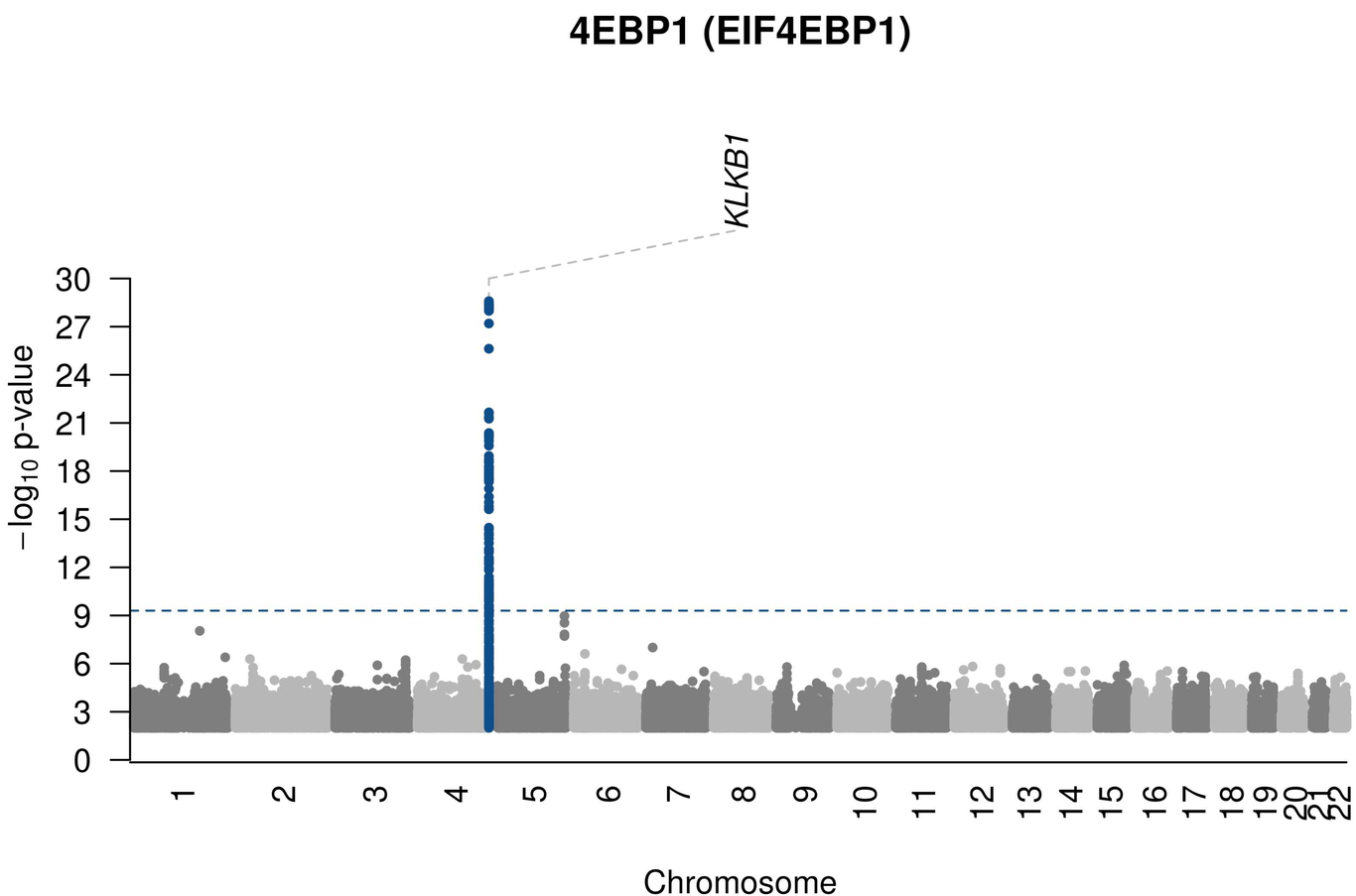
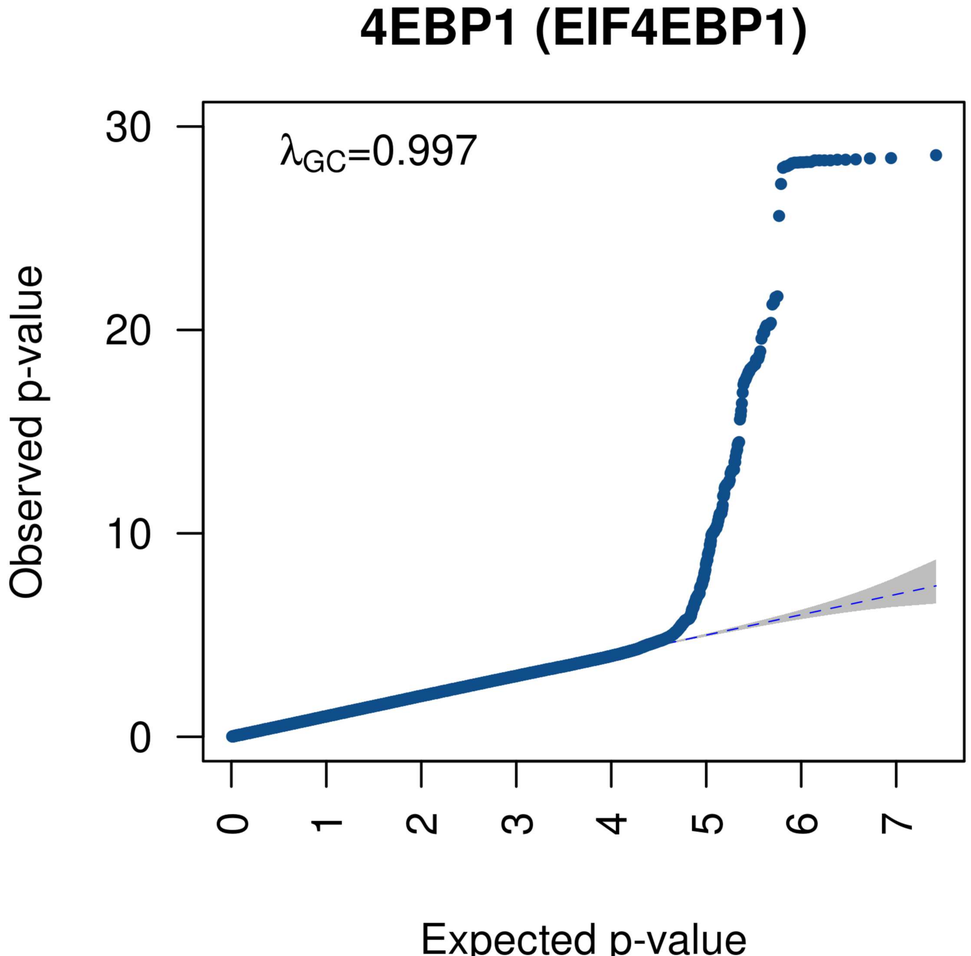
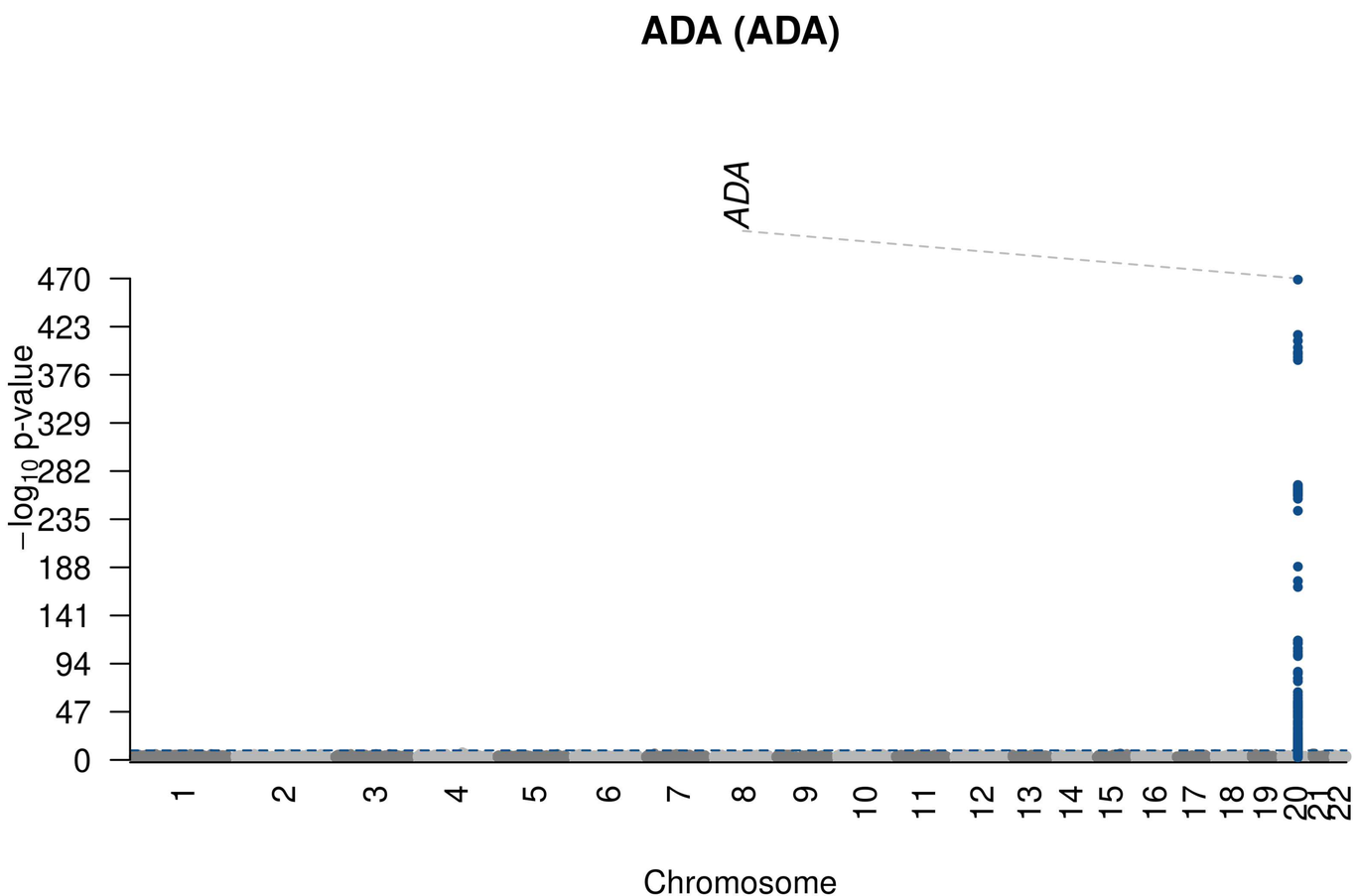
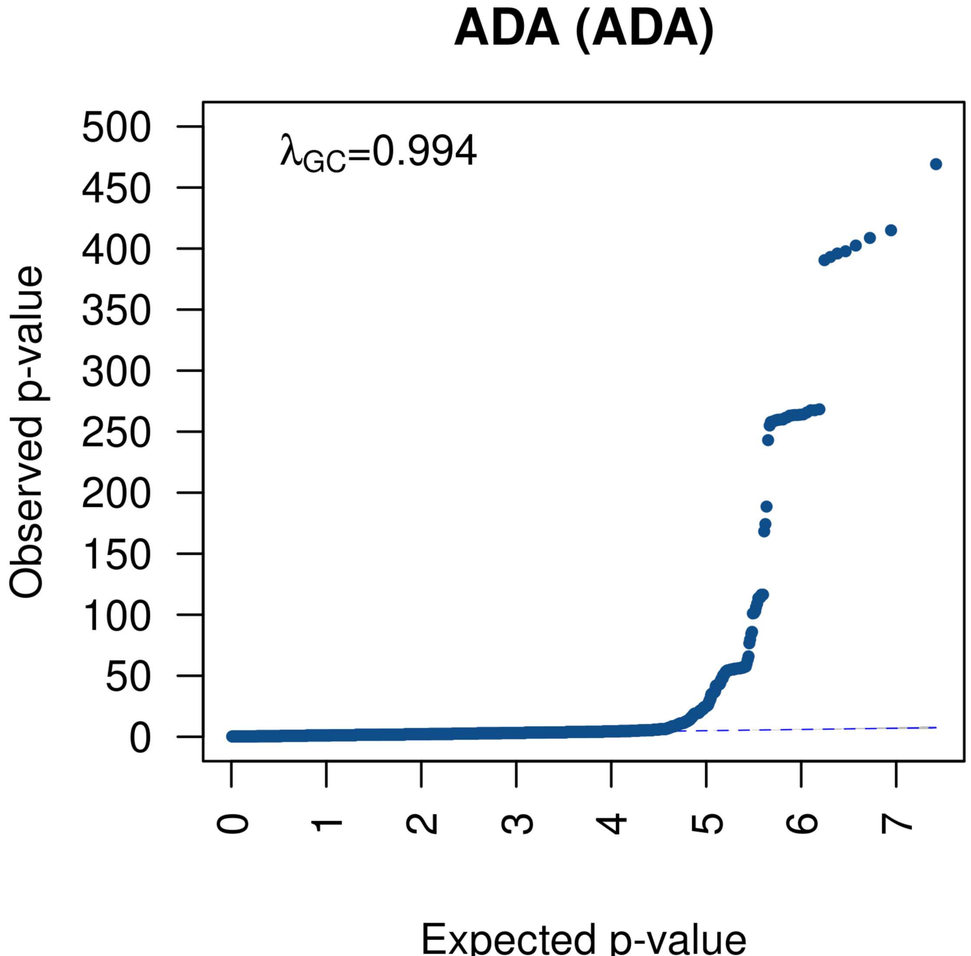
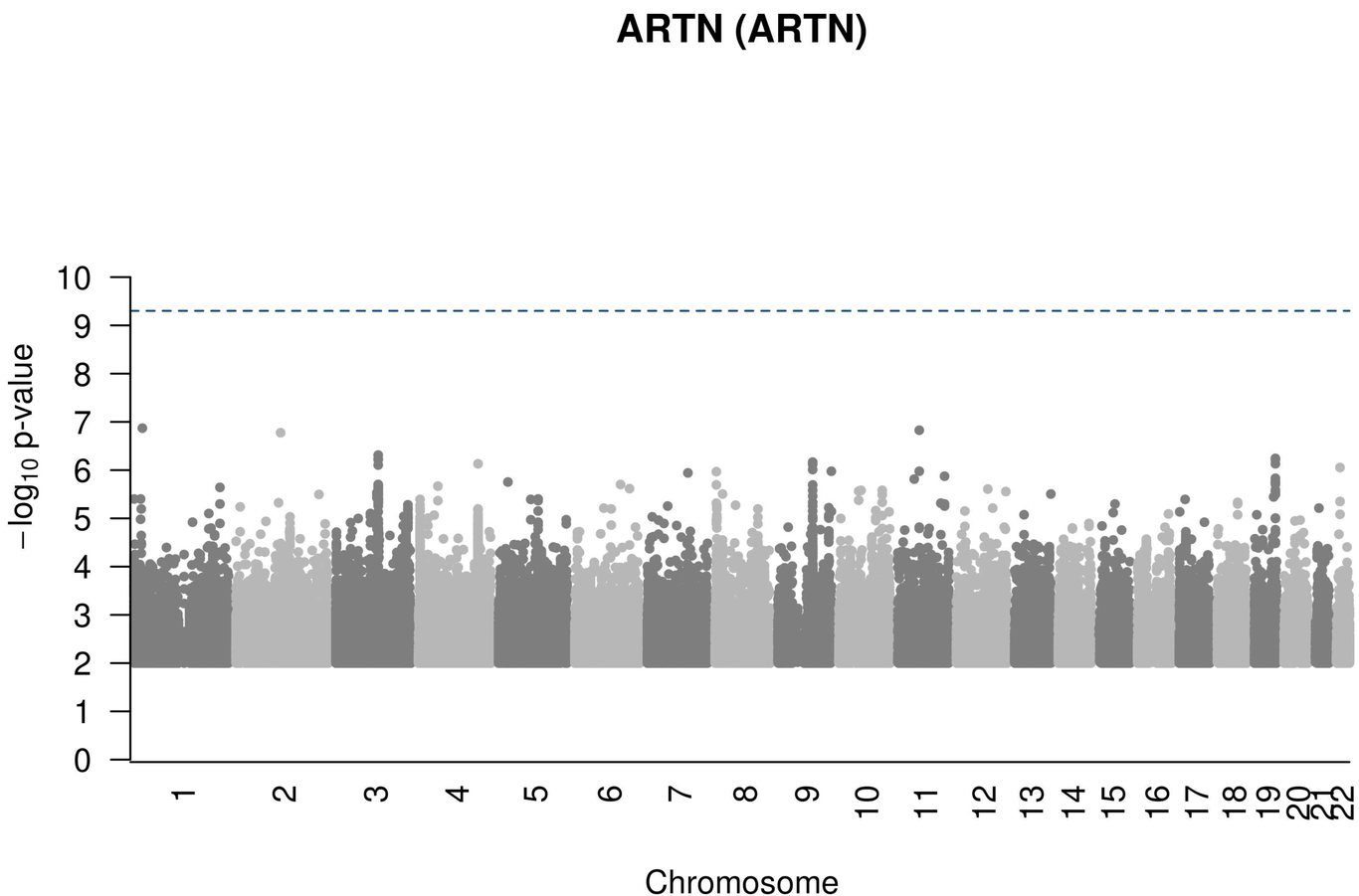
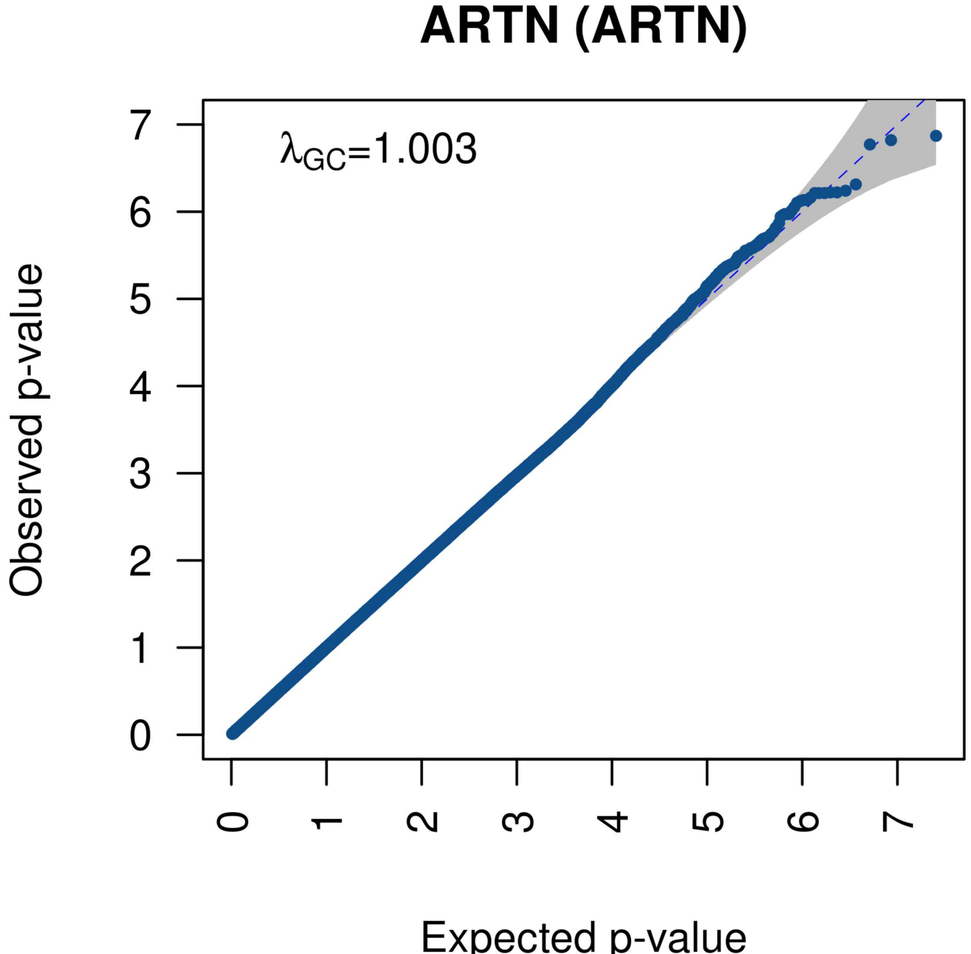

4EBP1 (EIF4EBP1)
KLKB1
−log10 p-value
30
27
24
21
18
15
12
9
6
3
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

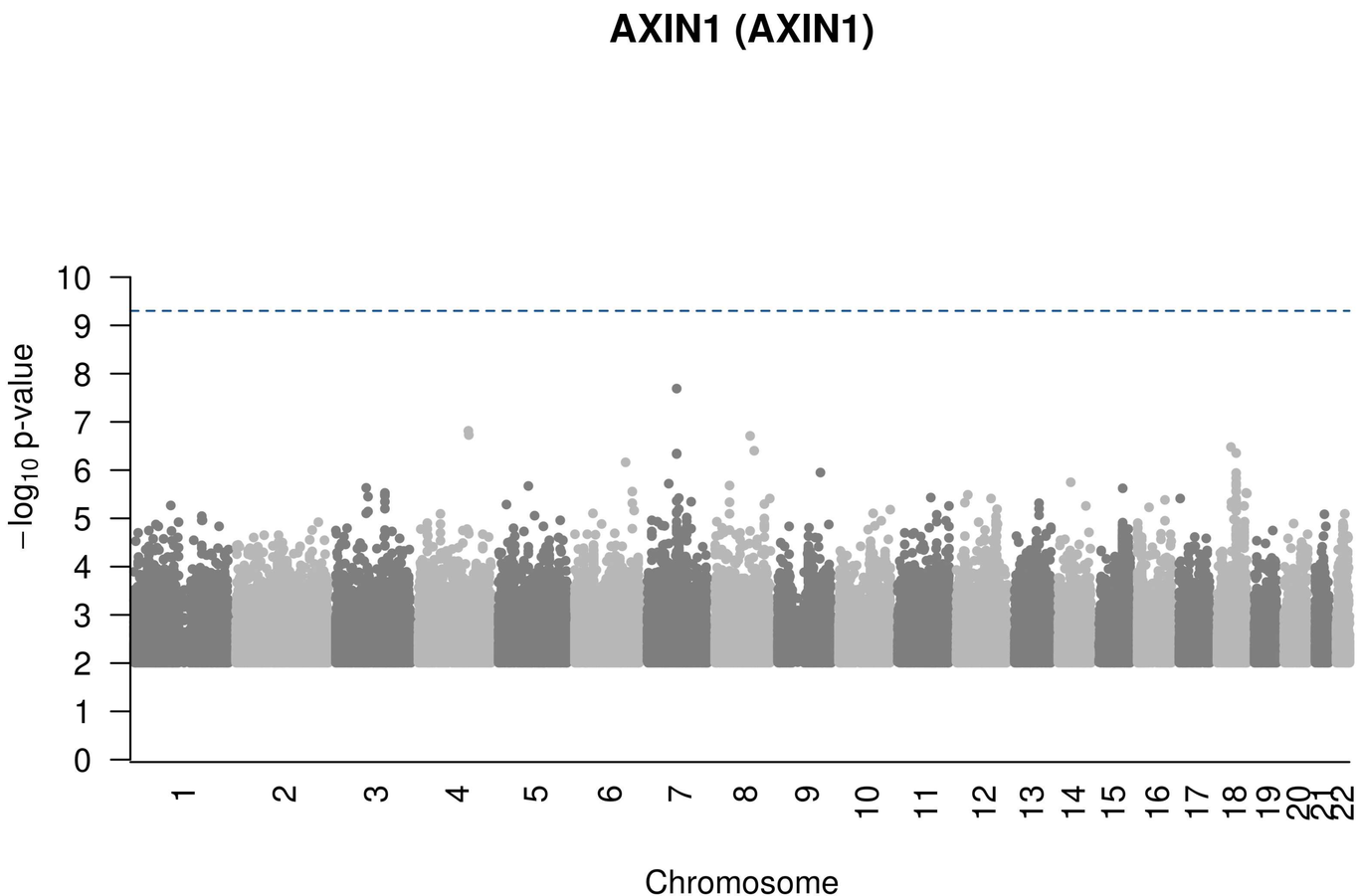

4EBP1 (EIF4EBP1)
λGC=0.997
Observed p-value
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

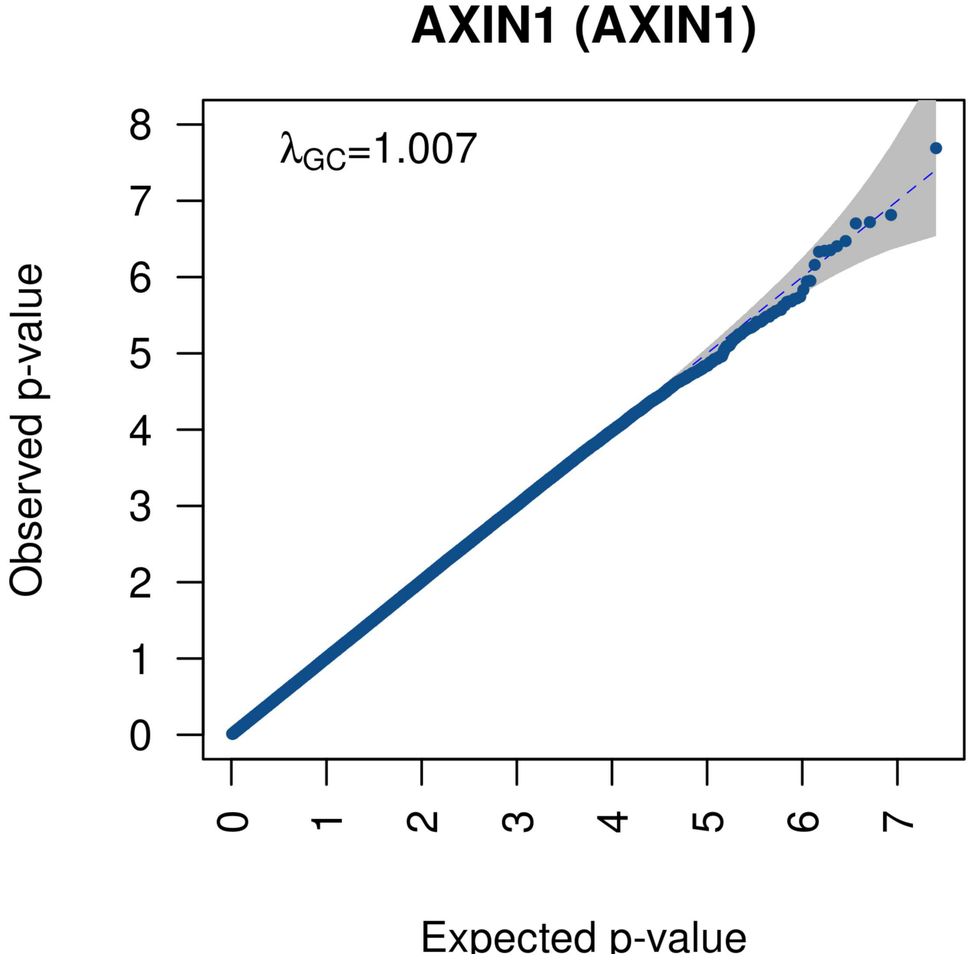

ADA (ADA)
ADA
470
423
376
329
282
235
188
141
94
47
0
−log10 p-value
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

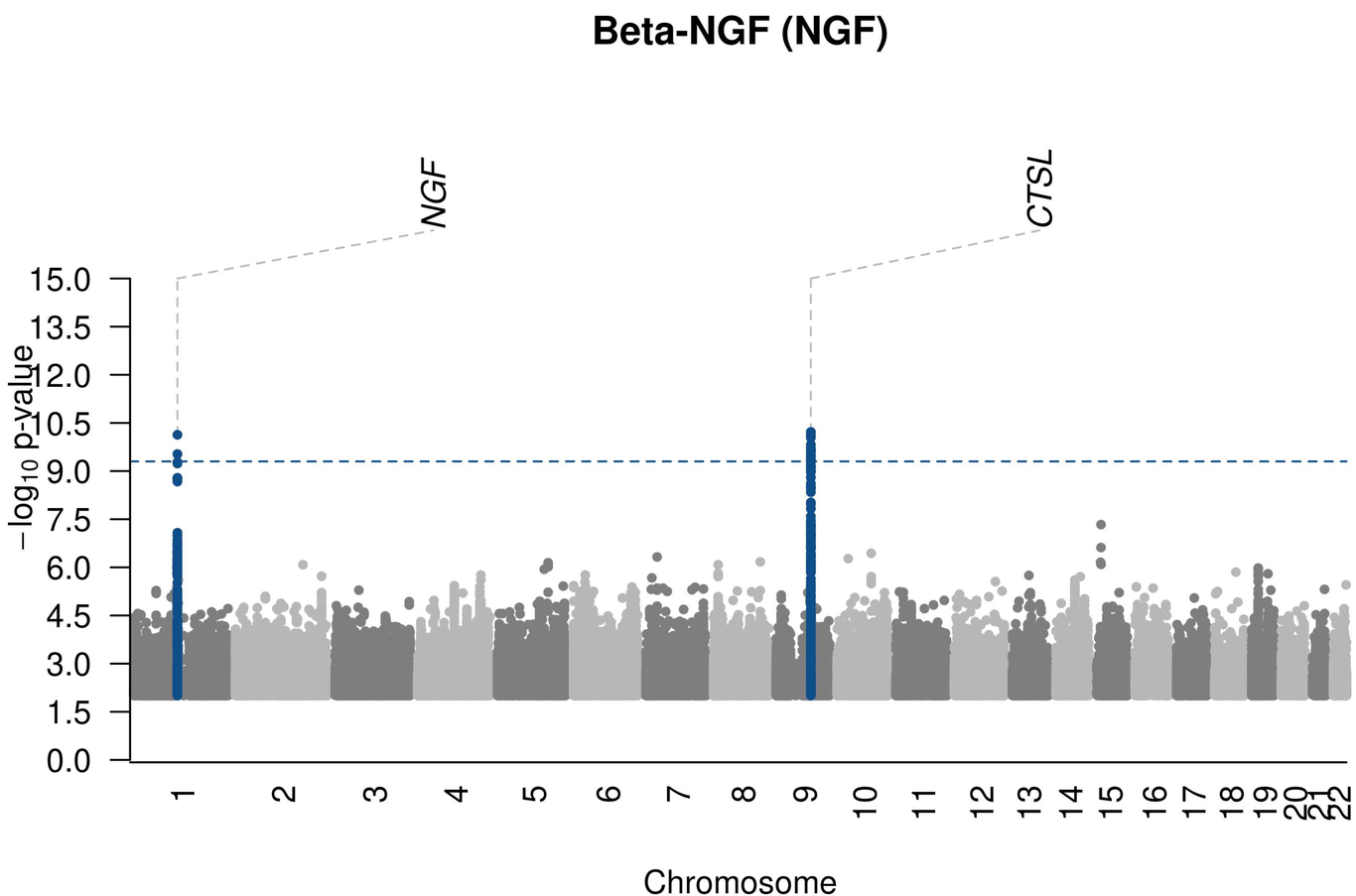

ADA (ADA)
λGC=0.994
500
450
400
350
300
250
200
150
100
50
0
Observed p-value
0
1
2
3
4
5
6
7
Expected p-value

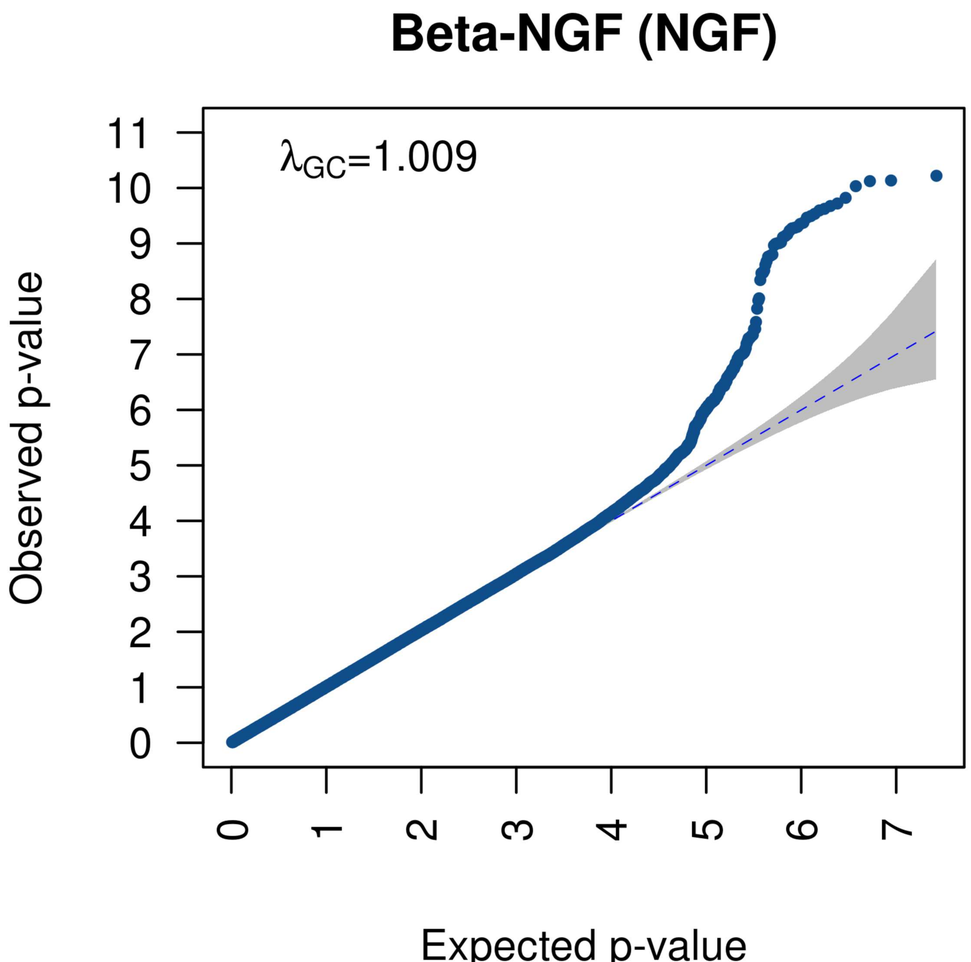

ARTN (ARTN)
−log10 p-value
Chromosome
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

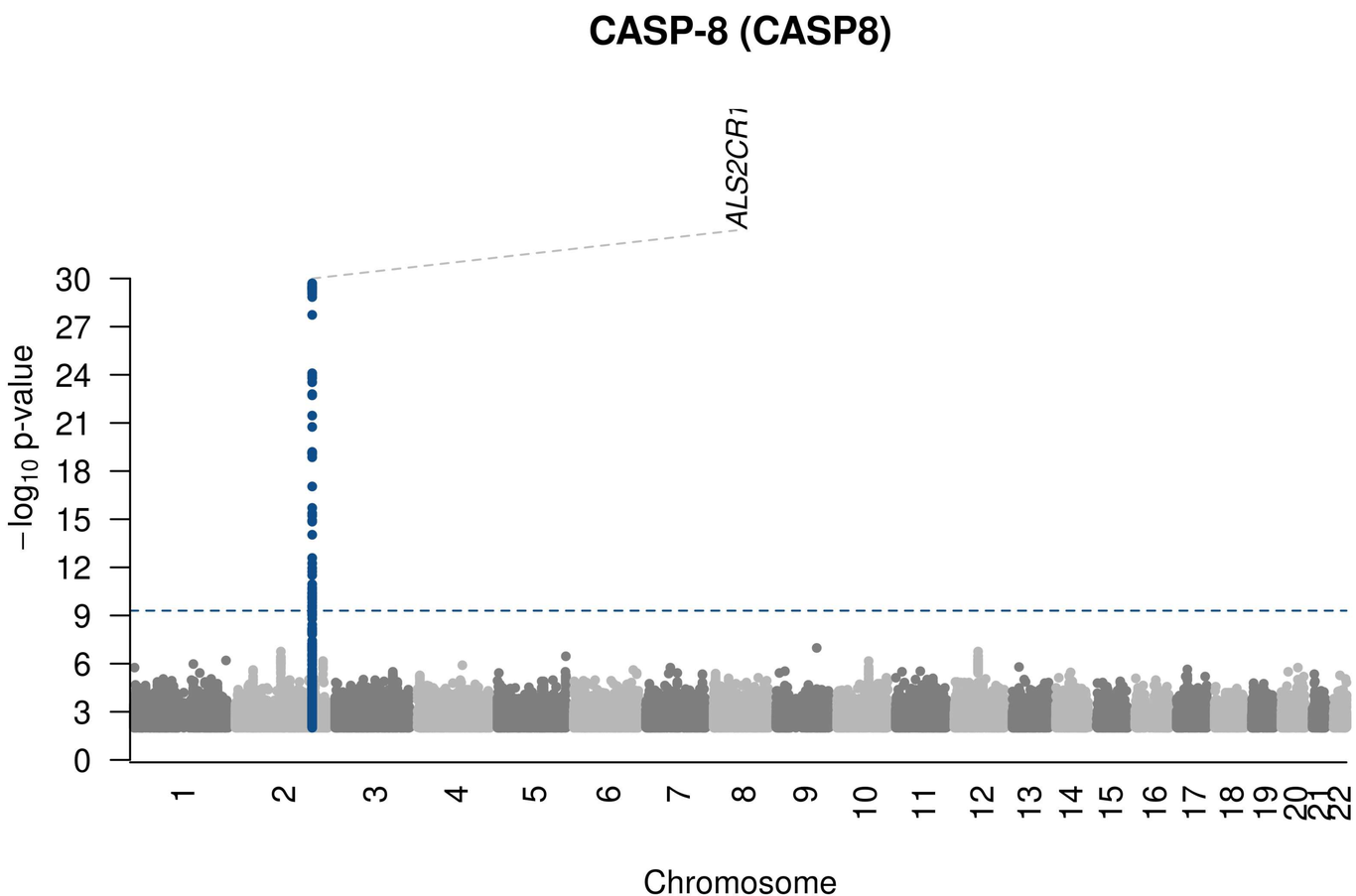

ARTN (ARTN)
λGC=1.003
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7

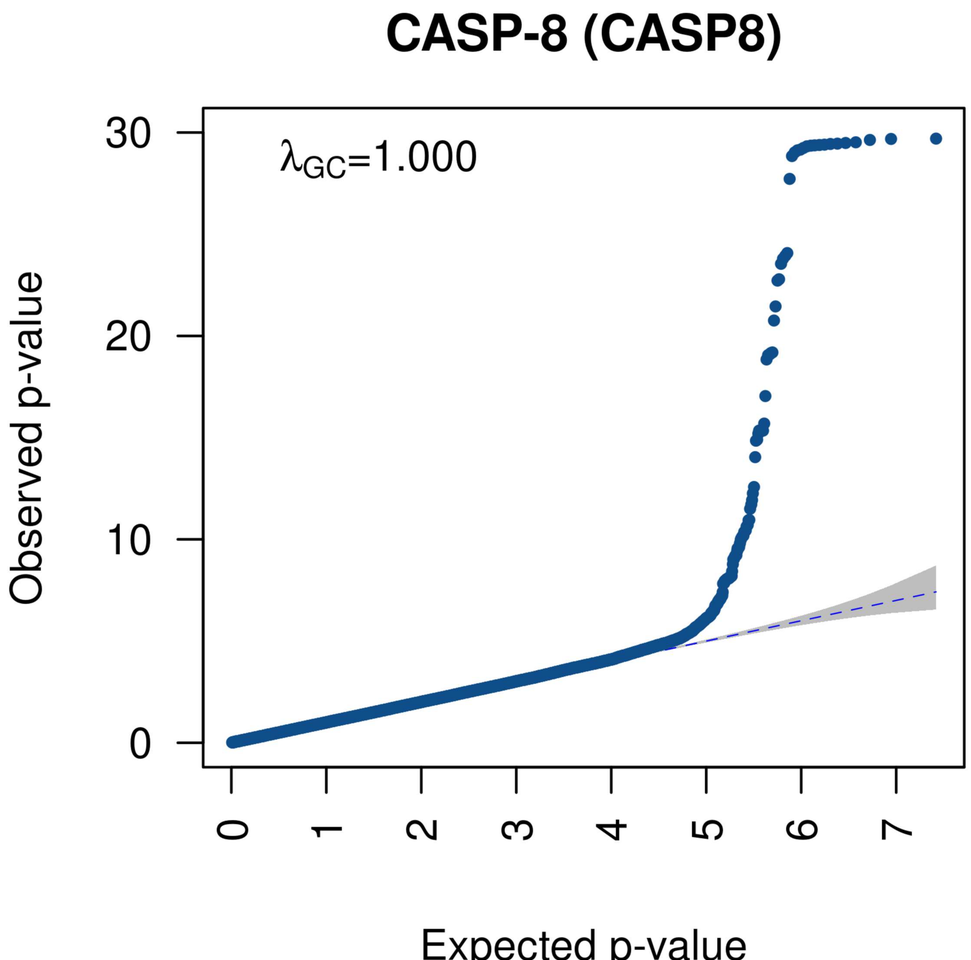

AXIN1 (AXIN1)
−log10 p-value
Chromosome
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

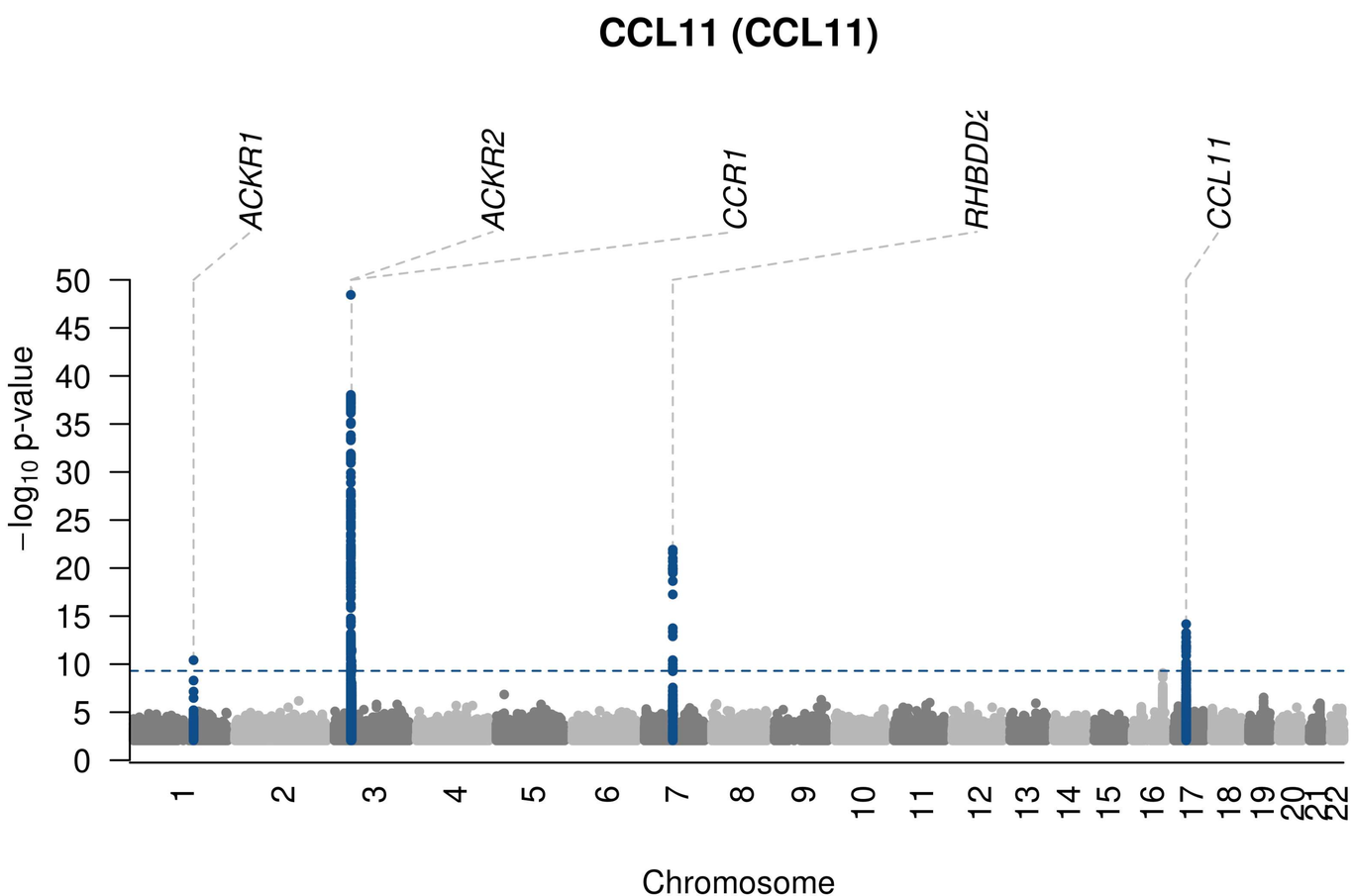

AXIN1 (AXIN1)
λGC=1.007
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7
8
0
1
2
3
4
5
6
7

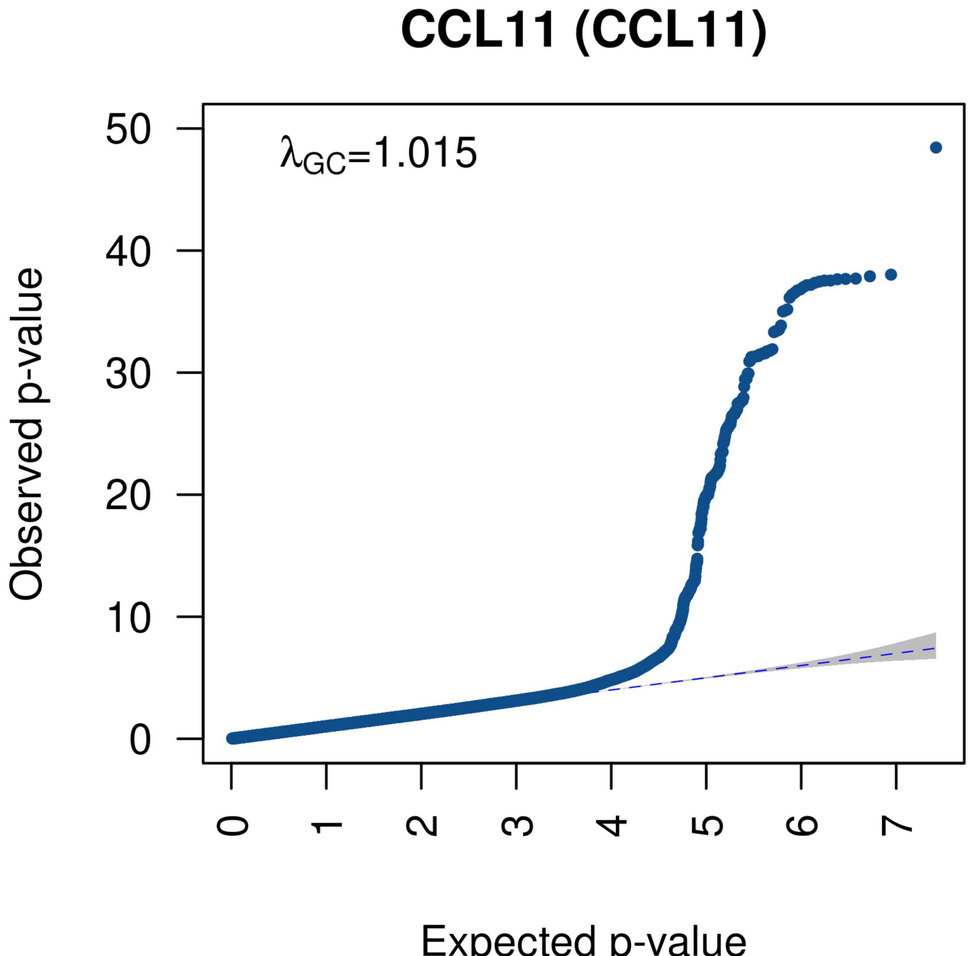

Beta-NGF (NGF)
NGF
CTSL
−log10 p-value
15.0
13.5
12.0
10.5
9.0
7.5
6.0
4.5
3.0
1.5
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Chromosome

