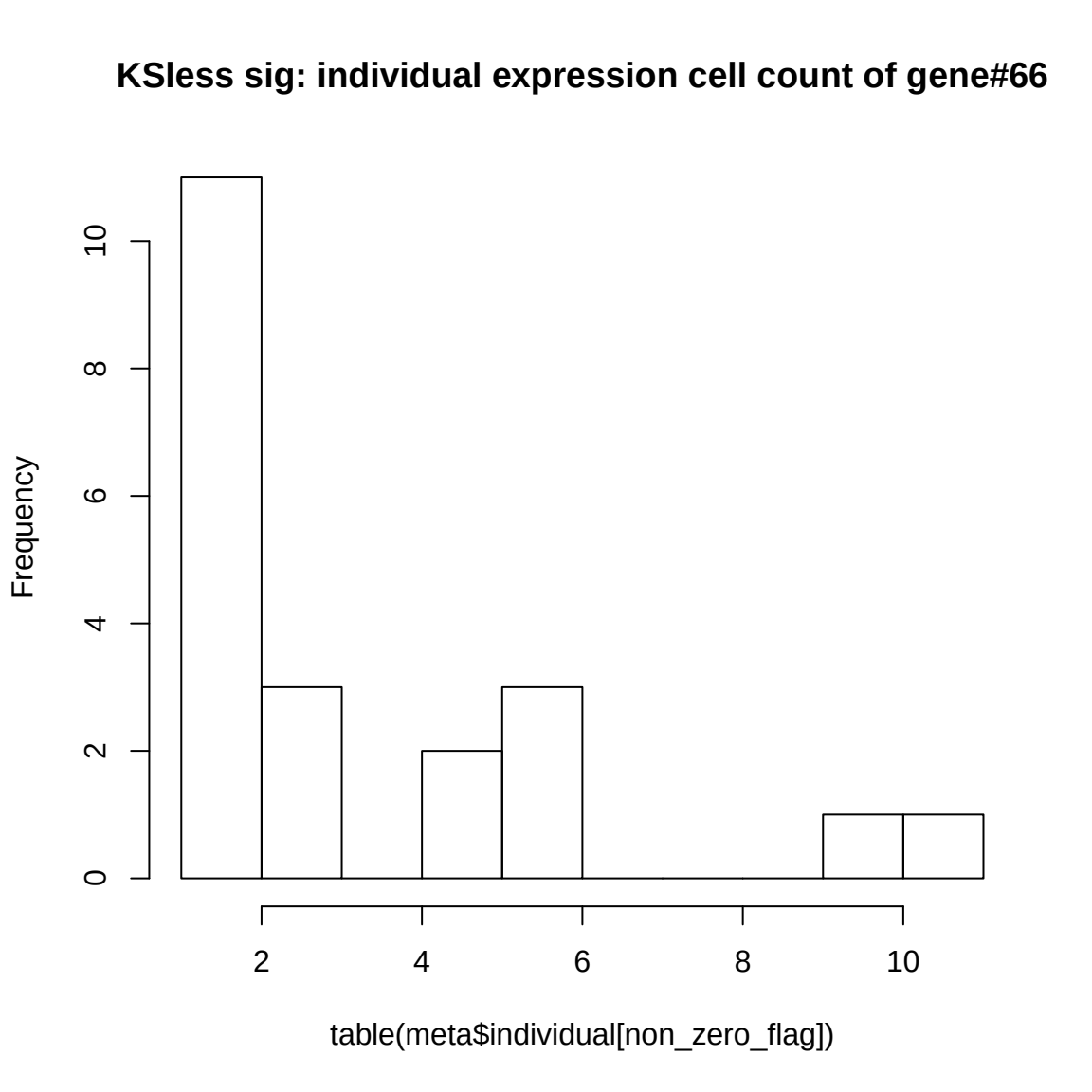

Sless sig: log expression of gene#39, pval ob=0.1705, non−zero nu
Frequency
0
10
20
30
40
50
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 15, diag#: 2

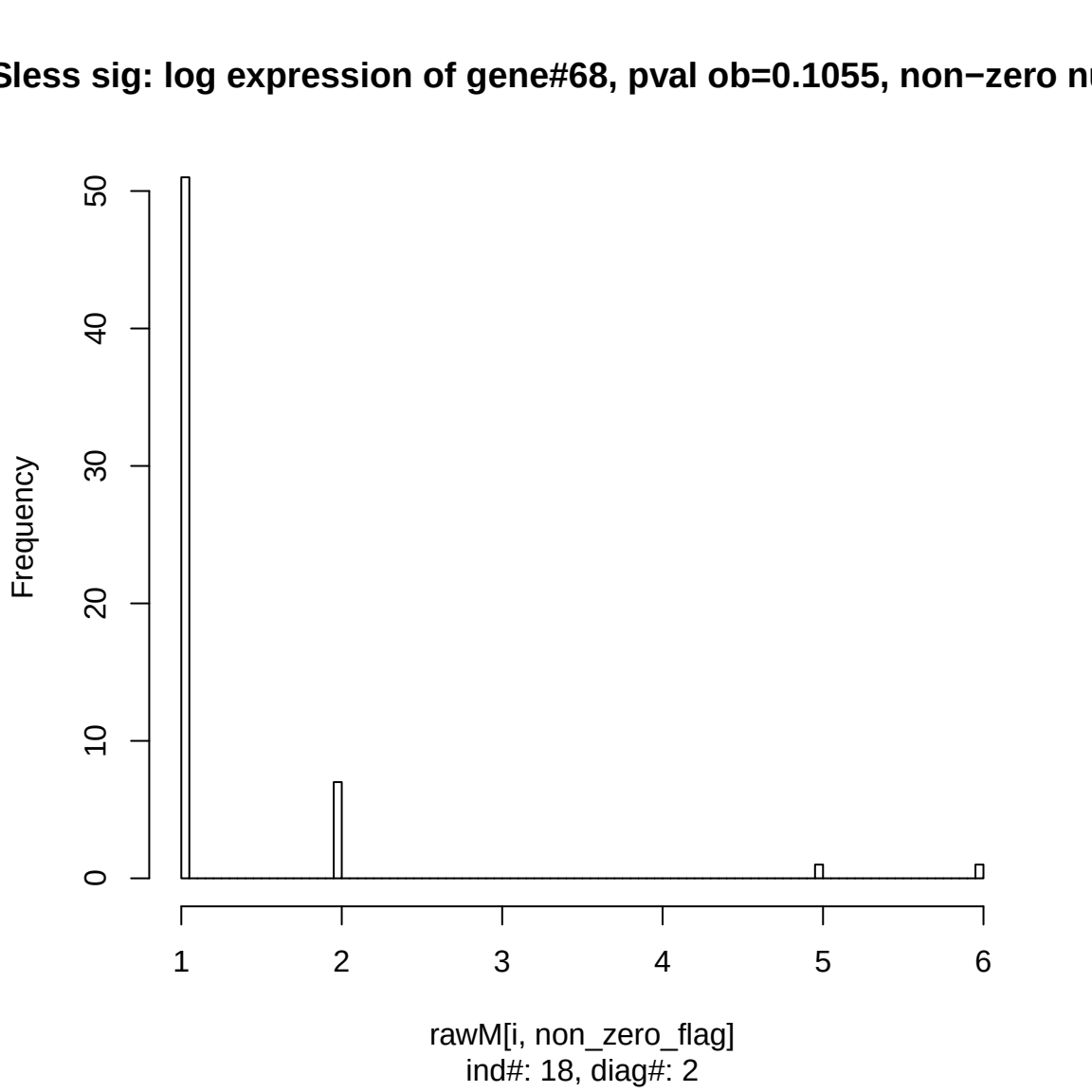

KSless sig: individual expression cell count of gene#39
Frequency
0
1
2
3
4
5
6
7
1
2
3
4
5
6
7
8
table(meta$individual[non_zero_flag])

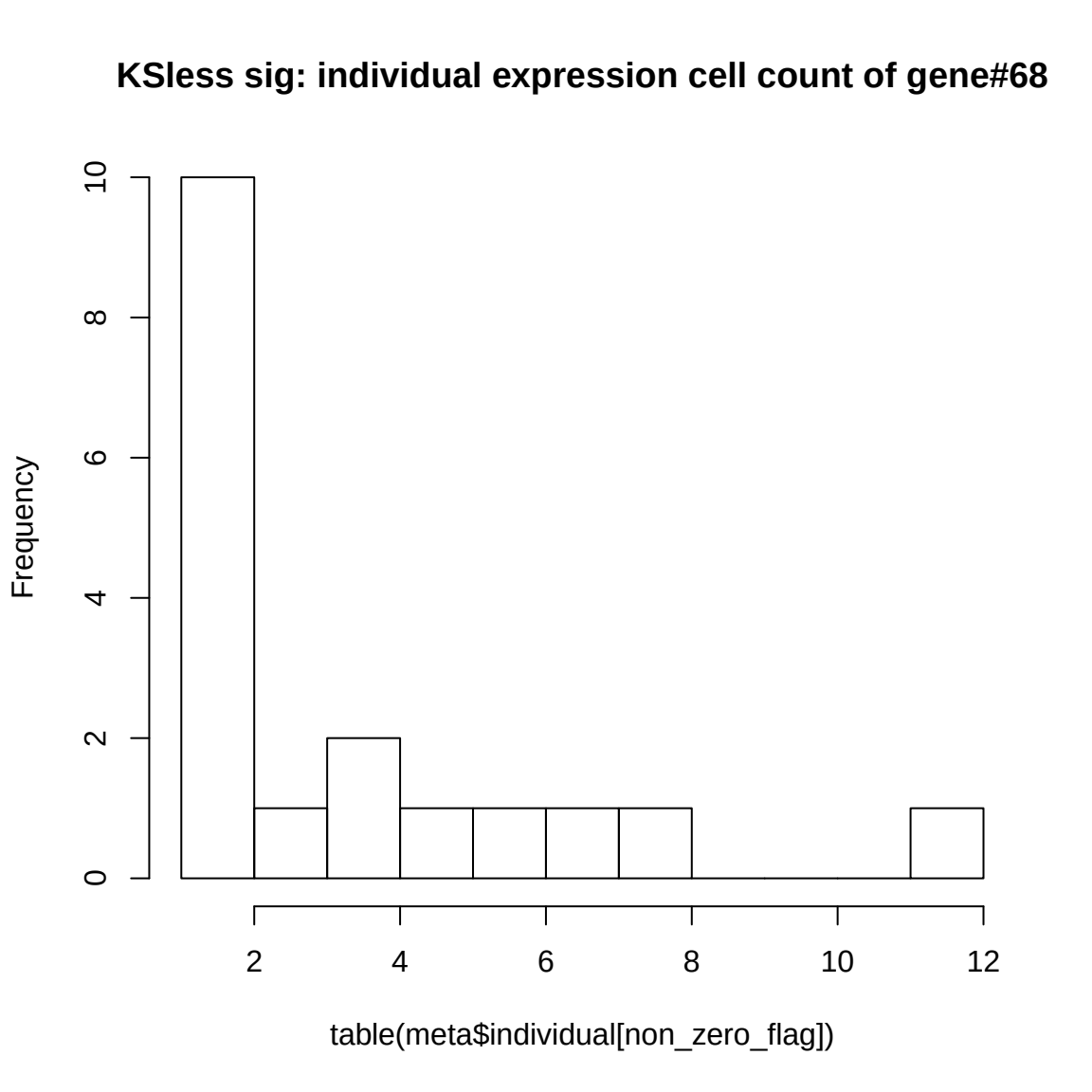

Sless sig: log expression of gene#53, pval ob=0.007, non−zero nu
Frequency
0
50
100
150
1.0
1.5
2.0
2.5
3.0
3.5
4.0
rawM[i, non_zero_flag]
ind#: 25, diag#: 2

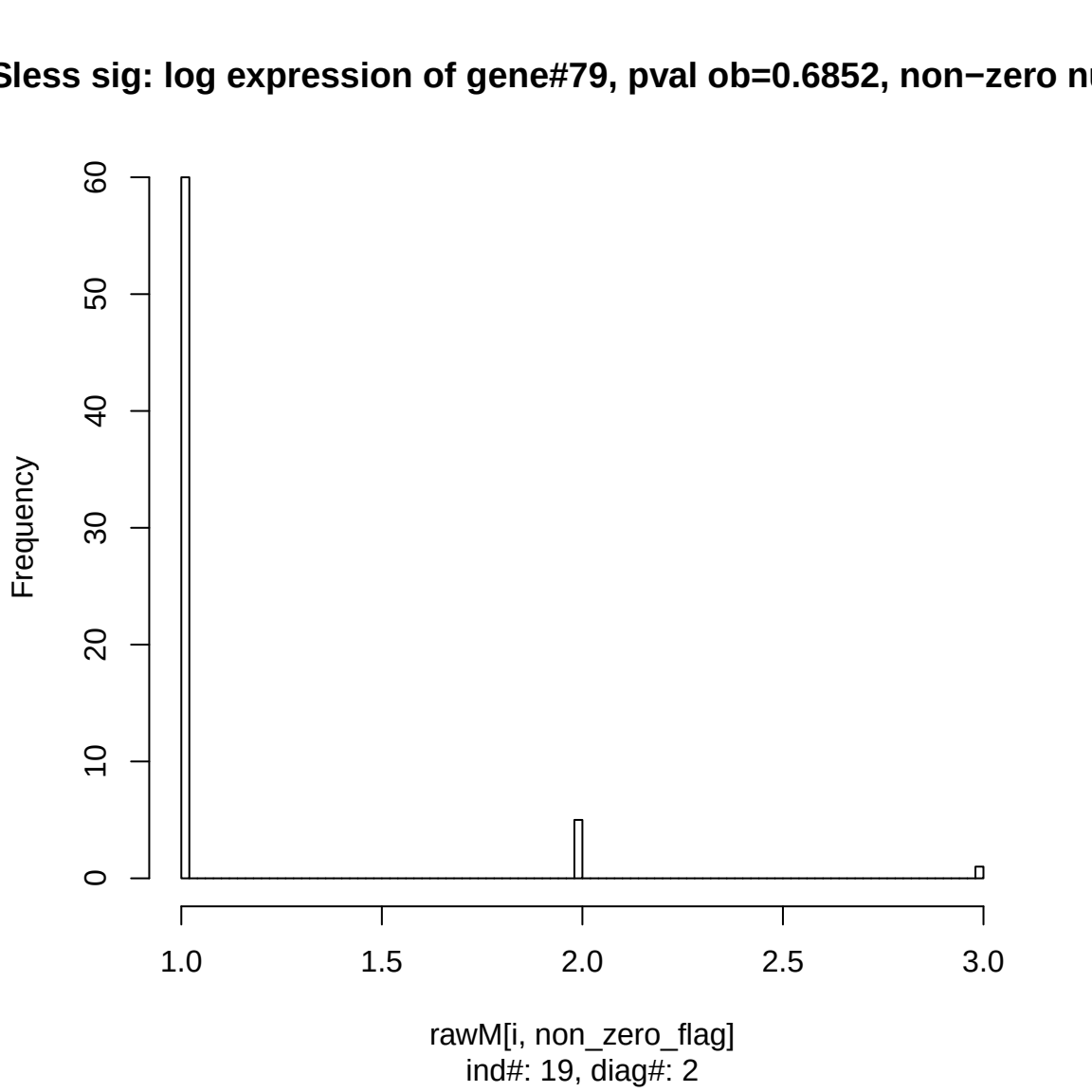

KSless sig: individual expression cell count of gene#53
Frequency
0
1
2
3
4
5
0
5
10
15
table(meta$individual[non_zero_flag])

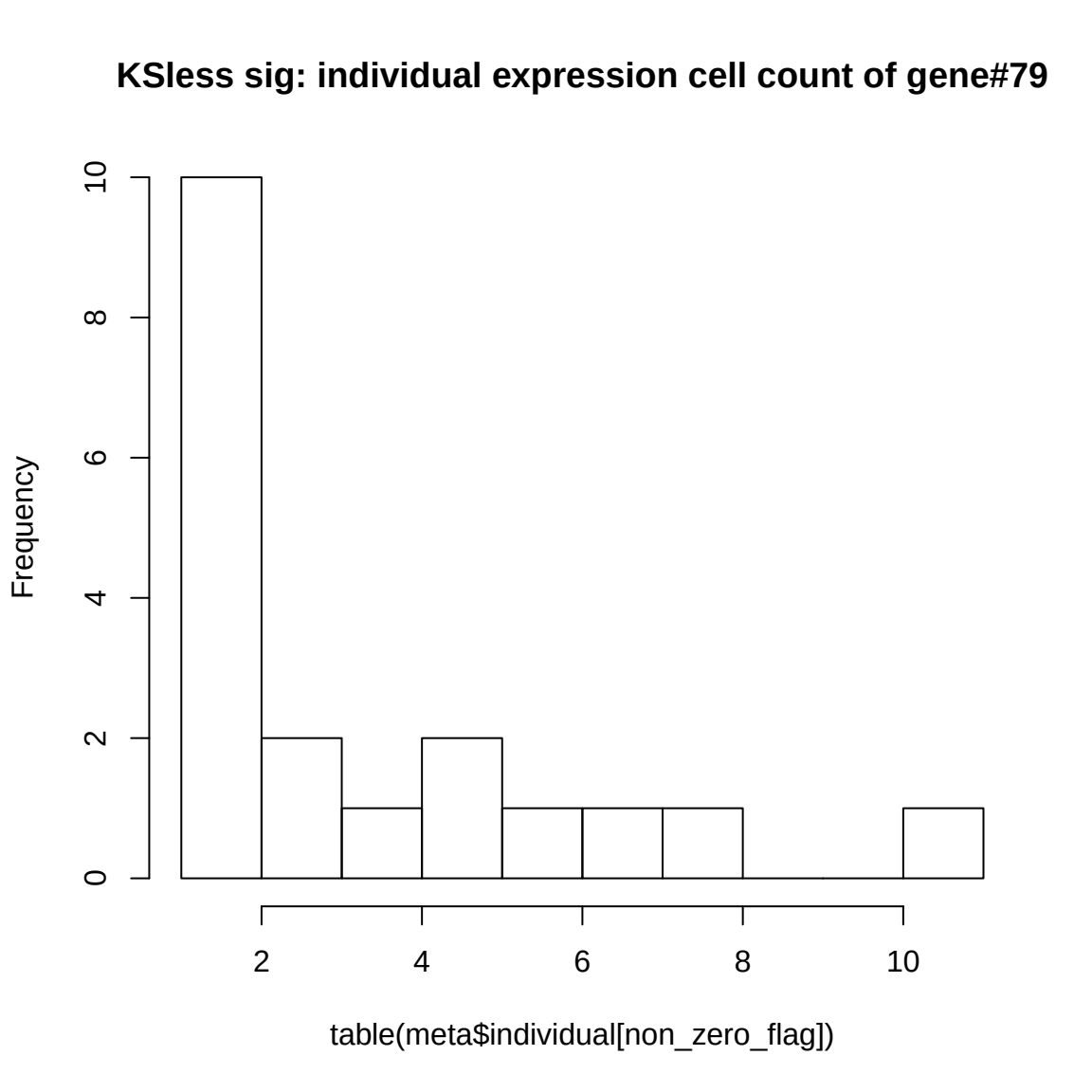

Sless sig: log expression of gene#66, pval ob=0.2512, non−zero nu
Frequency
0
10
20
30
40
50
60
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 21, diag#: 2

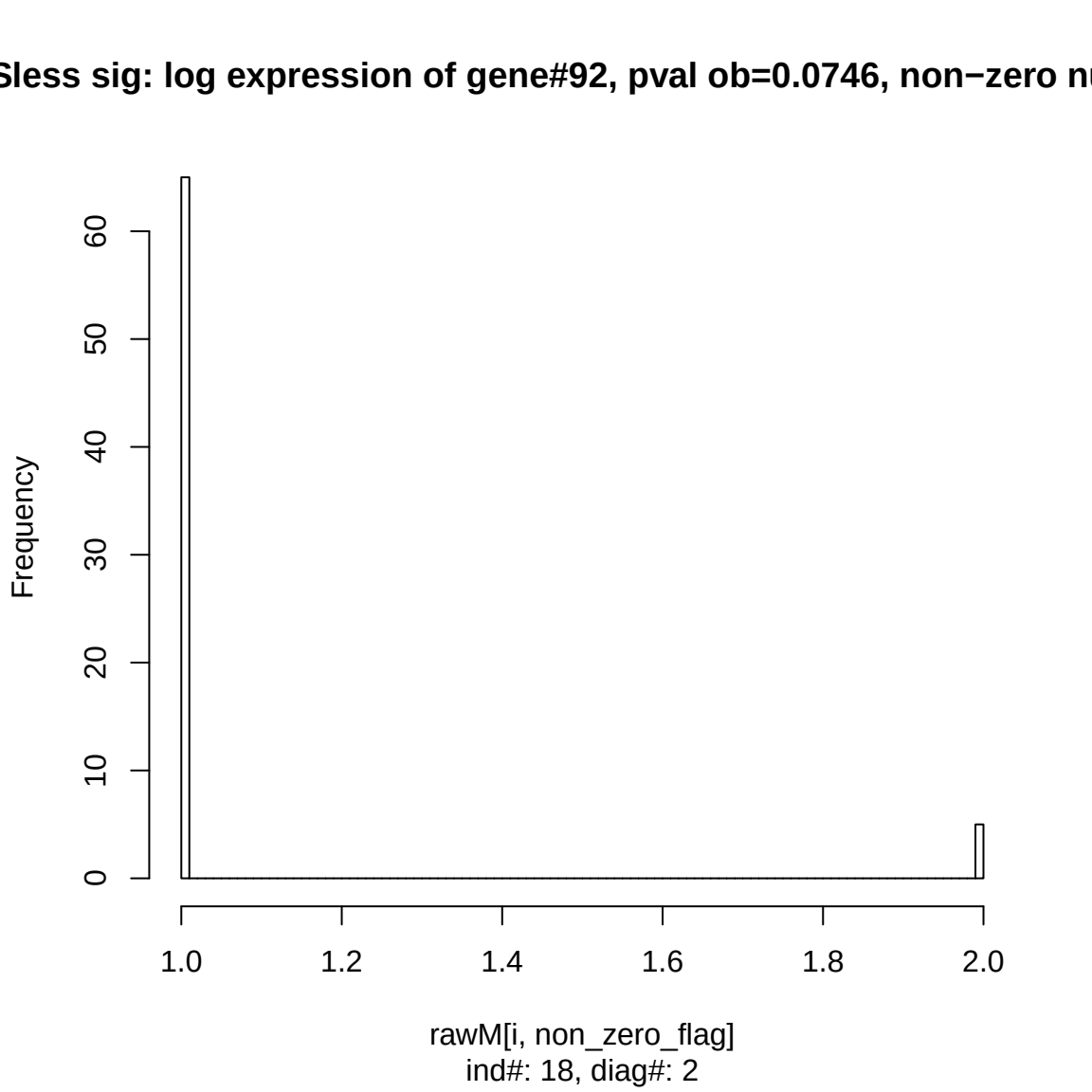

KSless sig: individual expression cell count of gene#66
Frequency
0
2
4
6
8
10
2
4
6
8
10
table(meta$individual[non_zero_flag])

