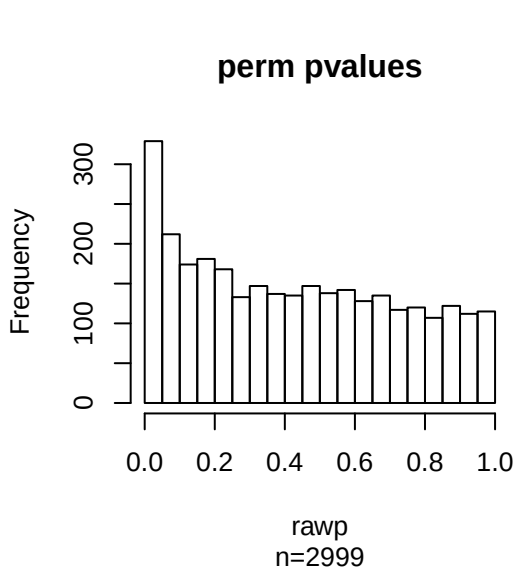
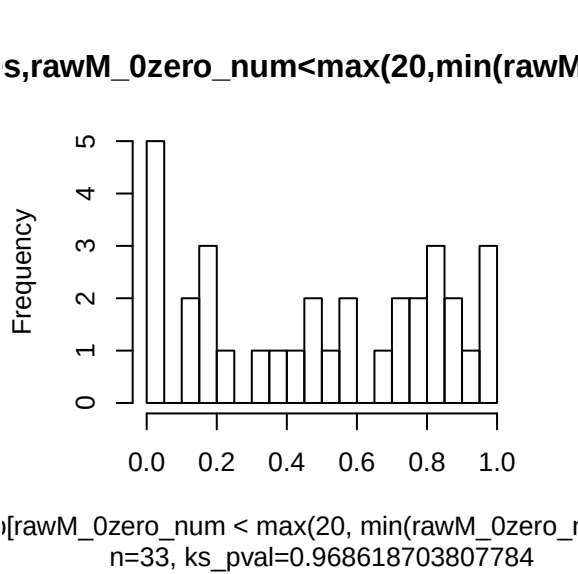
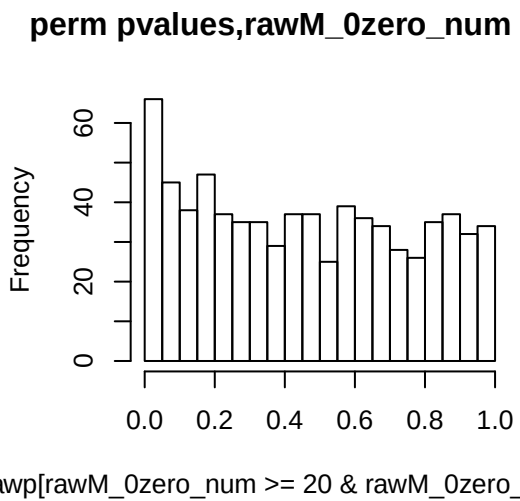
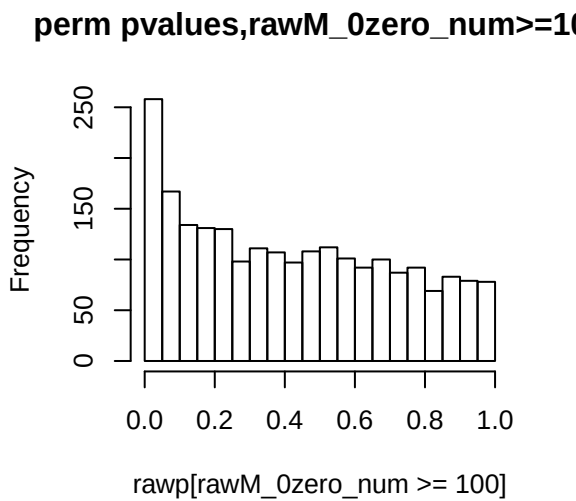
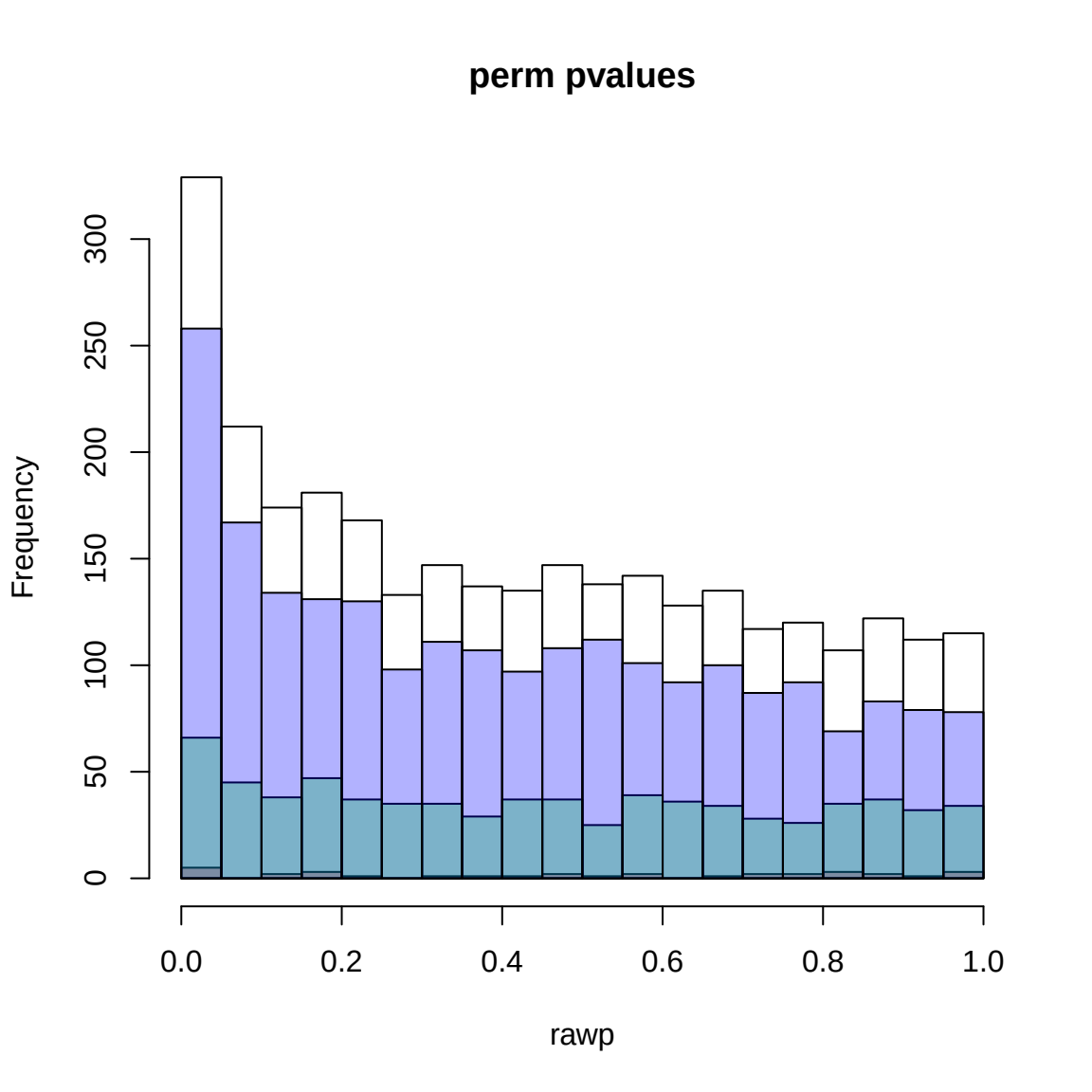
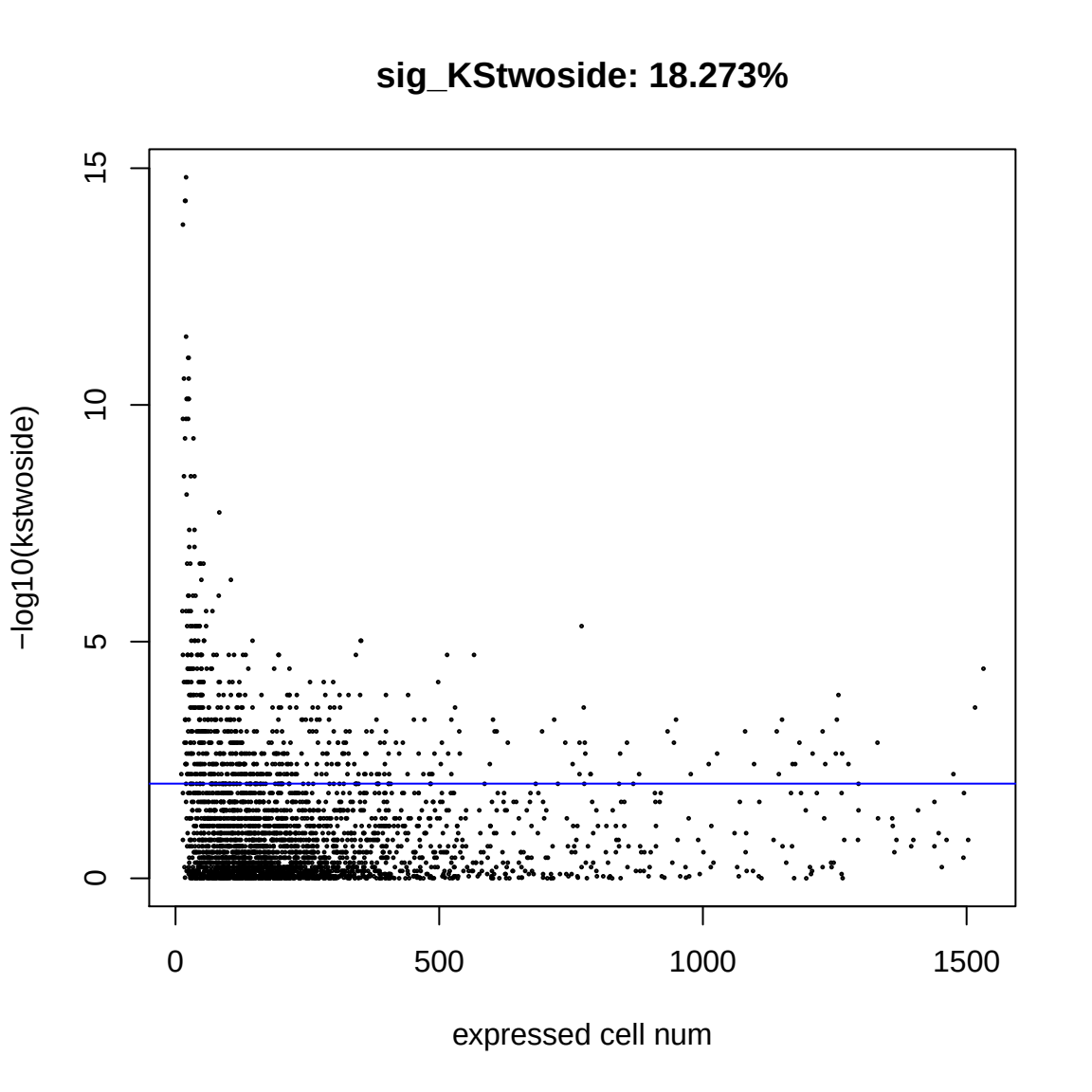

perm pvalues
Frequency
0
100
200
300
0.0
0.2
0.4
0.6
0.8
1.0
rawp
n=2999

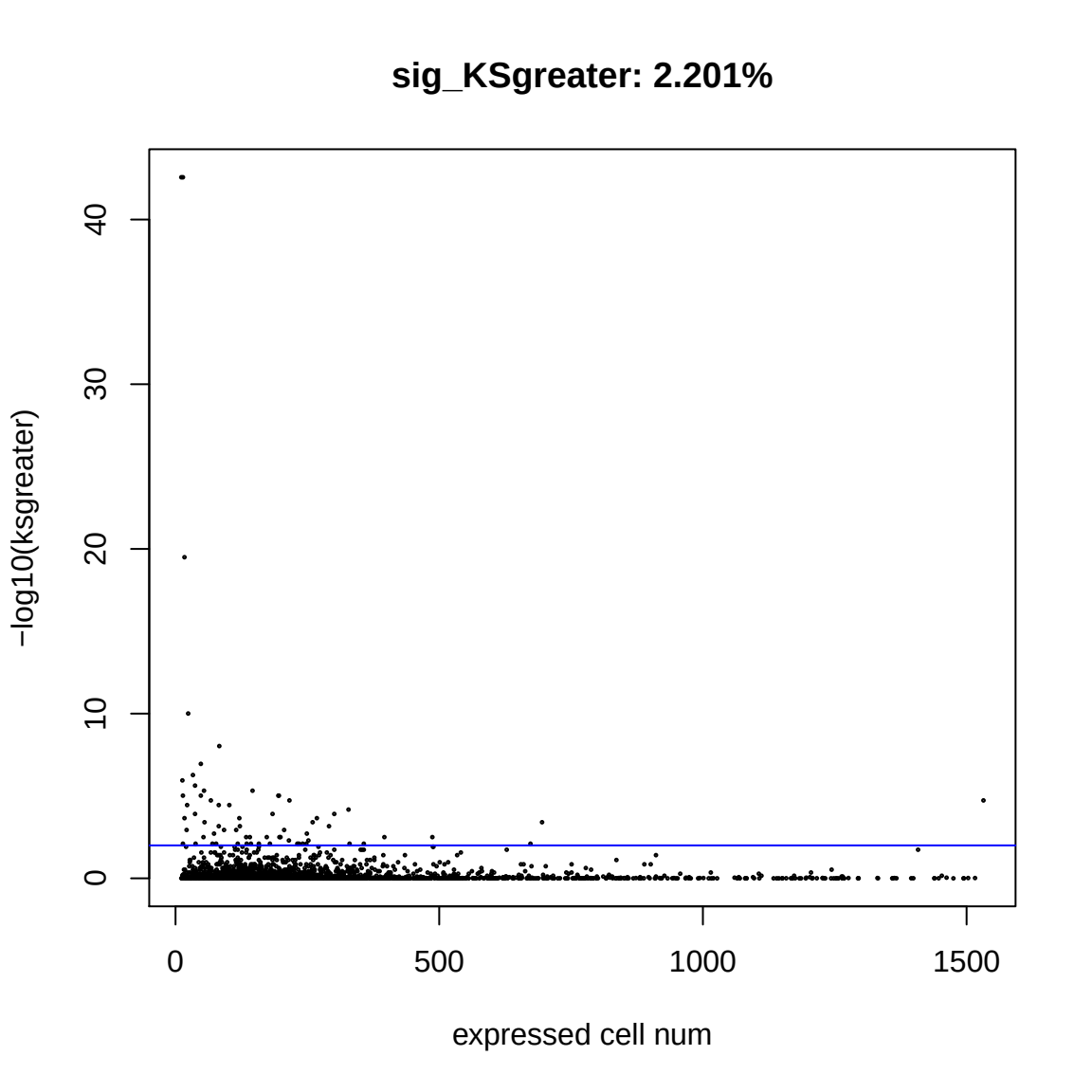

s,rawM_0zero_num<max(20,min(rawM
Frequency
0
1
2
3
4
5
0.0
0.2
0.4
0.6
0.8
1.0
[rawM_0zero_num < max(20, min(rawM_0zero_
n=33, ks_pval=0.968618703807784

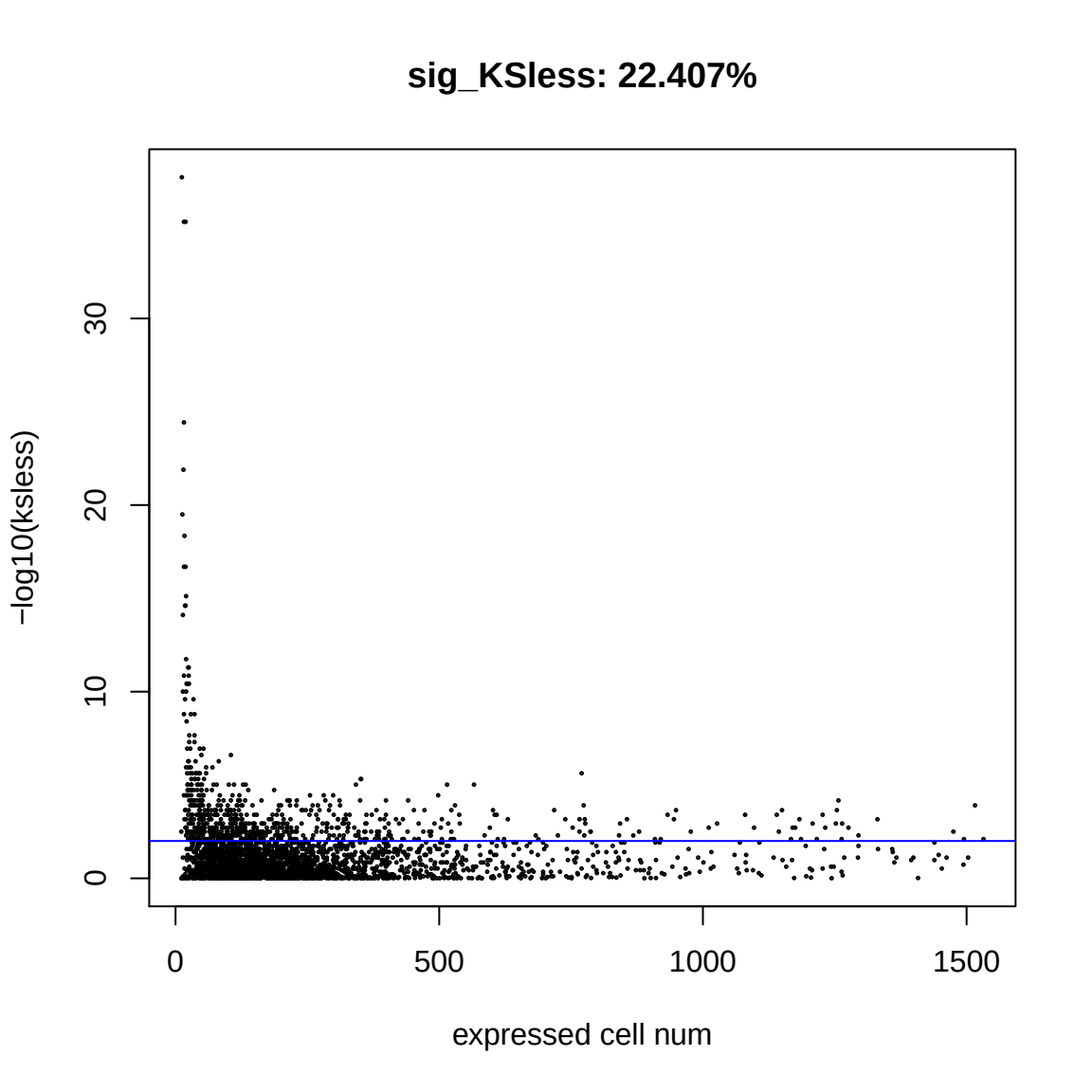

perm pvalues,rawM_0zero_num 20−
Frequency
0
20
40
60
0.0
0.2
0.4
0.6
0.8
1.0
awp[rawM_0zero_num >= 20 & rawM_0zero_num
n=732, ks_pval=0.0497444053036233

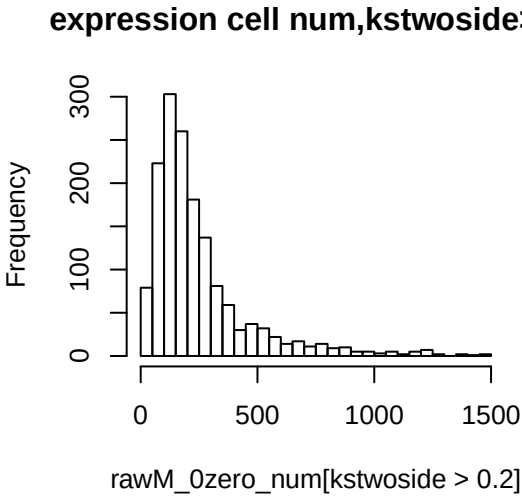

perm pvalues,rawM_0zero_num>=10
Frequency
0
50
150
250
0.0
0.2
0.4
0.6
0.8
1.0
rawp[rawM_0zero_num >= 100]
n=2234, ks_pval=9.04831765069503e−14

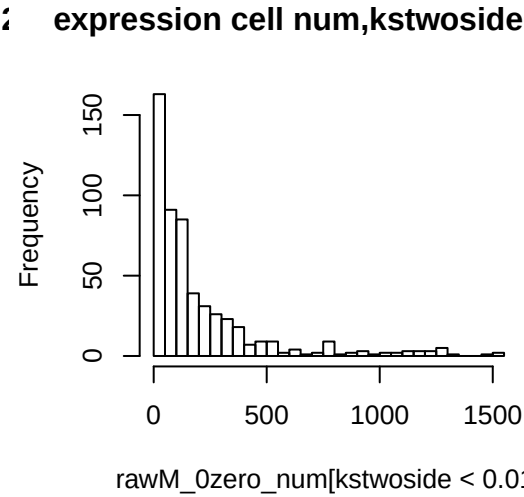

perm pvalues
Frequency
0
50
100
150
200
250
300
0.0
0.2
0.4
0.6
0.8
1.0
rawp

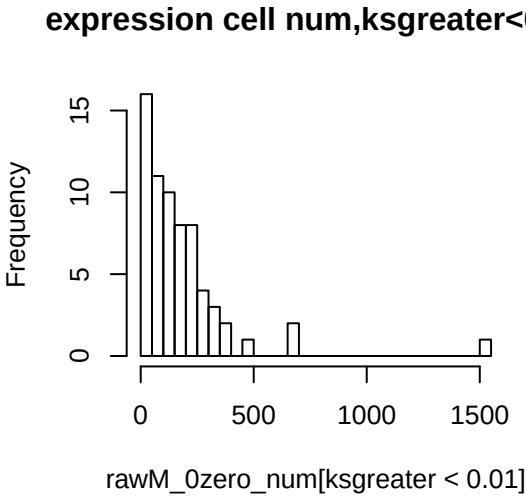

sig_KStwoside: 18.273%
−log10(kstwoside)
0
5
10
15
0
500
1000
1500
expressed cell num

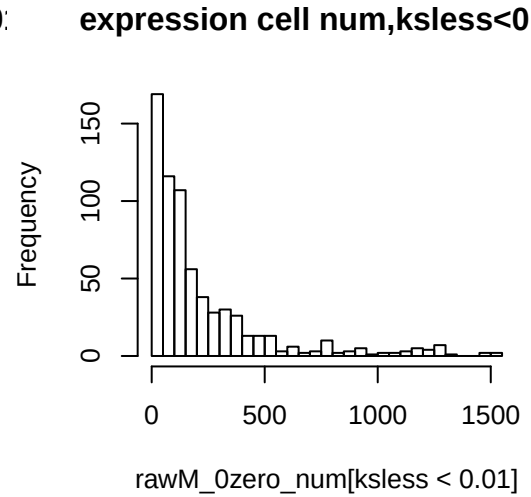

sig_KSgreater: 2.201%
−log10(ksgreater)
0
10
20
30
40
0
500
1000
1500
expressed cell num

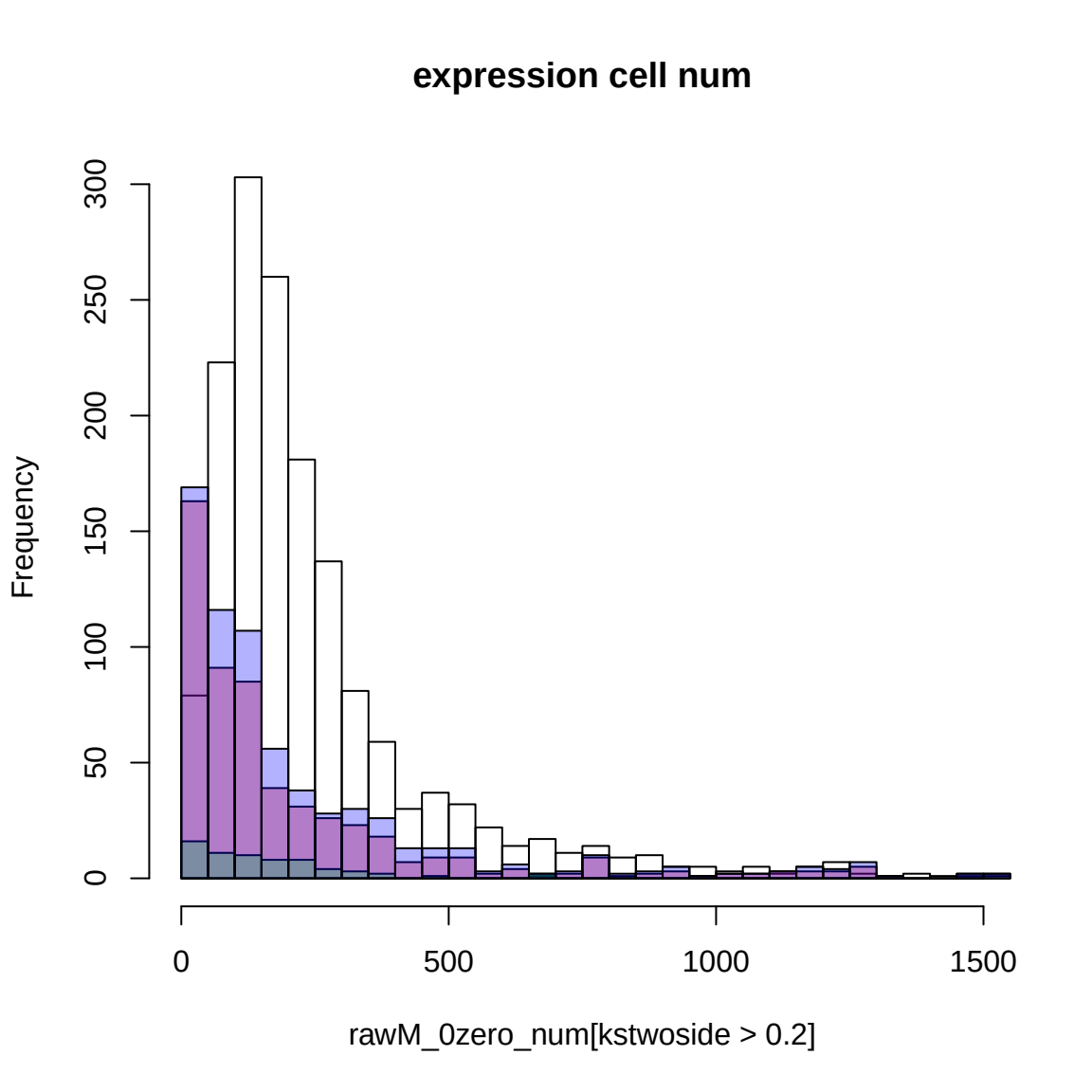

sig_KSless: 22.407%
−log10(ksless)
0
10
20
30
0
500
1000
1500
expressed cell num

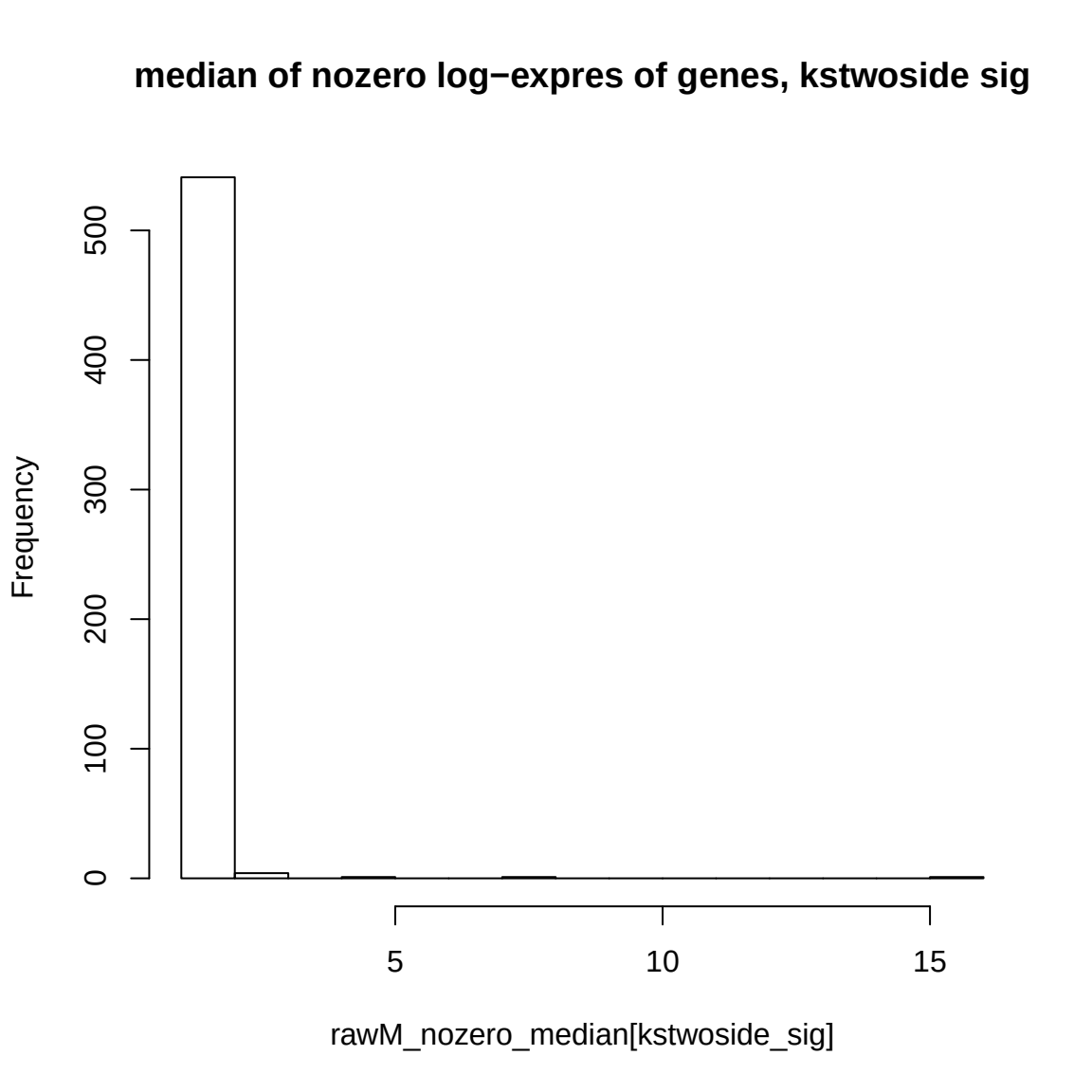

expression cell num,kstwoside>0.2
Frequency
0
100
200
300
0
500
1000
1500
rawM_0zero_num[kstwoside > 0.2]

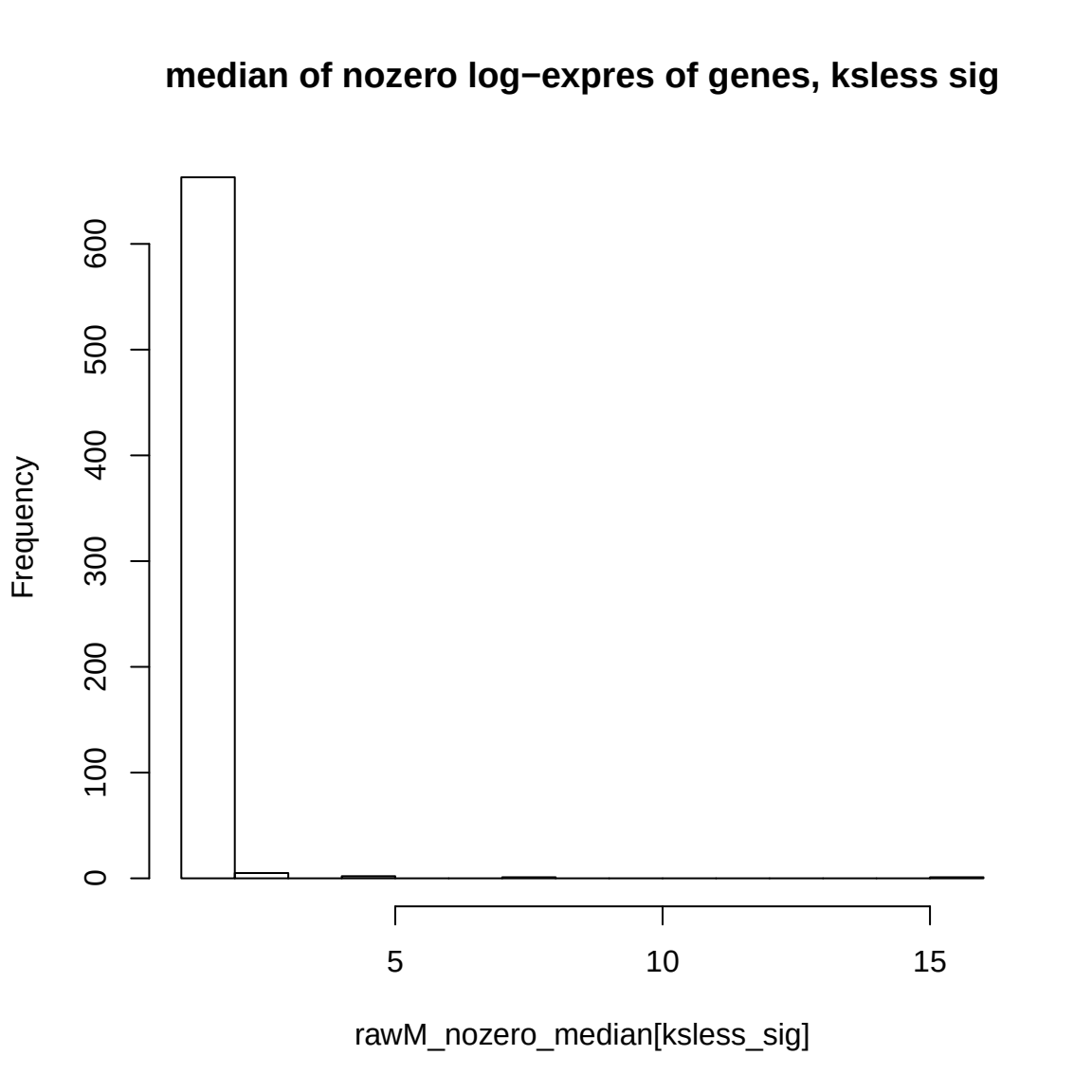

expression cell num,kstwoside<0.0
Frequency
0
50
100
150
0
500
1000
1500
rawM_0zero_num[kstwoside < 0.01]


expression cell num,ksgreater<0.0
Frequency
0
5
10
15
0
500
1000
1500
rawM_0zero_num[ksgreater < 0.01]

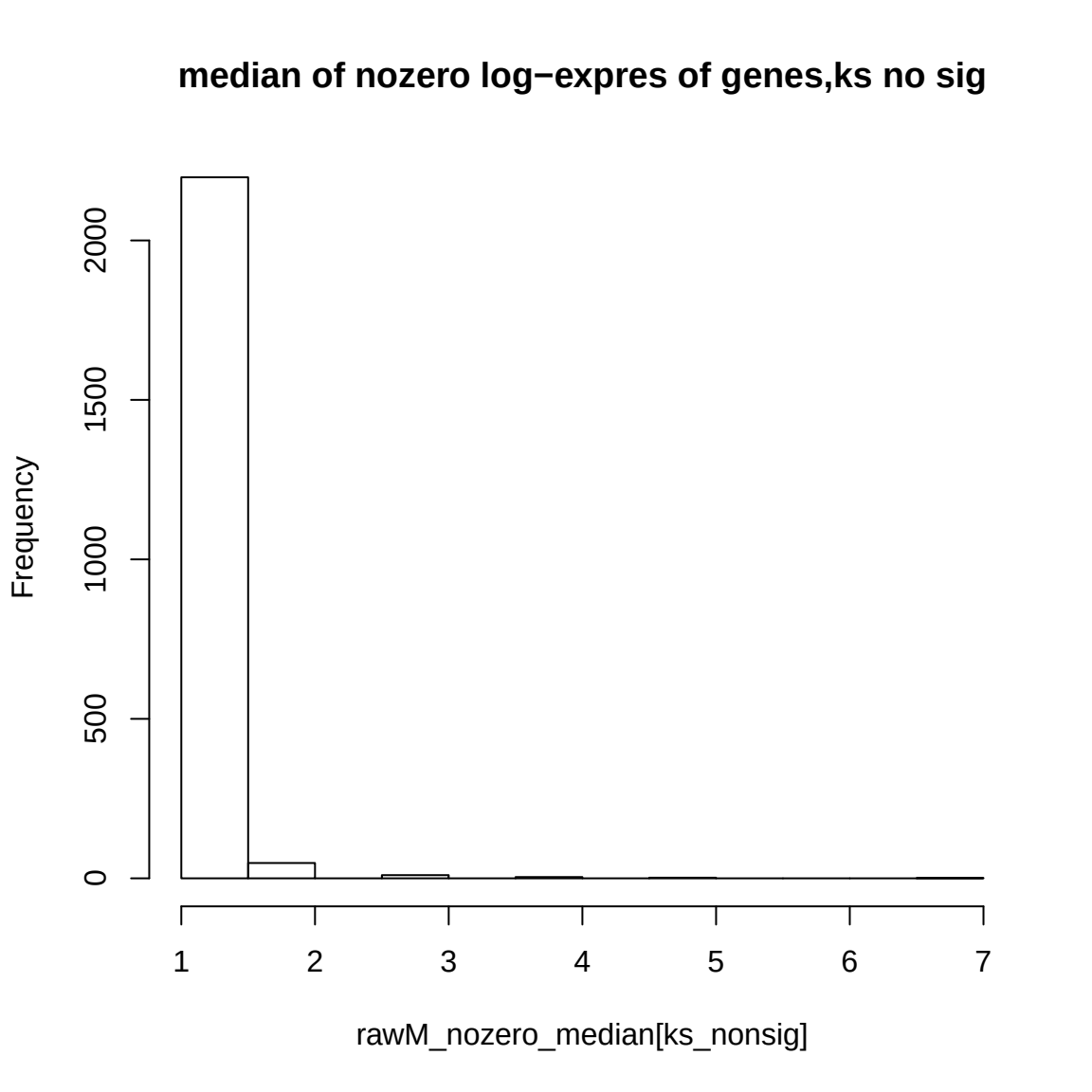

expression cell num,ksless<0.01
Frequency
0
50
100
150
0
500
1000
1500
rawM_0zero_num[ksless < 0.01]