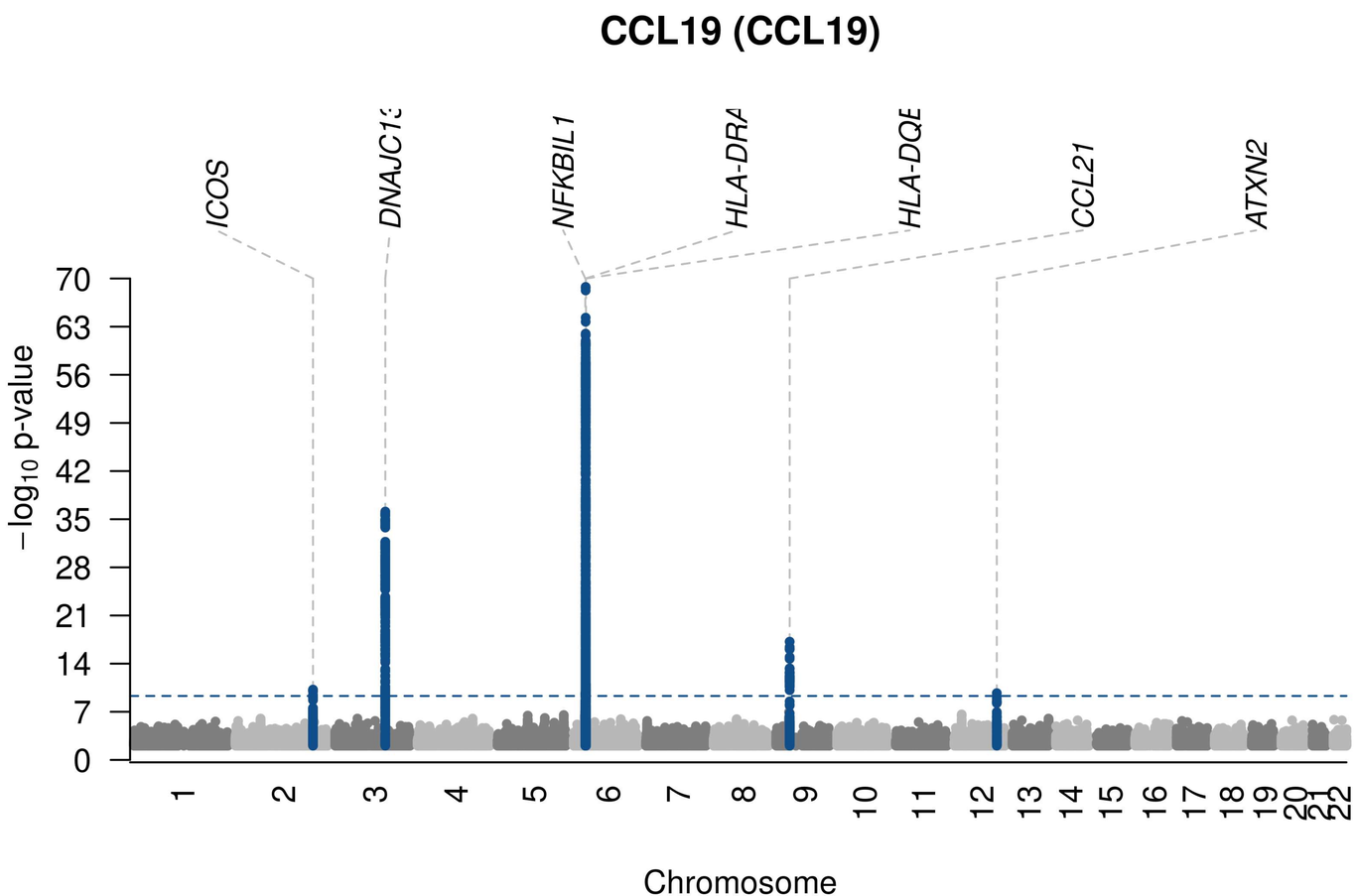

Beta-NGF (NGF)
λGC=1.009
Observed p-value
11
10
9
8
7
6
5
4
3
2
1
0
0 1 2 3 4 5 6 7
Expected p-value

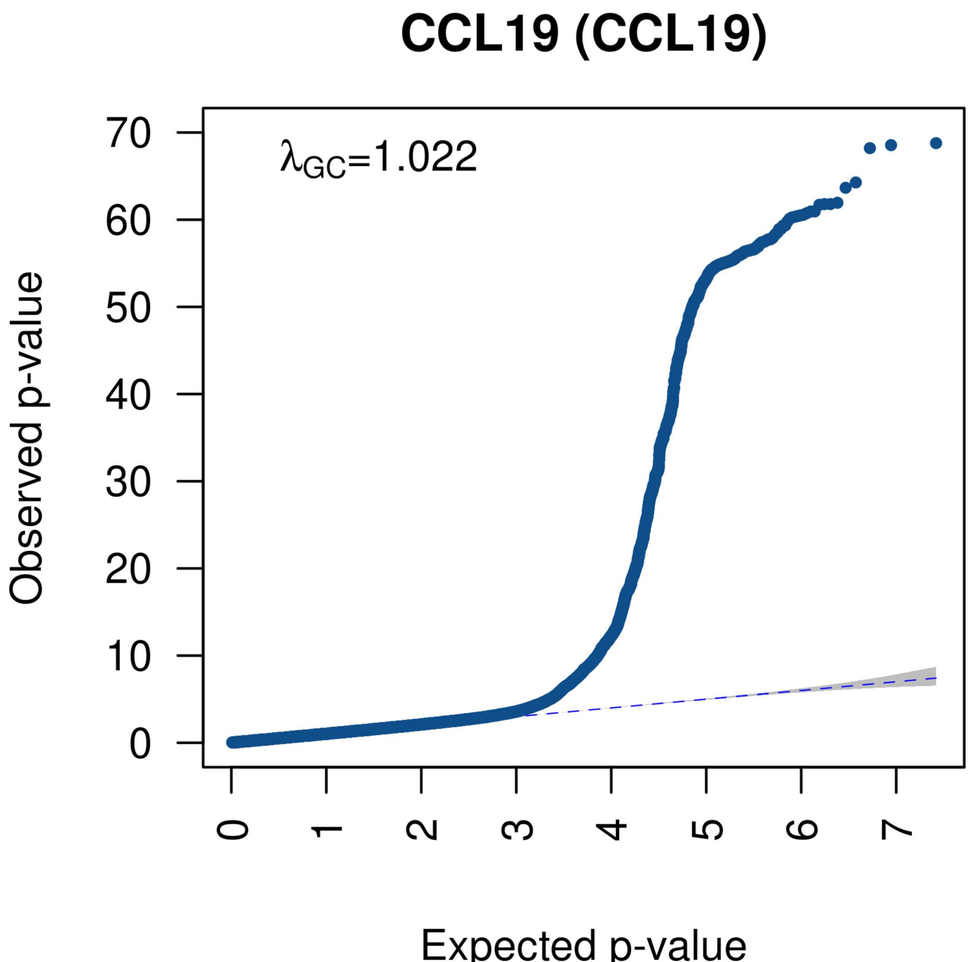

CASP-8 (CASP8)
ALS2CR1
−log10 p-value
30
27
24
21
18
15
12
9
6
3
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

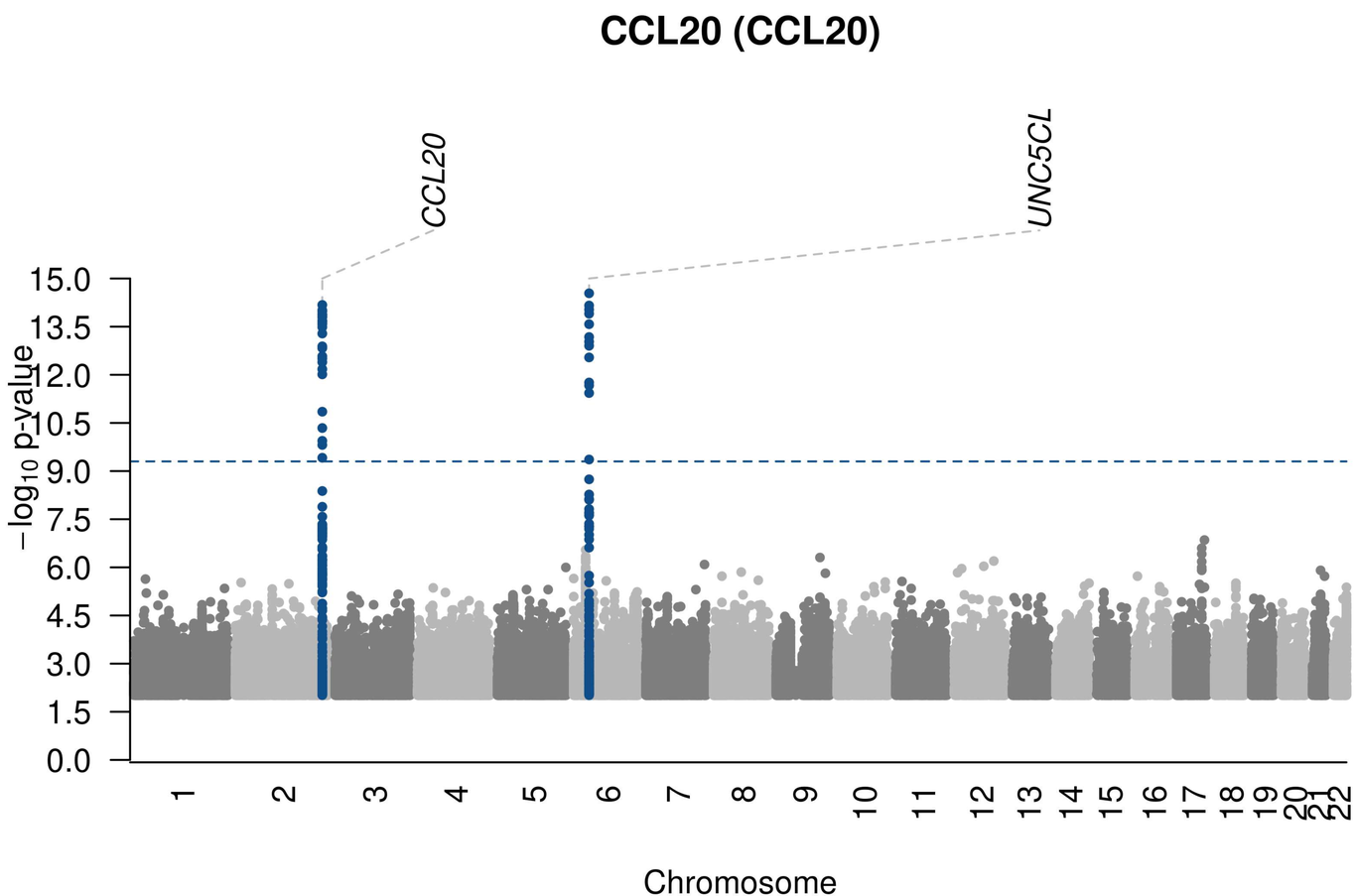

CASP-8 (CASP8)
λGC=1.000
Observed p-value
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

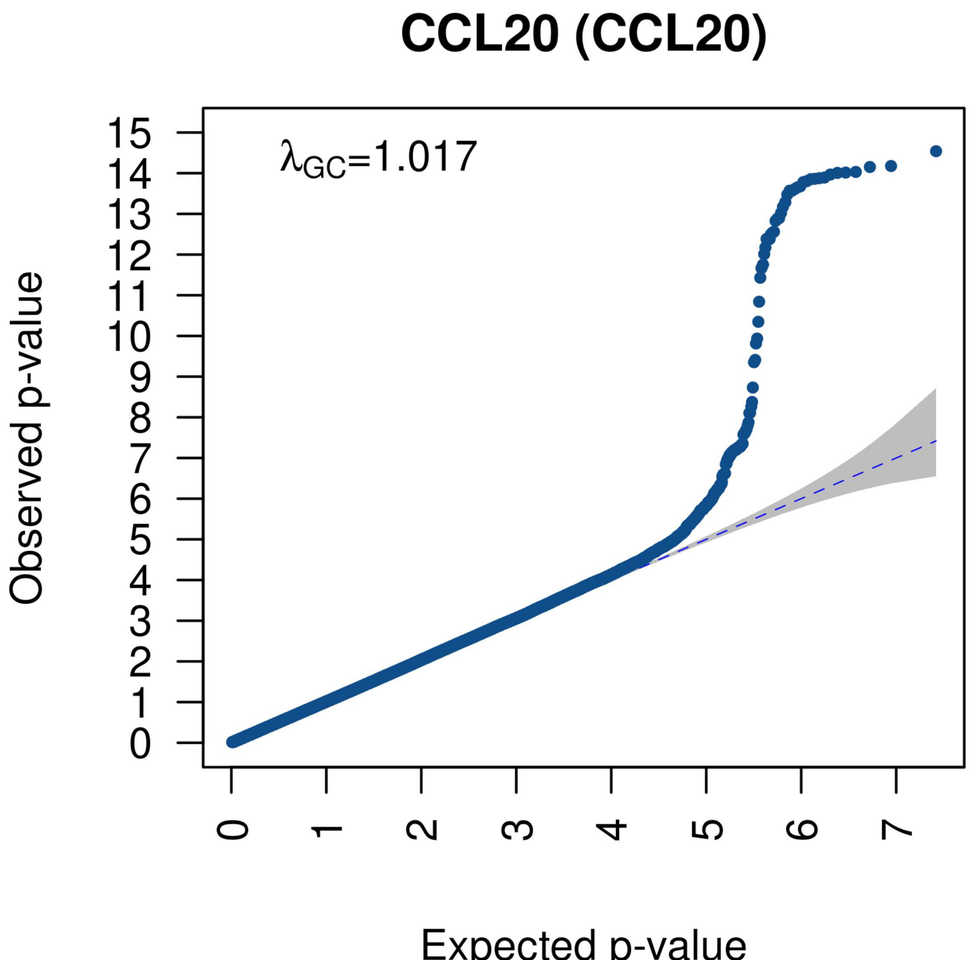

CCL11 (CCL11)
ACKR1
ACKR2
CCR1
RHBDD2
CCL11
−log10 p-value
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

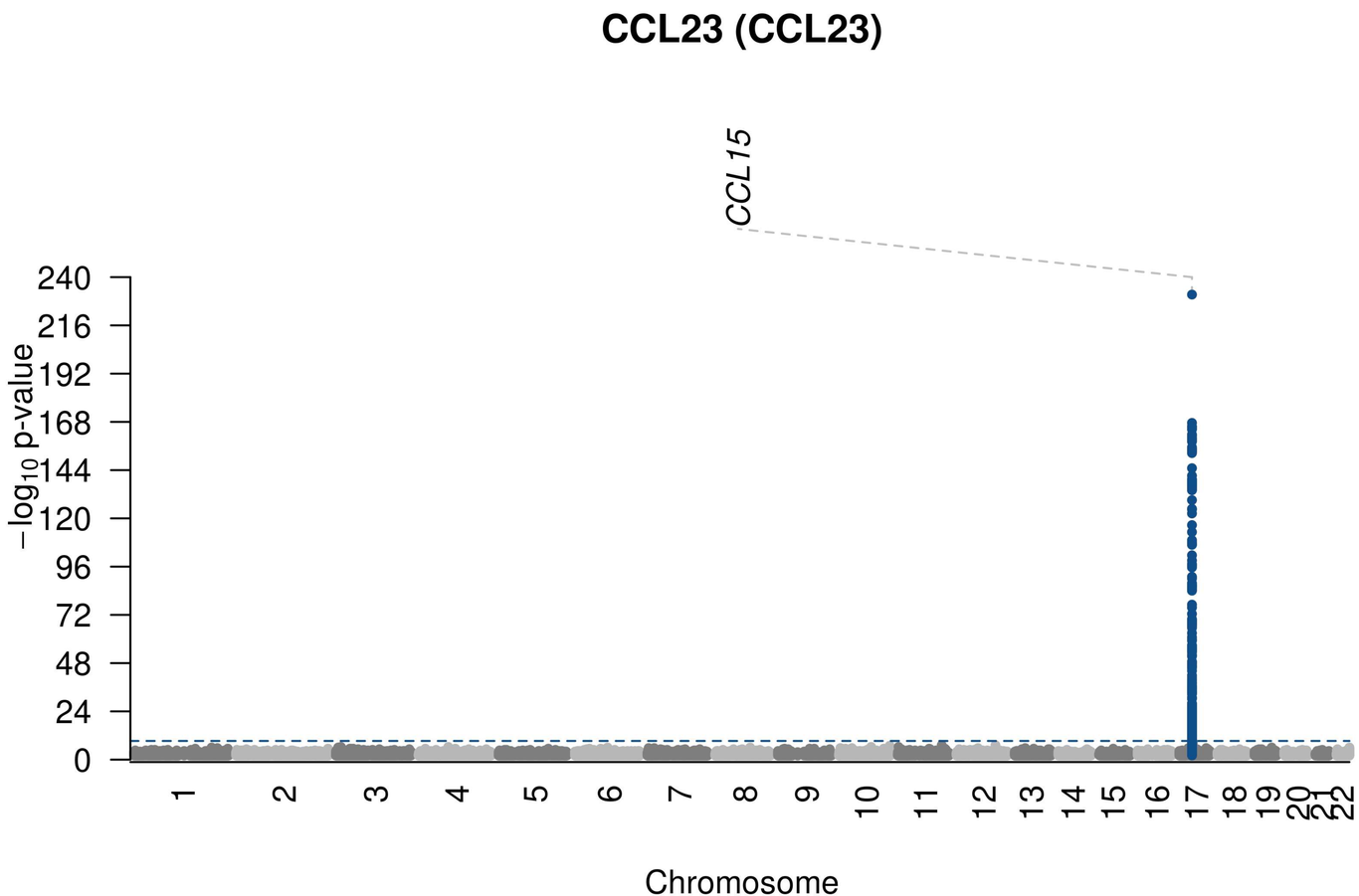

CCL11 (CCL11)
λGC=1.015
Observed p-value
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

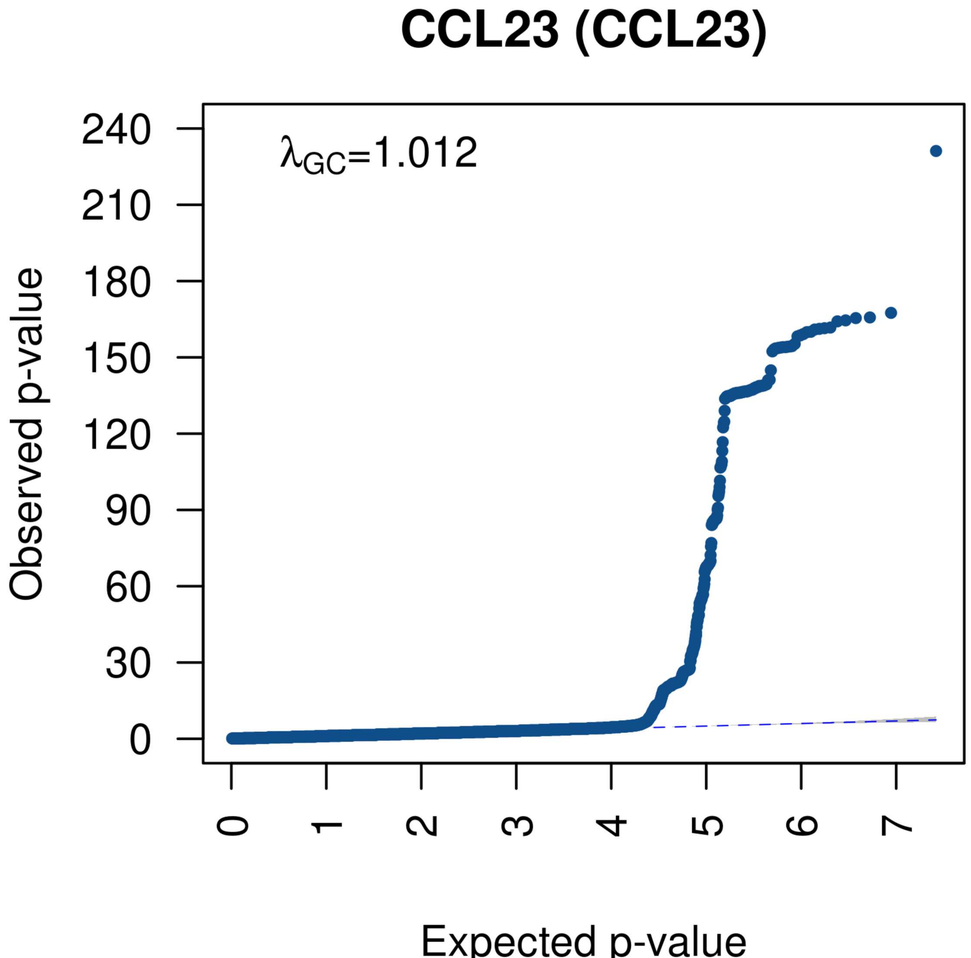

CCL19 (CCL19)
ICOS
DNAJC13
NFKBIL1
HLA-DRA
HLA-DQB
CCL21
ATXN2
−log10 p-value
70
63
56
49
42
35
28
21
14
7
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

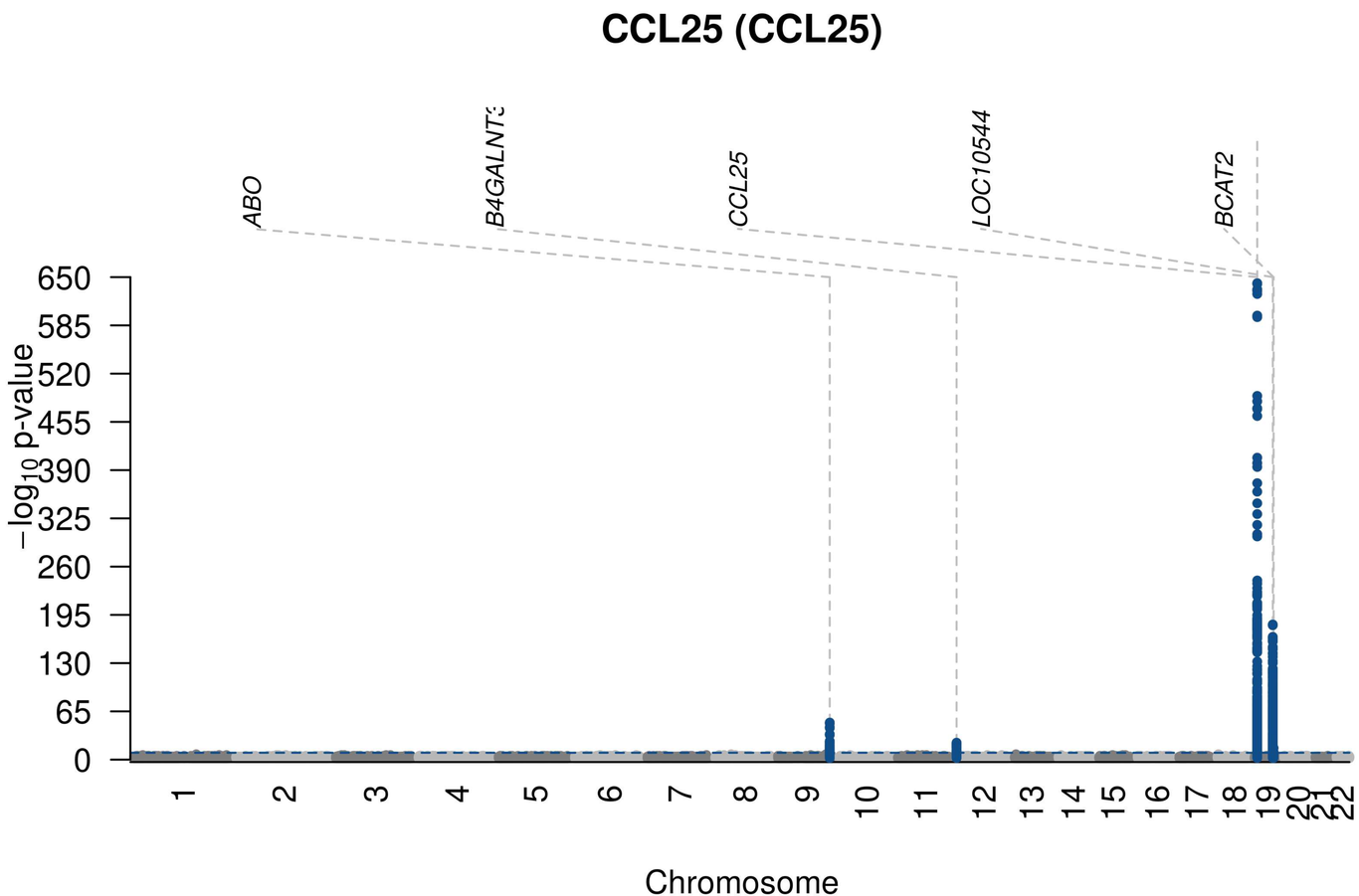

CCL19 (CCL19)
λGC=1.022
Observed p-value
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

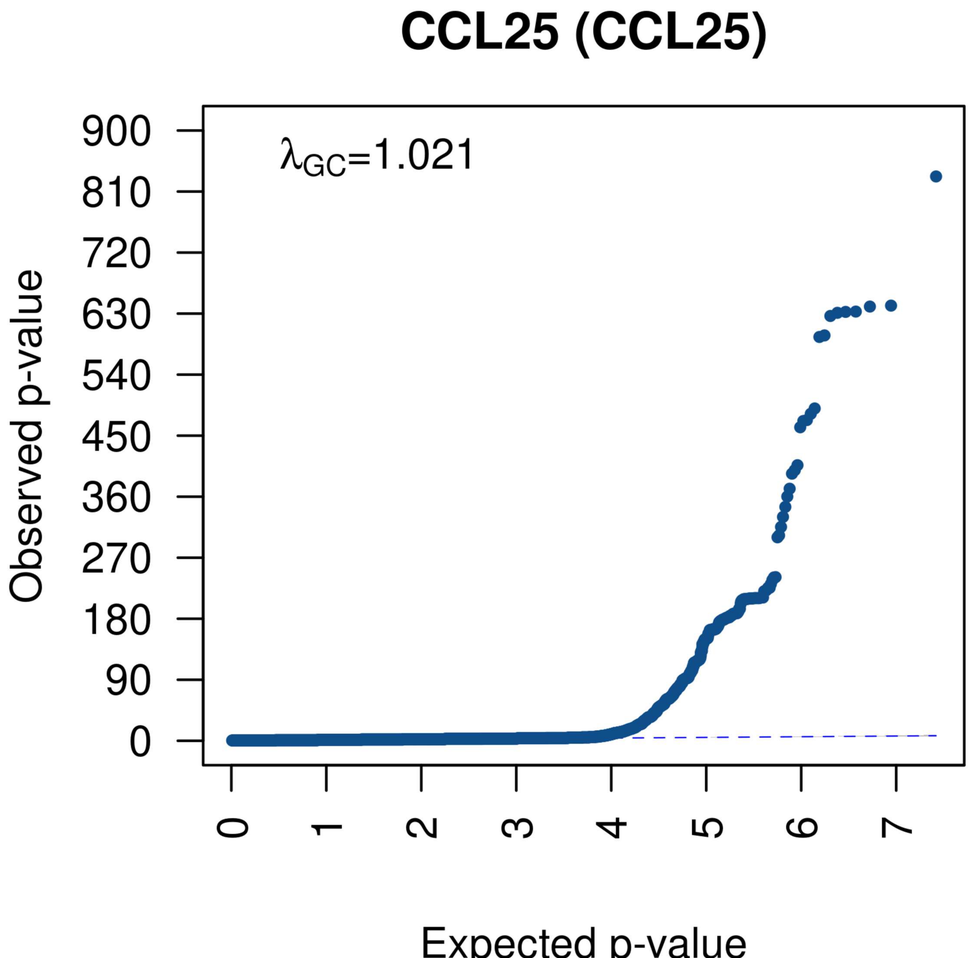

CCL20 (CCL20)
CCL20
UNC5CL
−log10 p-value
15.0
13.5
12.0
10.5
9.0
7.5
6.0
4.5
3.0
1.5
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Chromosome

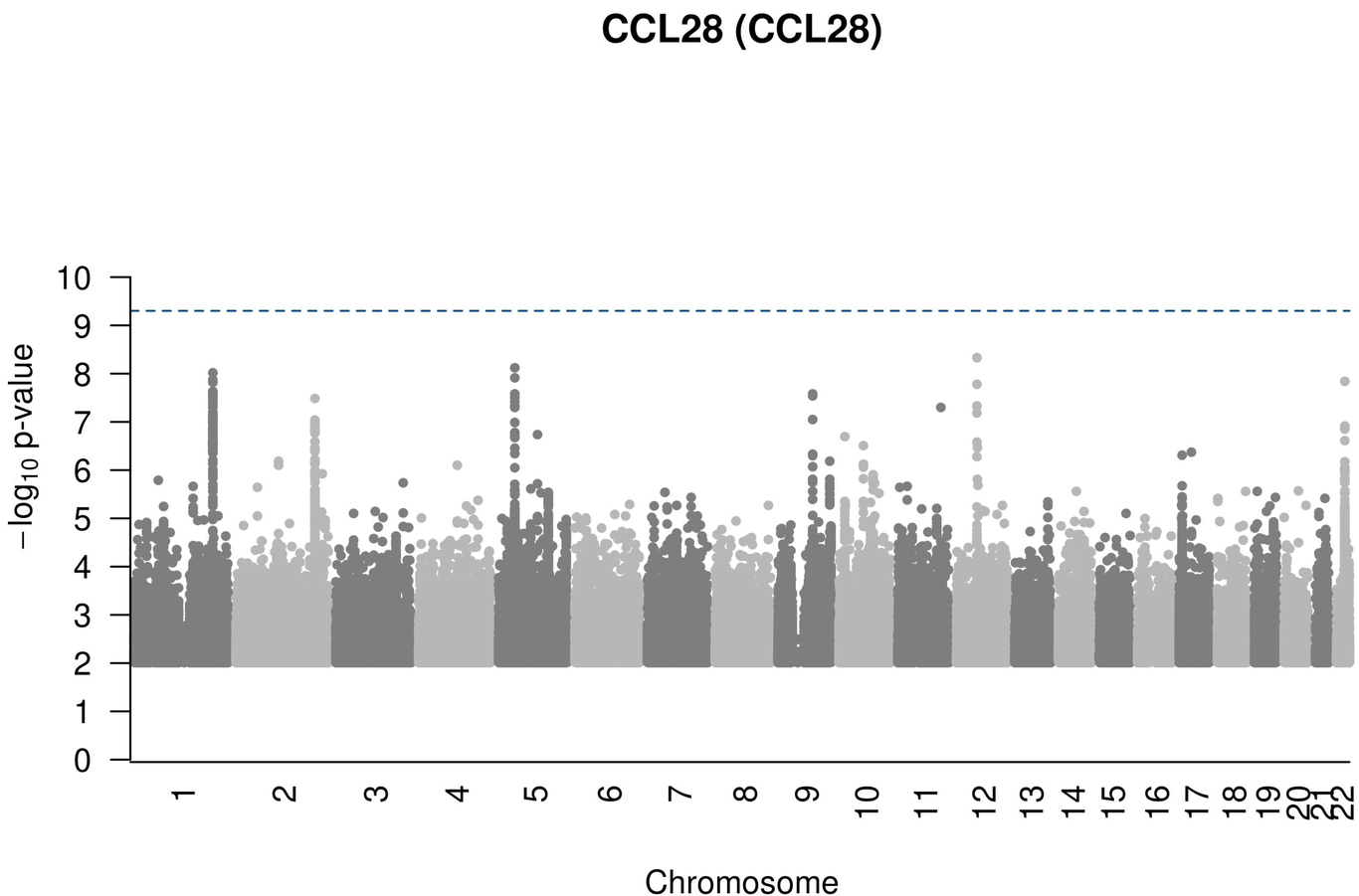

CCL20 (CCL20)
λGC=1.017
Observed p-value
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
0 1 2 3 4 5 6 7
Expected p-value

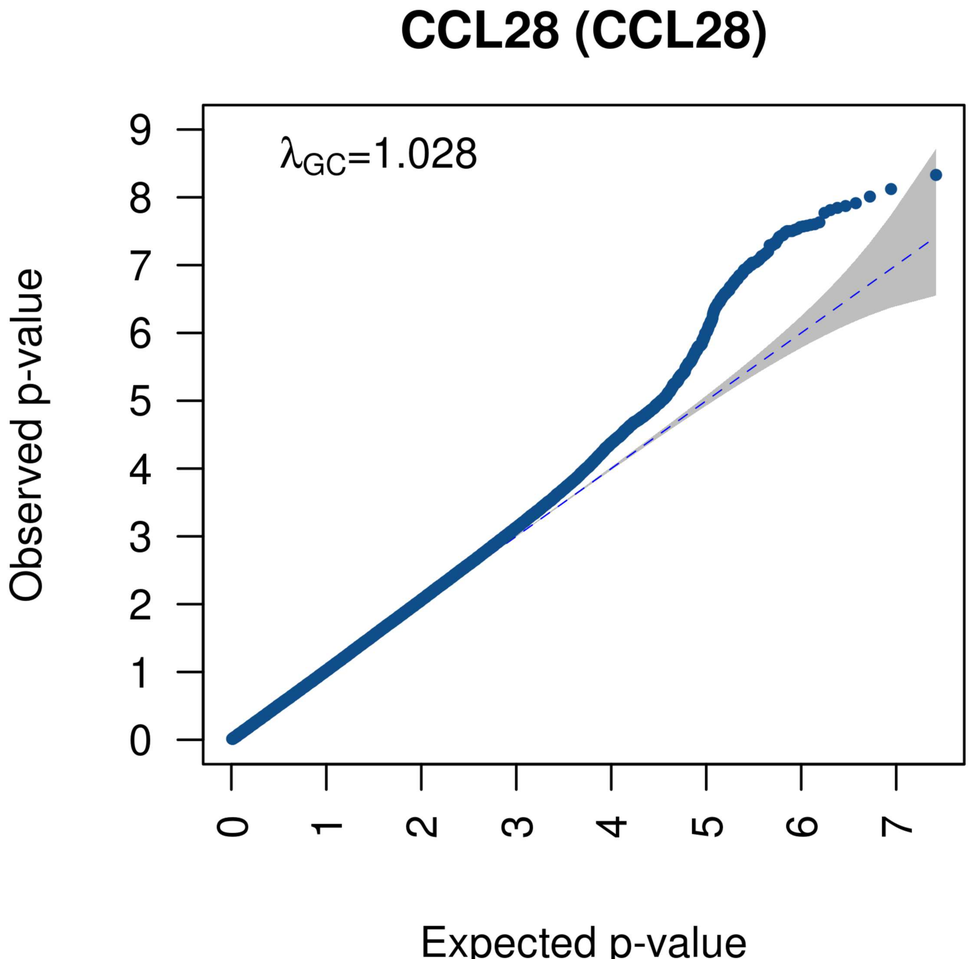

CCL23 (CCL23)
CCL15
240
216
192
168
144
120
96
72
48
24
0
−log10 p-value
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

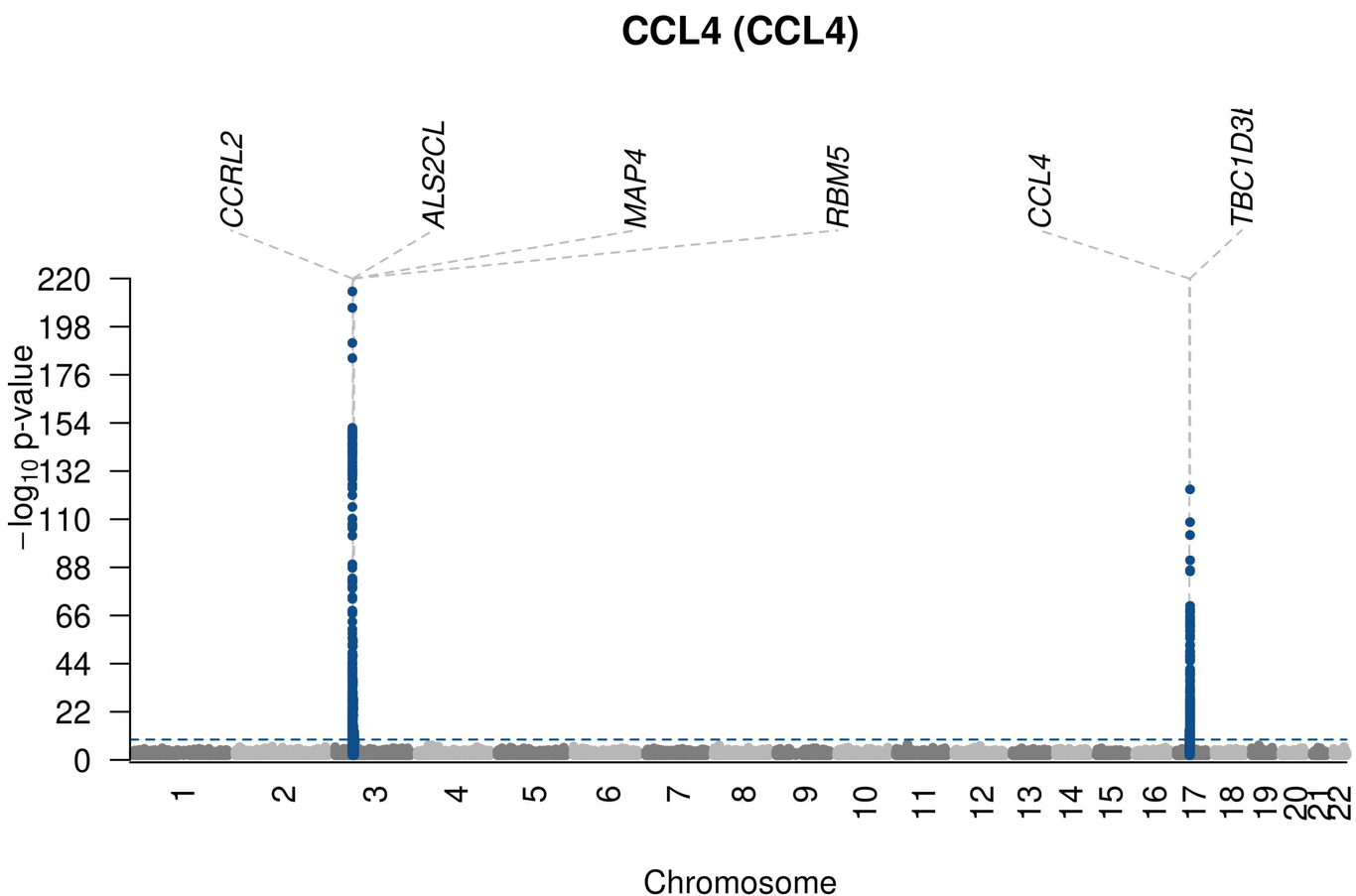

CCL23 (CCL23)
λGC=1.012
240
210
180
150
120
90
60
30
0
Observed p-value
0
1
2
3
4
5
6
7
Expected p-value

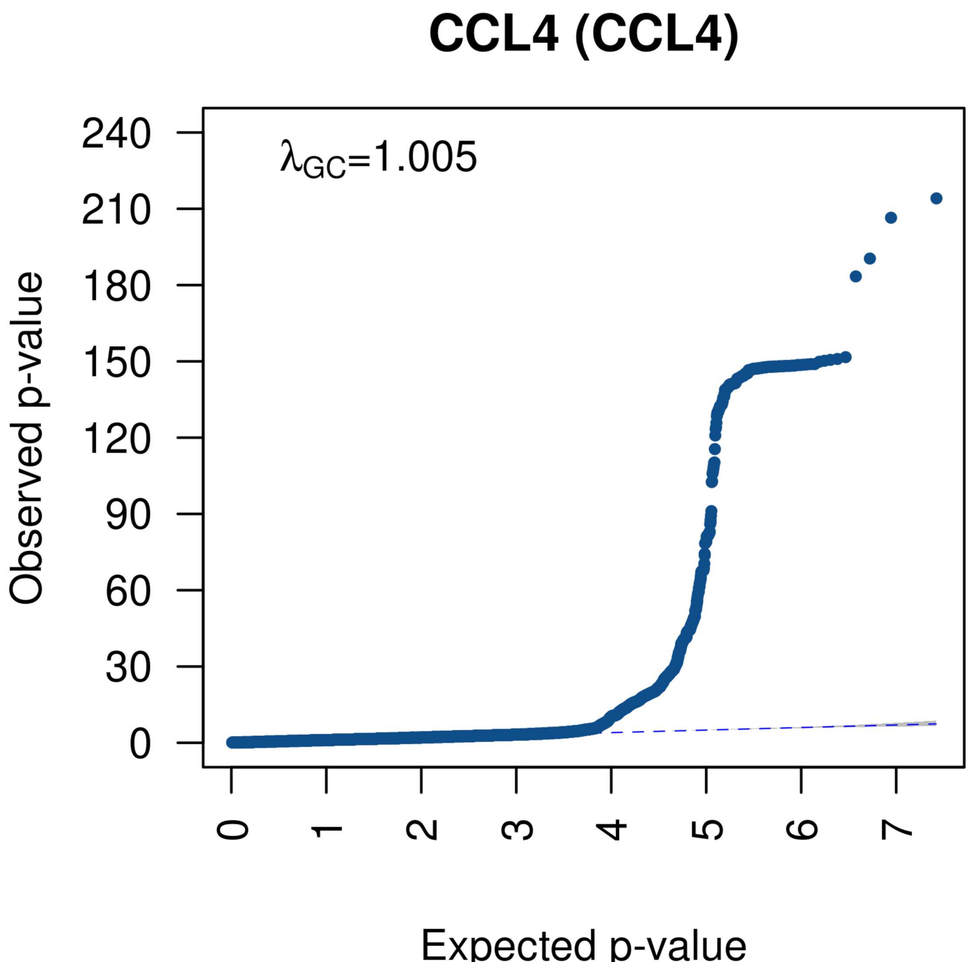

CCL25 (CCL25)
ABO
B4GALNT3
CCL25
LOC10544
BCAT2
650
585
520
455
390
325
260
195
130
65
0
−log10 p-value
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

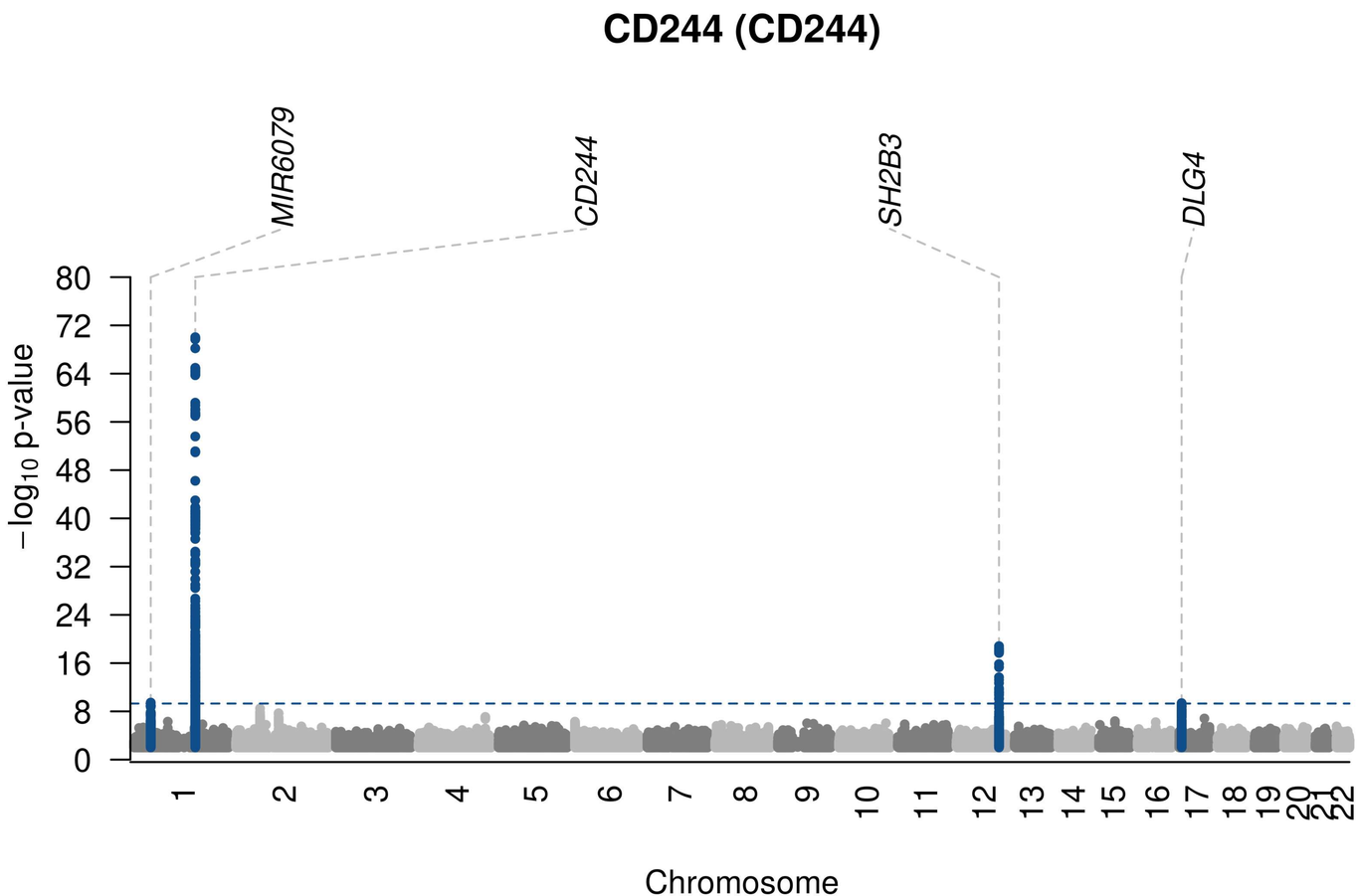

CCL25 (CCL25)
λGC=1.021
900
810
720
630
540
450
360
270
180
90
0
Observed p-value
0
1
2
3
4
5
6
7
Expected p-value