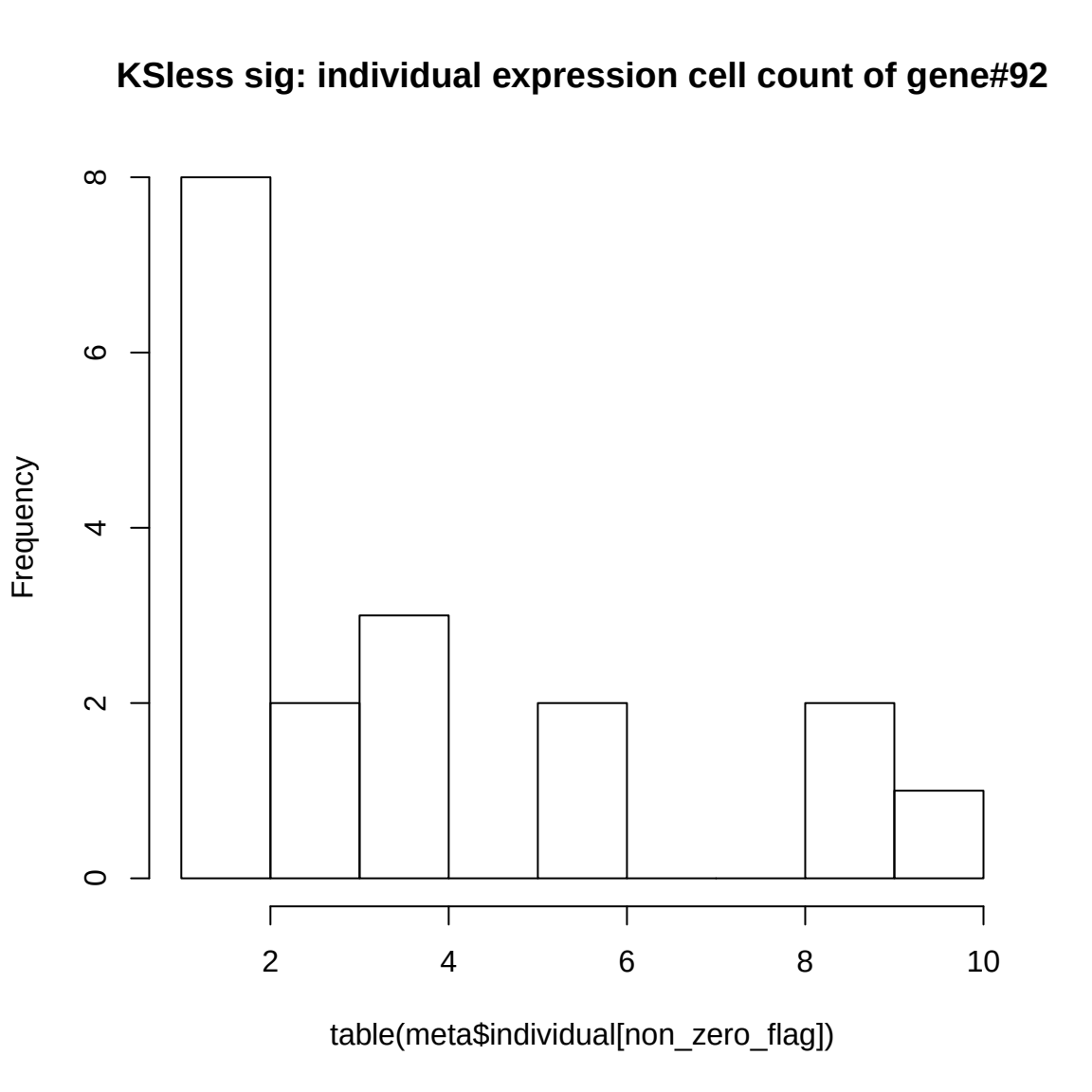

Sless sig: log expression of gene#68, pval ob=0.1055, non−zero nu
Frequency
0
10
20
30
40
50
1
2
3
4
5
6
rawM[i, non_zero_flag]
ind#: 18, diag#: 2

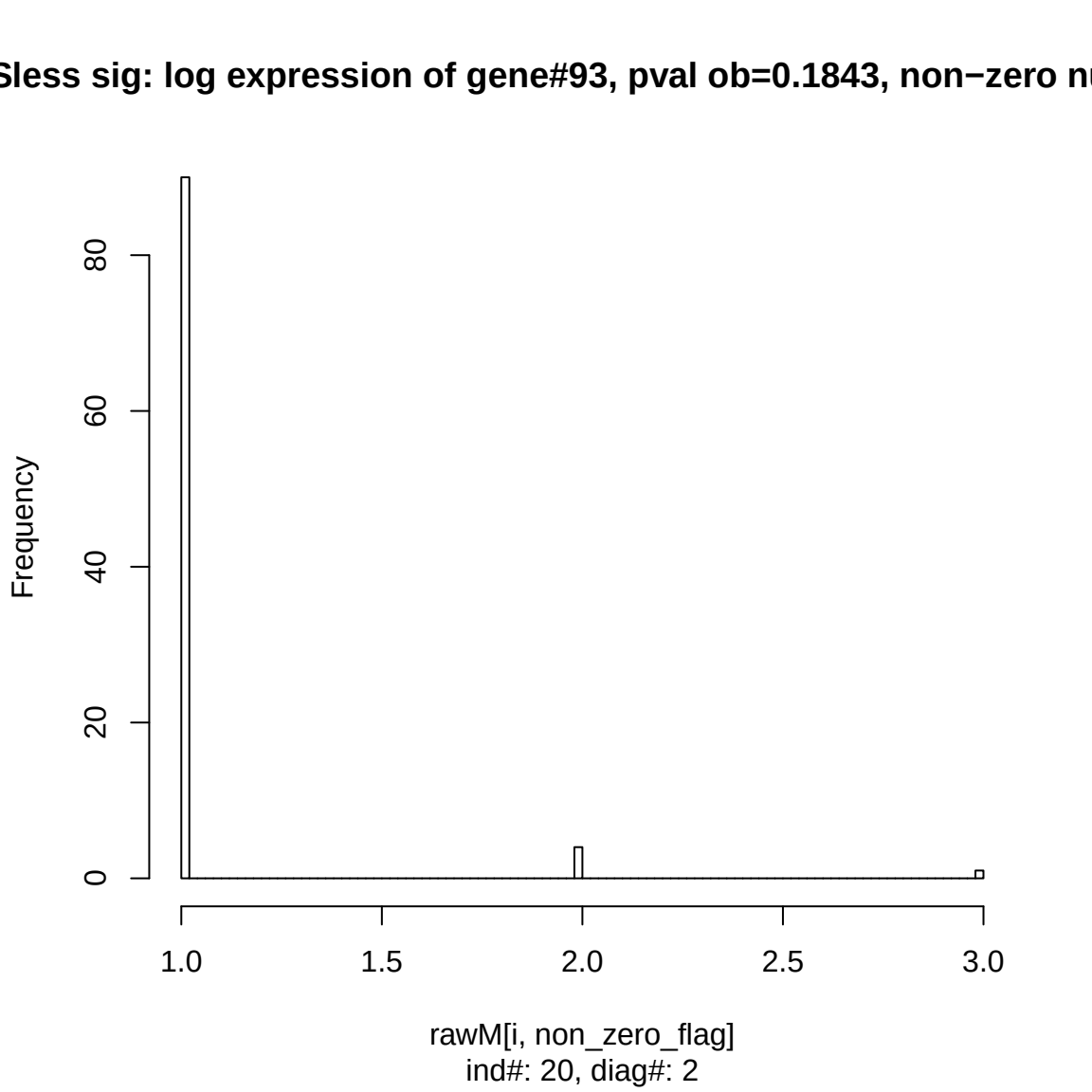

KSless sig: individual expression cell count of gene#68
Frequency
0
2
4
6
8
10
2
4
6
8
10
12
table(meta$individual[non_zero_flag])

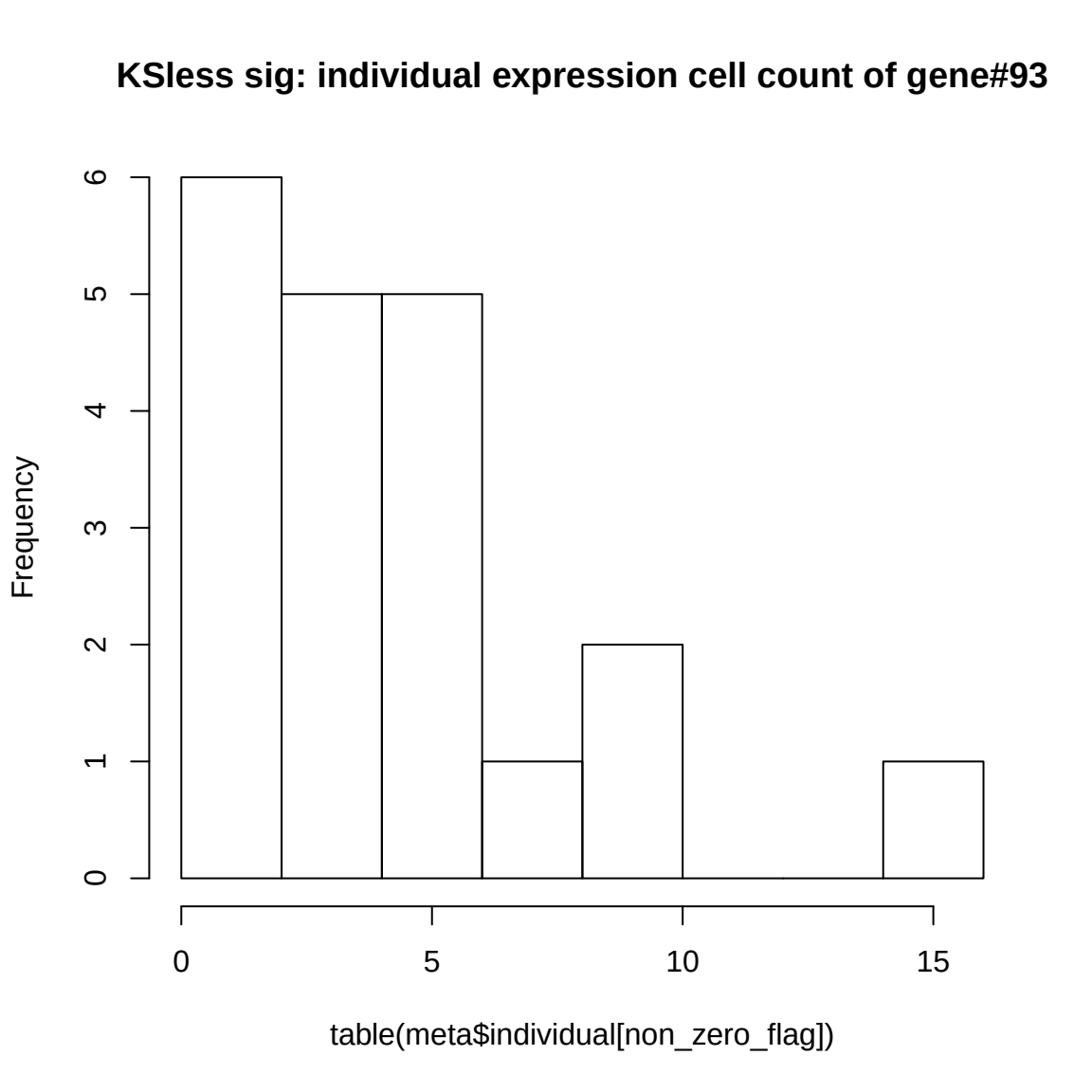

Sless sig: log expression of gene#79, pval ob=0.6852, non−zero nu
Frequency
0
10
20
30
40
50
60
1.0
1.5
2.0
2.5
3.0
rawM[i, non_zero_flag]
ind#: 19, diag#: 2

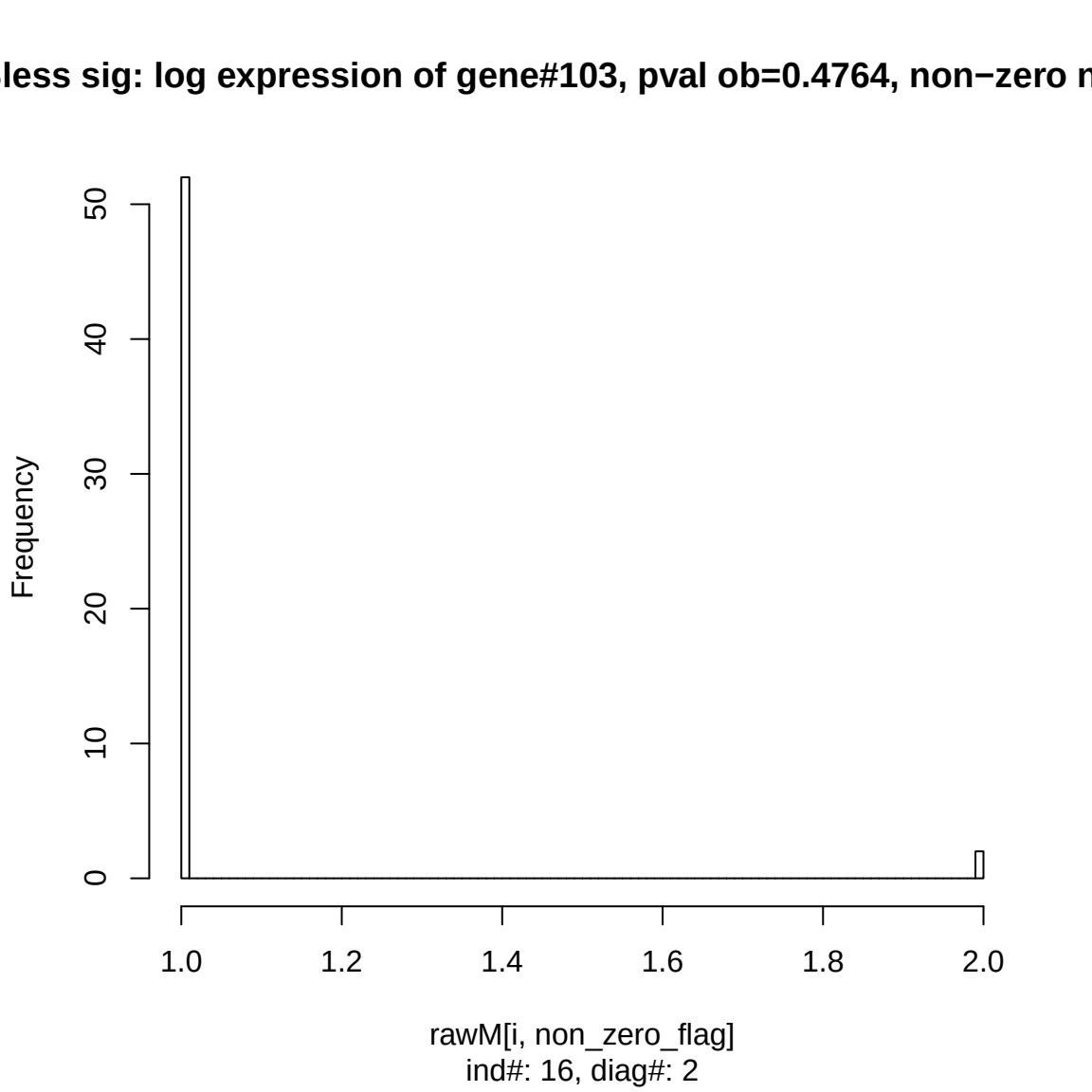

KSless sig: individual expression cell count of gene#79
Frequency
0
2
4
6
8
10
2
4
6
8
10
table(meta$individual[non_zero_flag])

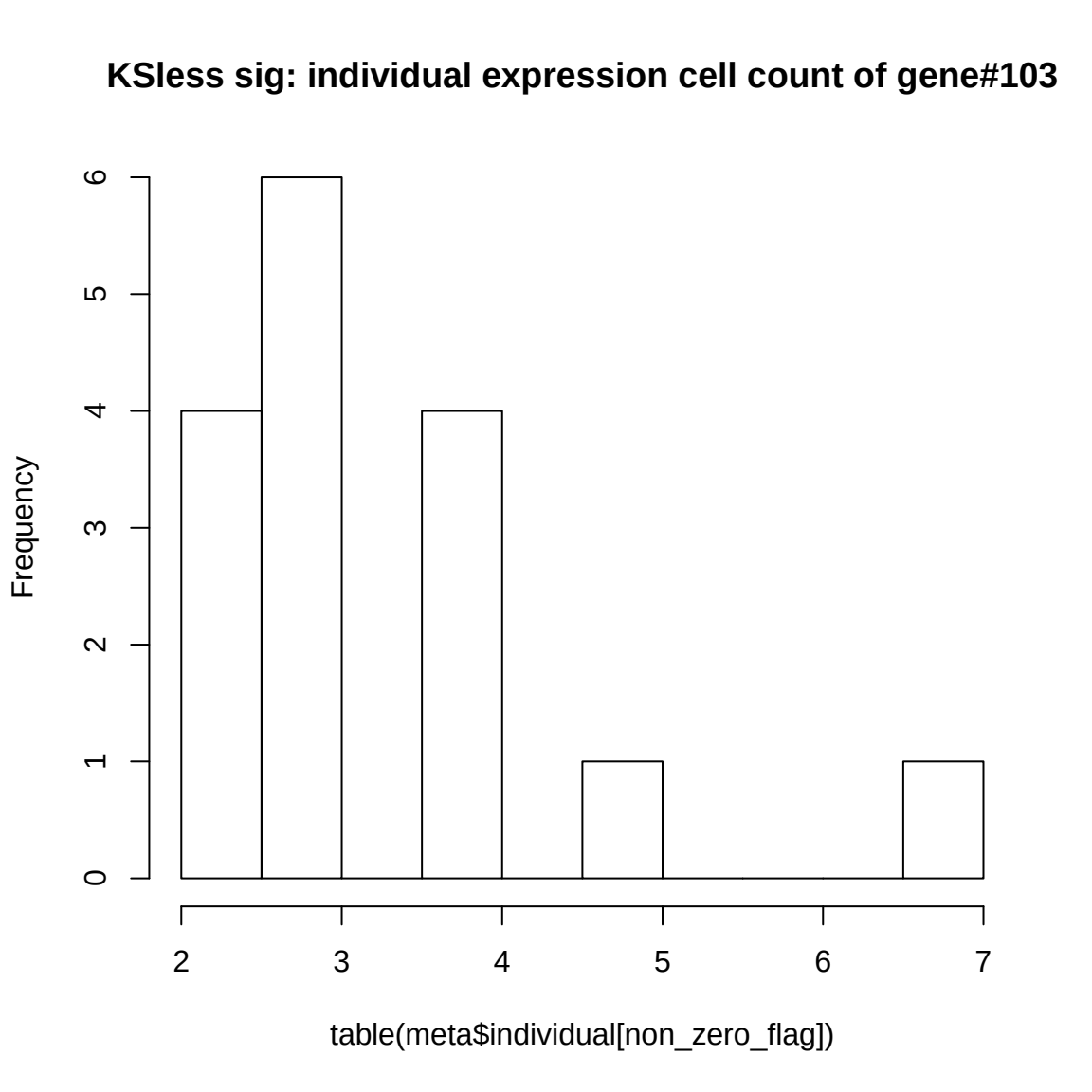

Sless sig: log expression of gene#92, pval ob=0.0746, non−zero nu
Frequency
0
10
20
30
40
50
60
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 18, diag#: 2

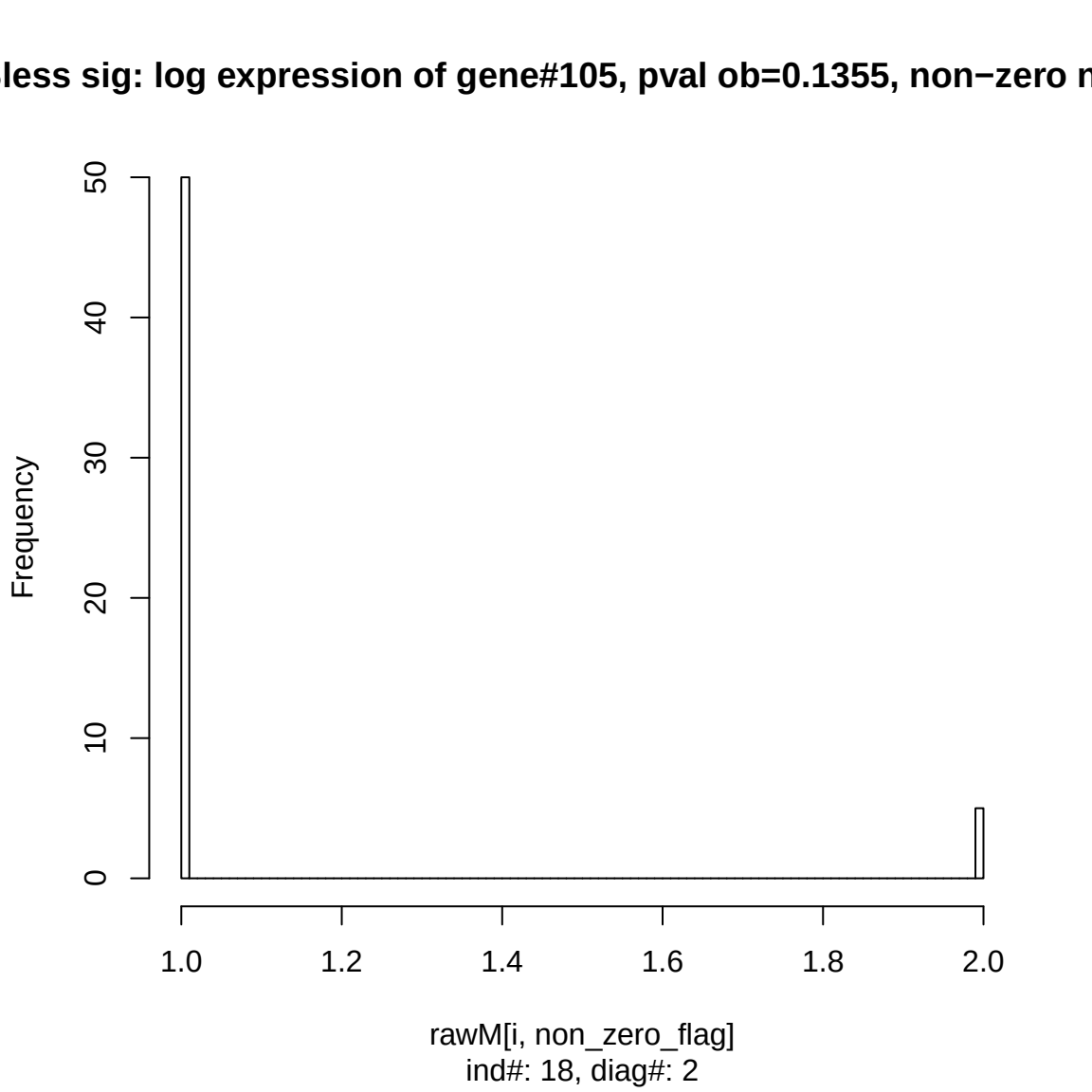

KSless sig: individual expression cell count of gene#92
Frequency
0
2
4
6
8
2
4
6
8
10
table(meta$individual[non_zero_flag])

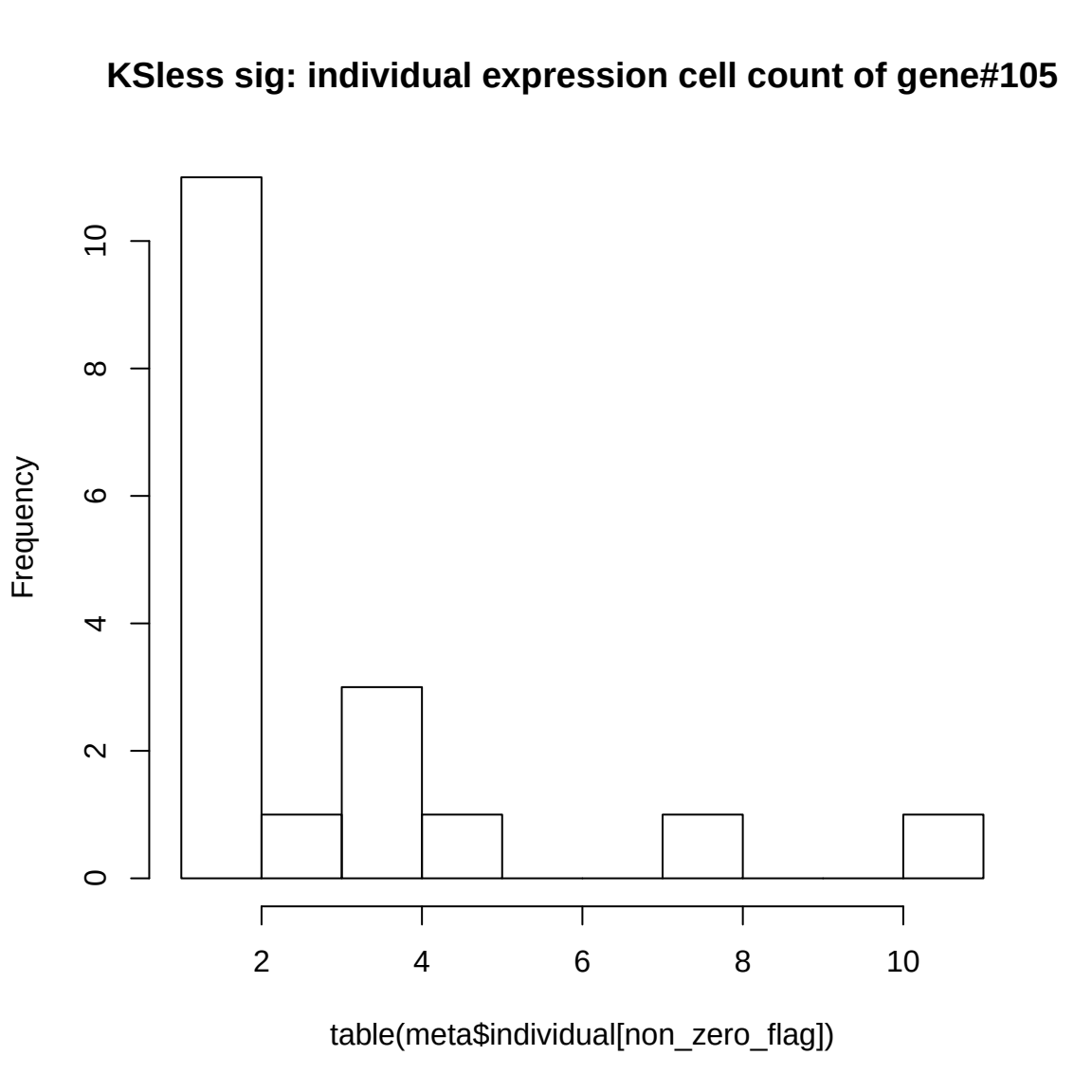

Sless sig: log expression of gene#93, pval ob=0.1843, non−zero nu
Frequency
0
20
40
60
80
1.0
1.5
2.0
2.5
3.0
rawM[i, non_zero_flag]
ind#: 20, diag#: 2