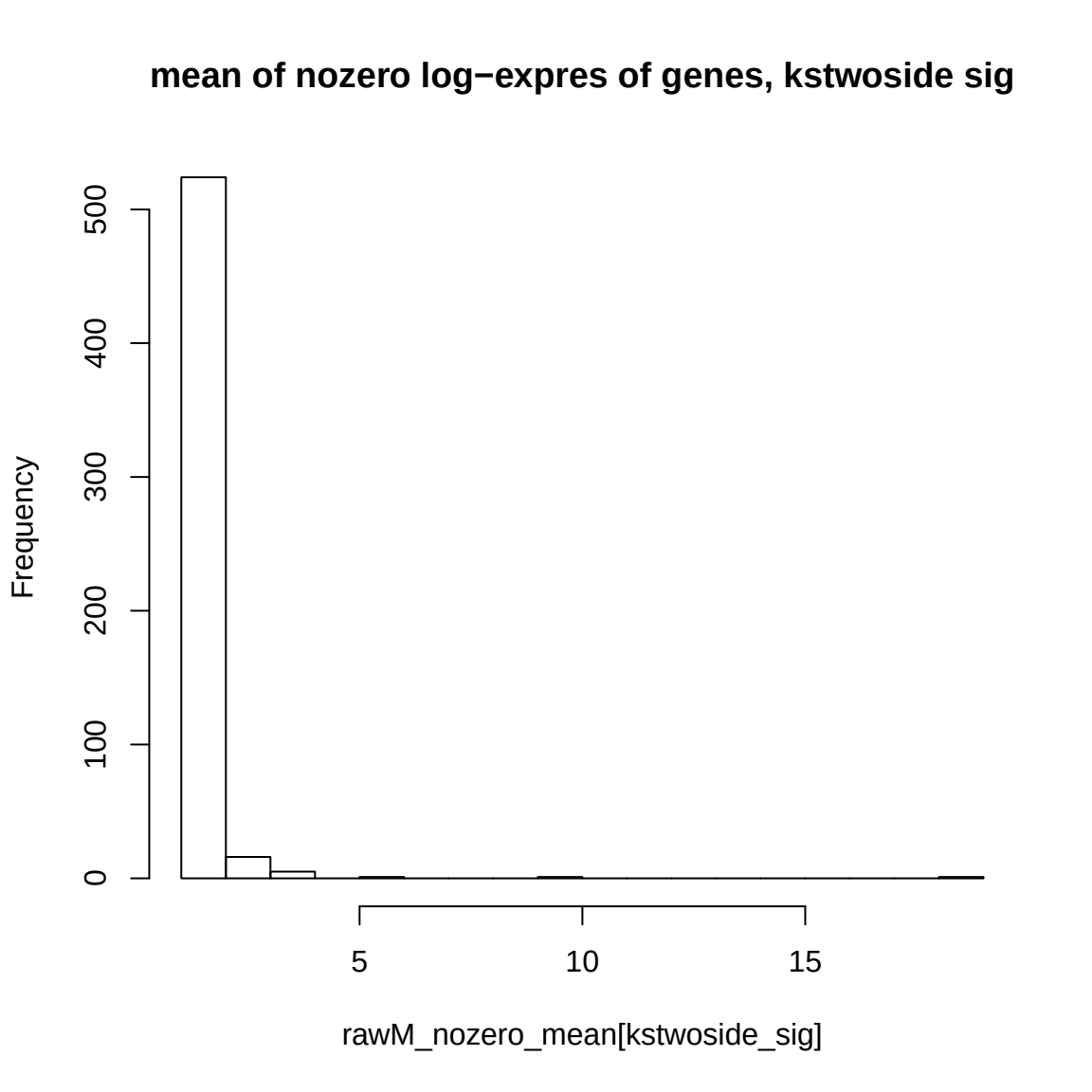

expression cell num
Frequency
0
50
100
150
200
250
300
0
500
1000
1500
rawM_0zero_num[kstwoside > 0.2]

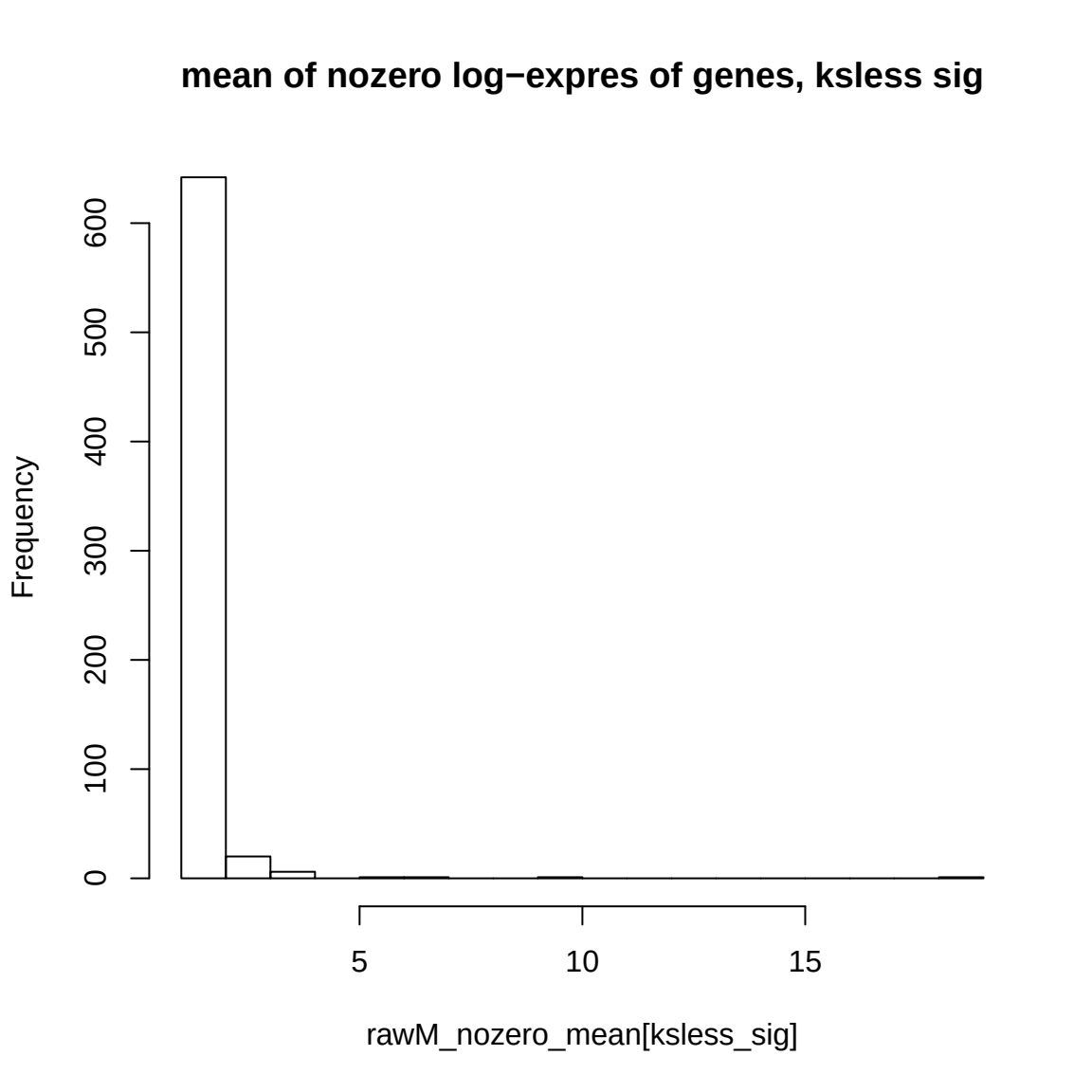

median of nozero log−expres of genes, kstwoside sig
Frequency
0
100
200
300
400
500
5
10
15
rawM_nozero_median[kstwoside_sig]


median of nozero log−expres of genes, ksless sig
Frequency
0
100
200
300
400
500
600
5
10
15
rawM_nozero_median[ksless_sig]

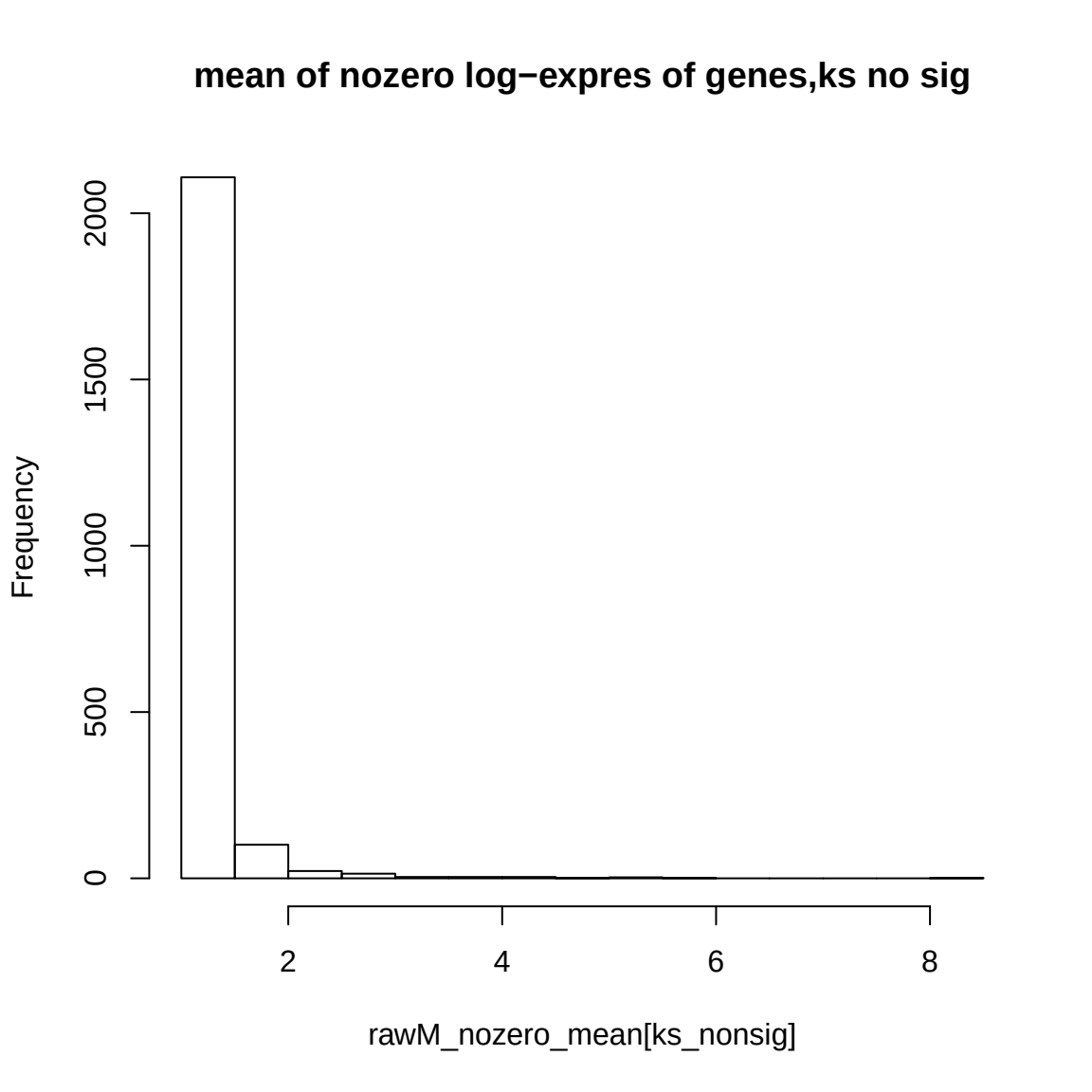
median of nozero log−expres of genes,ksgreater sig
Frequency
0
10
20
30
40
50
60
5
10
15
rawM_nozero_median[ksgreater_sig]

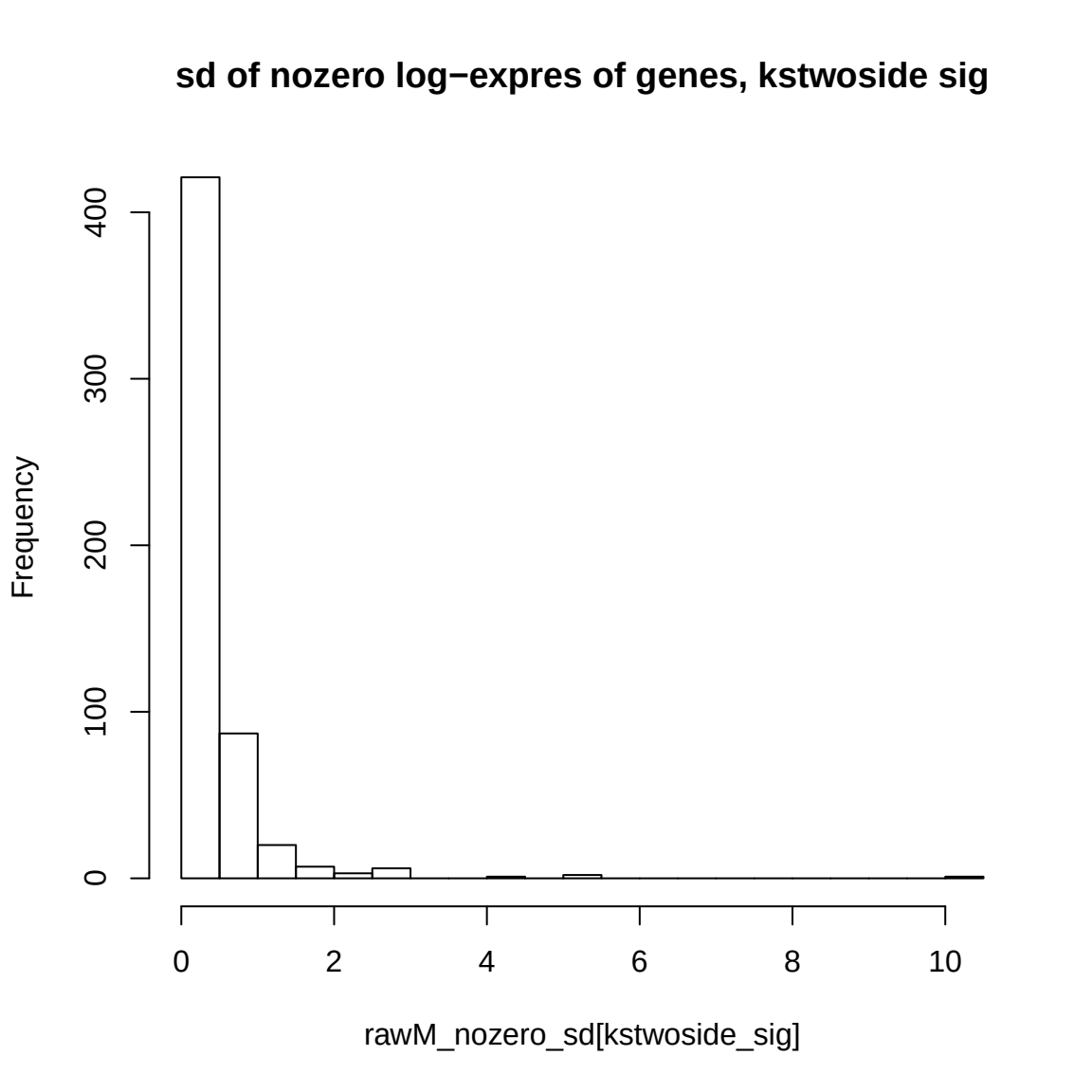

median of nozero log−expres of genes,ks no sig
Frequency
0
500
1000
1500
2000
1
2
3
4
5
6
7
rawM_nozero_median[ks_nonsig]

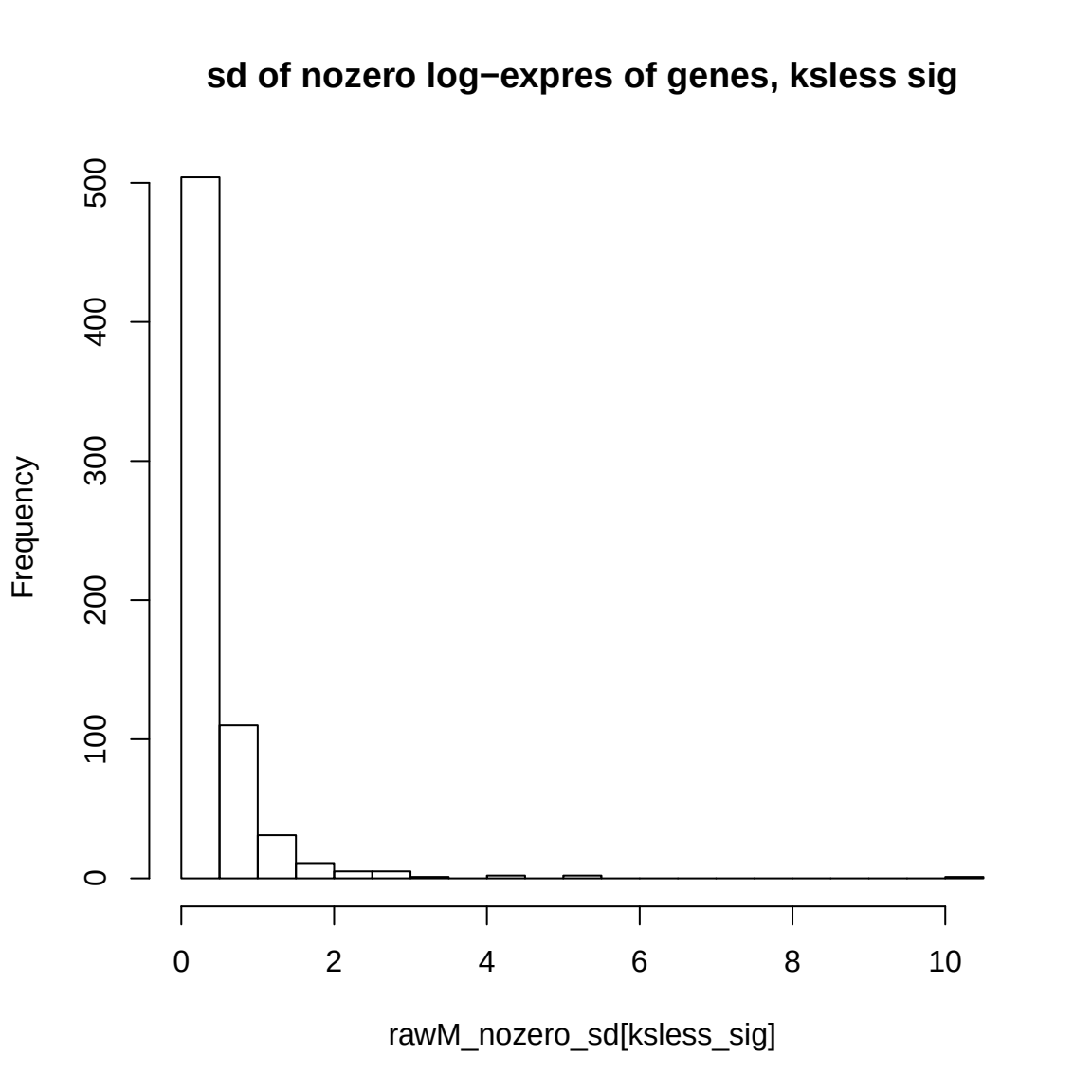

mean of nozero log−expres of genes, kstwoside sig
Frequency
0
100
200
300
400
500
5
10
15
rawM_nozero_mean[kstwoside_sig]

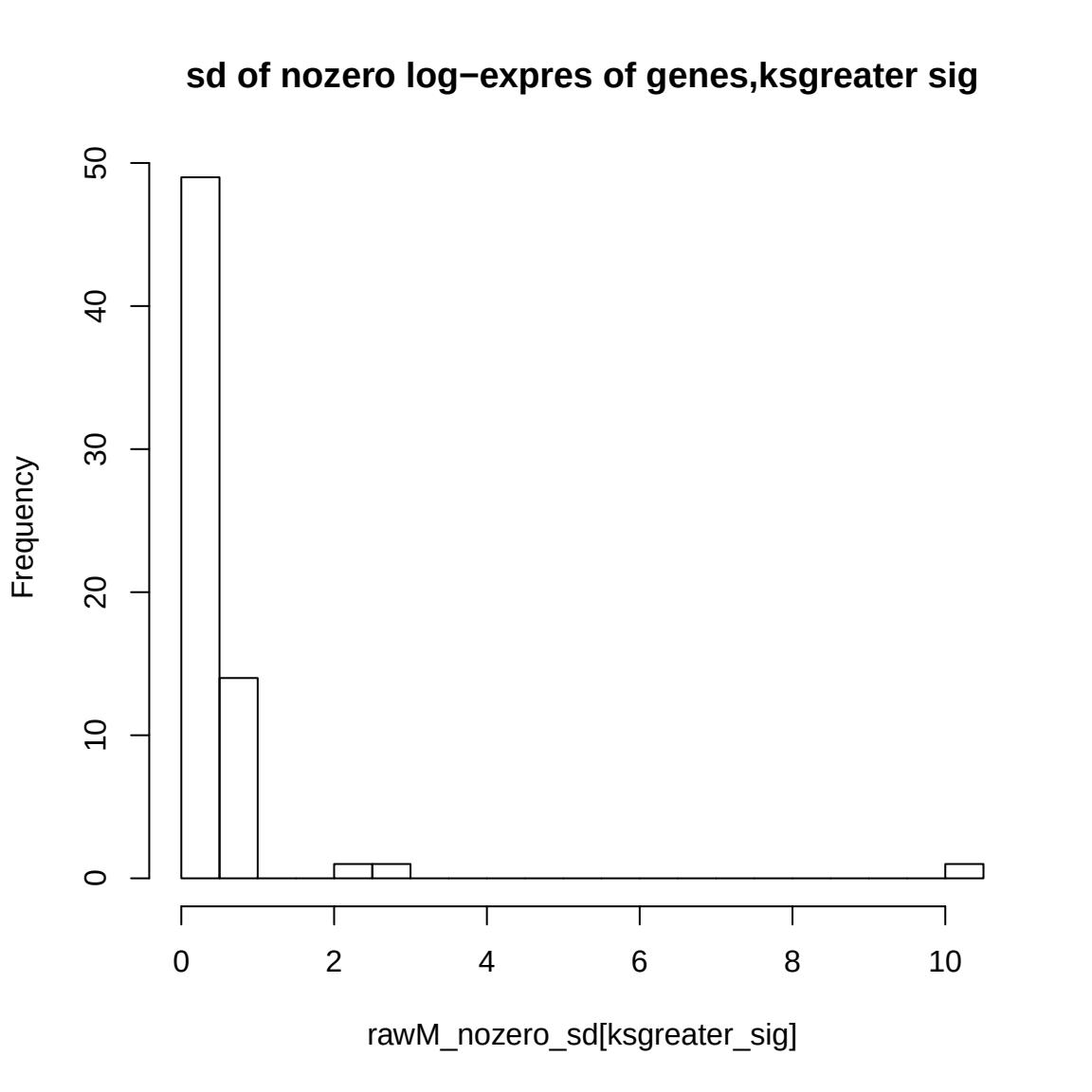

mean of nozero log−expres of genes, ksless sig
Frequency
0
100
200
300
400
500
600
5
10
15
rawM_nozero_mean[ksless_sig]

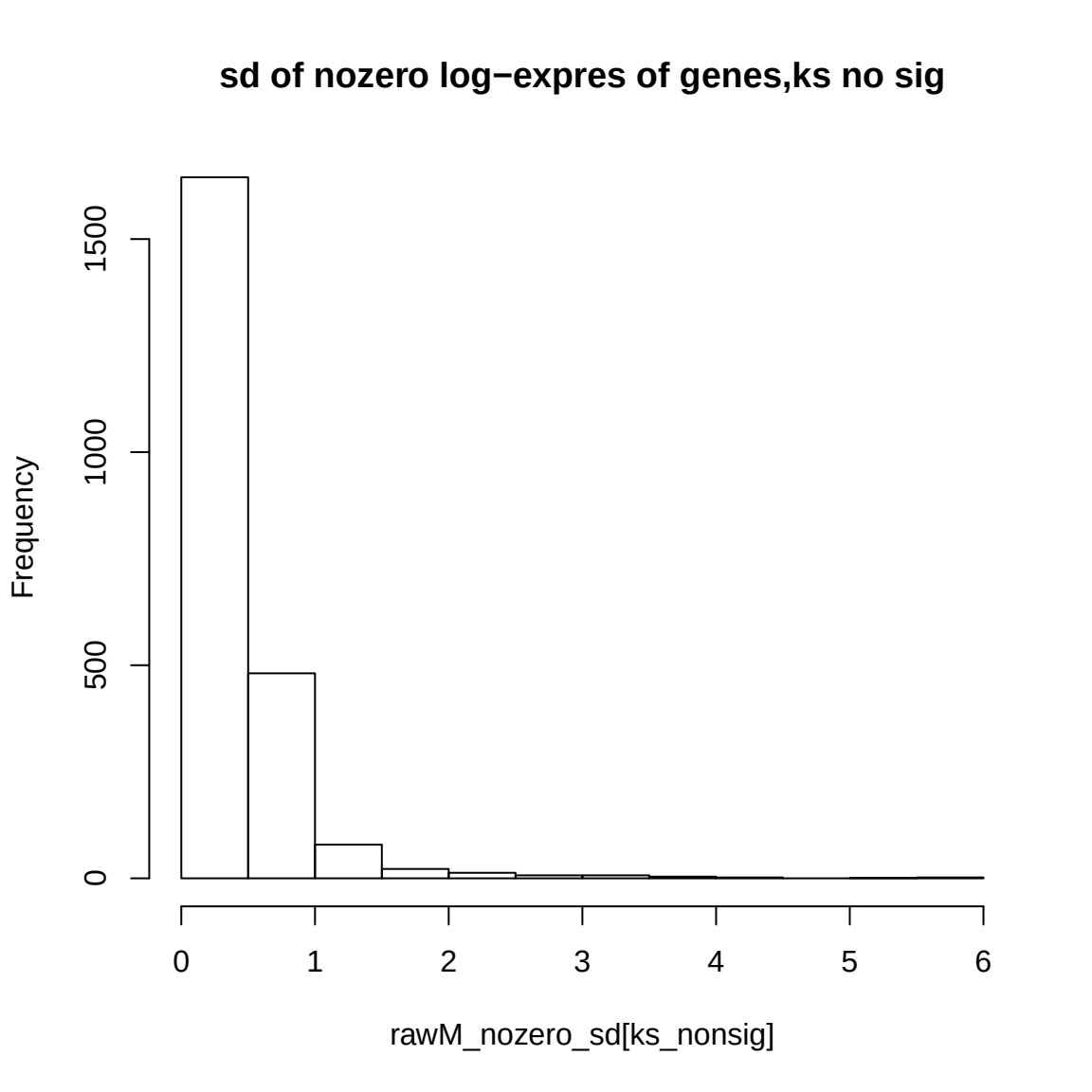
mean of nozero log−expres of genes,ksgreater sig
Frequency
0
10
20
30
40
50
60
5
10
15
rawM_nozero_mean[ksgreater_sig]

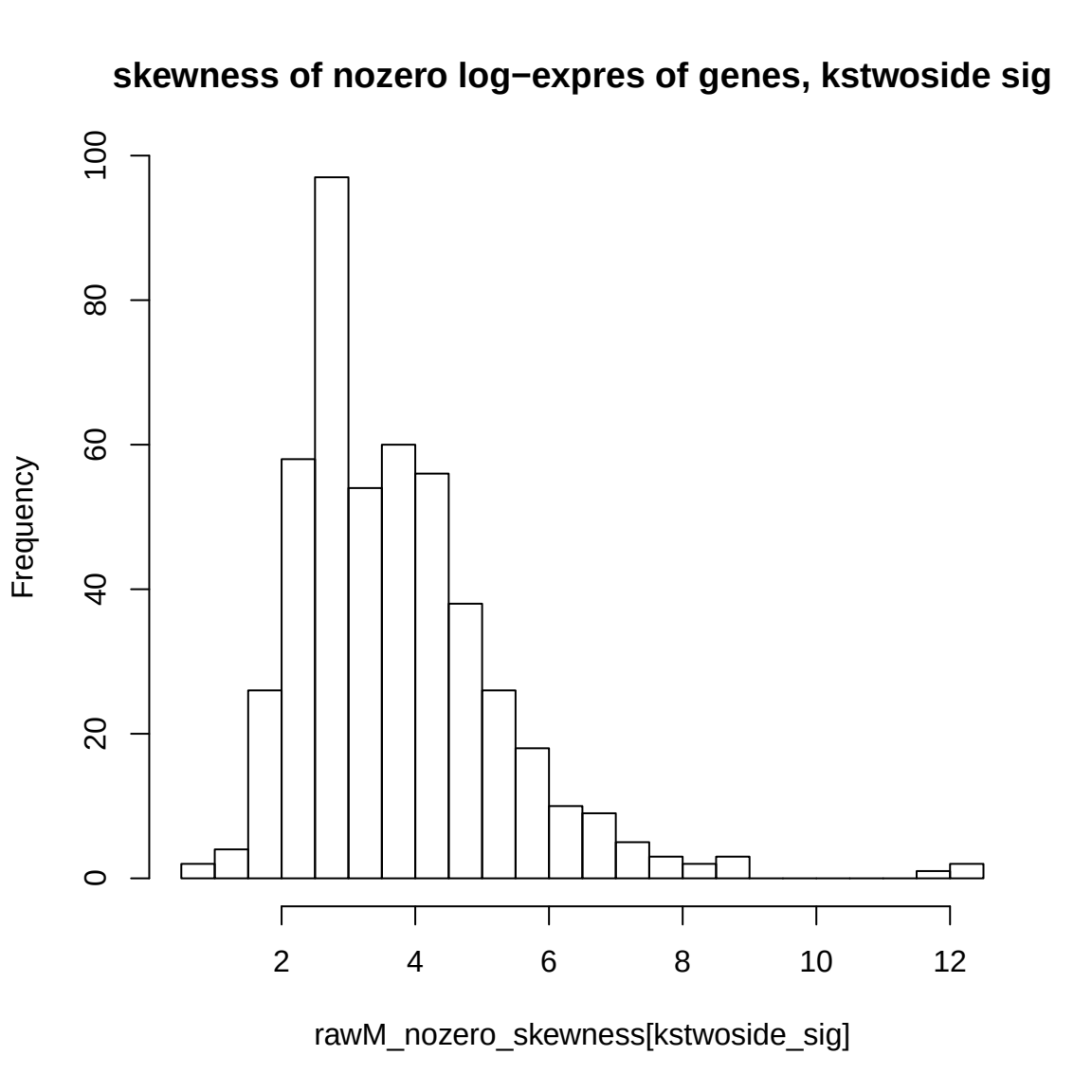

mean of nozero log−expres of genes,ks no sig
Frequency
0
500
1000
1500
2000
2
4
6
8
rawM_nozero_mean[ks_nonsig]

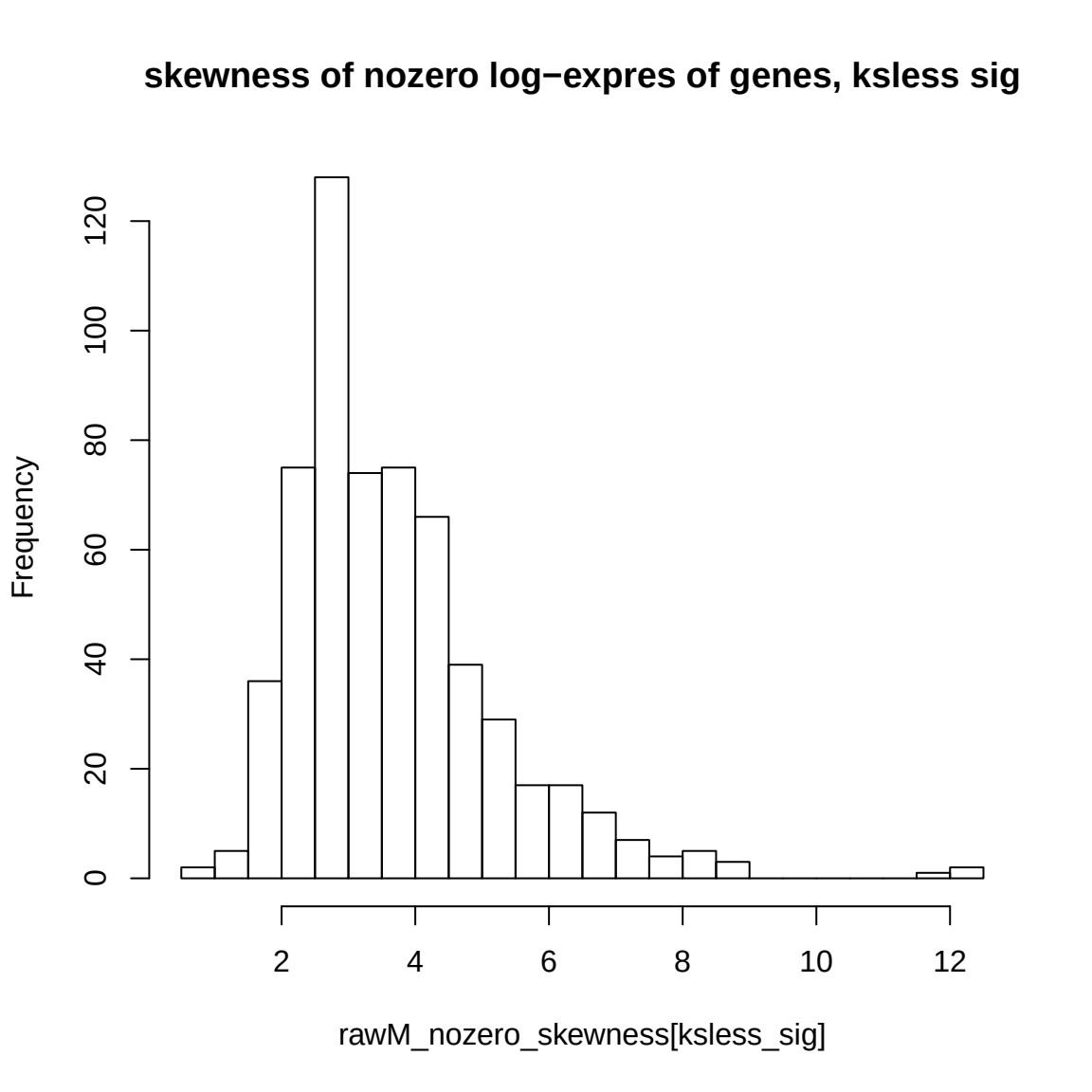

sd of nozero log−expres of genes, kstwoside sig
Frequency
0
100
200
300
400
0
2
4
6
8
10
rawM_nozero_sd[kstwoside_sig]

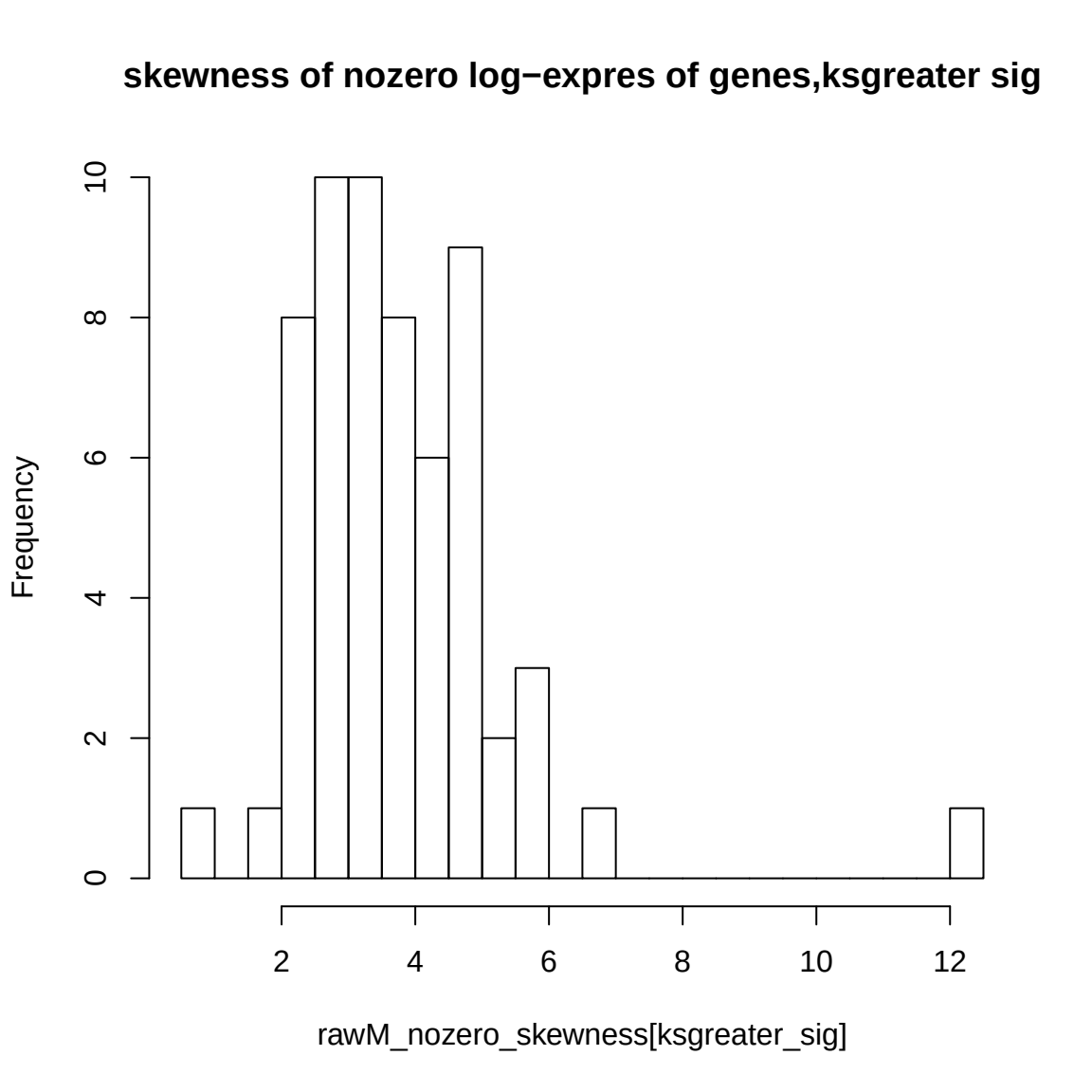

sd of nozero log−expres of genes, ksless sig
Frequency
0
100
200
300
400
500
0
2
4
6
8
10
rawM_nozero_sd[ksless_sig]