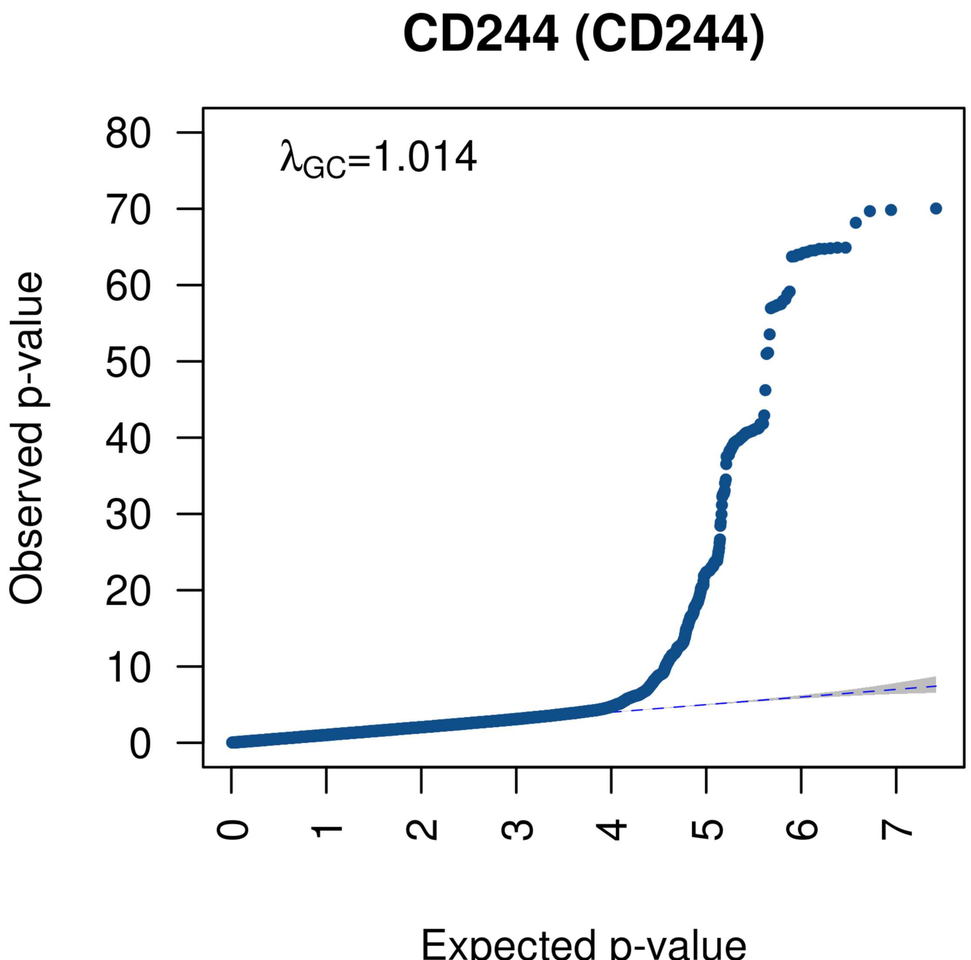

CCL28 (CCL28)
−log10 p-value
Chromosome
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

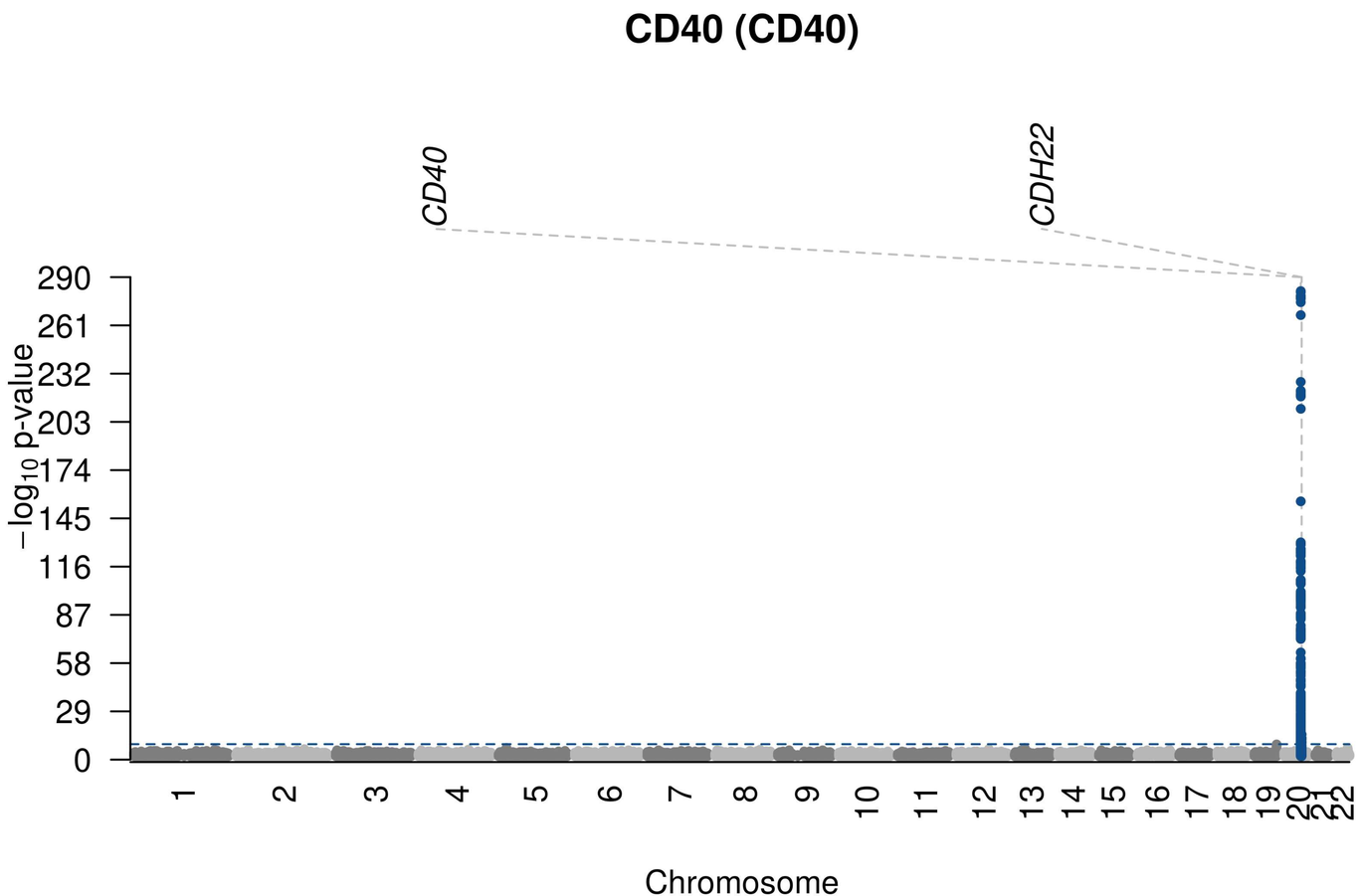

CCL28 (CCL28)
λGC=1.028
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7
8
9
0
1
2
3
4
5
6
7

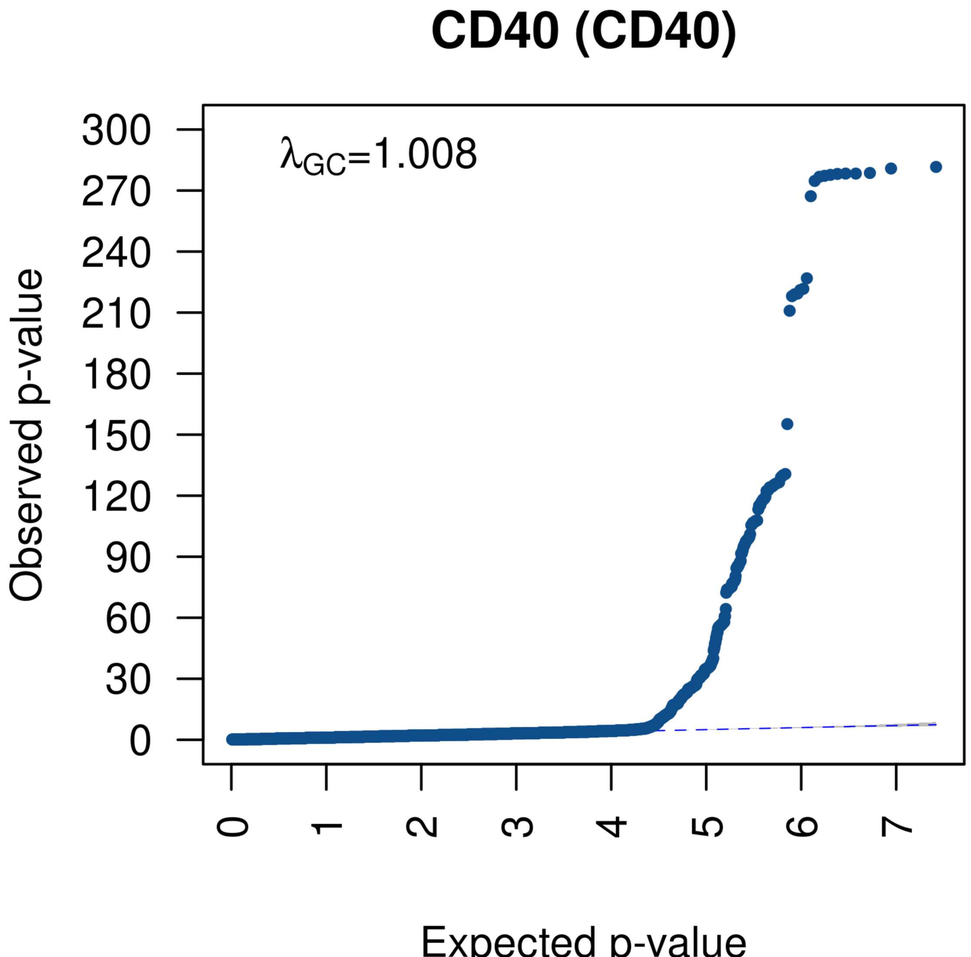

CCL4 (CCL4)
CCRL2
ALS2CL
MAP4
RBM5
CCL4
TBC1D3L
−log10 p-value
220
198
176
154
132
110
88
66
44
22
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

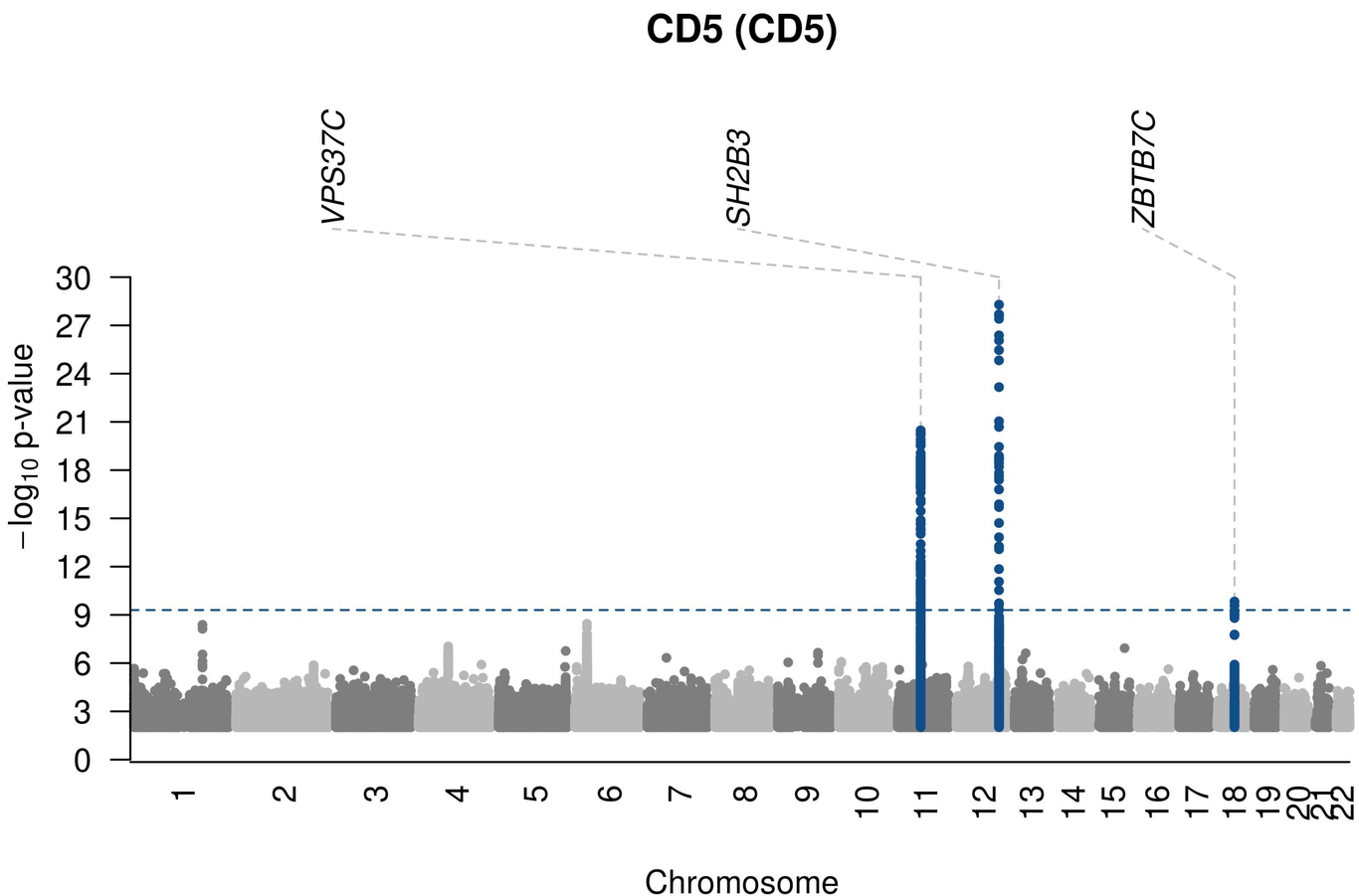

CCL4 (CCL4)
λGC=1.005
Observed p-value
240
210
180
150
120
90
60
30
0
0
1
2
3
4
5
6
7
Expected p-value

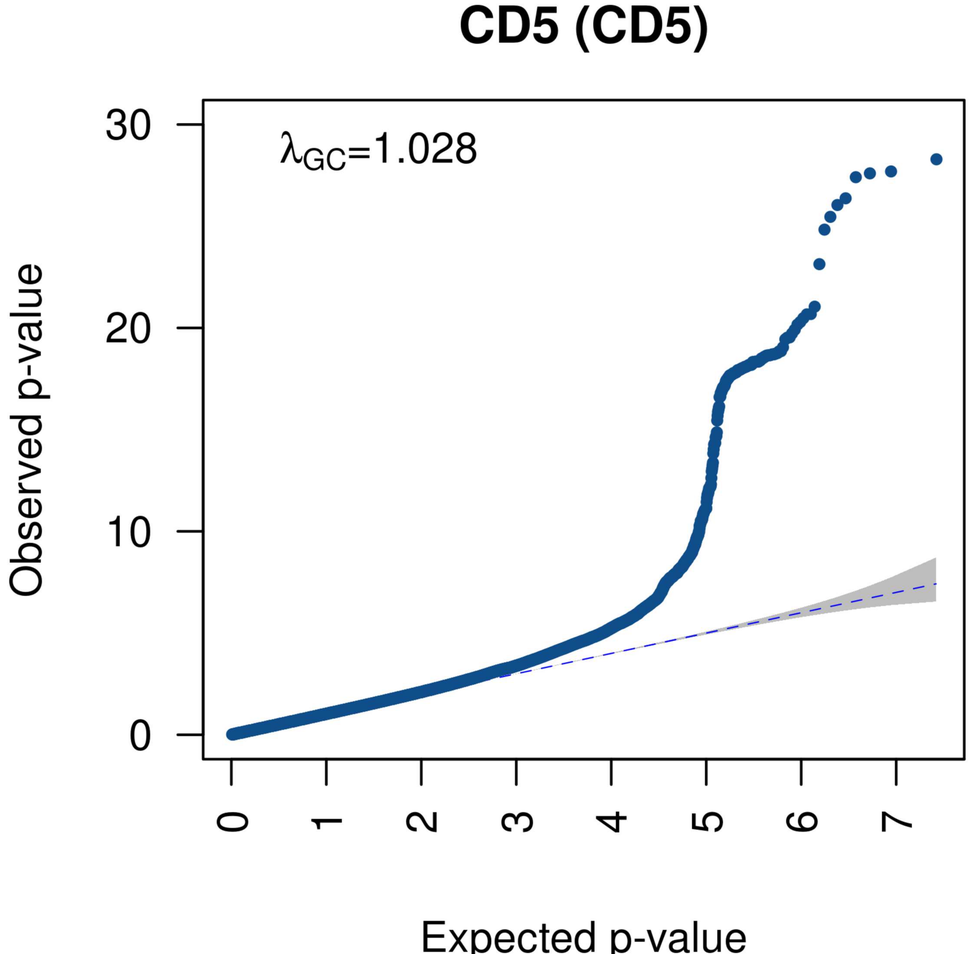

CD244 (CD244)
MIR6079
CD244
SH2B3
DLG4
−log10 p-value
80
72
64
56
48
40
32
24
16
8
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

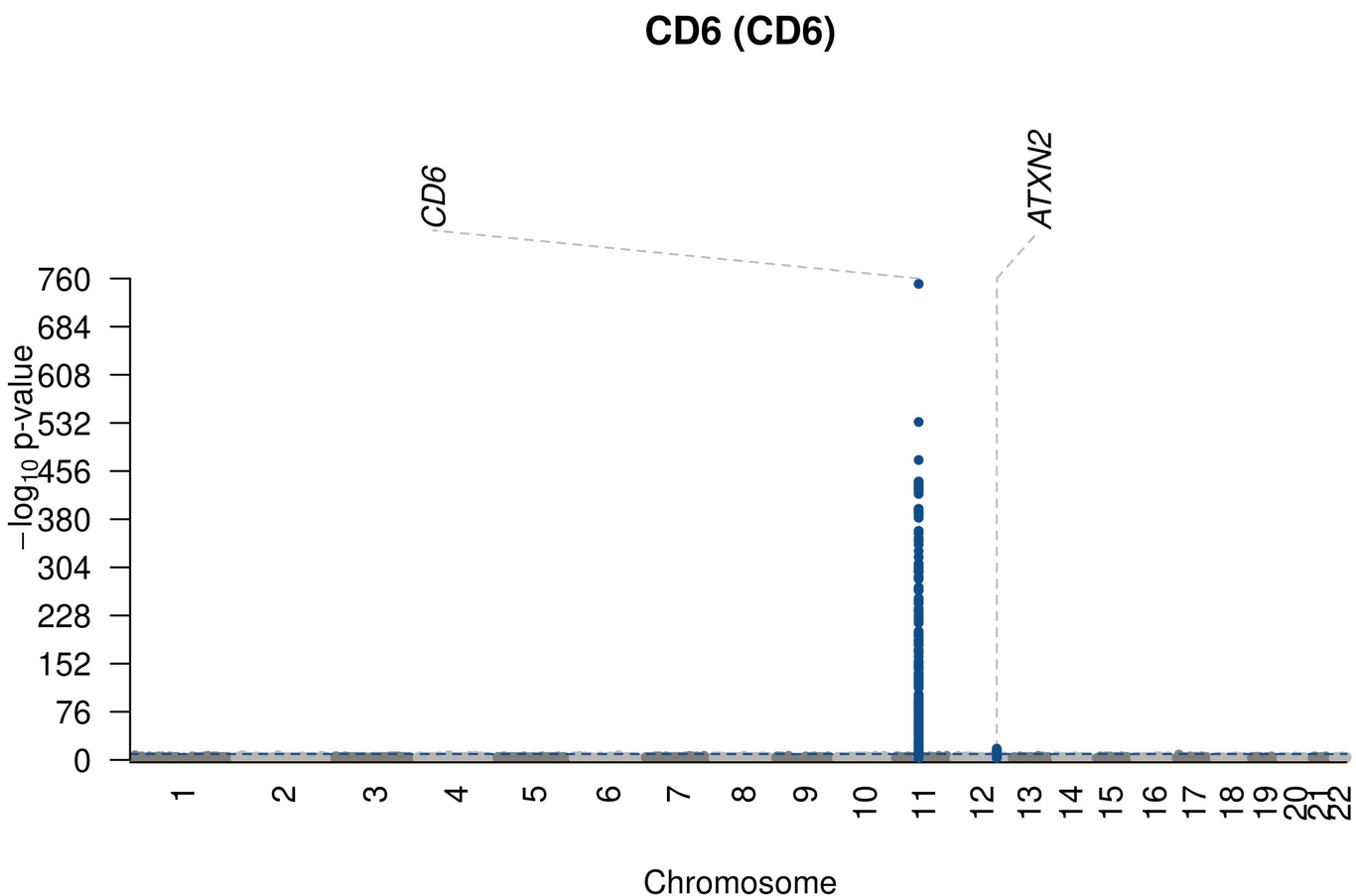

CD244 (CD244)
λGC=1.014
Observed p-value
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

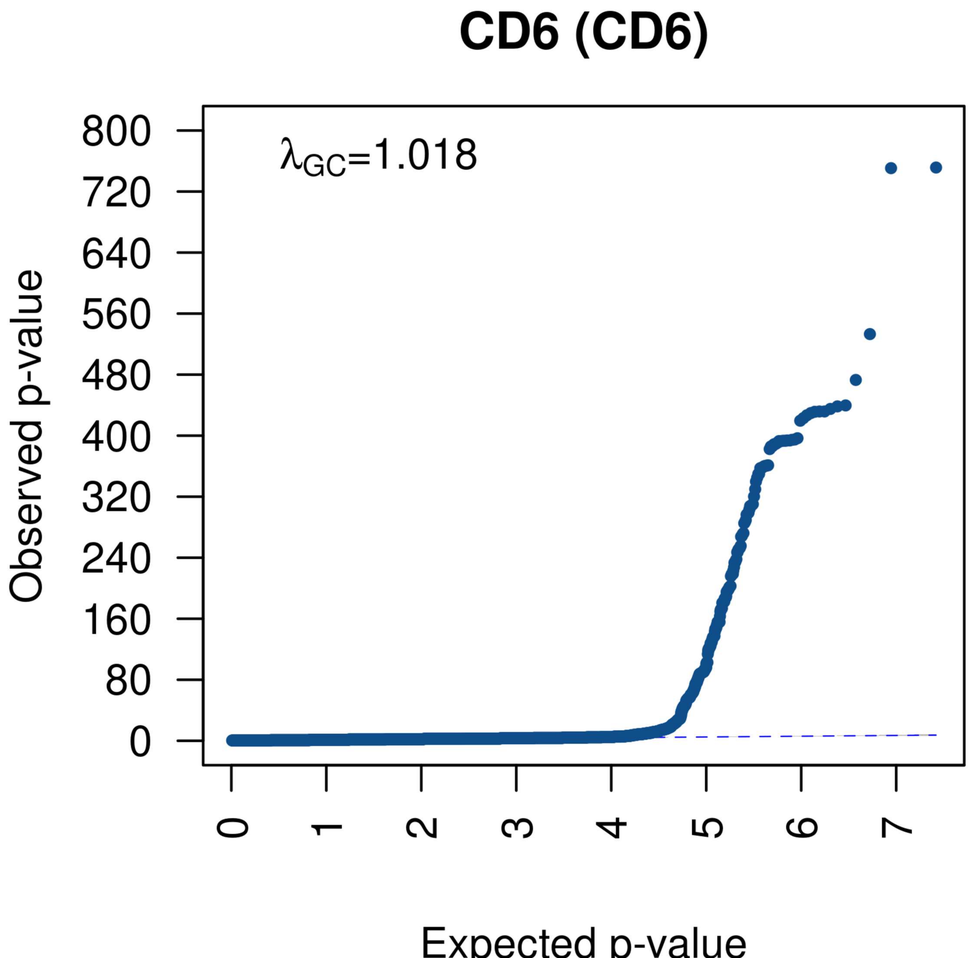

CD40 (CD40)
CD40
CDH22
290
261
232
203
174
145
116
87
58
29
0
−log10 p-value
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

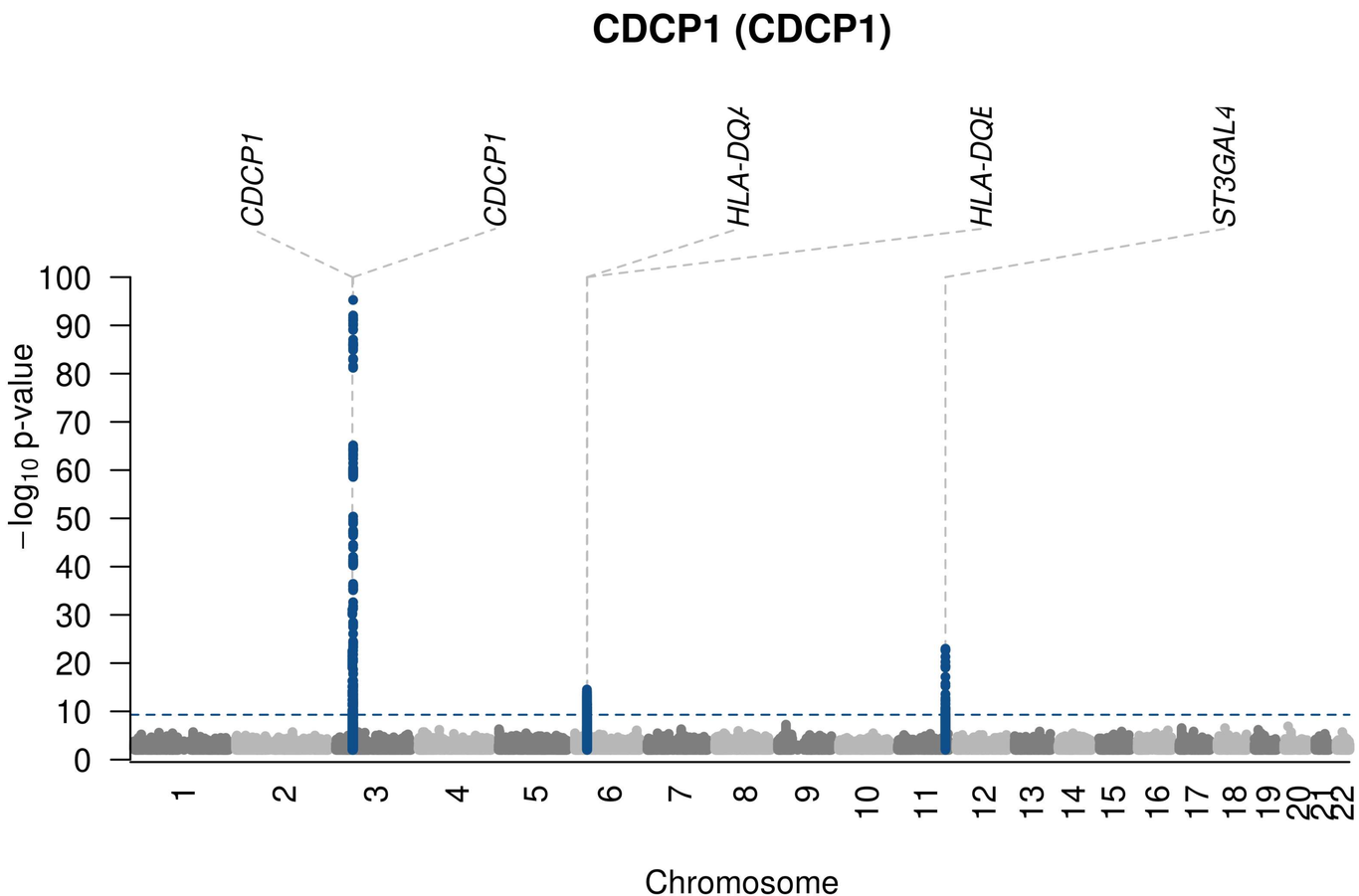

CD40 (CD40)
λGC=1.008
300
270
240
210
180
150
120
90
60
30
0
Observed p-value
0
1
2
3
4
5
6
7
Expected p-value

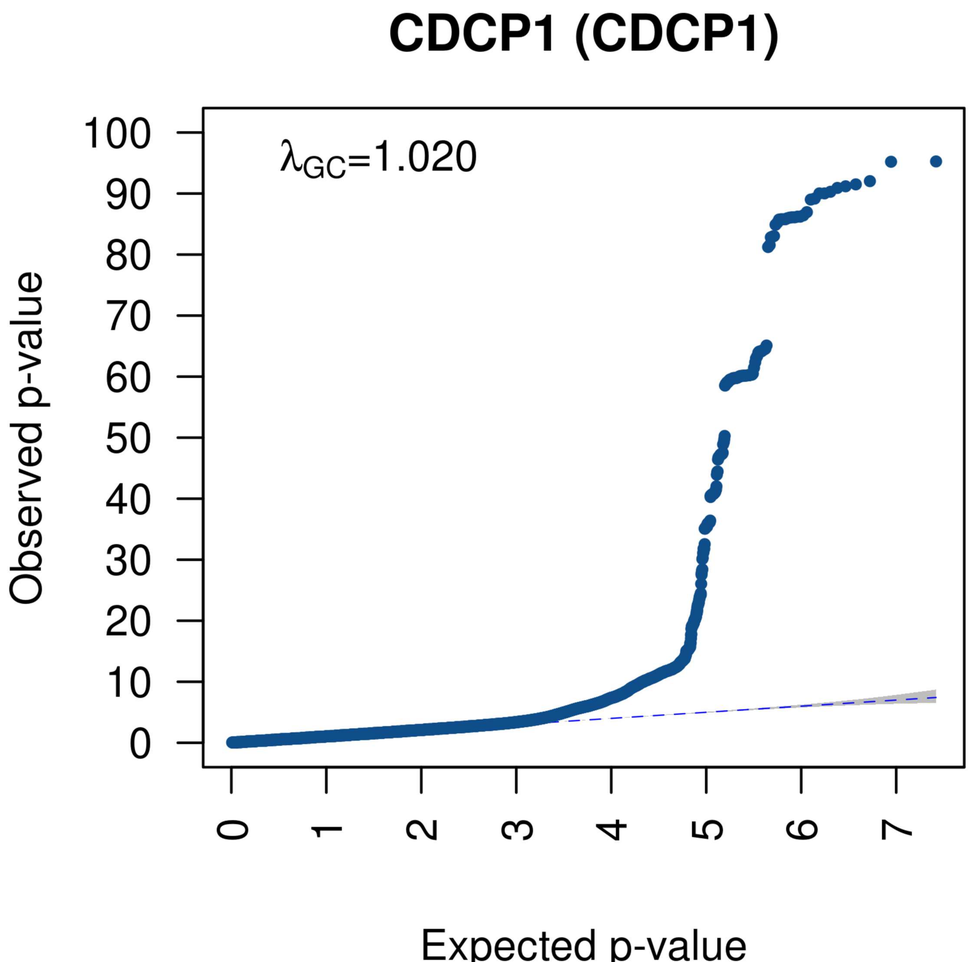

CD5 (CD5)
VPS37C
SH2B3
ZBTB7C
−log10 p-value
30
27
24
21
18
15
12
9
6
3
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

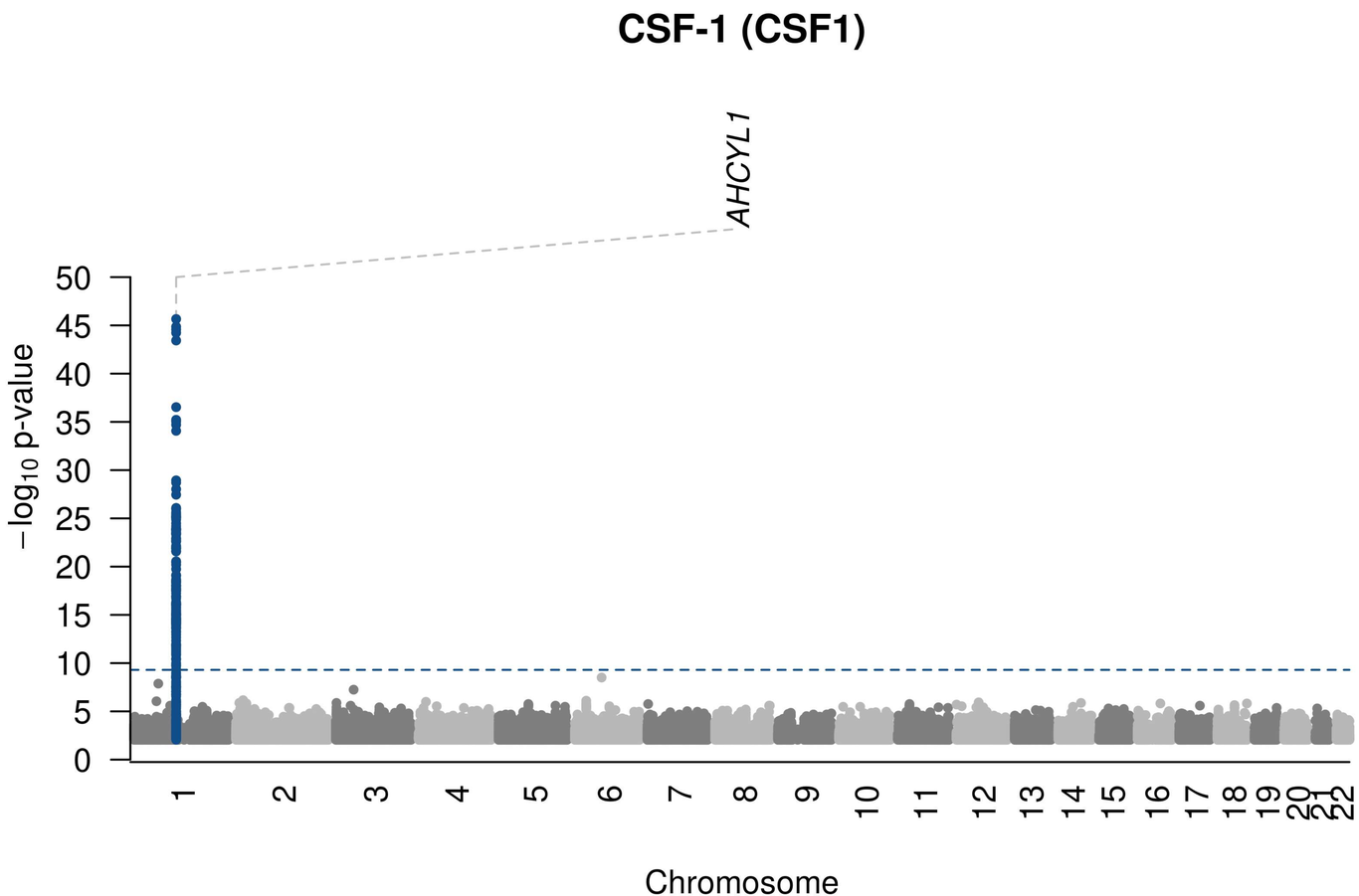

CD5 (CD5)
λGC=1.028
Observed p-value
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

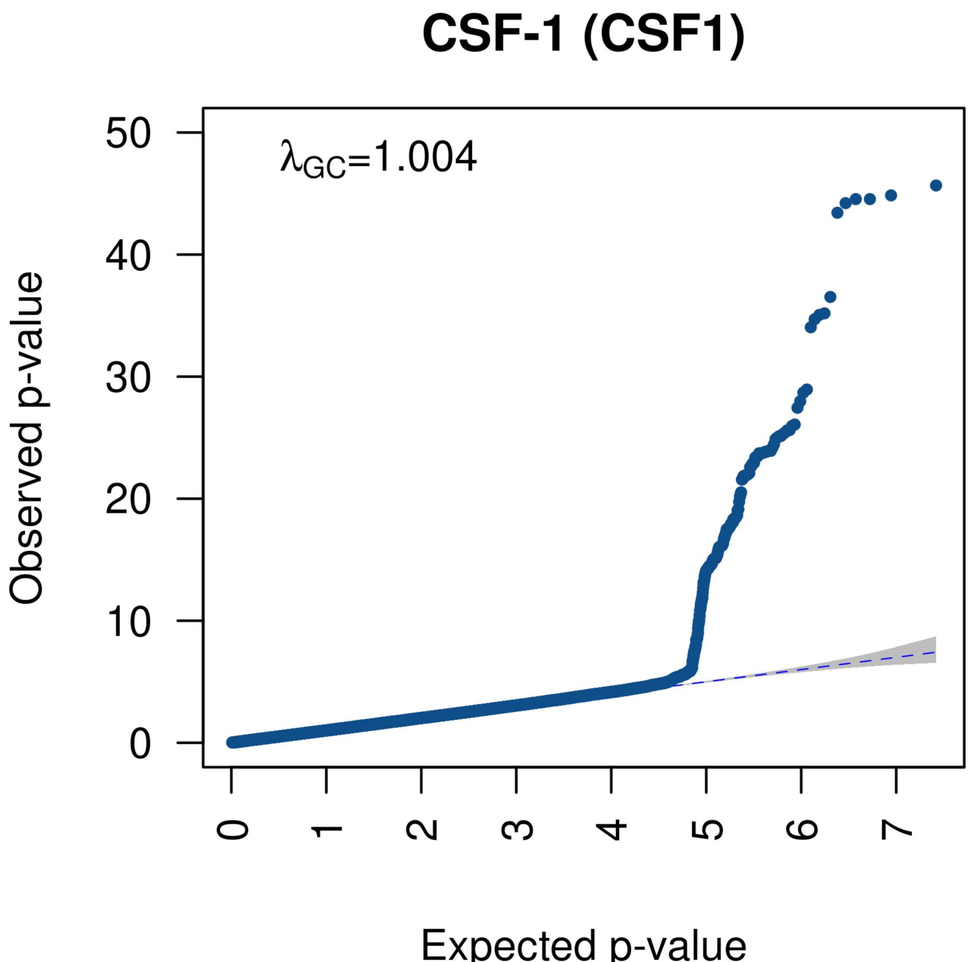

CD6 (CD6)
CD6
ATXN2
760
684
608
532
456
380
304
228
152
76
0
−log10 p-value
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

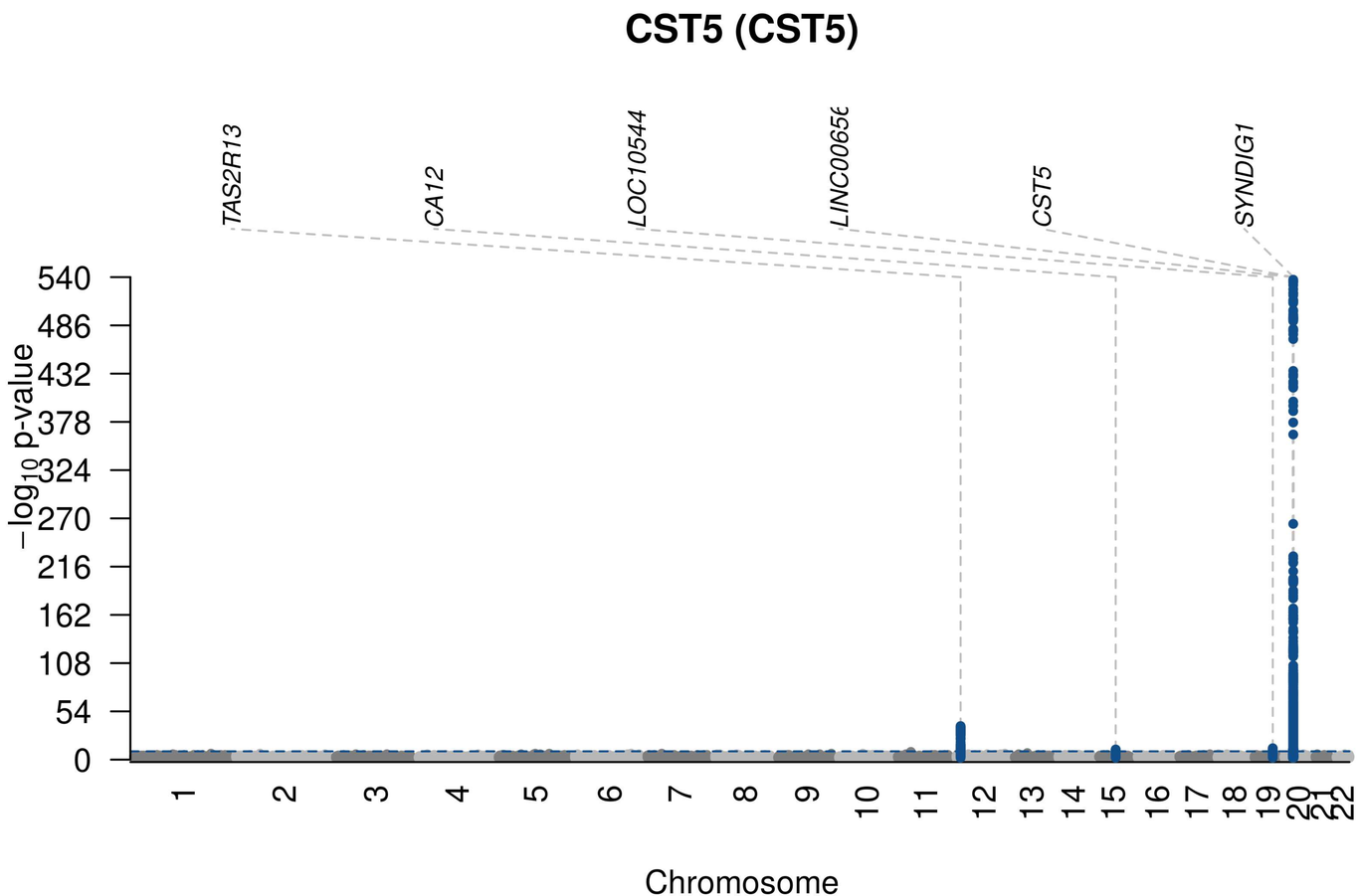

CD6 (CD6)
λGC=1.018
800
720
640
560
480
400
320
240
160
80
0
Observed p-value
0
1
2
3
4
5
6
7
Expected p-value

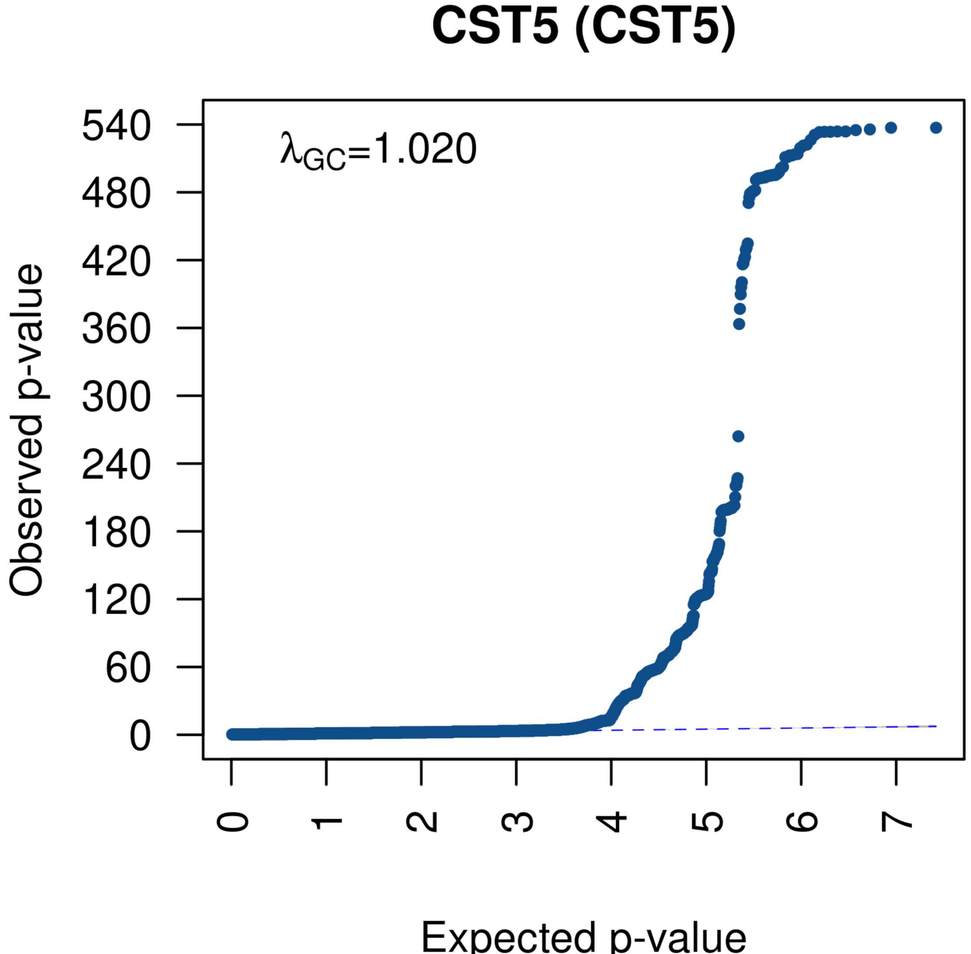

CDCP1 (CDCP1)
CDCP1
CDCP1
HLA-DQA
HLA-DQB
ST3GAL4
−log10 p-value
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