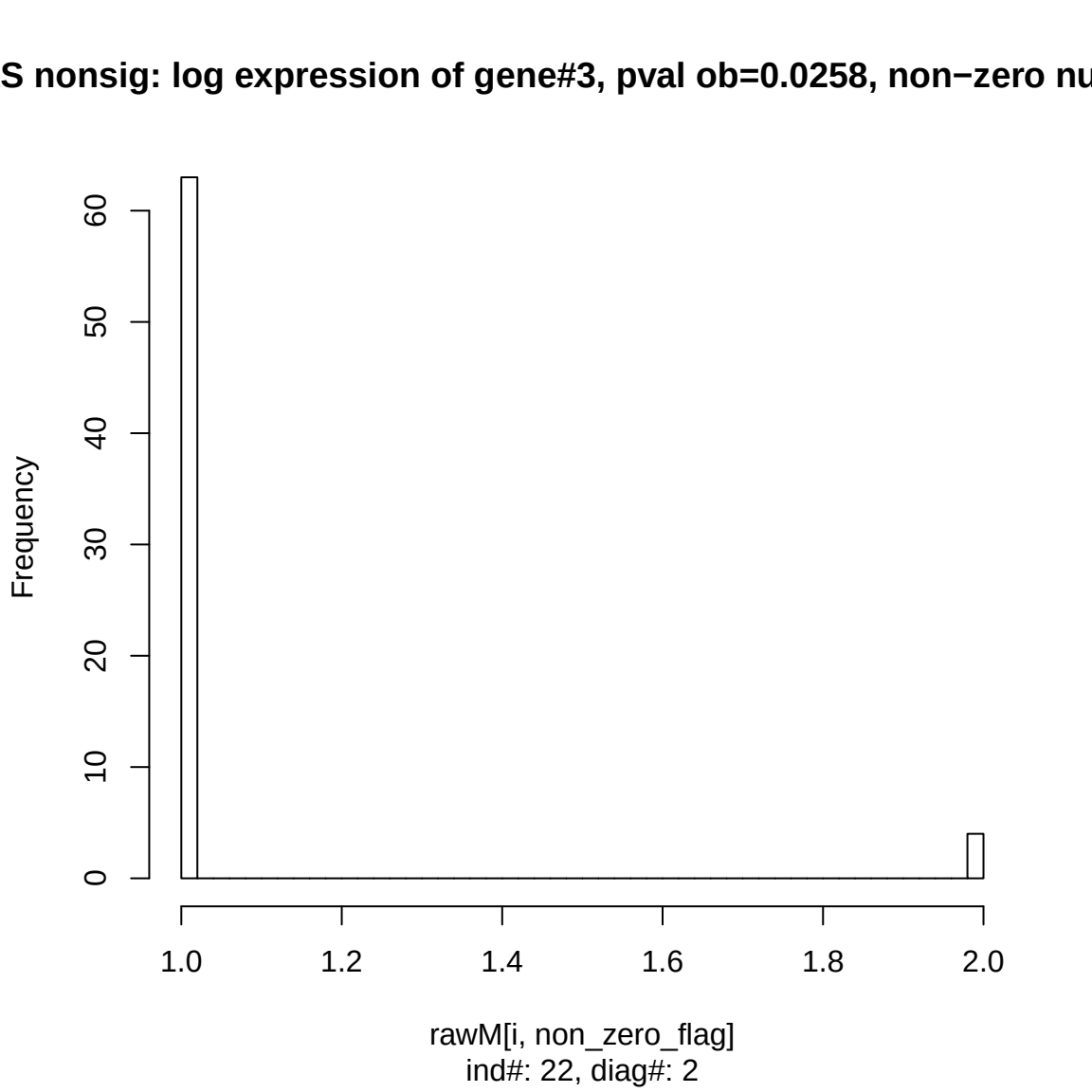

KSless sig: individual expression cell count of gene#93
Frequency
0
1
2
3
4
5
6
0
5
10
15
table(meta$individual[non_zero_flag])

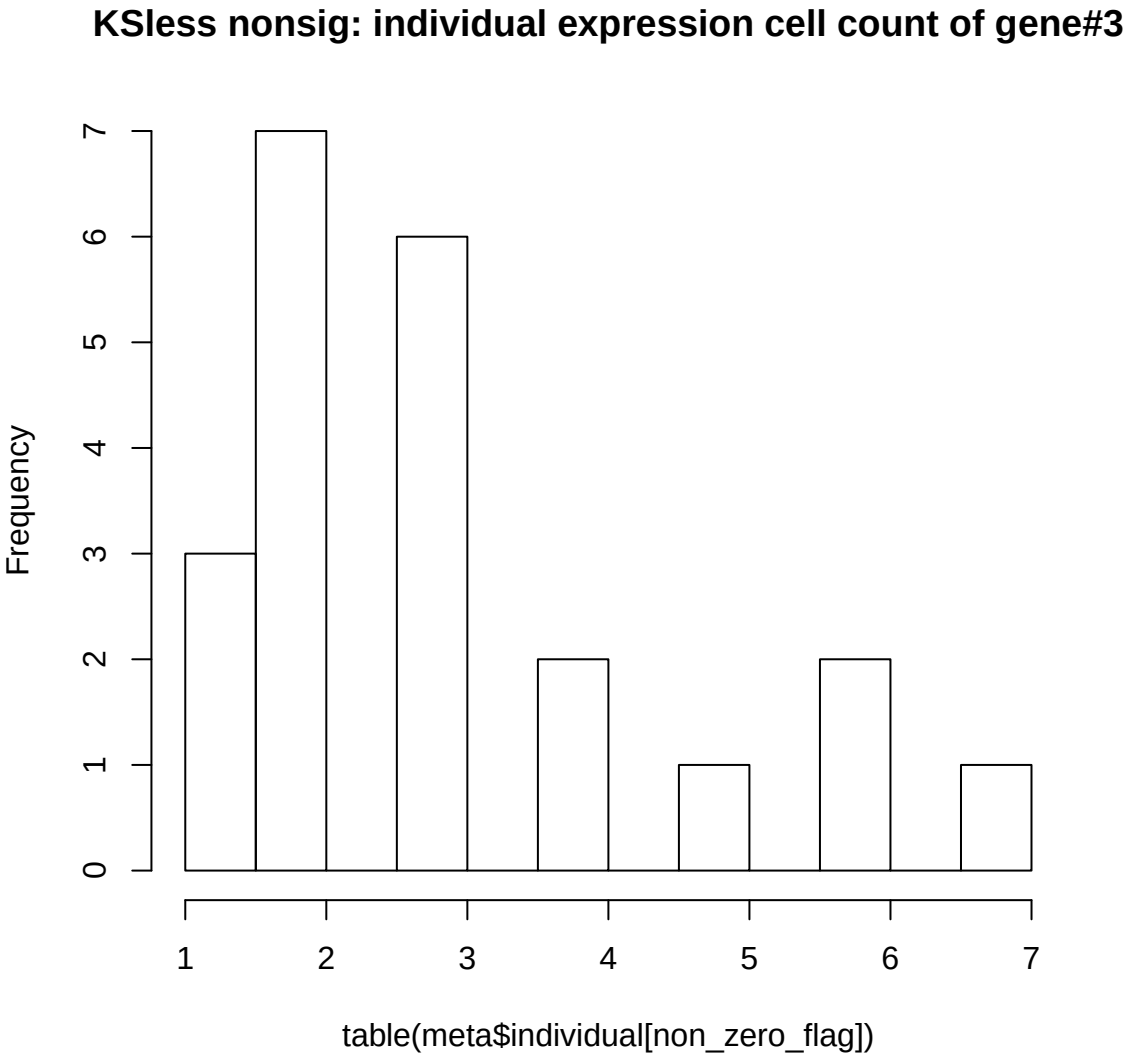

less sig: log expression of gene#103, pval ob=0.4764, non−zero n
Frequency
0
10
20
30
40
50
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 16, diag#: 2

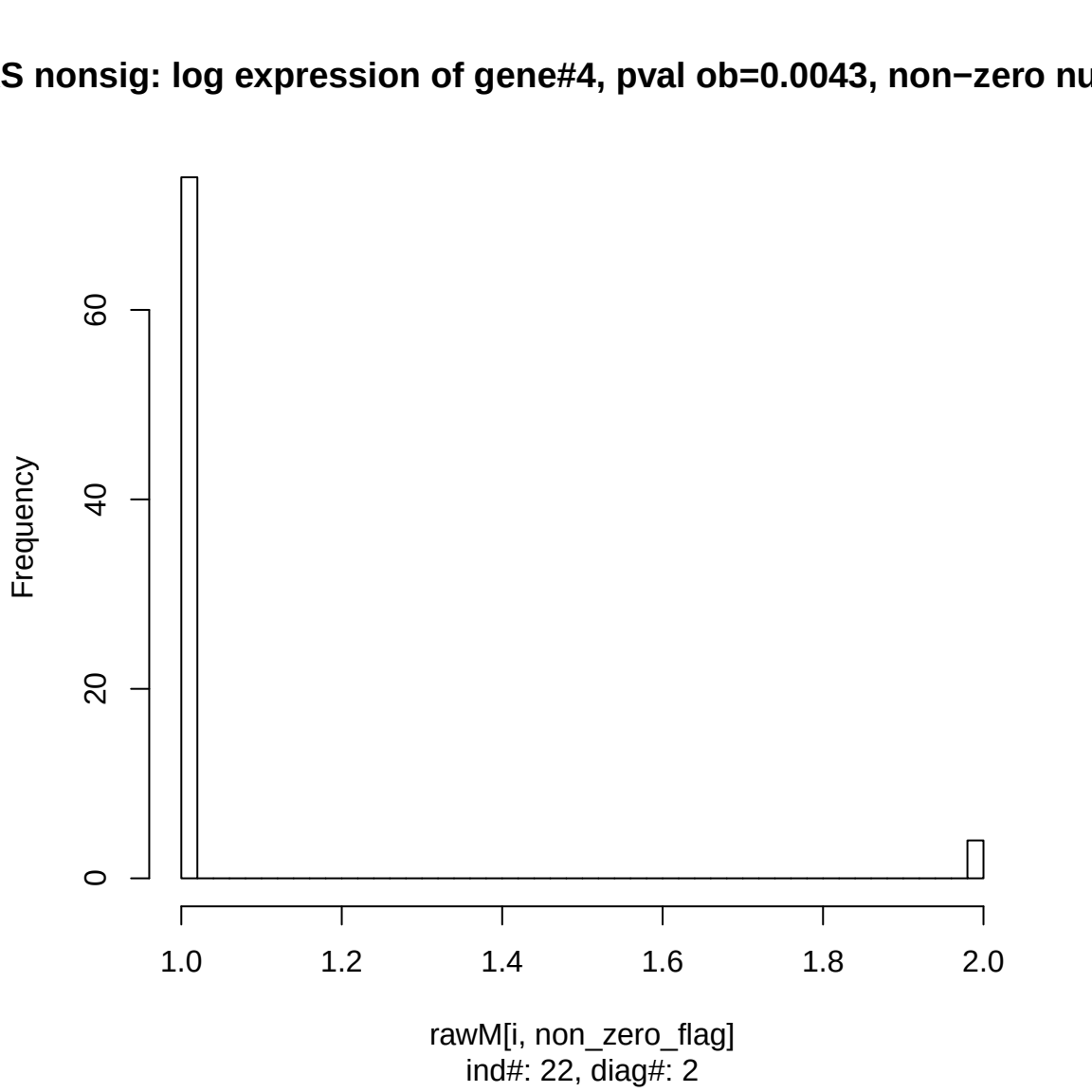

KSless sig: individual expression cell count of gene#103
Frequency
0
1
2
3
4
5
6
2
3
4
5
6
7
table(meta$individual[non_zero_flag])

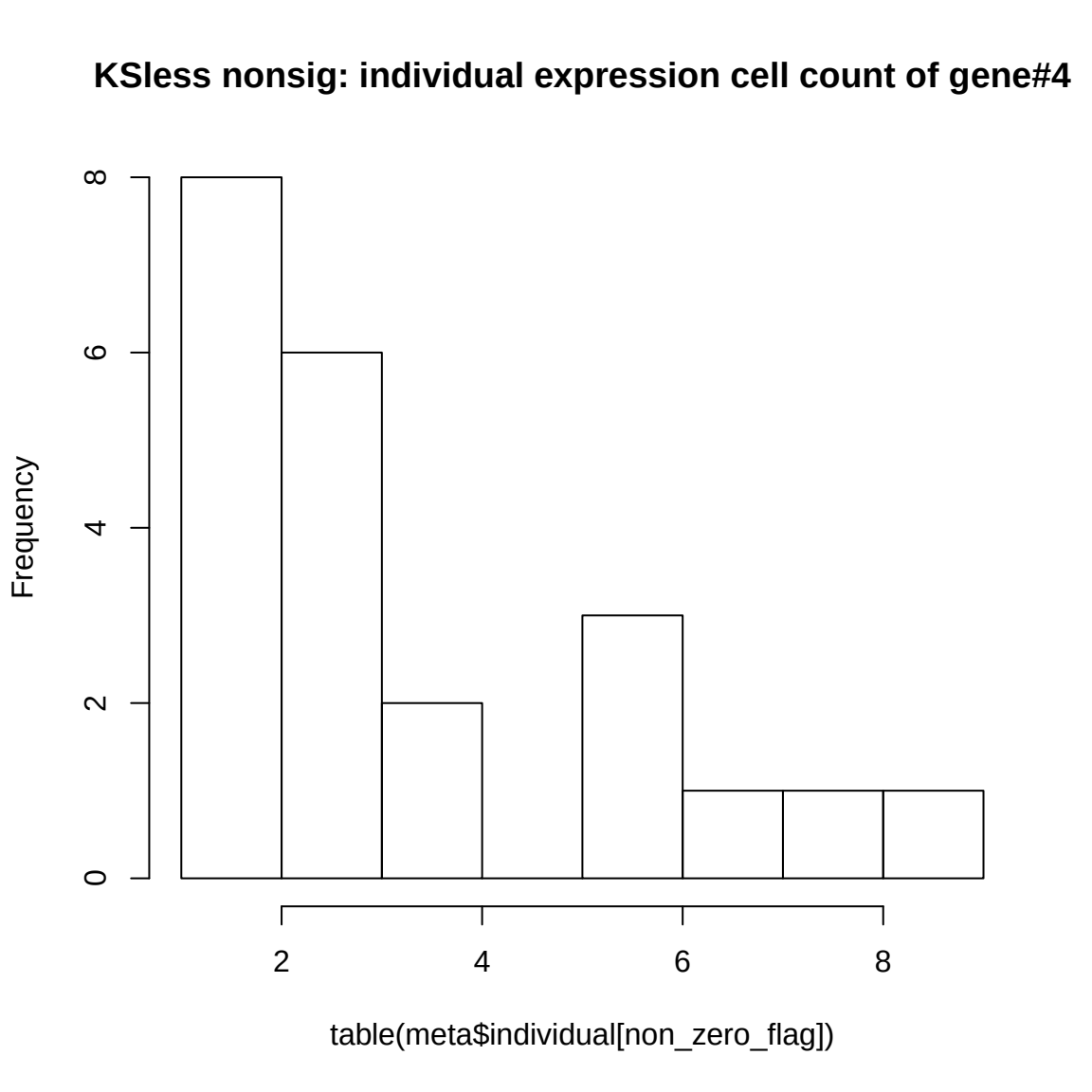

less sig: log expression of gene#105, pval ob=0.1355, non−zero n
Frequency
0
10
20
30
40
50
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 18, diag#: 2

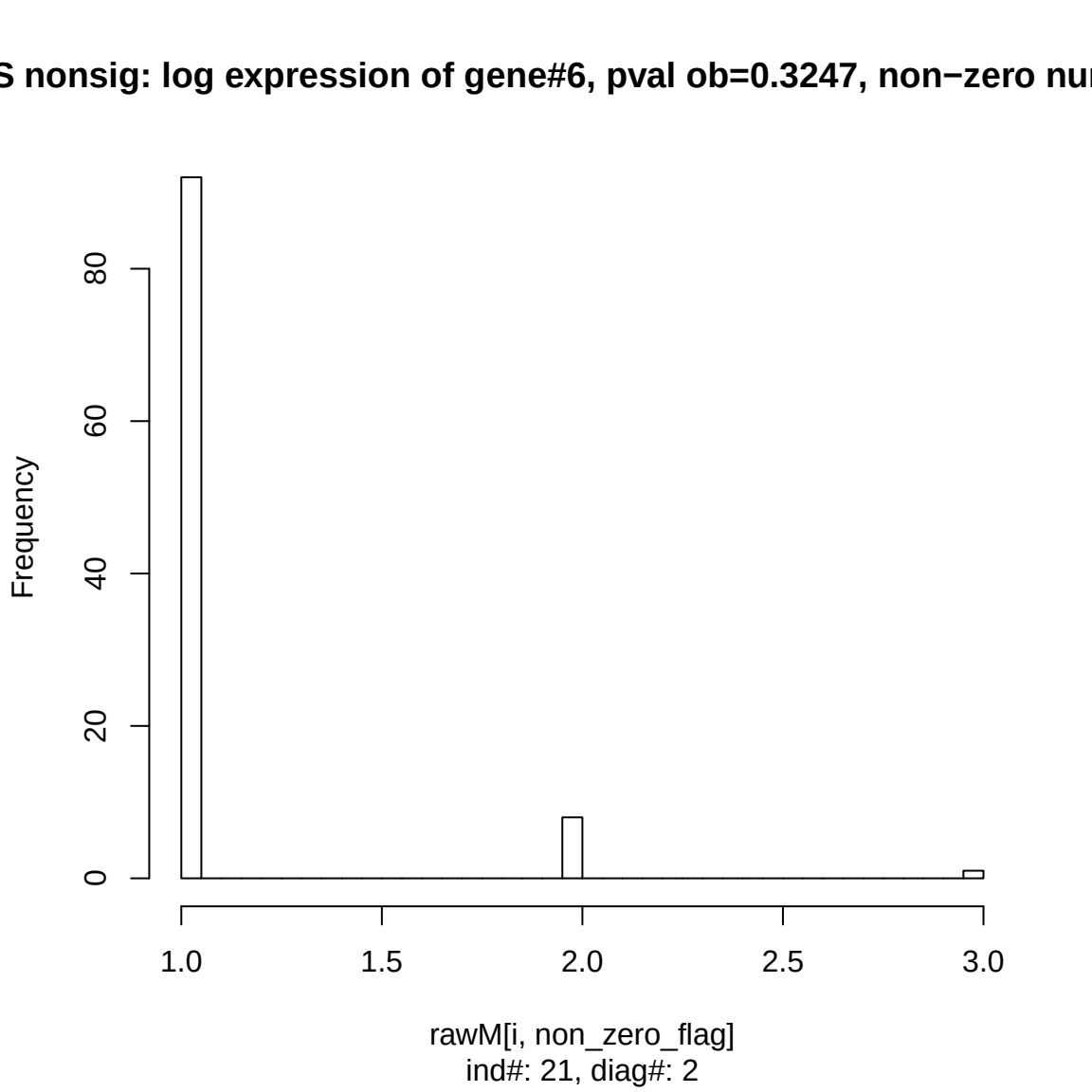

KSless sig: individual expression cell count of gene#105
Frequency
0
2
4
6
8
10
2
4
6
8
10
table(meta$individual[non_zero_flag])

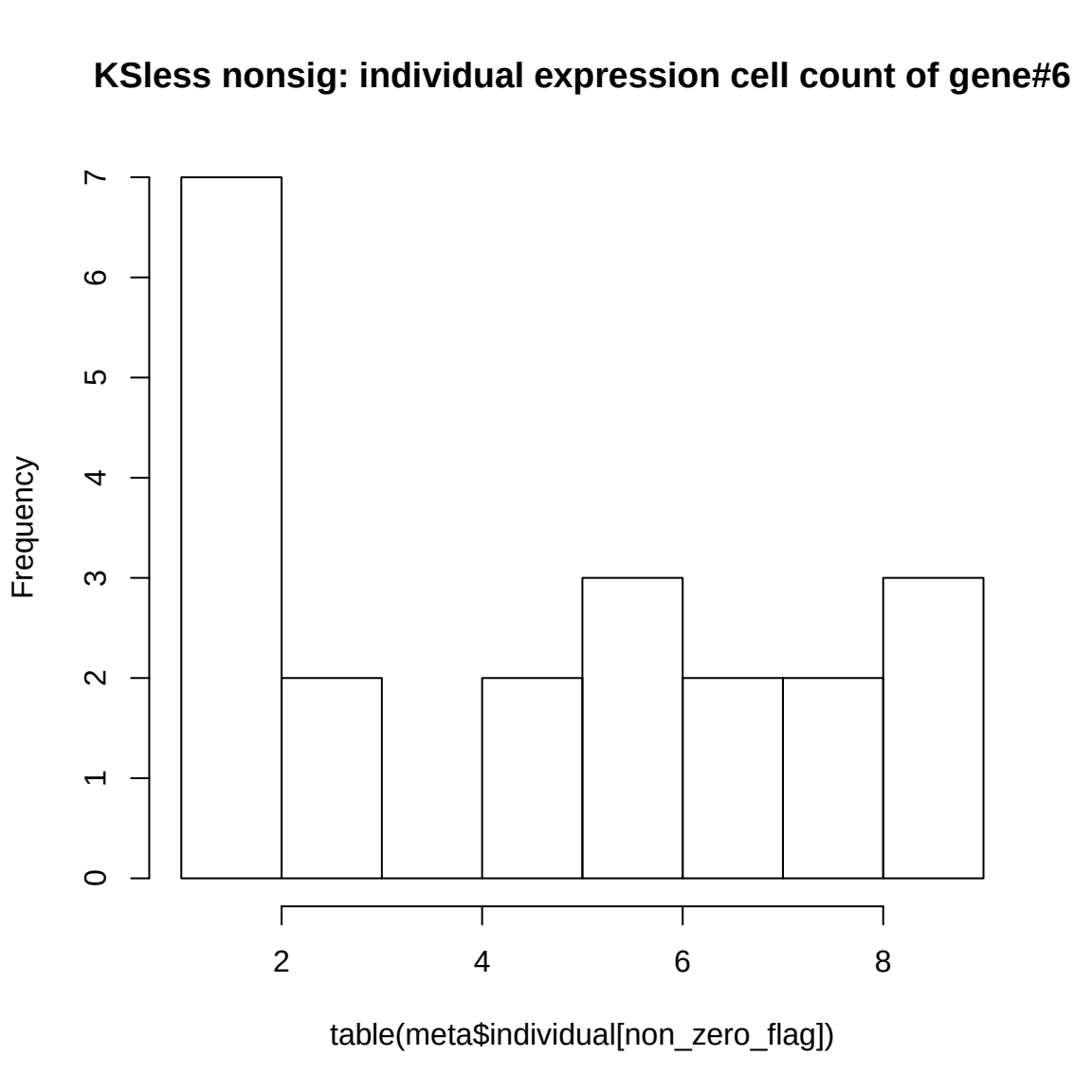

S nonsig: log expression of gene#3, pval ob=0.0258, non−zero nu
Frequency
0
10
20
30
40
50
60
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 22, diag#: 2