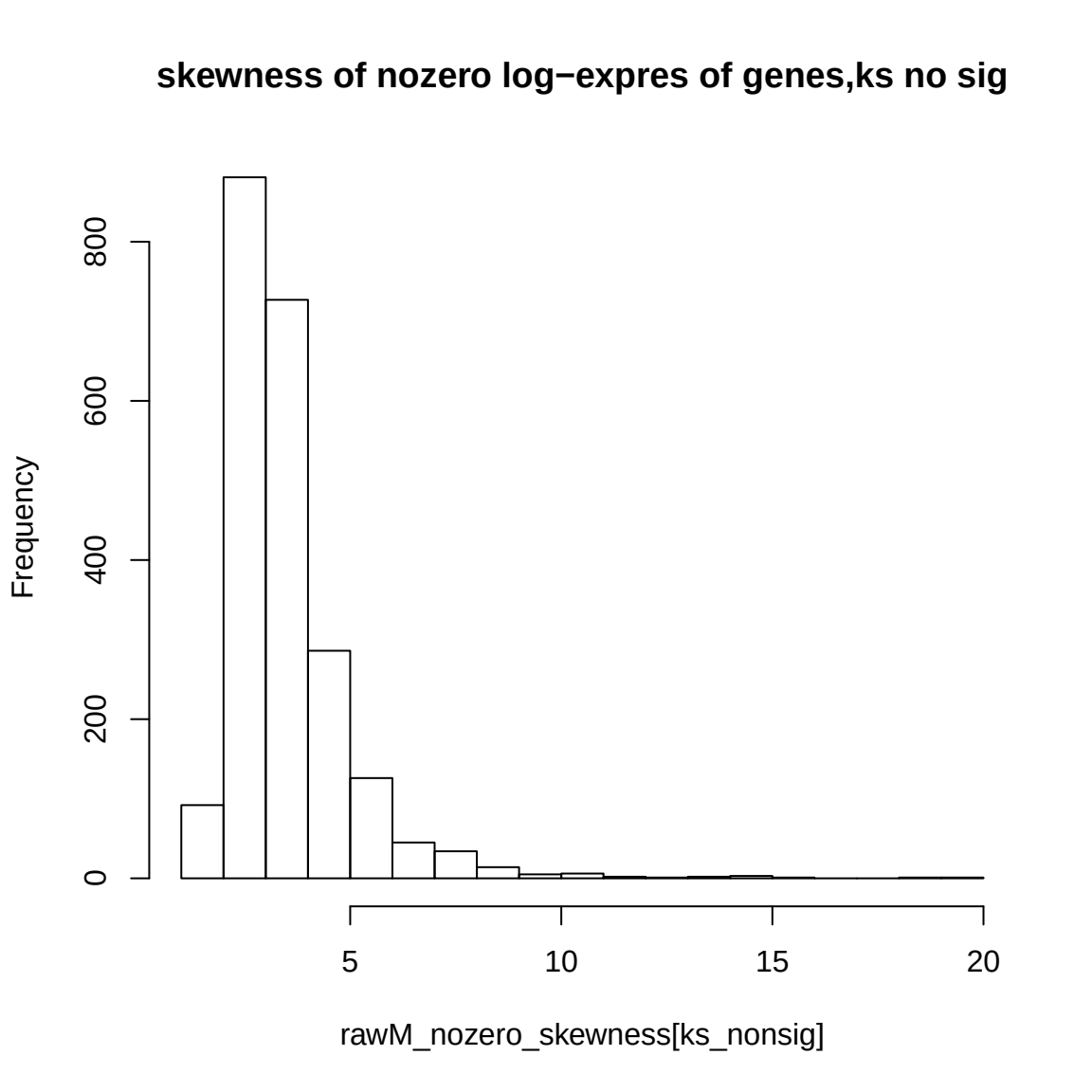

sd of nozero log−expres of genes,ksgreater sig
Frequency
0
10
20
30
40
50
0
2
4
6
8
10
rawM_nozero_sd[ksgreater_sig]

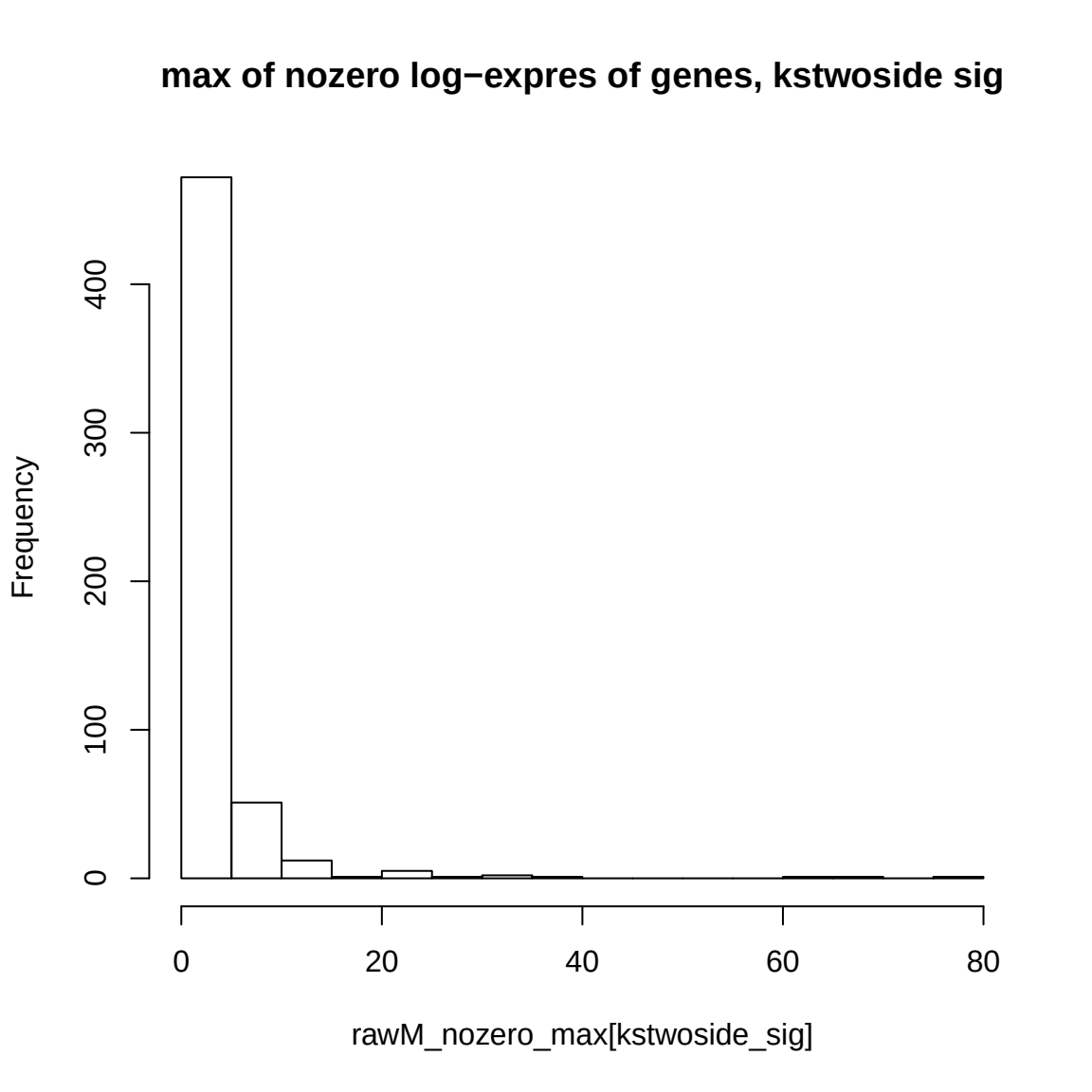

sd of nozero log−expres of genes,ks no sig
Frequency
0
500
1000
1500
0
1
2
3
4
5
6
rawM_nozero_sd[ks_nonsig]

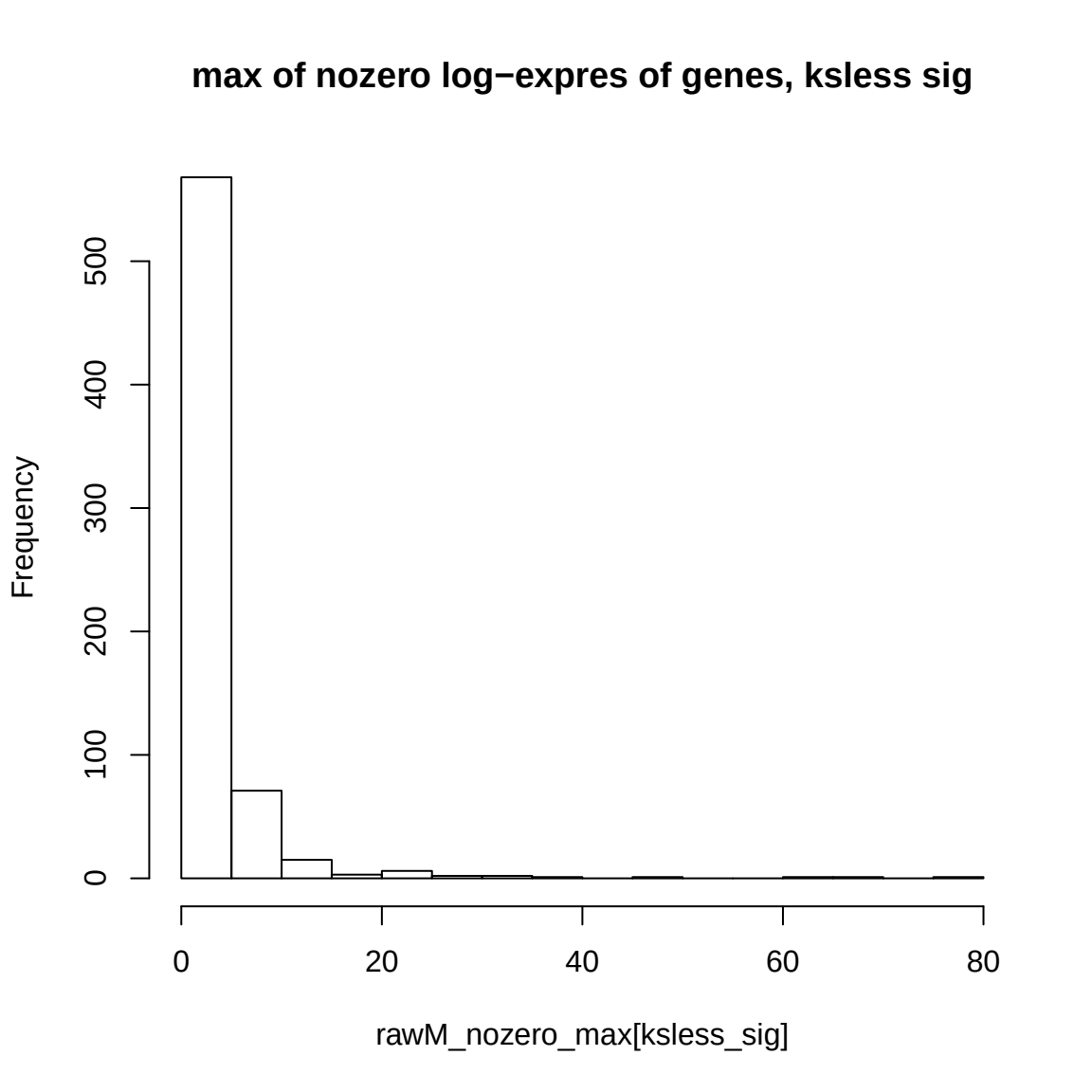

skewness of nozero log−expres of genes, kstwoside sig
Frequency
0
20
40
60
80
100
2
4
6
8
10
12
rawM_nozero_skewness[kstwoside_sig]


skewness of nozero log−expres of genes, ksless sig
Frequency
0
20
40
60
80
100
120
2
4
6
8
10
12
rawM_nozero_skewness[ksless_sig]

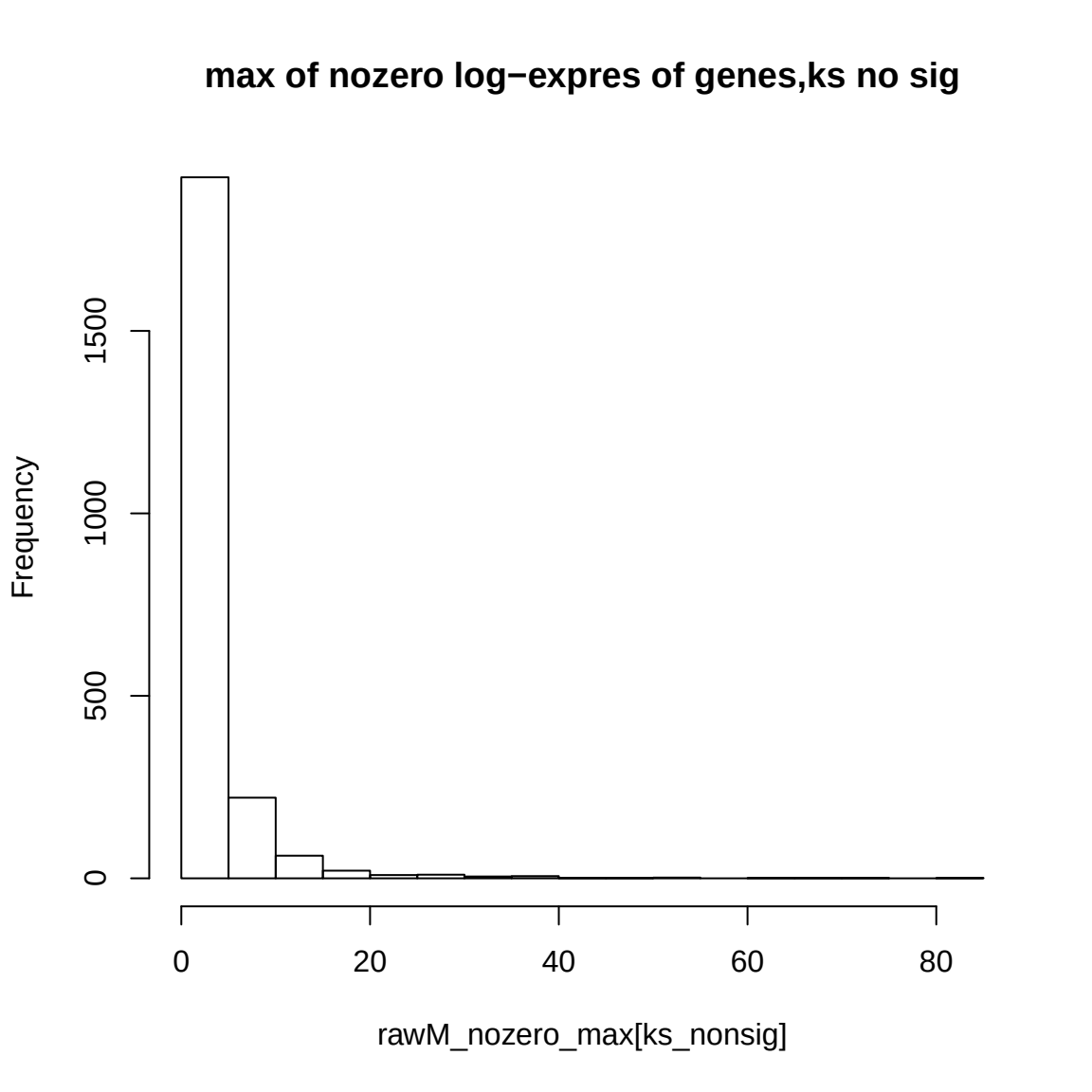

skewness of nozero log−expres of genes,ksgreater sig
Frequency
0
2
4
6
8
10
2
4
6
8
10
12
rawM_nozero_skewness[ksgreater_sig]

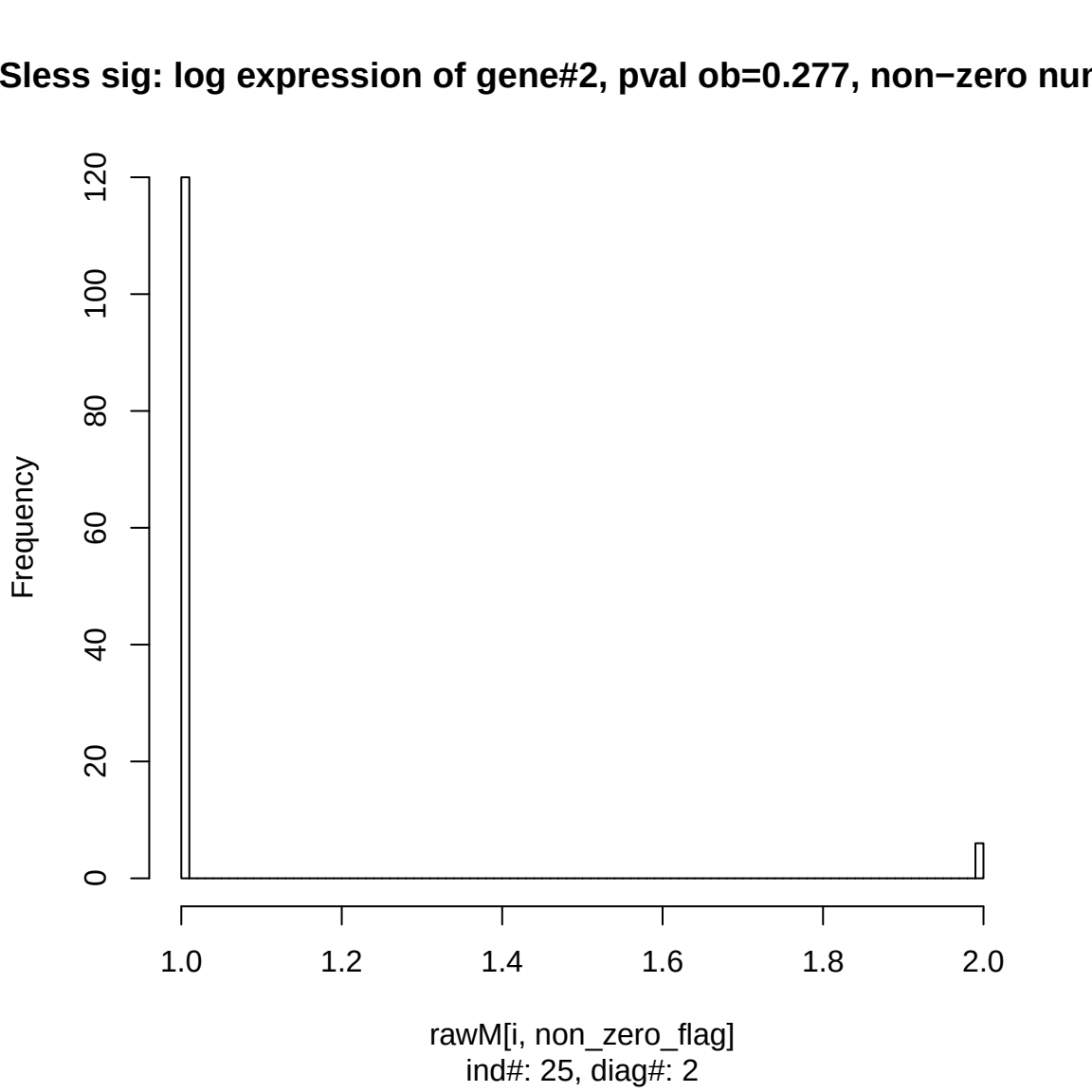

skewness of nozero log−expres of genes,ks no sig
Frequency
0
200
400
600
800
5
10
15
20
rawM_nozero_skewness[ks_nonsig]

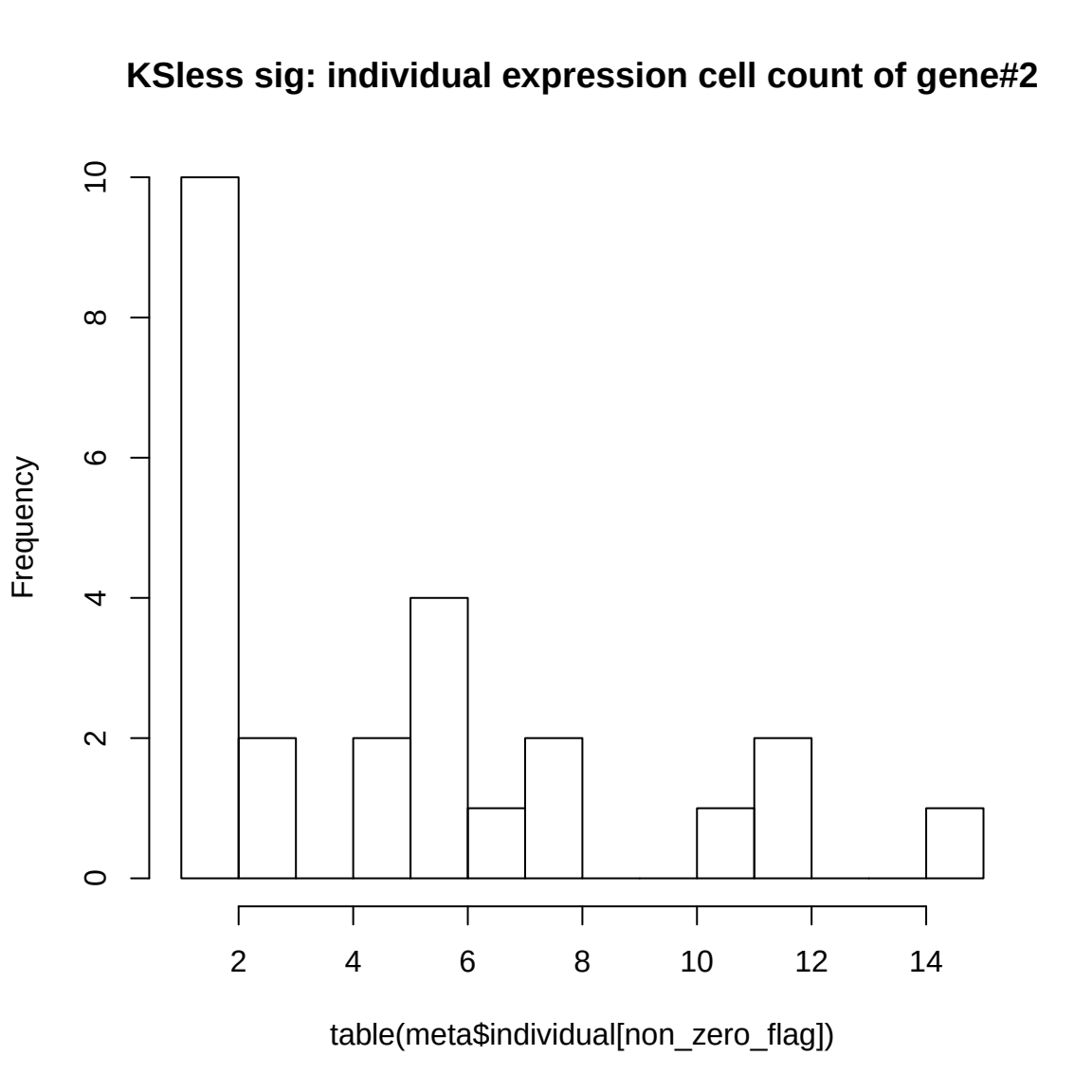

max of nozero log−expres of genes, kstwoside sig
Frequency
0
100
200
300
400
0
20
40
60
80
rawM_nozero_max[kstwoside_sig]

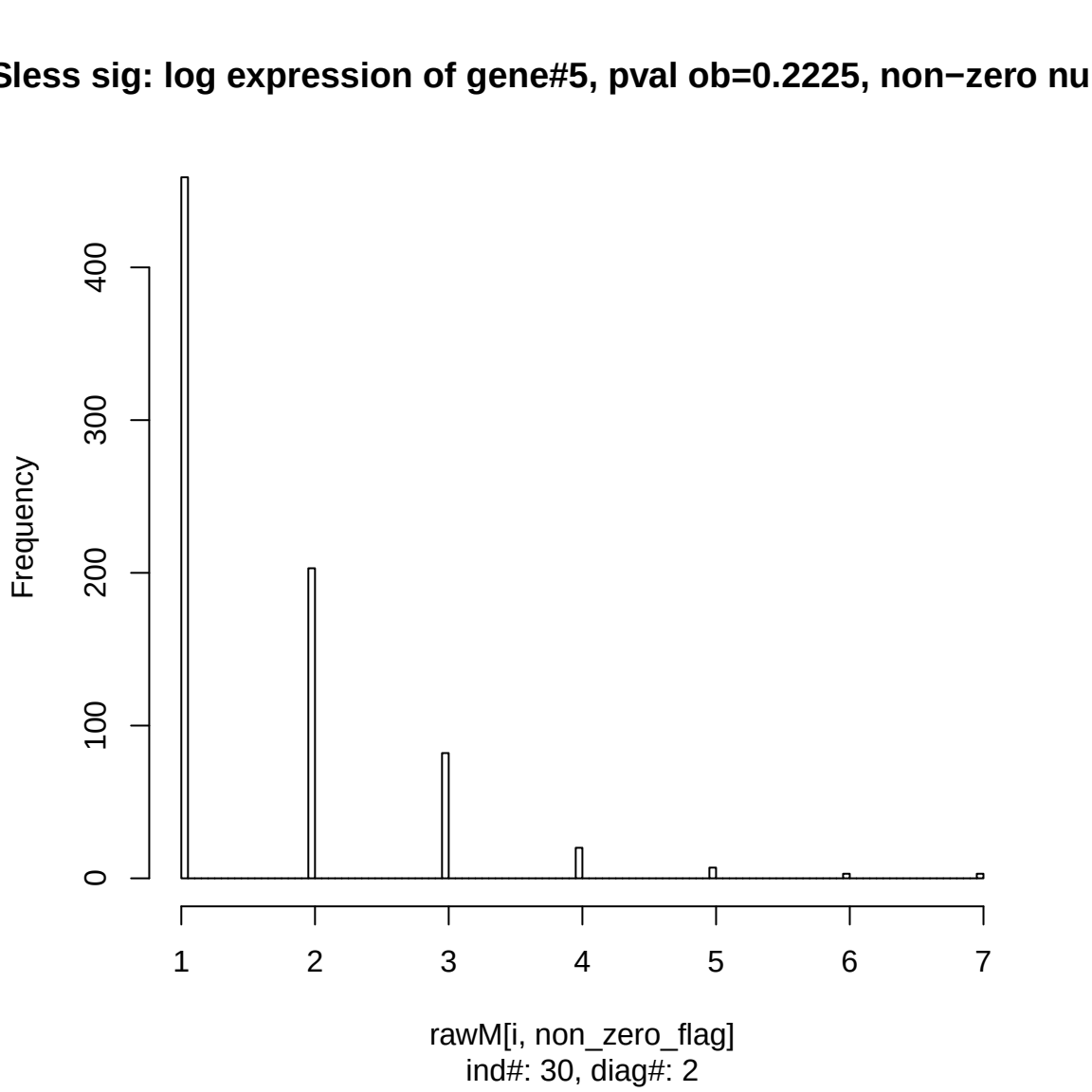

max of nozero log−expres of genes, ksless sig
Frequency
0
100
200
300
400
500
0
20
40
60
80
rawM_nozero_max[ksless_sig]

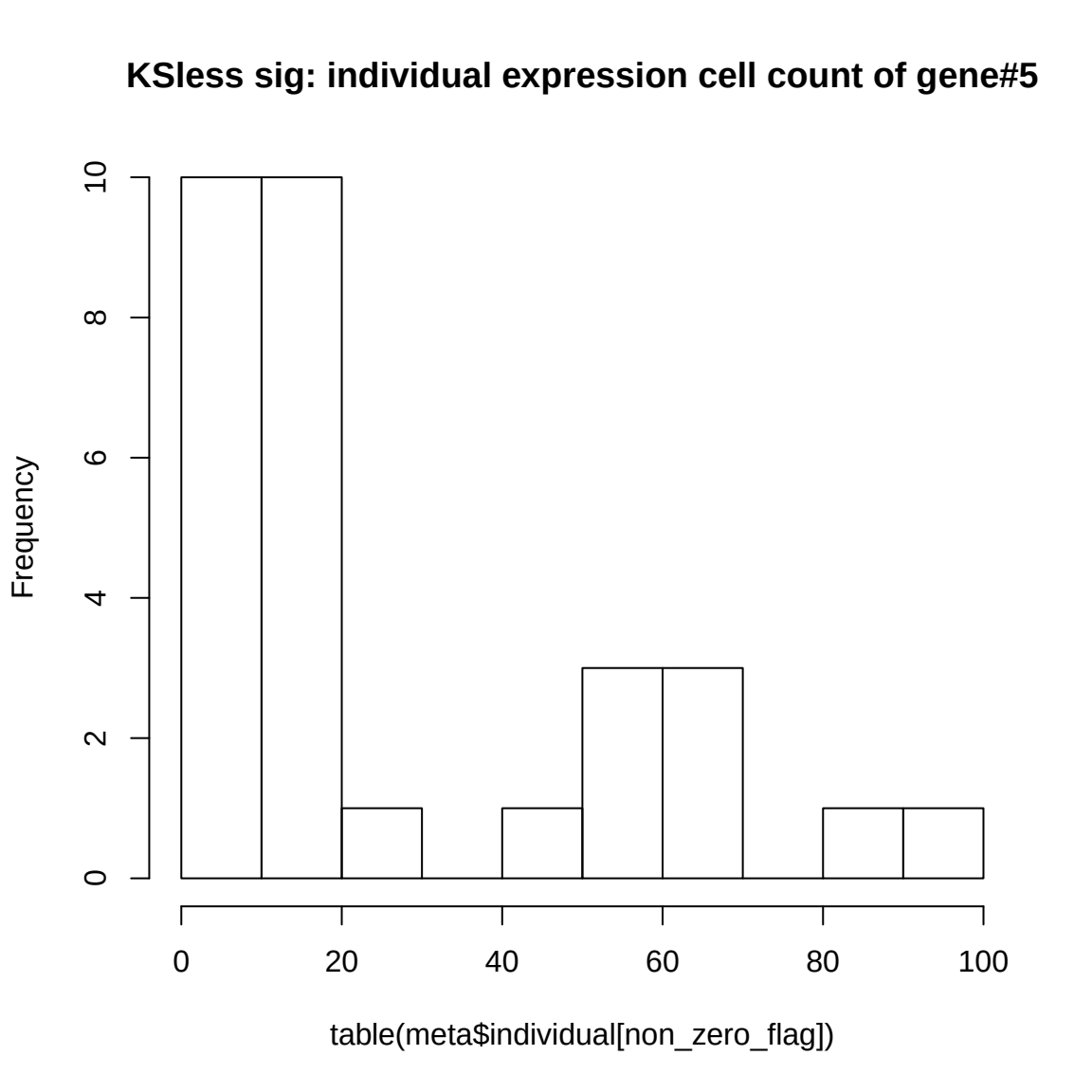
max of nozero log−expres of genes,ksgreater sig
Frequency
0
10
20
30
40
50
60
0
10
20
30
40
50
60
70
rawM_nozero_max[ksgreater_sig]

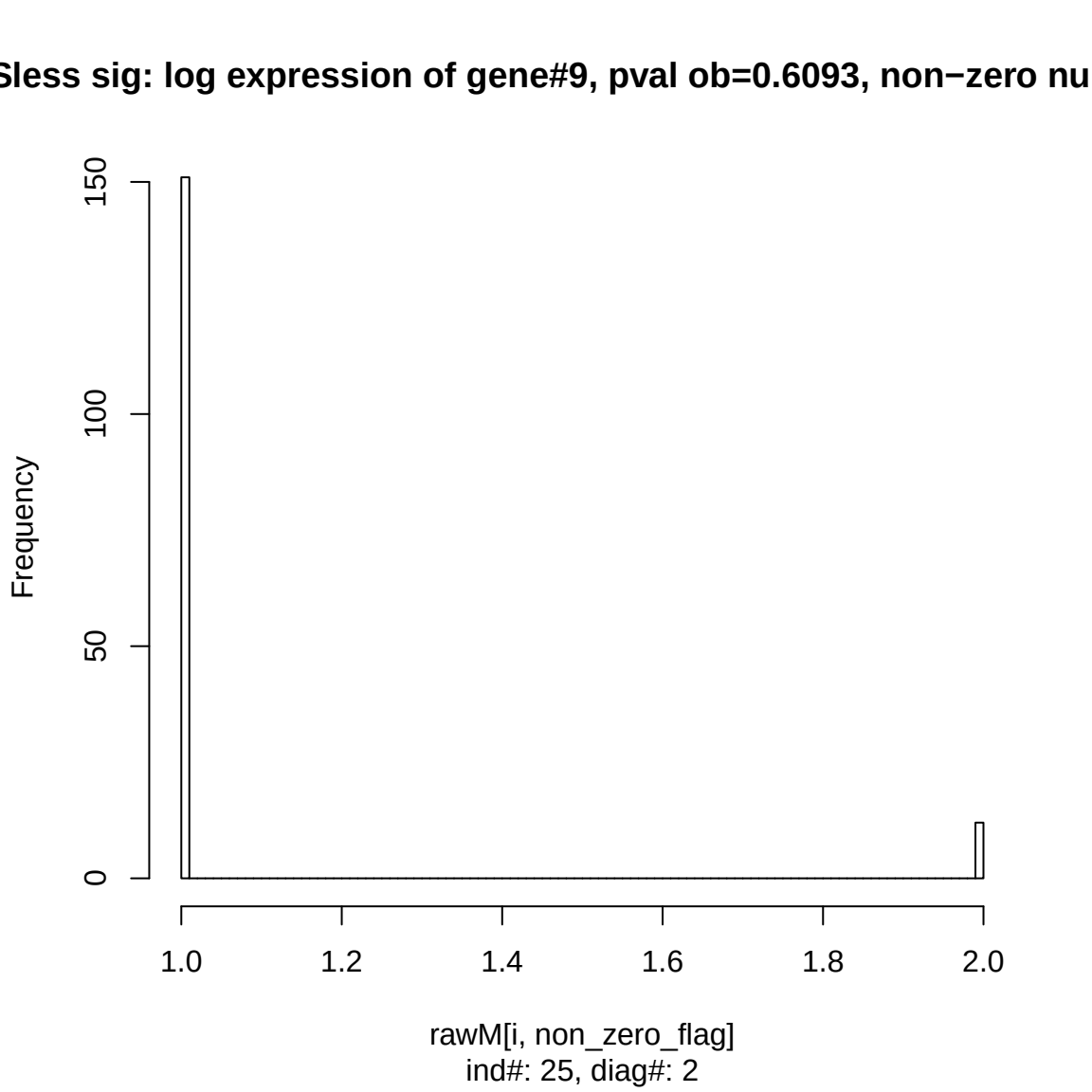

max of nozero log−expres of genes,ks no sig
Frequency
0
500
1000
1500
0
20
40
60
80
rawM_nozero_max[ks_nonsig]

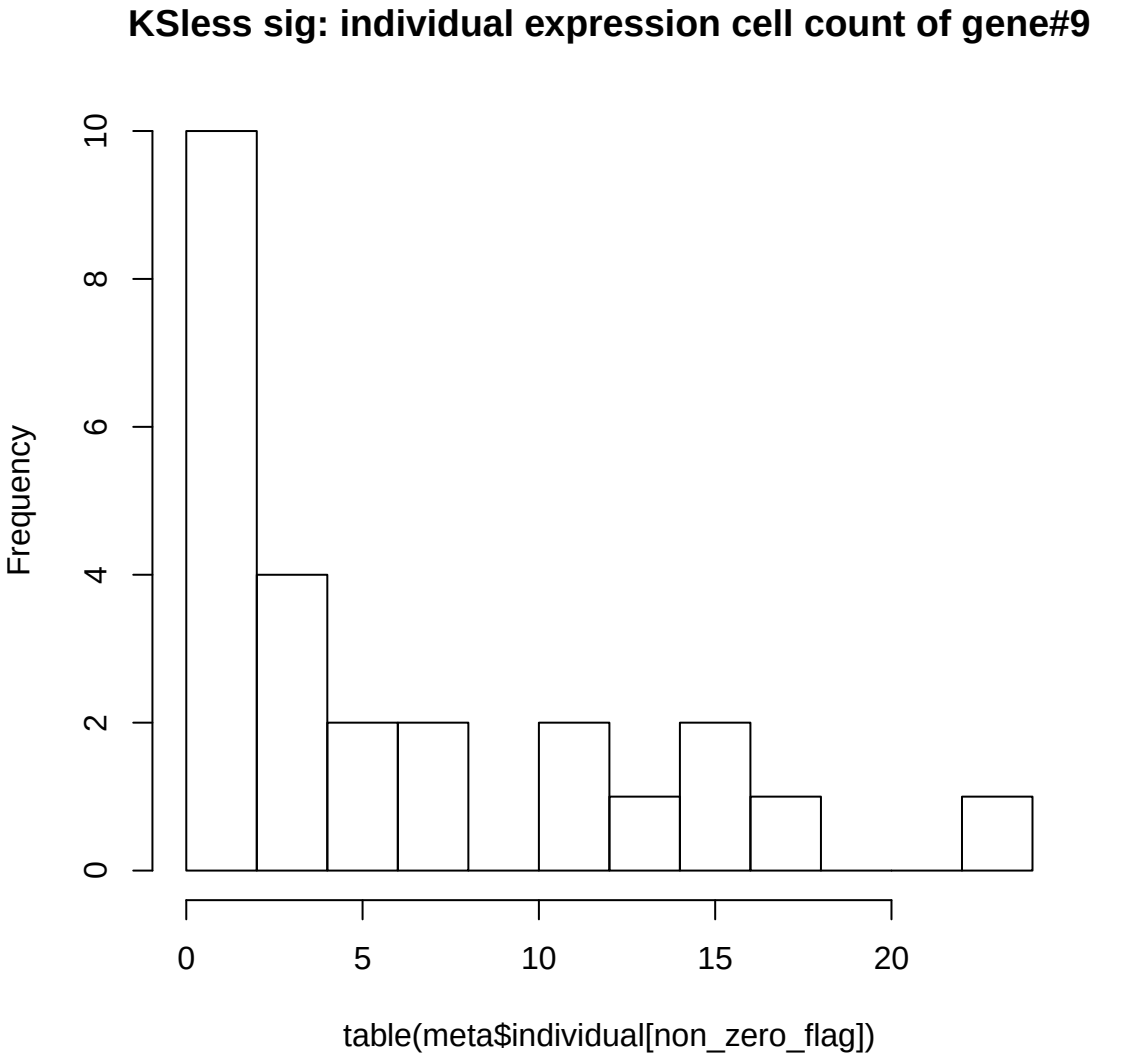

Sless sig: log expression of gene#2, pval ob=0.277, non−zero nur
Frequency
0
20
40
60
80
100
120
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 25, diag#: 2