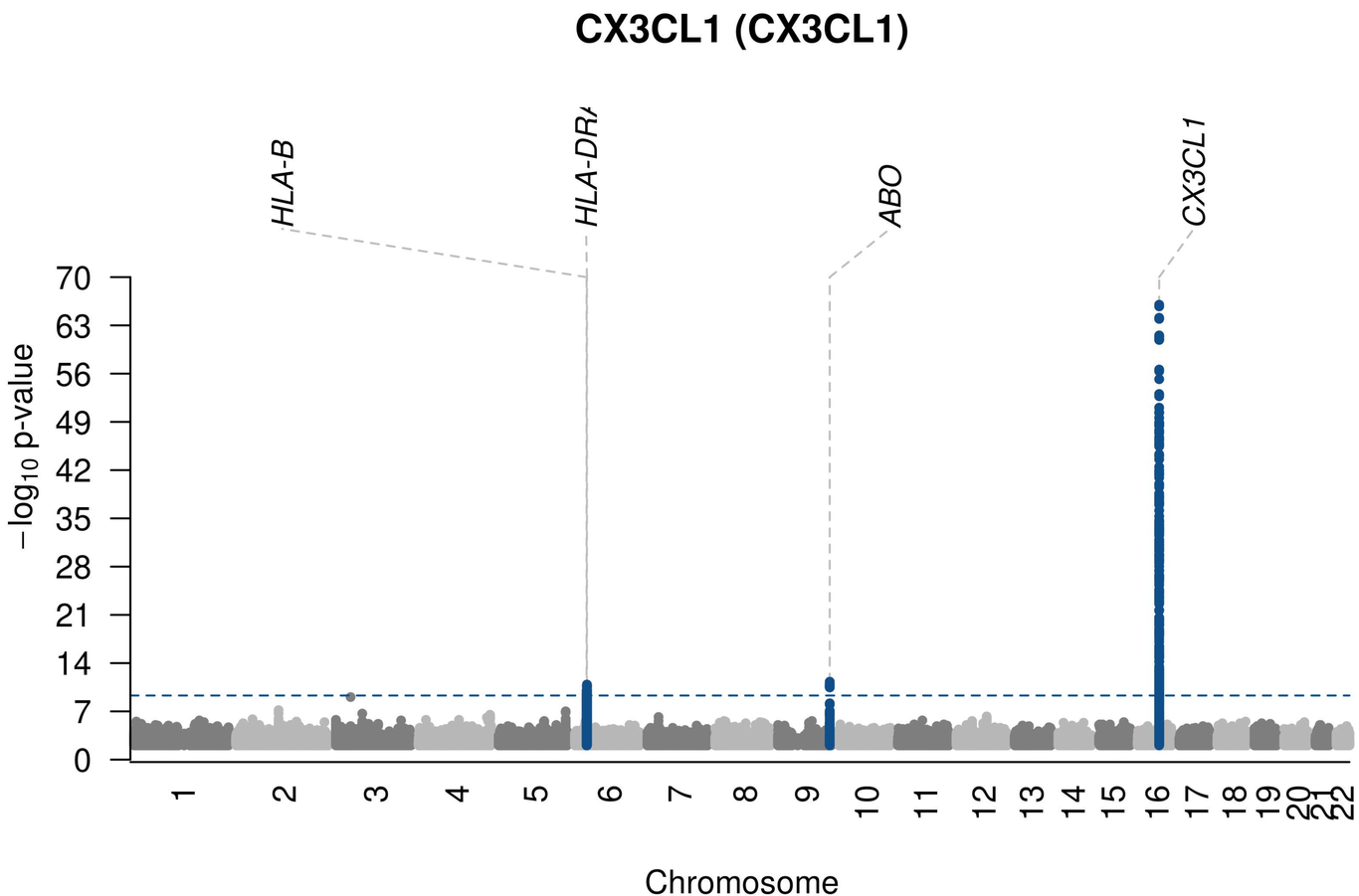

CDCP1 (CDCP1)
λGC=1.020
Observed p-value
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

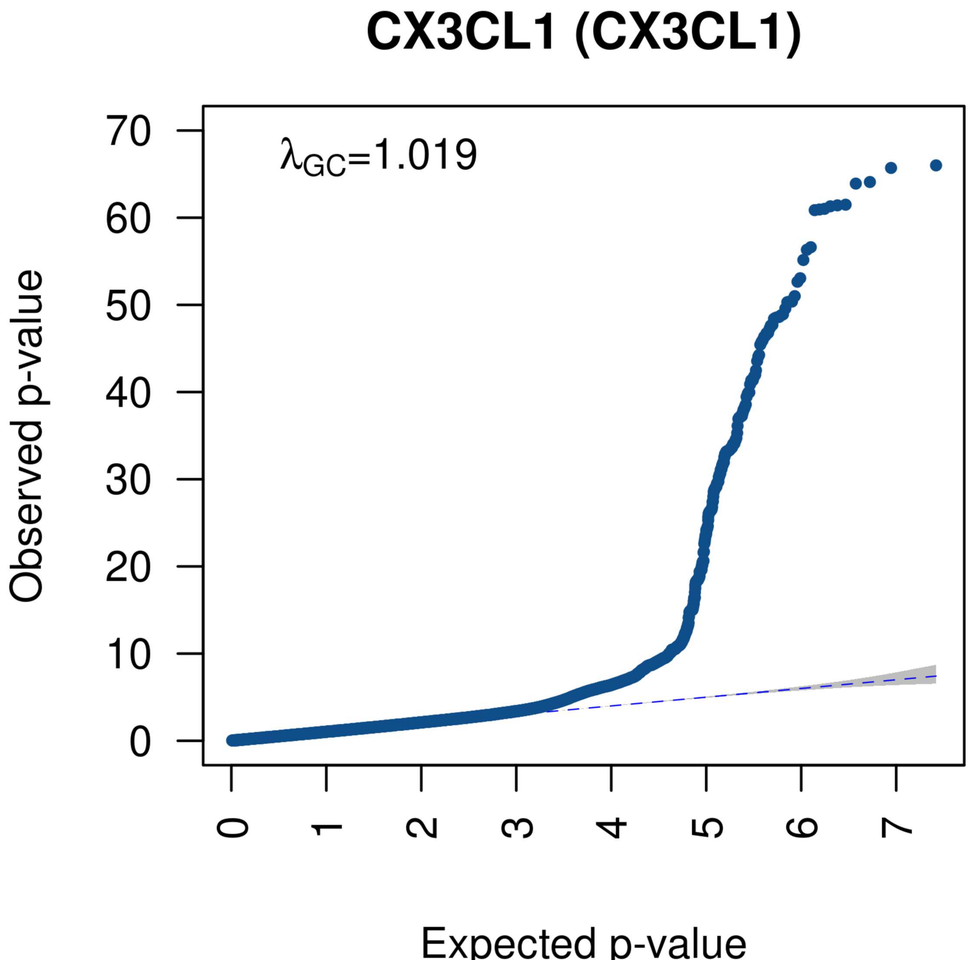

CSF-1 (CSF1)
AHCYL1
−log10 p-value
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

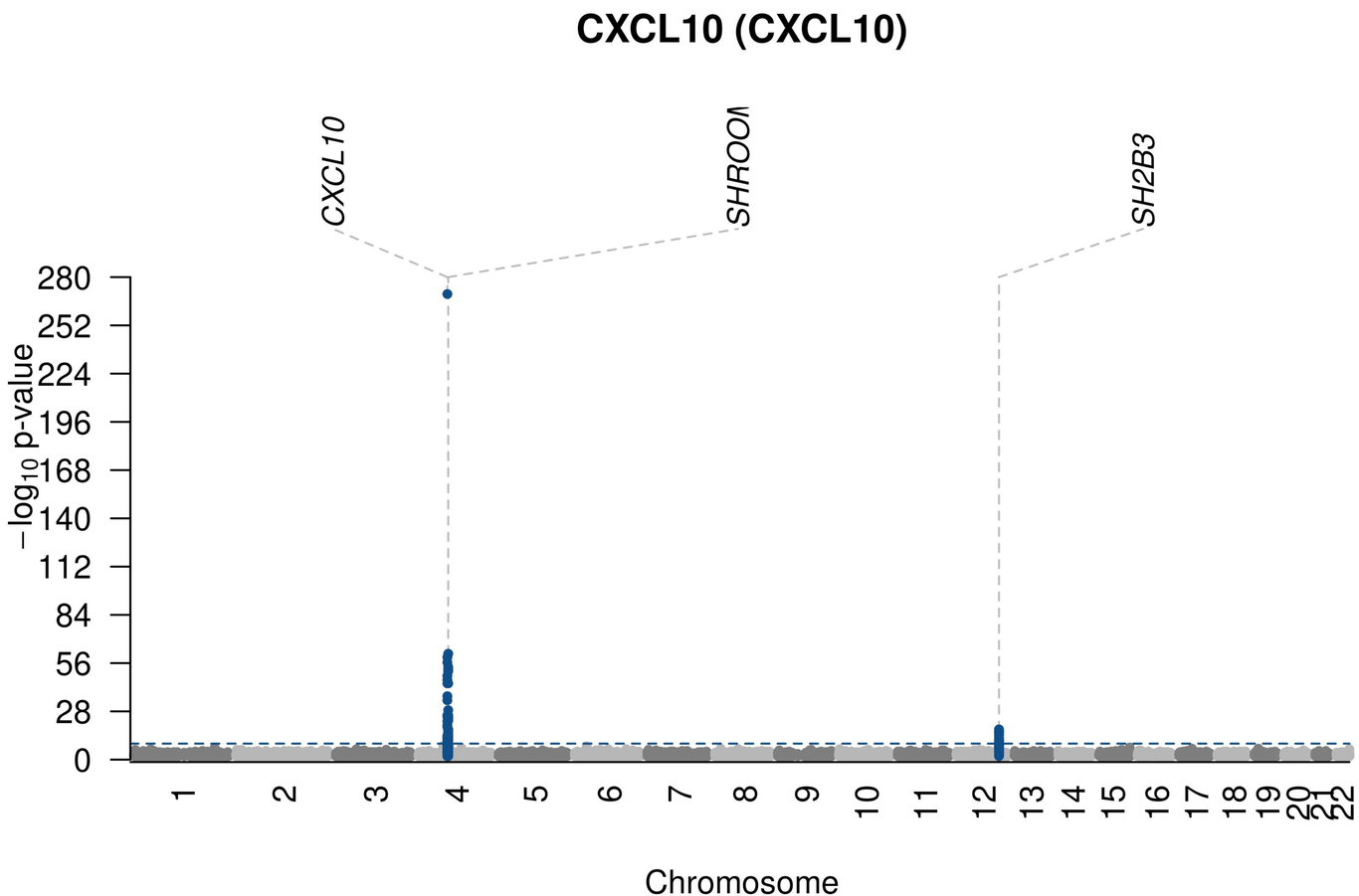

CSF-1 (CSF1)
λGC=1.004
Observed p-value
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

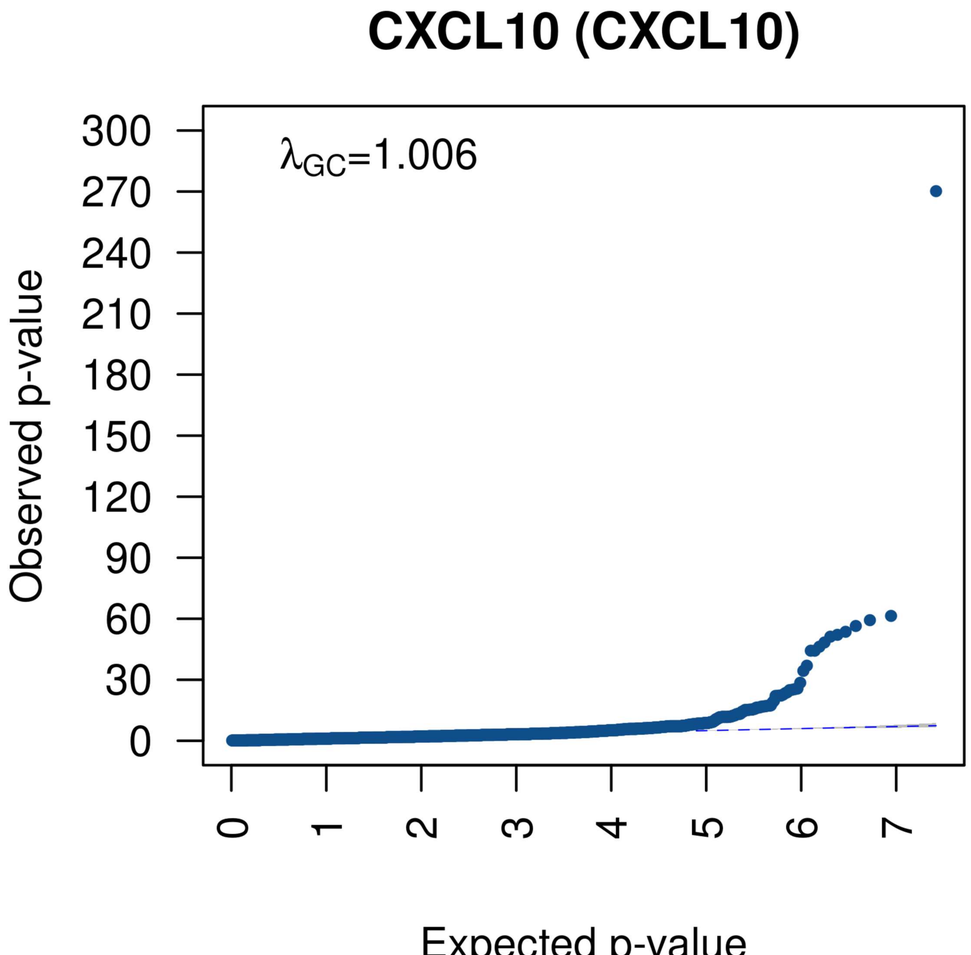

CST5 (CST5)
TAS2R13
CA12
LOC10544
LINC00656
CST5
SYNDIG1
540
486
432
378
324
270
216
162
108
54
0
−log10 p-value
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

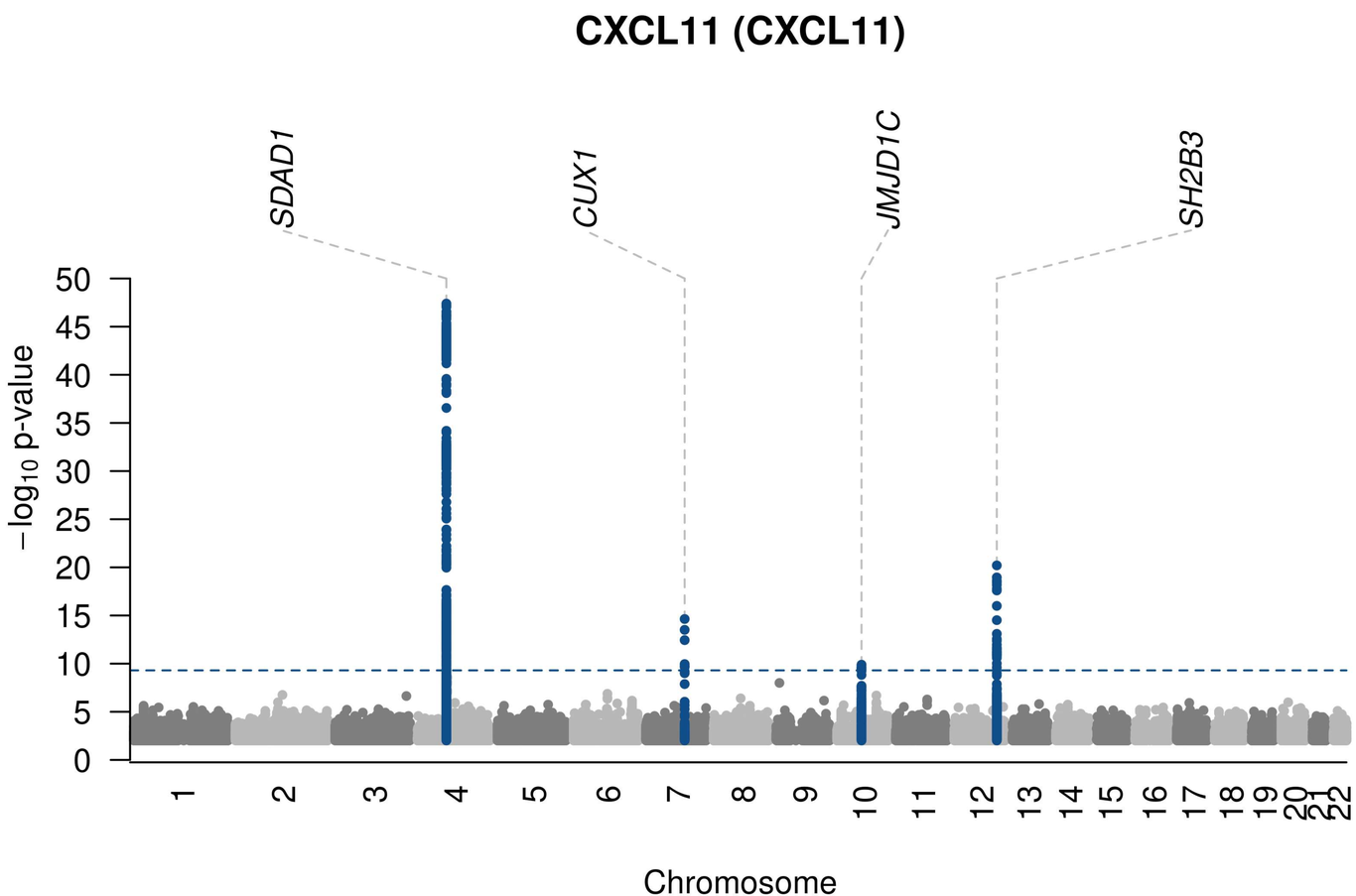

CST5 (CST5)
λGC=1.020
540
480
420
360
300
240
180
120
60
0
Observed p-value
0
1
2
3
4
5
6
7
Expected p-value

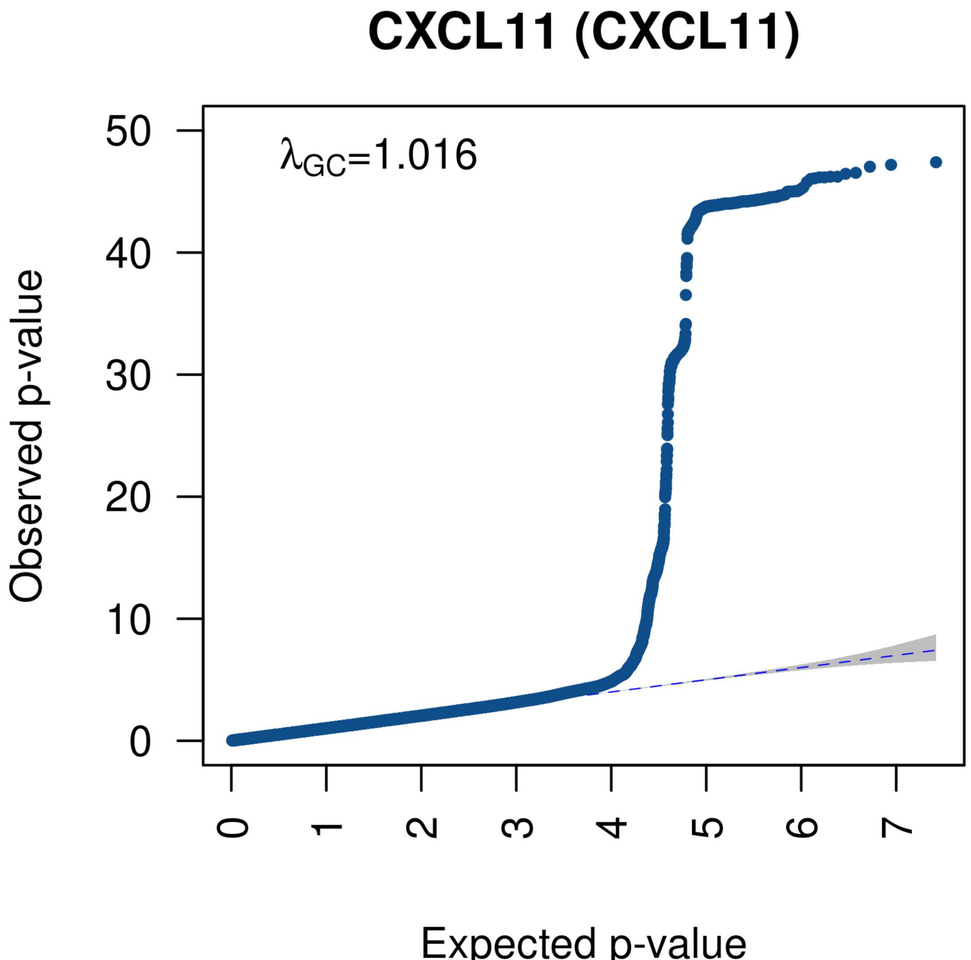

CX3CL1 (CX3CL1)
HLA-B
HLA-DR
ABO
CX3CL1
−log10 p-value
70
63
56
49
42
35
28
21
14
7
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

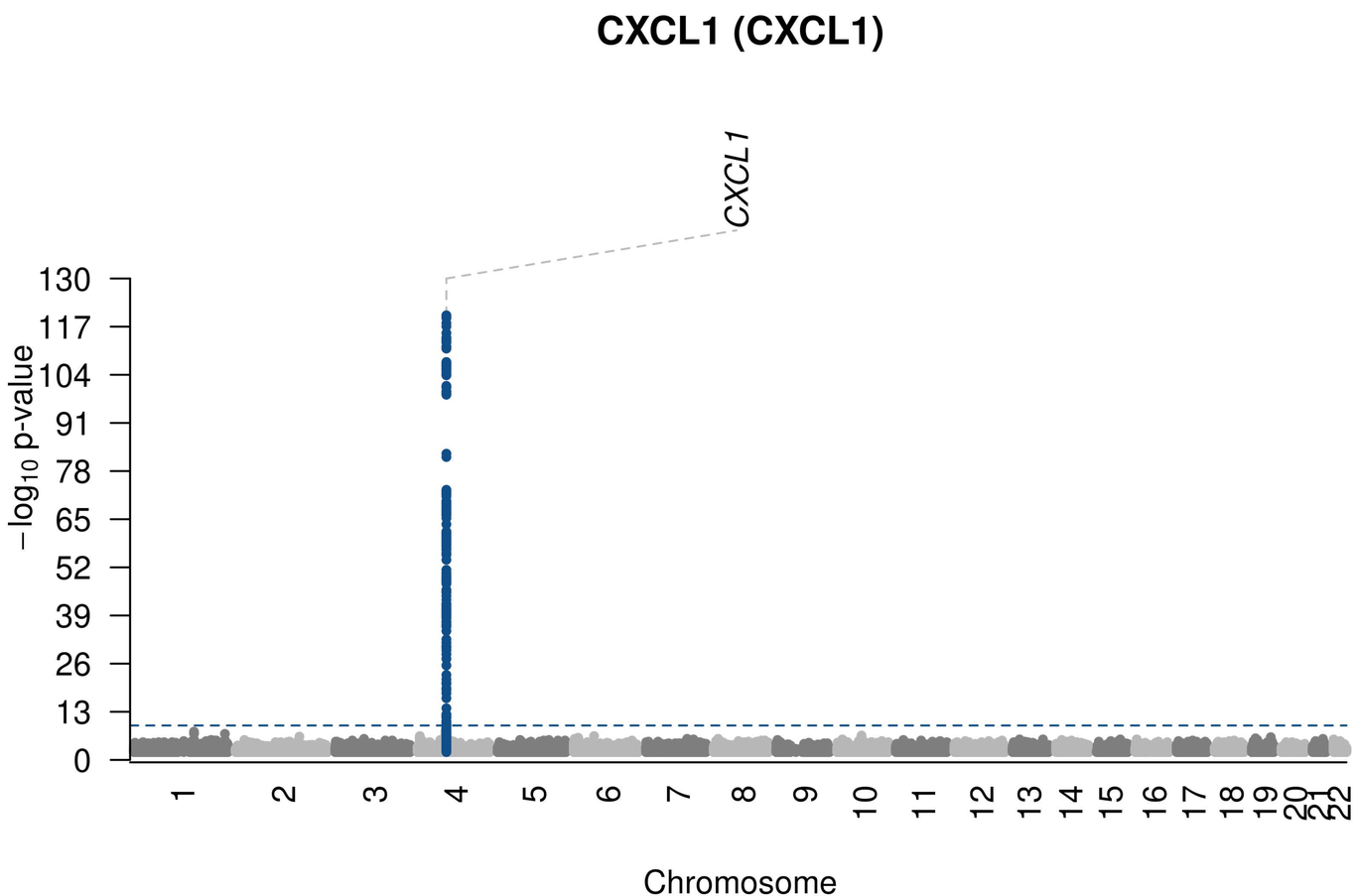

CX3CL1 (CX3CL1)
λGC=1.019
Observed p-value
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

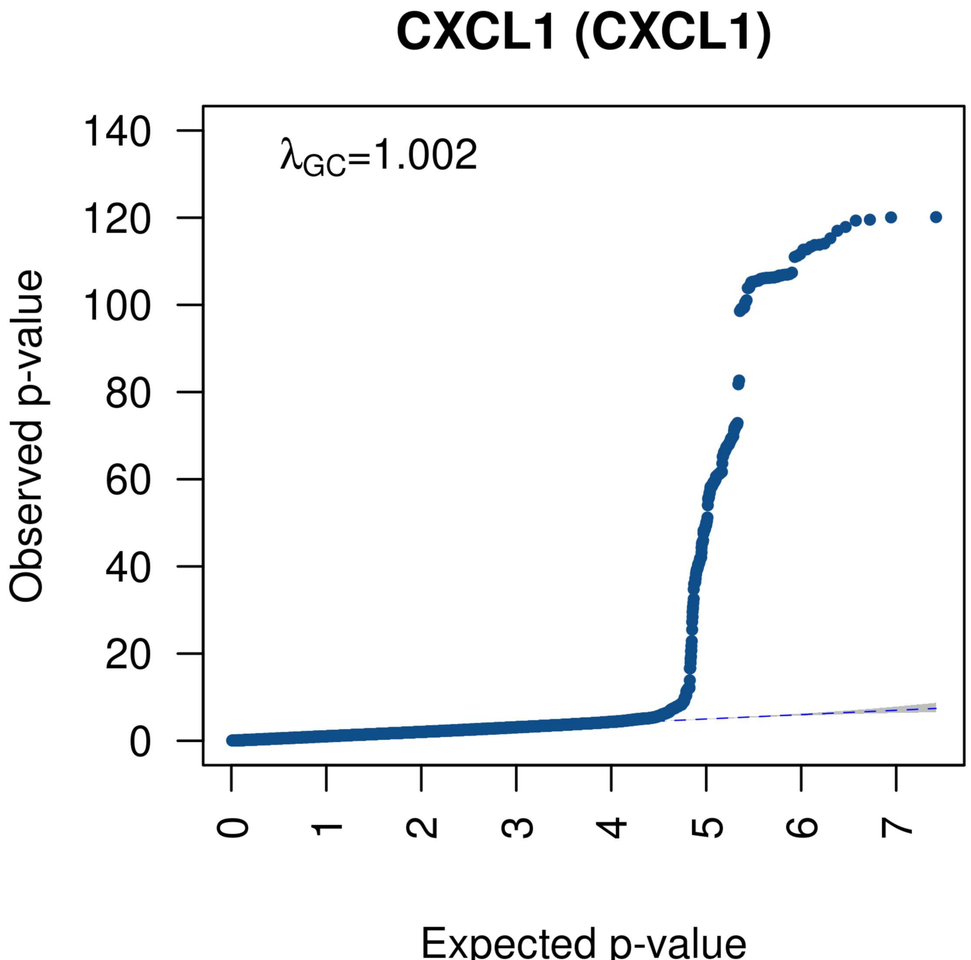

CXCL10 (CXCL10)
CXCL10
SHROOM
SH2B3
−log10 p-value
280
252
224
196
168
140
112
84
56
28
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

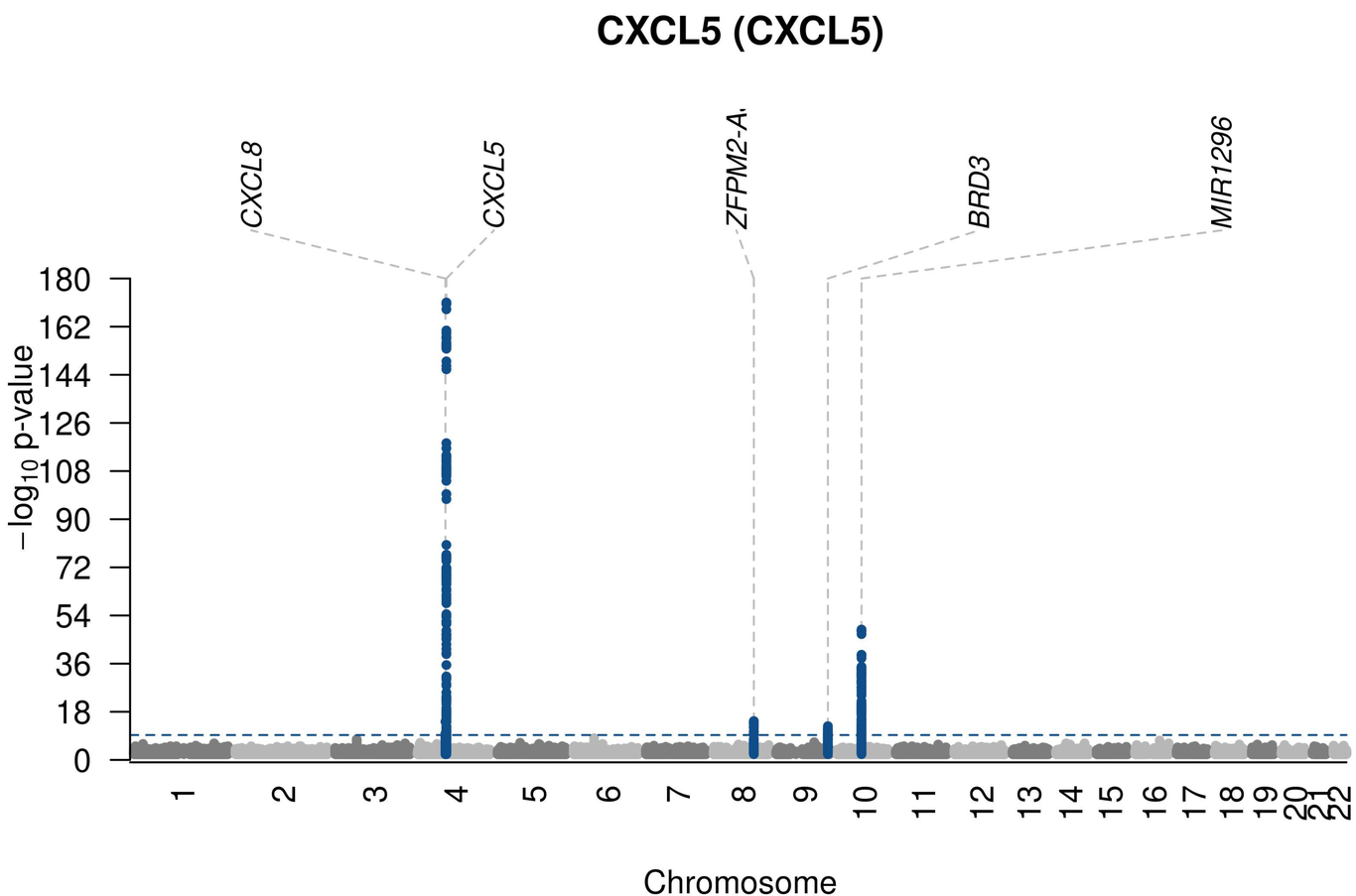

CXCL10 (CXCL10)
λGC=1.006
Observed p-value
300
270
240
210
180
150
120
90
60
30
0
0
1
2
3
4
5
6
7
Expected p-value

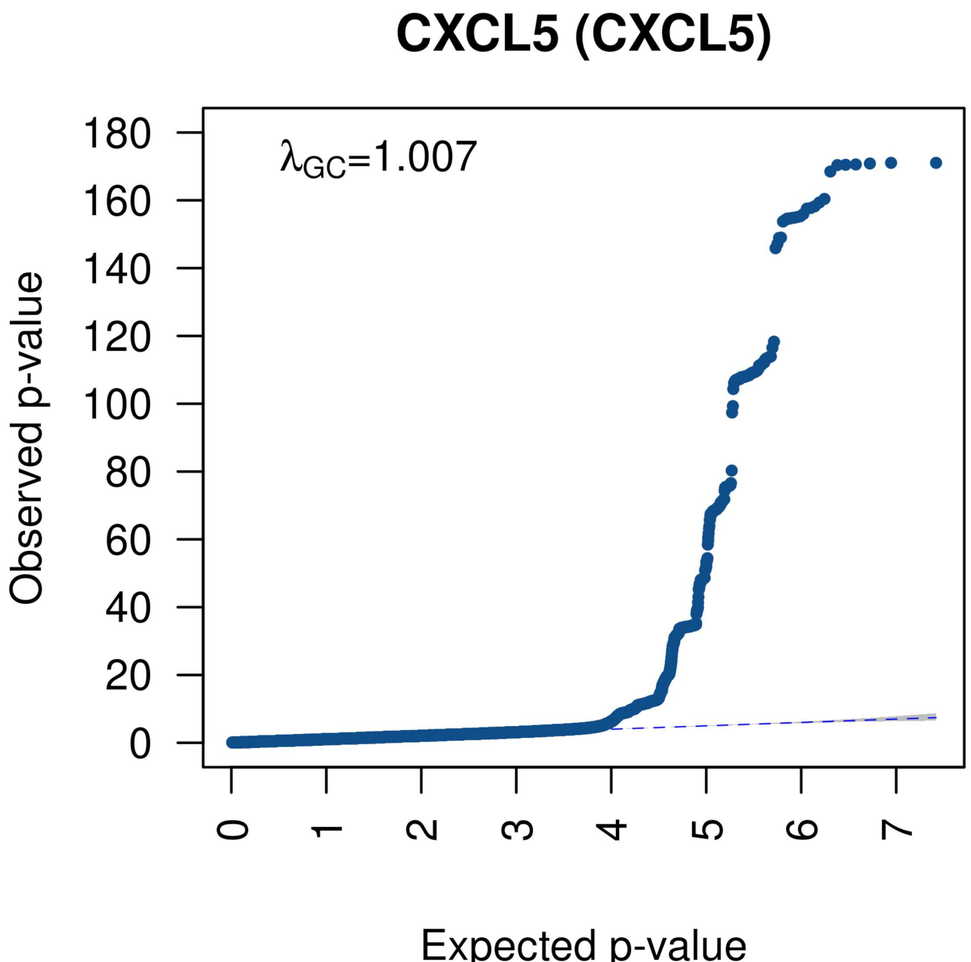

CXCL11 (CXCL11)
SDAD1
CUX1
JMJD1C
SH2B3
−log10 p-value
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

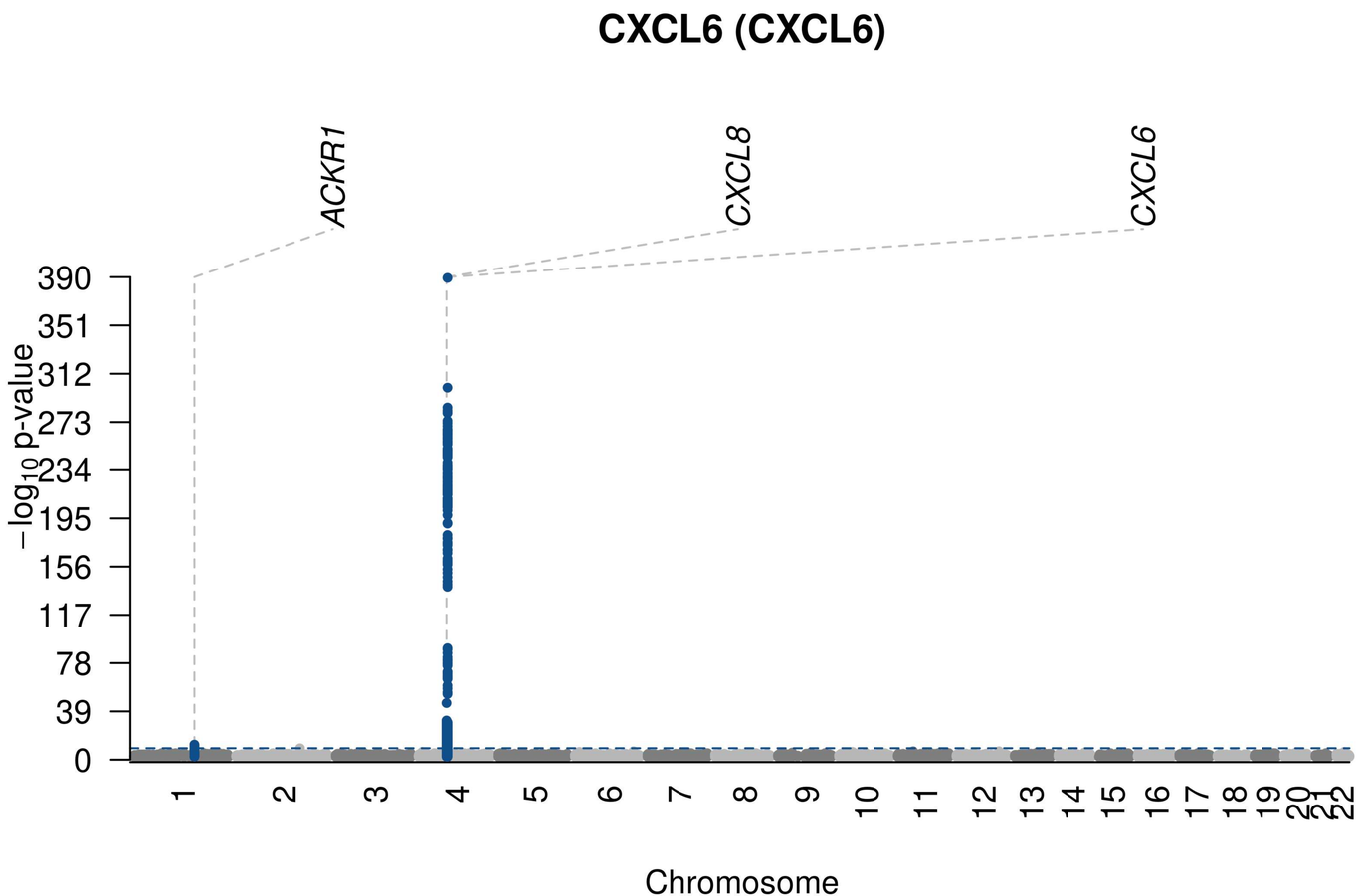

CXCL11 (CXCL11)
λGC=1.016
Observed p-value
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

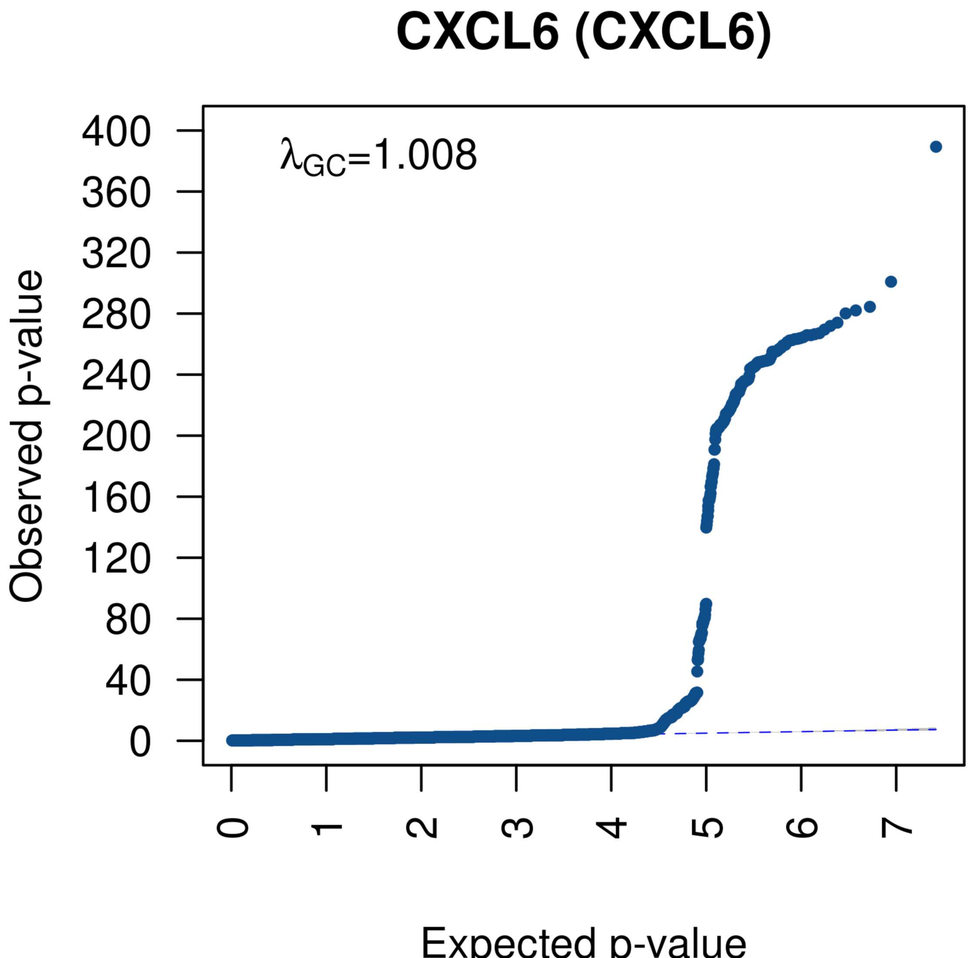

CXCL1 (CXCL1)
CXCL1
130
117
104
91
78
65
52
39
26
13
0
−log10 p-value
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

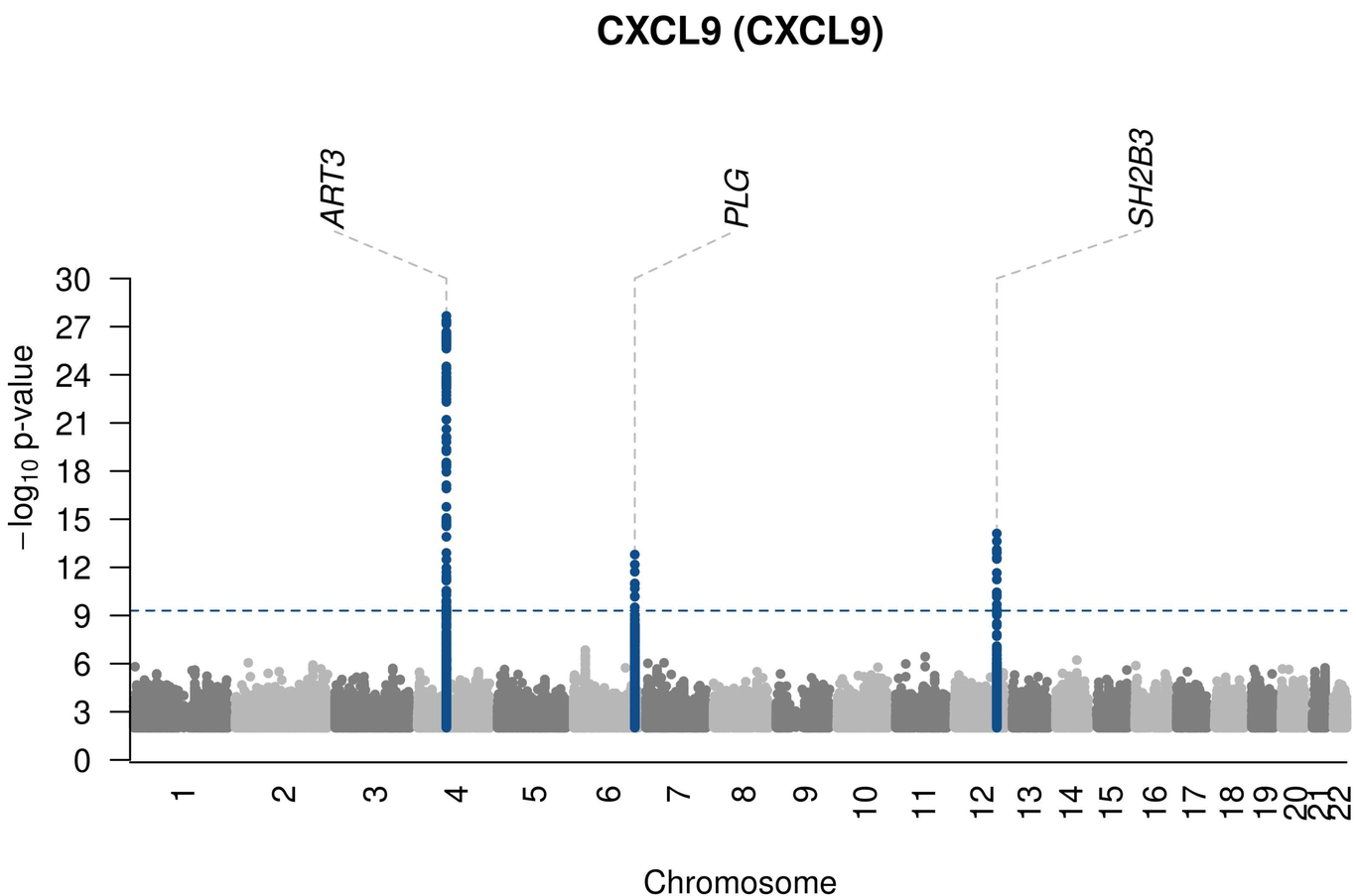

CXCL1 (CXCL1)
λGC=1.002
140
120
100
80
60
40
20
0
Observed p-value
0
1
2
3
4
5
6
7
Expected p-value

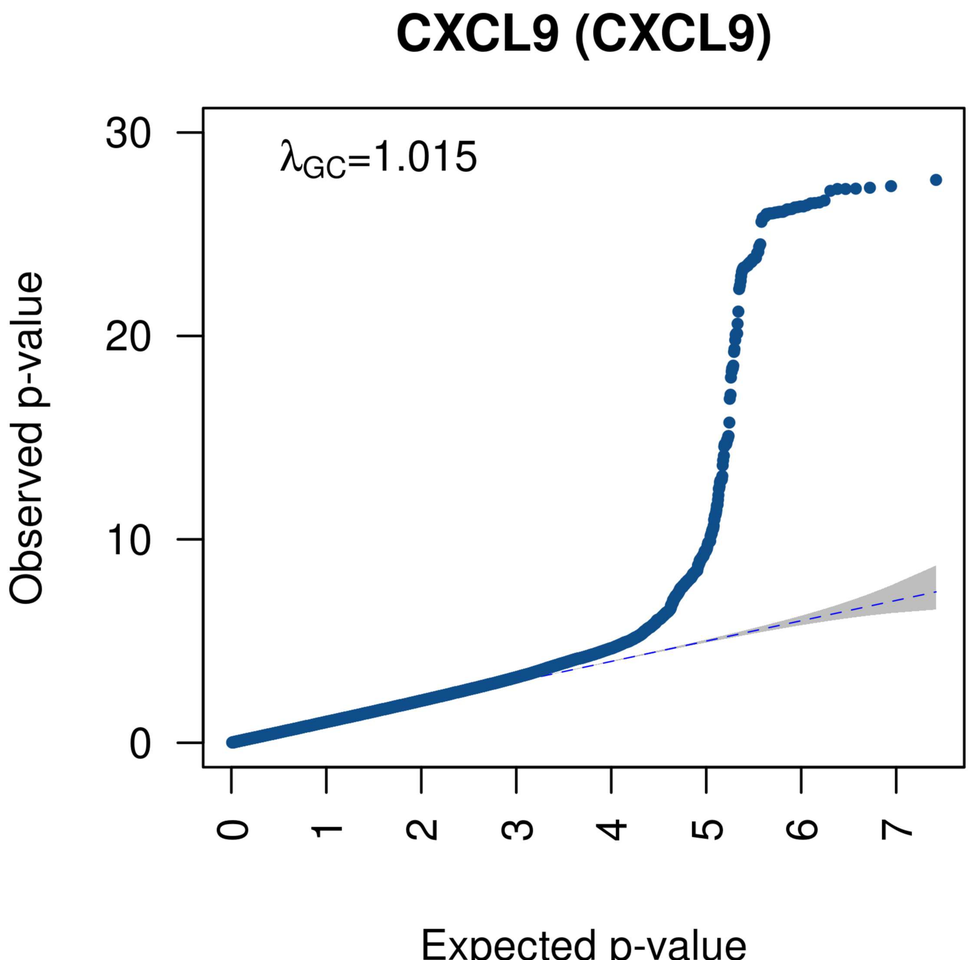

CXCL5 (CXCL5)
CXCL8
CXCL5
ZFPM2-A
BRD3
MIR1296
−log10 p-value
180
162
144
126
108
90
72
54
36
18
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