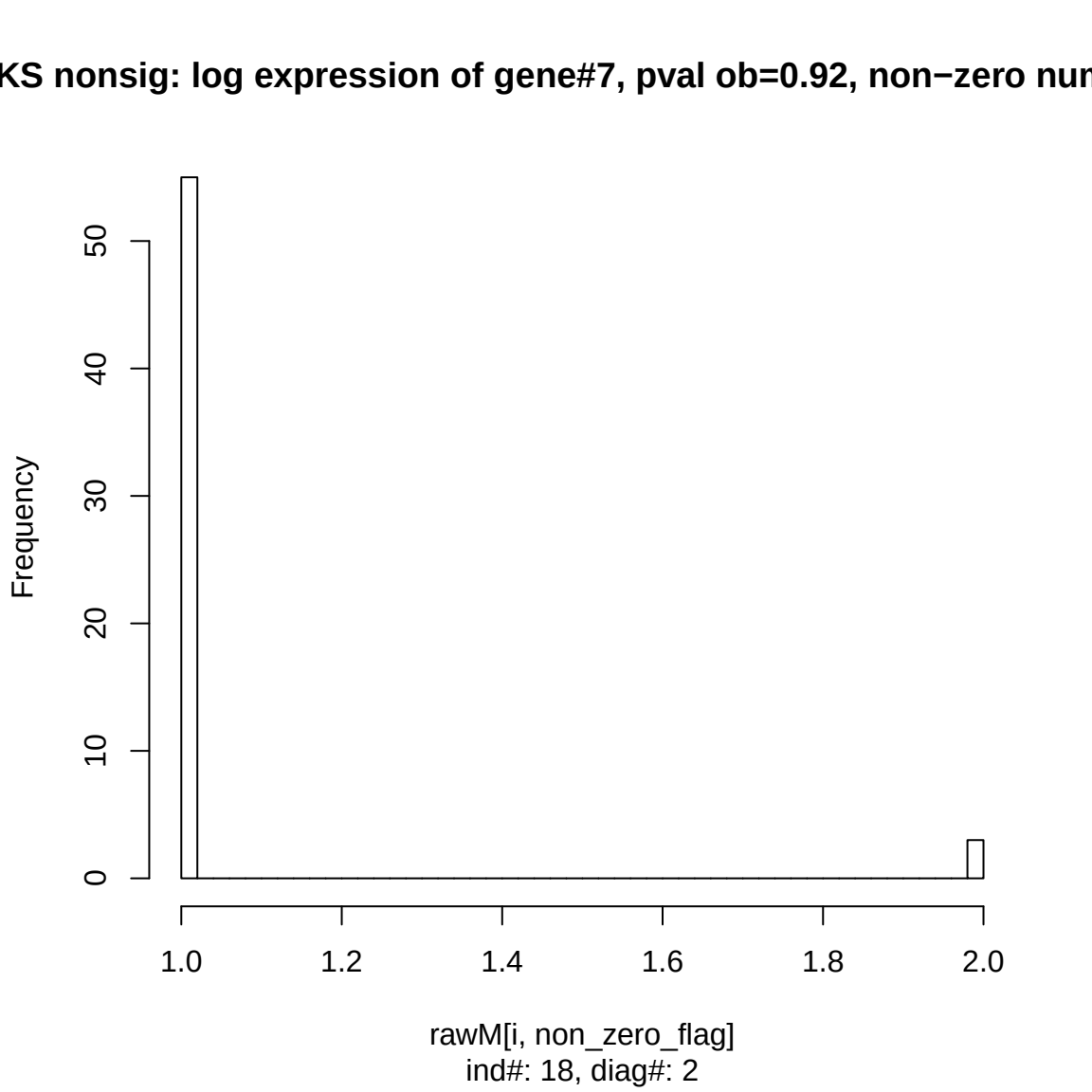

KSless nonsig: individual expression cell count of gene#3
Frequency
0
1
2
3
4
5
6
7
1
2
3
4
5
6
7
table(meta$individual[non_zero_flag])

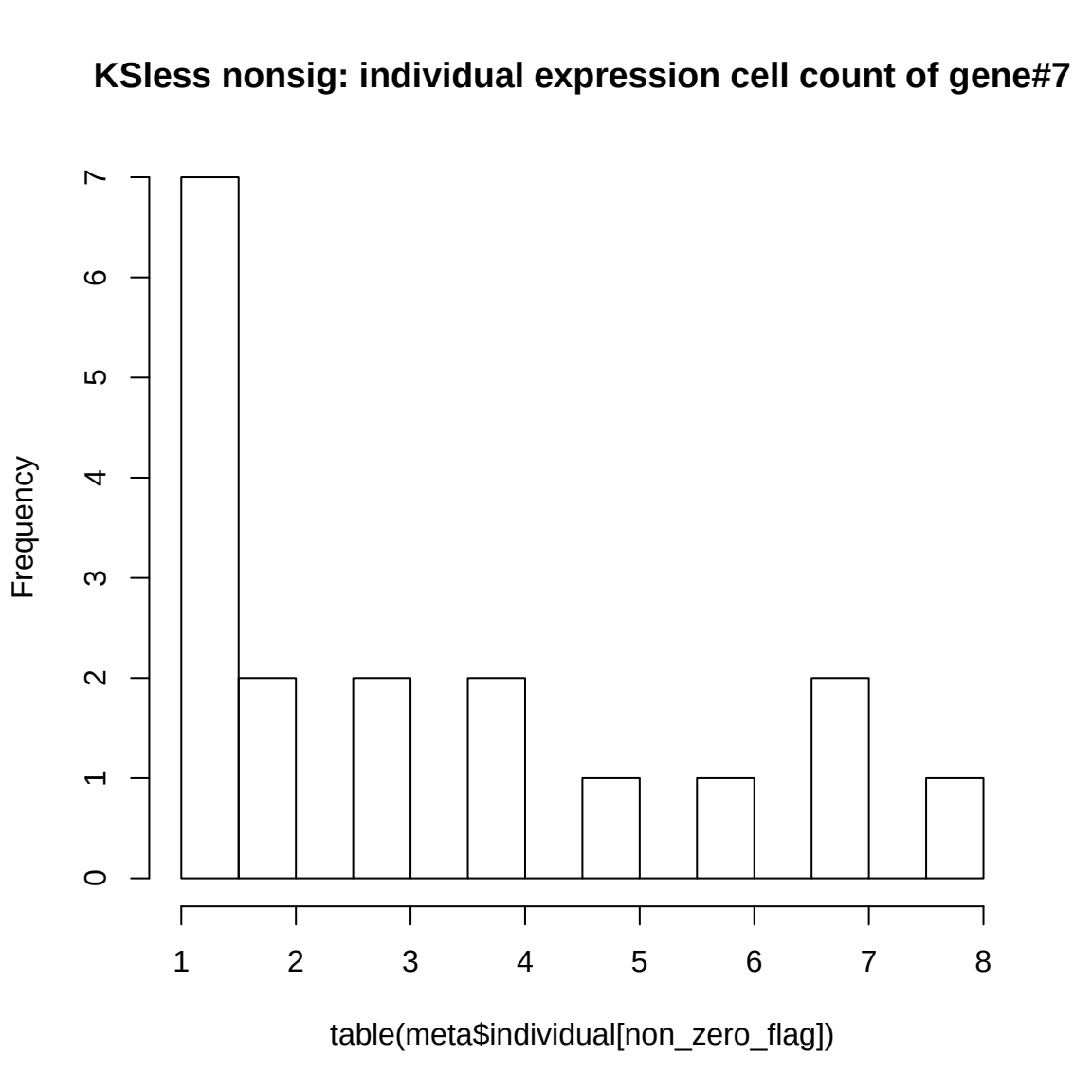

S nonsig: log expression of gene#4, pval ob=0.0043, non−zero nu
Frequency
0
20
40
60
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 22, diag#: 2

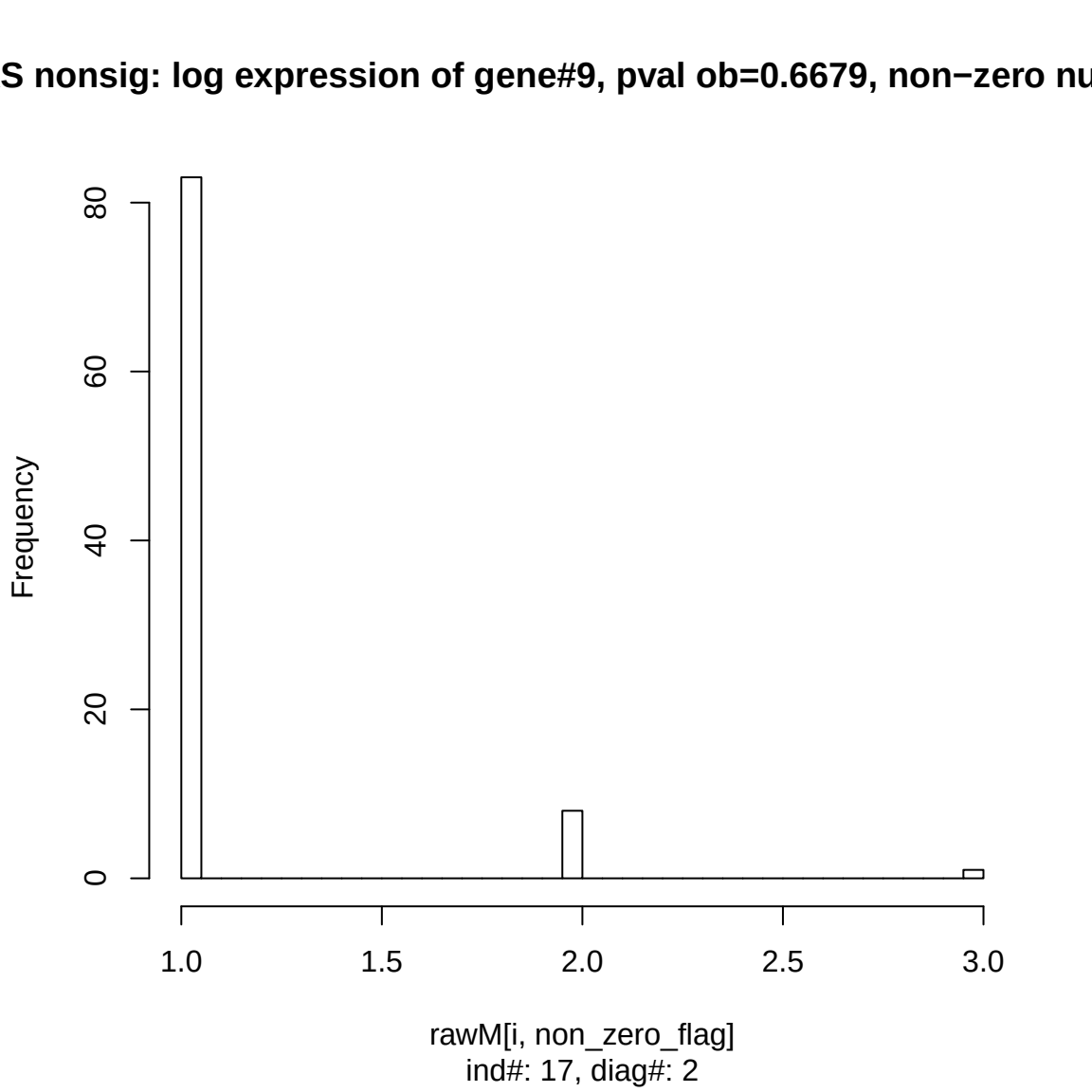

KSless nonsig: individual expression cell count of gene#4
Frequency
0
2
4
6
8
2
4
6
8
table(meta$individual[non_zero_flag])

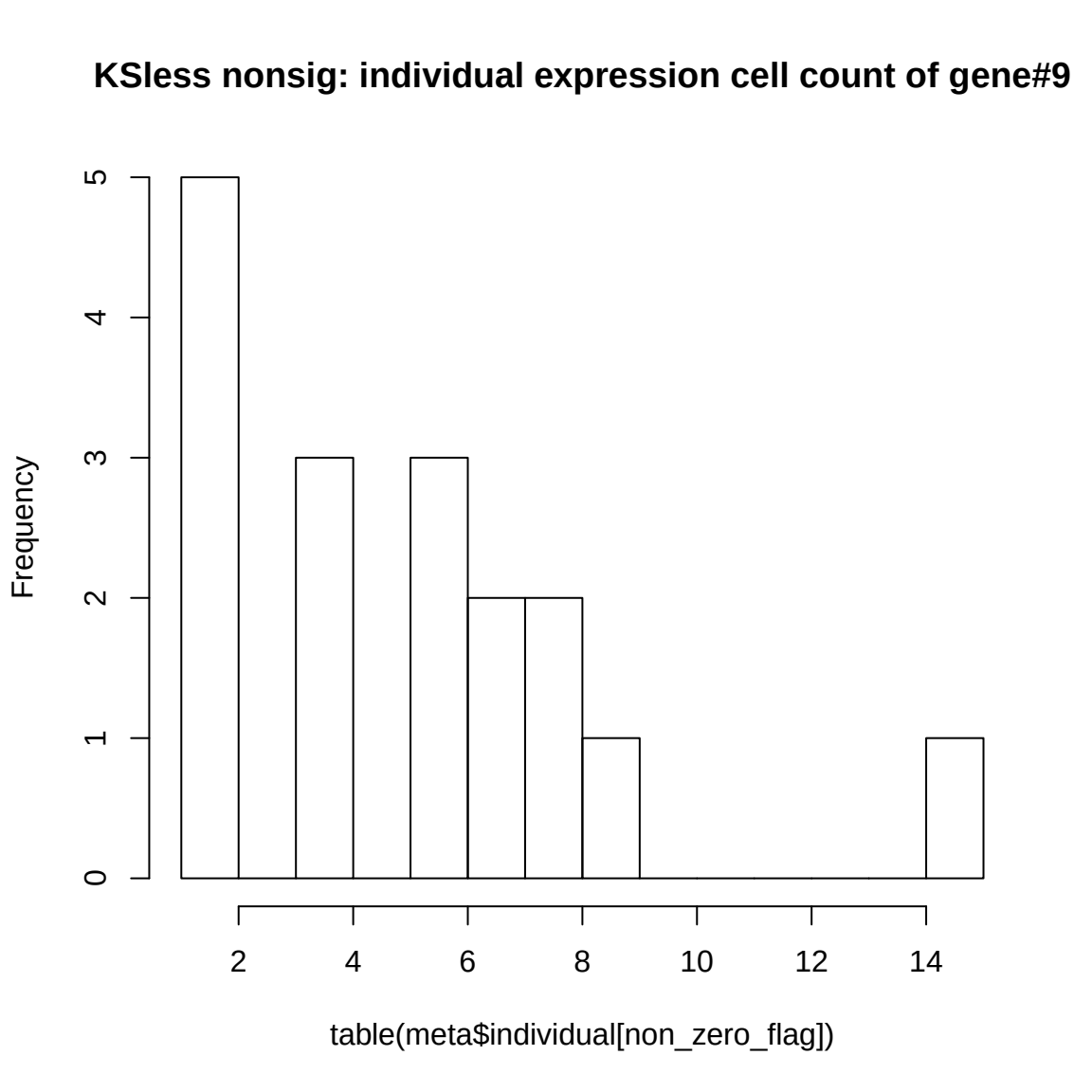

S nonsig: log expression of gene#6, pval ob=0.3247, non−zero nu
Frequency
0
20
40
60
80
1.0
1.5
2.0
2.5
3.0
rawM[i, non_zero_flag]
ind#: 21, diag#: 2

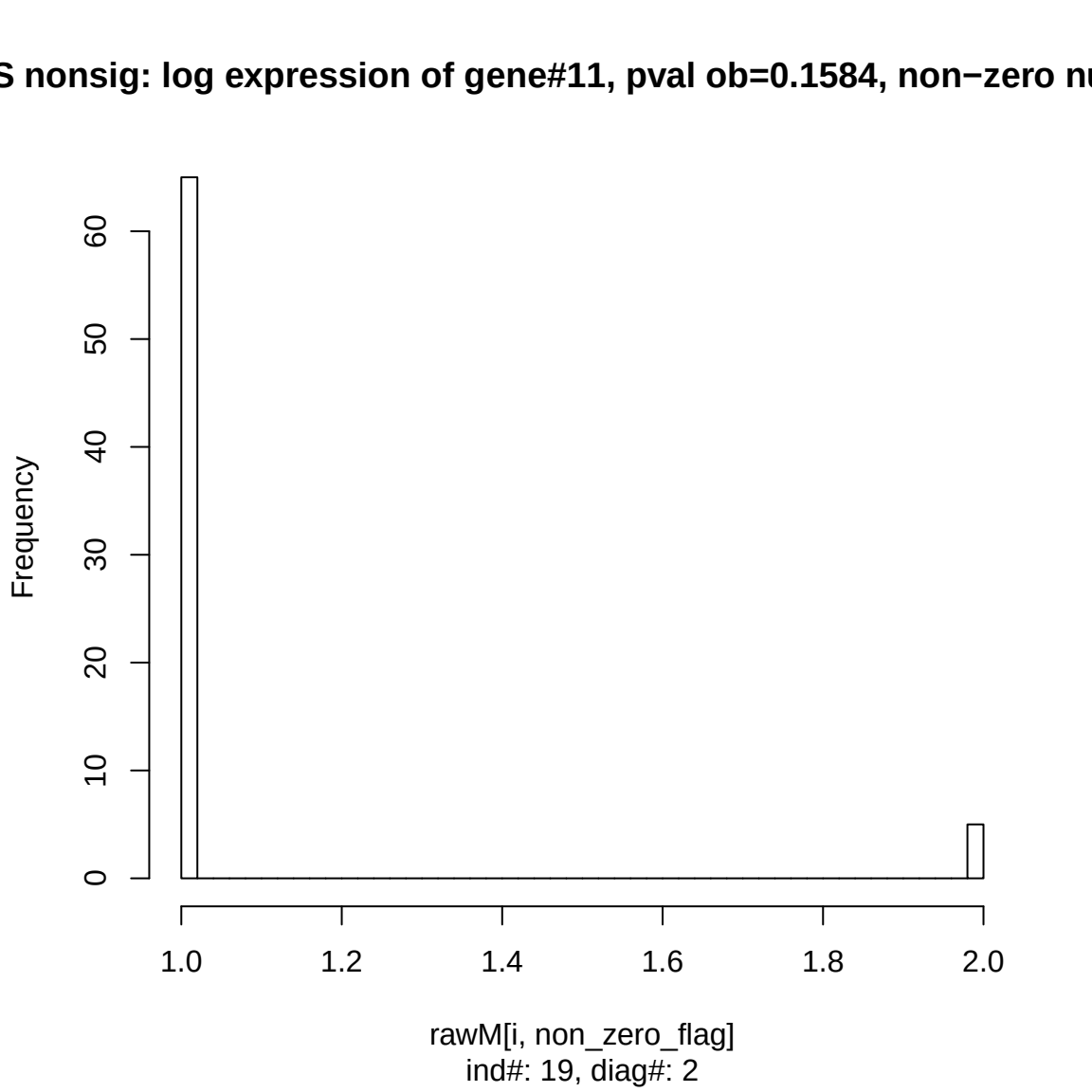

KSless nonsig: individual expression cell count of gene#6
Frequency
0
1
2
3
4
5
6
7
2
4
6
8
table(meta$individual[non_zero_flag])

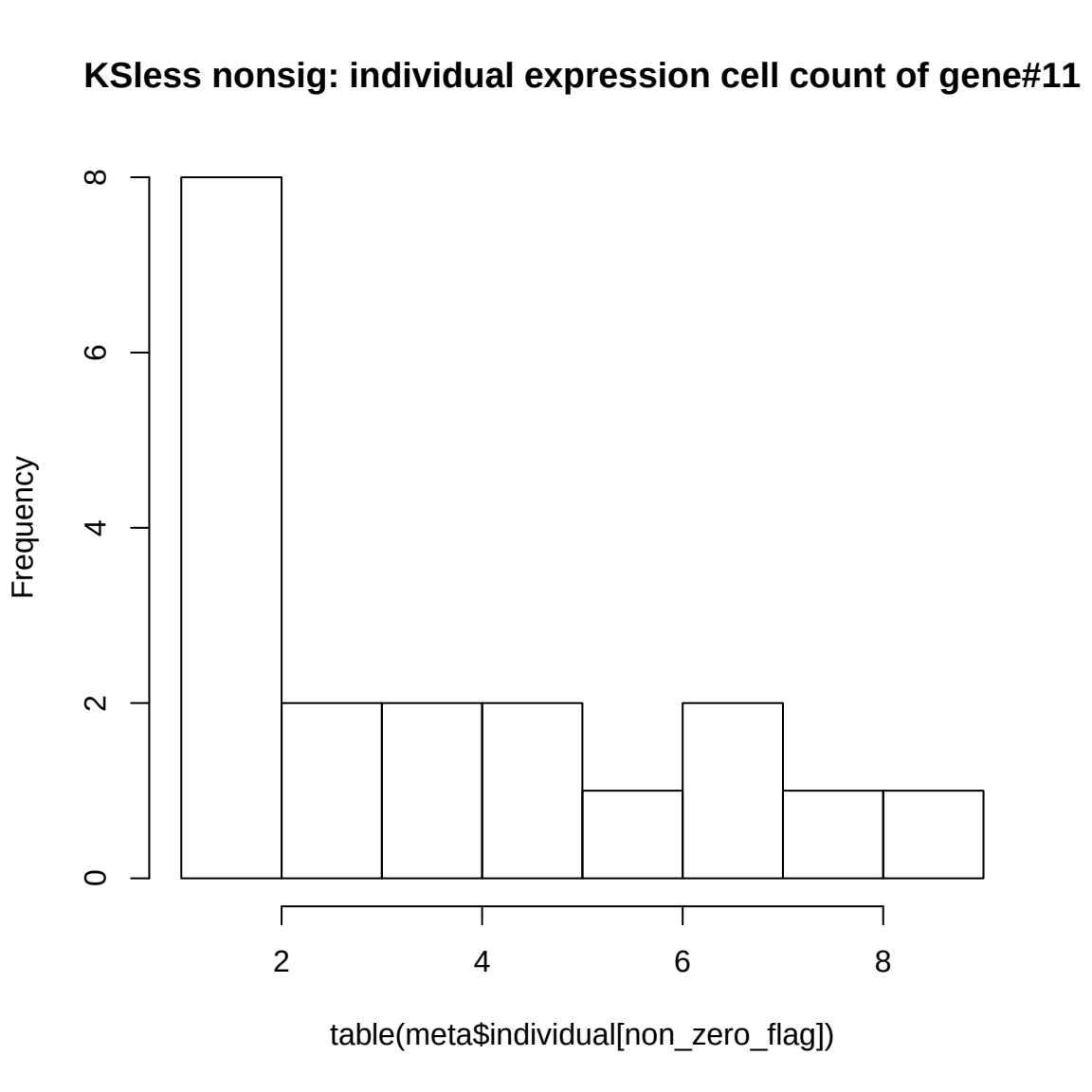

KS nonsig: log expression of gene#7, pval ob=0.92, non−zero num
Frequency
0
10
20
30
40
50
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 18, diag#: 2