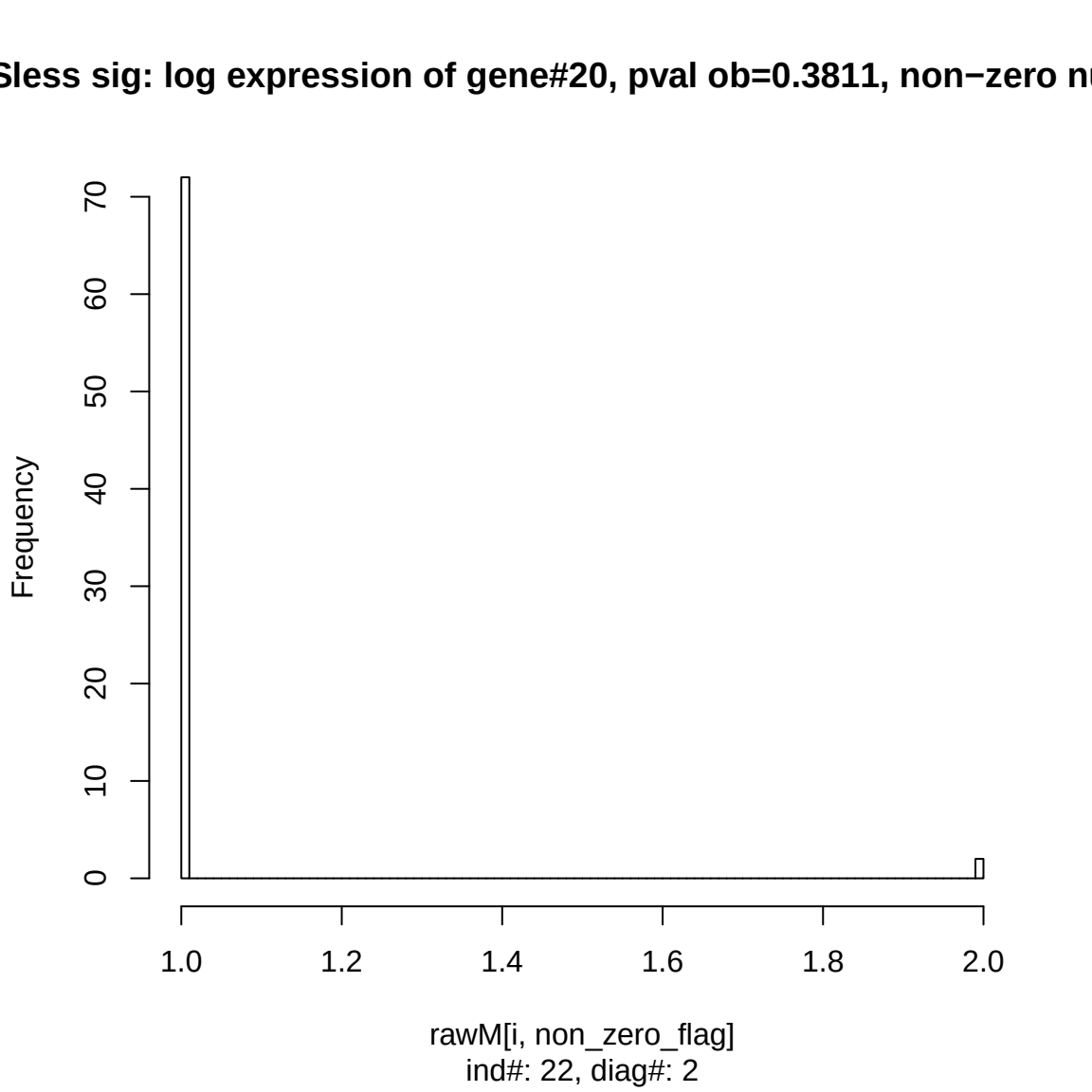

KSless sig: individual expression cell count of gene#2
Frequency
0
2
4
6
8
10
2
4
6
8
10
12
14
table(meta$individual[non_zero_flag])

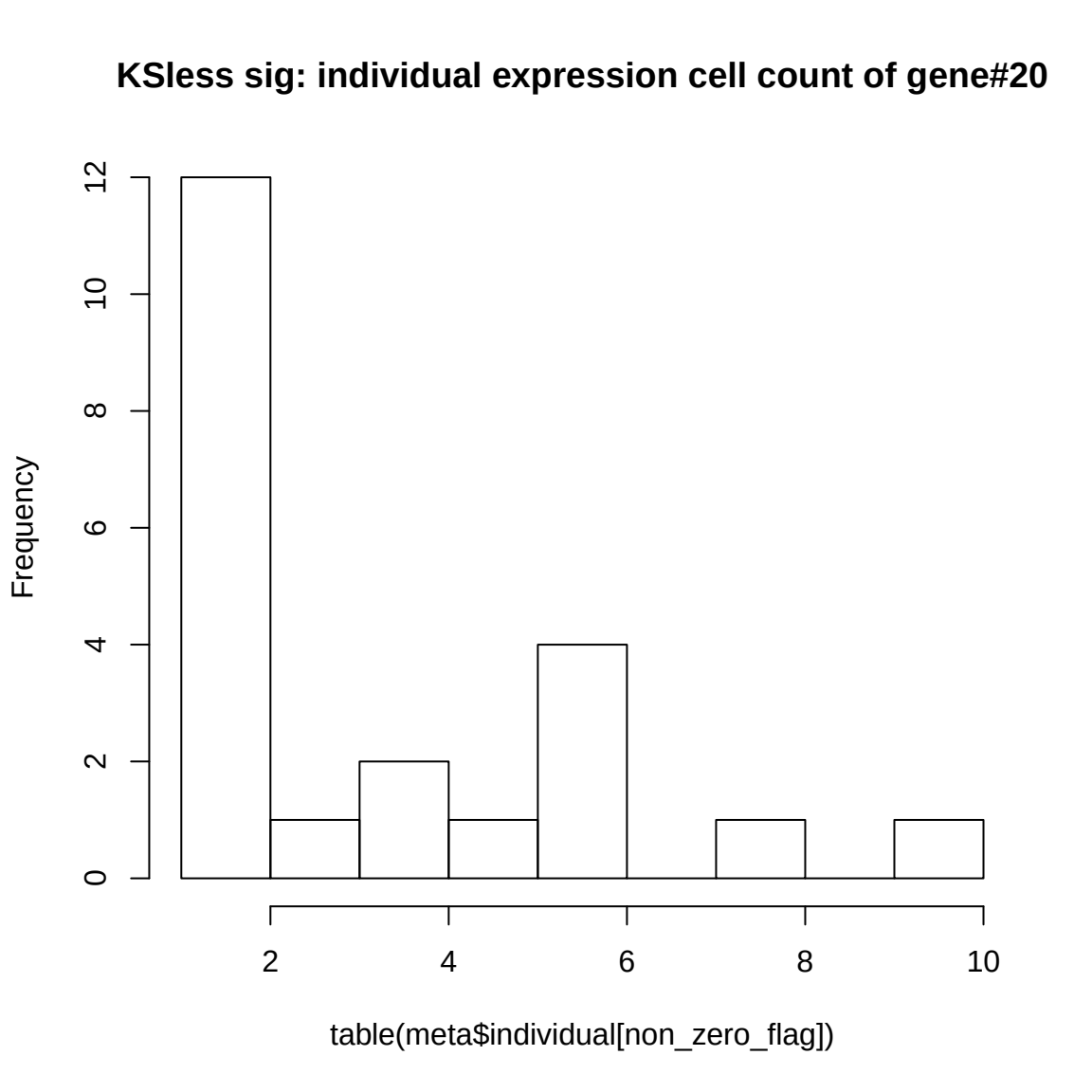

Sless sig: log expression of gene#5, pval ob=0.2225, non−zero nu
Frequency
0
100
200
300
400
1
2
3
4
5
6
7
rawM[i, non_zero_flag]
ind#: 30, diag#: 2

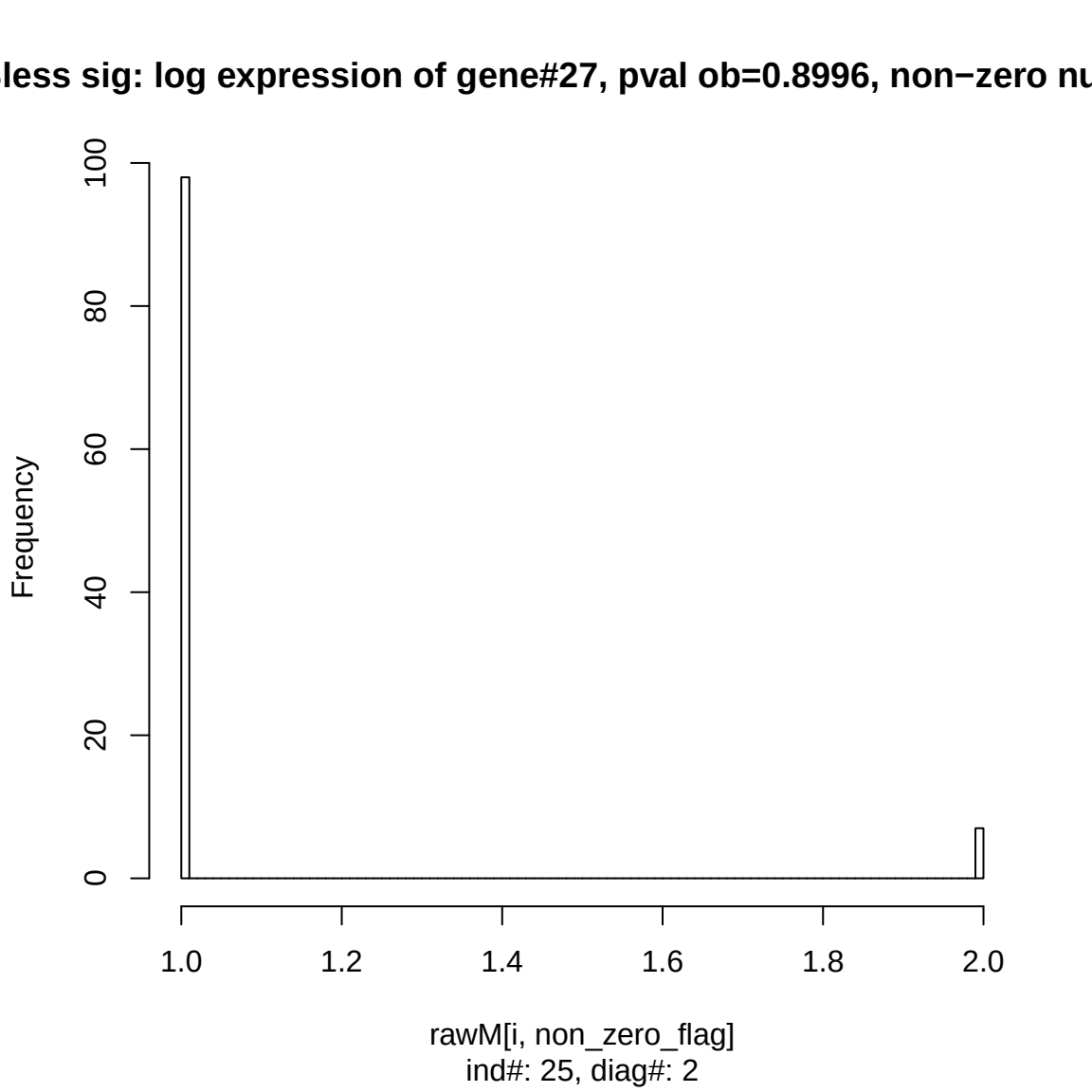

KSless sig: individual expression cell count of gene#5
Frequency
0
2
4
6
8
10
0
20
40
60
80
100
table(meta$individual[non_zero_flag])

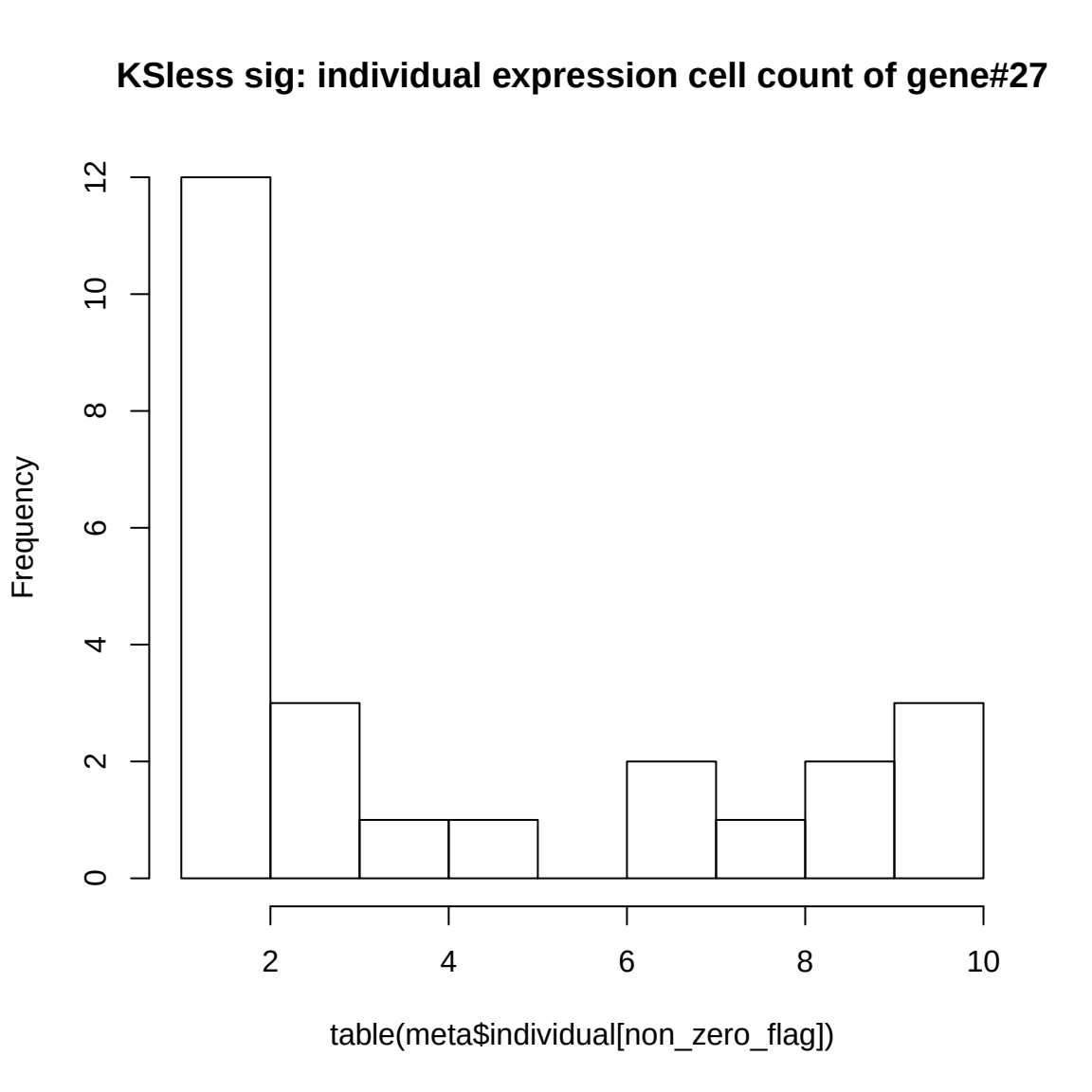

Sless sig: log expression of gene#9, pval ob=0.6093, non−zero nu
Frequency
0
50
100
150
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 25, diag#: 2

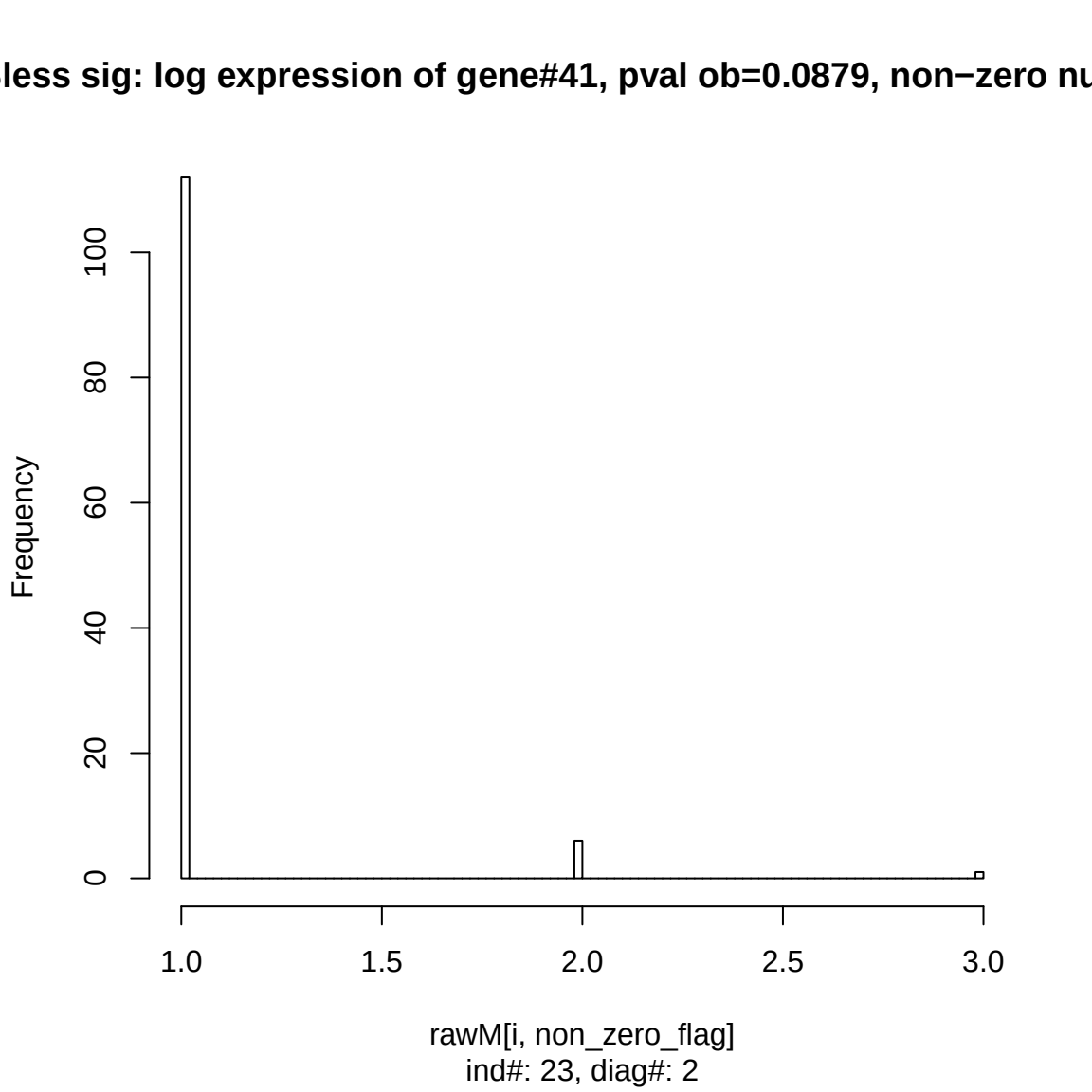

KSless sig: individual expression cell count of gene#9
Frequency
0
2
4
6
8
10
0
5
10
15
20
table(meta$individual[non_zero_flag])

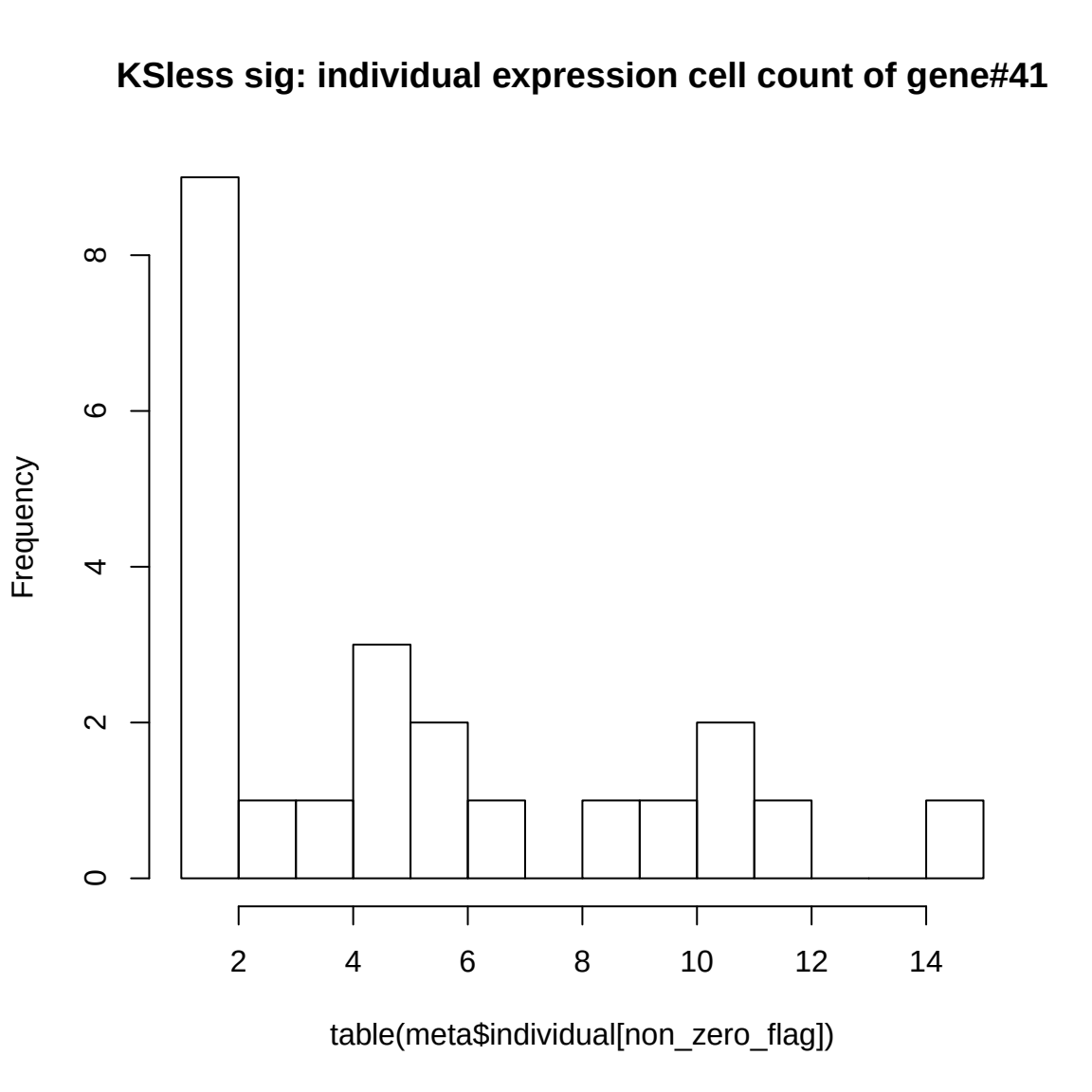

Sless sig: log expression of gene#20, pval ob=0.3811, non−zero nu
Frequency
0
10
20
30
40
50
60
70
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 22, diag#: 2

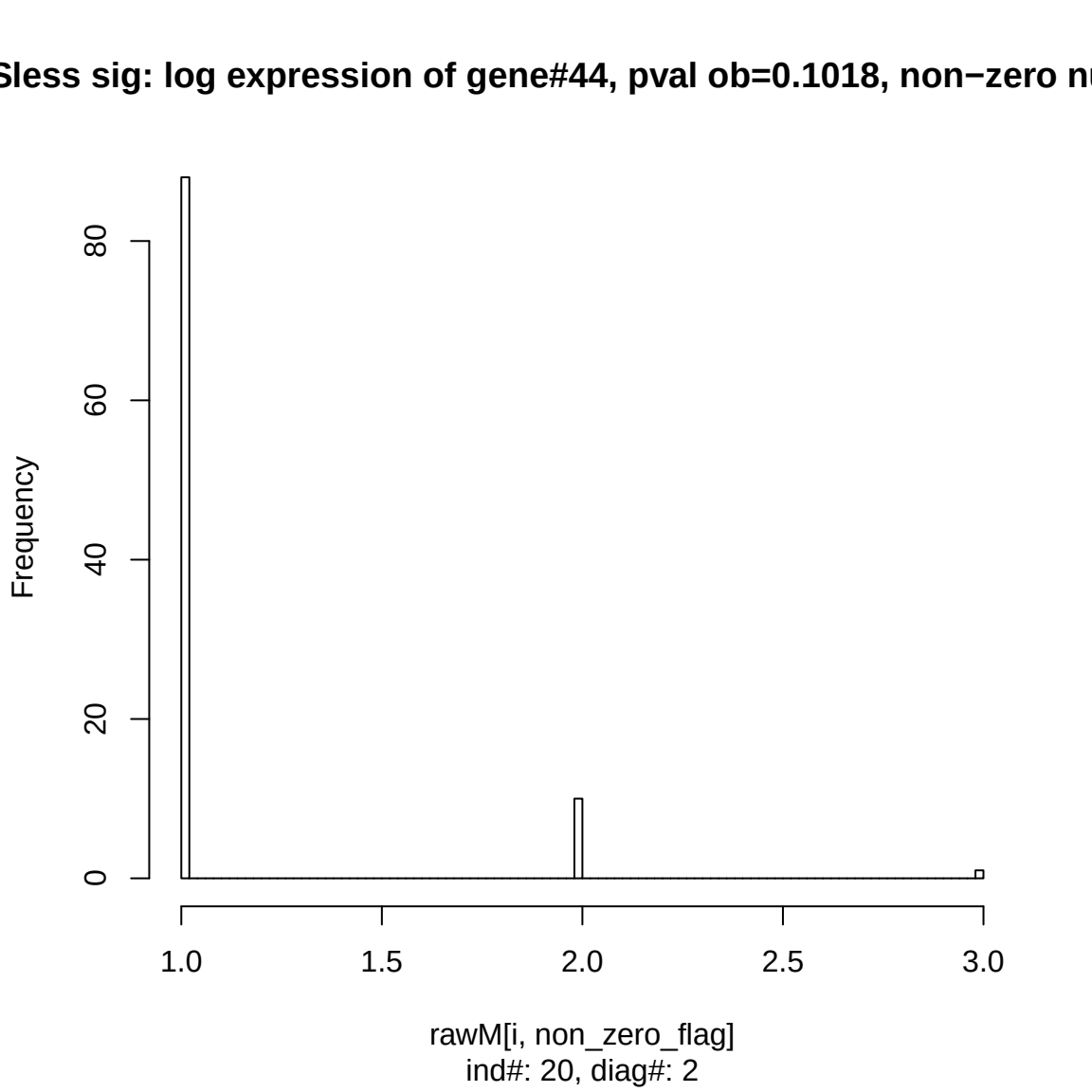

KSless sig: individual expression cell count of gene#20
Frequency
0
2
4
6
8
10
12
2
4
6
8
10
table(meta$individual[non_zero_flag])

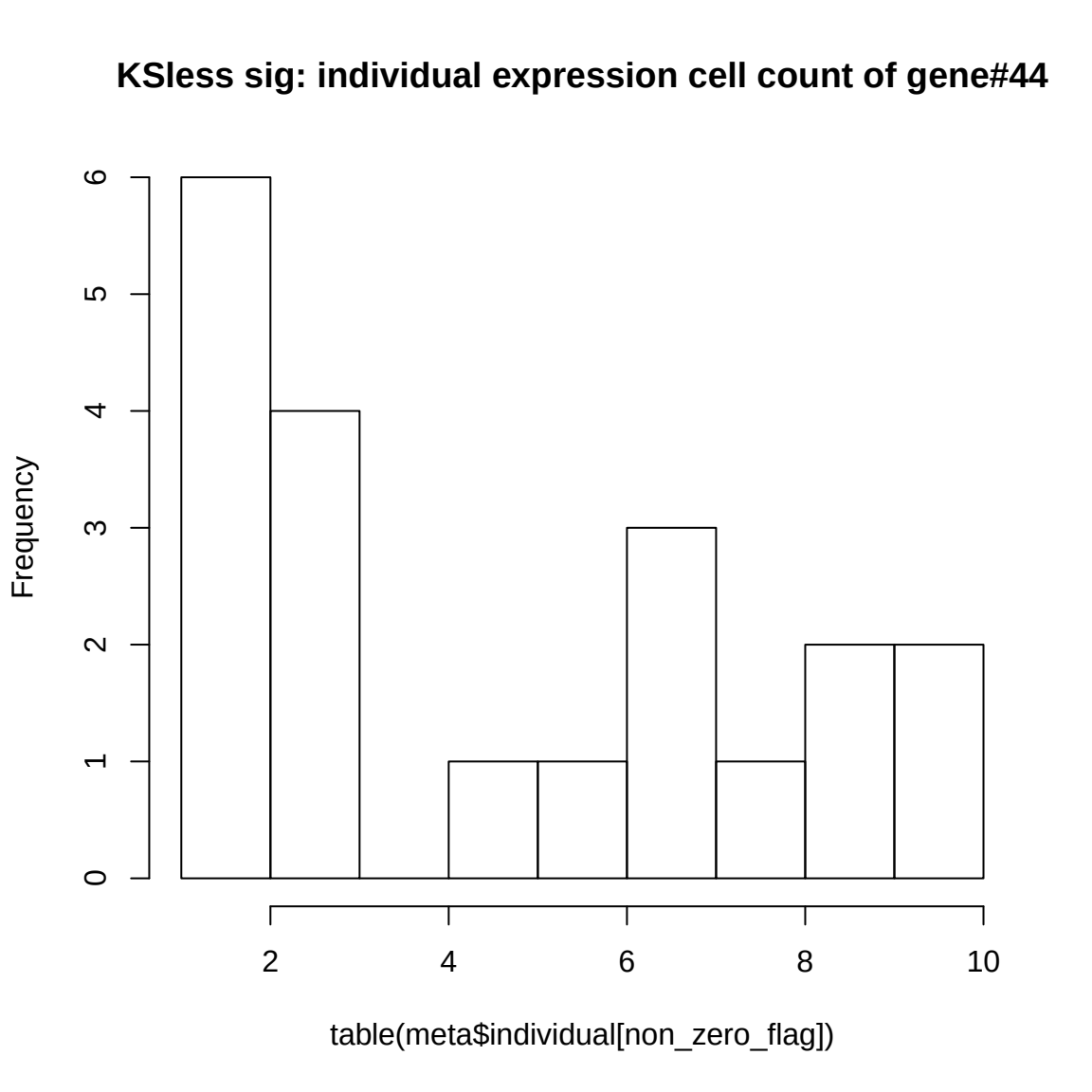

less sig: log expression of gene#27, pval ob=0.8996, non−zero nu
Frequency
0
20
40
60
80
100
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 25, diag#: 2

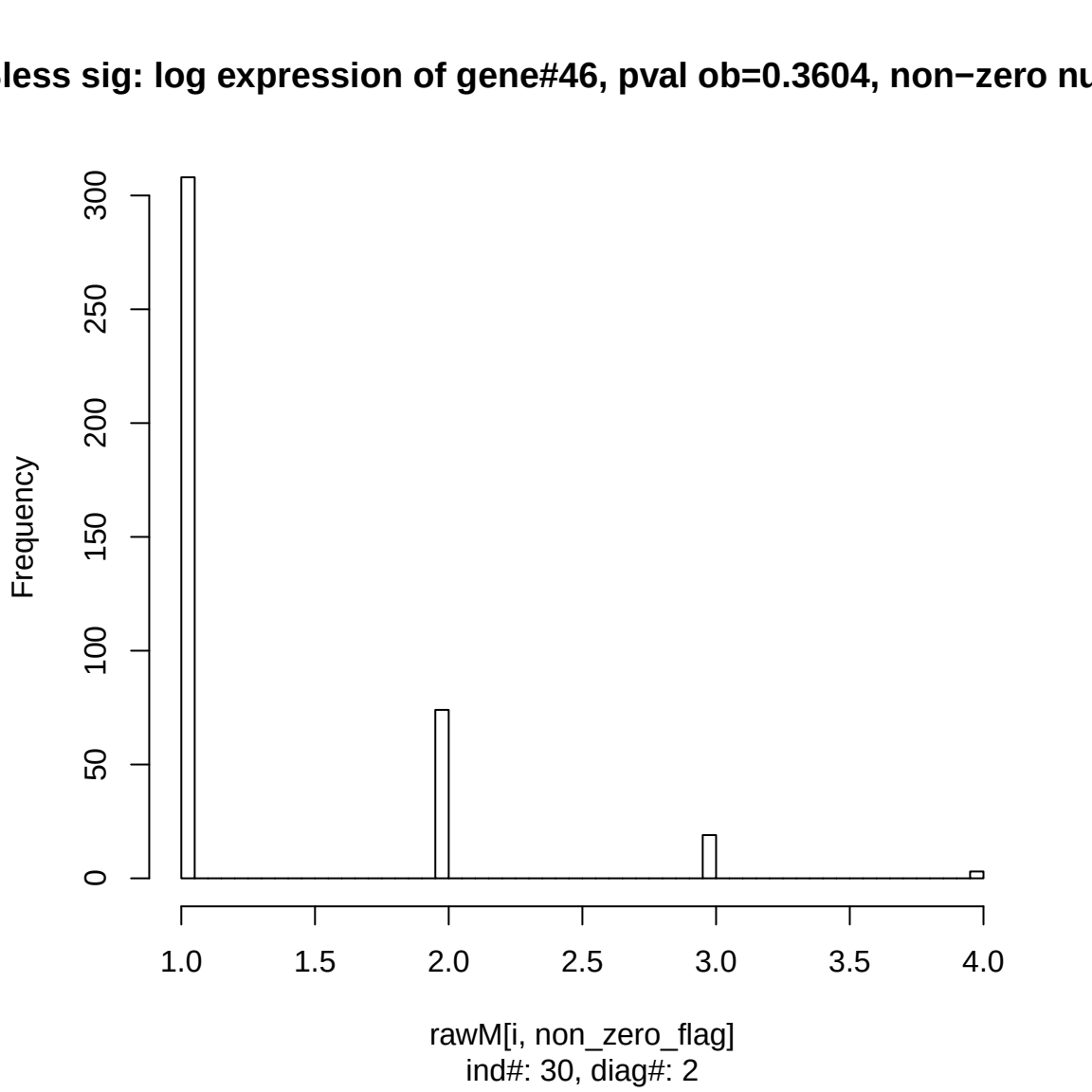

KSless sig: individual expression cell count of gene#27
Frequency
0
2
4
6
8
10
12
2
4
6
8
10
table(meta$individual[non_zero_flag])

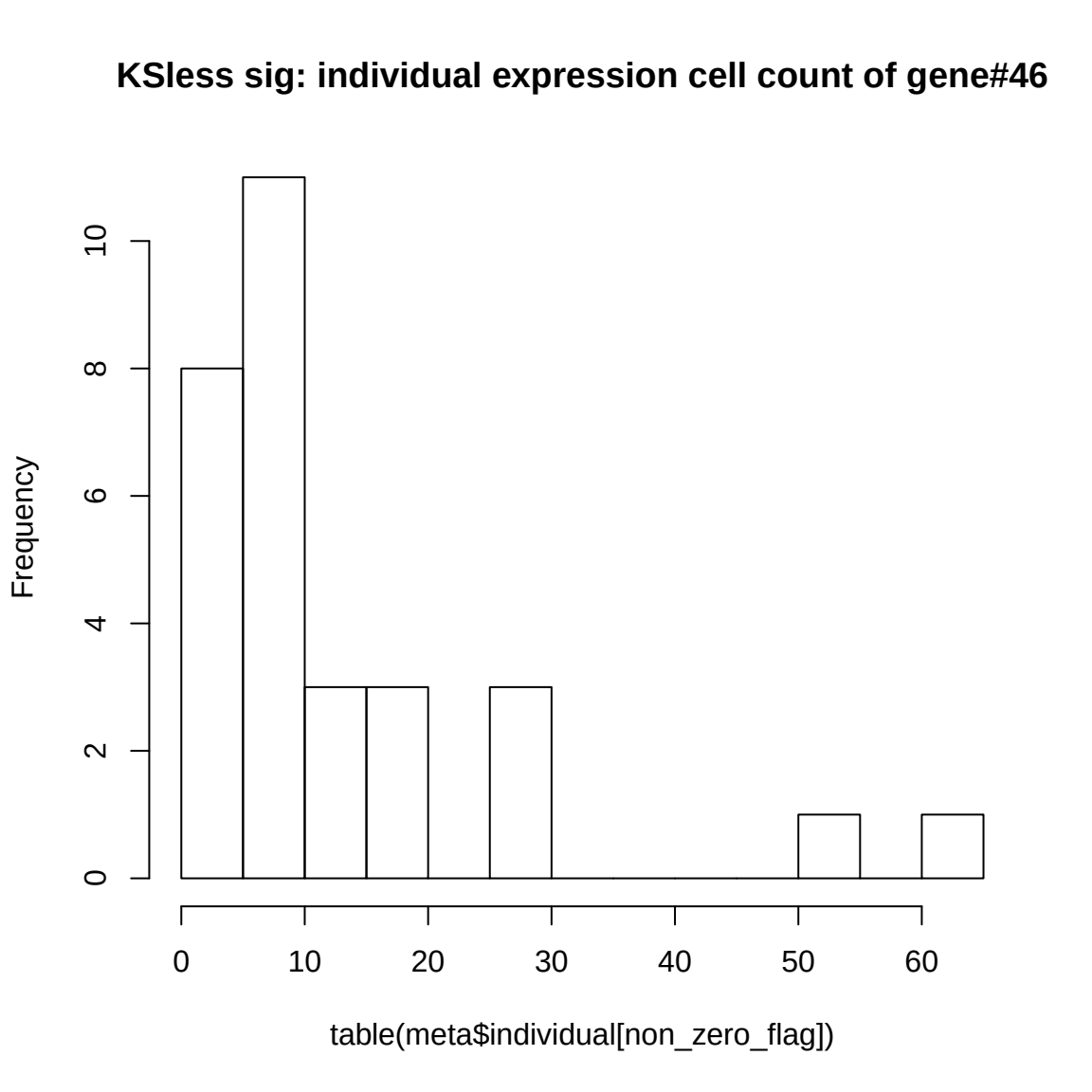

less sig: log expression of gene#41, pval ob=0.0879, non−zero nu
Frequency
0
20
40
60
80
100
1.0
1.5
2.0
2.5
3.0
rawM[i, non_zero_flag]
ind#: 23, diag#: 2

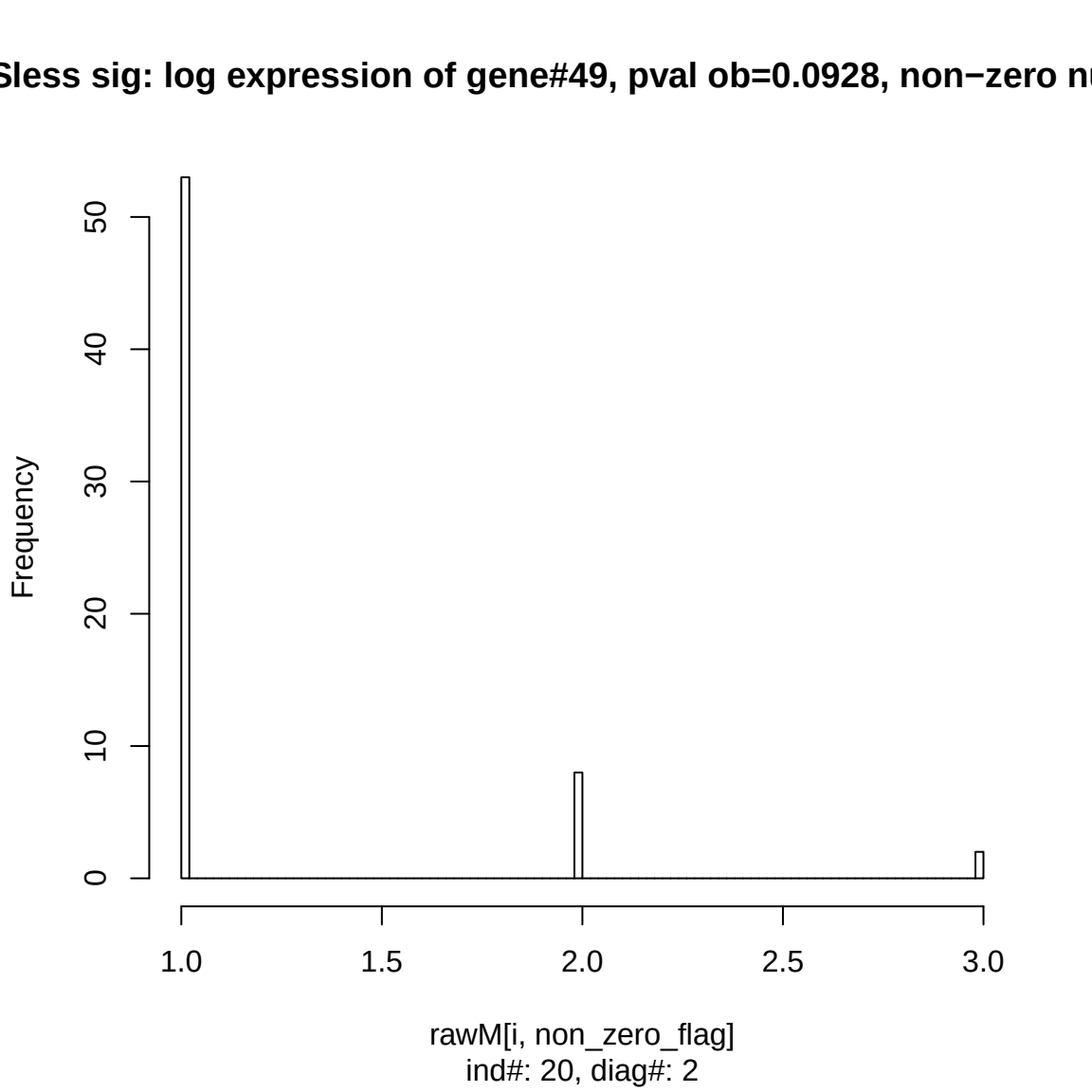

KSless sig: individual expression cell count of gene#41
Frequency
0
2
4
6
8
2
4
6
8
10
12
14
table(meta$individual[non_zero_flag])