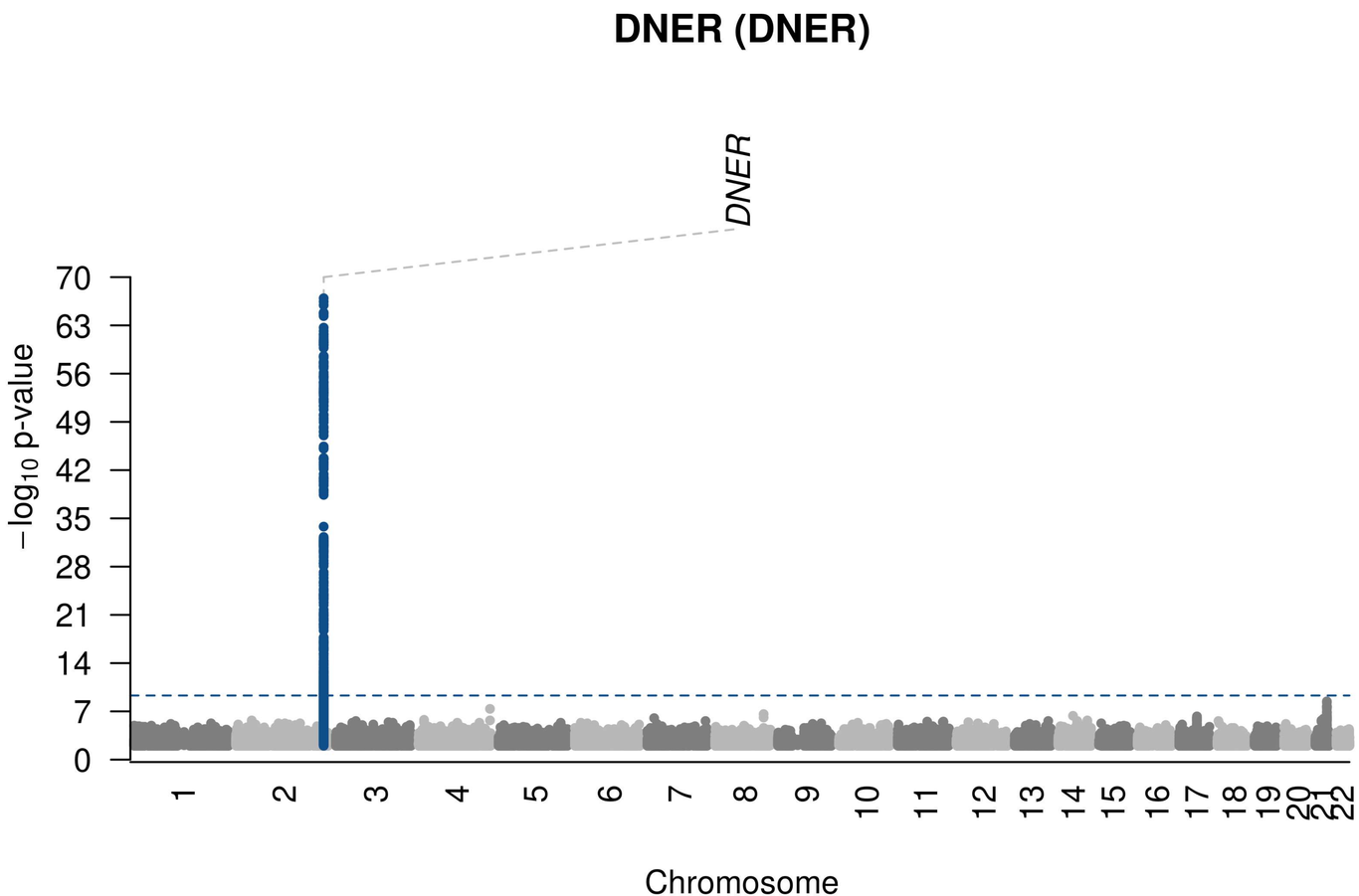

CXCL5 (CXCL5)
λGC=1.007
Observed p-value
180
160
140
120
100
80
60
40
20
0
0
1
2
3
4
5
6
7
Expected p-value

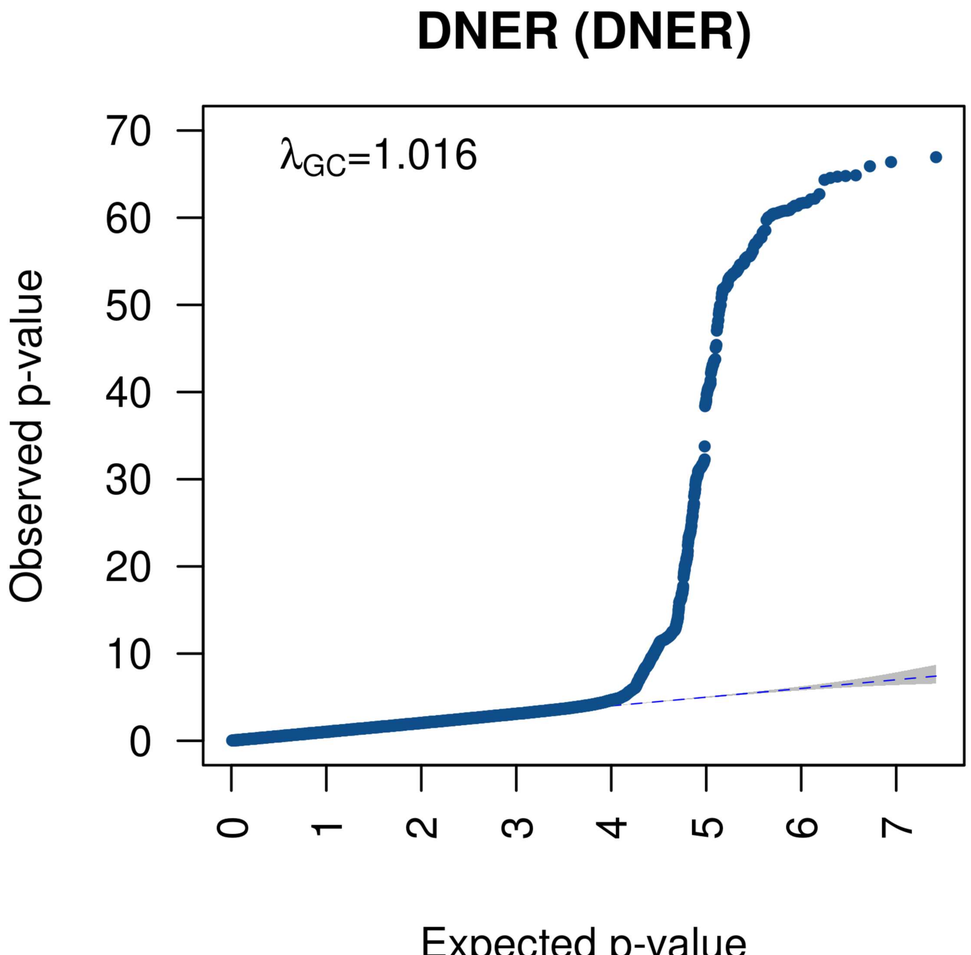

CXCL6 (CXCL6)
ACKR1
CXCL8
CXCL6
390
351
312
273
234
195
156
117
78
39
0
−log10 p-value
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

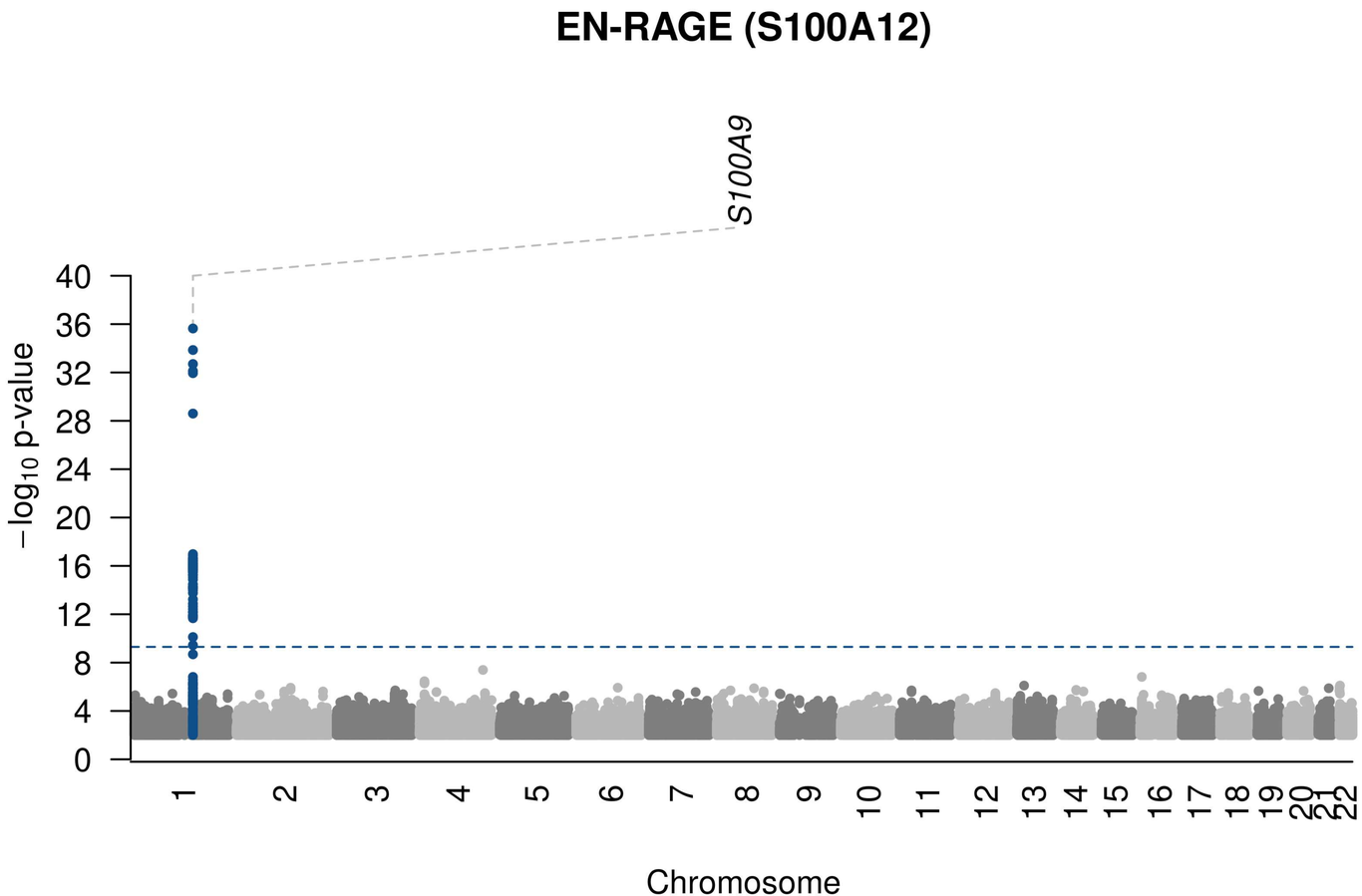

CXCL6 (CXCL6)
λGC=1.008
400
360
320
280
240
200
160
120
80
40
0
Observed p-value
0
1
2
3
4
5
6
7
Expected p-value

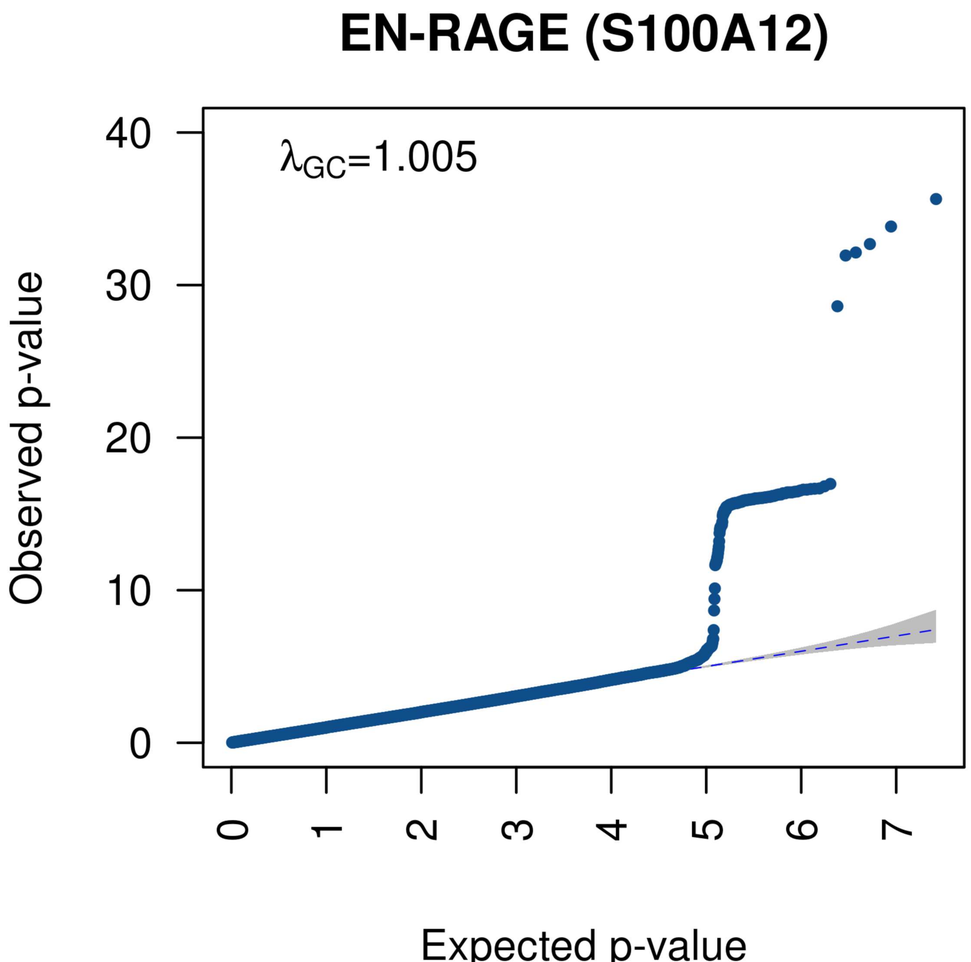

CXCL9 (CXCL9)
ART3
PLG
SH2B3
−log10 p-value
30
27
24
21
18
15
12
9
6
3
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

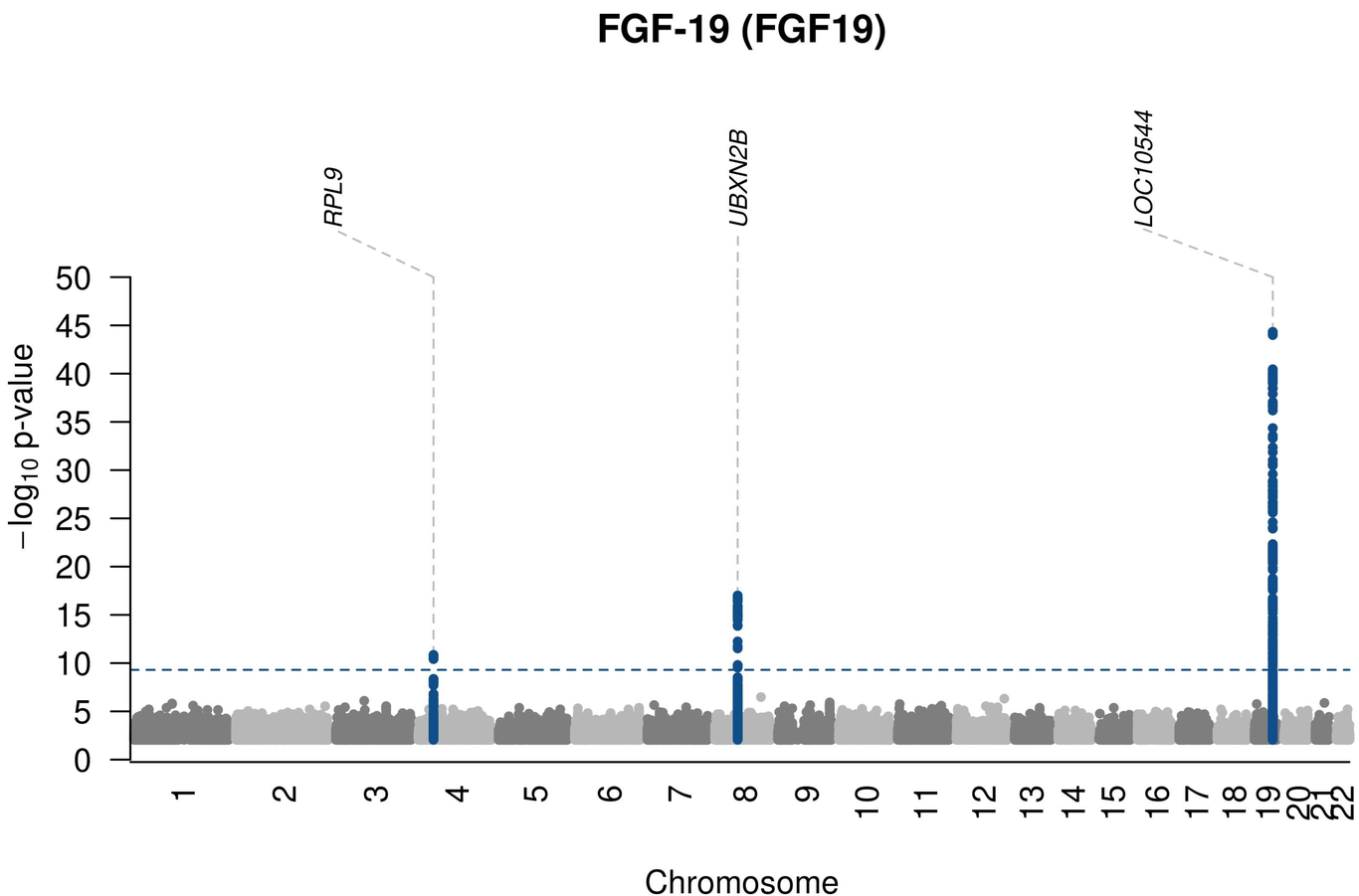

CXCL9 (CXCL9)
λGC=1.015
Observed p-value
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

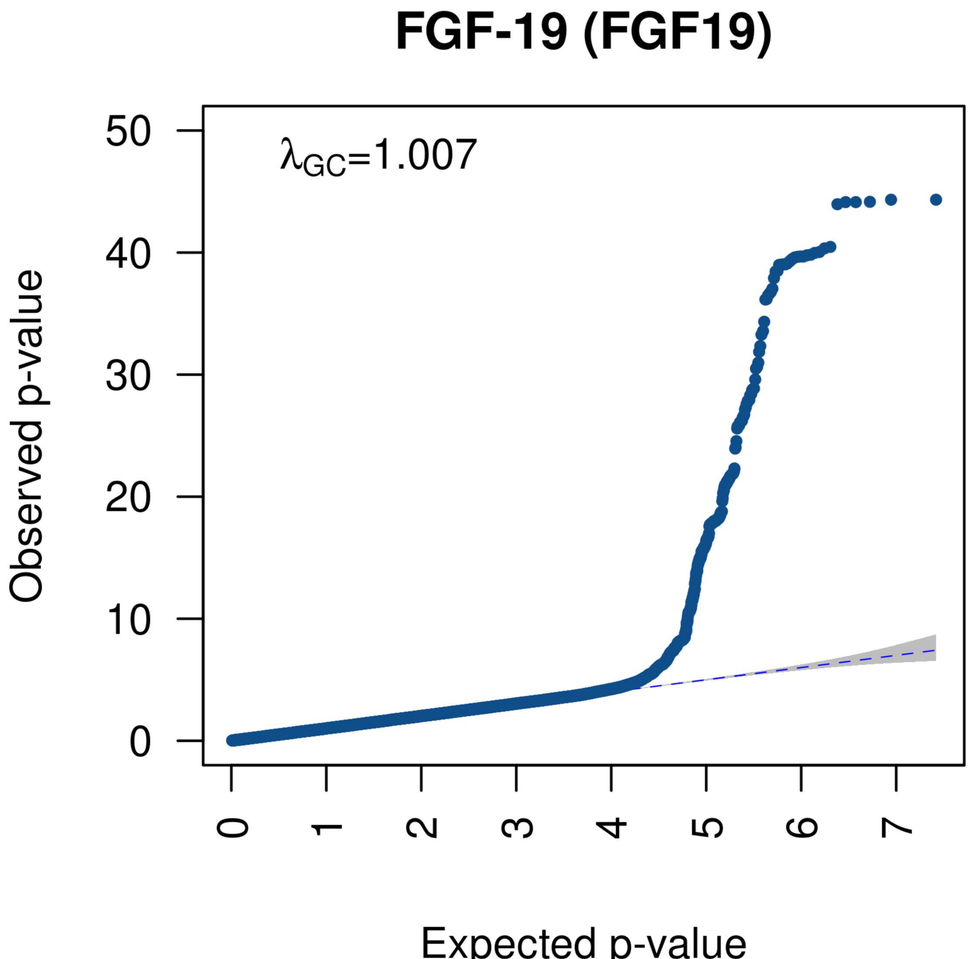

DNER (DNER)
DNER
−log10 p-value
70
63
56
49
42
35
28
21
14
7
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

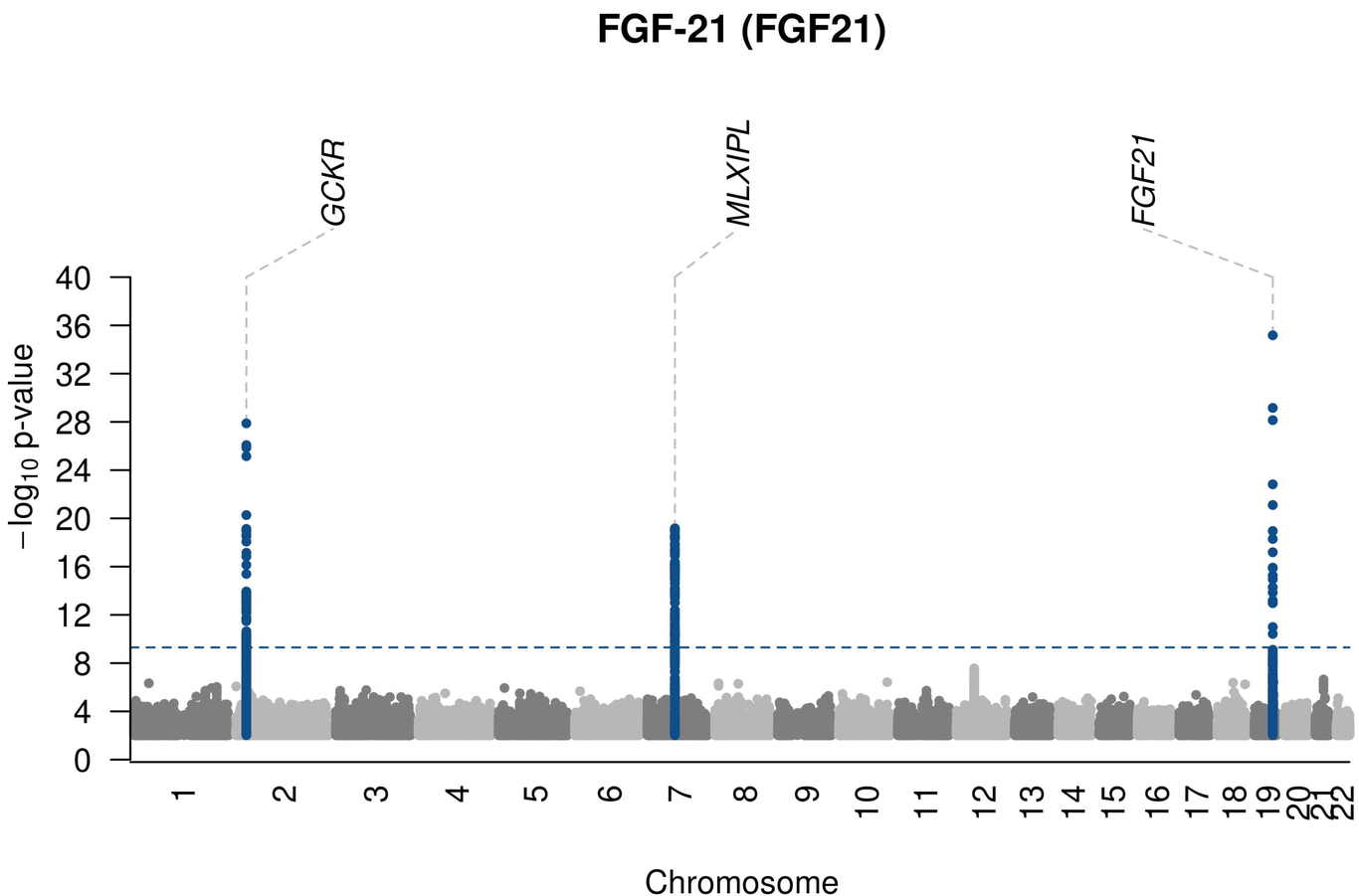

DNER (DNER)
λGC=1.016
Observed p-value
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

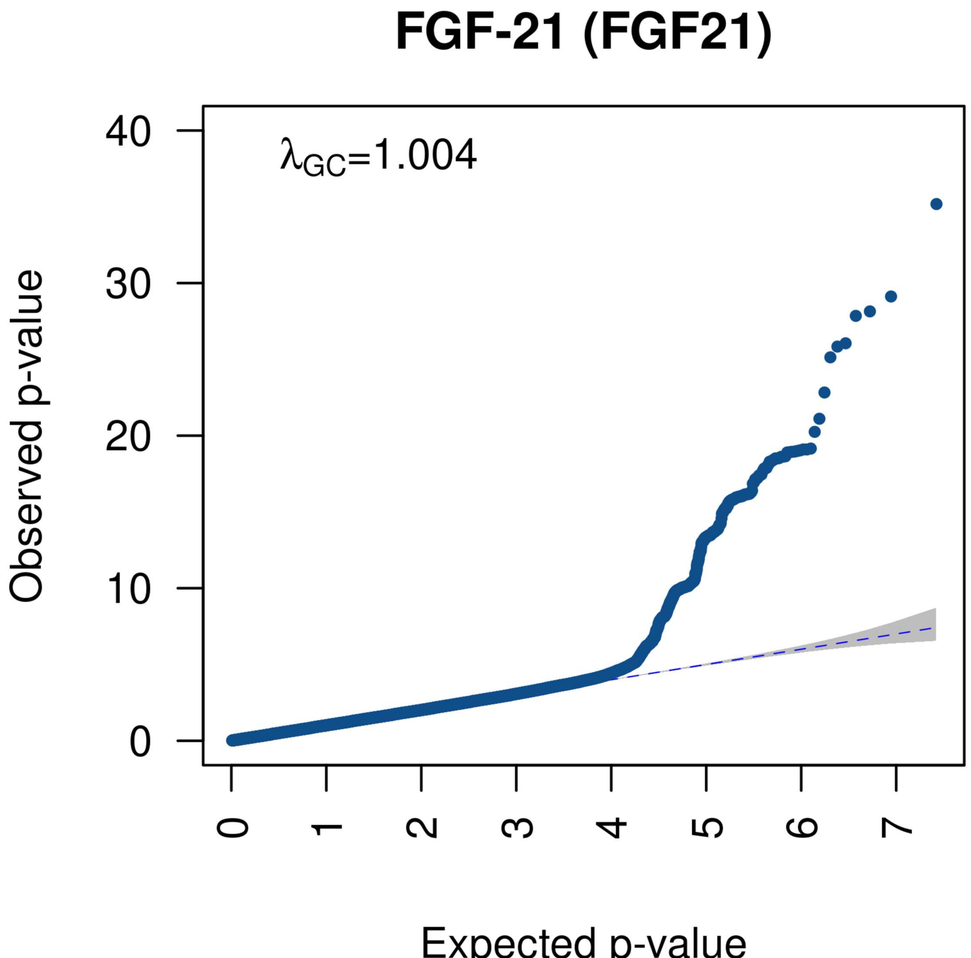

EN-RAGE (S100A12)
S100A9
−log10 p-value
40
36
32
28
24
20
16
12
8
4
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

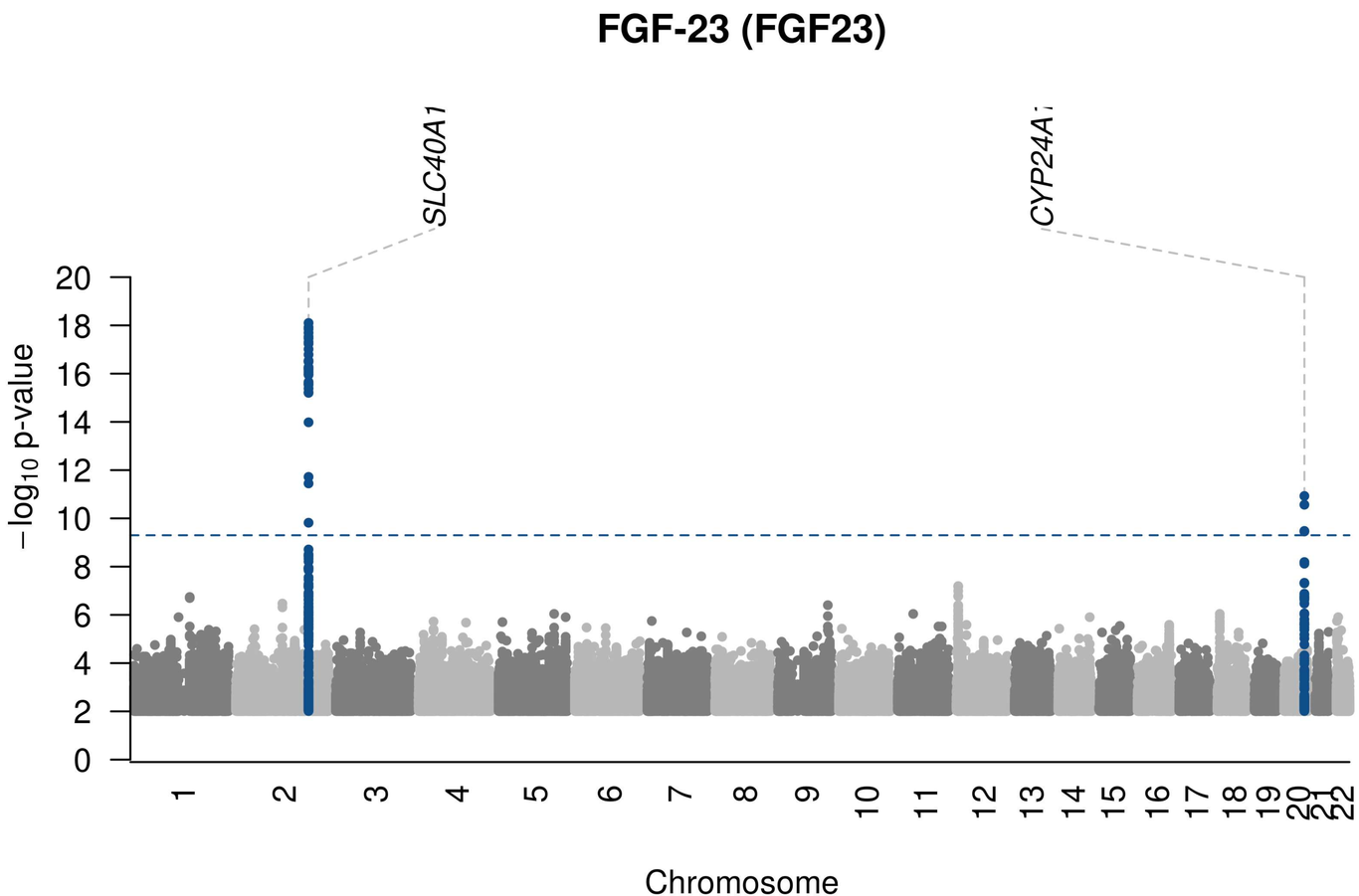

EN-RAGE (S100A12)
λGC=1.005
Observed p-value
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

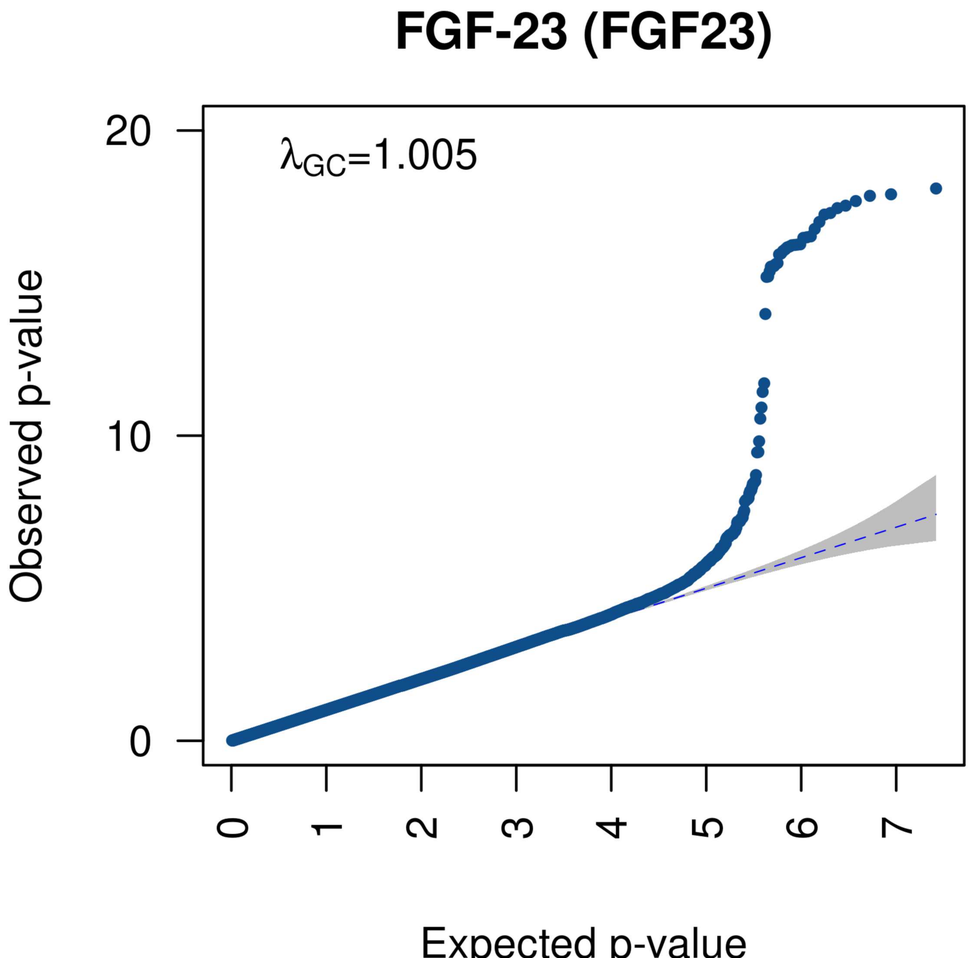

FGF-19 (FGF19)
RPL9
UBXN2B
LOC10544
−log10 p-value
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

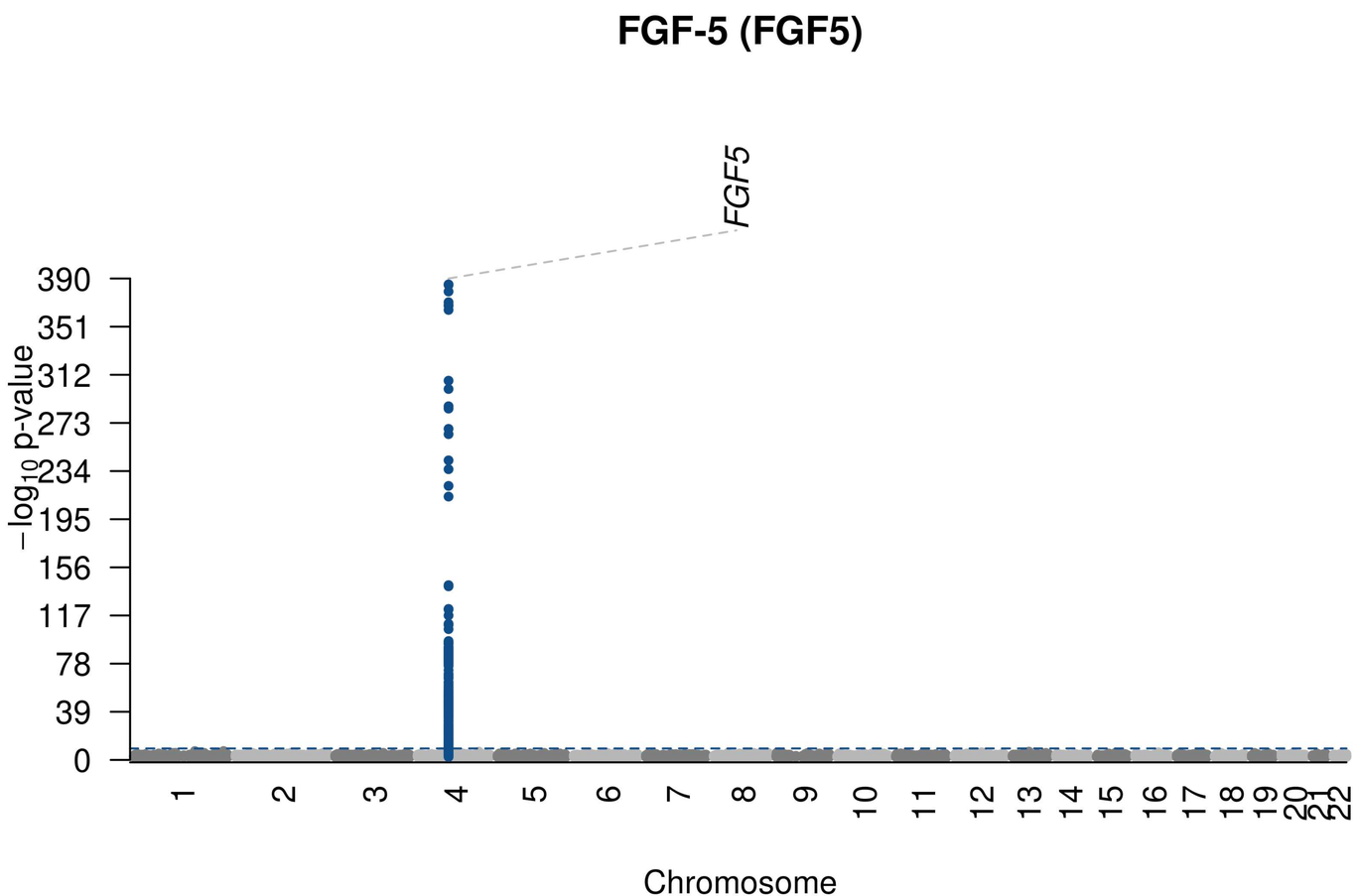

FGF-19 (FGF19)
λGC=1.007
Observed p-value
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

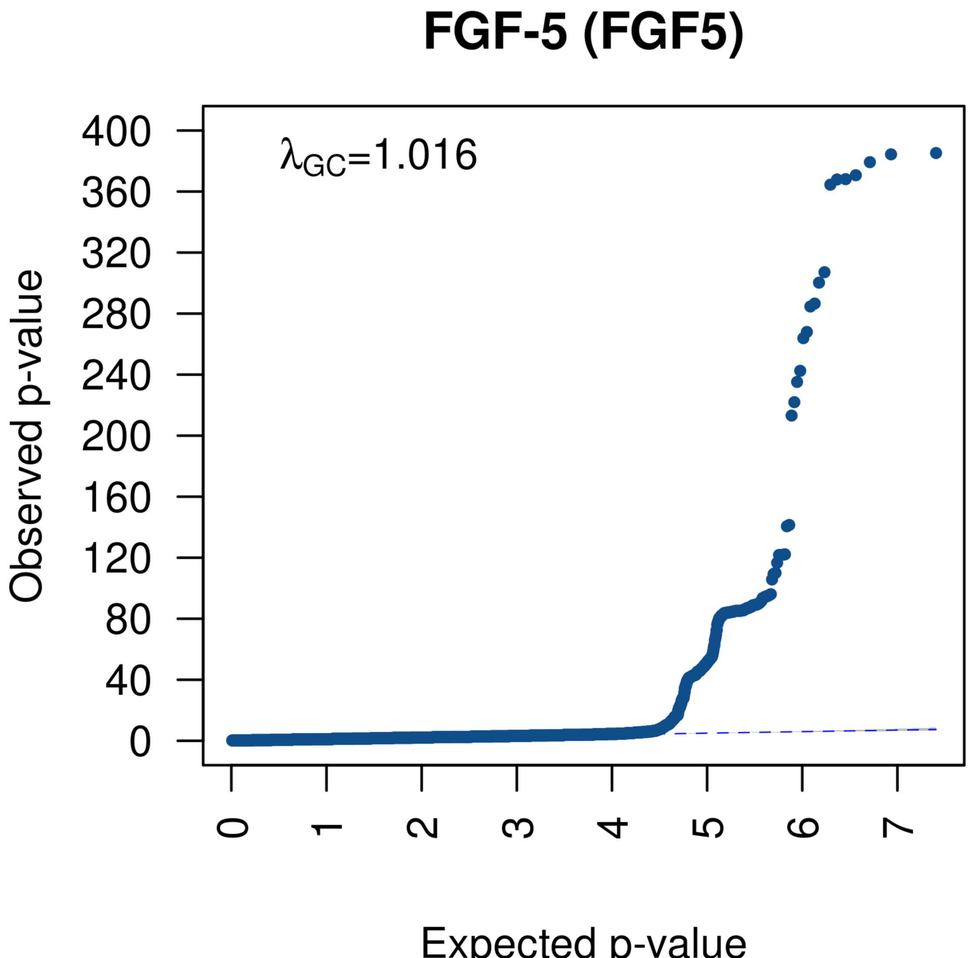

FGF-21 (FGF21)
GCKR
MLXIPL
FGF21
−log10 p-value
40
36
32
28
24
20
16
12
8
4
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

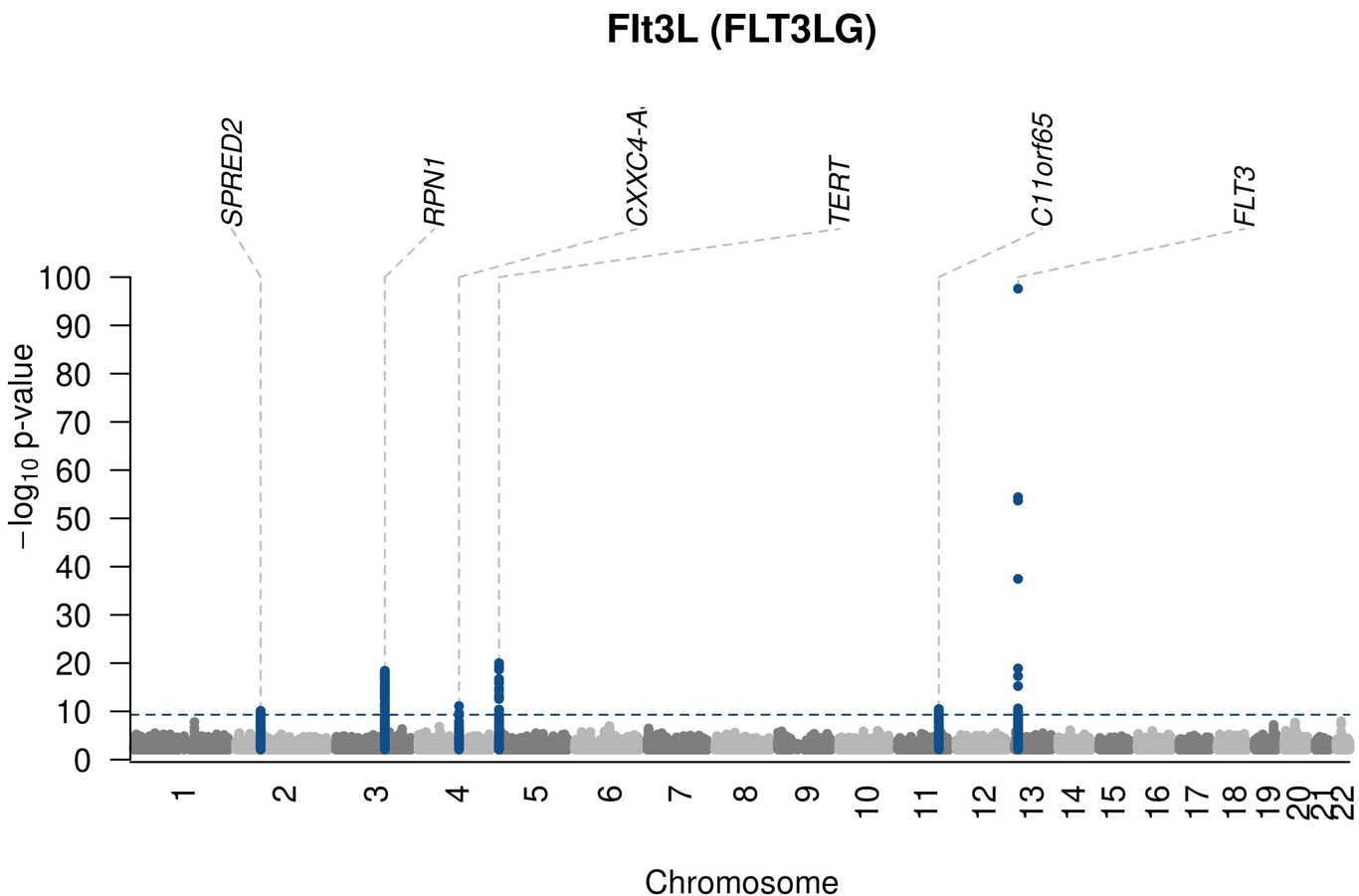

FGF-21 (FGF21)
λGC=1.004
Observed p-value
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