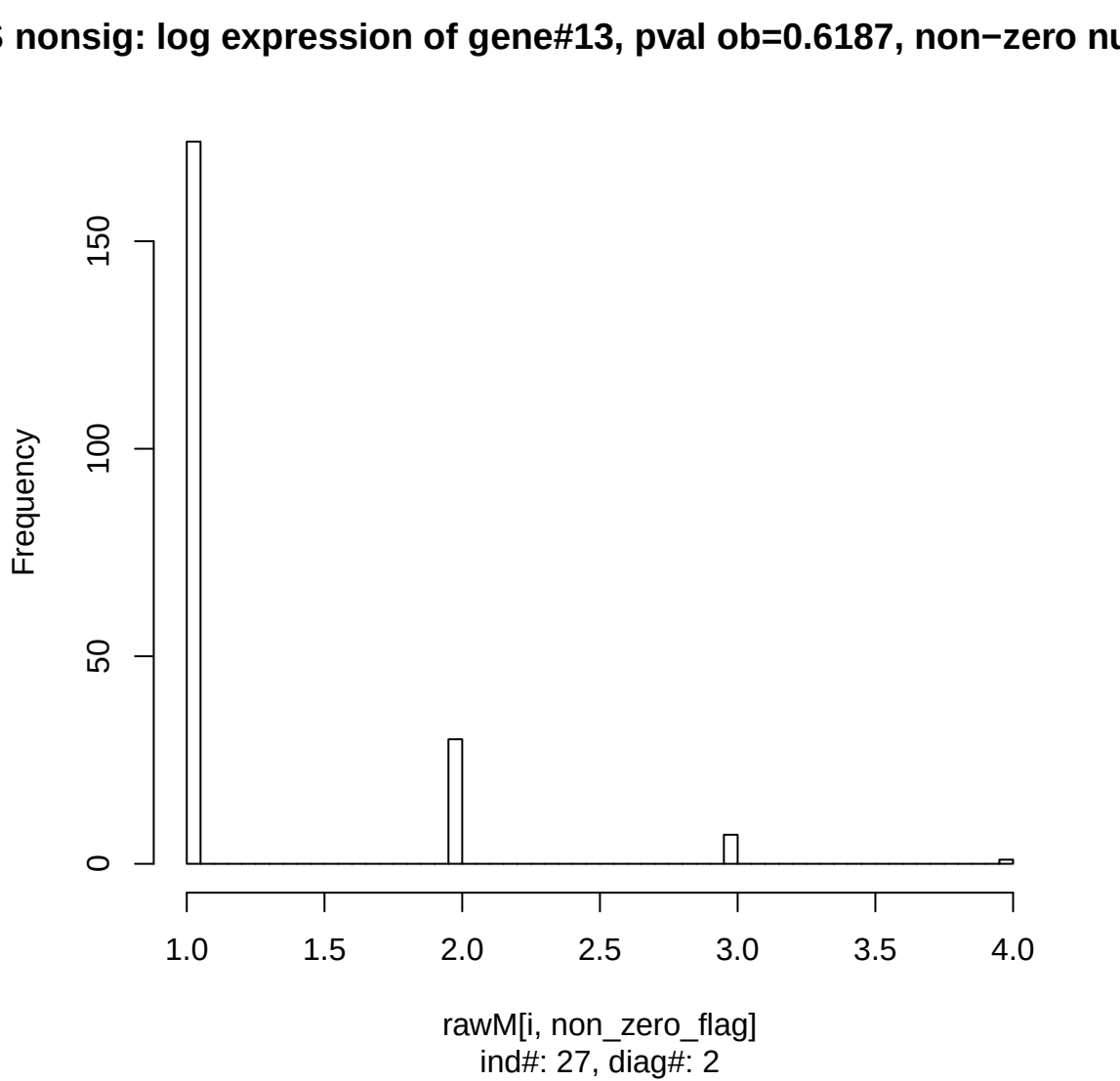

KSless nonsig: individual expression cell count of gene#7
Frequency
0
1
2
3
4
5
6
7
1
2
3
4
5
6
7
8
table(meta$individual[non_zero_flag])

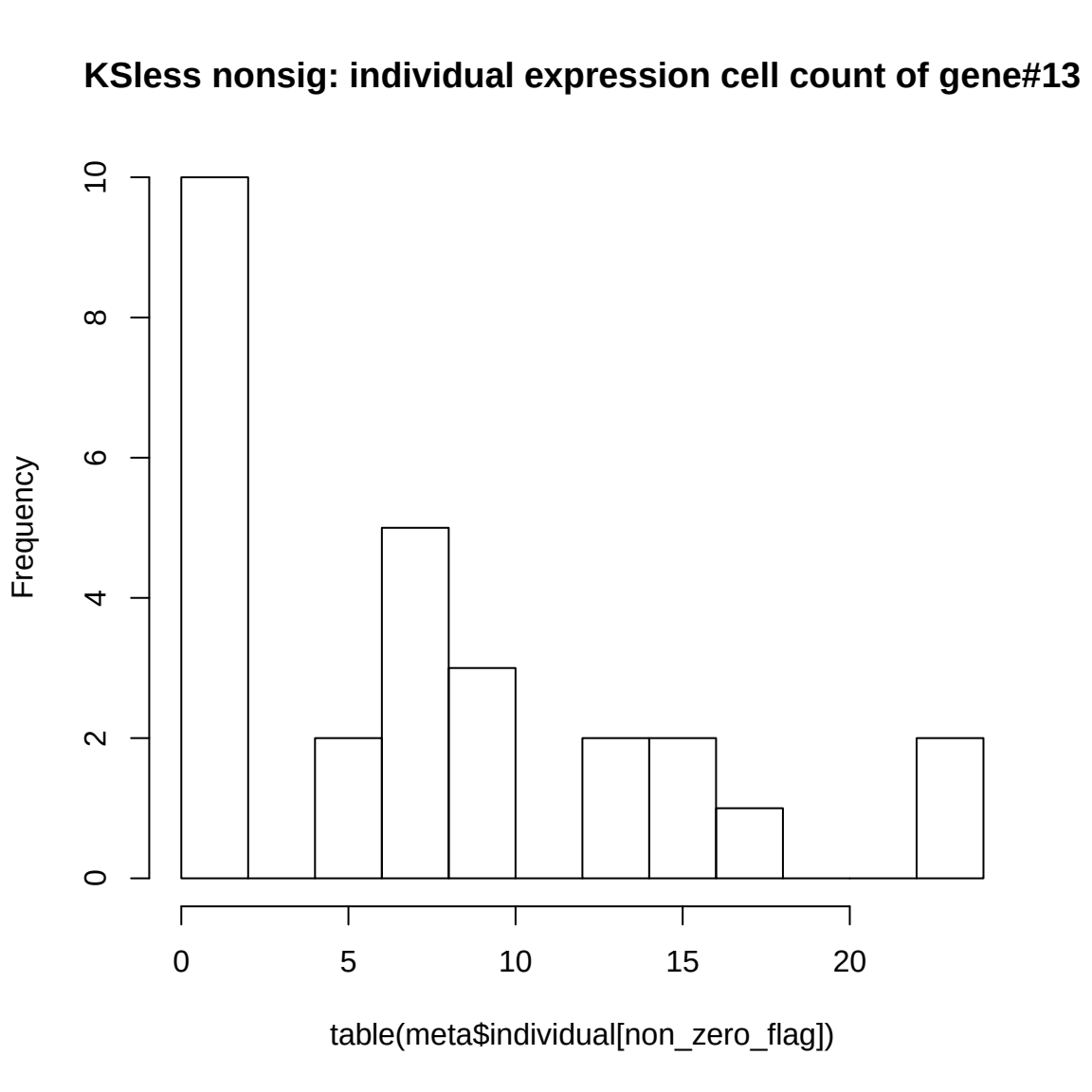

S nonsig: log expression of gene#9, pval ob=0.6679, non−zero nu
Frequency
0
20
40
60
80
1.0
1.5
2.0
2.5
3.0
rawM[i, non_zero_flag]
ind#: 17, diag#: 2

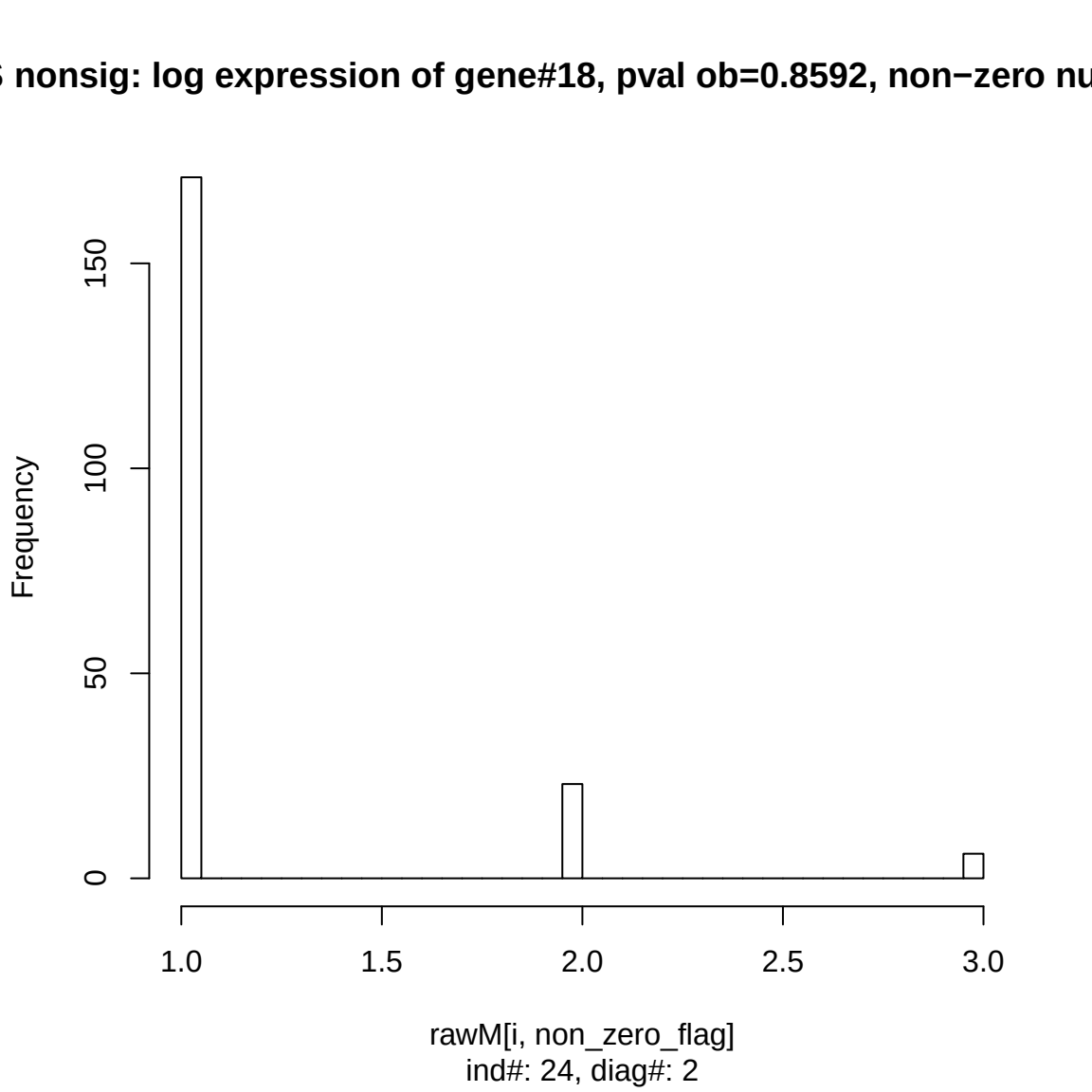

KSless nonsig: individual expression cell count of gene#9
Frequency
0
1
2
3
4
5
2
4
6
8
10
12
14
table(meta$individual[non_zero_flag])

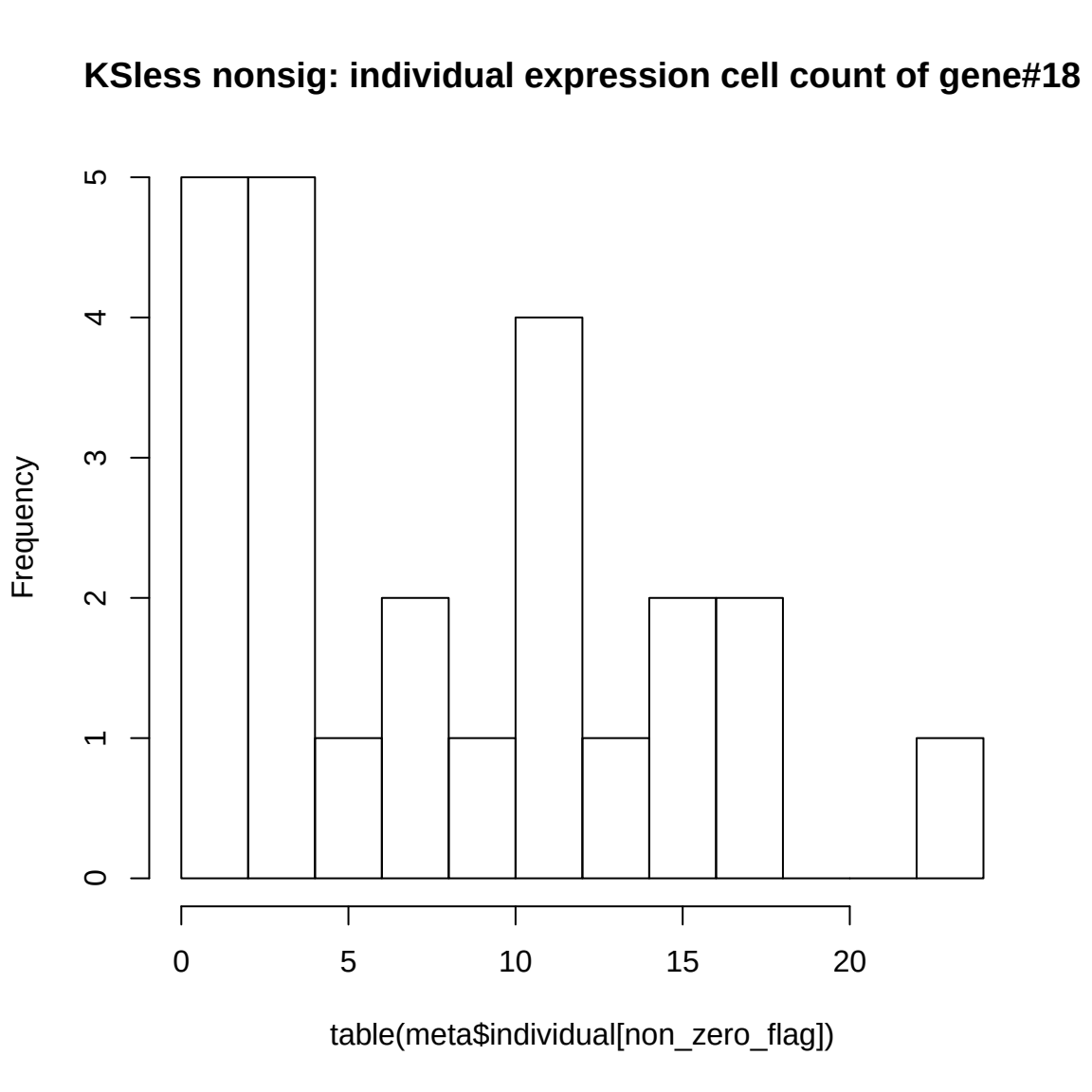

S nonsig: log expression of gene#11, pval ob=0.1584, non−zero nu
Frequency
0
10
20
30
40
50
60
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 19, diag#: 2

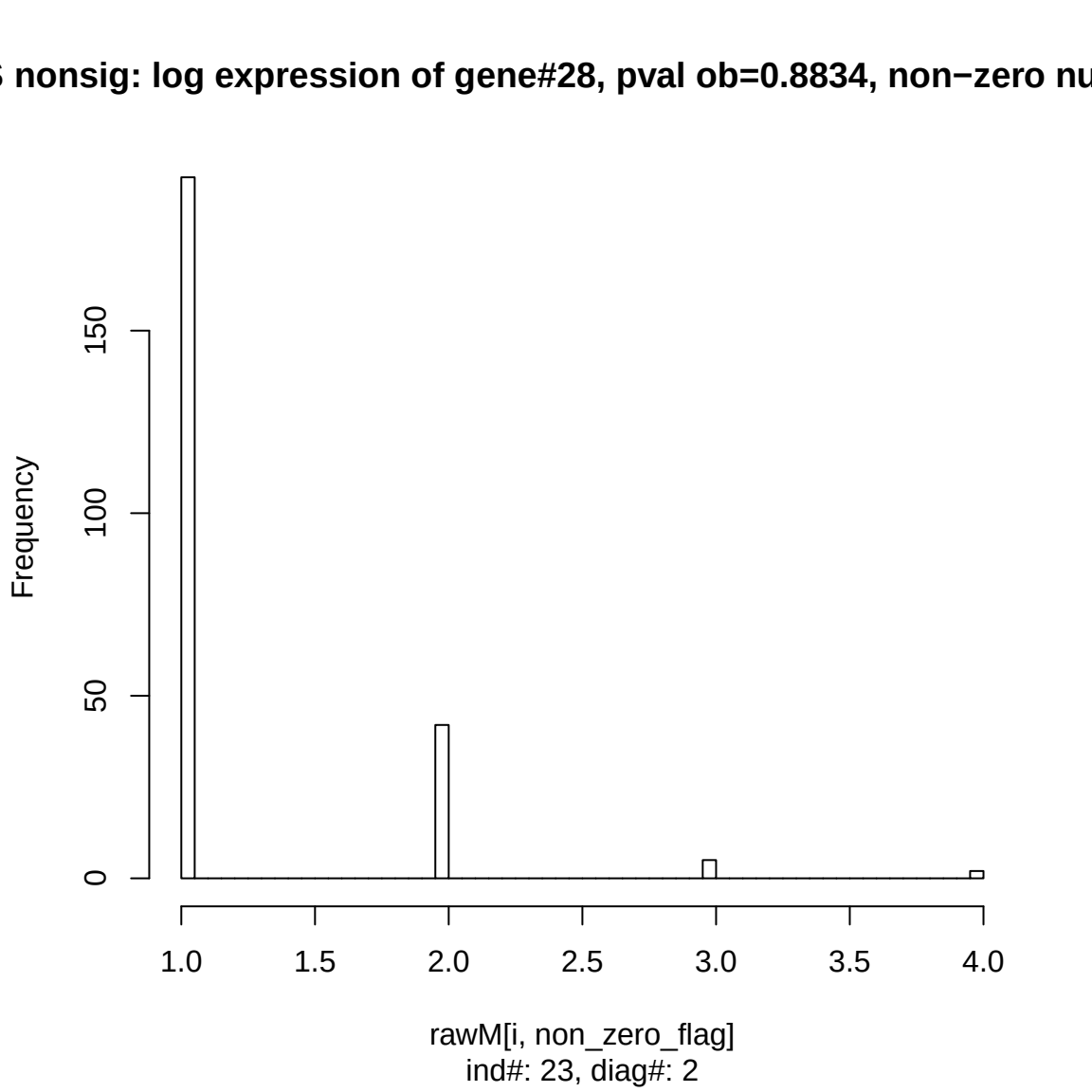

KSless nonsig: individual expression cell count of gene#11
Frequency
0
2
4
6
8
2
4
6
8
table(meta$individual[non_zero_flag])

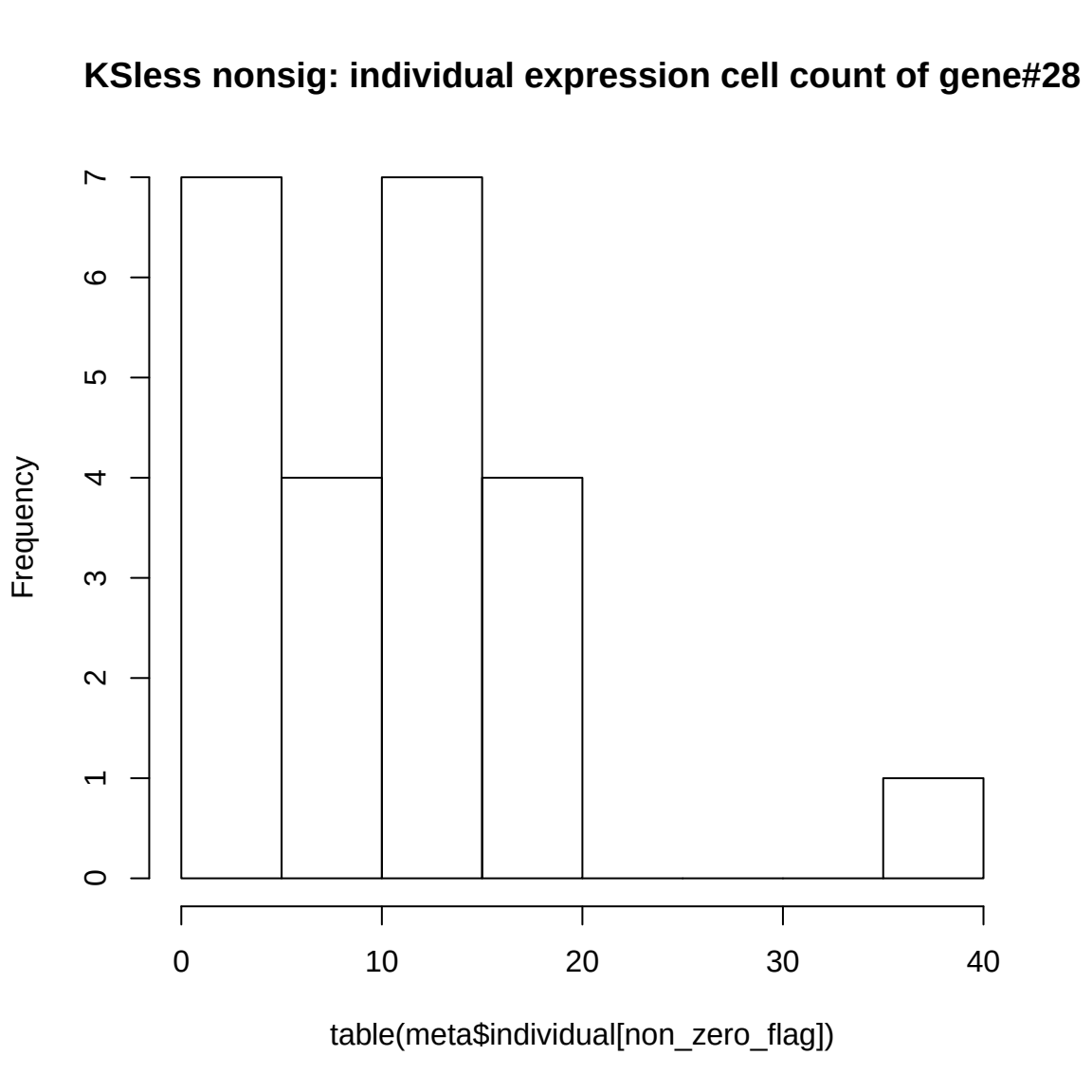

nonsig: log expression of gene#13, pval ob=0.6187, non−zero nu
Frequency
0
50
100
150
1.0
1.5
2.0
2.5
3.0
3.5
4.0
rawM[i, non_zero_flag]
ind#: 27, diag#: 2