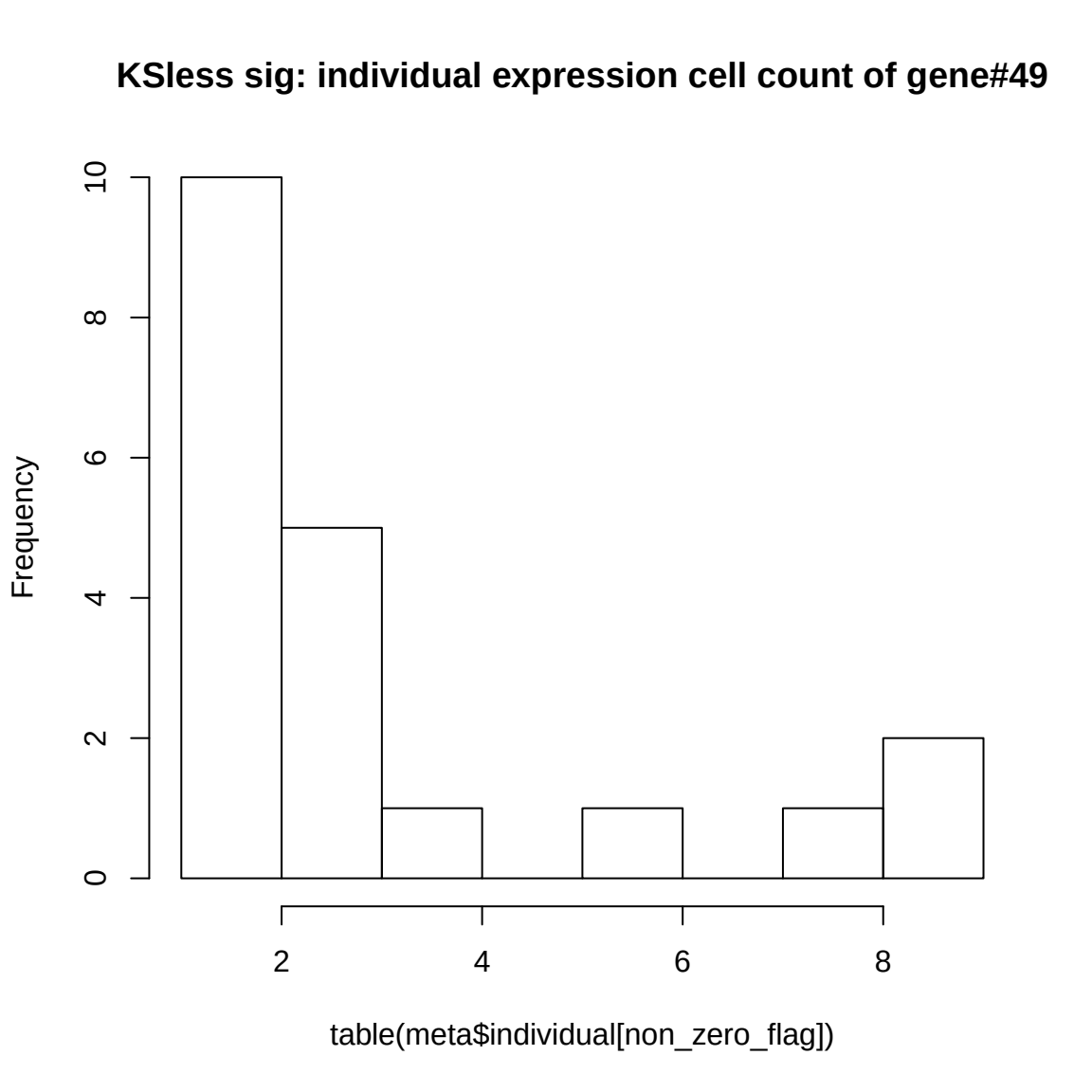

Sless sig: log expression of gene#44, pval ob=0.1018, non−zero nu
Frequency
0
20
40
60
80
1.0
1.5
2.0
2.5
3.0
rawM[i, non_zero_flag]
ind#: 20, diag#: 2

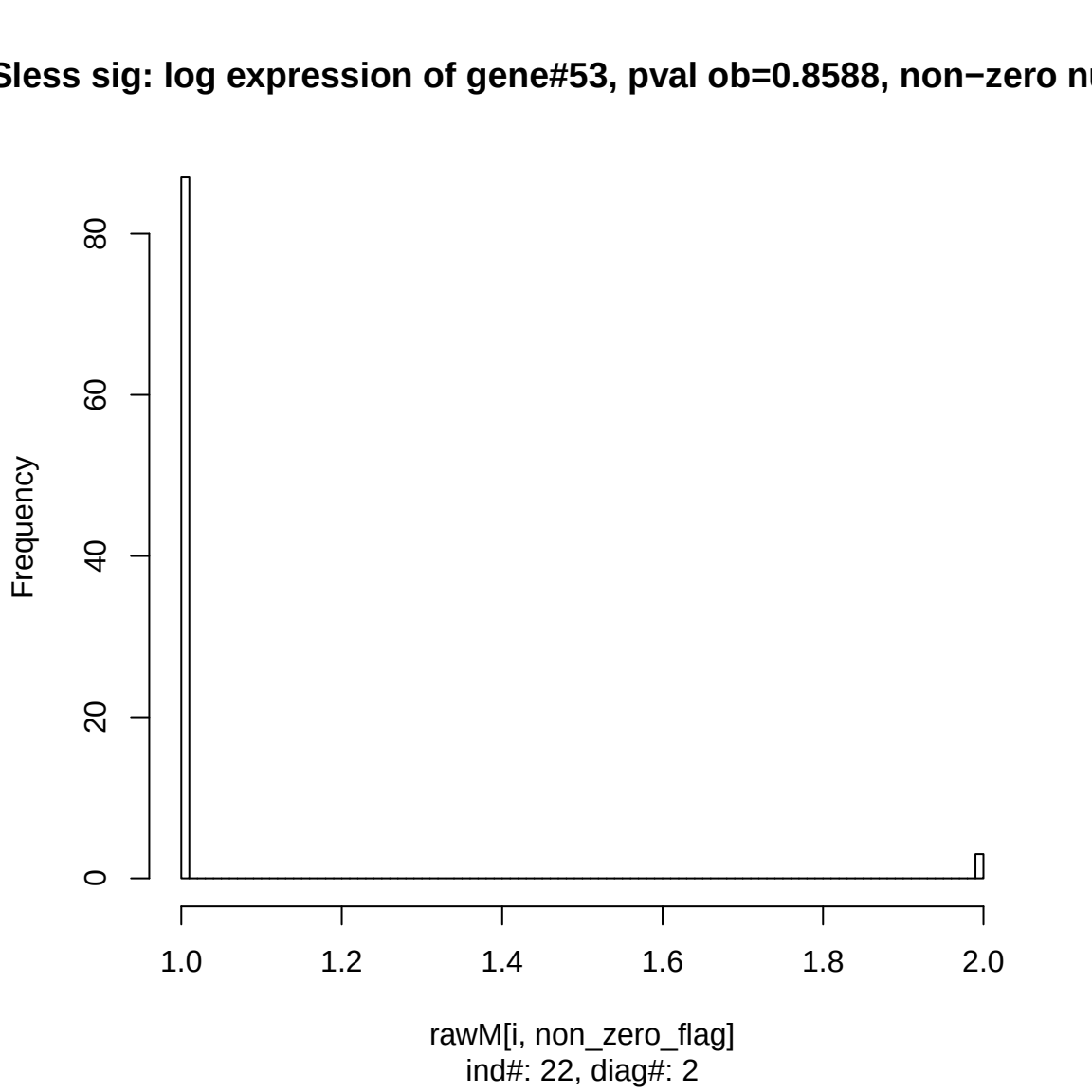

KSless sig: individual expression cell count of gene#44
Frequency
0
1
2
3
4
5
6
2
4
6
8
10
table(meta$individual[non_zero_flag])

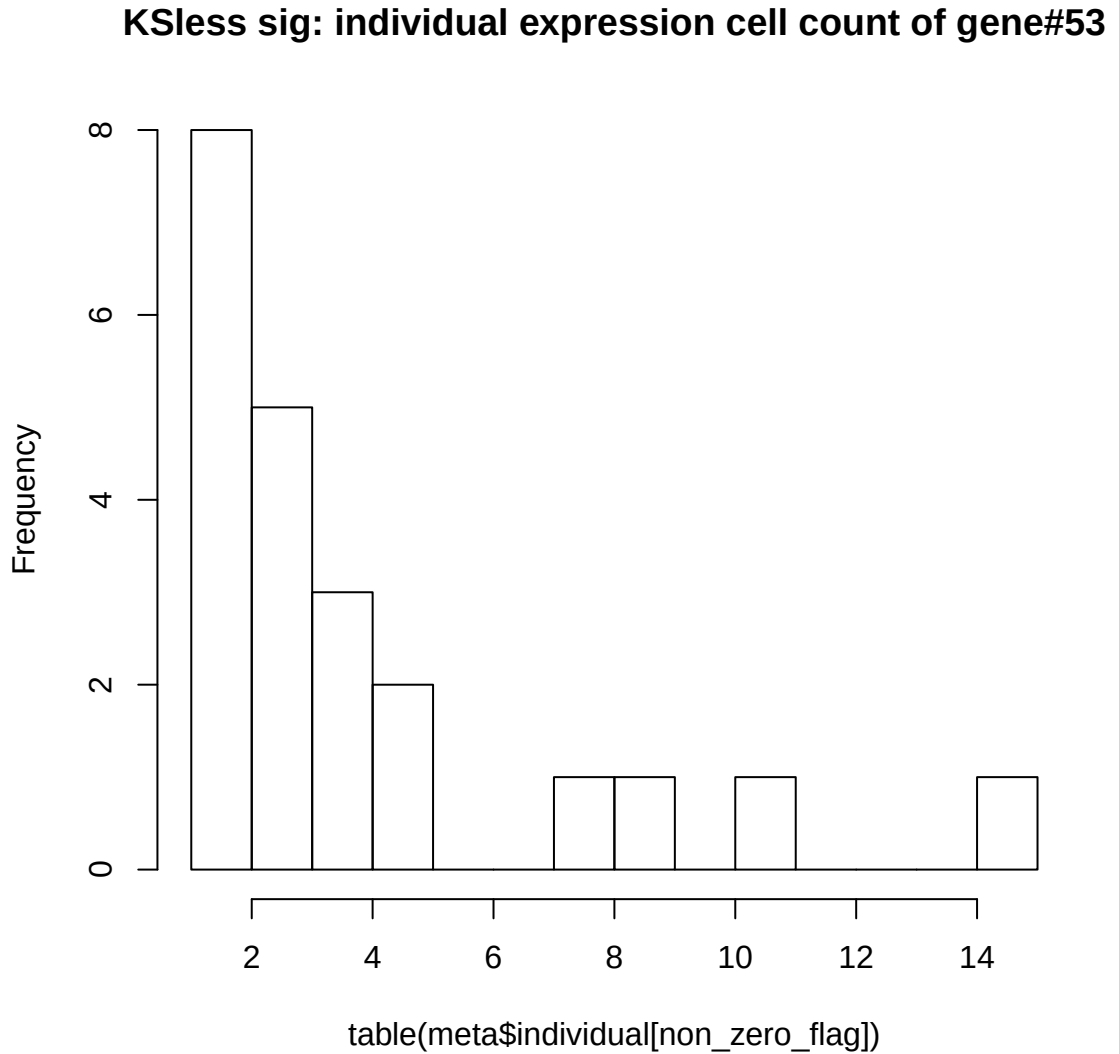

less sig: log expression of gene#46, pval ob=0.3604, non−zero nu
Frequency
0
50
100
150
200
250
300
1.0
1.5
2.0
2.5
3.0
3.5
4.0
rawM[i, non_zero_flag]
ind#: 30, diag#: 2

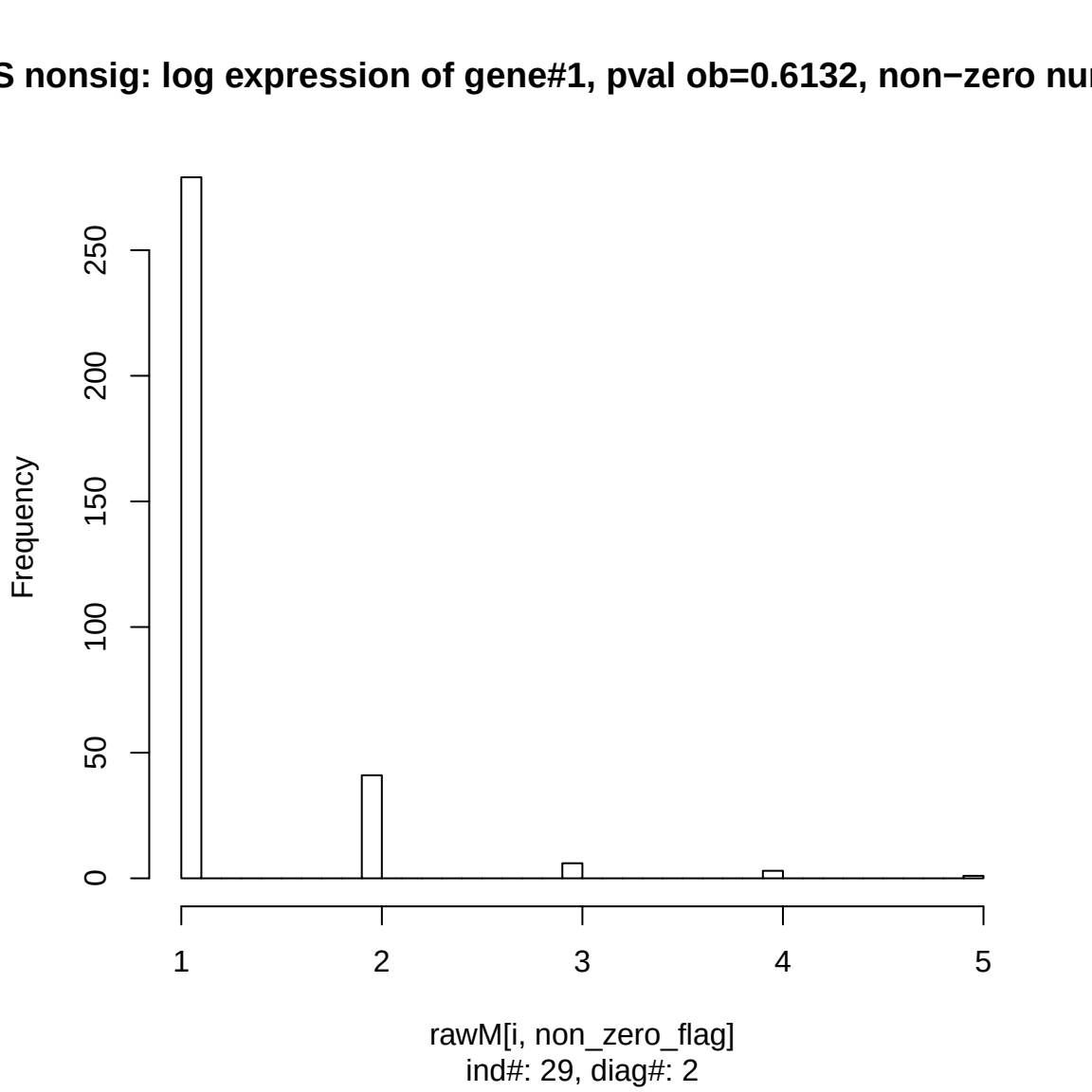

KSless sig: individual expression cell count of gene#46
Frequency
0
2
4
6
8
10
0
10
20
30
40
50
60
table(meta$individual[non_zero_flag])

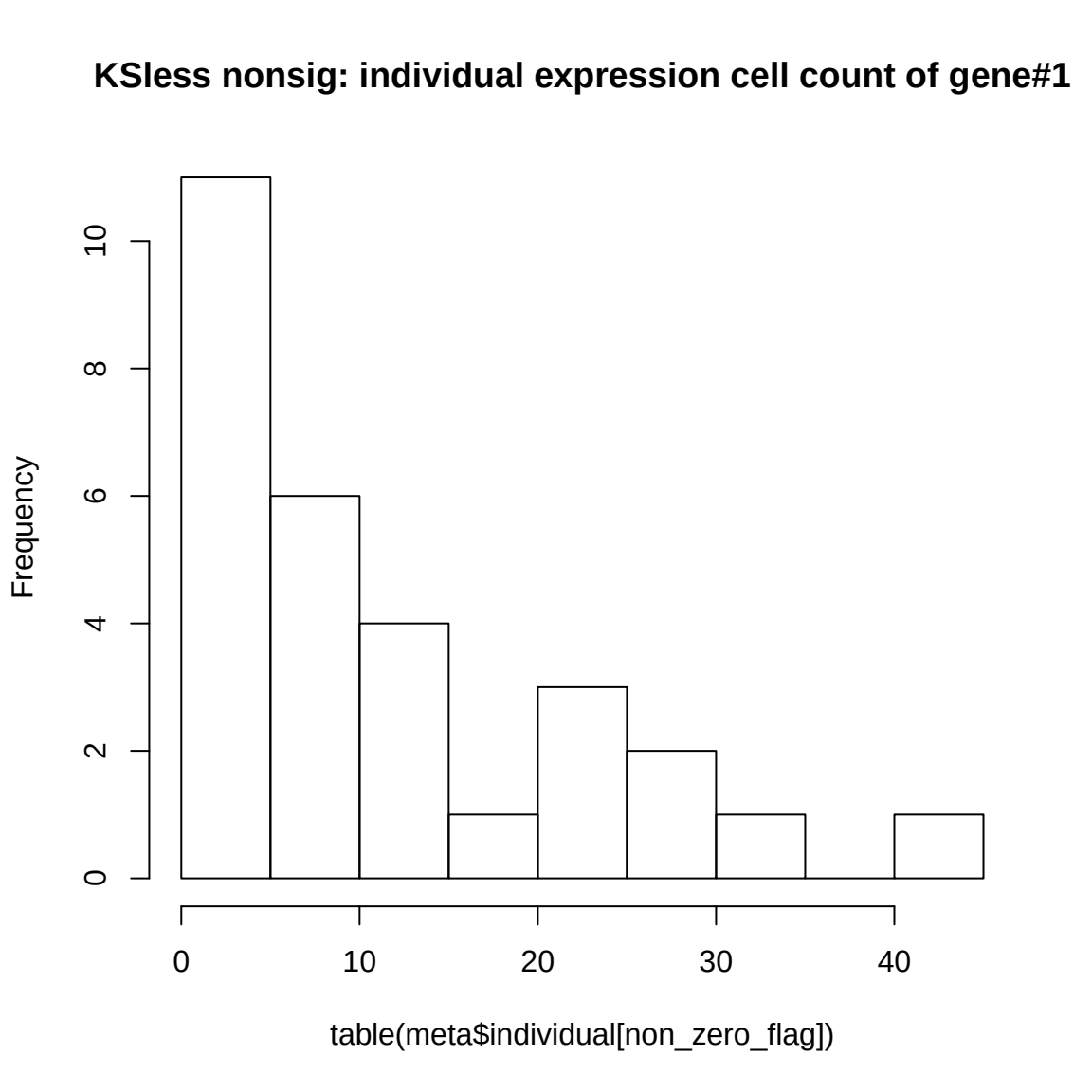

Sless sig: log expression of gene#49, pval ob=0.0928, non−zero nu
Frequency
0
10
20
30
40
50
1.0
1.5
2.0
2.5
3.0
rawM[i, non_zero_flag]
ind#: 20, diag#: 2

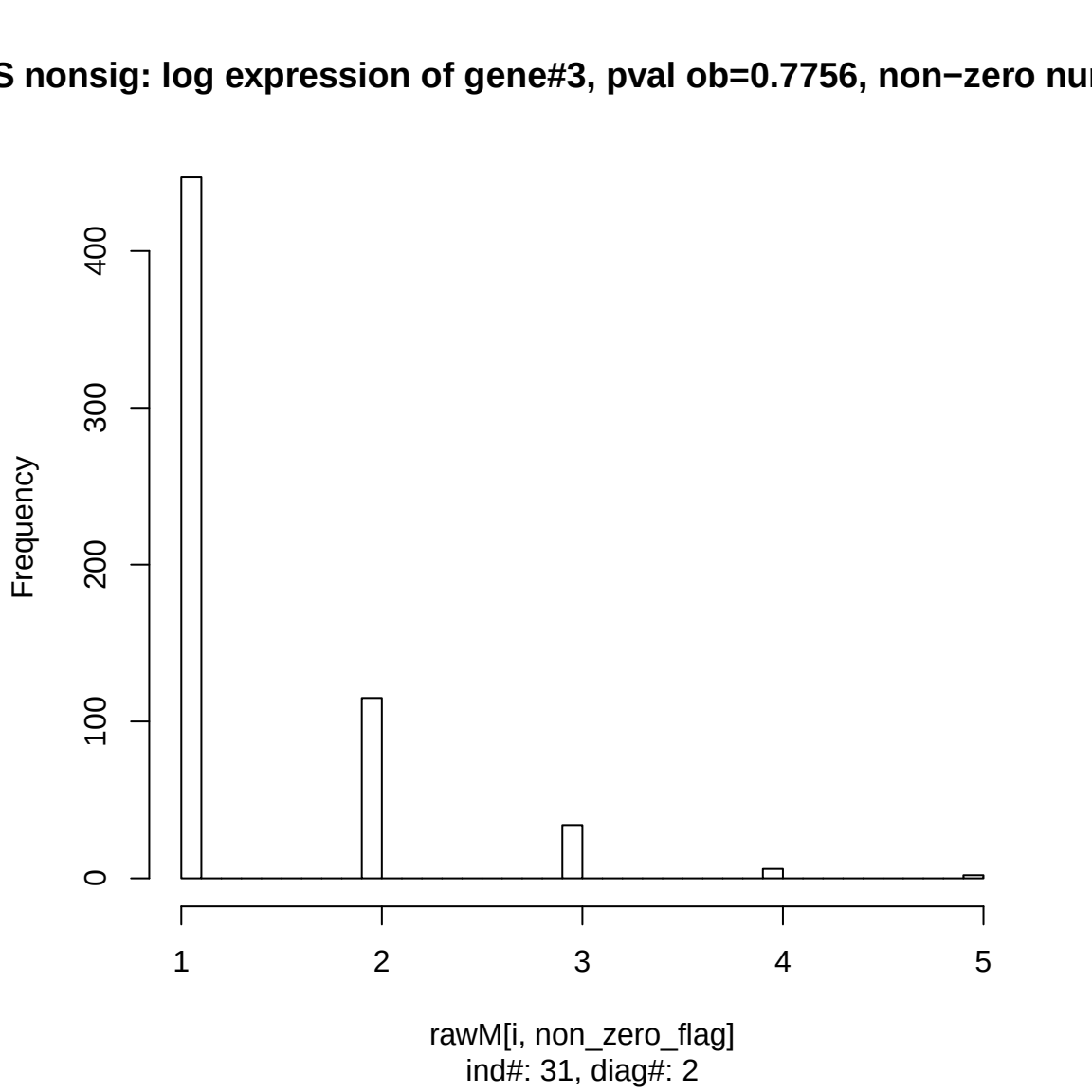

KSless sig: individual expression cell count of gene#49
Frequency
0
2
4
6
8
10
2
4
6
8
table(meta$individual[non_zero_flag])

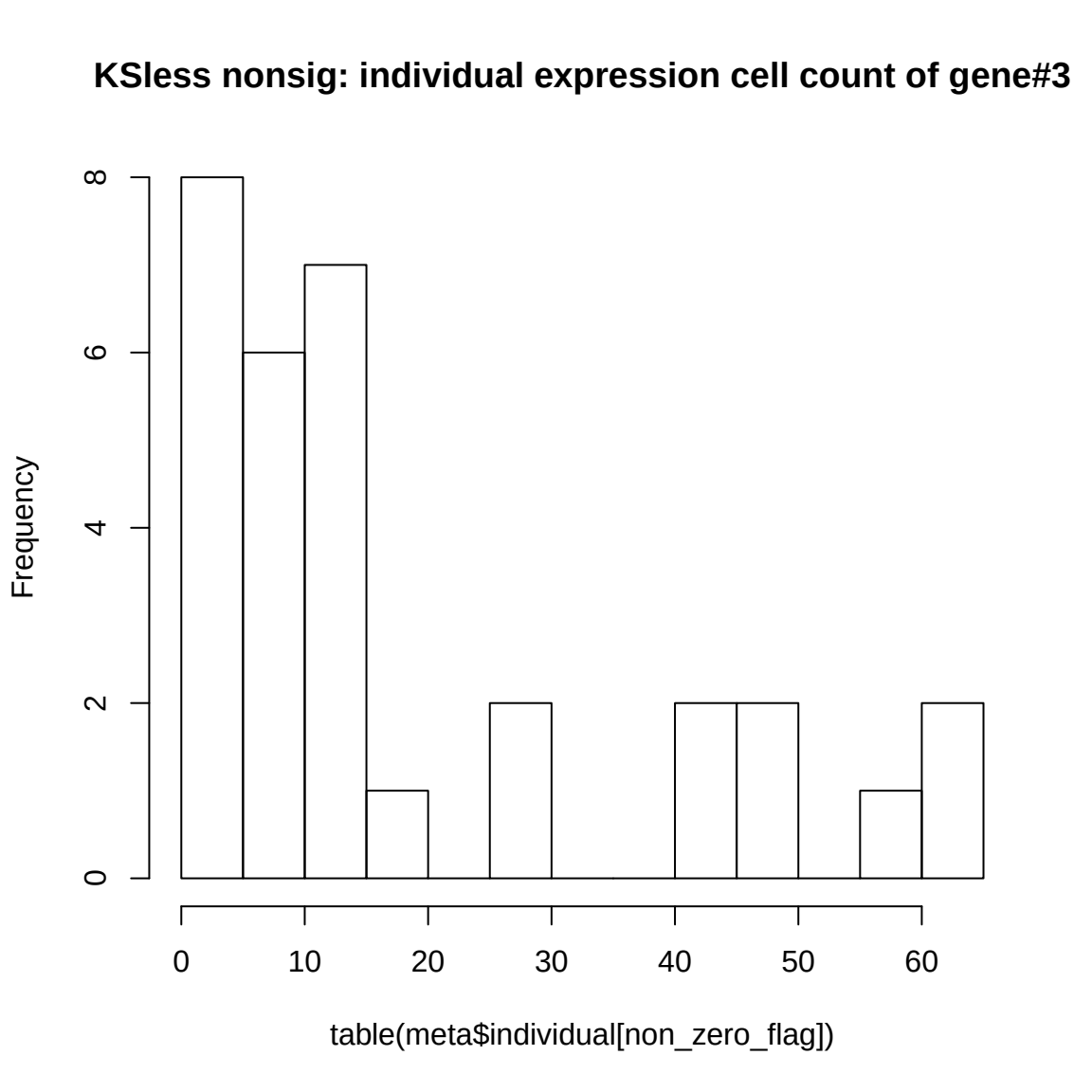

Sless sig: log expression of gene#53, pval ob=0.8588, non−zero nu
Frequency
0
20
40
60
80
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 22, diag#: 2

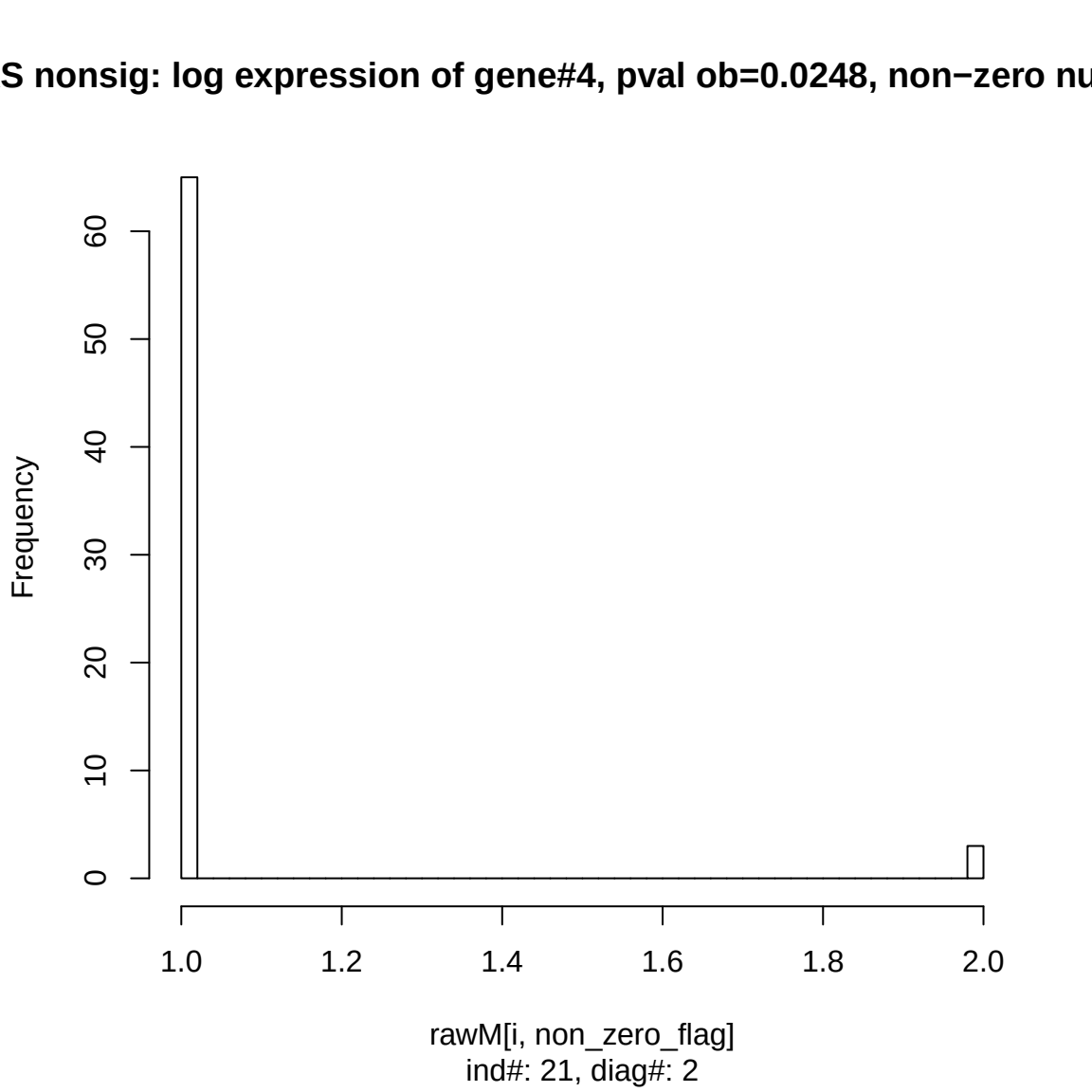

KSless sig: individual expression cell count of gene#53
Frequency
0
2
4
6
8
2
4
6
8
10
12
14
table(meta$individual[non_zero_flag])

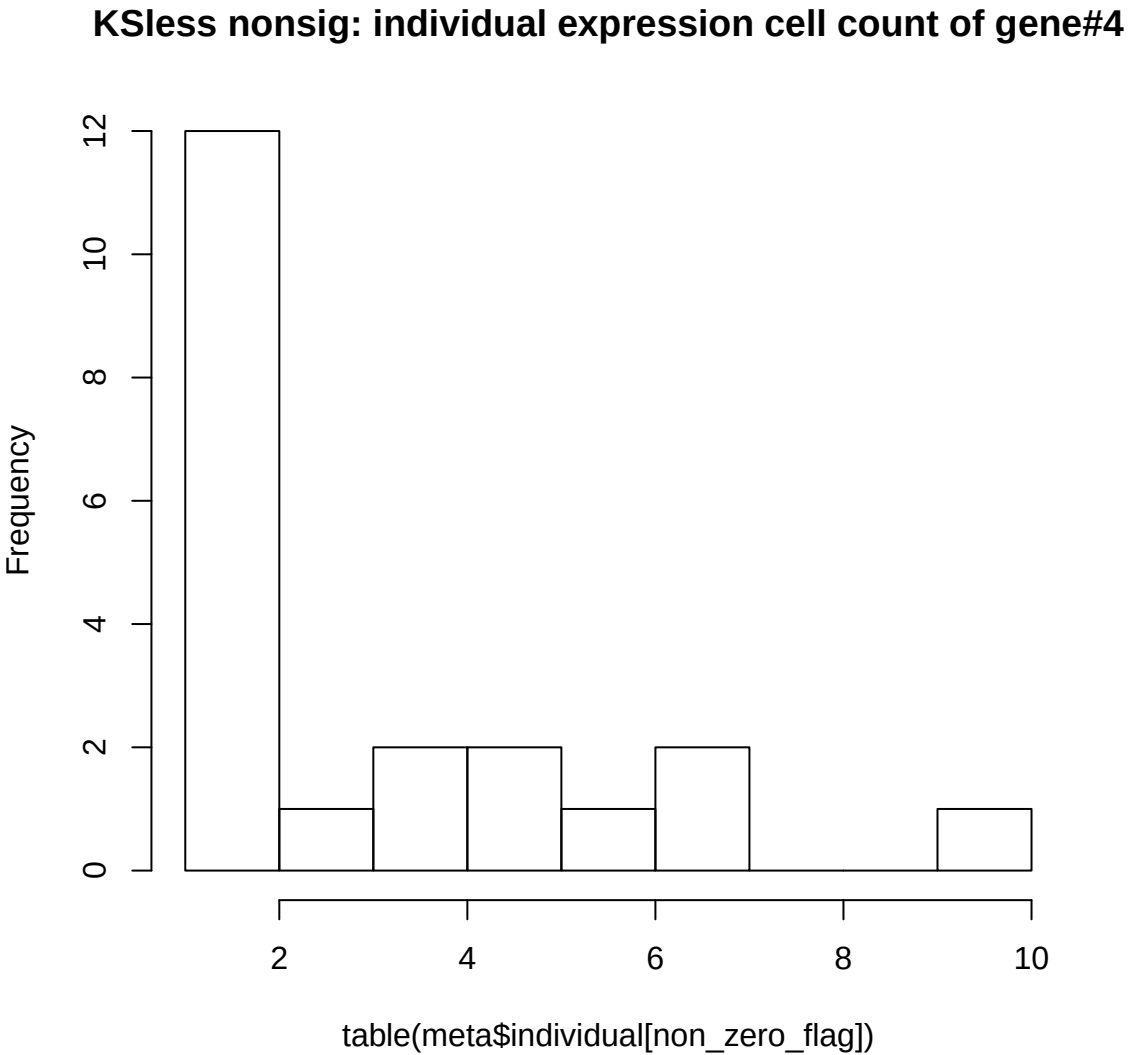

S nonsig: log expression of gene#1, pval ob=0.6132, non−zero nu
Frequency
0
50
100
150
200
250
1
2
3
4
5
rawM[i, non_zero_flag]
ind#: 29, diag#: 2

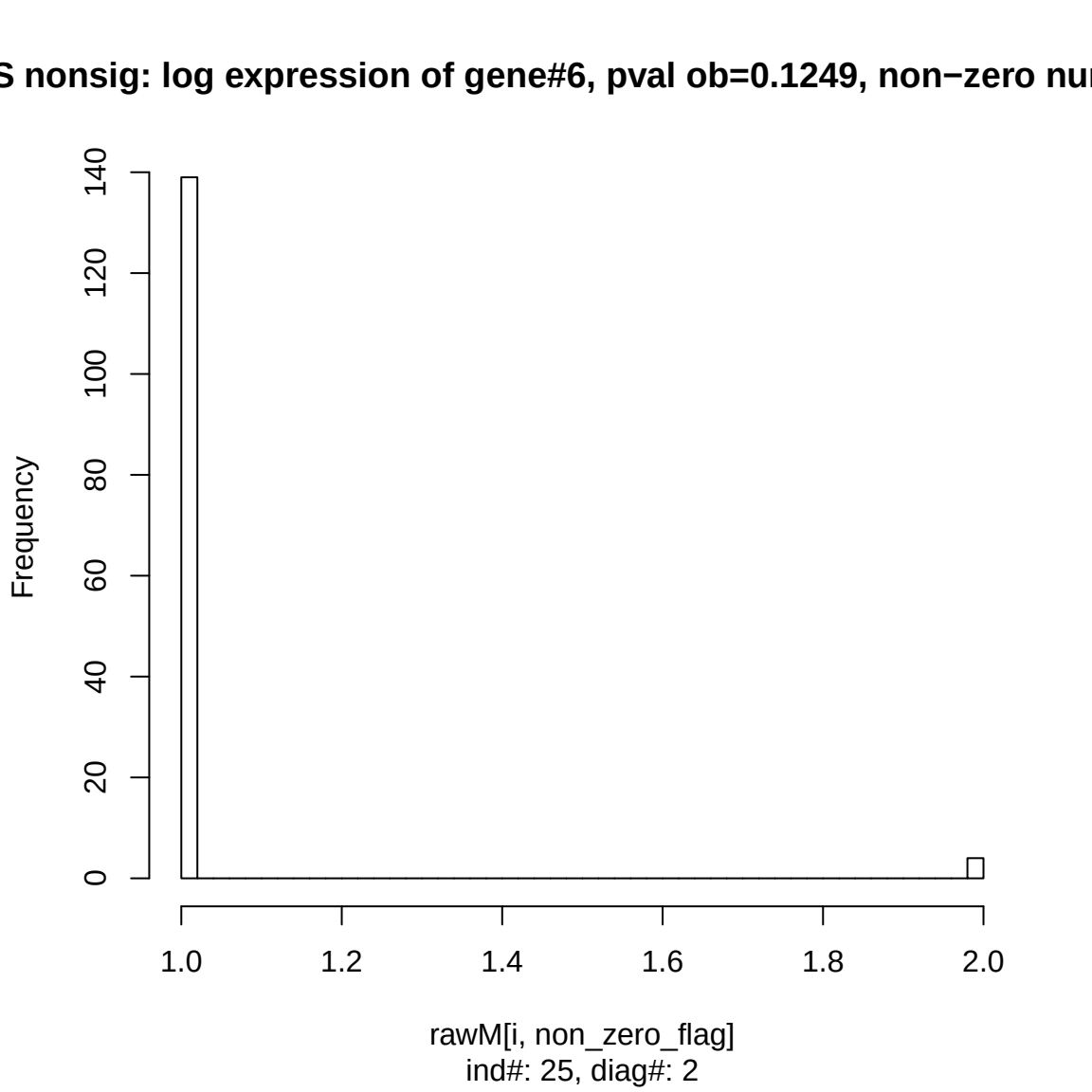

KSless nonsig: individual expression cell count of gene#1
Frequency
0
2
4
6
8
10
0
10
20
30
40
table(meta$individual[non_zero_flag])