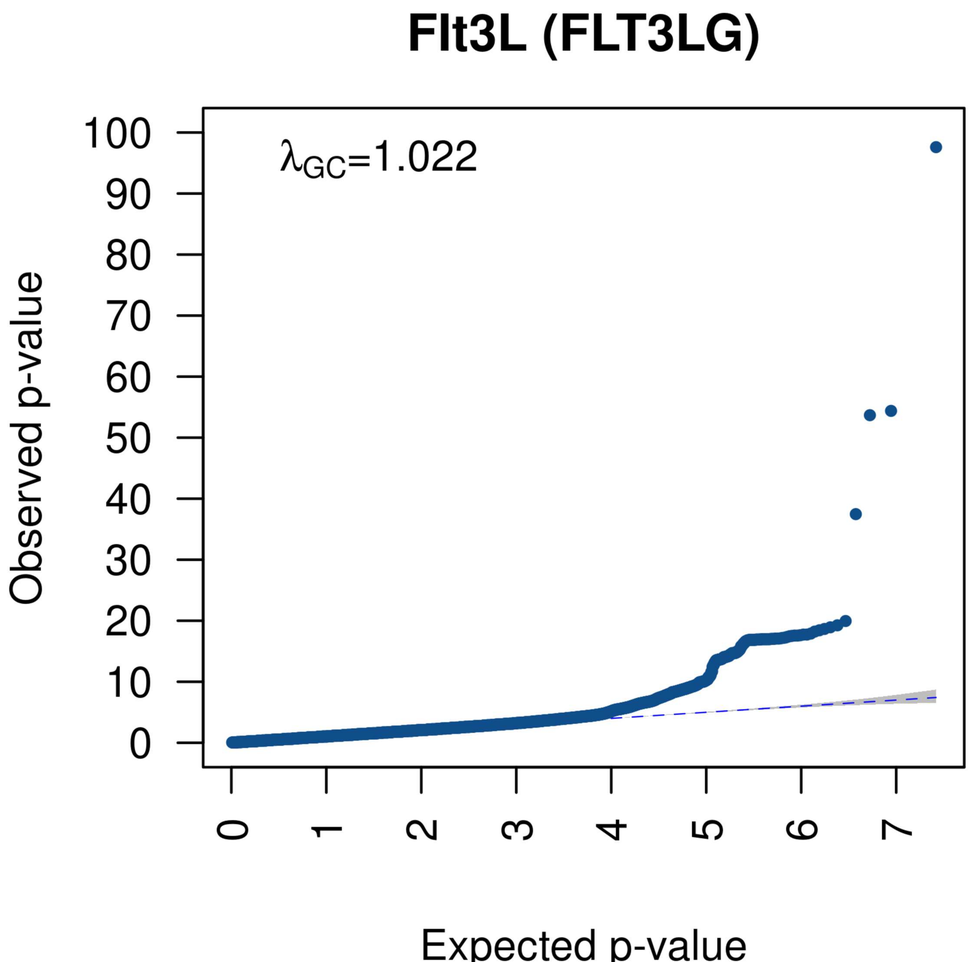

FGF-23 (FGF23)
SLC40A1
CYP24A1
−log10 p-value
20
18
16
14
12
10
8
6
4
2
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

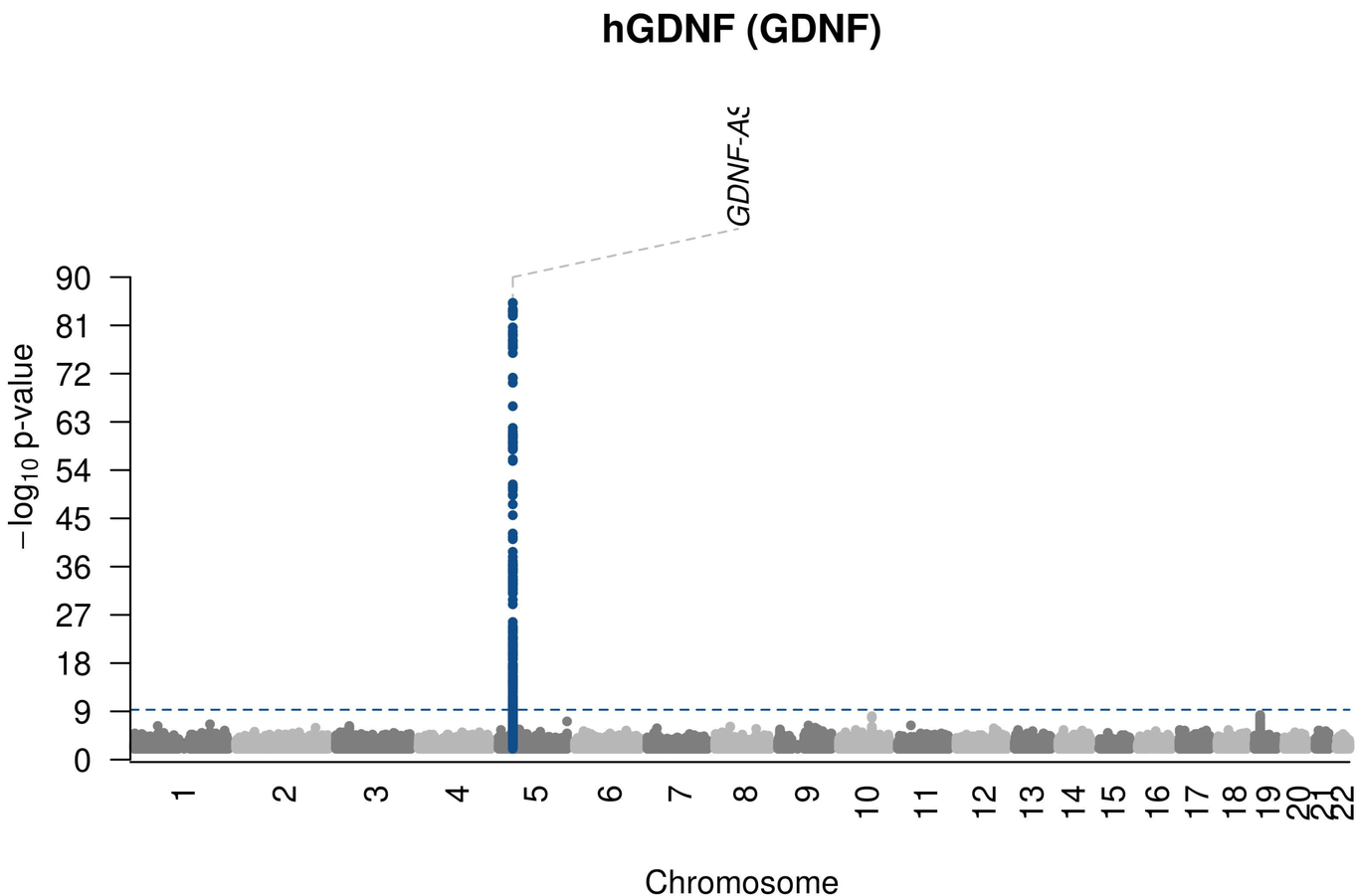

FGF-23 (FGF23)
λGC=1.005
Observed p-value
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

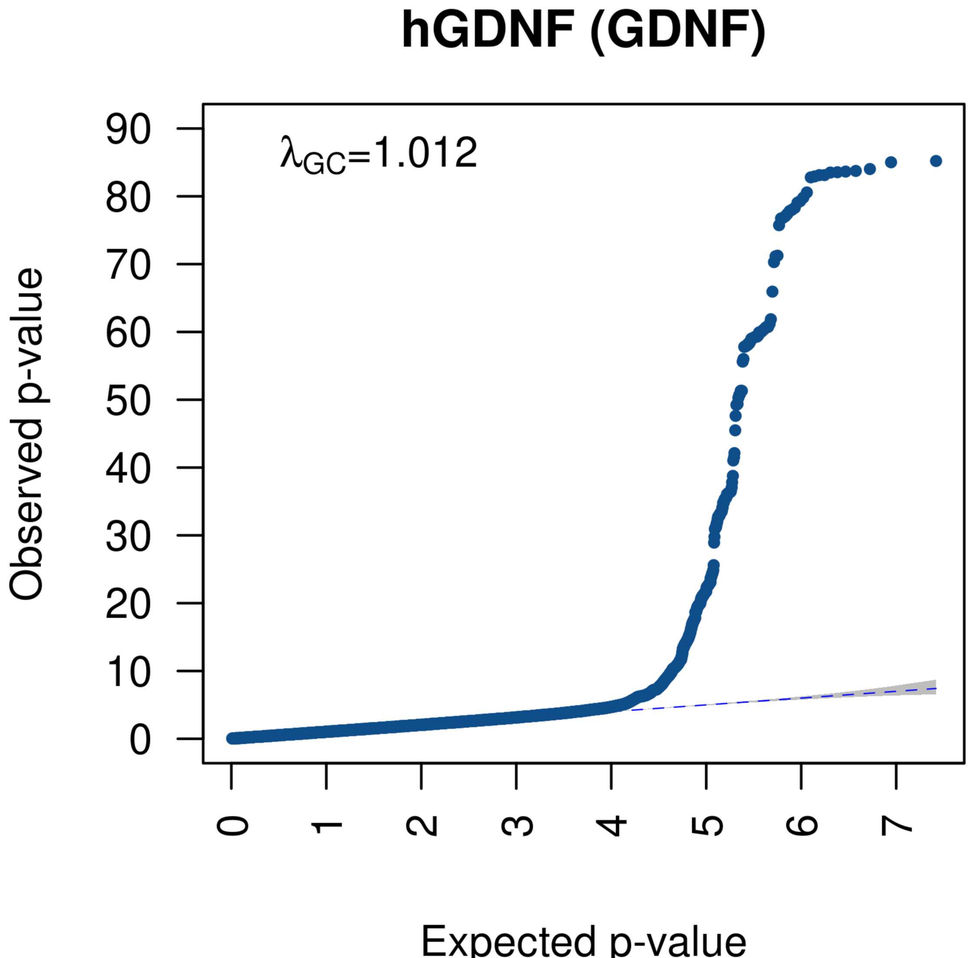

FGF-5 (FGF5)
FGF5
390
351
312
273
234
195
156
117
78
39
0
−log10 p-value
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

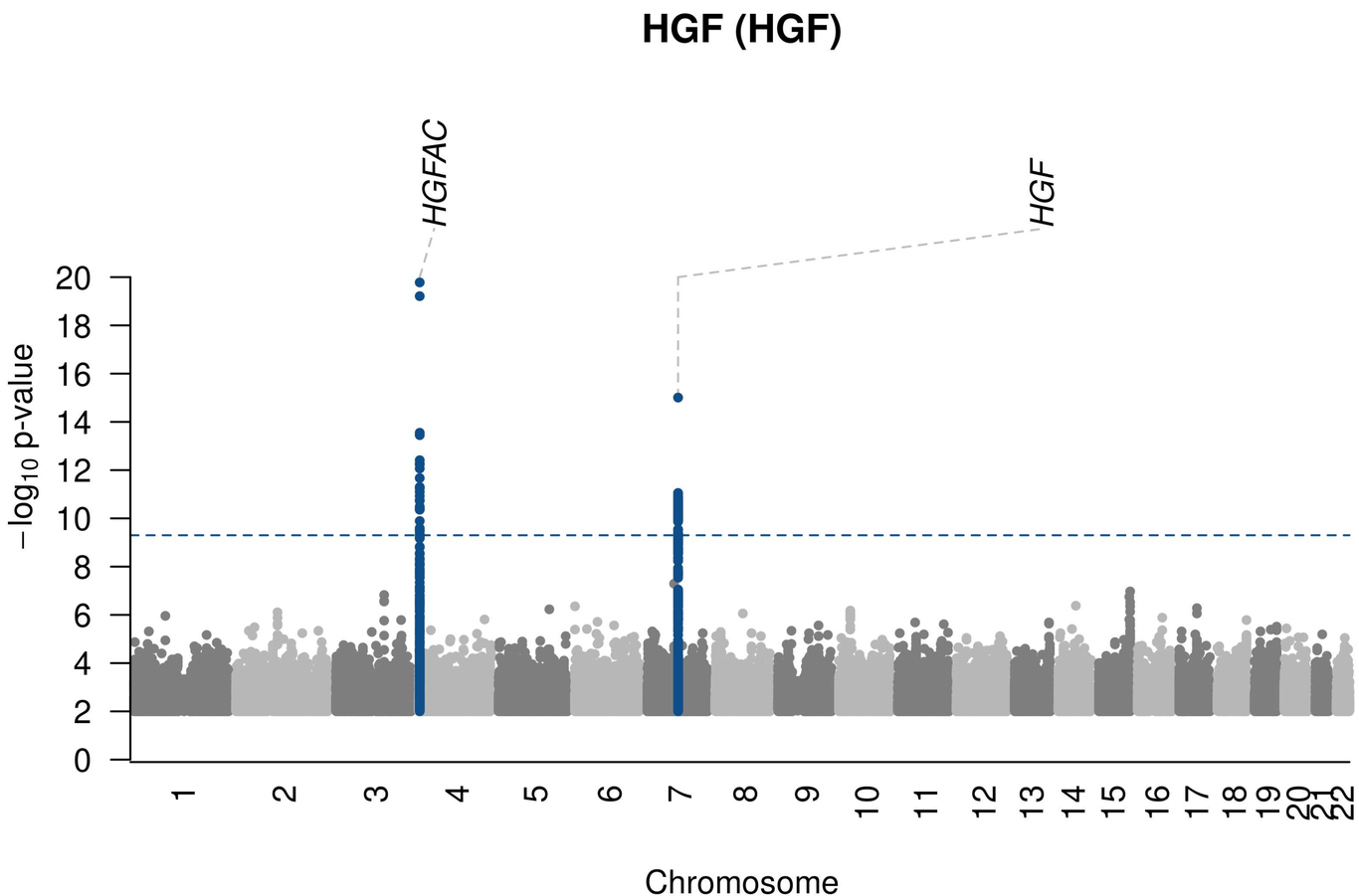

FGF-5 (FGF5)
λGC=1.016
400
360
320
280
240
200
160
120
80
40
0
Observed p-value
0
1
2
3
4
5
6
7
Expected p-value

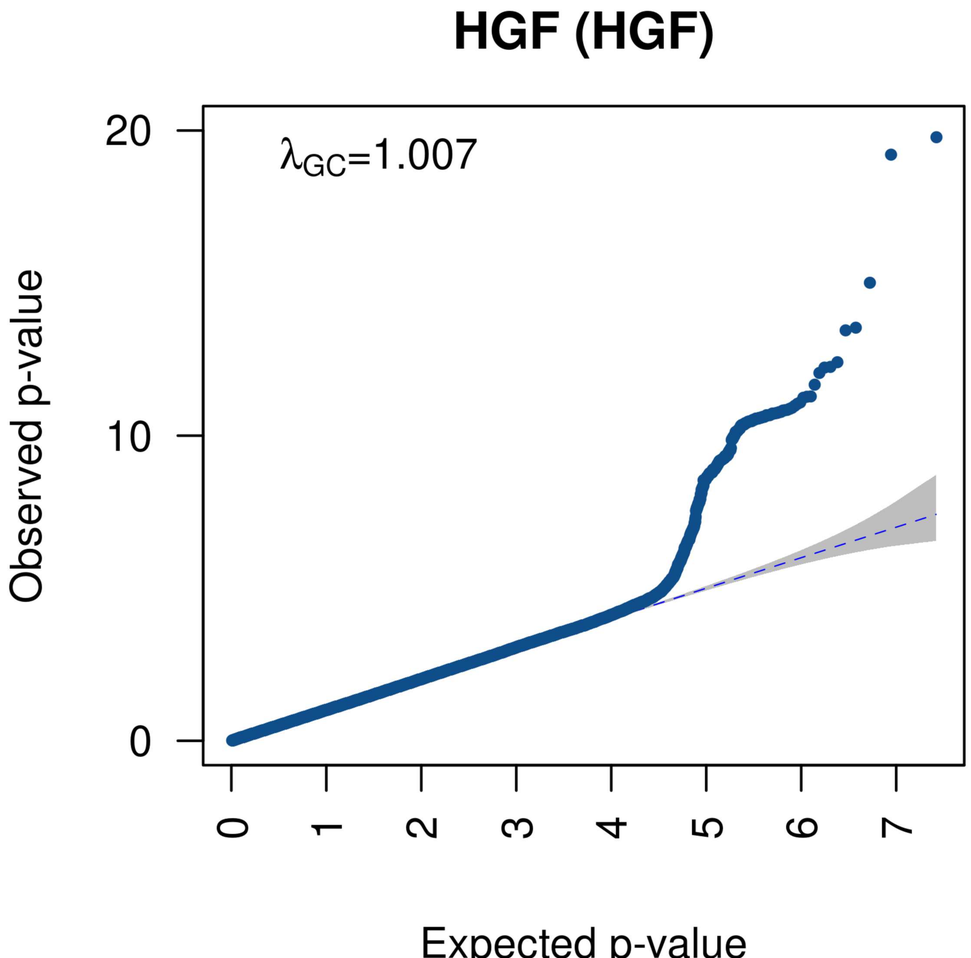

Flt3L (FLT3LG)
SPRED2
RPN1
CXXC4-A
TERT
C11orf65
FLT3
−log10 p-value
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

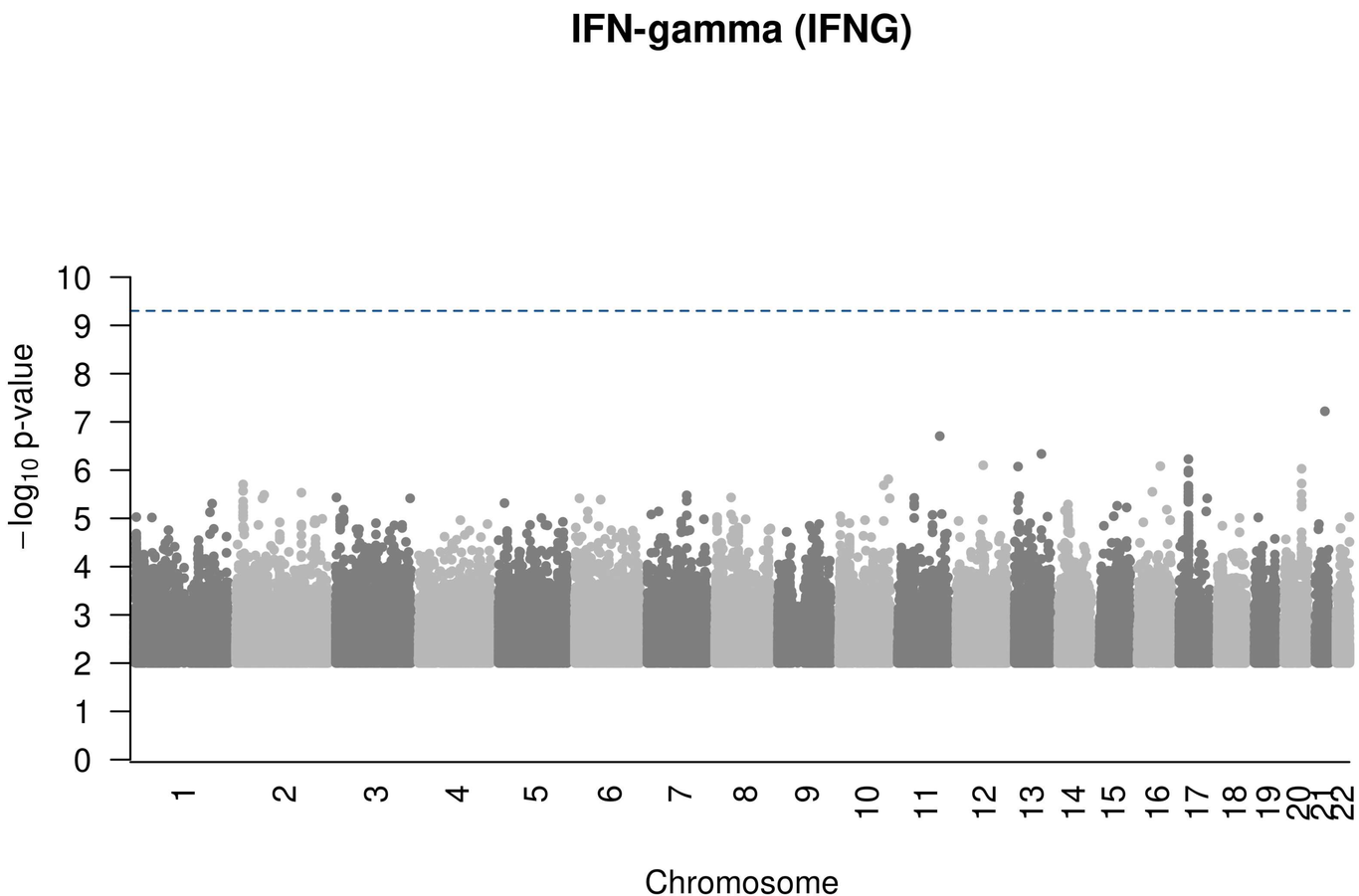

Flt3L (FLT3LG)
λGC=1.022
Observed p-value
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

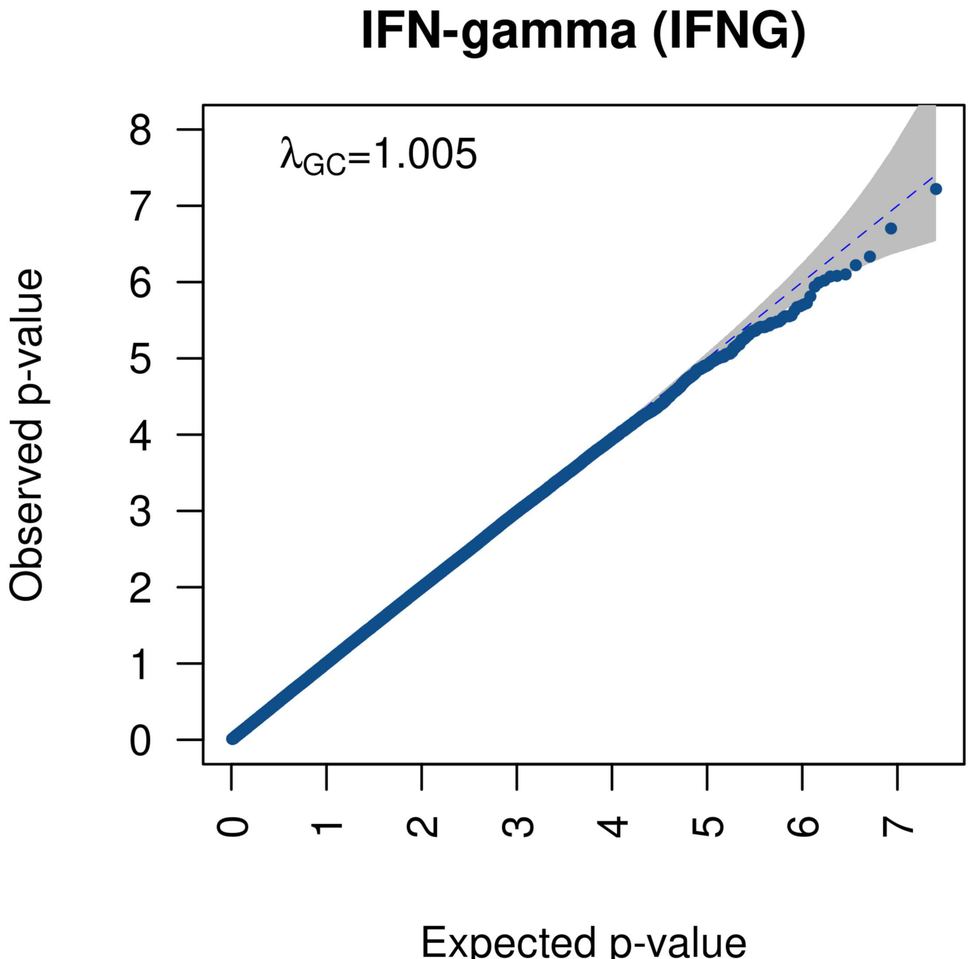

hGDNF (GDNF)
GDNF-AS
−log10 p-value
90
81
72
63
54
45
36
27
18
9
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

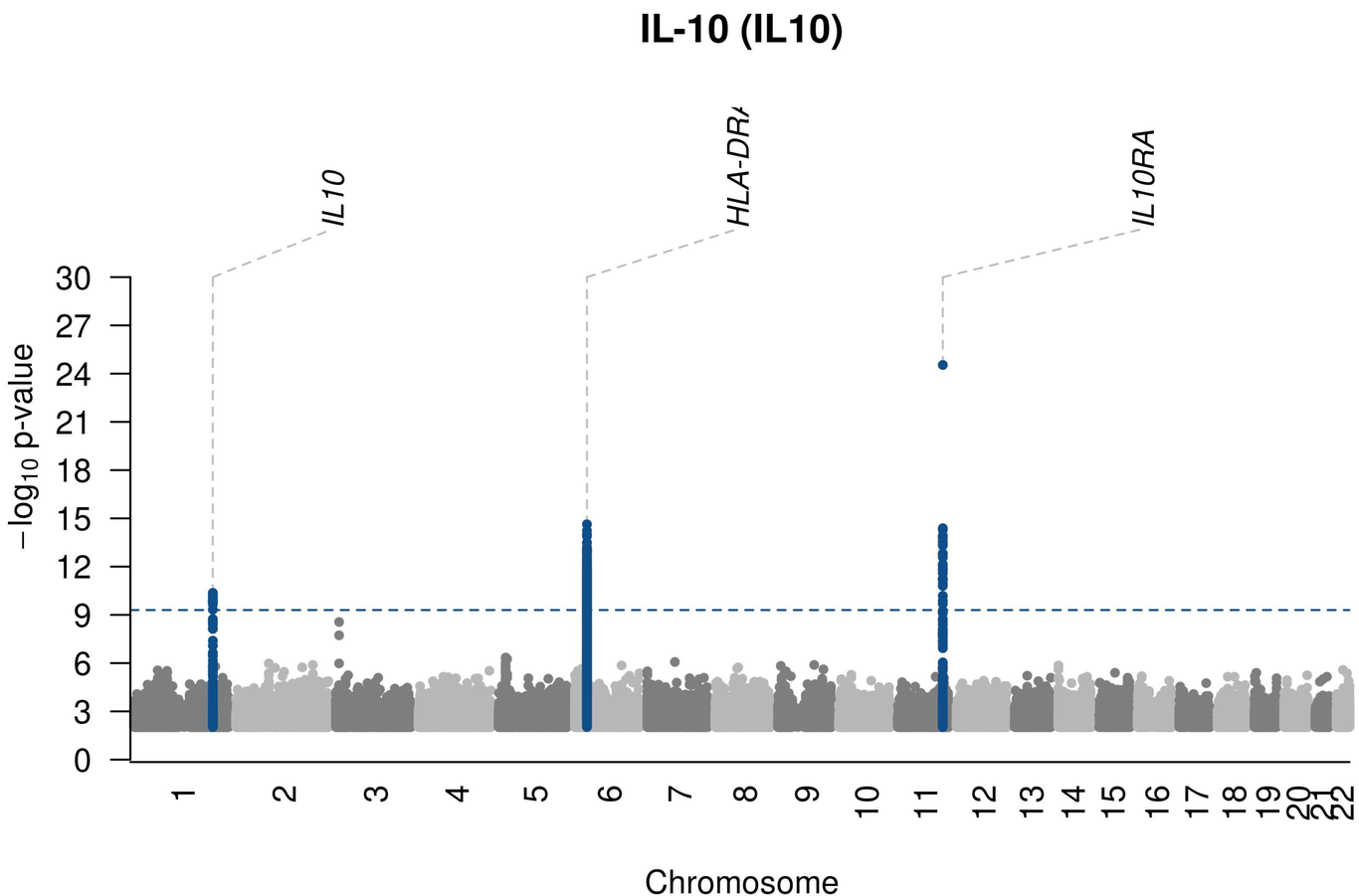

hGDNF (GDNF)
λGC=1.012
Observed p-value
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

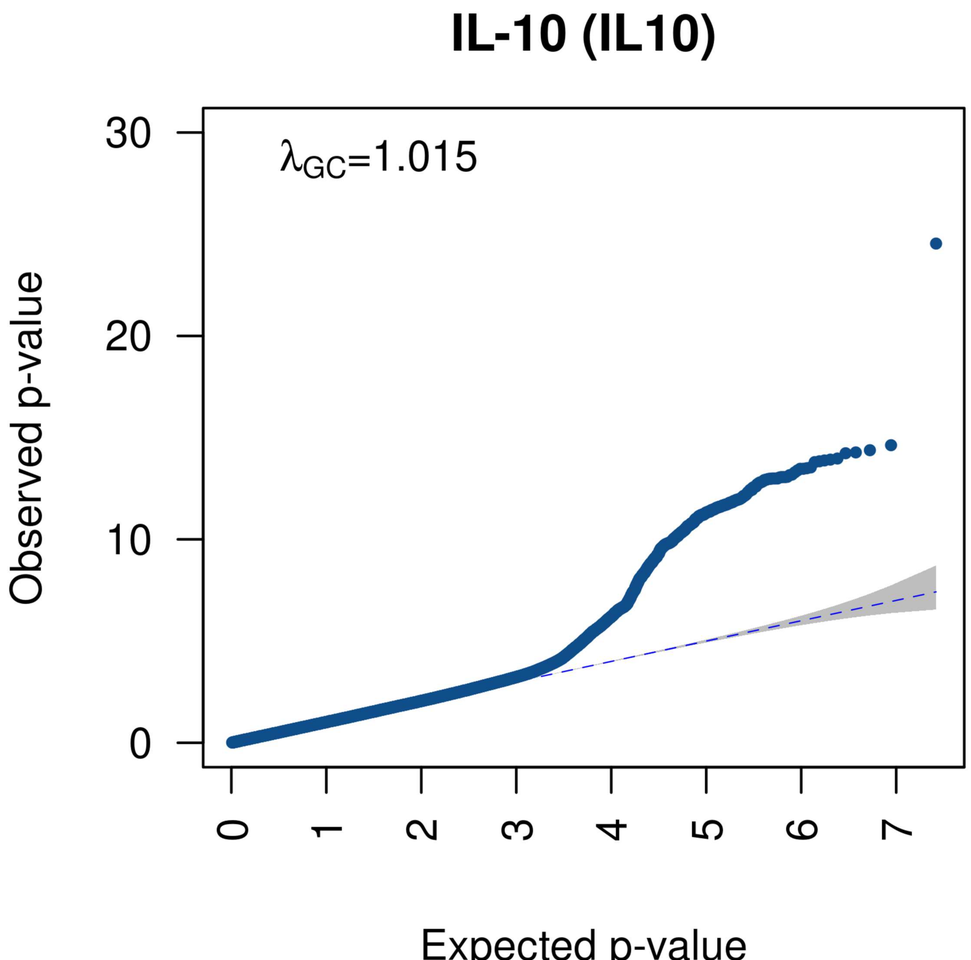

HGF (HGF)
HGFAC
HGF
−log10 p-value
20
18
16
14
12
10
8
6
4
2
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

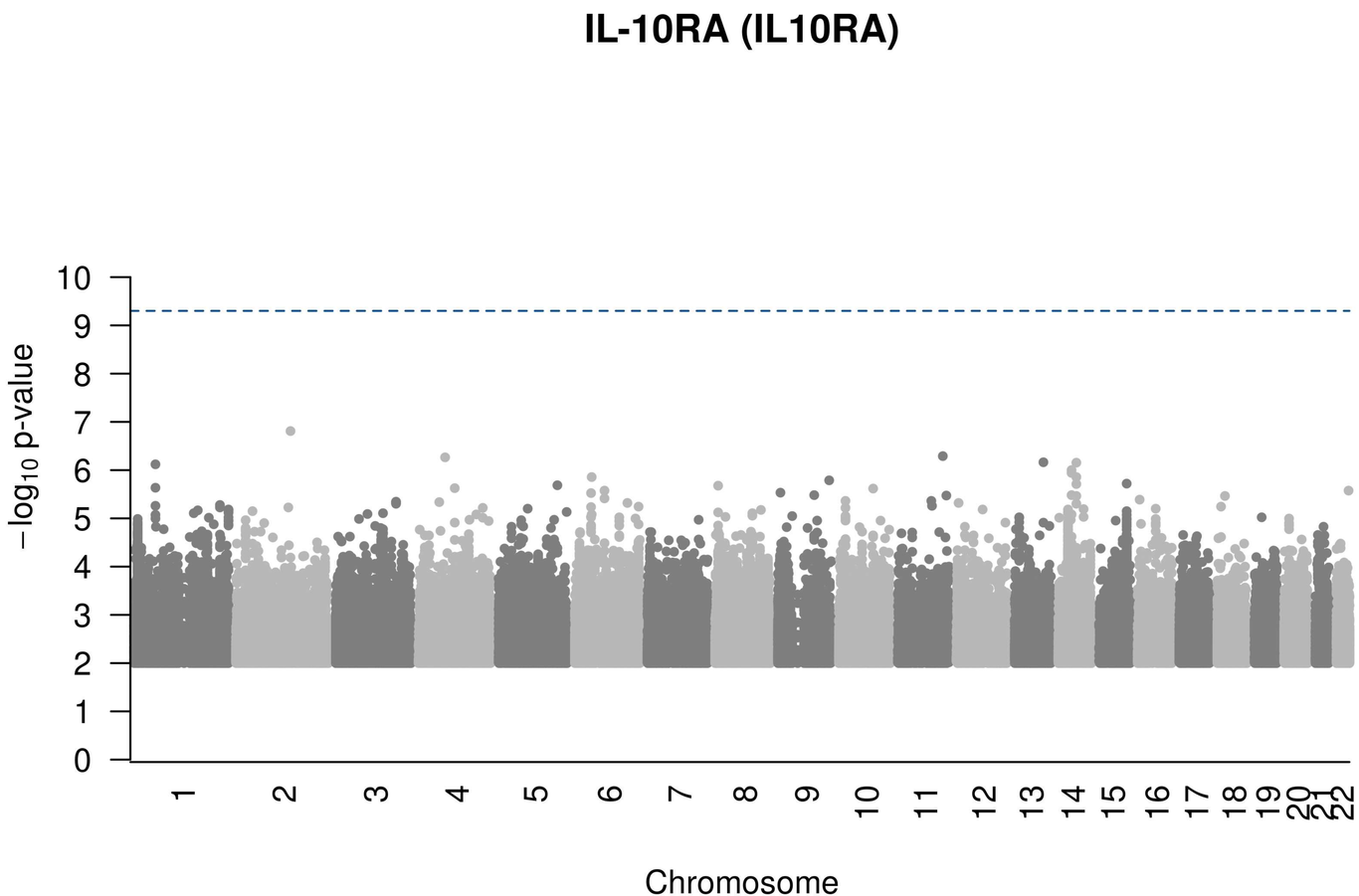

HGF (HGF)
λGC=1.007
Observed p-value
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

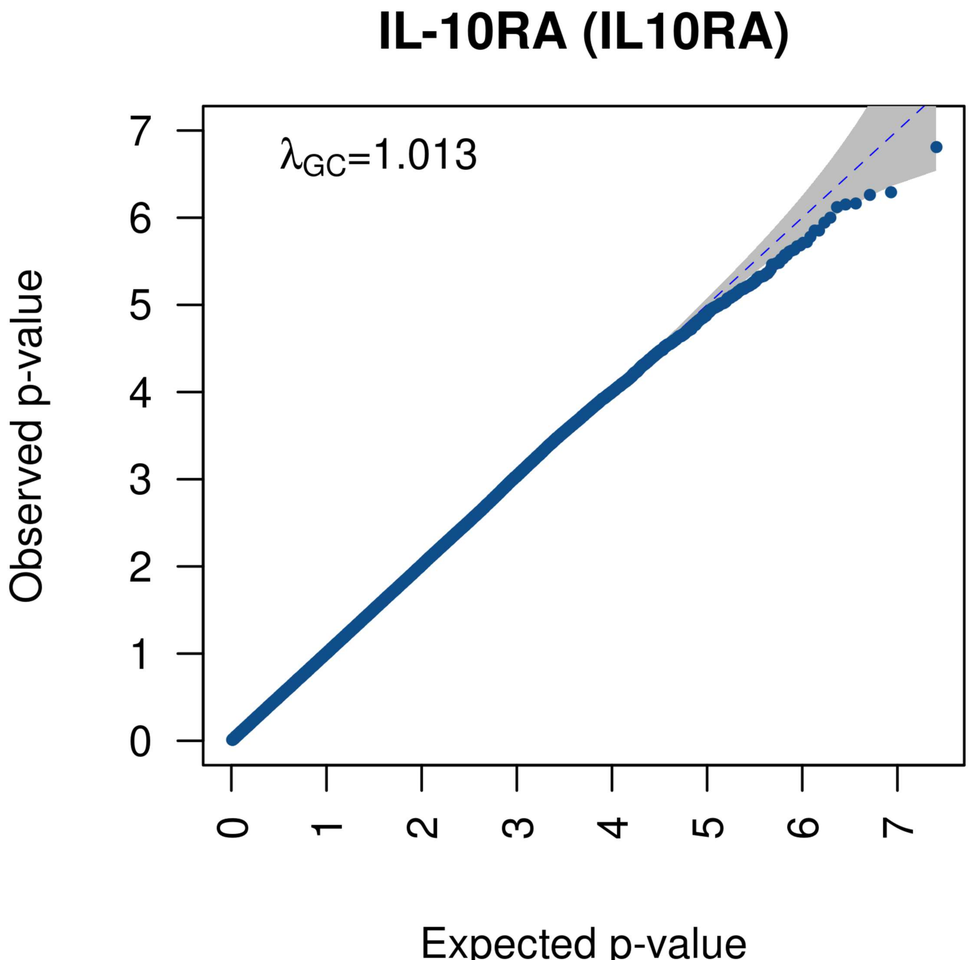

IFN-gamma (IFNG)
−log10 p-value
Chromosome
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

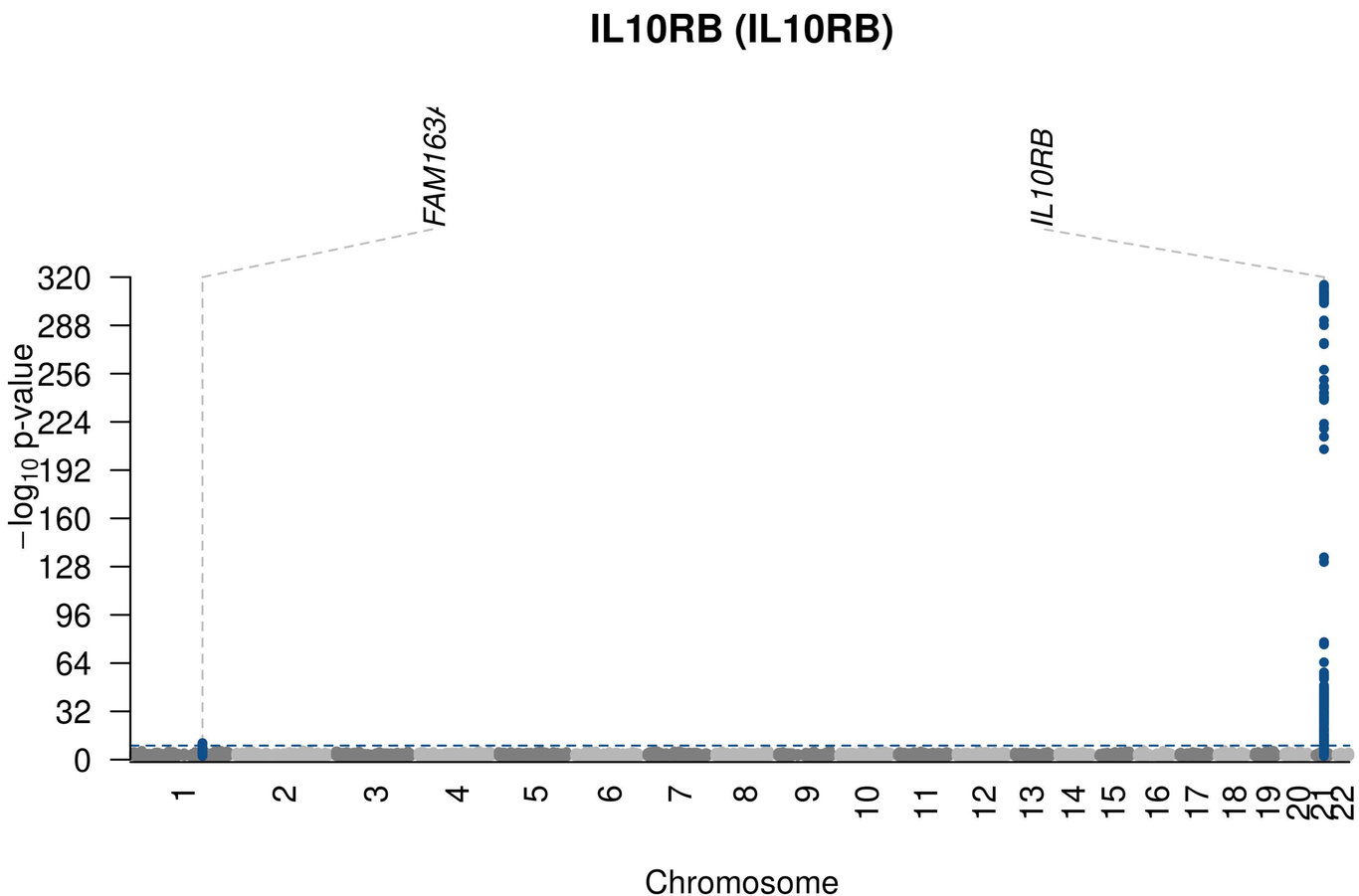

IFN-gamma (IFNG)
λGC=1.005
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7
8
0
1
2
3
4
5
6
7

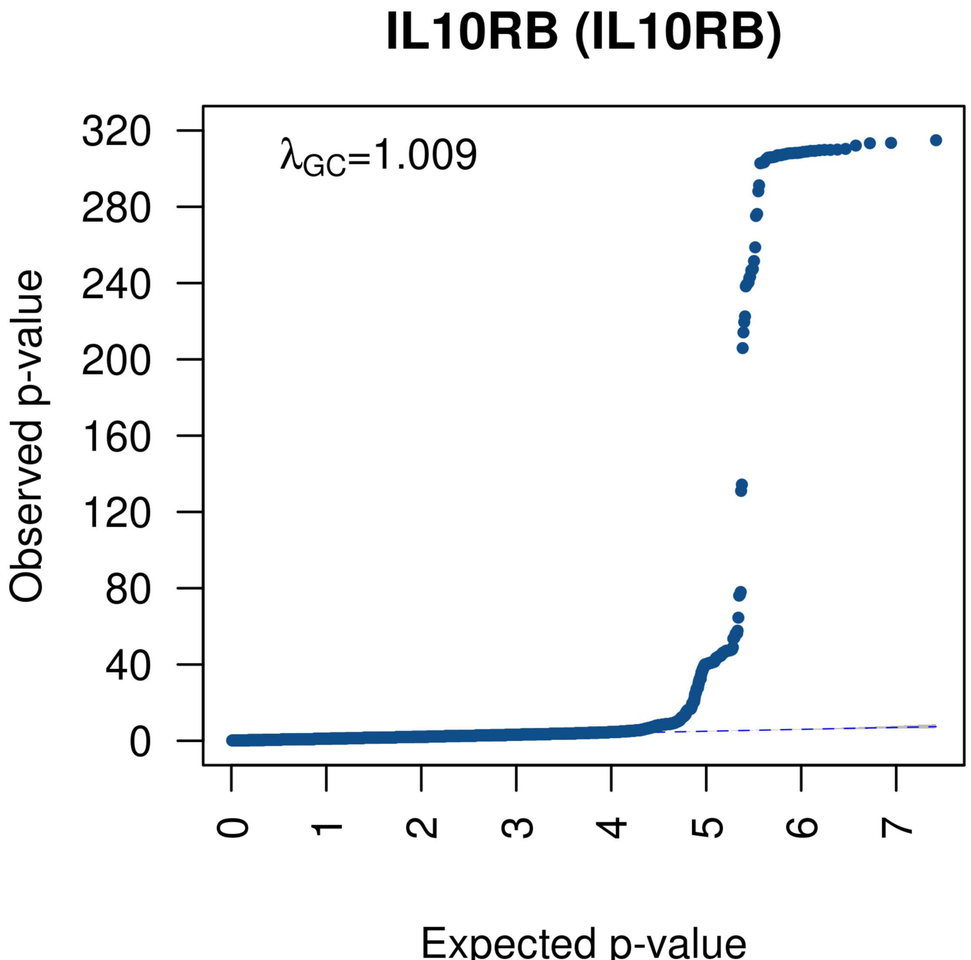

IL-10 (IL10)
IL10
HLA-DR
IL10RA
−log10 p-value
30
27
24
21
18
15
12
9
6
3
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

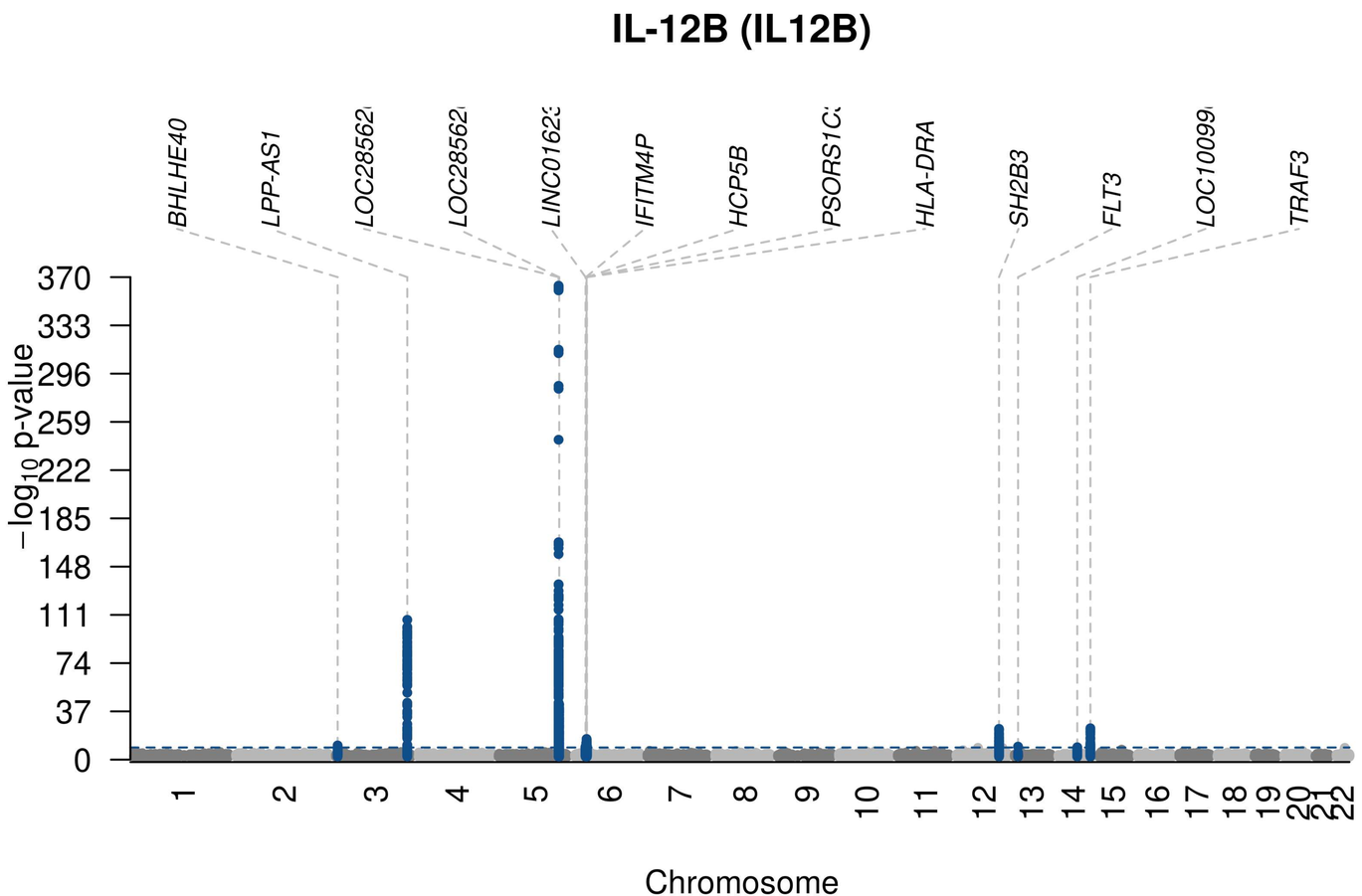

IL-10 (IL10)
λGC=1.015
Observed p-value
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