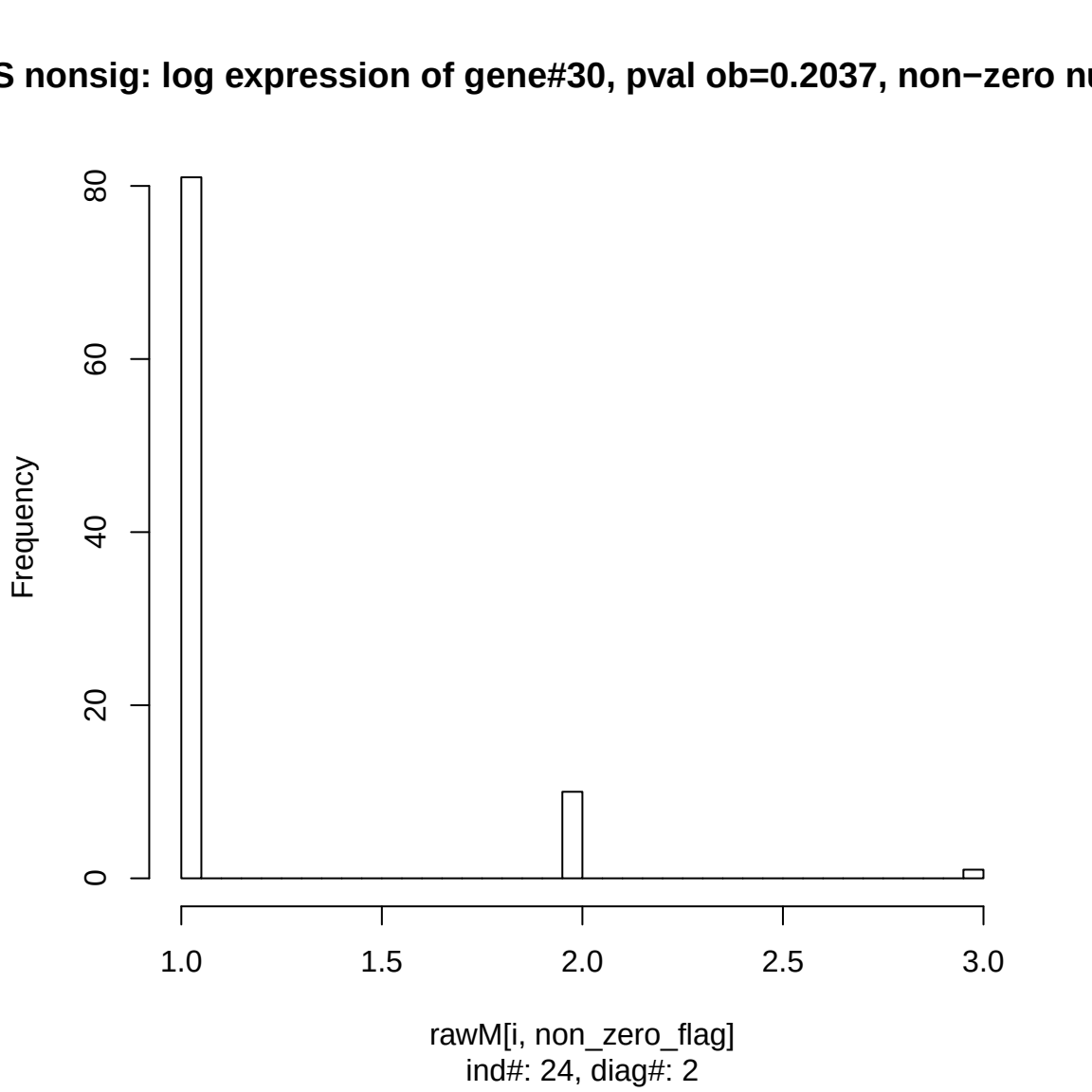

KSless nonsig: individual expression cell count of gene#13
Frequency
0
2
4
6
8
10
0
5
10
15
20
table(meta$individual[non_zero_flag])

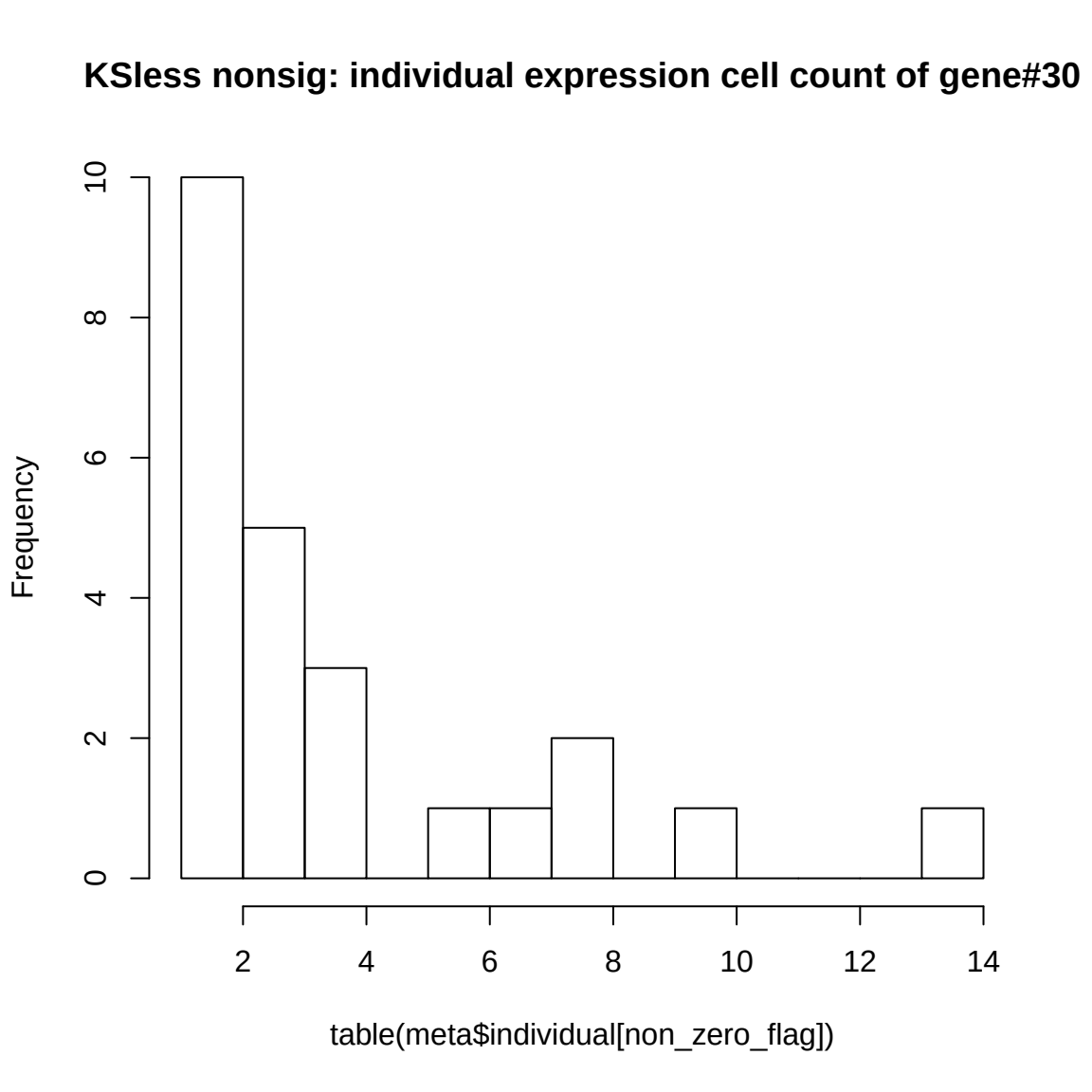

nonsig: log expression of gene#18, pval ob=0.8592, non−zero nu
Frequency
0
50
100
150
1.0
1.5
2.0
2.5
3.0
rawM[i, non_zero_flag]
ind#: 24, diag#: 2

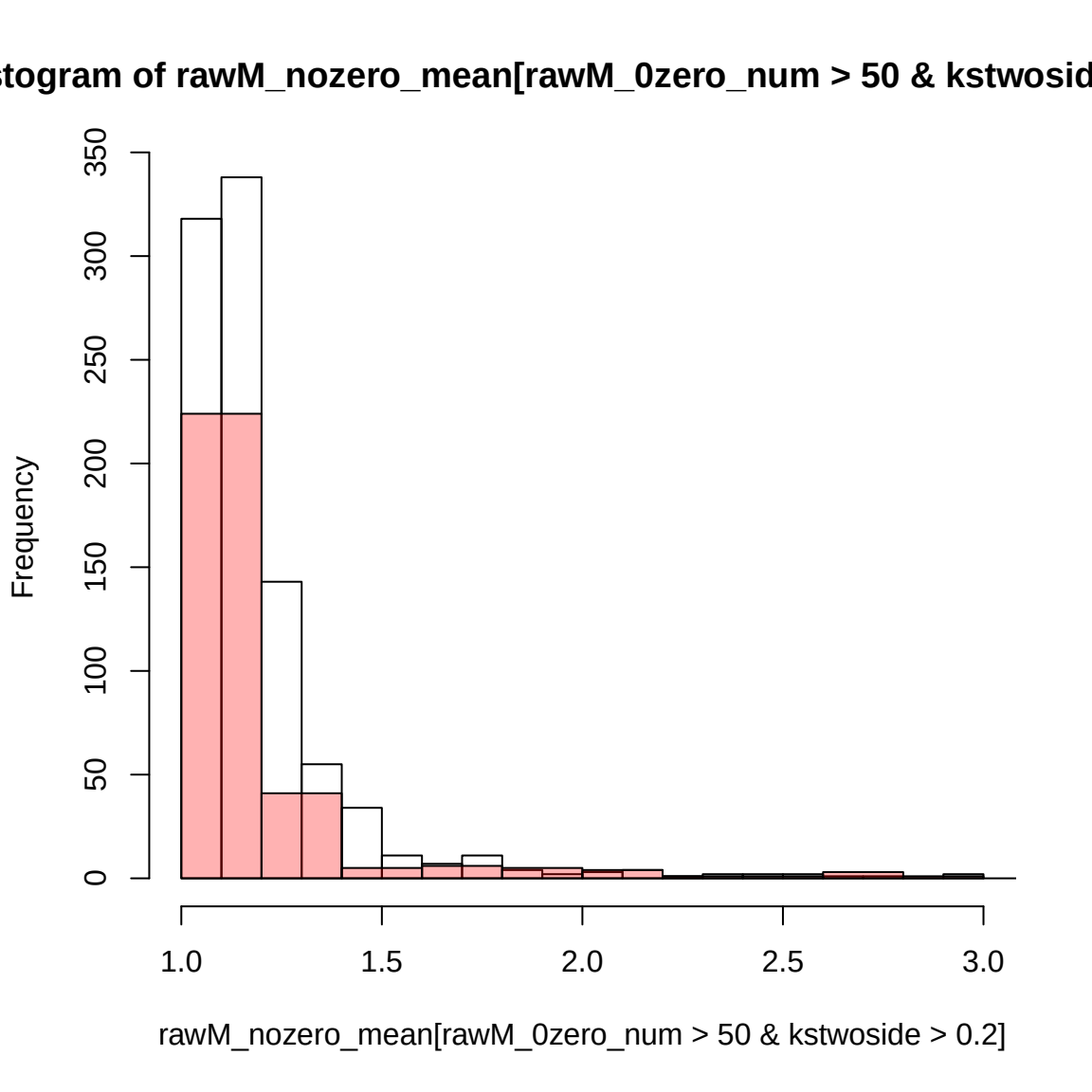

KSless nonsig: individual expression cell count of gene#18
Frequency
0
1
2
3
4
5
0
5
10
15
20
table(meta$individual[non_zero_flag])

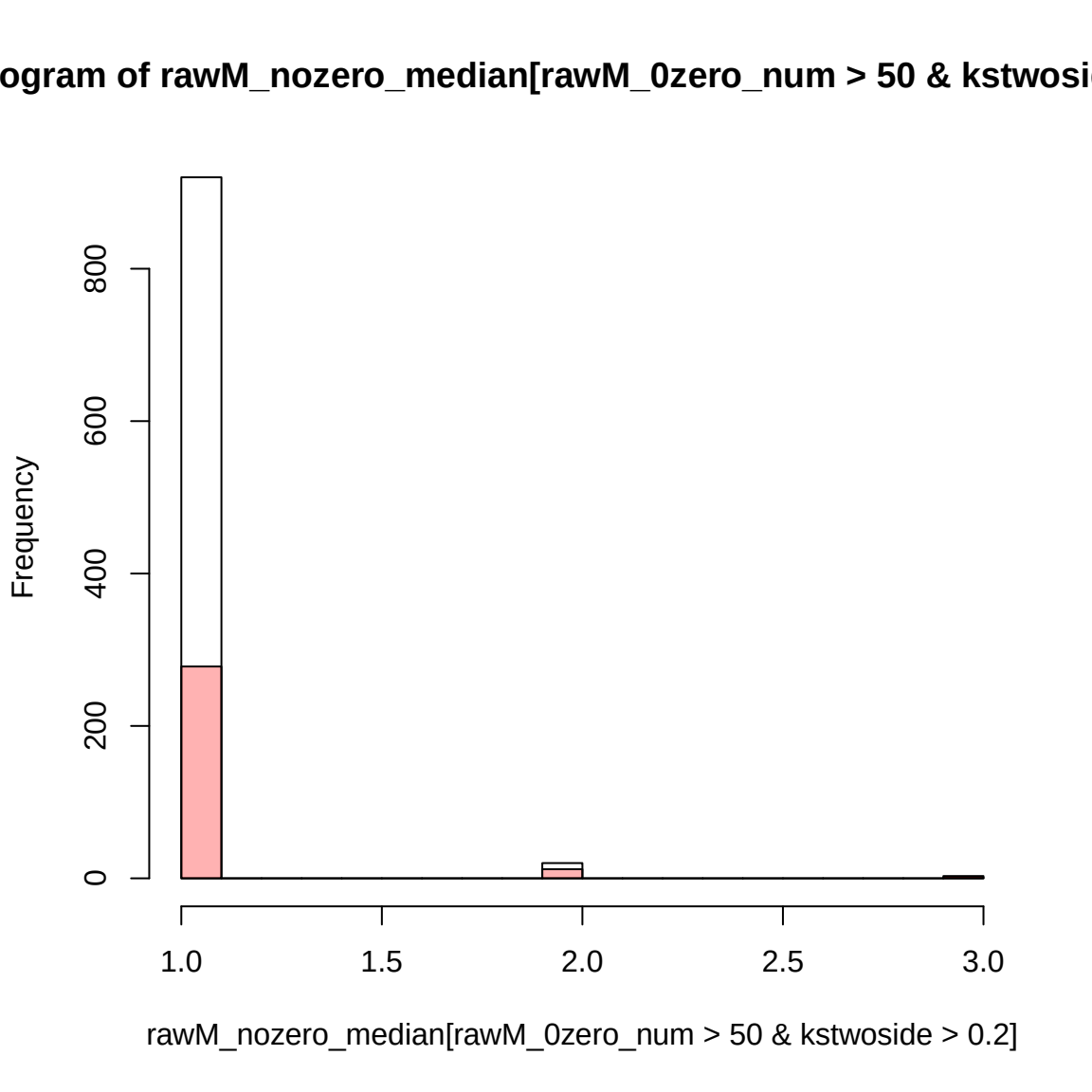

nonsig: log expression of gene#28, pval ob=0.8834, non−zero nu
Frequency
0
50
100
150
1.0
1.5
2.0
2.5
3.0
3.5
4.0
rawM[i, non_zero_flag]
ind#: 23, diag#: 2

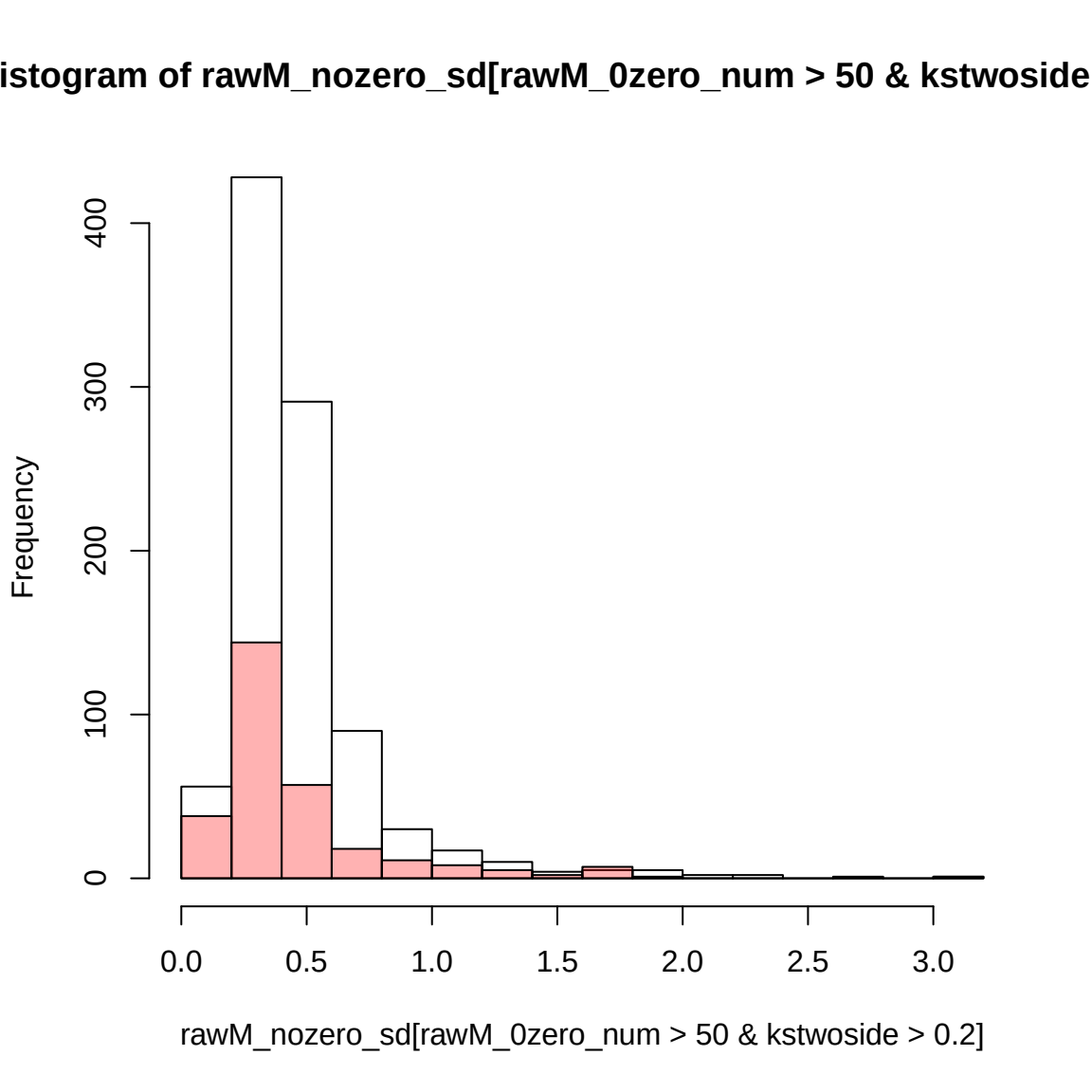

KSless nonsig: individual expression cell count of gene#28
Frequency
0
1
2
3
4
5
6
7
0
10
20
30
40
table(meta$individual[non_zero_flag])

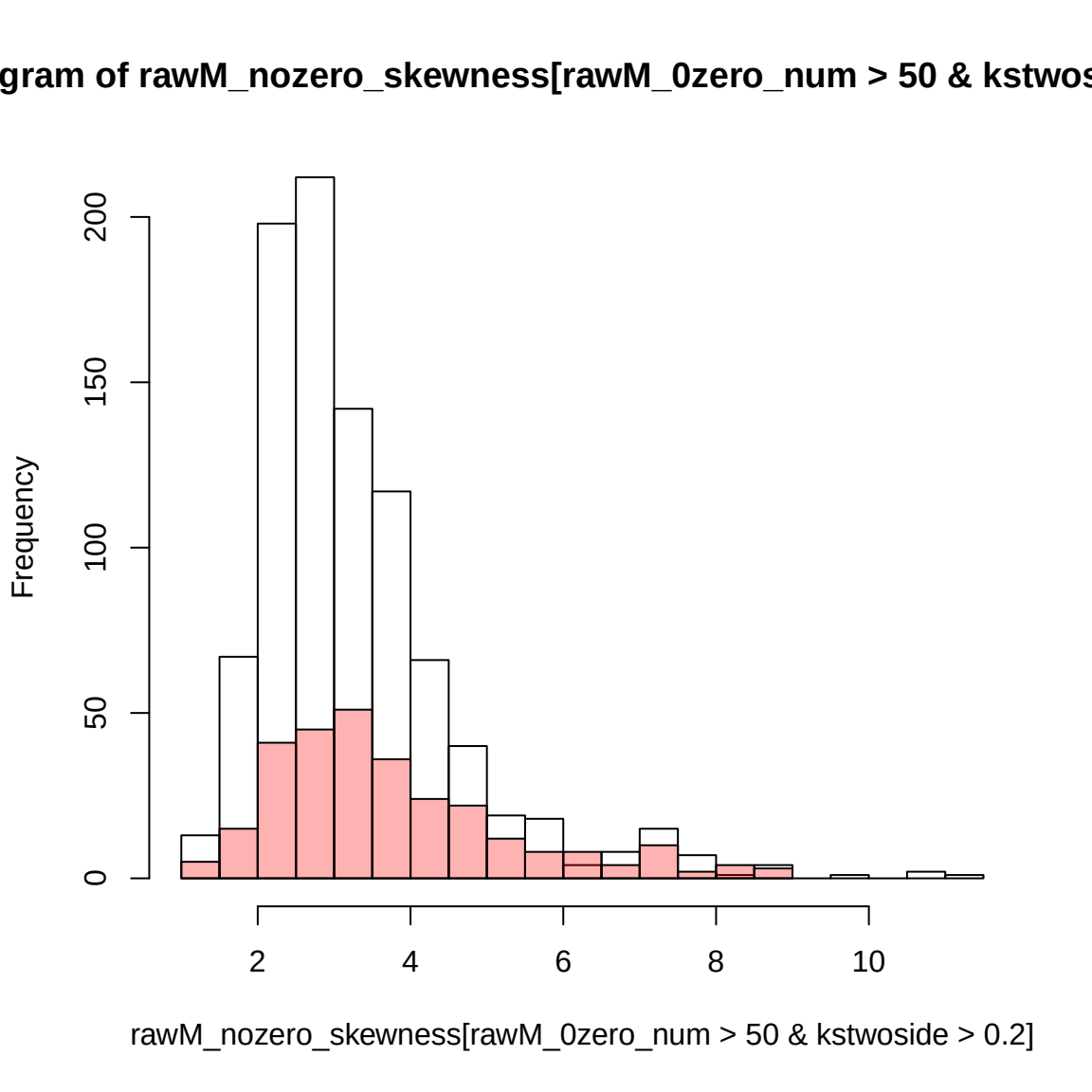

S nonsig: log expression of gene#30, pval ob=0.2037, non−zero nu
Frequency
0
20
40
60
80
1.0
1.5
2.0
2.5
3.0
rawM[i, non_zero_flag]
ind#: 24, diag#: 2

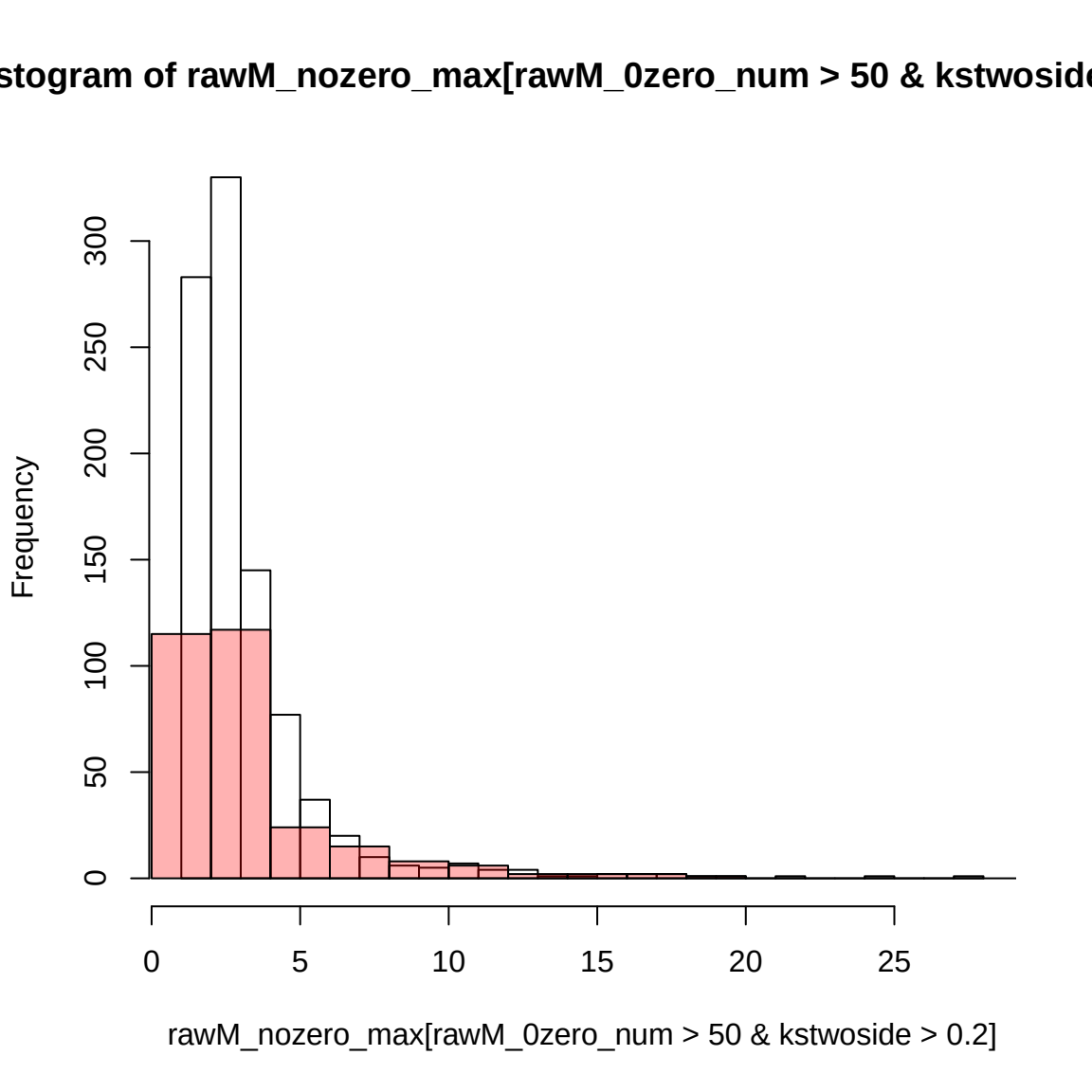

KSless nonsig: individual expression cell count of gene#30
Frequency
0
2
4
6
8
10
2
4
6
8
10
12
14
table(meta$individual[non_zero_flag])