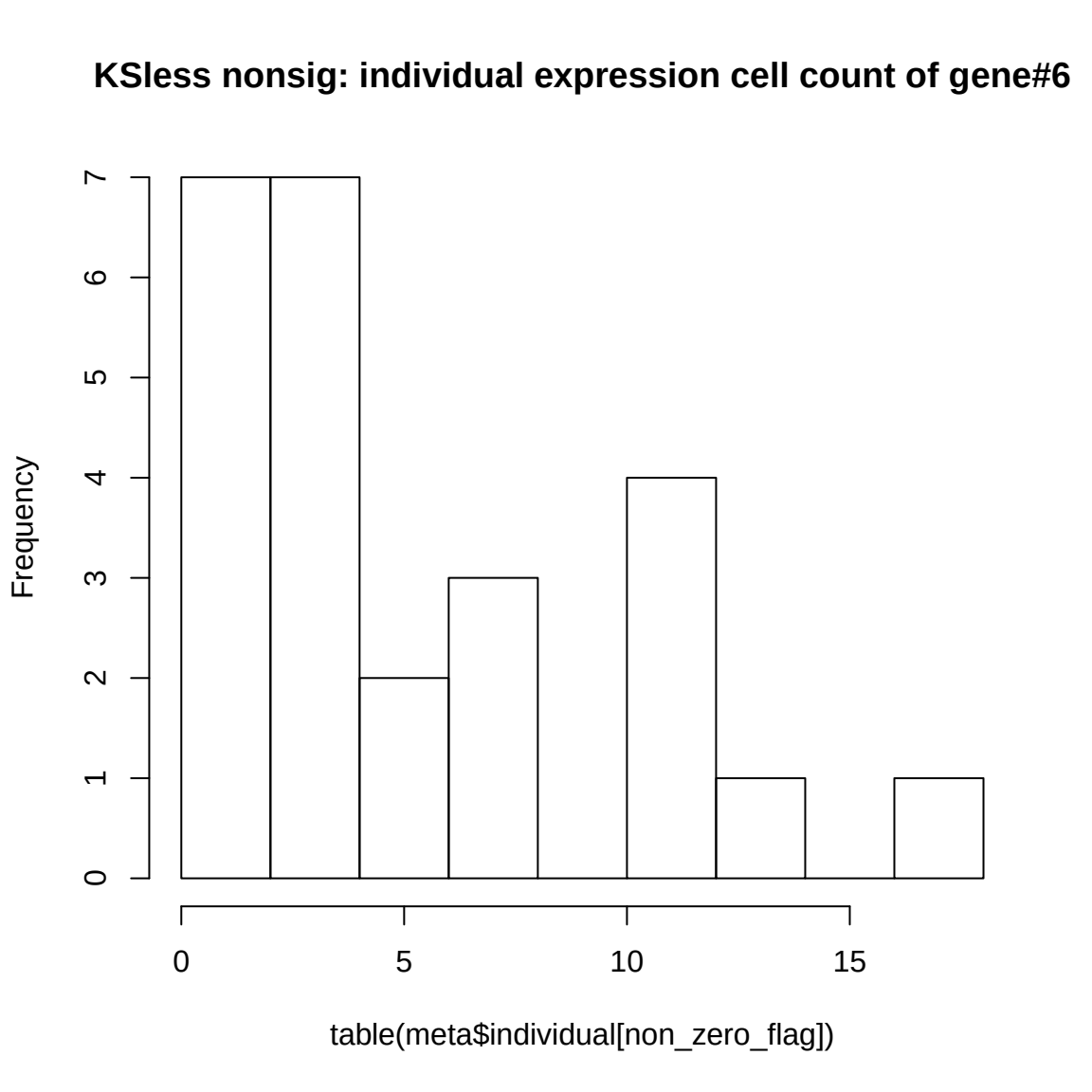

S nonsig: log expression of gene#3, pval ob=0.7756, non−zero nu
Frequency
0
100
200
300
400
1
2
3
4
5
rawM[i, non_zero_flag]
ind#: 31, diag#: 2

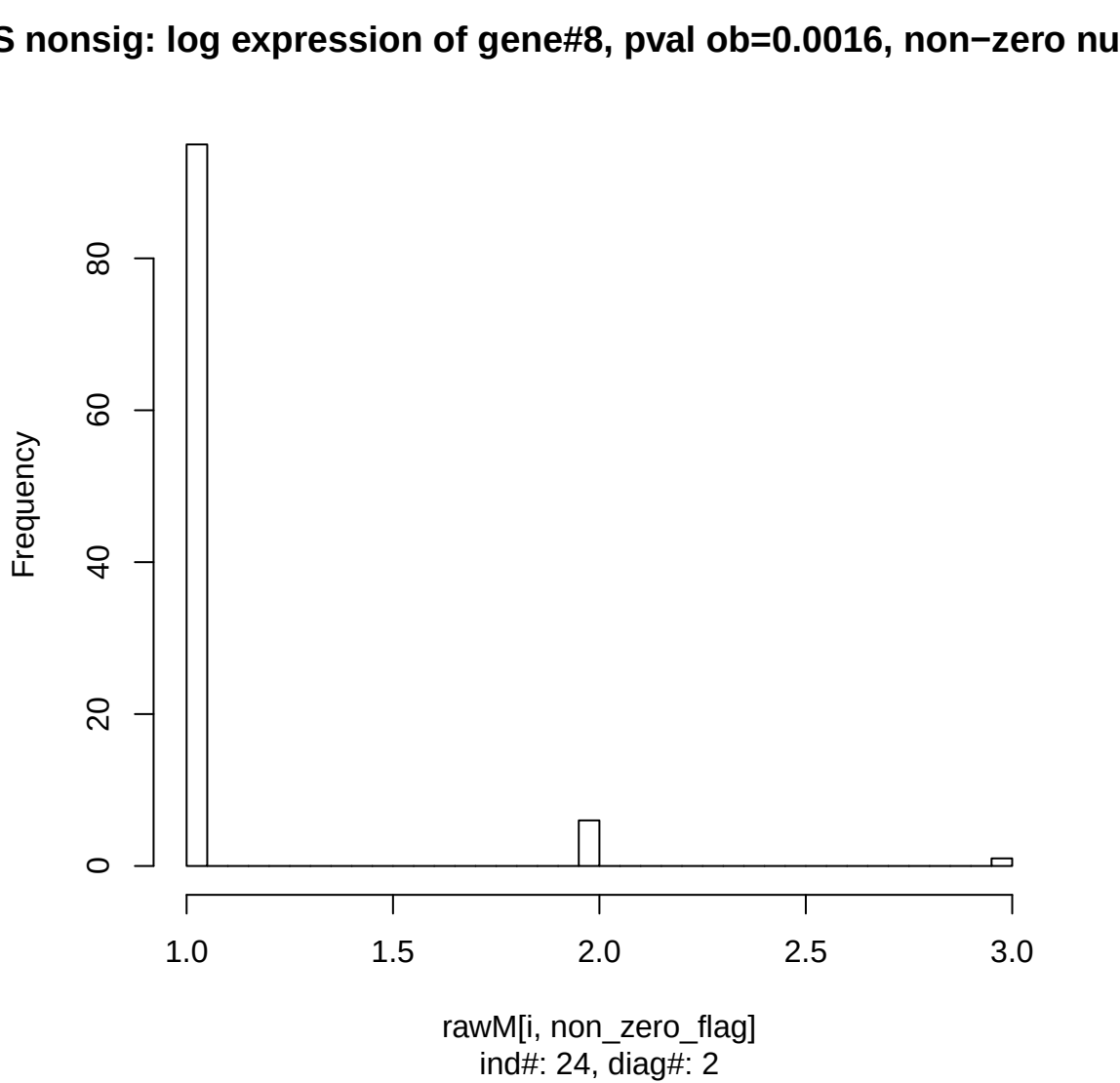

KSless nonsig: individual expression cell count of gene#3
Frequency
0
2
4
6
8
0
10
20
30
40
50
60
table(meta$individual[non_zero_flag])

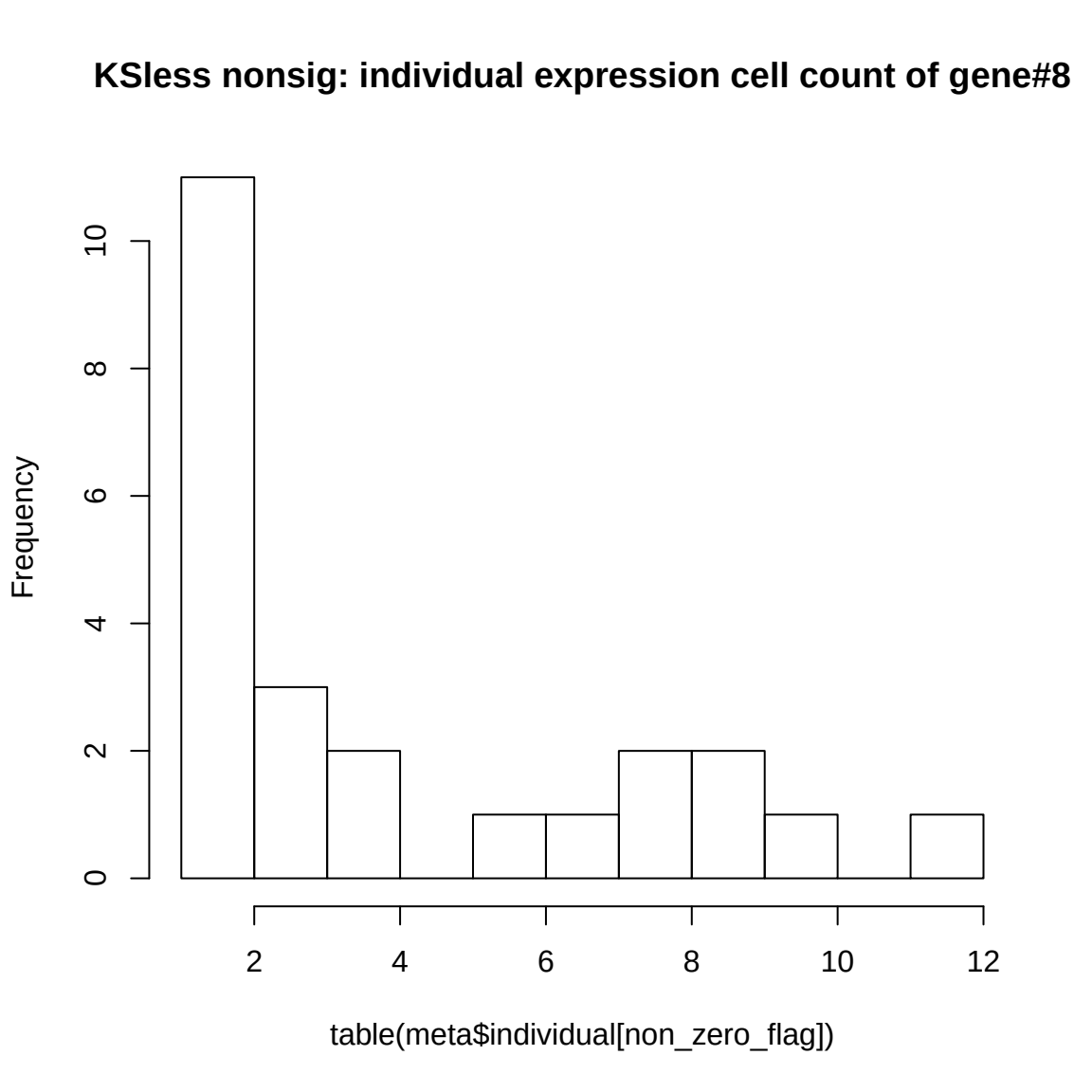

S nonsig: log expression of gene#4, pval ob=0.0248, non−zero nu
Frequency
0
10
20
30
40
50
60
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 21, diag#: 2

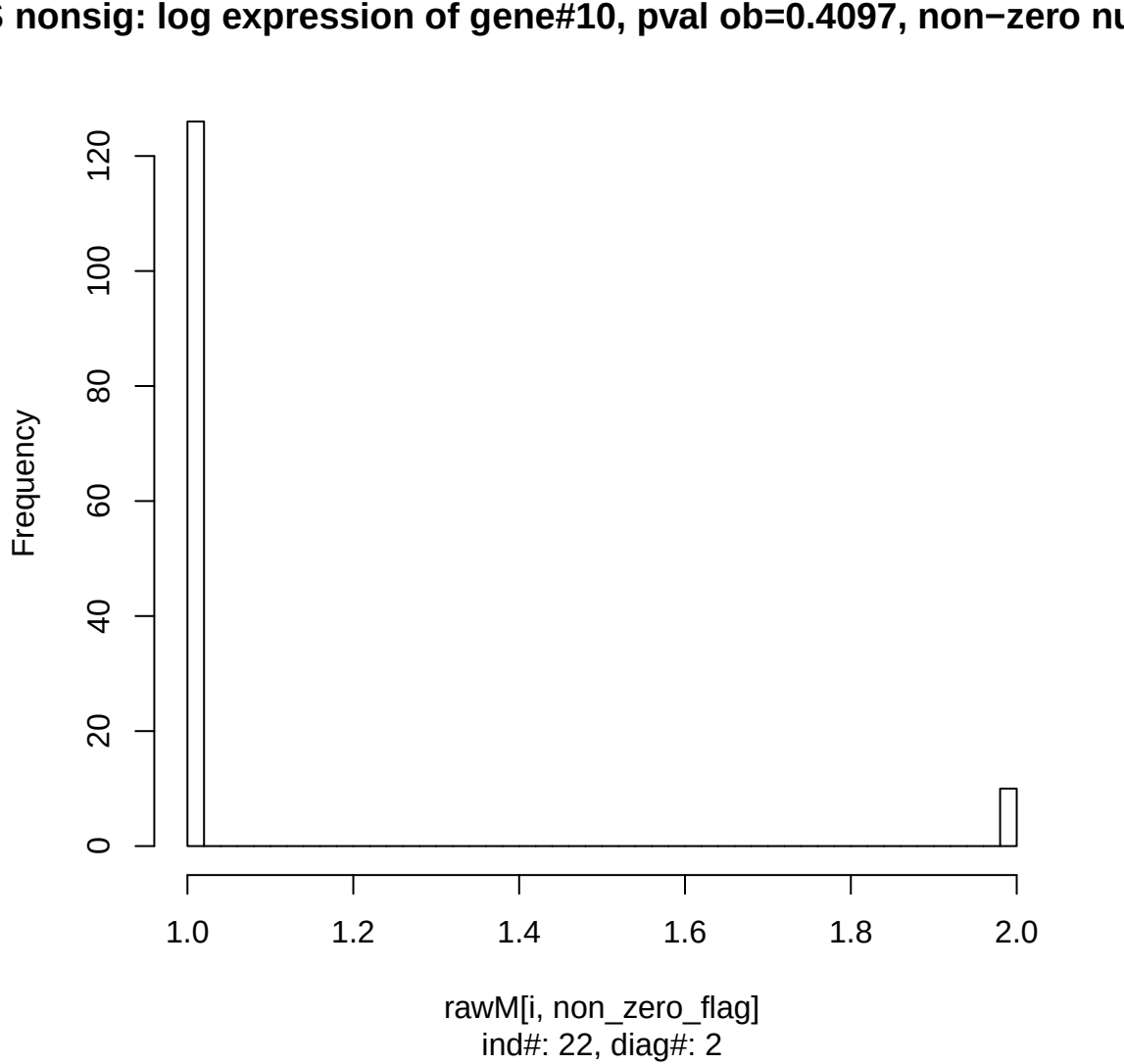

KSless nonsig: individual expression cell count of gene#4
Frequency
0
2
4
6
8
10
12
2
4
6
8
10
table(meta$individual[non_zero_flag])

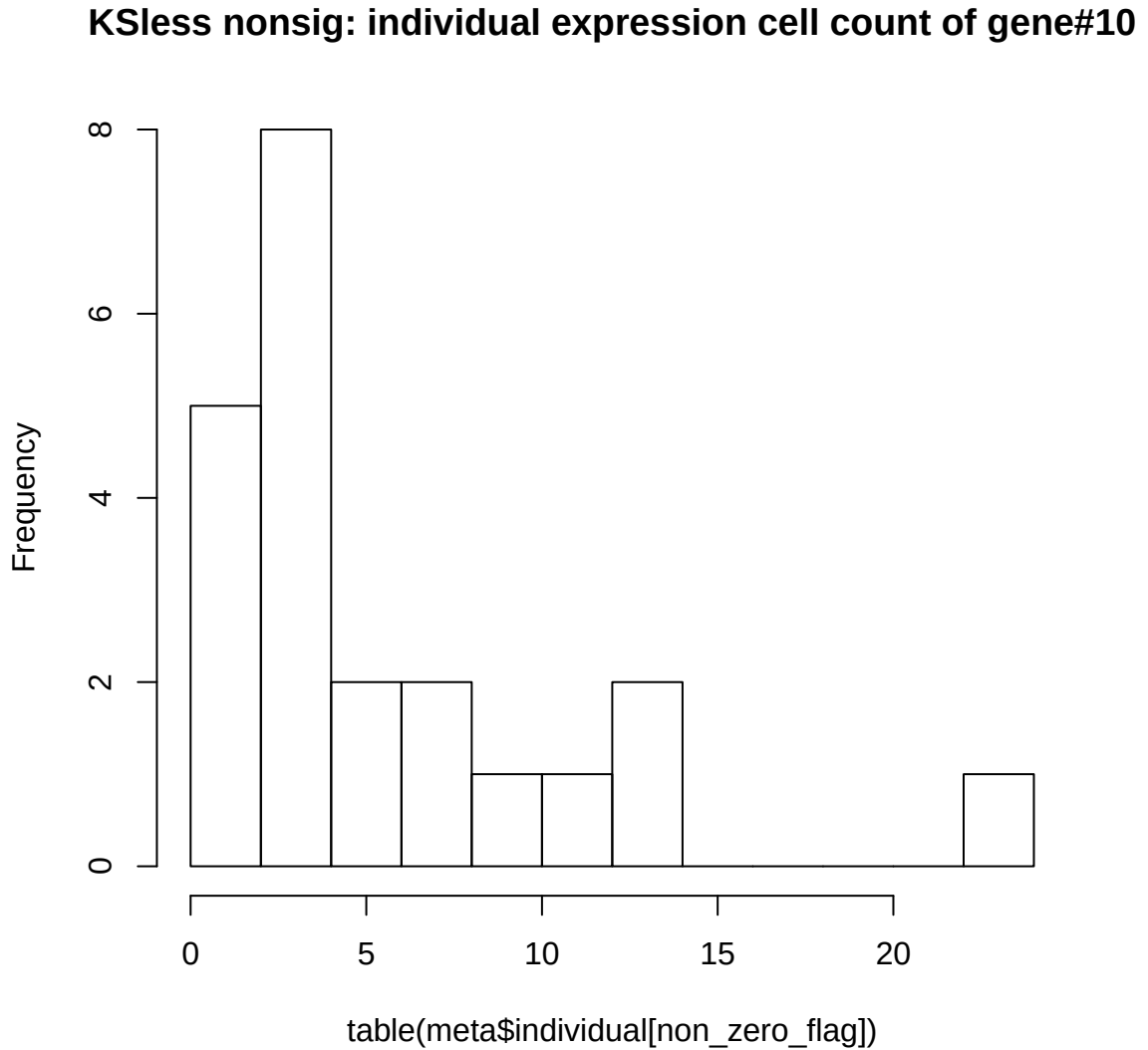

S nonsig: log expression of gene#6, pval ob=0.1249, non−zero nu
Frequency
0
20
40
60
80
100
120
140
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 25, diag#: 2

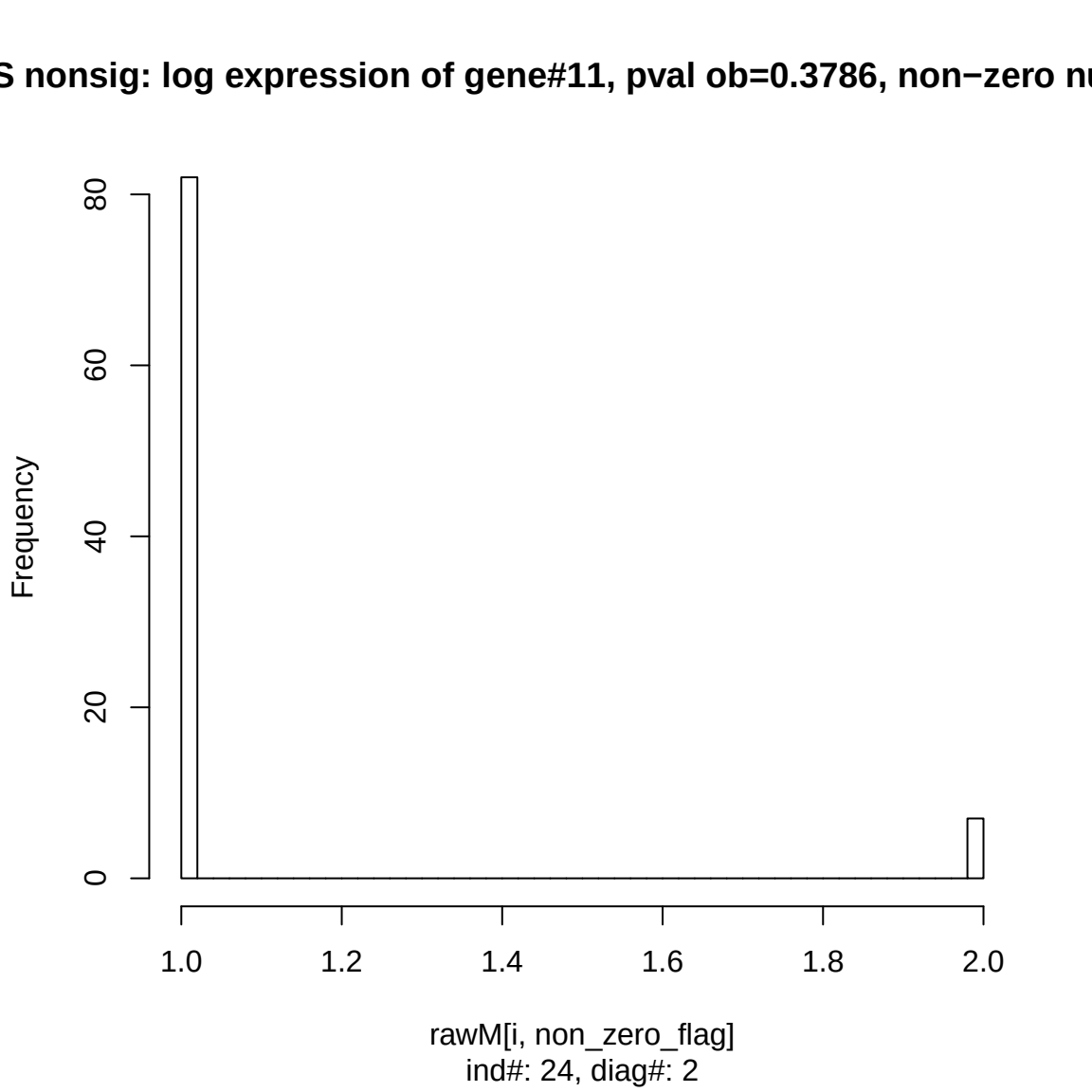

KSless nonsig: individual expression cell count of gene#6
Frequency
0
1
2
3
4
5
6
7
0
5
10
15
table(meta$individual[non_zero_flag])

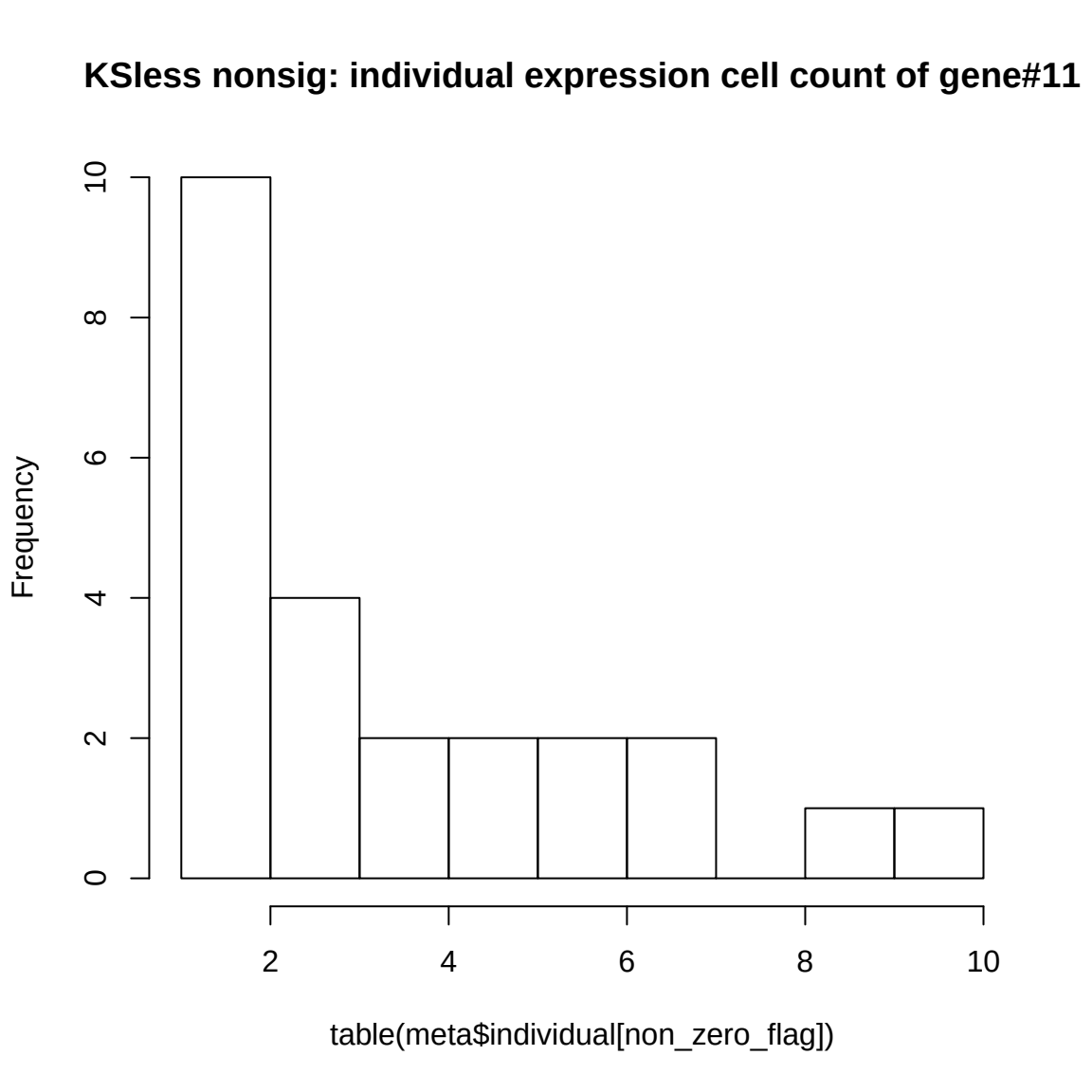

S nonsig: log expression of gene#8, pval ob=0.0016, non−zero nu
Frequency
0
20
40
60
80
1.0
1.5
2.0
2.5
3.0
rawM[i, non_zero_flag]
ind#: 24, diag#: 2

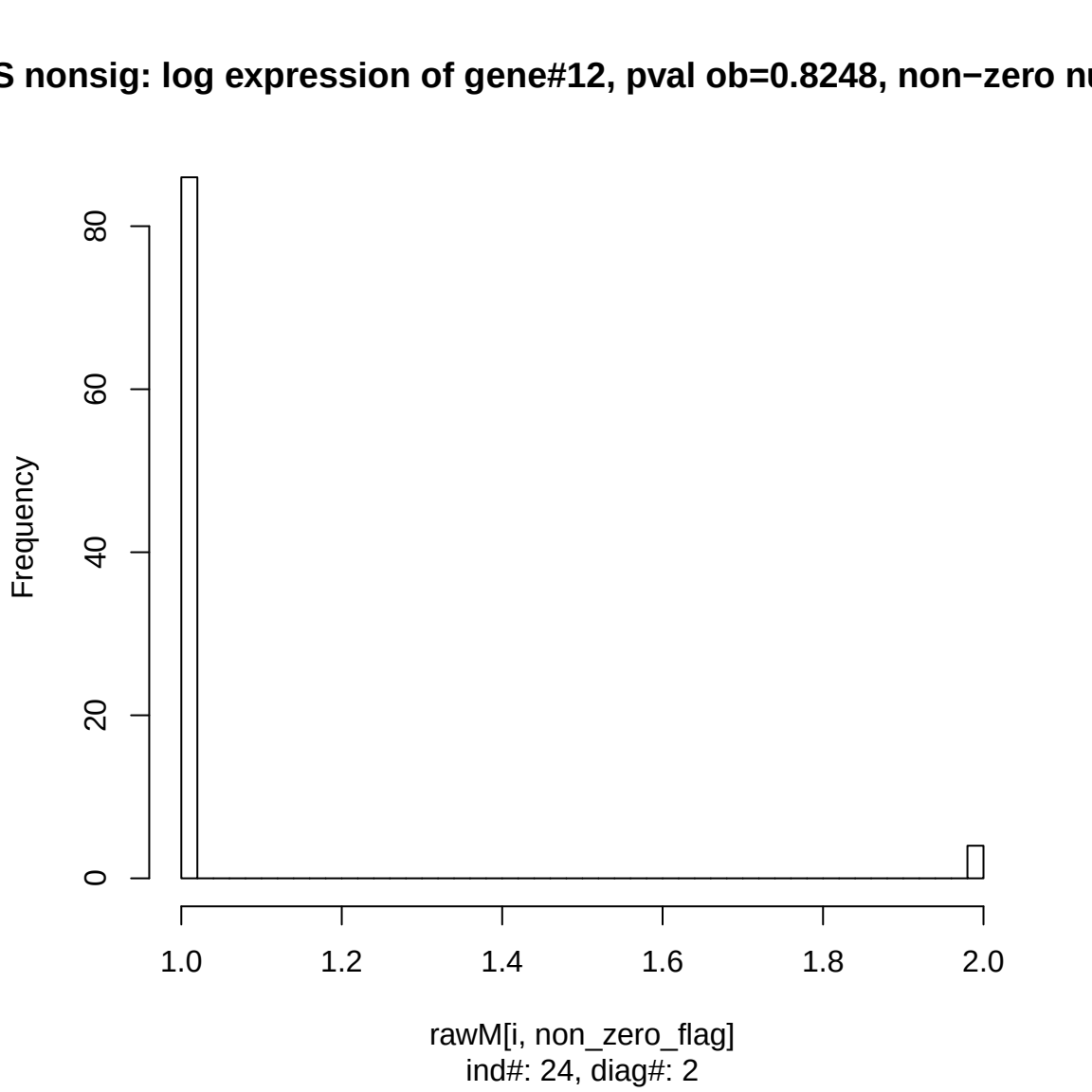

KSless nonsig: individual expression cell count of gene#8
Frequency
0
2
4
6
8
10
2
4
6
8
10
12
table(meta$individual[non_zero_flag])

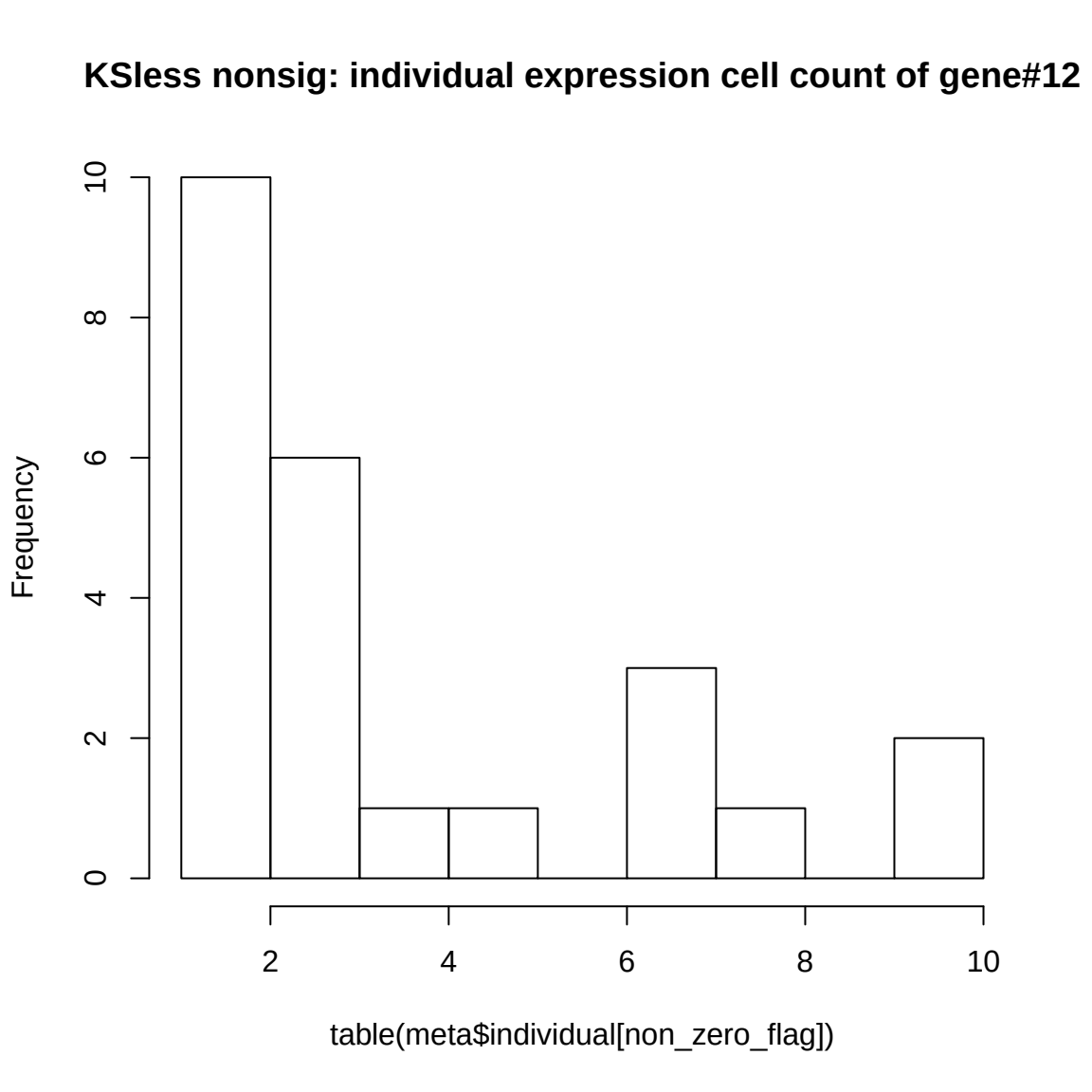

nonsig: log expression of gene#10, pval ob=0.4097, non−zero nu
Frequency
0
20
40
60
80
100
120
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 22, diag#: 2

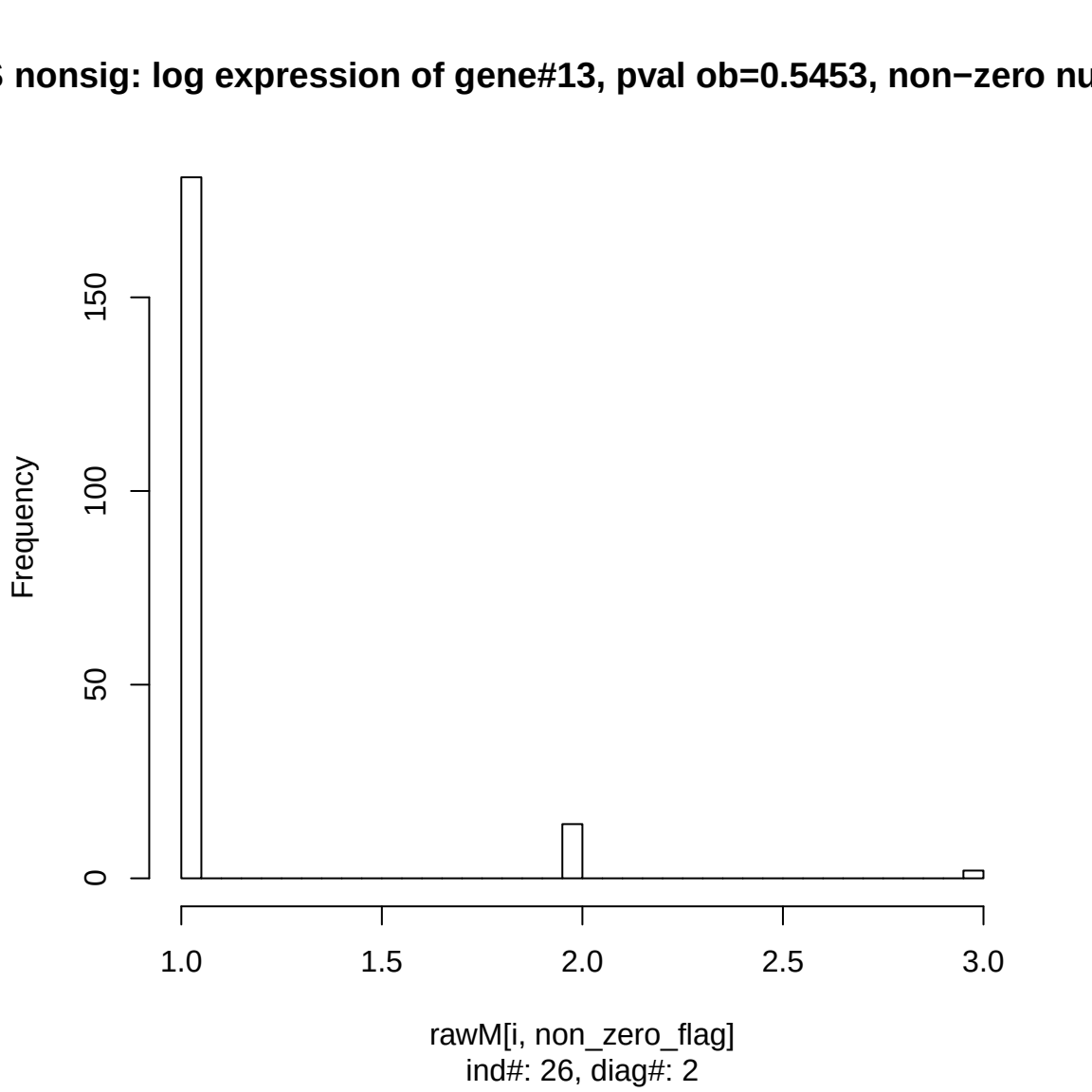

KSless nonsig: individual expression cell count of gene#10
Frequency
0
2
4
6
8
0
5
10
15
20
table(meta$individual[non_zero_flag])