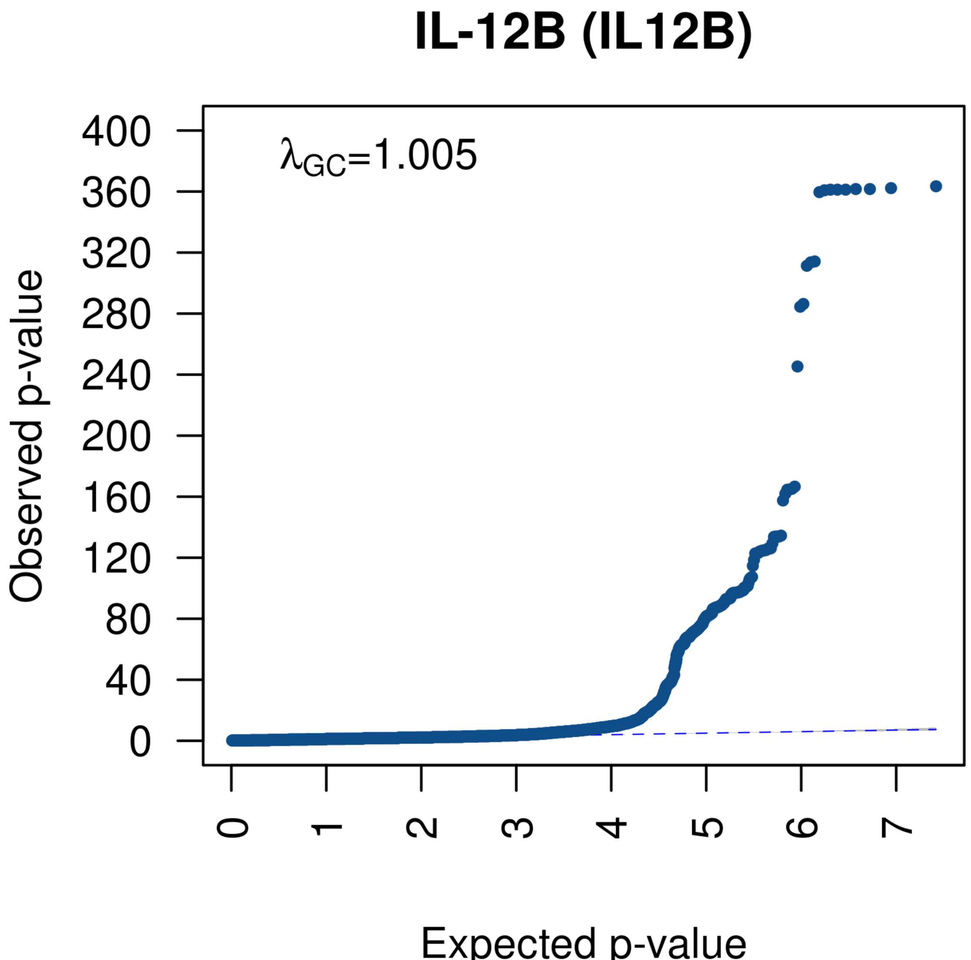

IL-10RA (IL10RA)
−log10 p-value
Chromosome

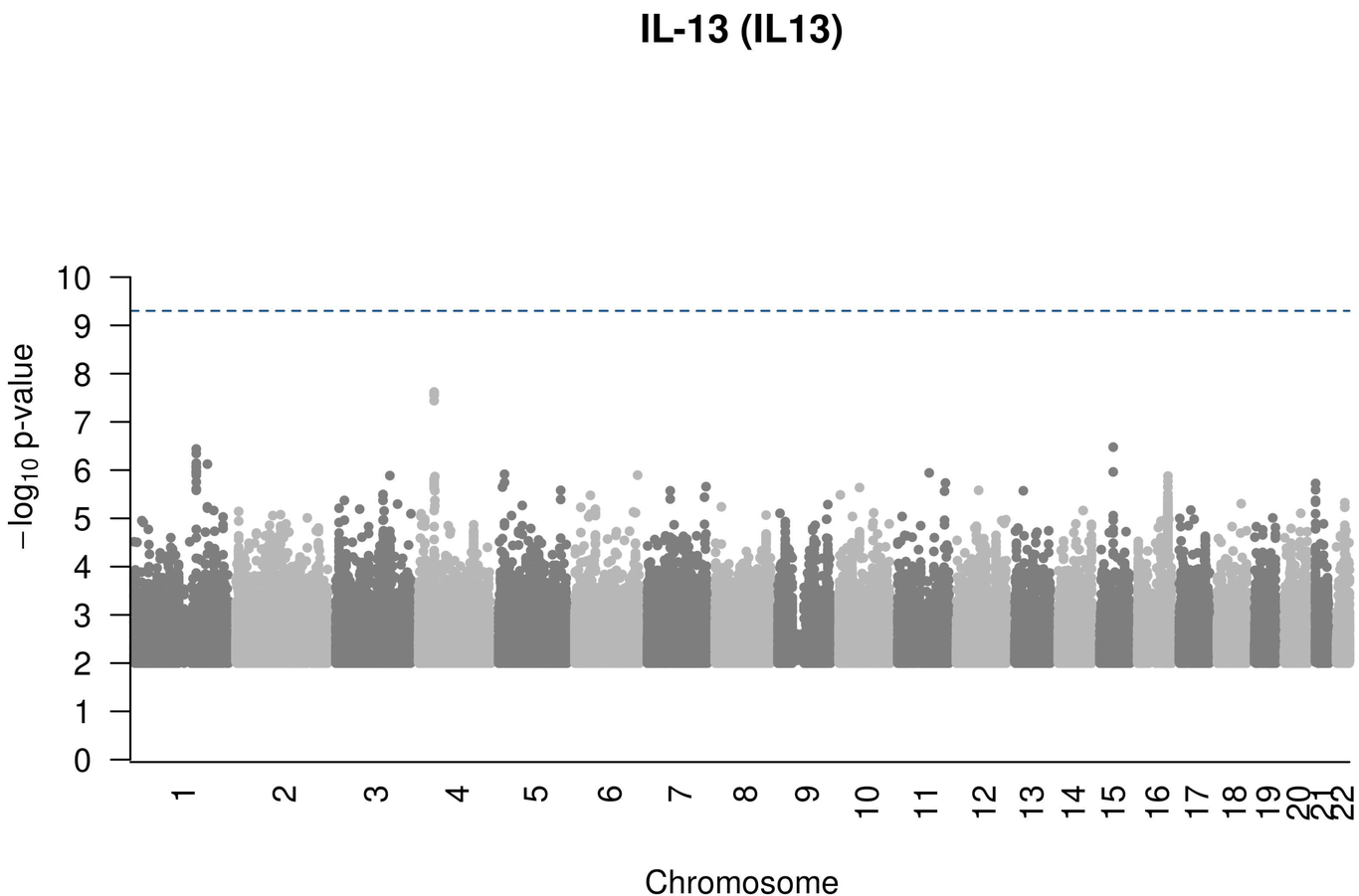

IL-10RA (IL10RA)
λGC=1.013
Observed p-value
Expected p-value

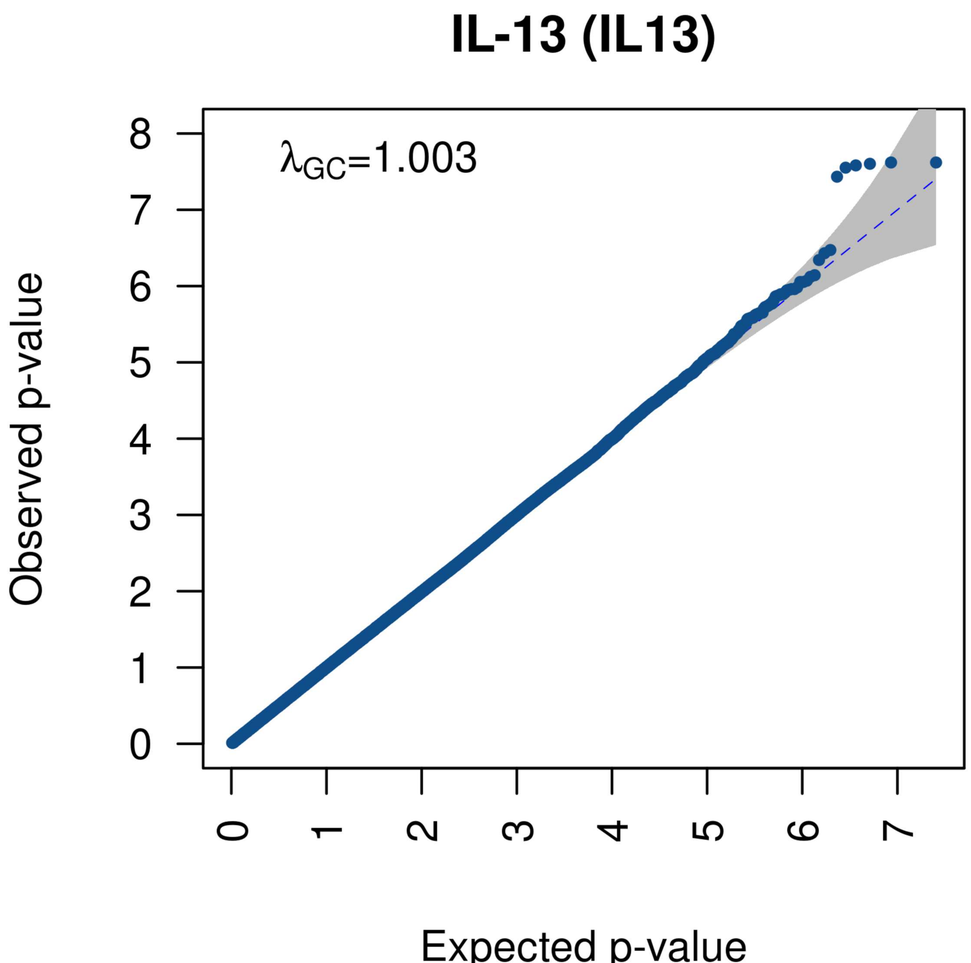

IL10RB (IL10RB)
FAM163A
IL10RB
−log10 p-value
320
288
256
224
192
160
128
96
64
32
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

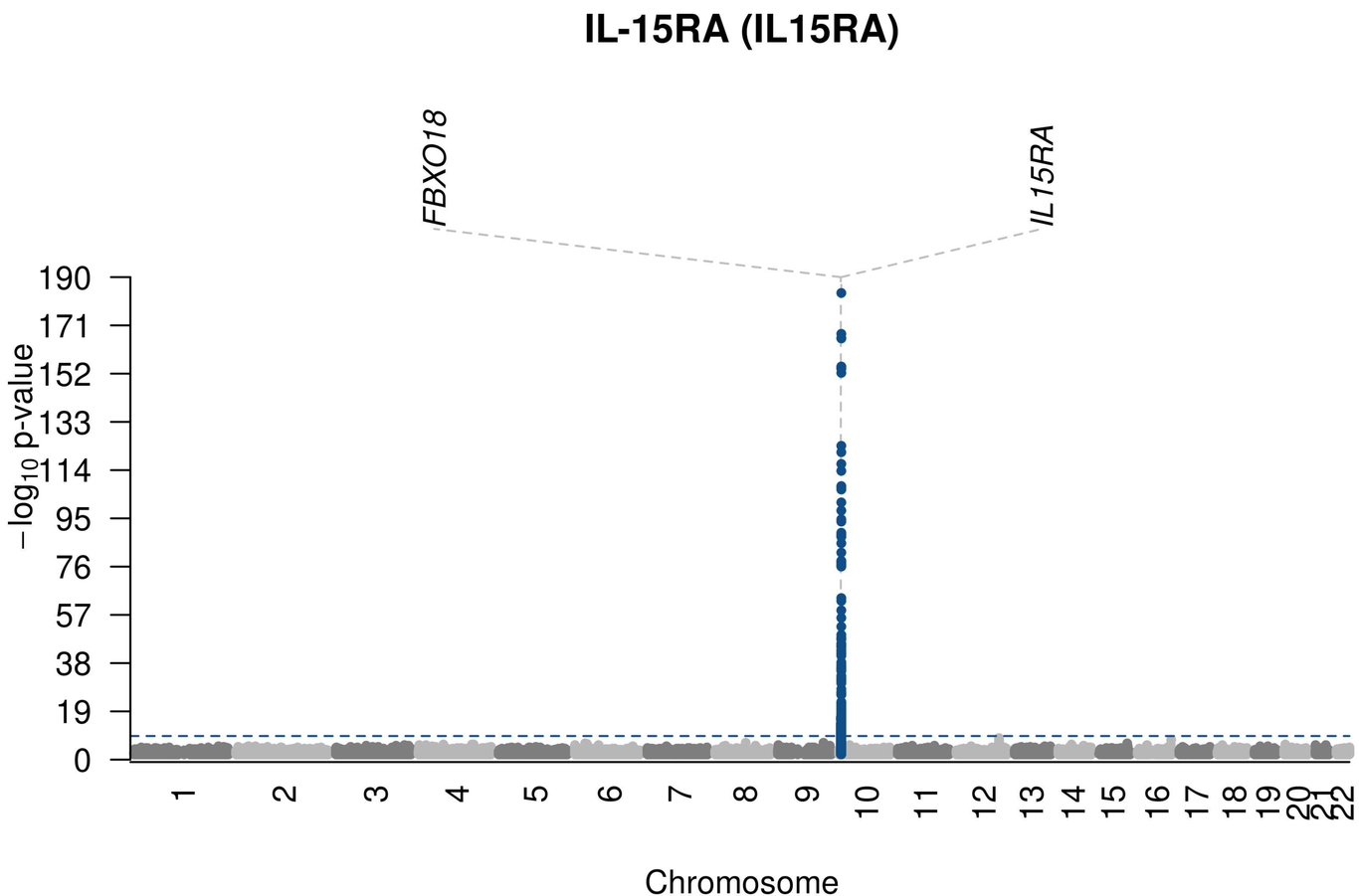

IL10RB (IL10RB)
λGC=1.009
Observed p-value
320
280
240
200
160
120
80
40
0
0
1
2
3
4
5
6
7
Expected p-value

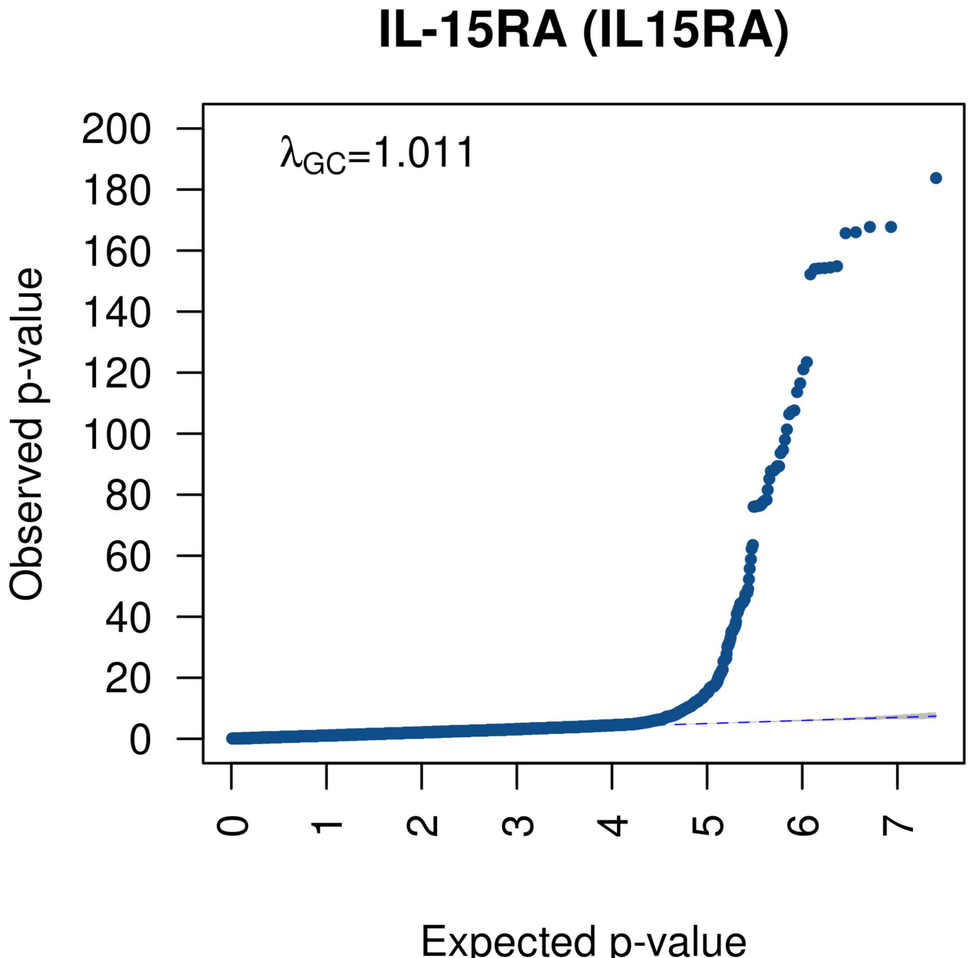

IL-12B (IL12B)
BHLHE40
LPP-AS1
LOC28562
LOC28562
LINC01625
IFITM4P
HCP5B
PSORS1C
HLA-DRA
SH2B3
FLT3
LOC10099
TRAF3
370
333
296
259
222
185
148
111
74
37
0
−log10 p-value
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

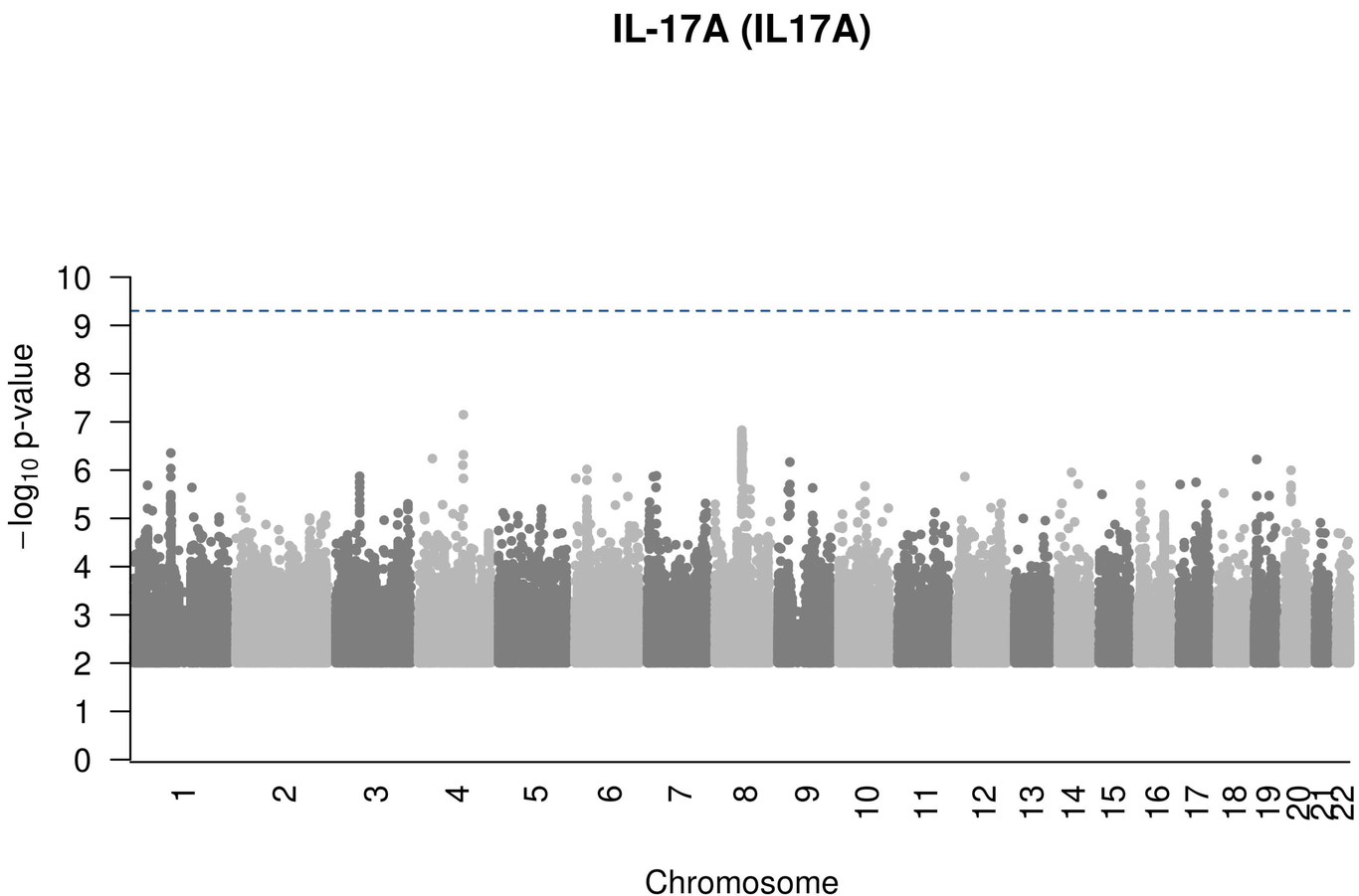

IL-12B (IL12B)
λGC=1.005
400
360
320
280
240
200
160
120
80
40
0
Observed p-value
0
1
2
3
4
5
6
7
Expected p-value

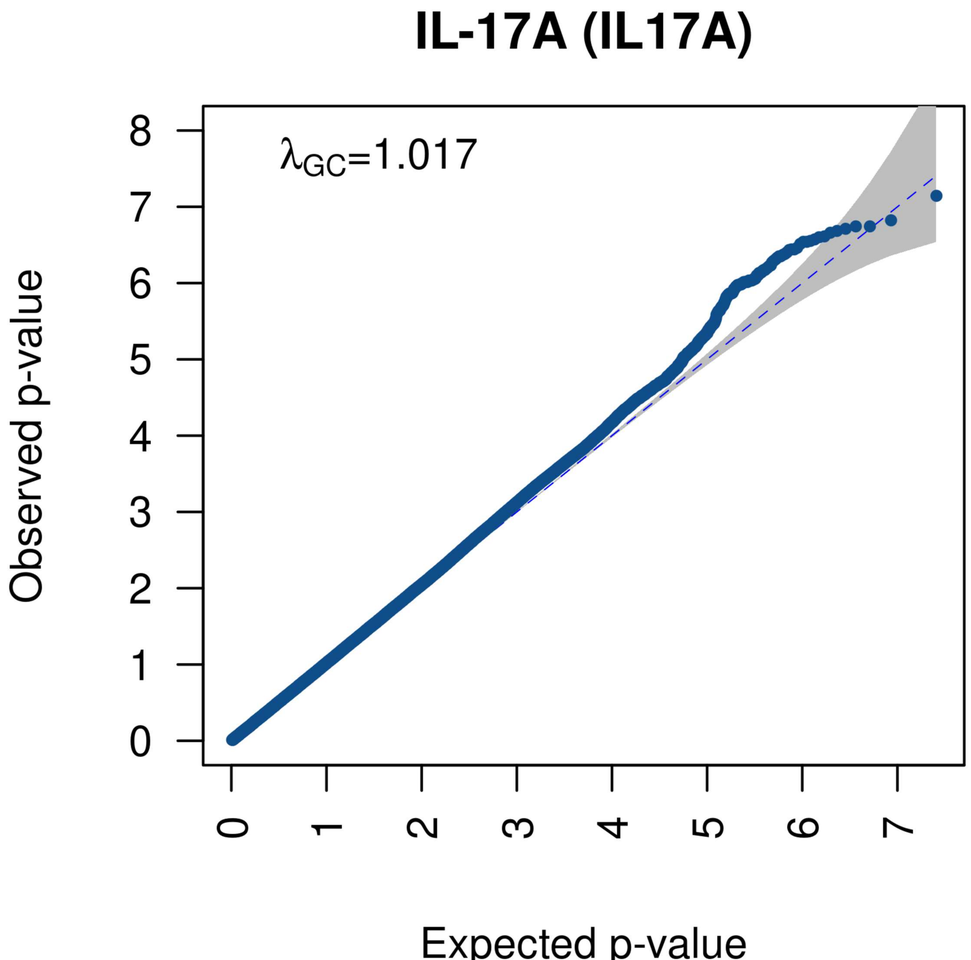

IL-13 (IL13)
−log10 p-value
Chromosome

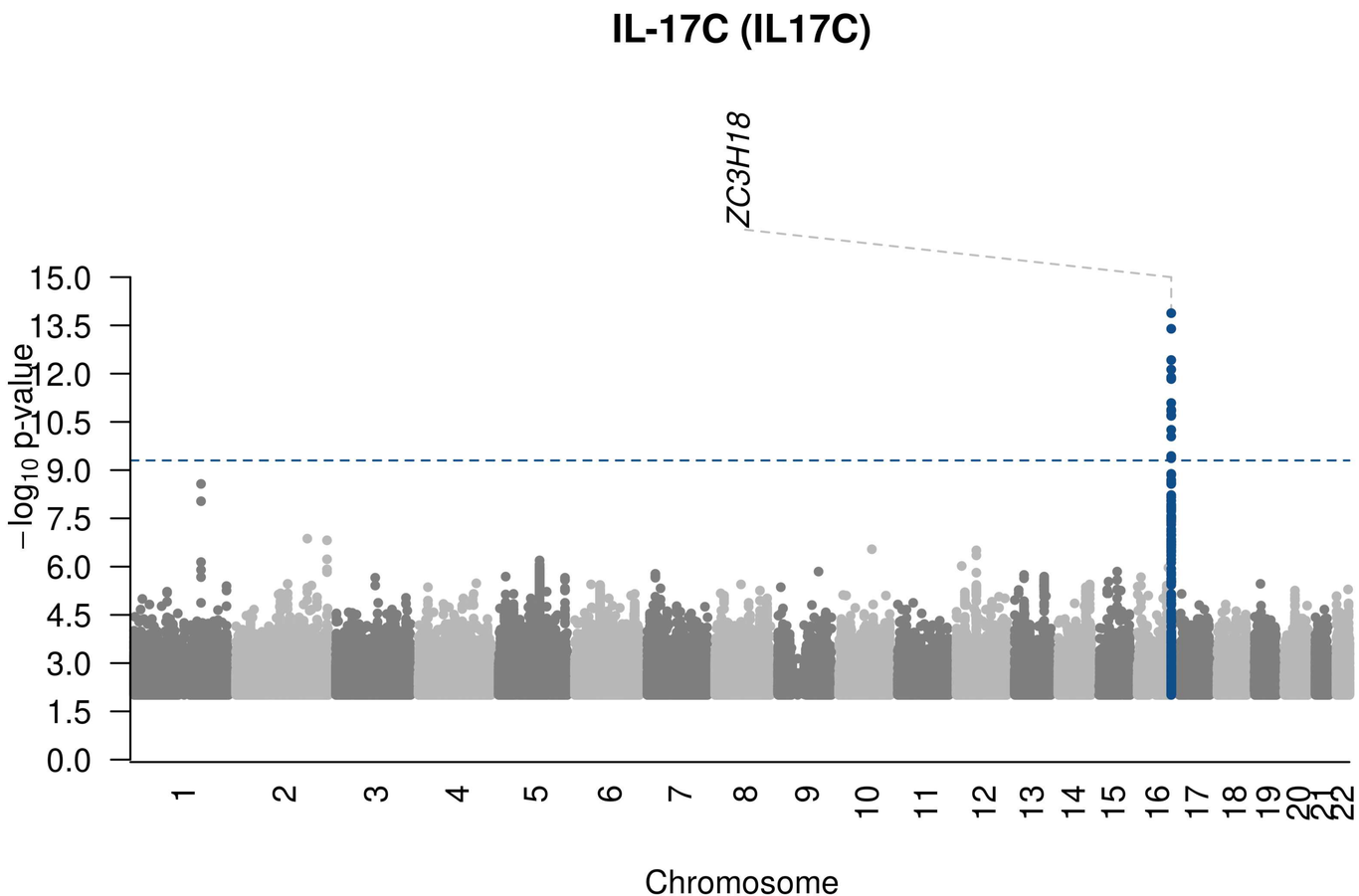

IL-13 (IL13)
λGC=1.003
Observed p-value
Expected p-value

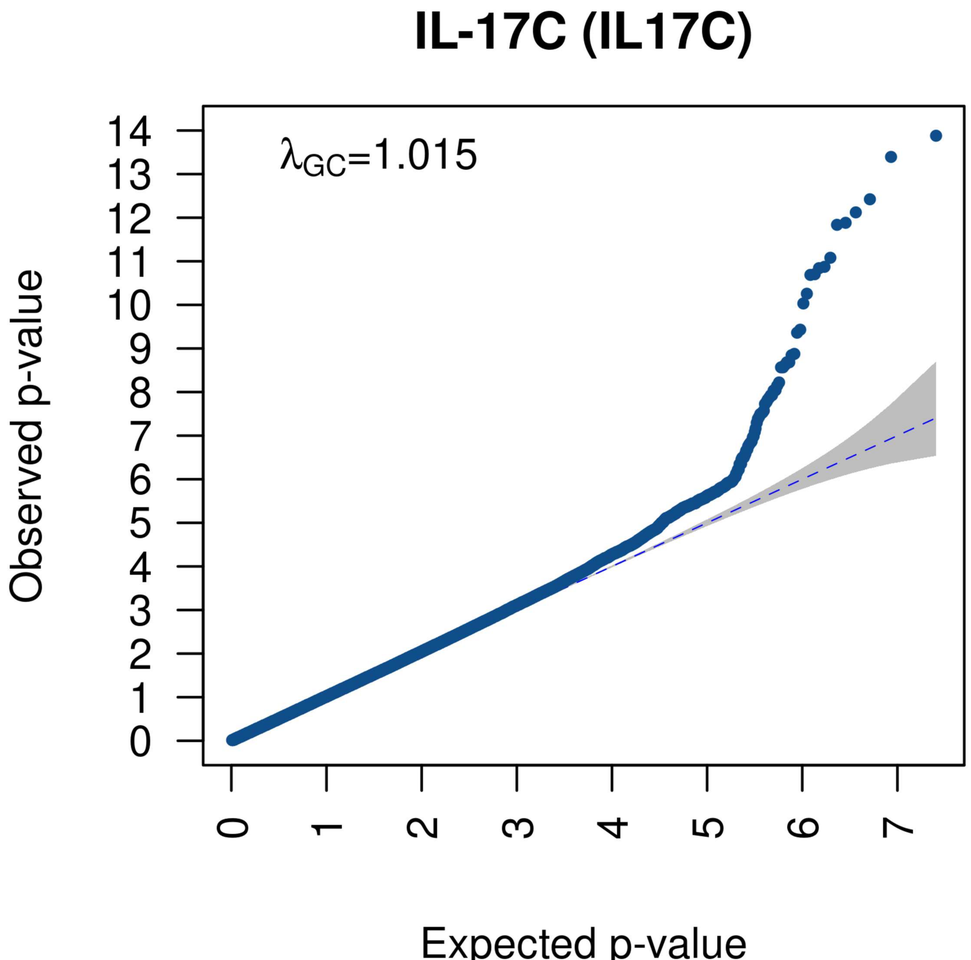

IL-15RA (IL15RA)
FBXO18
IL15RA
190
171
152
133
114
95
76
57
38
19
0
−log10 p-value
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

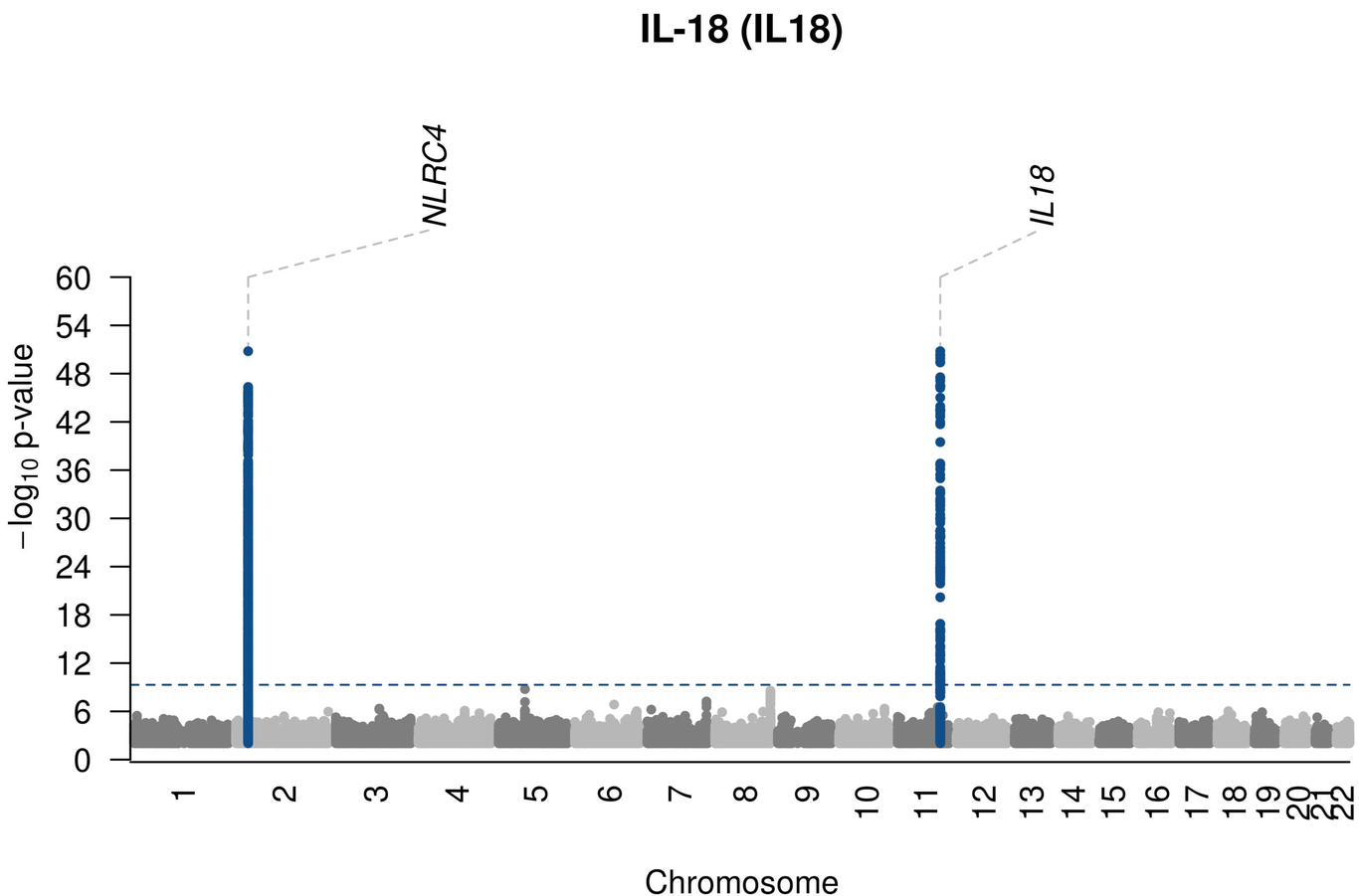

IL-15RA (IL15RA)
λGC=1.011
200
180
160
140
120
100
80
60
40
20
0
Observed p-value
0
1
2
3
4
5
6
7
Expected p-value

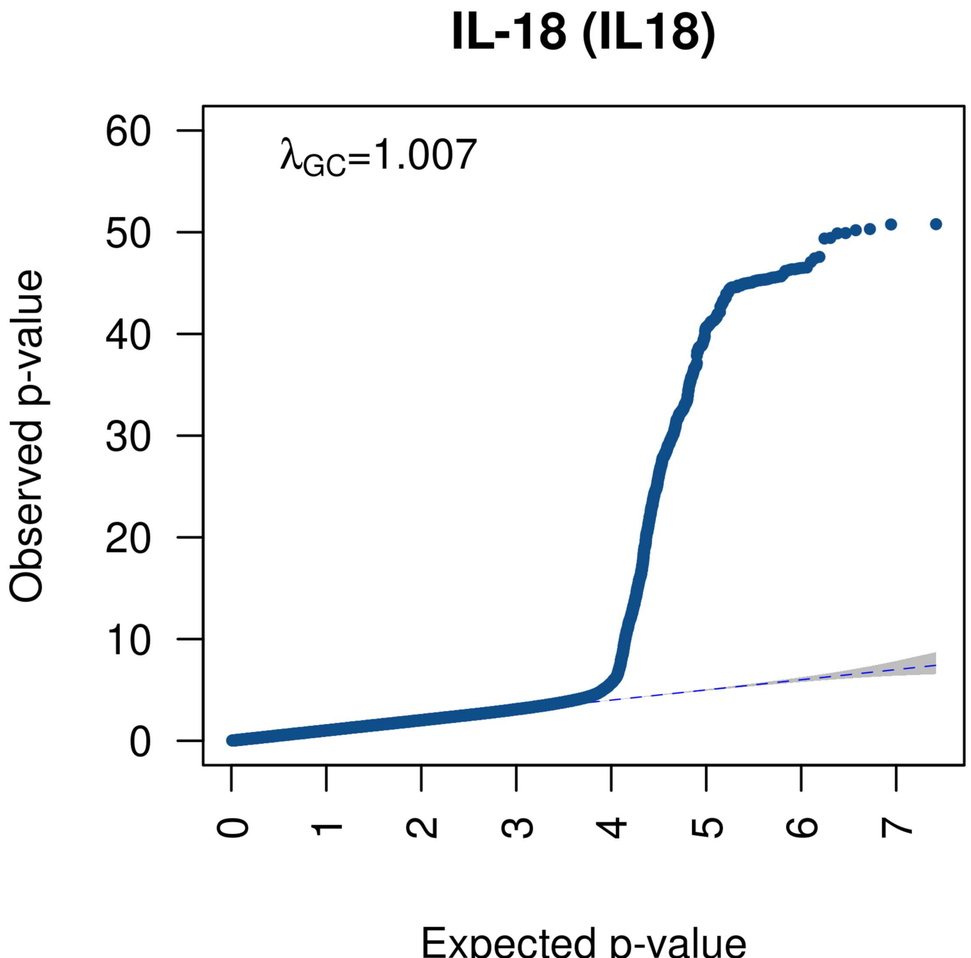

IL-17A (IL17A)
−log10 p-value
Chromosome

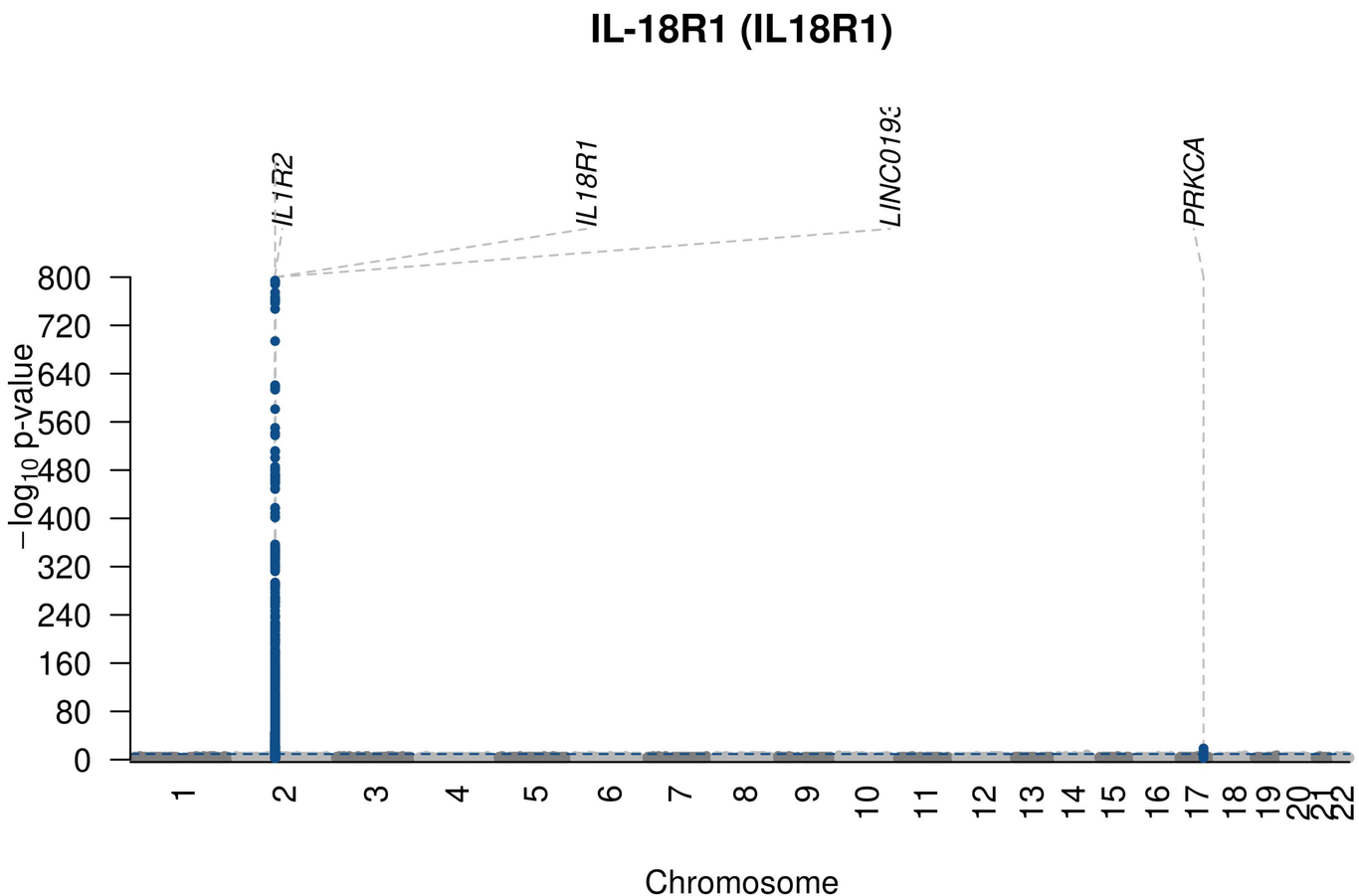

IL-17A (IL17A)
λGC=1.017
Observed p-value
Expected p-value

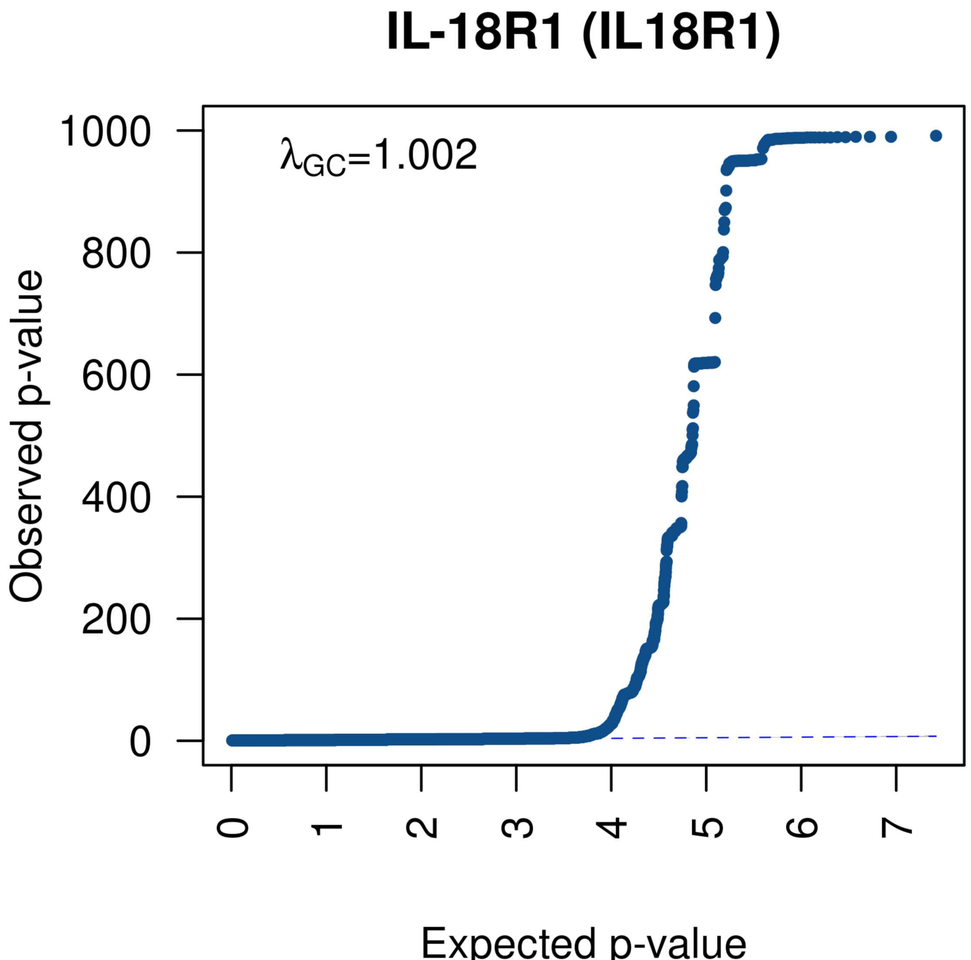

IL-17C (IL17C)
ZC3H18
−log10 p-value
15.0
13.5
12.0
10.5
9.0
7.5
6.0
4.5
3.0
1.5
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Chromosome