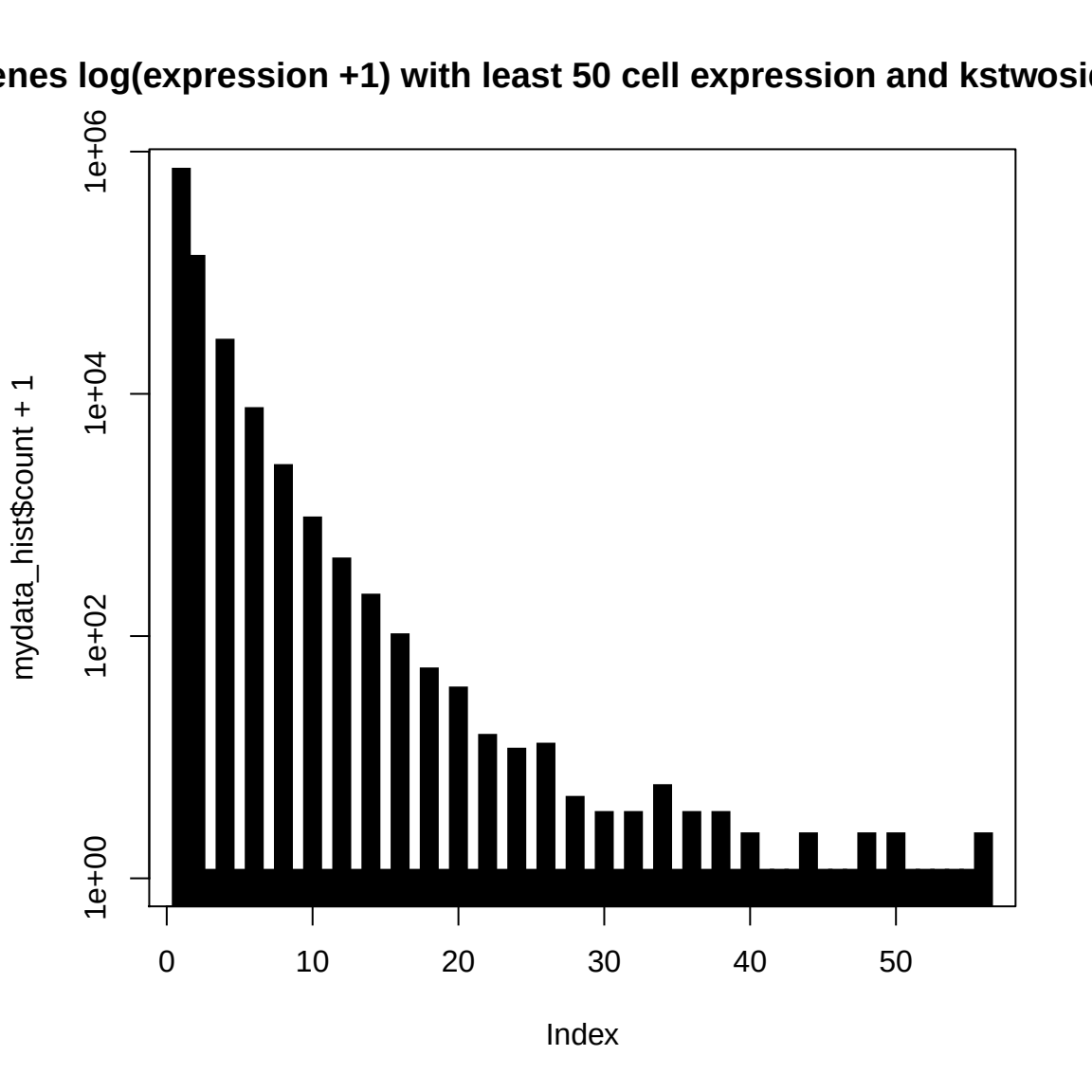

stogram of rawM_nozero_mean[rawM_0zero_num > 50 & kstwosid
Frequency
0
50
100
150
200
250
300
350
1.0
1.5
2.0
2.5
3.0
rawM_nozero_mean[rawM_0zero_num > 50 & kstwoside > 0.2]

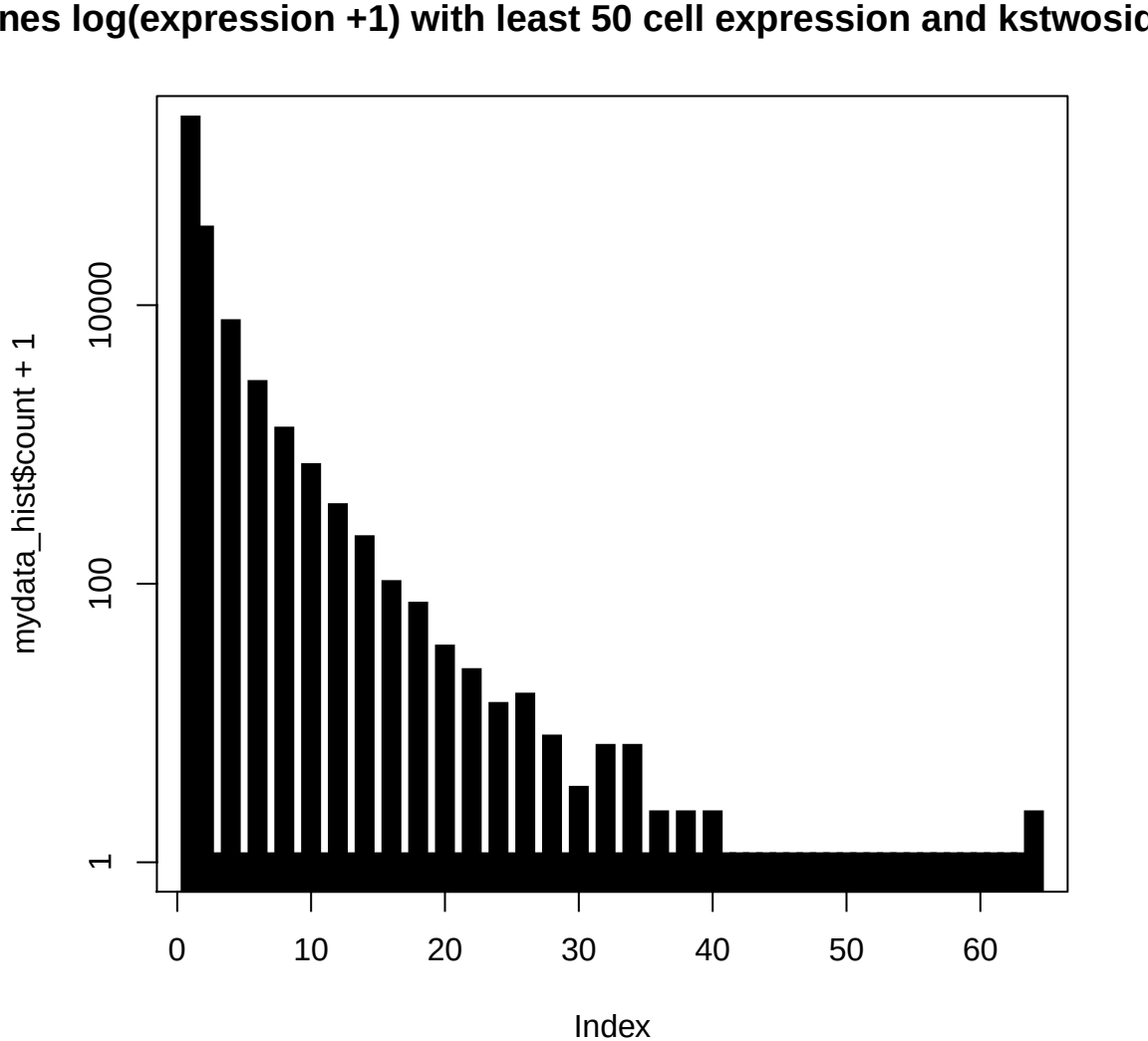

ogram of rawM_nozero_median[rawM_0zero_num > 50 & kstwosi
Frequency
0
200
400
600
800
1.0
1.5
2.0
2.5
3.0
rawM_nozero_median[rawM_0zero_num > 50 & kstwoside > 0.2]

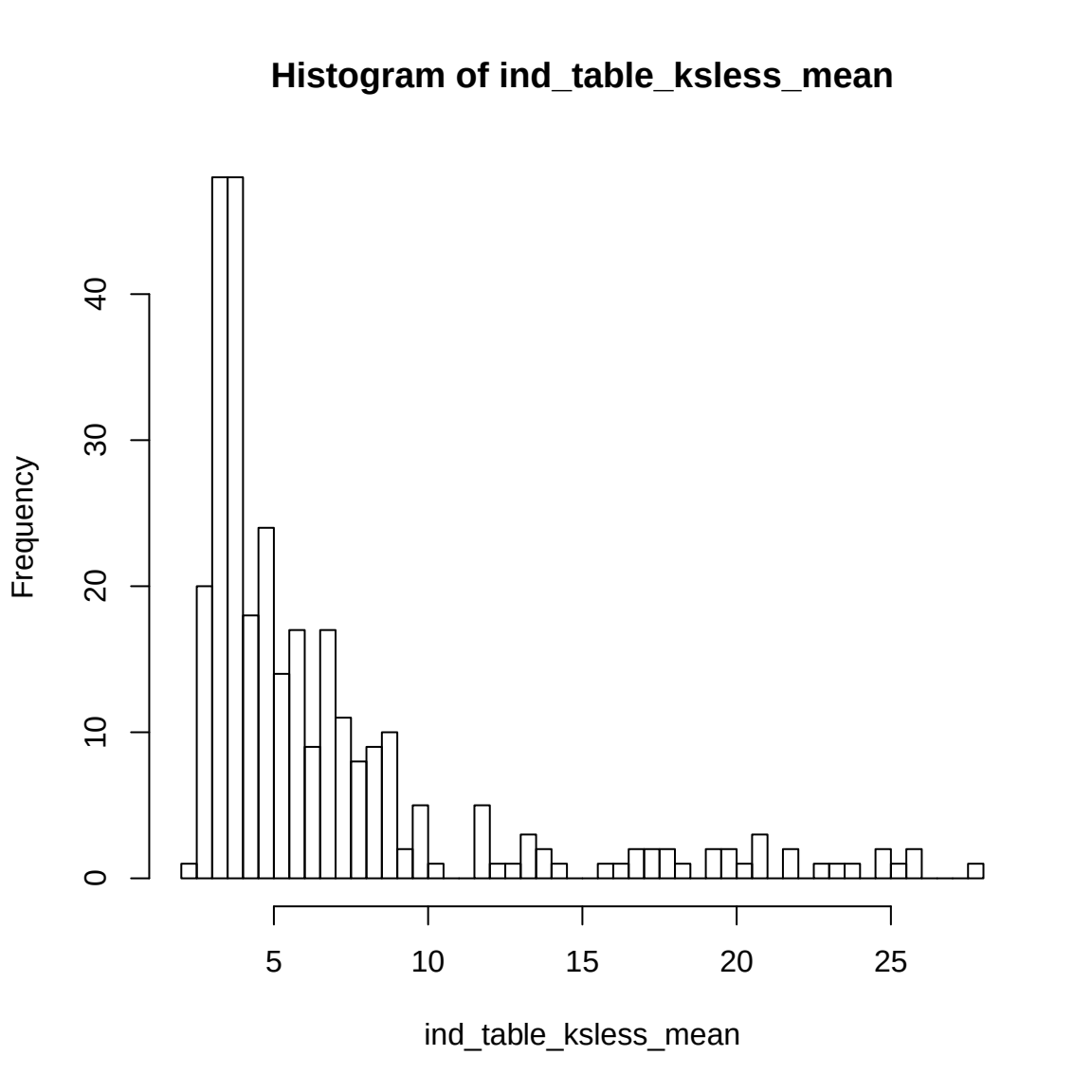

istogram of rawM_nozero_sd[rawM_0zero_num > 50 & kstwoside
Frequency
0
100
200
300
400
0.0
0.5
1.0
1.5
2.0
2.5
3.0
rawM_nozero_sd[rawM_0zero_num > 50 & kstwoside > 0.2]

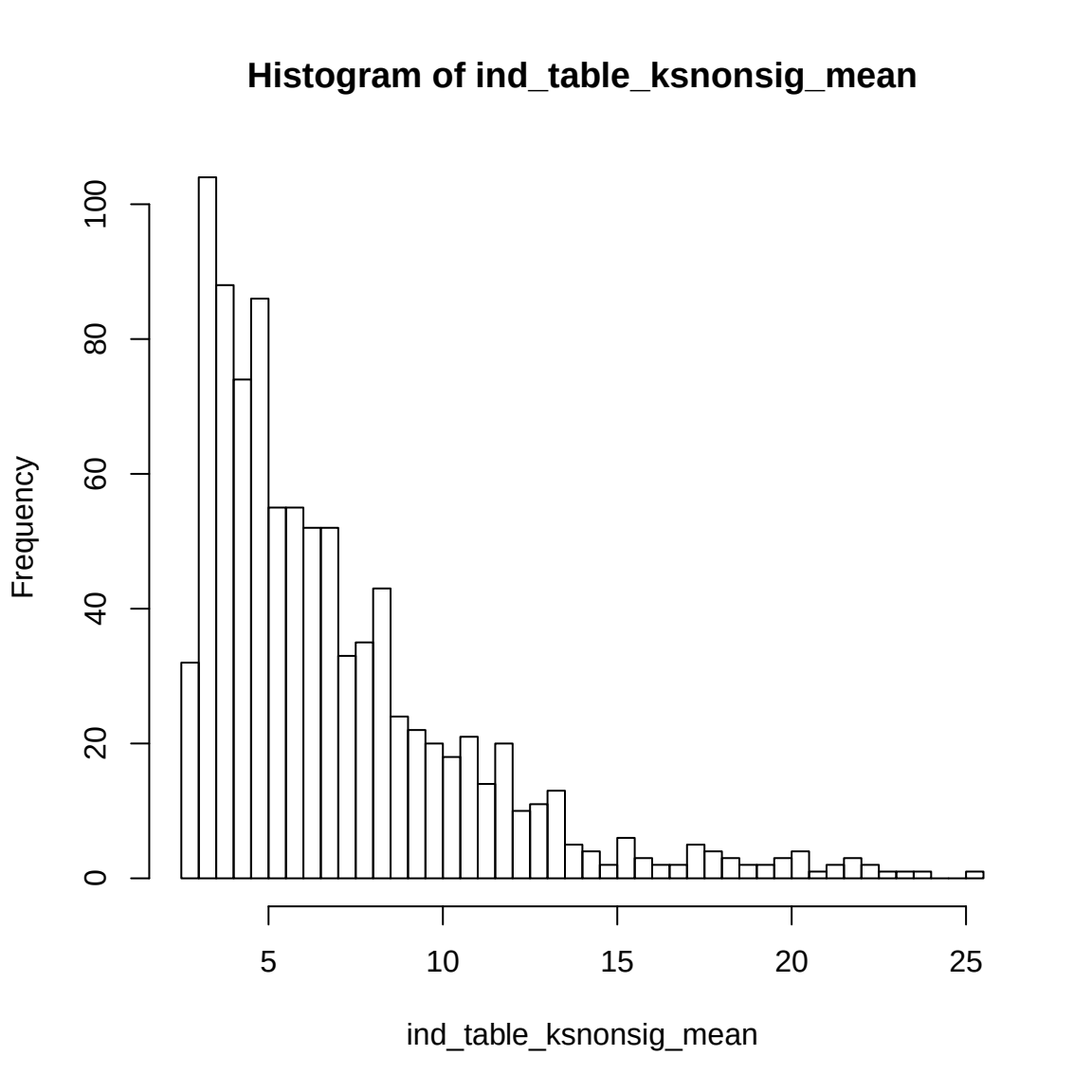

gram of rawM_nozero_skewness[rawM_0zero_num > 50 & kstwos
Frequency
0
50
100
150
200
2
4
6
8
10
rawM_nozero_skewness[rawM_0zero_num > 50 & kstwoside > 0.2]

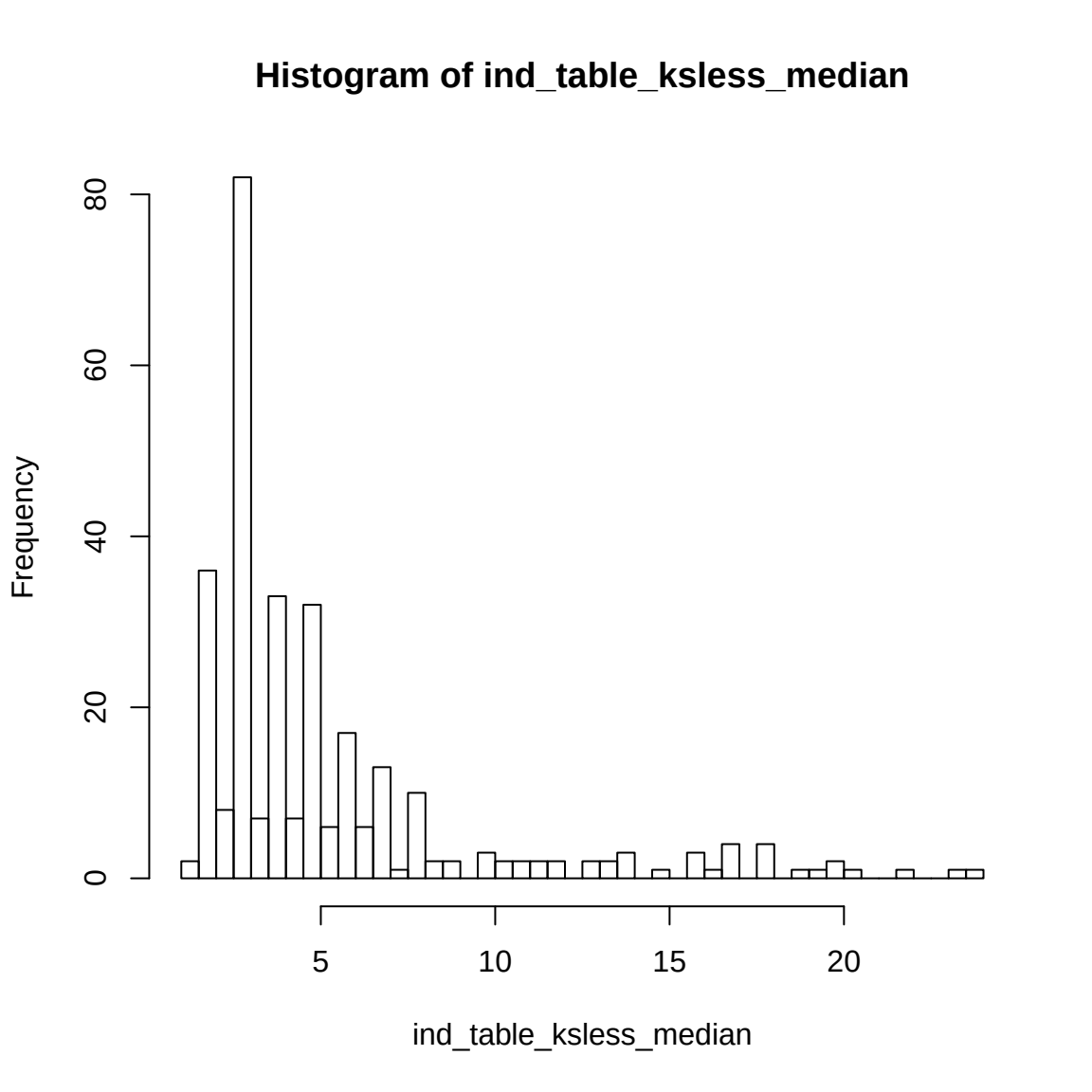

stogram of rawM_nozero_max[rawM_0zero_num > 50 & kstwoside
Frequency
0
50
100
150
200
250
300
0
5
10
15
20
25
rawM_nozero_max[rawM_0zero_num > 50 & kstwoside > 0.2]

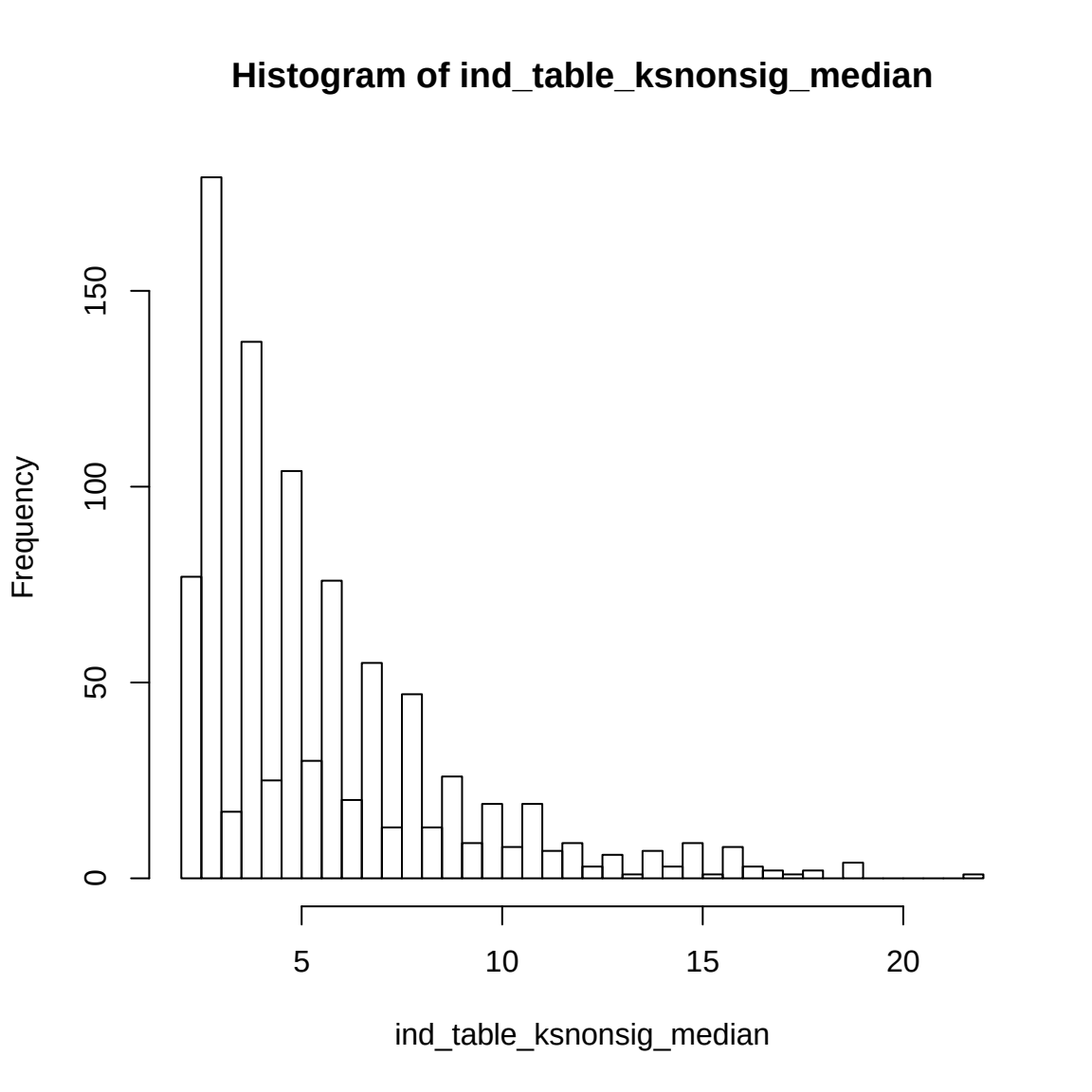

enes log(expression +1) with least 50 cell expression and kstwosi
mydata_hist$count + 1
1e+00
1e+02
1e+04
1e+06
0
10
20
30
40
50
Index