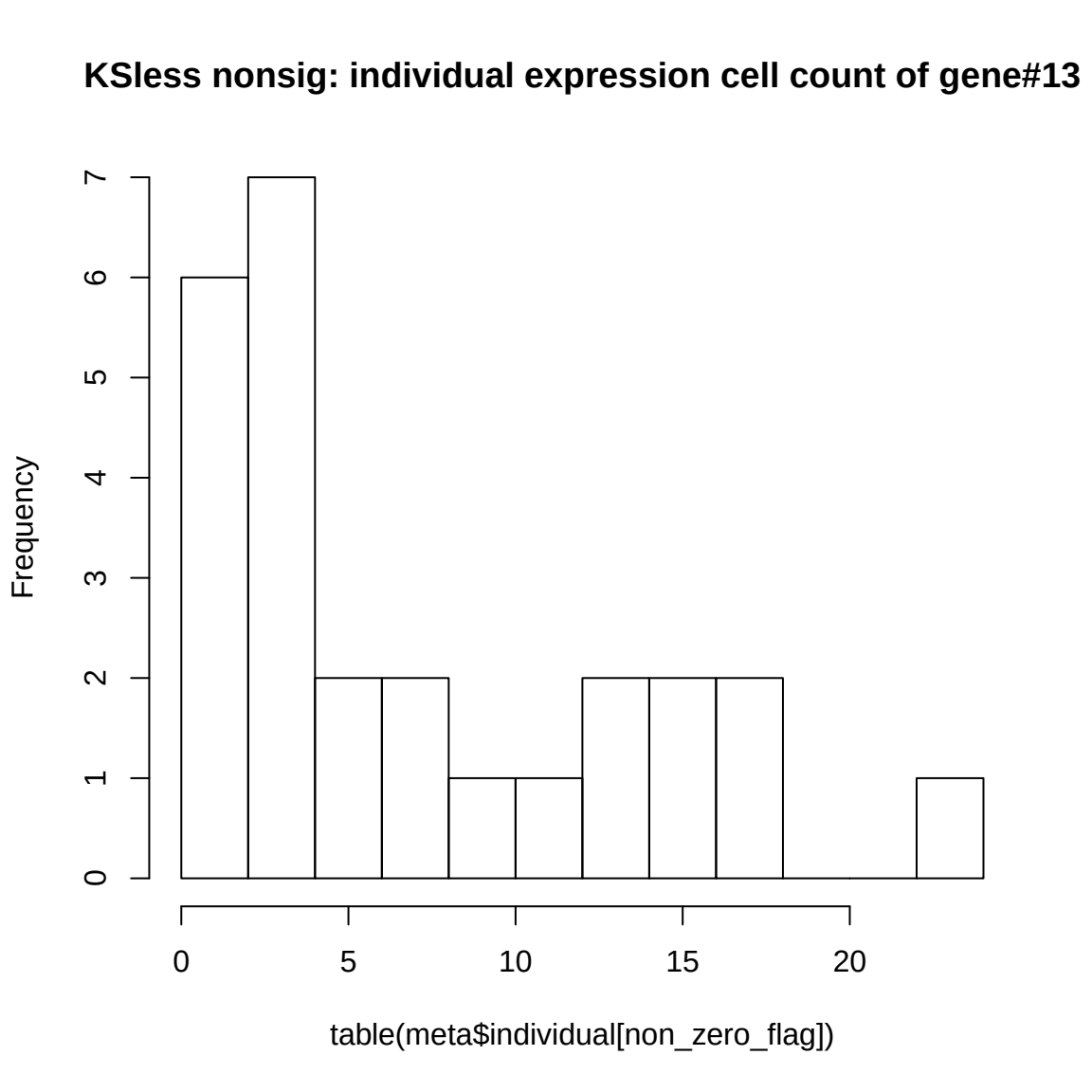

S nonsig: log expression of gene#11, pval ob=0.3786, non−zero nu
Frequency
0
20
40
60
80
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 24, diag#: 2

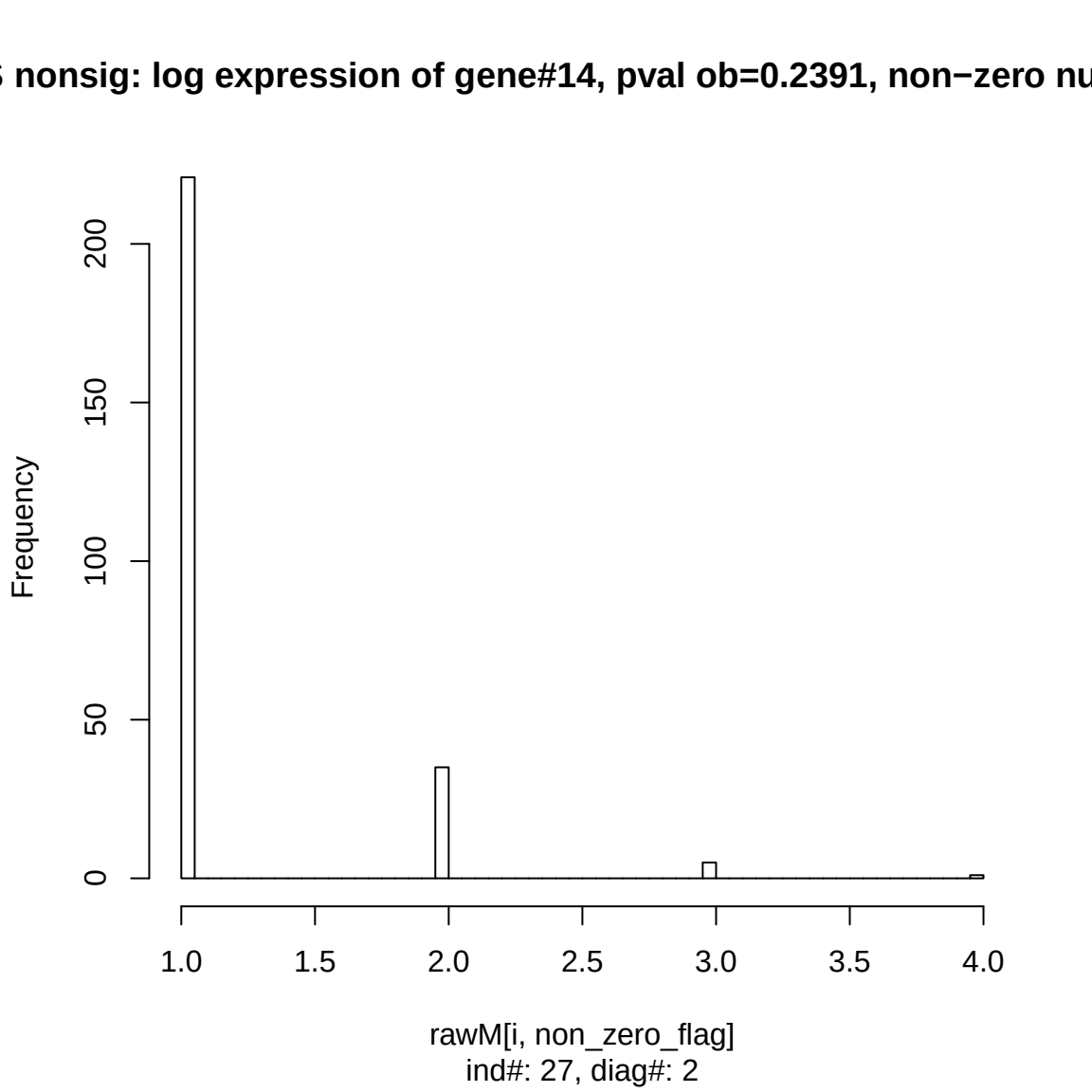

KSless nonsig: individual expression cell count of gene#11
Frequency
0
2
4
6
8
10
2
4
6
8
10
table(meta$individual[non_zero_flag])

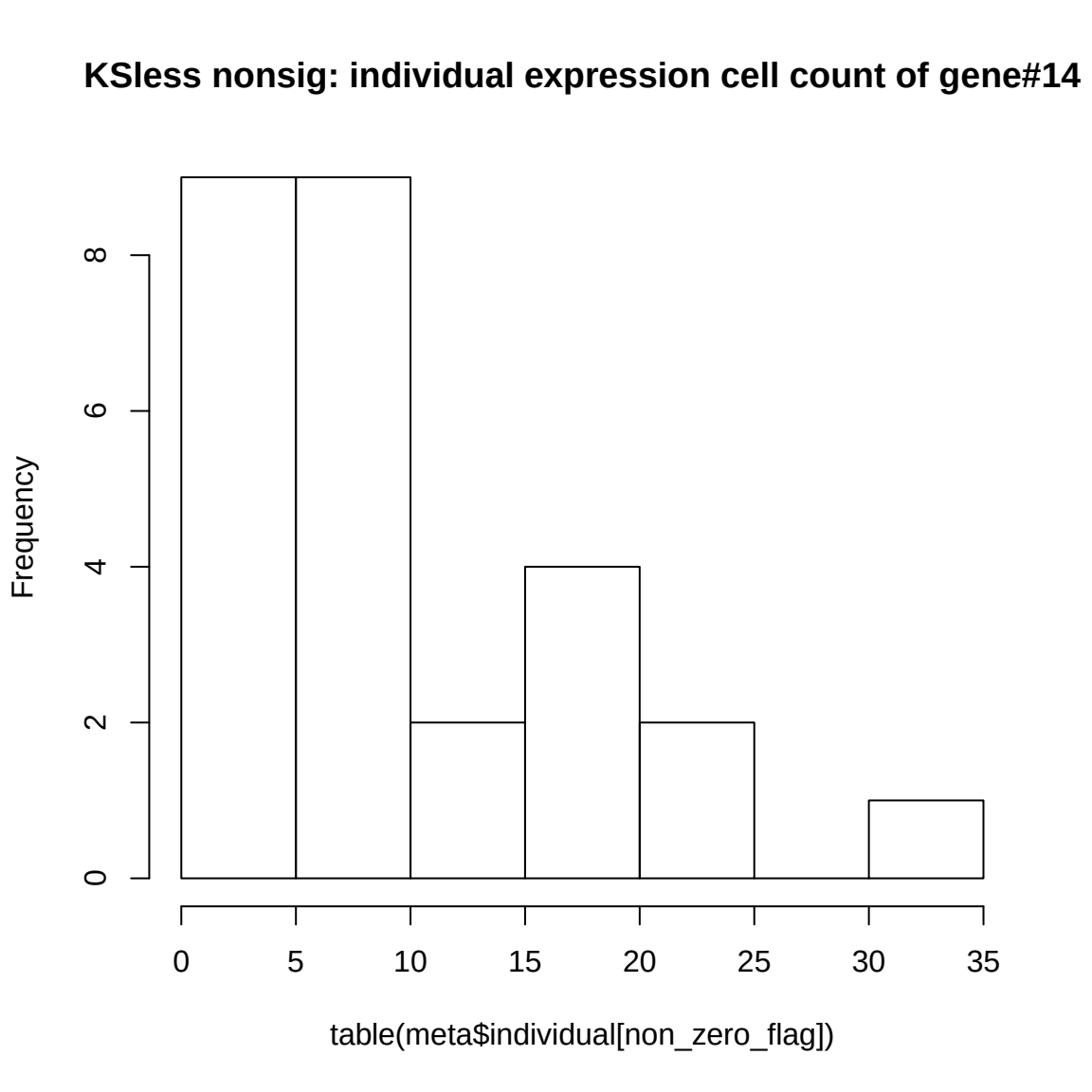

S nonsig: log expression of gene#12, pval ob=0.8248, non−zero nu
Frequency
0
20
40
60
80
1.0
1.2
1.4
1.6
1.8
2.0
rawM[i, non_zero_flag]
ind#: 24, diag#: 2

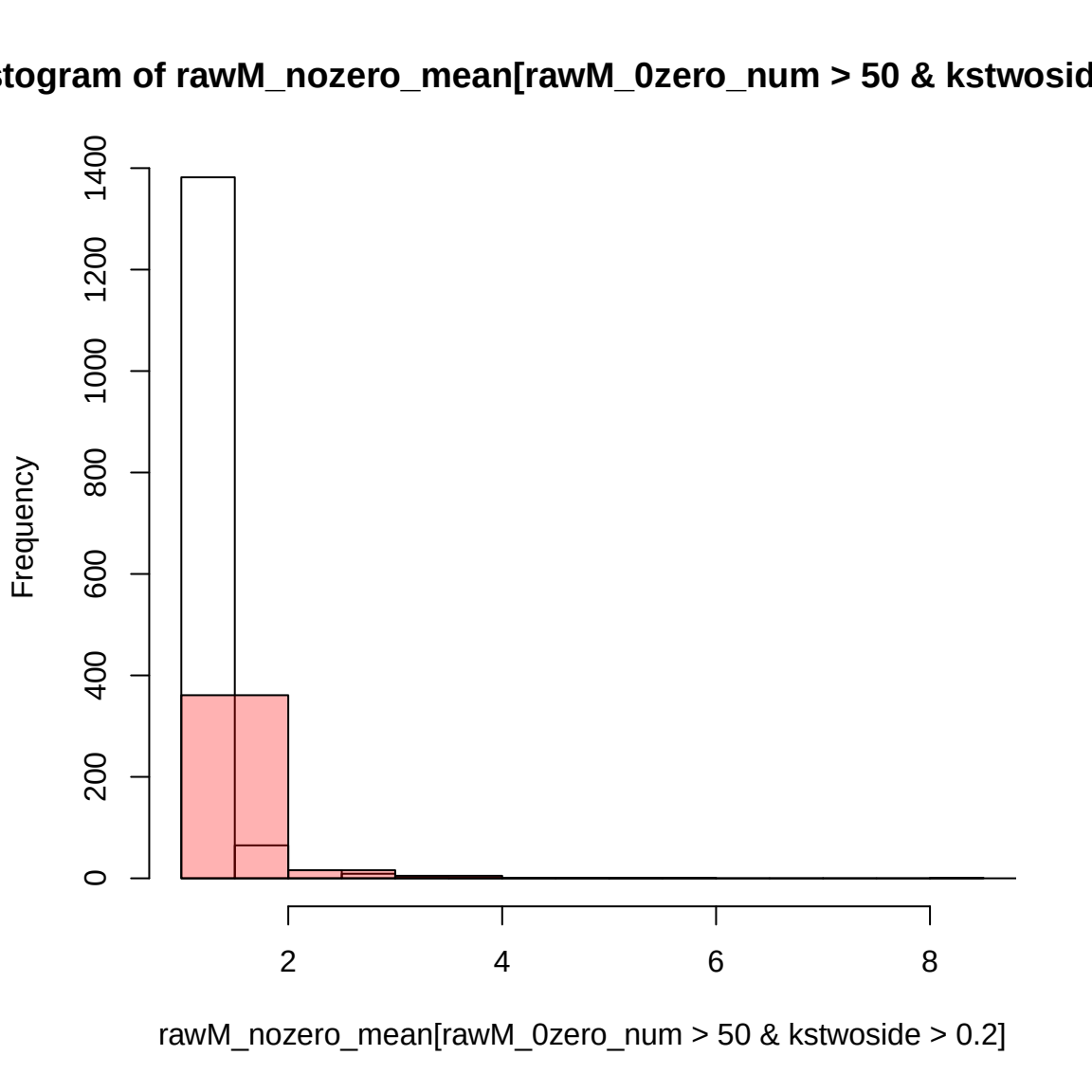

KSless nonsig: individual expression cell count of gene#12
Frequency
0
2
4
6
8
10
2
4
6
8
10
table(meta$individual[non_zero_flag])

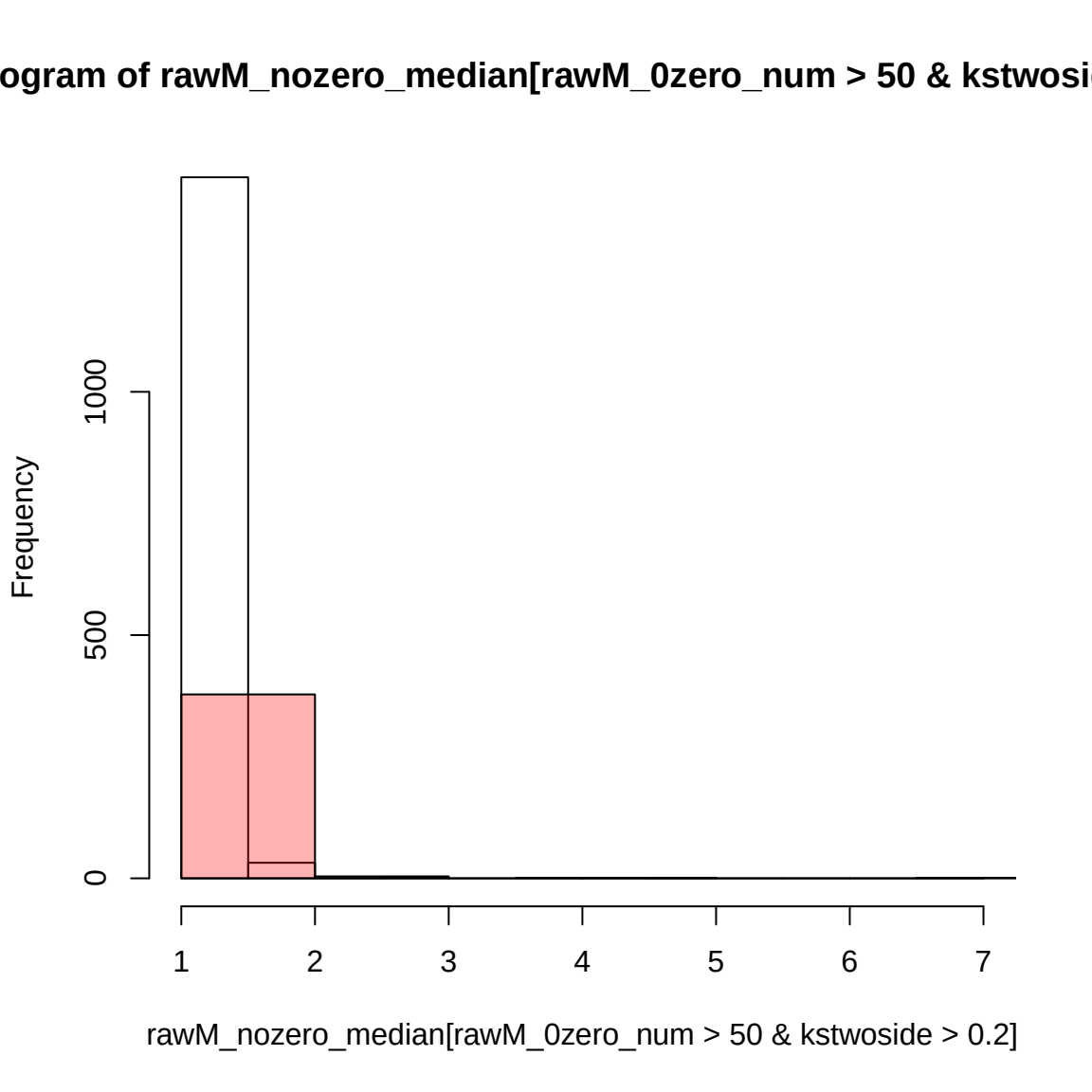

nonsig: log expression of gene#13, pval ob=0.5453, non−zero nu
Frequency
0
50
100
150
1.0
1.5
2.0
2.5
3.0
rawM[i, non_zero_flag]
ind#: 26, diag#: 2

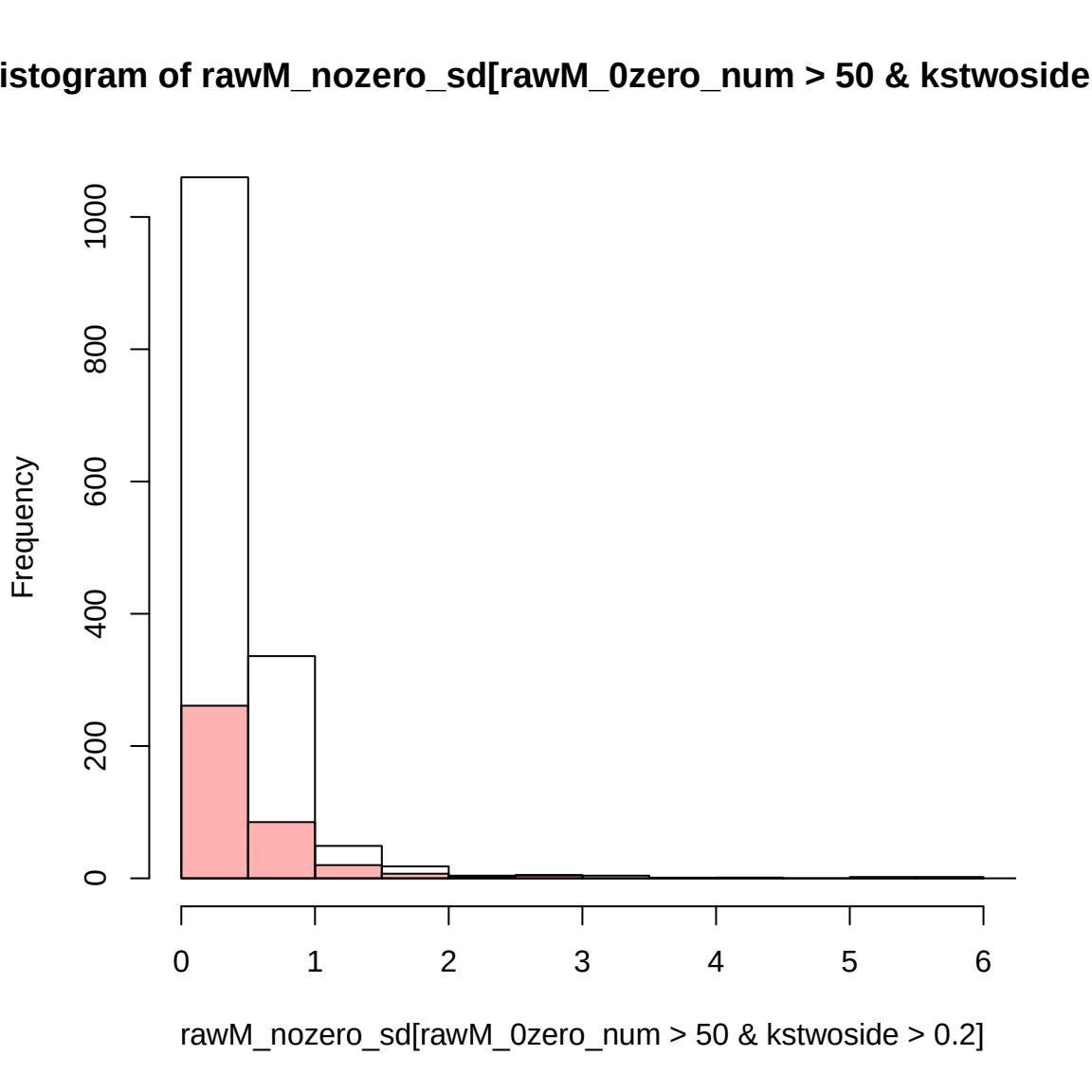

KSless nonsig: individual expression cell count of gene#13
Frequency
0
1
2
3
4
5
6
7
0
5
10
15
20
table(meta$individual[non_zero_flag])

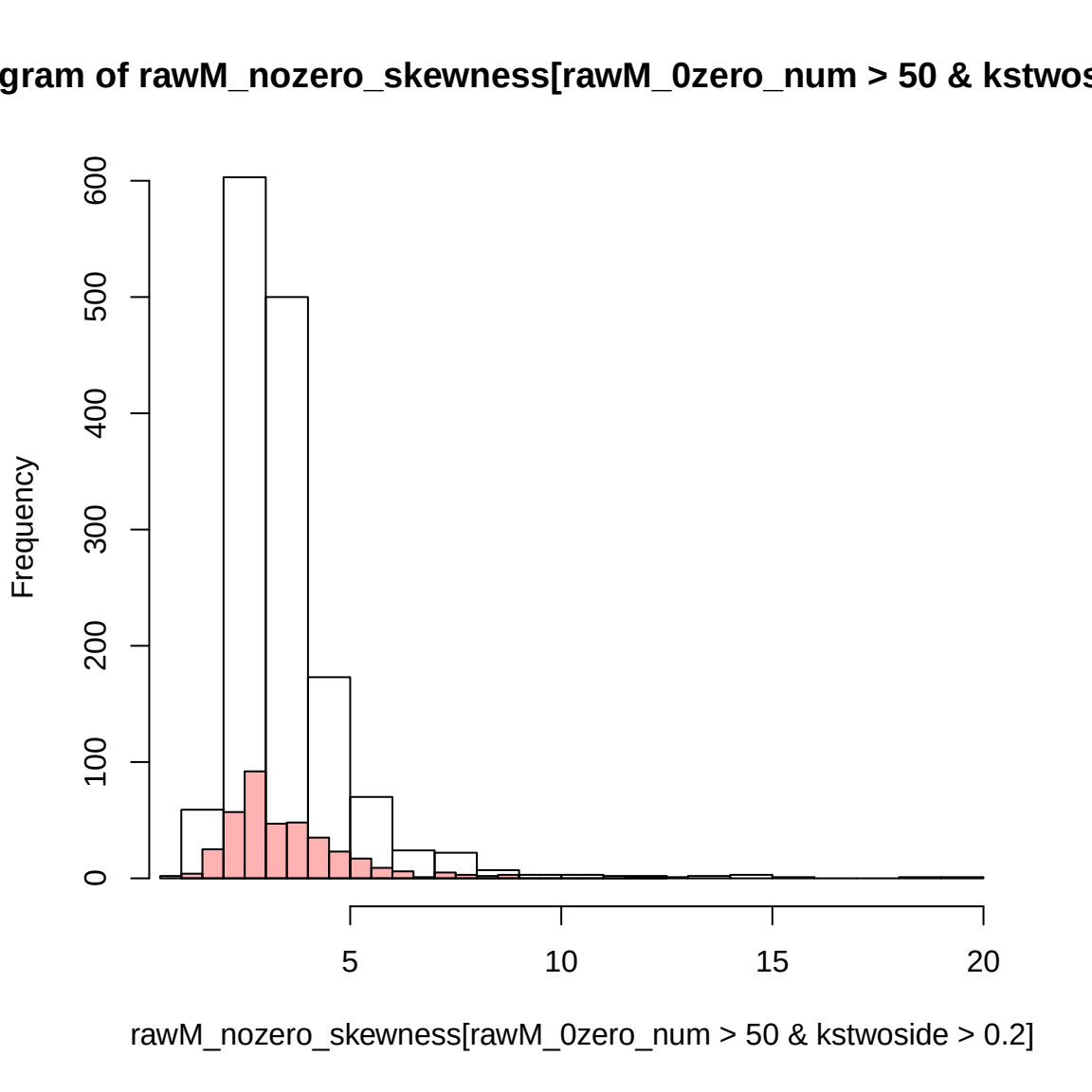

nonsig: log expression of gene#14, pval ob=0.2391, non−zero nu
Frequency
0
50
100
150
200
1.0
1.5
2.0
2.5
3.0
3.5
4.0
rawM[i, non_zero_flag]
ind#: 27, diag#: 2

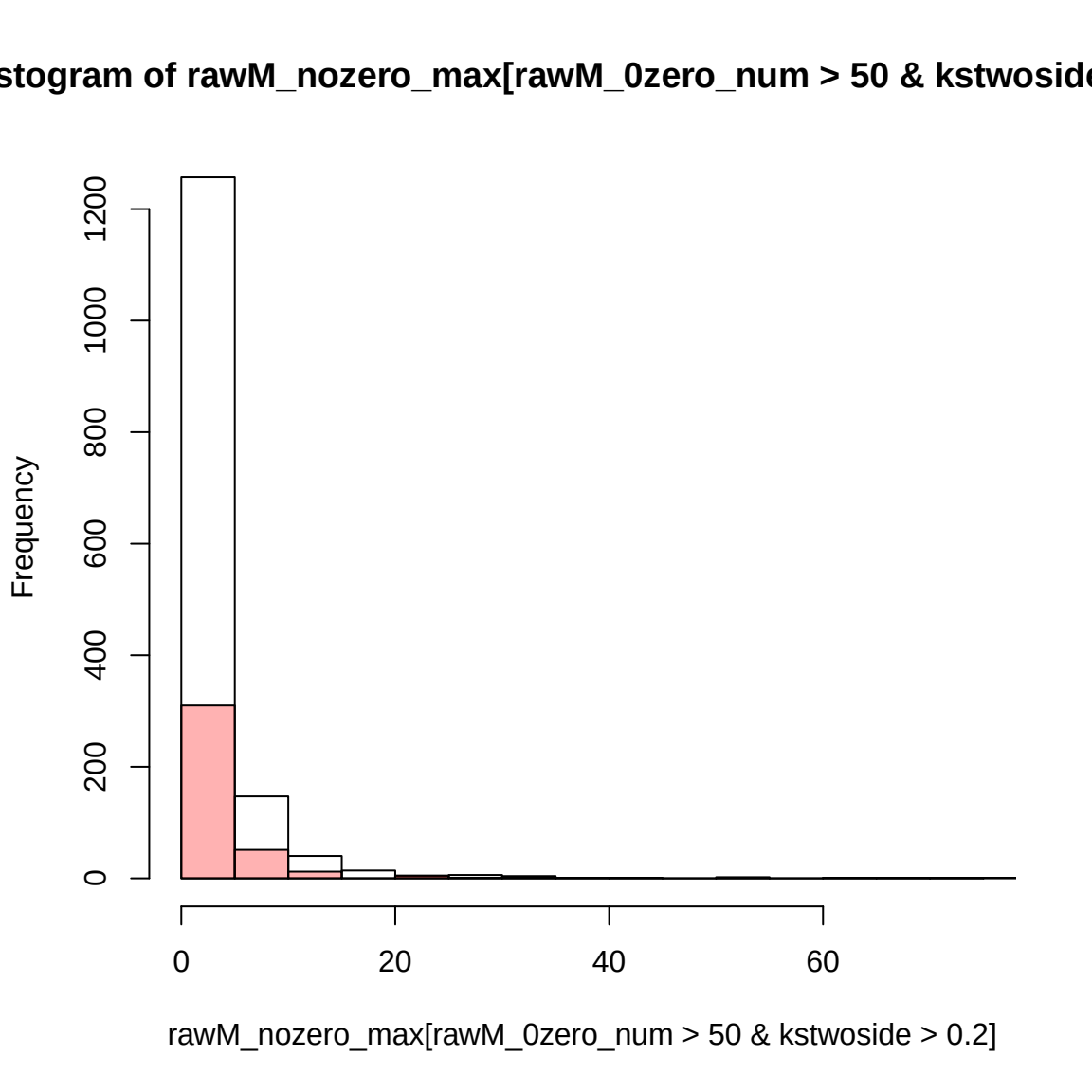

KSless nonsig: individual expression cell count of gene#14
Frequency
0
2
4
6
8
0
5
10
15
20
25
30
35
table(meta$individual[non_zero_flag])

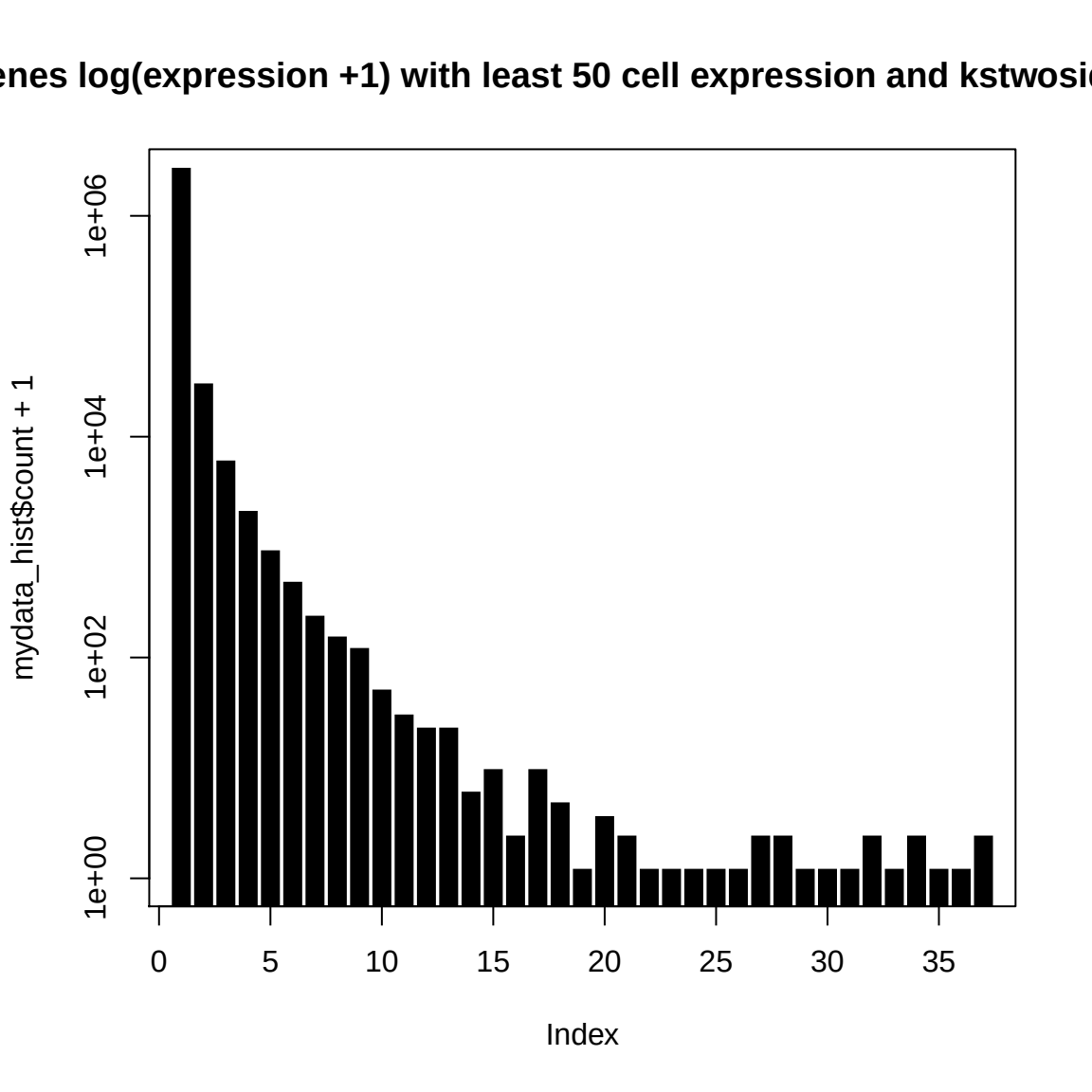

stogram of rawM_nozero_mean[rawM_0zero_num > 50 & kstwosid
Frequency
0
200
400
600
800
1000
1200
1400
2
4
6
8
rawM_nozero_mean[rawM_0zero_num > 50 & kstwoside > 0.2]

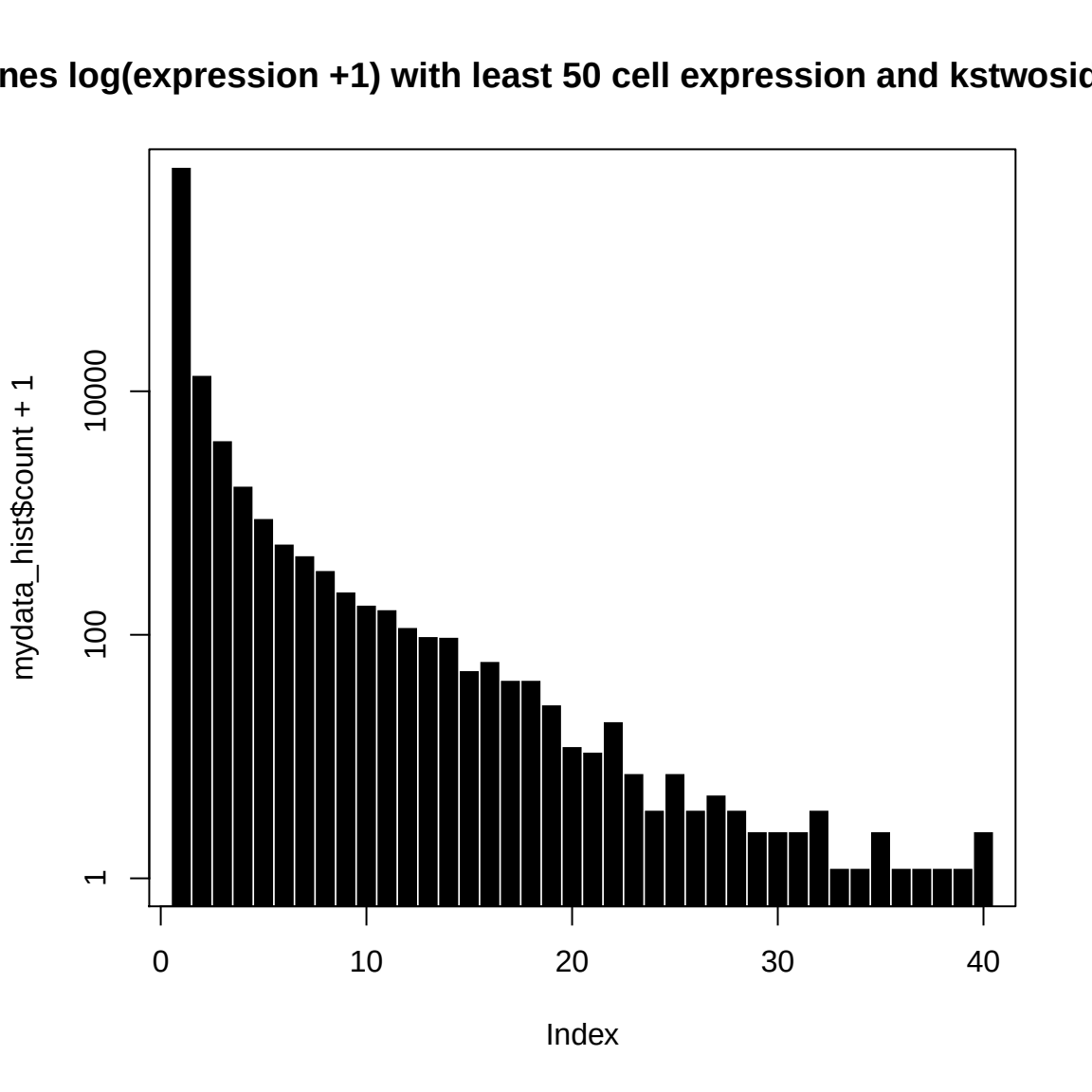

ogram of rawM_nozero_median[rawM_0zero_num > 50 & kstwosi
Frequency
0
500
1000
1
2
3
4
5
6
7
rawM_nozero_median[rawM_0zero_num > 50 & kstwoside > 0.2]

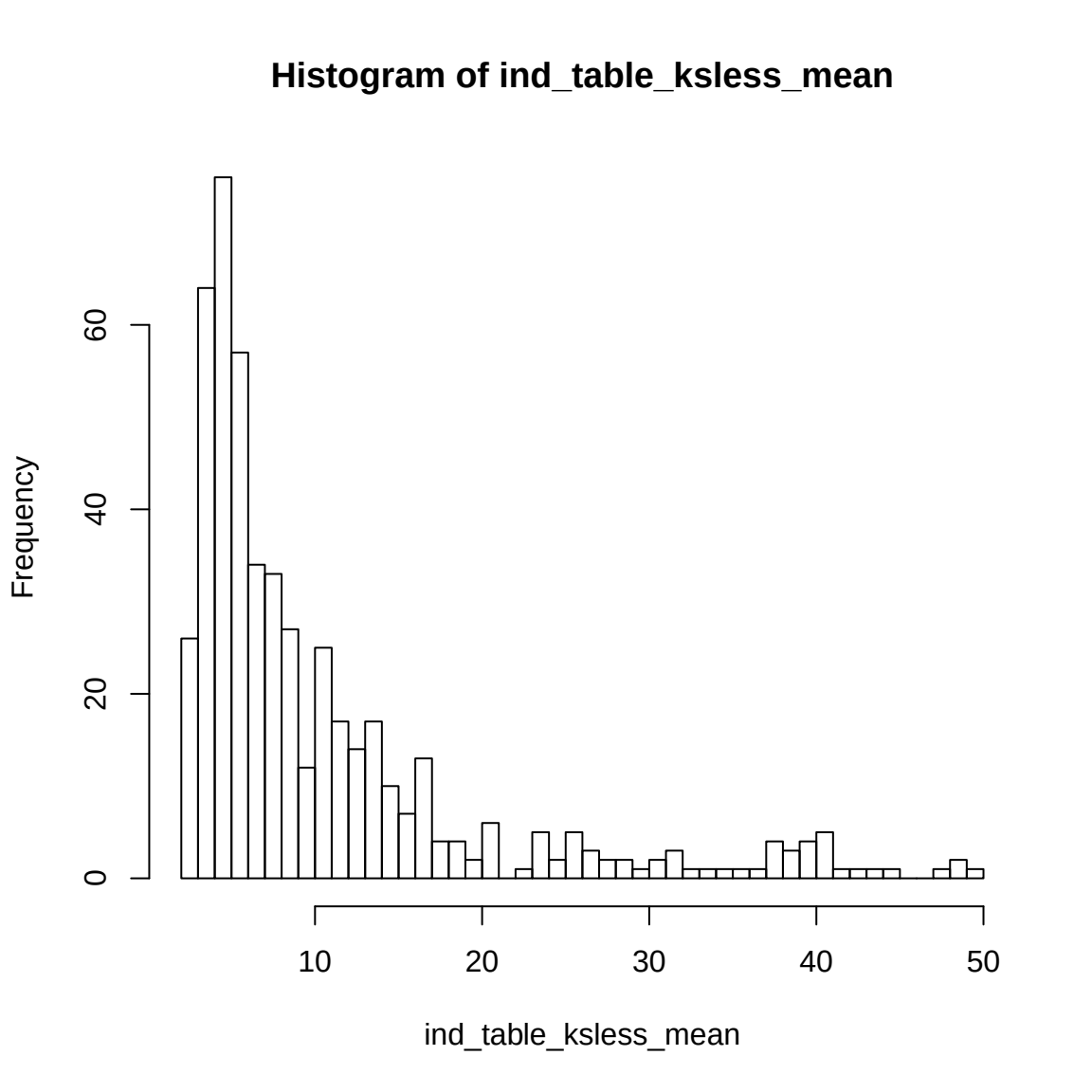

istogram of rawM_nozero_sd[rawM_0zero_num > 50 & kstwoside
Frequency
0
200
400
600
800
1000
0
1
2
3
4
5
6
rawM_nozero_sd[rawM_0zero_num > 50 & kstwoside > 0.2]

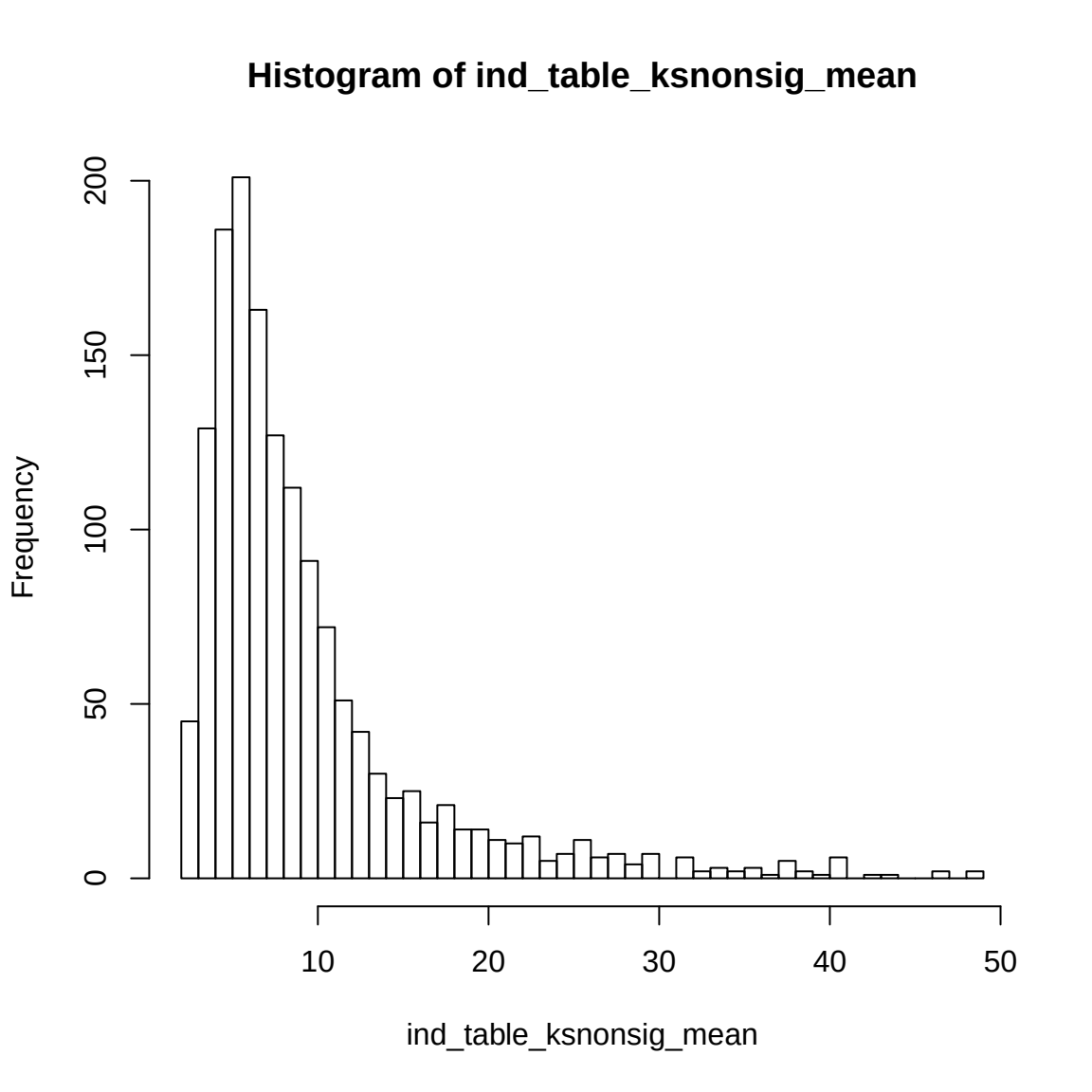

gram of rawM_nozero_skewness[rawM_0zero_num > 50 & kstwos
Frequency
0
100
200
300
400
500
600
5
10
15
20
rawM_nozero_skewness[rawM_0zero_num > 50 & kstwoside > 0.2]

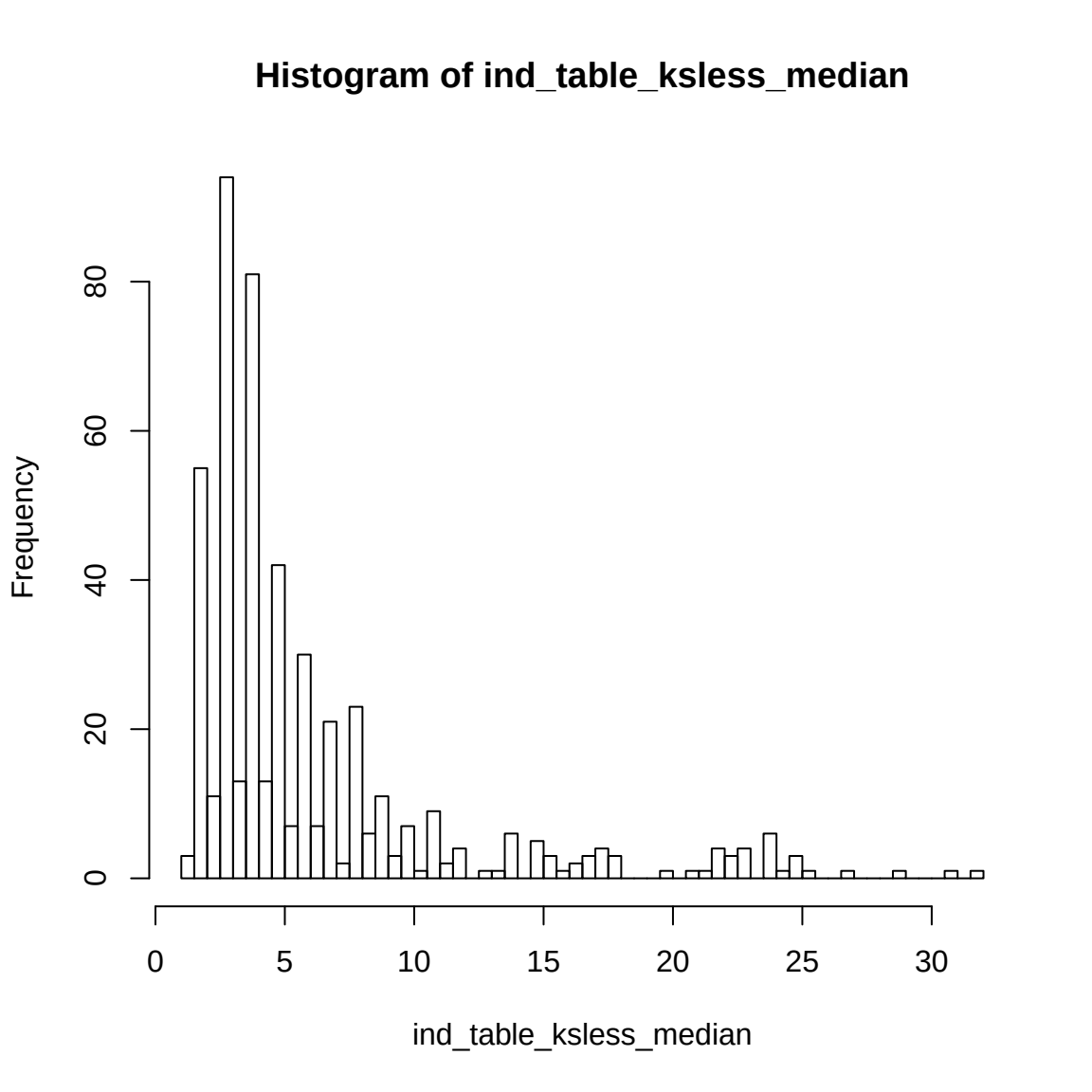

stogram of rawM_nozero_max[rawM_0zero_num > 50 & kstwoside
Frequency
0
200
400
600
800
1000
1200
0
20
40
60
rawM_nozero_max[rawM_0zero_num > 50 & kstwoside > 0.2]

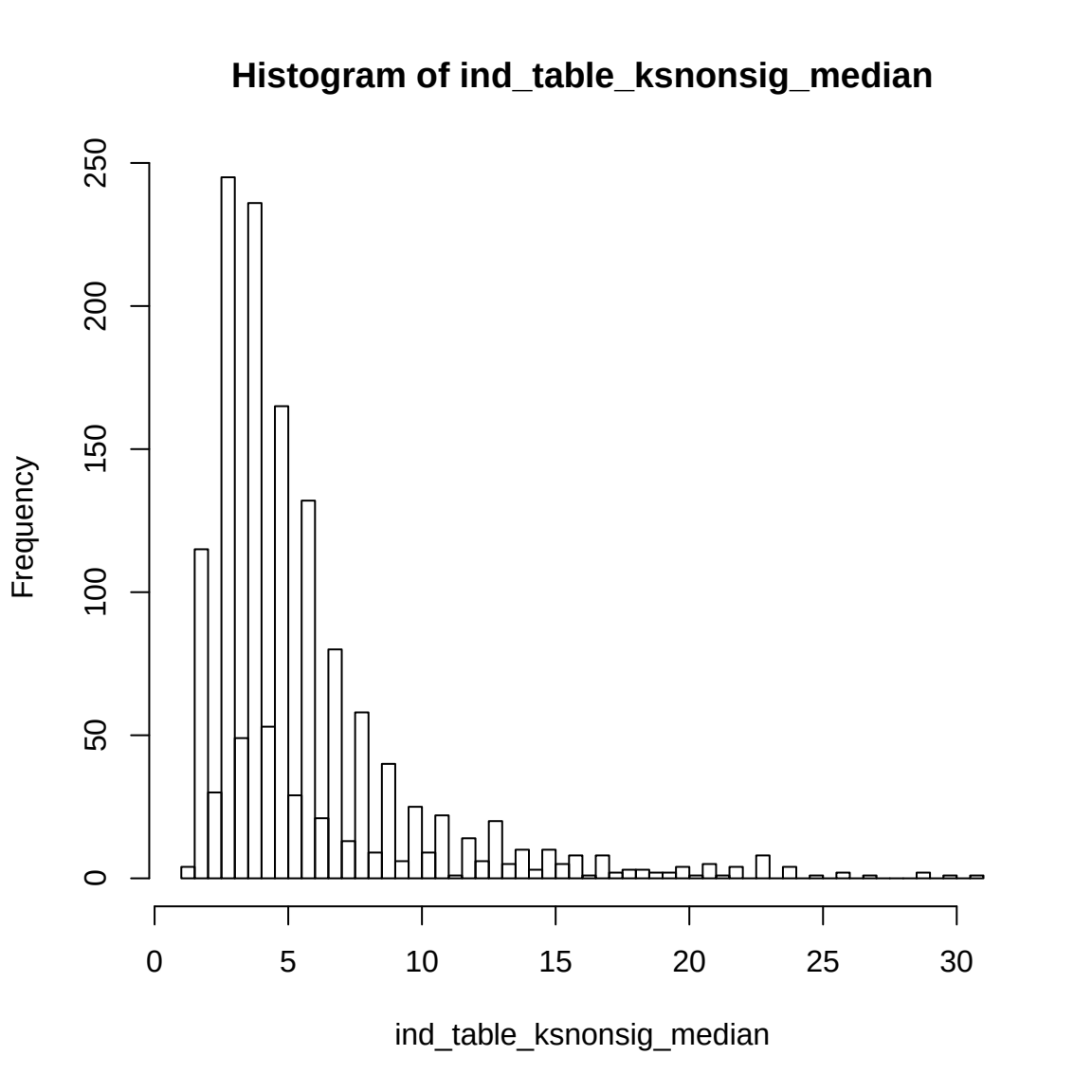

enes log(expression +1) with least 50 cell expression and kstwosi
mydata_hist$count + 1
1e+00
1e+02
1e+04
1e+06
0
5
10
15
20
25
30
35
Index

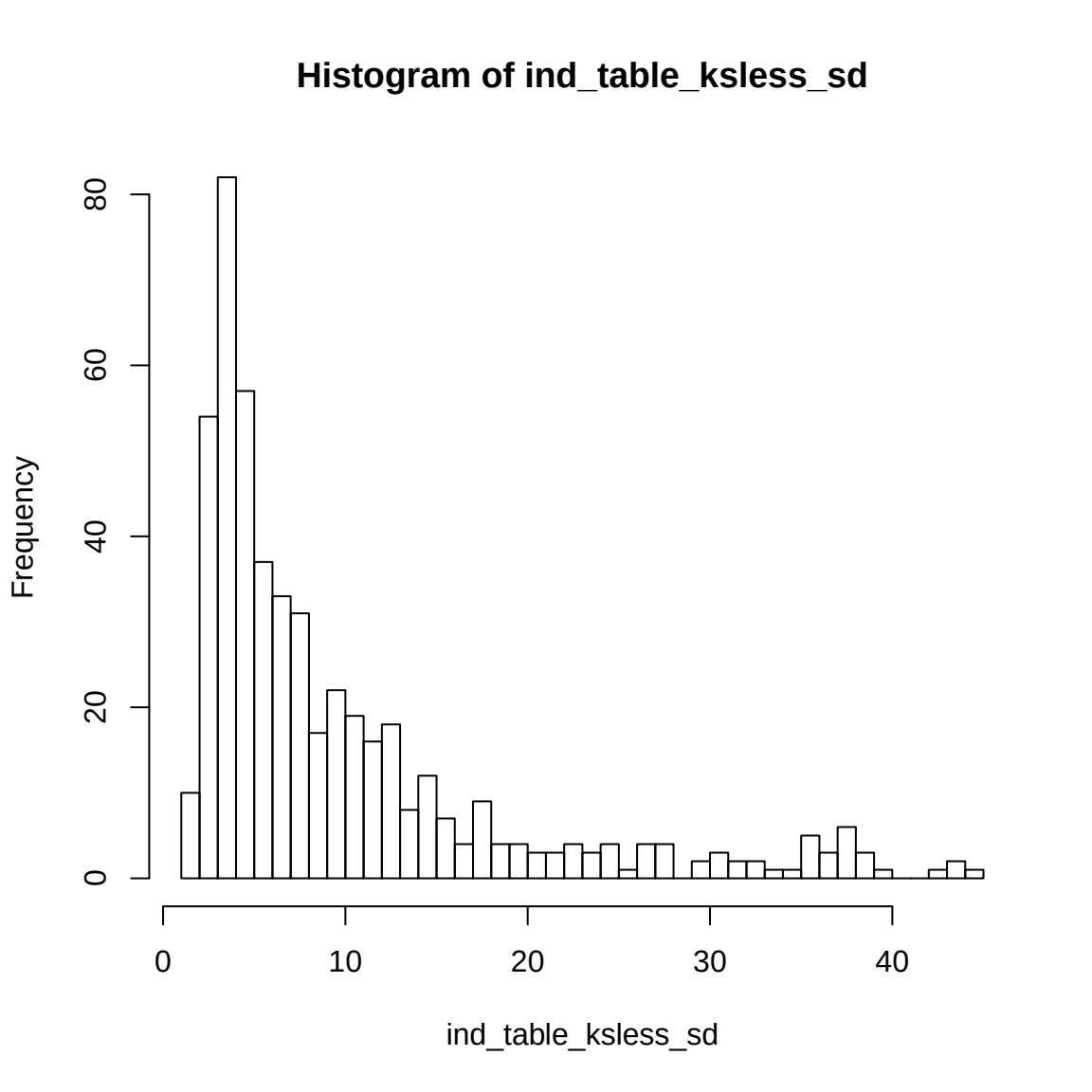

nes log(expression +1) with least 50 cell expression and kstwosic
mydata_hist$count + 1
1
100
10000
0
10
20
30
40
Index

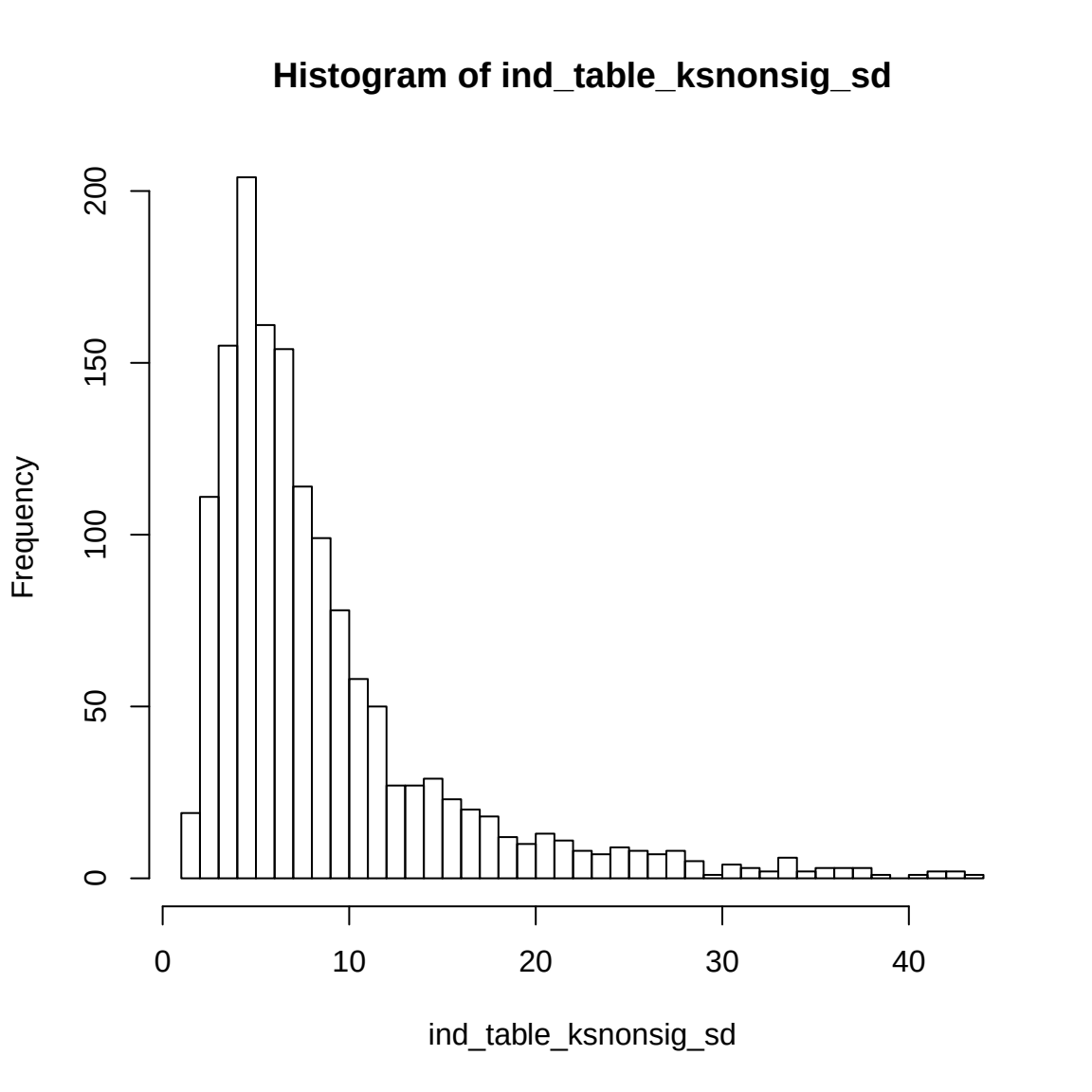

Histogram of ind_table_ksless_mean
Frequency
0
20
40
60
10
20
30
40
50
ind_table_ksless_mean

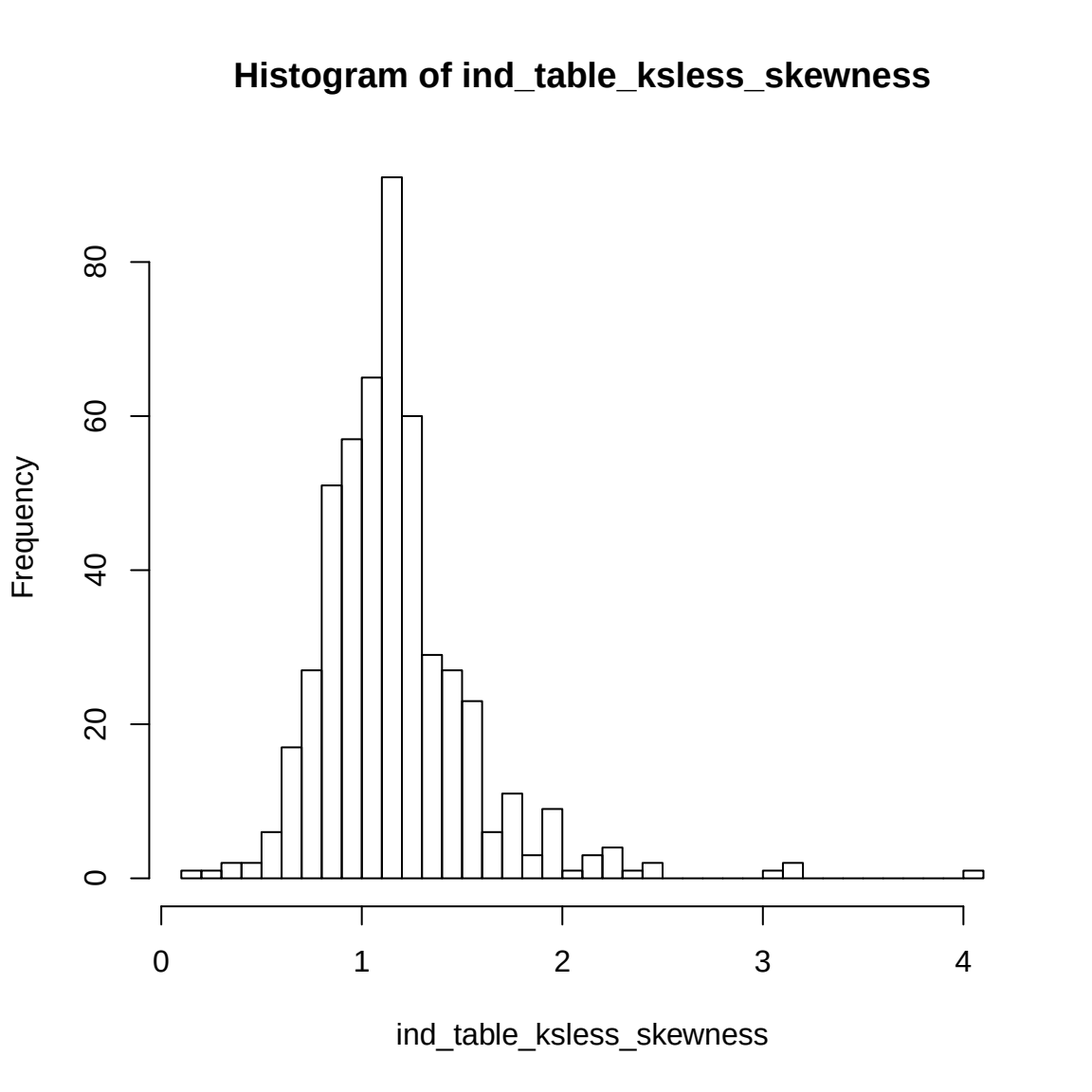

Histogram of ind_table_ksnonsig_mean
Frequency
0
50
100
150
200
10
20
30
40
50
ind_table_ksnonsig_mean

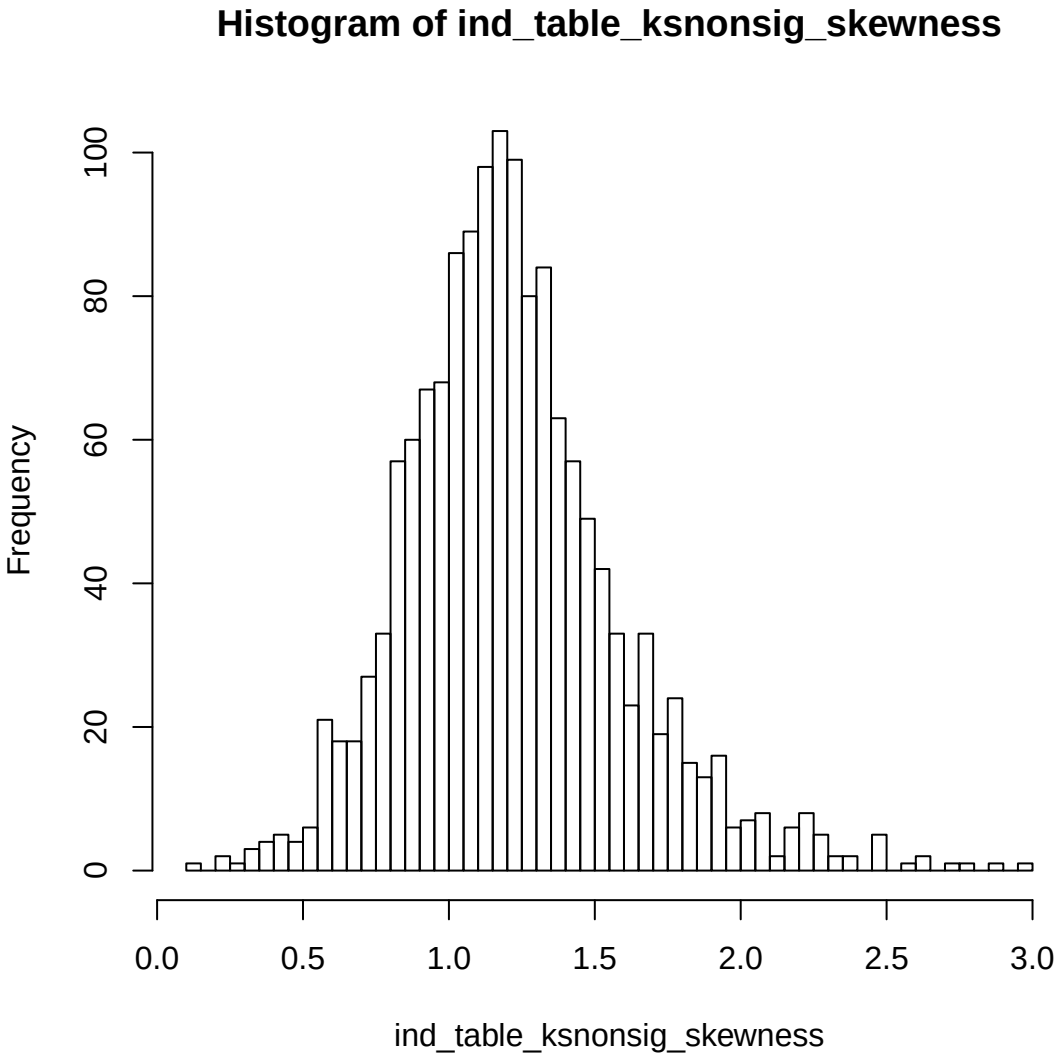

Histogram of ind_table_ksless_median
Frequency
0
20
40
60
80
0
5
10
15
20
25
30
ind_table_ksless_median

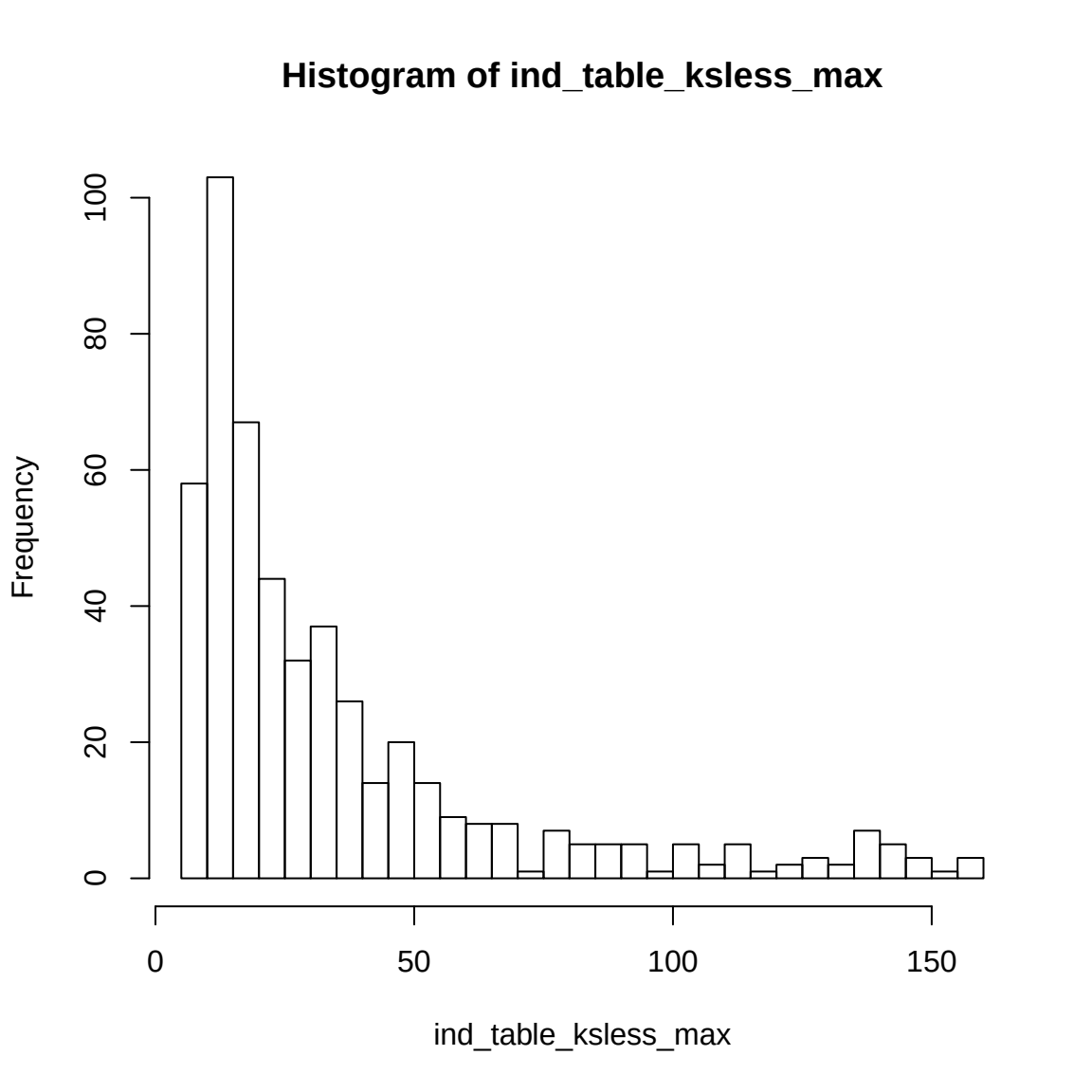

Histogram of ind_table_ksnonsig_median
Frequency
0
50
100
150
200
250
0
5
10
15
20
25
30
ind_table_ksnonsig_median

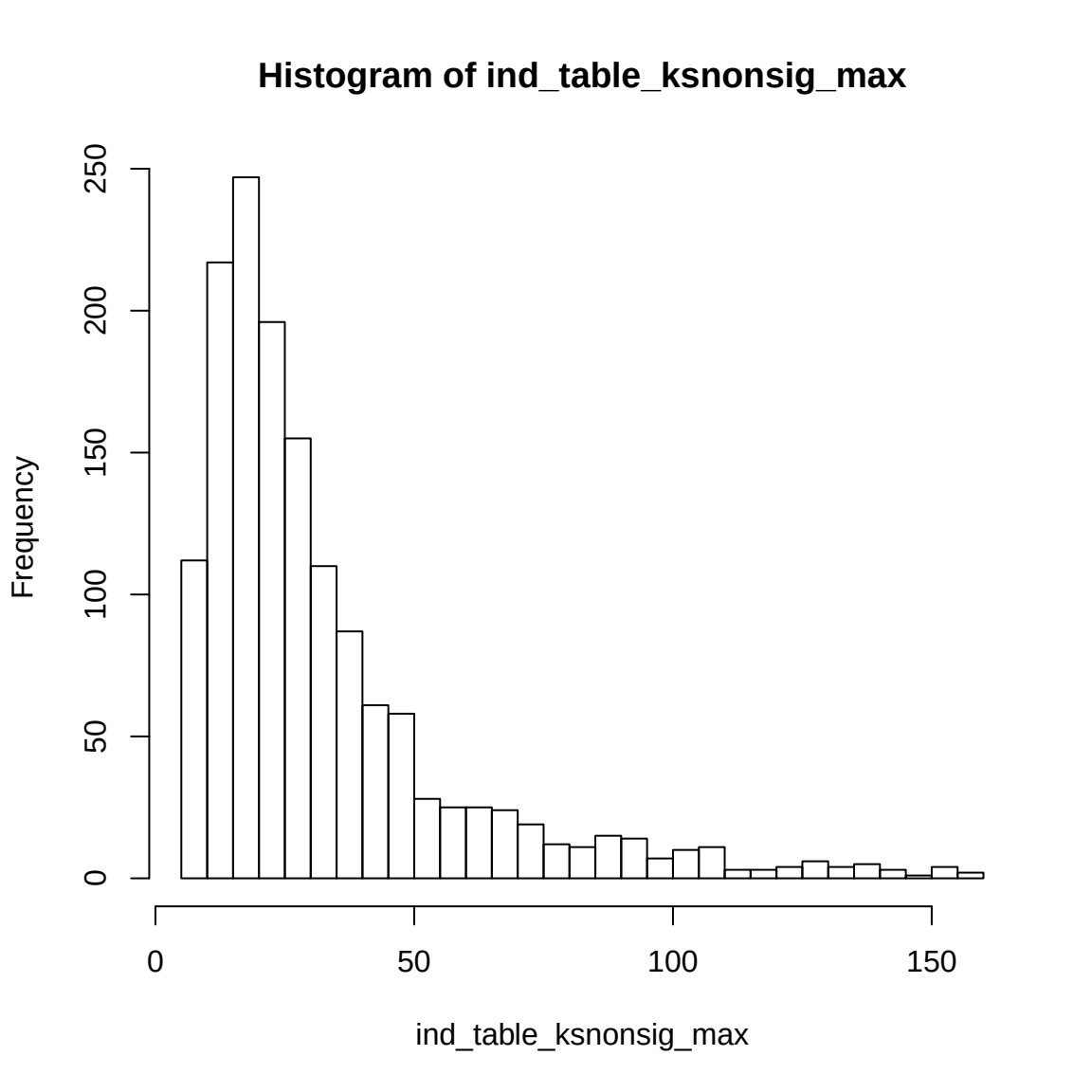

Histogram of ind_table_ksless_sd
Frequency
0
20
40
60
80
0
10
20
30
40
ind_table_ksless_sd


Histogram of ind_table_ksnonsig_sd
Frequency
0
50
100
150
200
0
10
20
30
40
ind_table_ksnonsig_sd


Histogram of ind_table_ksless_skewness
Frequency
0
20
40
60
80
0
1
2
3
4
ind_table_ksless_skewness


Histogram of ind_table_ksnonsig_skewness
Frequency
0
20
40
60
80
100
0.0
0.5
1.0
1.5
2.0
2.5
3.0
ind_table_ksnonsig_skewness


Histogram of ind_table_ksless_max
Frequency
0
20
40
60
80
100
0
50
100
150
ind_table_ksless_max


Histogram of ind_table_ksnonsig_max
Frequency
0
50
100
150
200
250
0
50
100
150
ind_table_ksnonsig_max