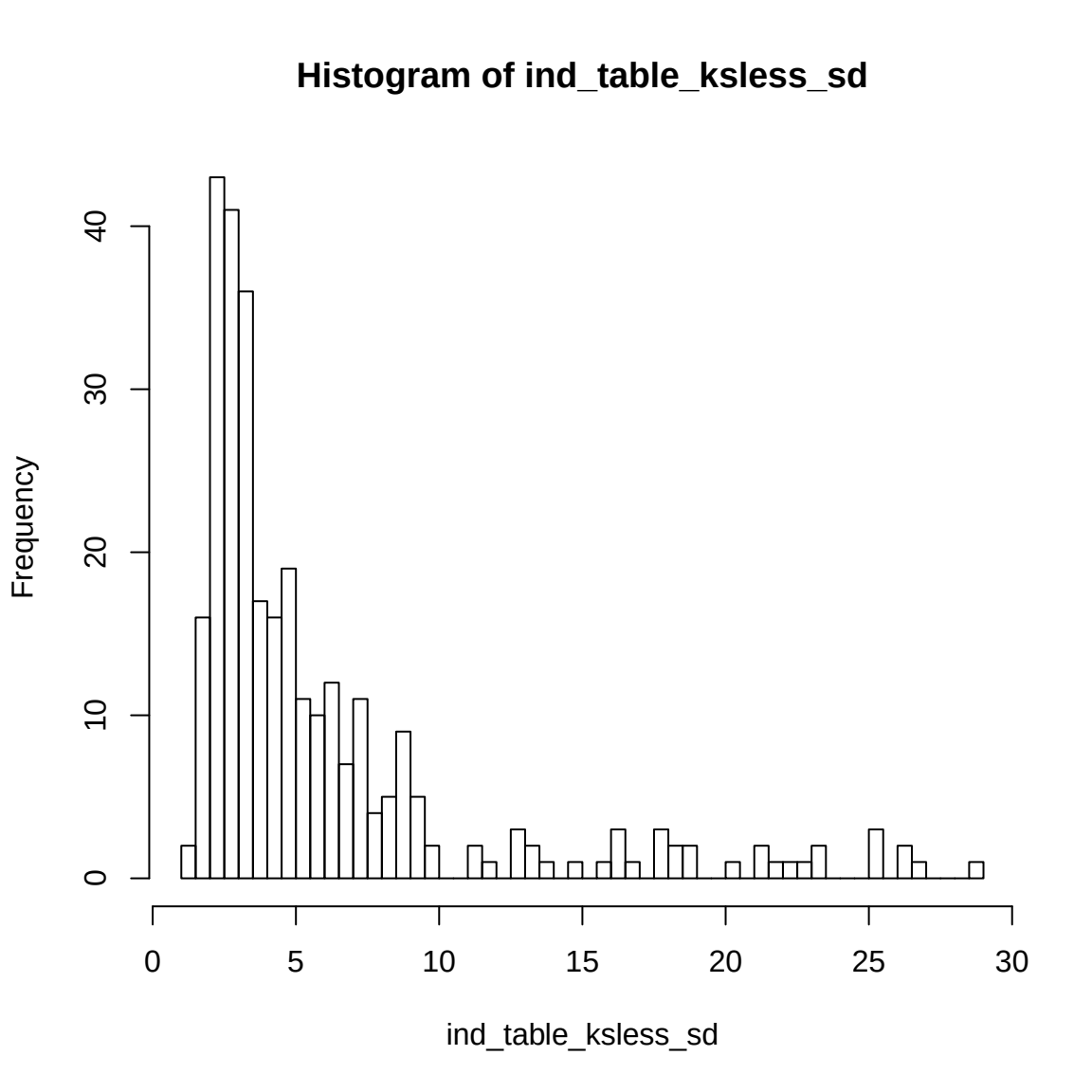

nes log(expression +1) with least 50 cell expression and kstwosic
mydata_hist$count + 1
1
100
10000
0
10
20
30
40
50
60
Index

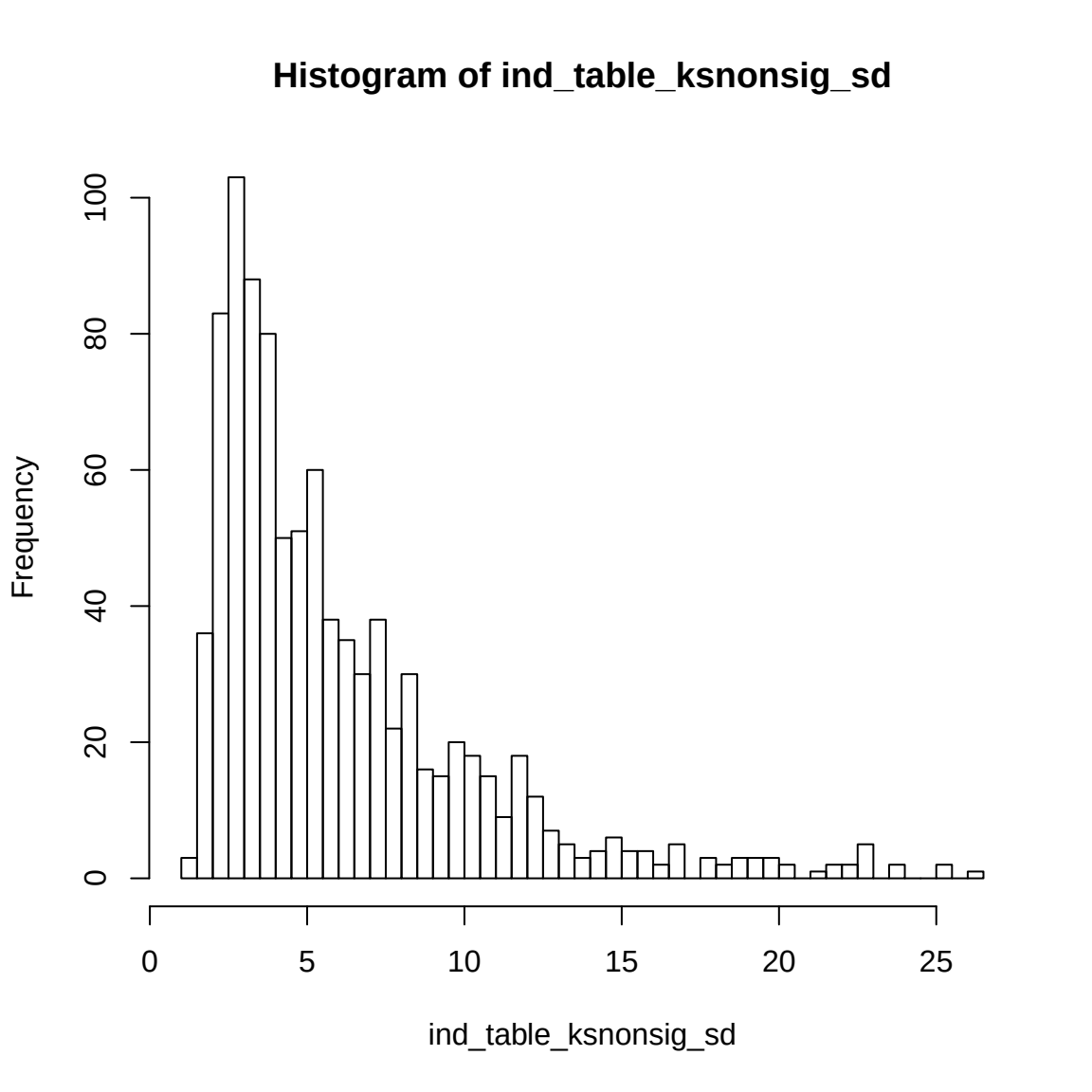

Histogram of ind_table_ksless_mean
Frequency
0
10
20
30
40
5
10
15
20
25
ind_table_ksless_mean

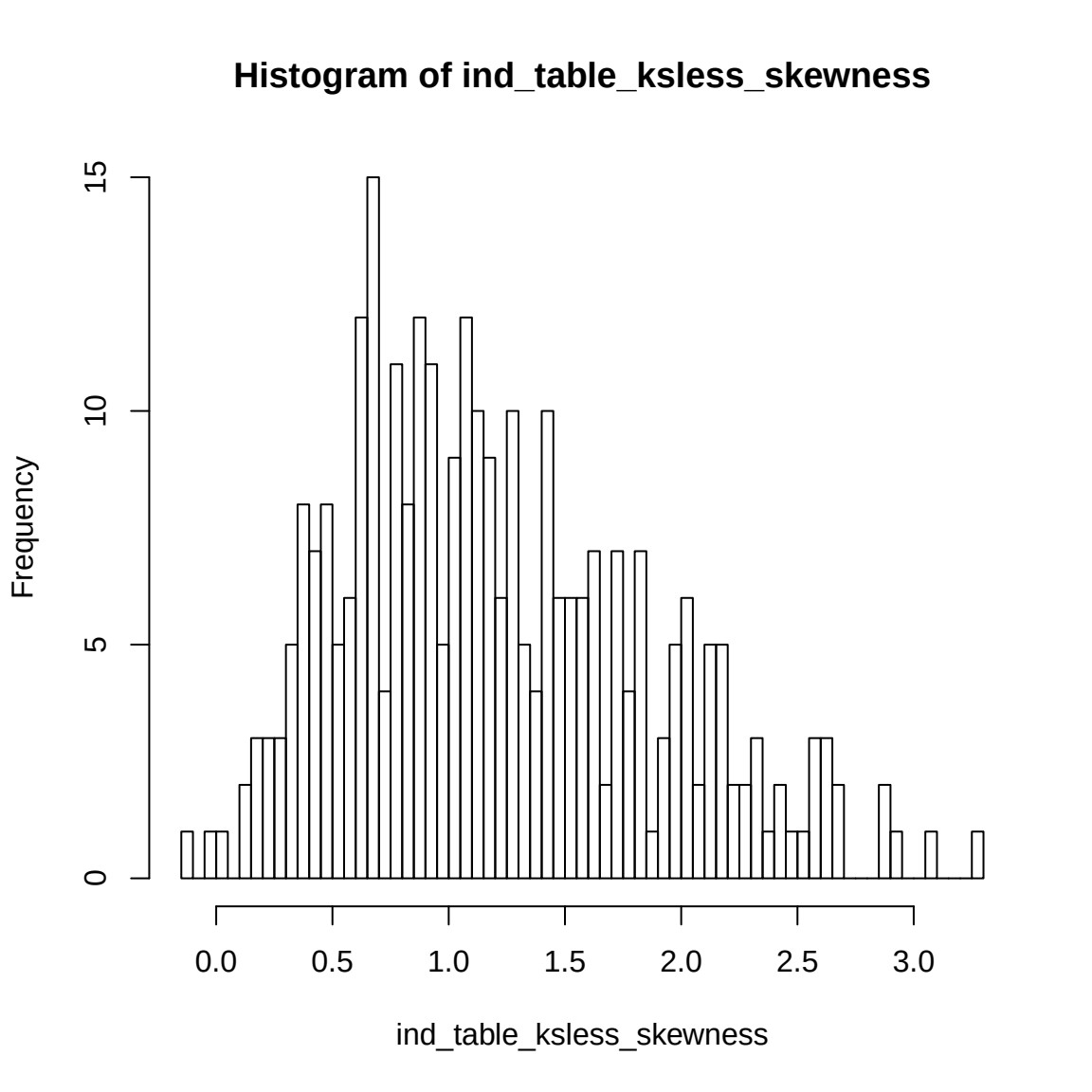

Histogram of ind_table_ksnonsig_mean
Frequency
0
20
40
60
80
100
5
10
15
20
25
ind_table_ksnonsig_mean

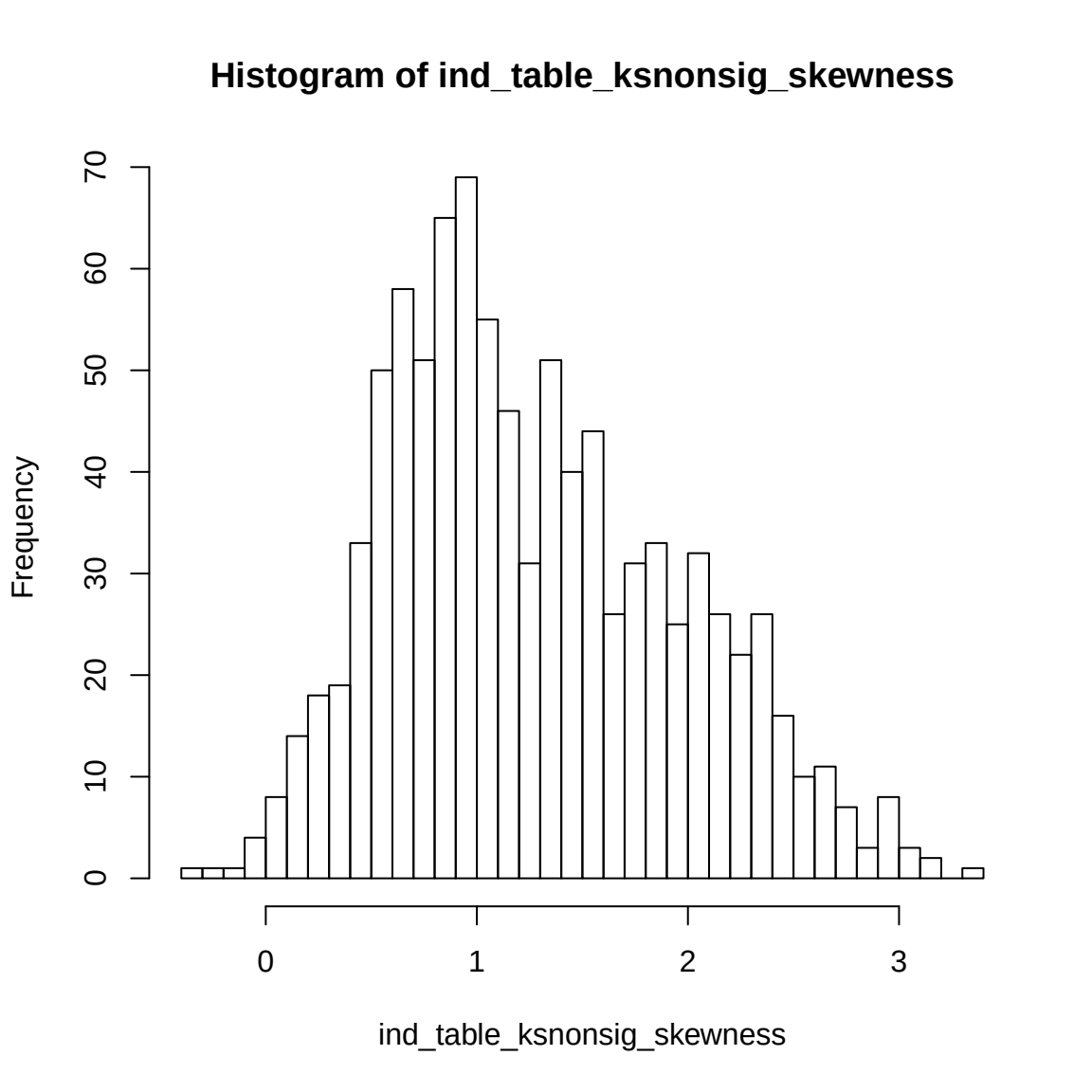

Histogram of ind_table_ksless_median
Frequency
0
20
40
60
80
5
10
15
20
ind_table_ksless_median

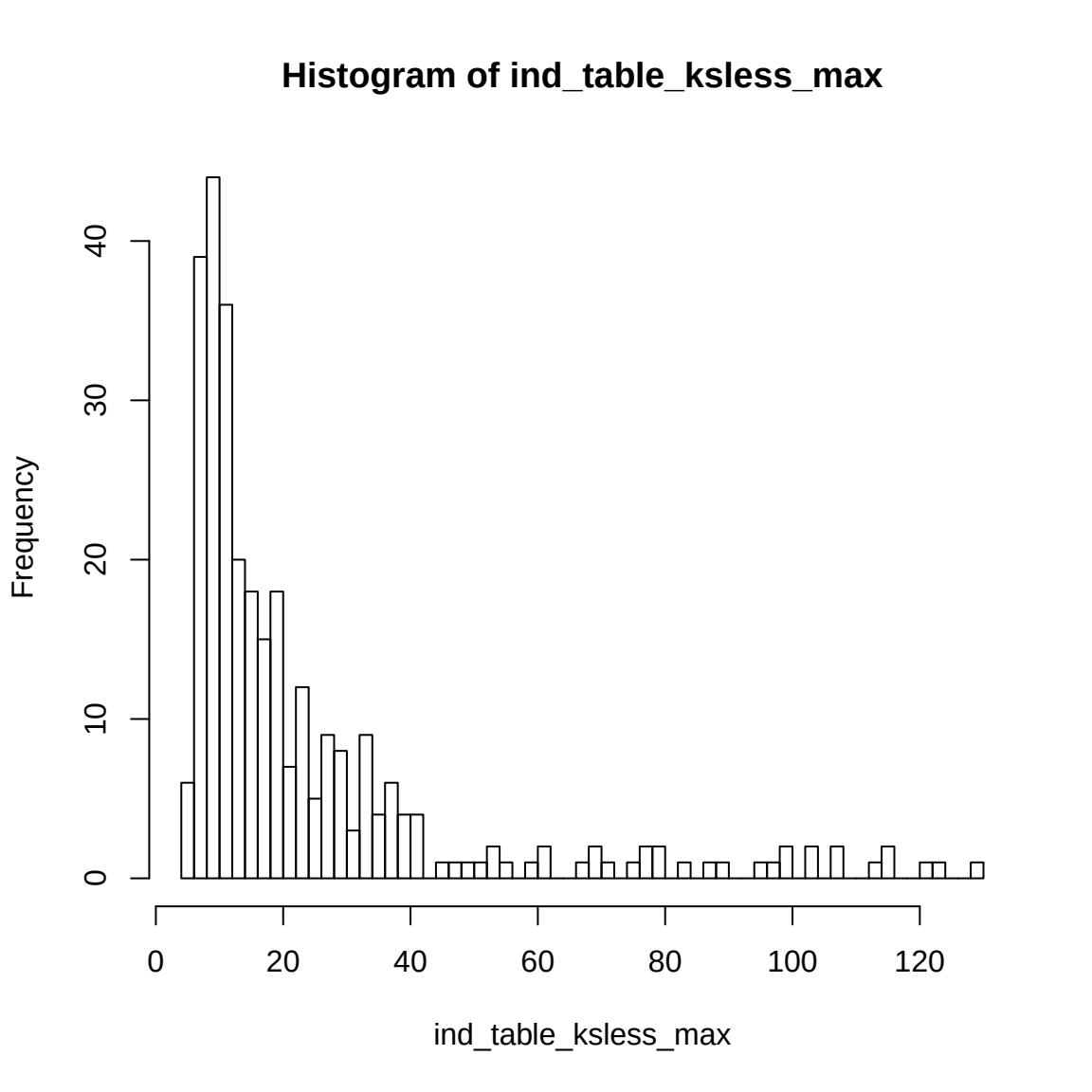

Histogram of ind_table_ksnonsig_median
Frequency
0
50
100
150
5
10
15
20
ind_table_ksnonsig_median

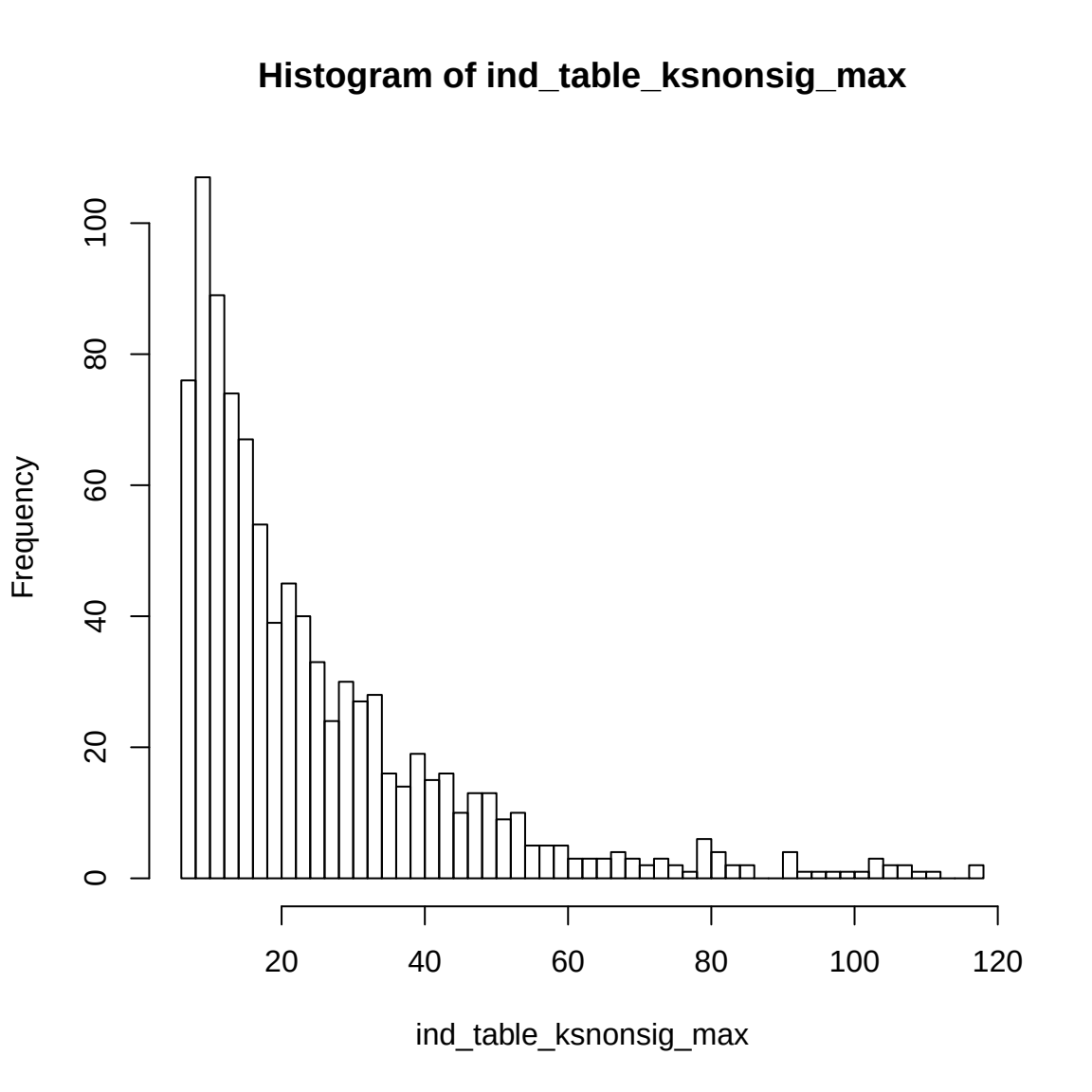

Histogram of ind_table_ksless_sd
Frequency
0
10
20
30
40
0
5
10
15
20
25
30
ind_table_ksless_sd


Histogram of ind_table_ksnonsig_sd
Frequency
0
20
40
60
80
100
0
5
10
15
20
25
ind_table_ksnonsig_sd


Histogram of ind_table_ksless_skewness
Frequency
0
5
10
15
0.0
0.5
1.0
1.5
2.0
2.5
3.0
ind_table_ksless_skewness


Histogram of ind_table_ksnonsig_skewness
Frequency
0
10
20
30
40
50
60
70
0
1
2
3
ind_table_ksnonsig_skewness


Histogram of ind_table_ksless_max
Frequency
0
10
20
30
40
0
20
40
60
80
100
120
ind_table_ksless_max


Histogram of ind_table_ksnonsig_max
Frequency
0
20
40
60
80
100
20
40
60
80
100
120
ind_table_ksnonsig_max