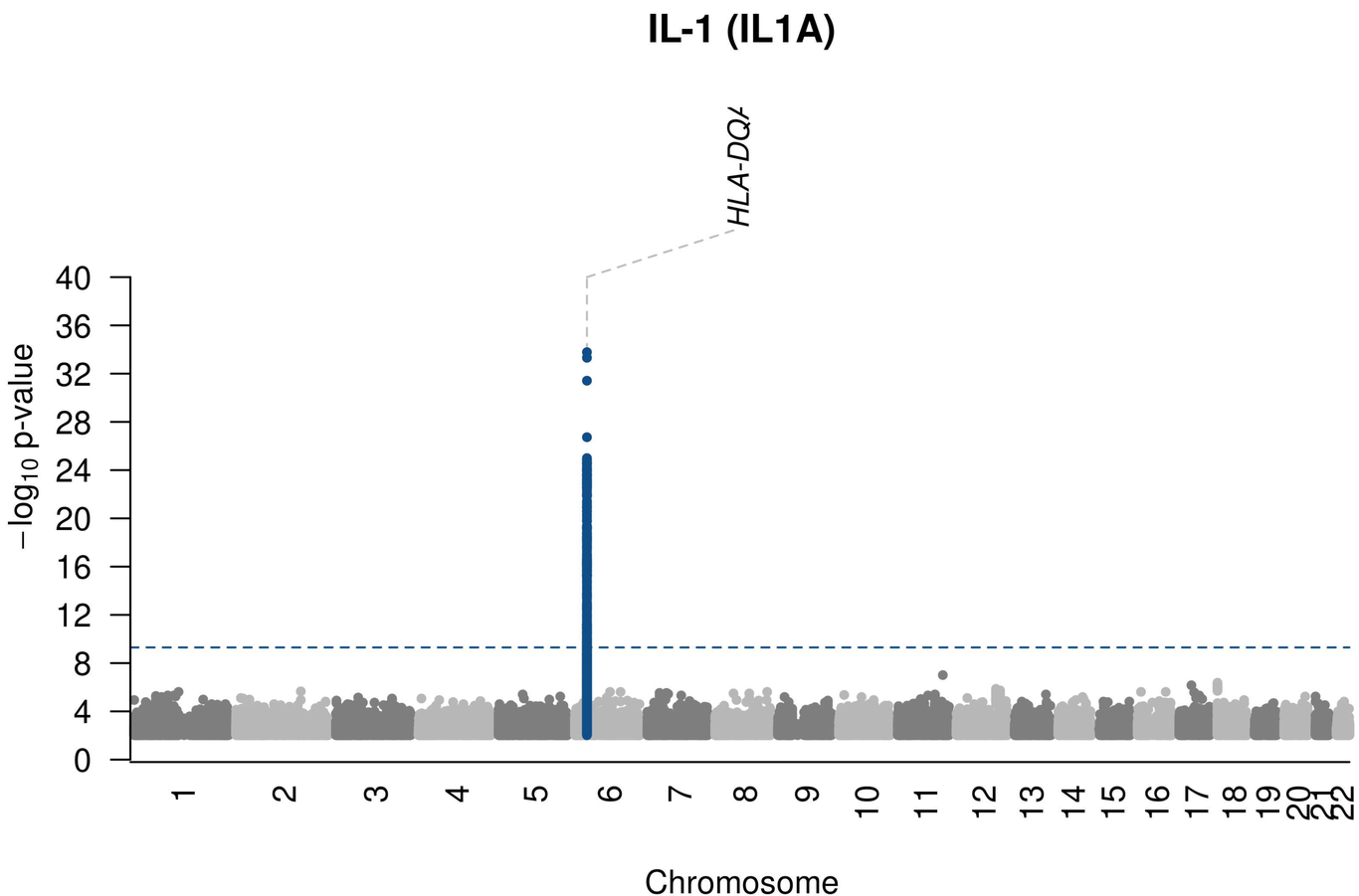

IL-17C (IL17C)
λGC=1.015
Observed p-value
14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
0 1 2 3 4 5 6 7
Expected p-value

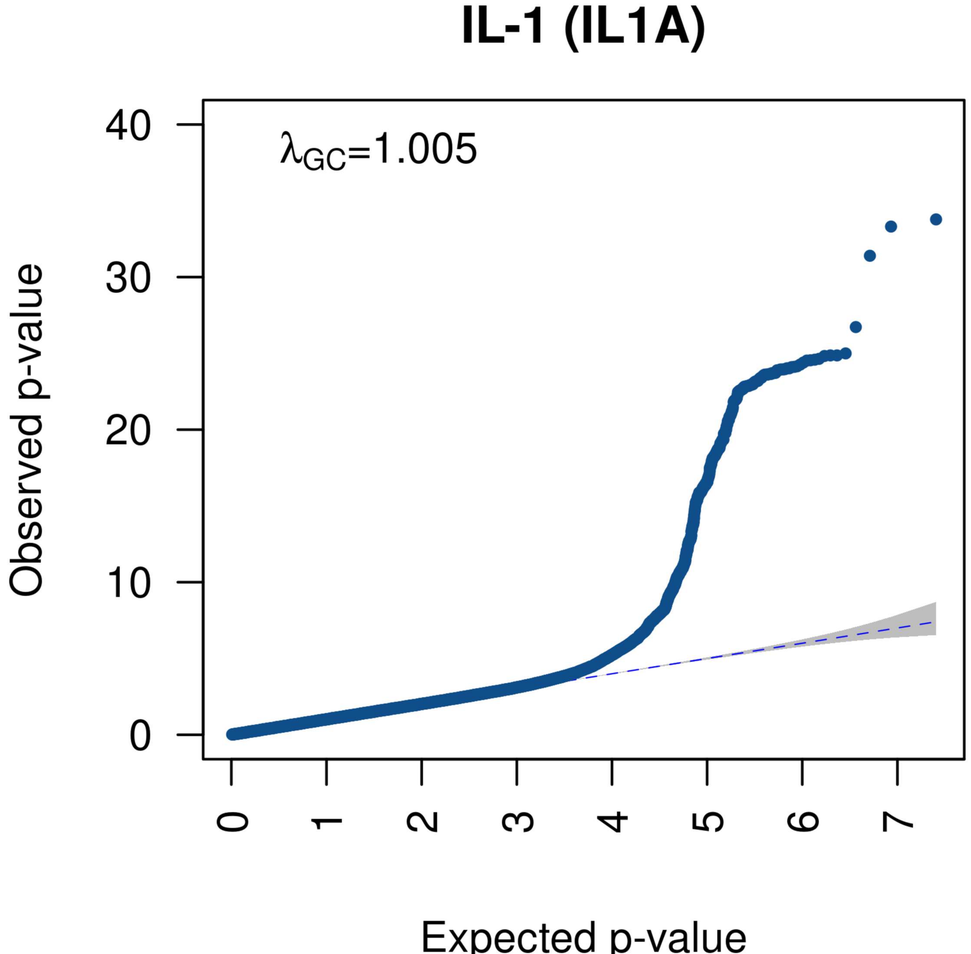

IL-18 (IL18)
NLRC4
IL18
−log10 p-value
60
54
48
42
36
30
24
18
12
6
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

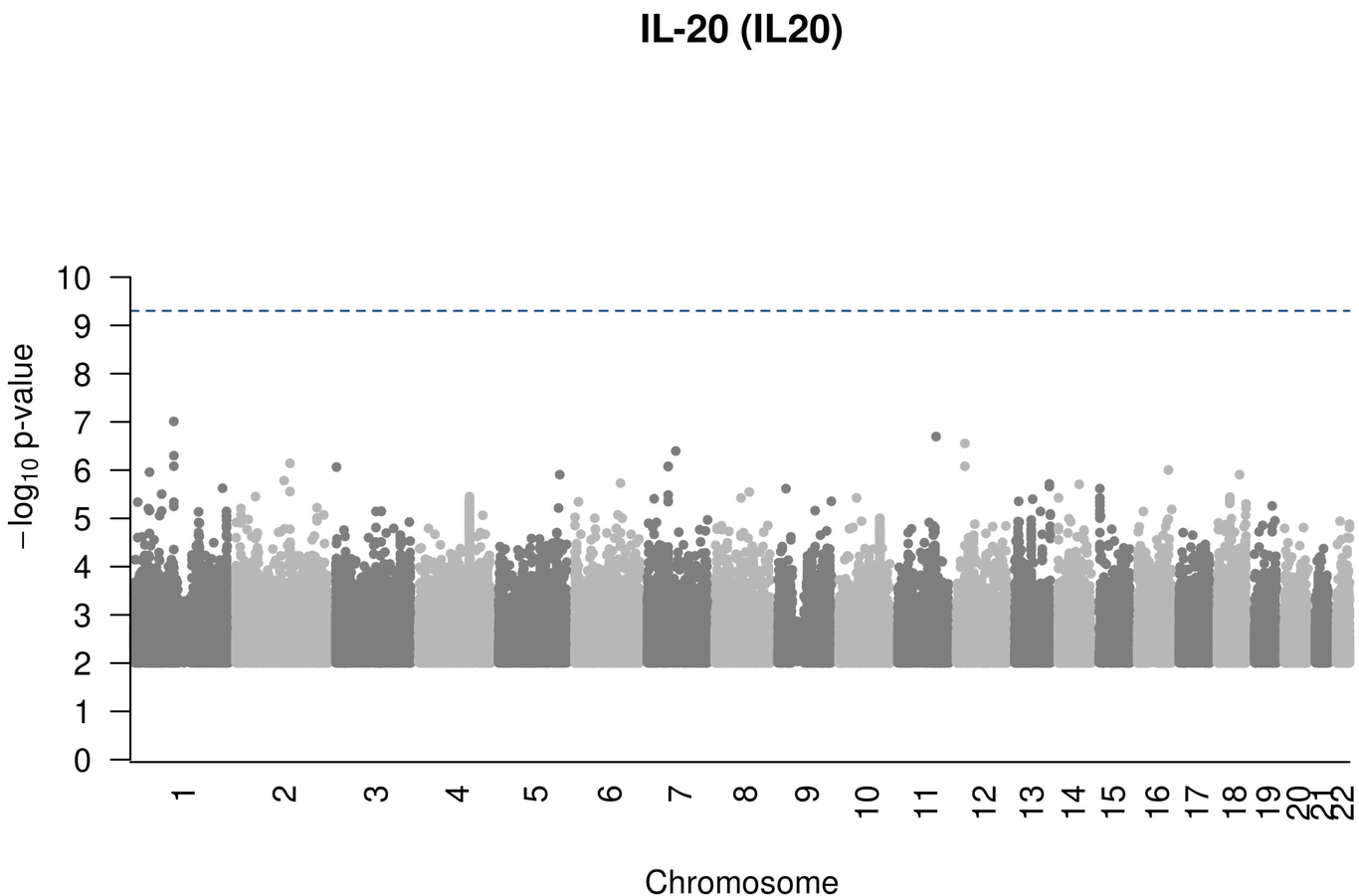

IL-18 (IL18)
λGC=1.007
Observed p-value
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

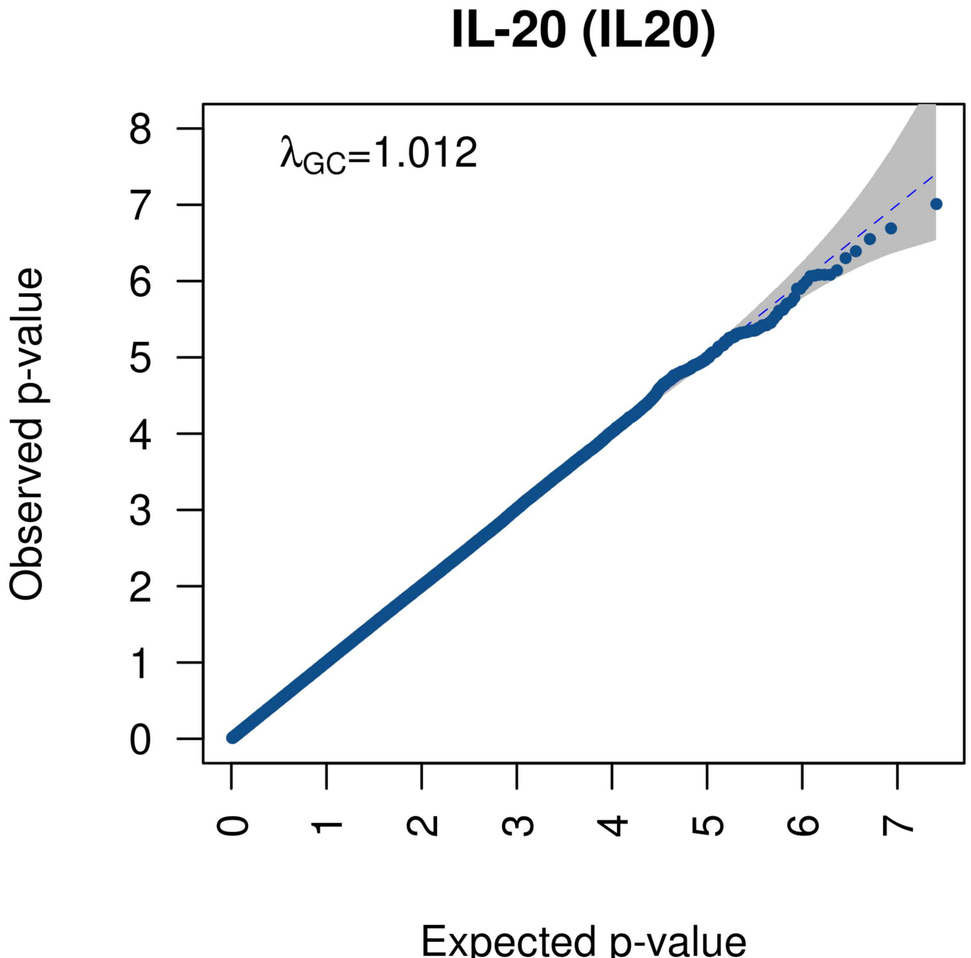

IL-18R1 (IL18R1)
IL1R2
IL18R1
LINC0193
PRKCA
−log10 p-value
800
720
640
560
480
400
320
240
160
80
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

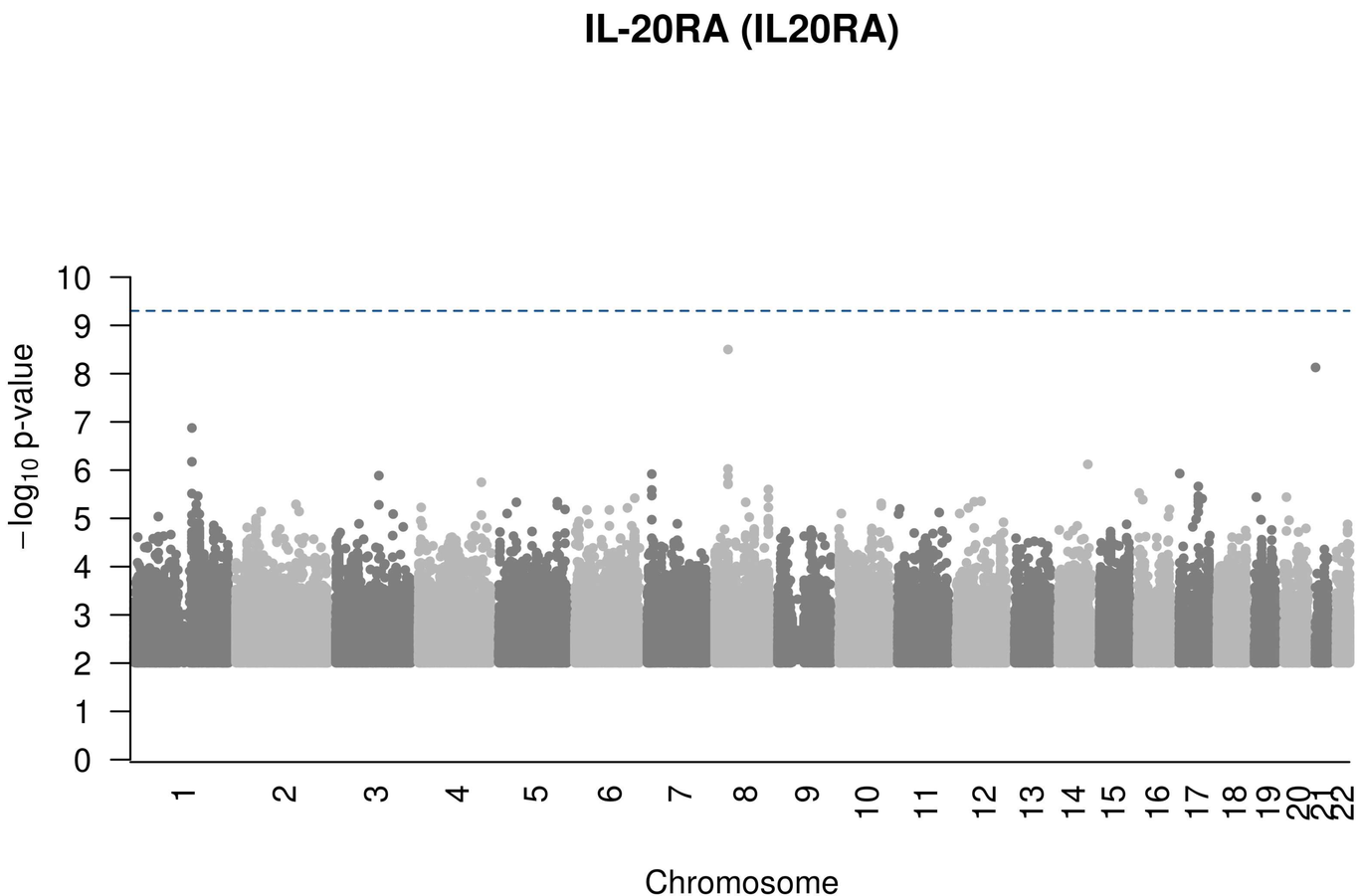

IL-18R1 (IL18R1)
λGC=1.002
Observed p-value
1000
800
600
400
200
0
0
1
2
3
4
5
6
7
Expected p-value

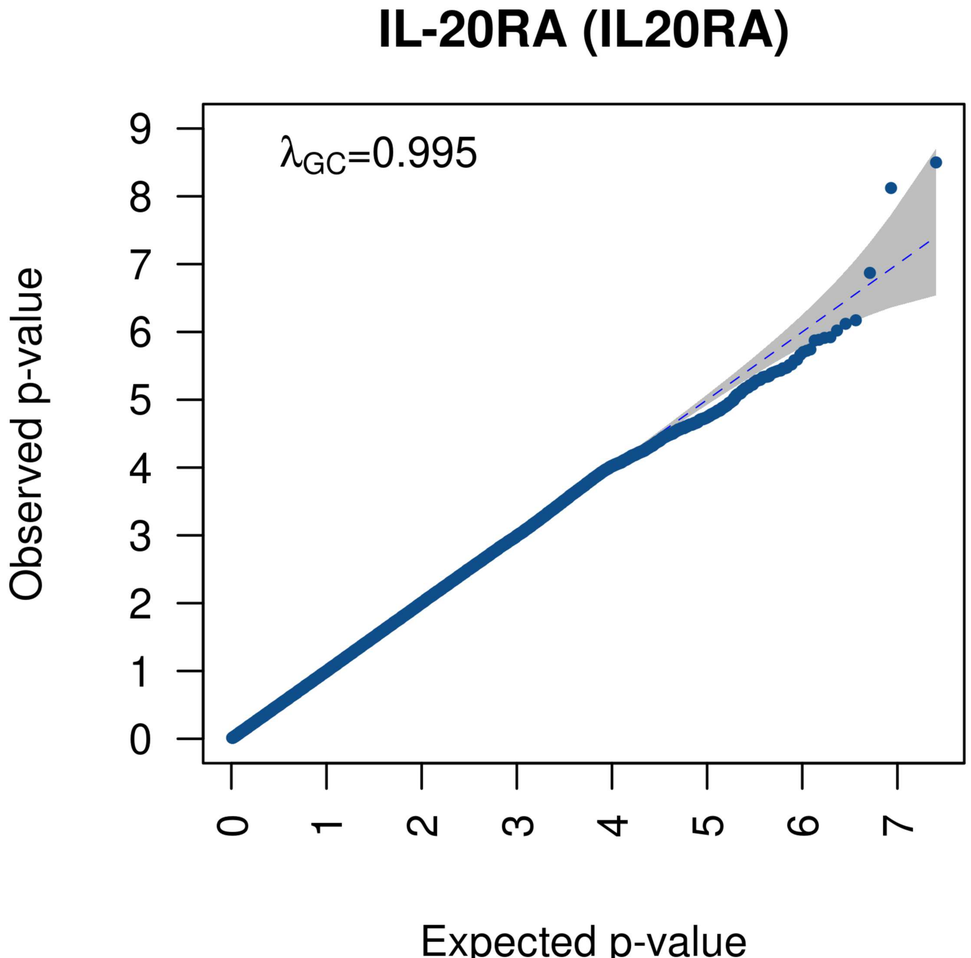

IL-1 (IL1A)
HLA-DQA
−log10 p-value
40
36
32
28
24
20
16
12
8
4
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

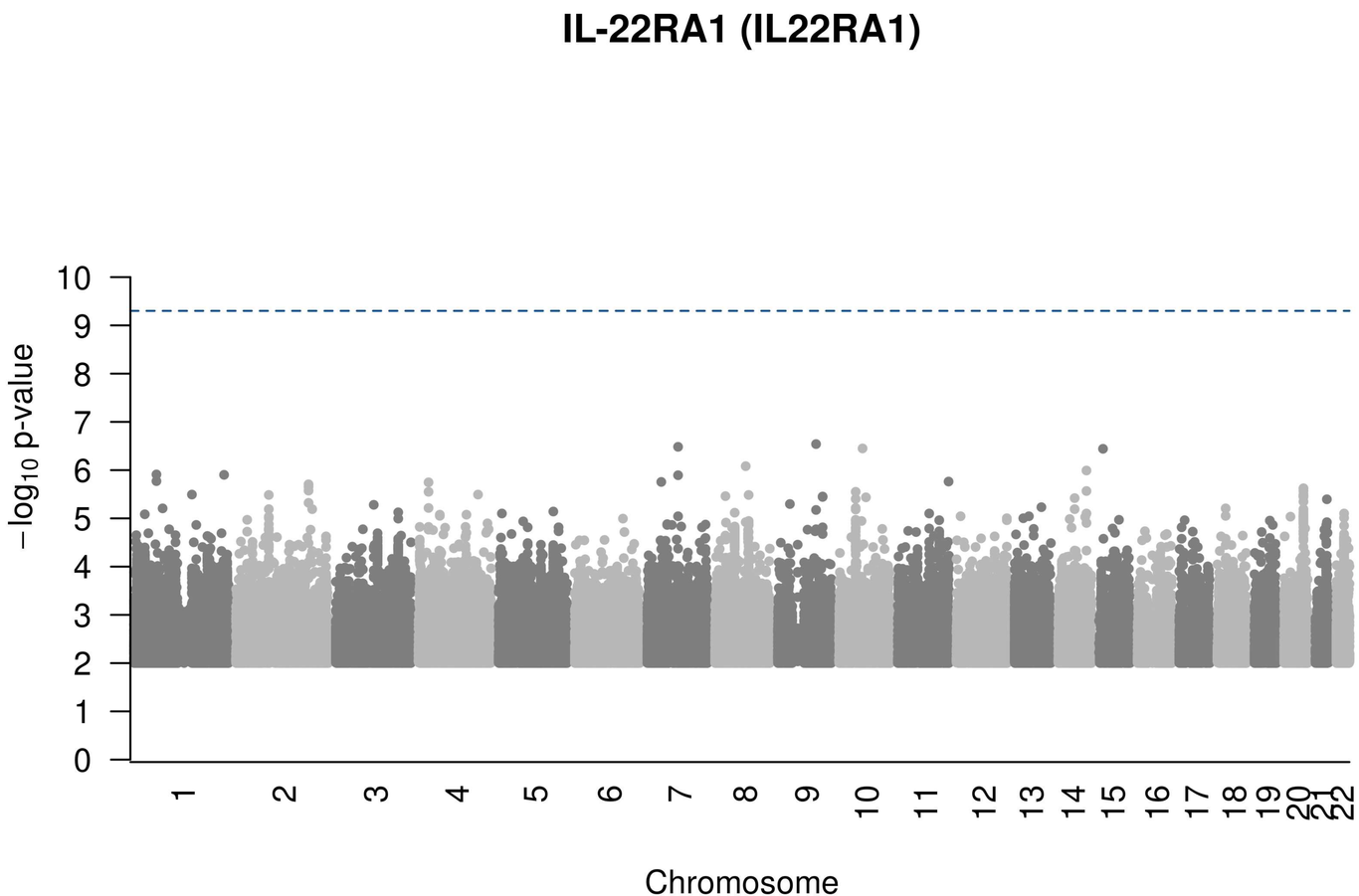

IL-1 (IL1A)
λGC=1.005
Observed p-value
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value


IL-20 (IL20)
−log10 p-value
Chromosome
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22


IL-20 (IL20)
λGC=1.012
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7
8
0
1
2
3
4
5
6
7


IL-20RA (IL20RA)
−log10 p-value
Chromosome
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22


IL-20RA (IL20RA)
λGC=0.995
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7
8
9
0
1
2
3
4
5
6
7


IL-22RA1 (IL22RA1)
−log10 p-value
Chromosome
0
1
2
3
4
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8
9
10
1
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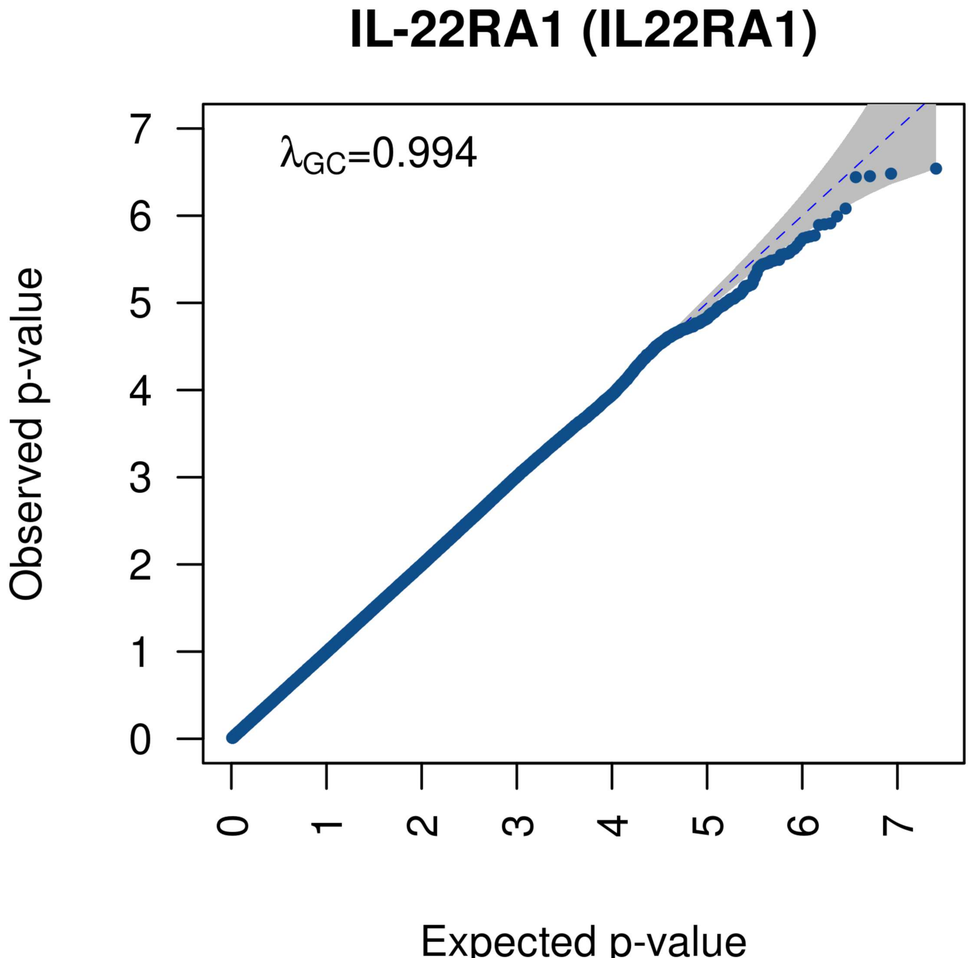
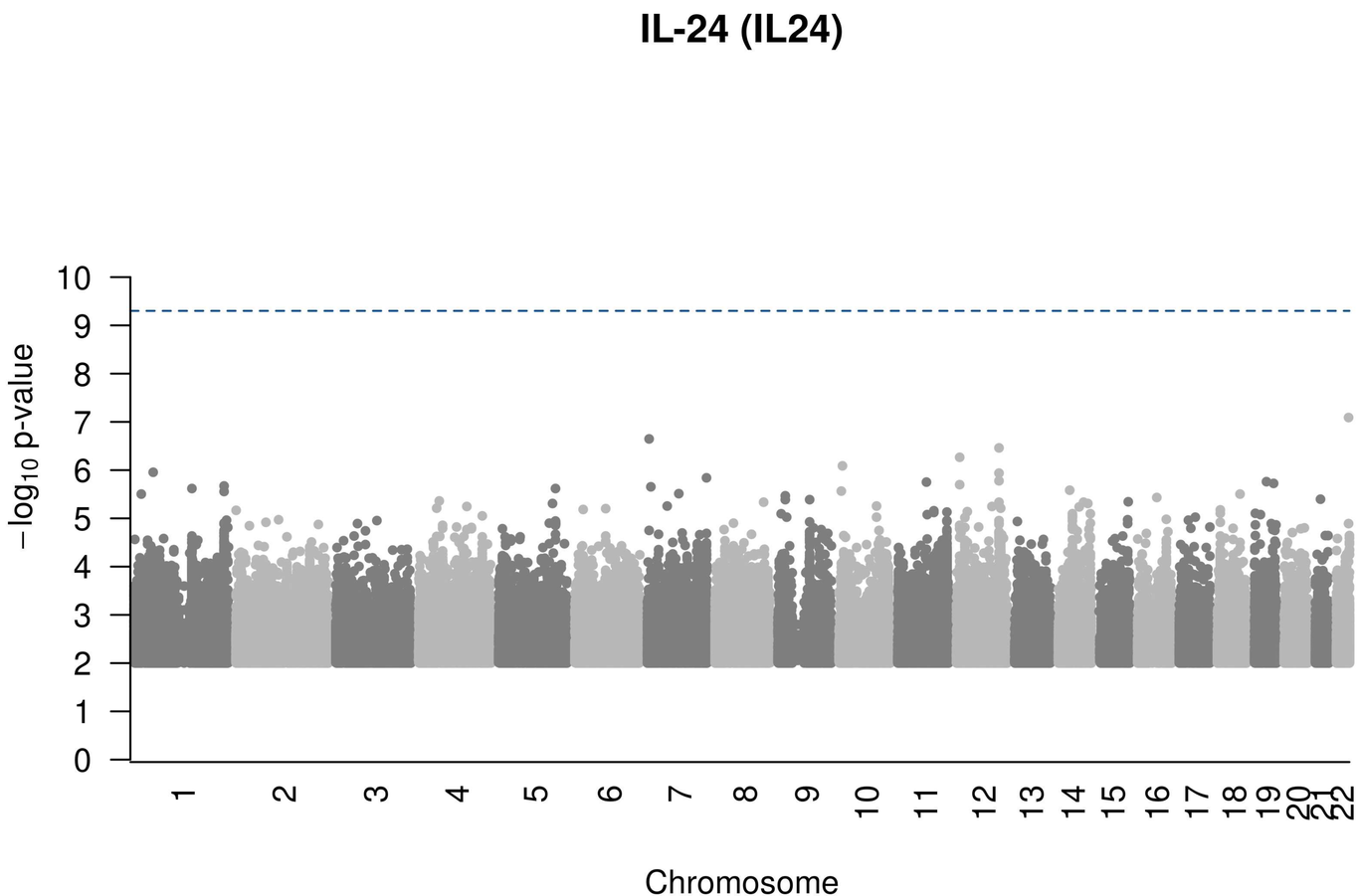

IL-22RA1 (IL22RA1)
λGC=0.994
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7


IL-24 (IL24)
−log10 p-value
Chromosome
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
11
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13
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16
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19
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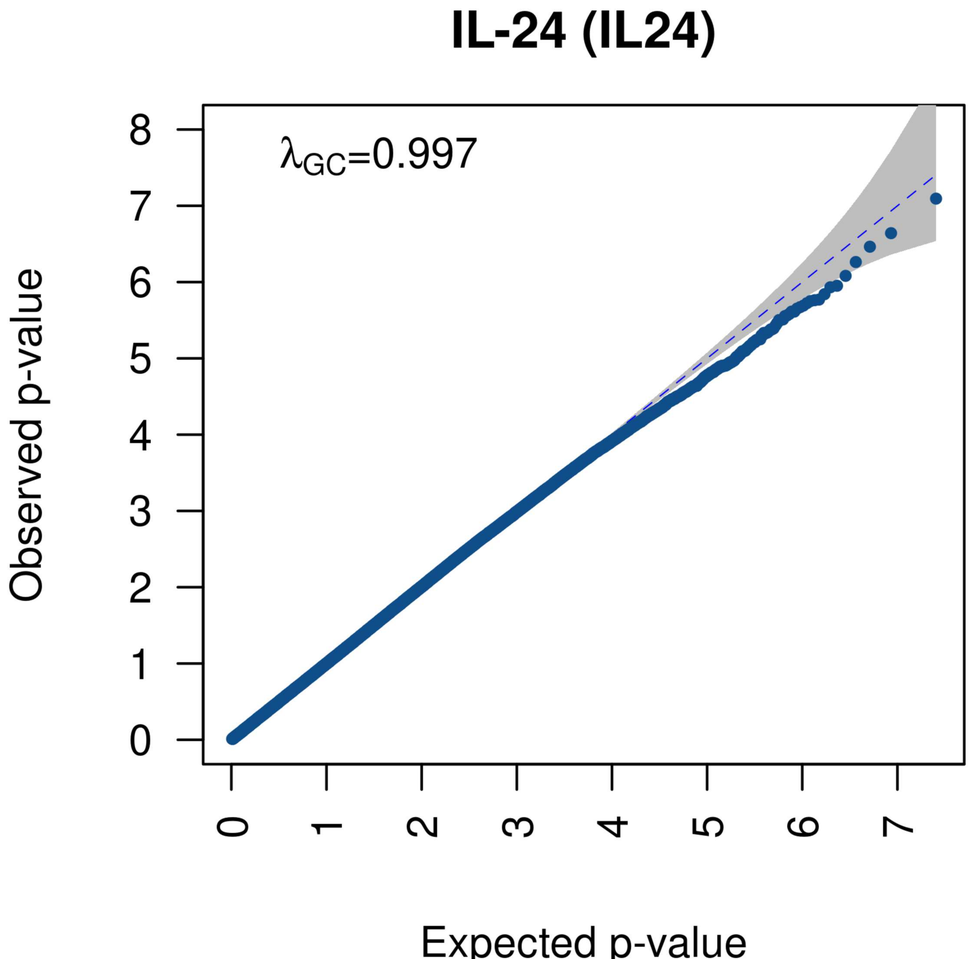
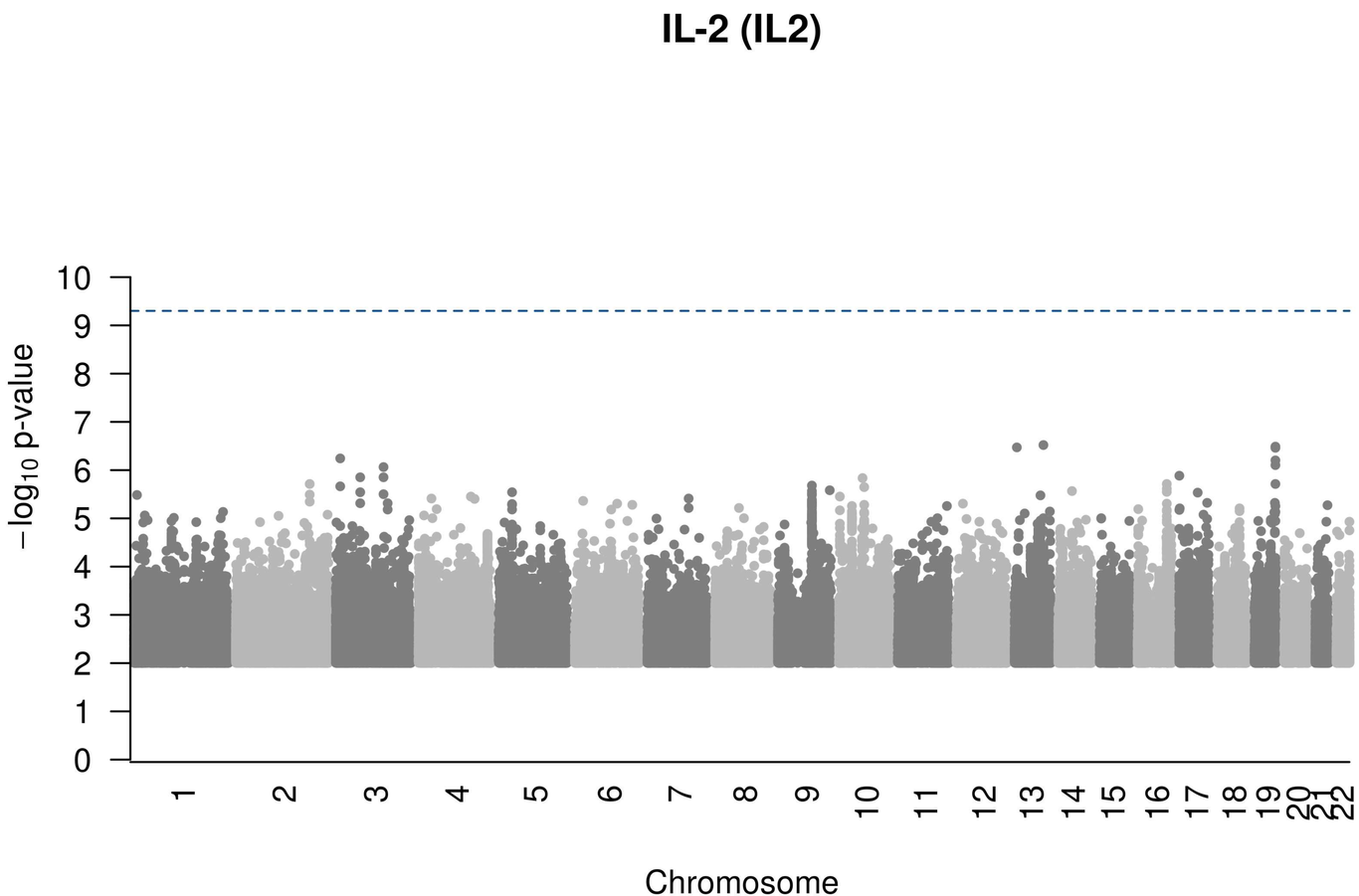
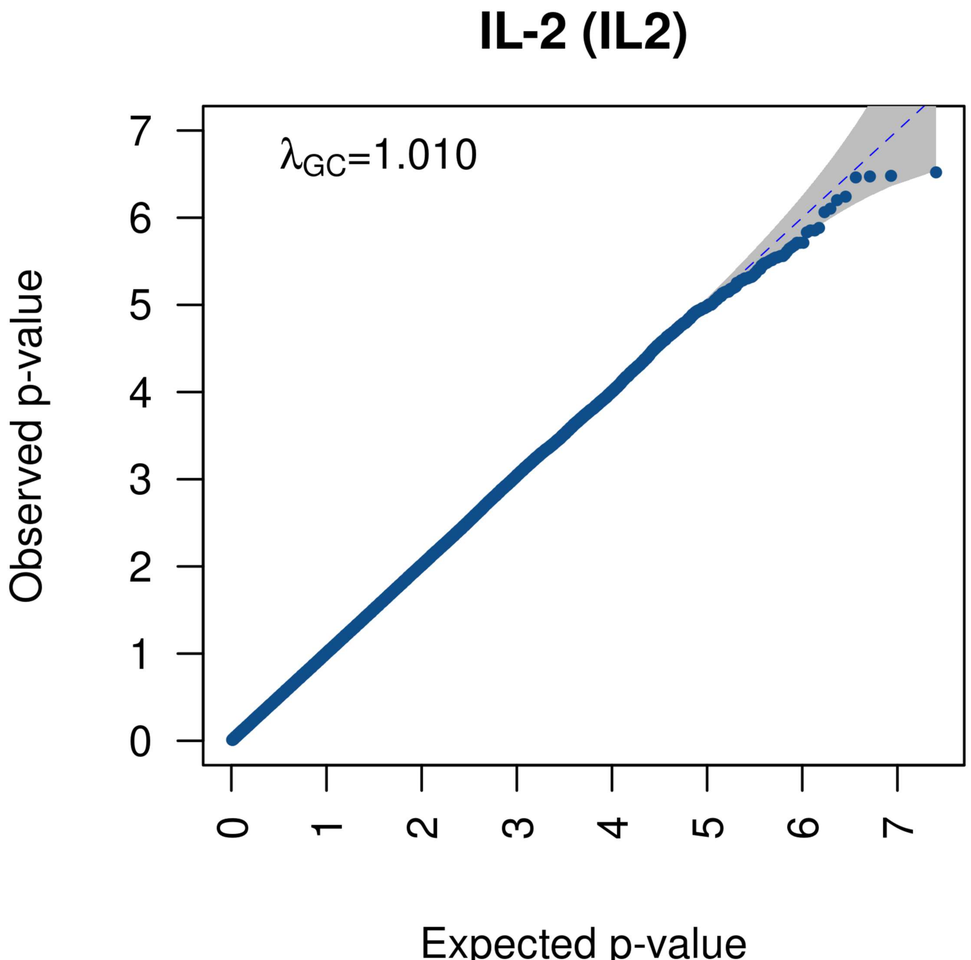
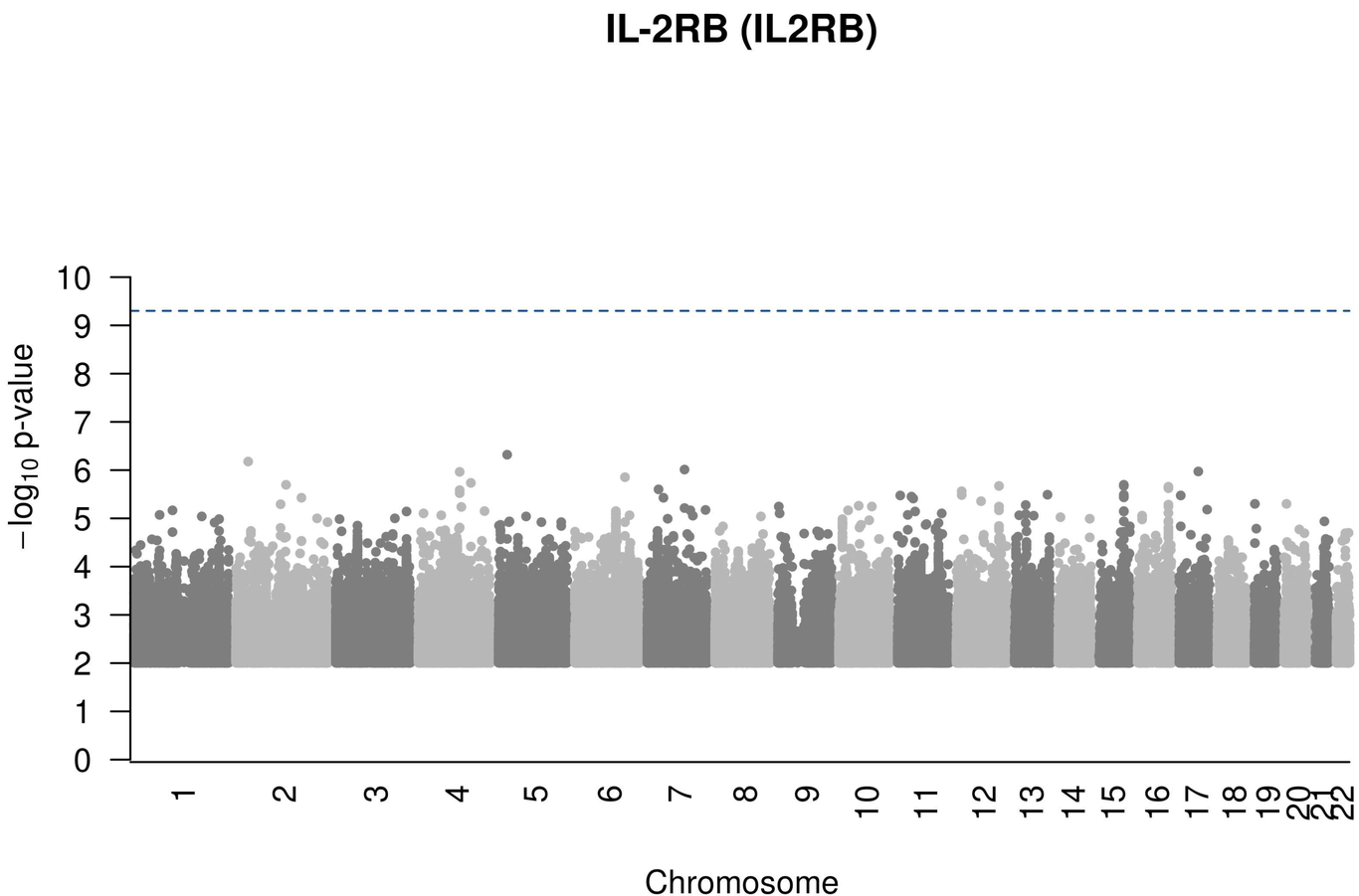
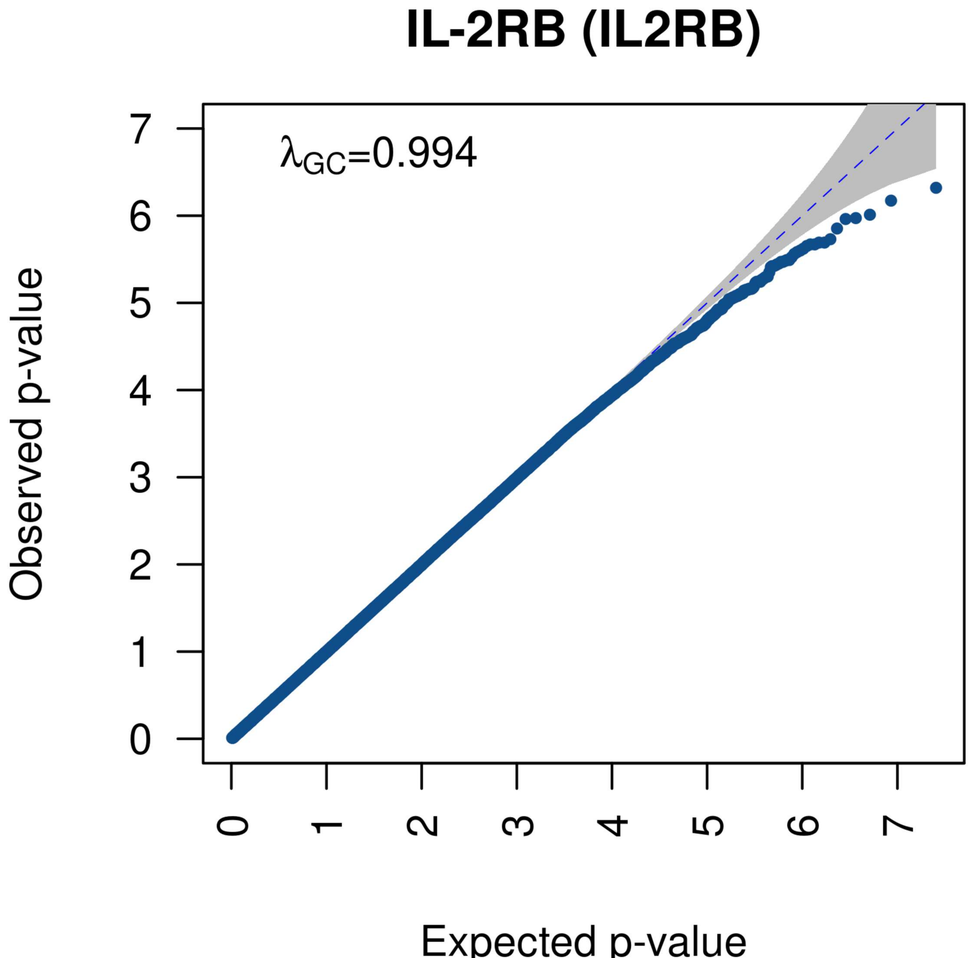
21
22

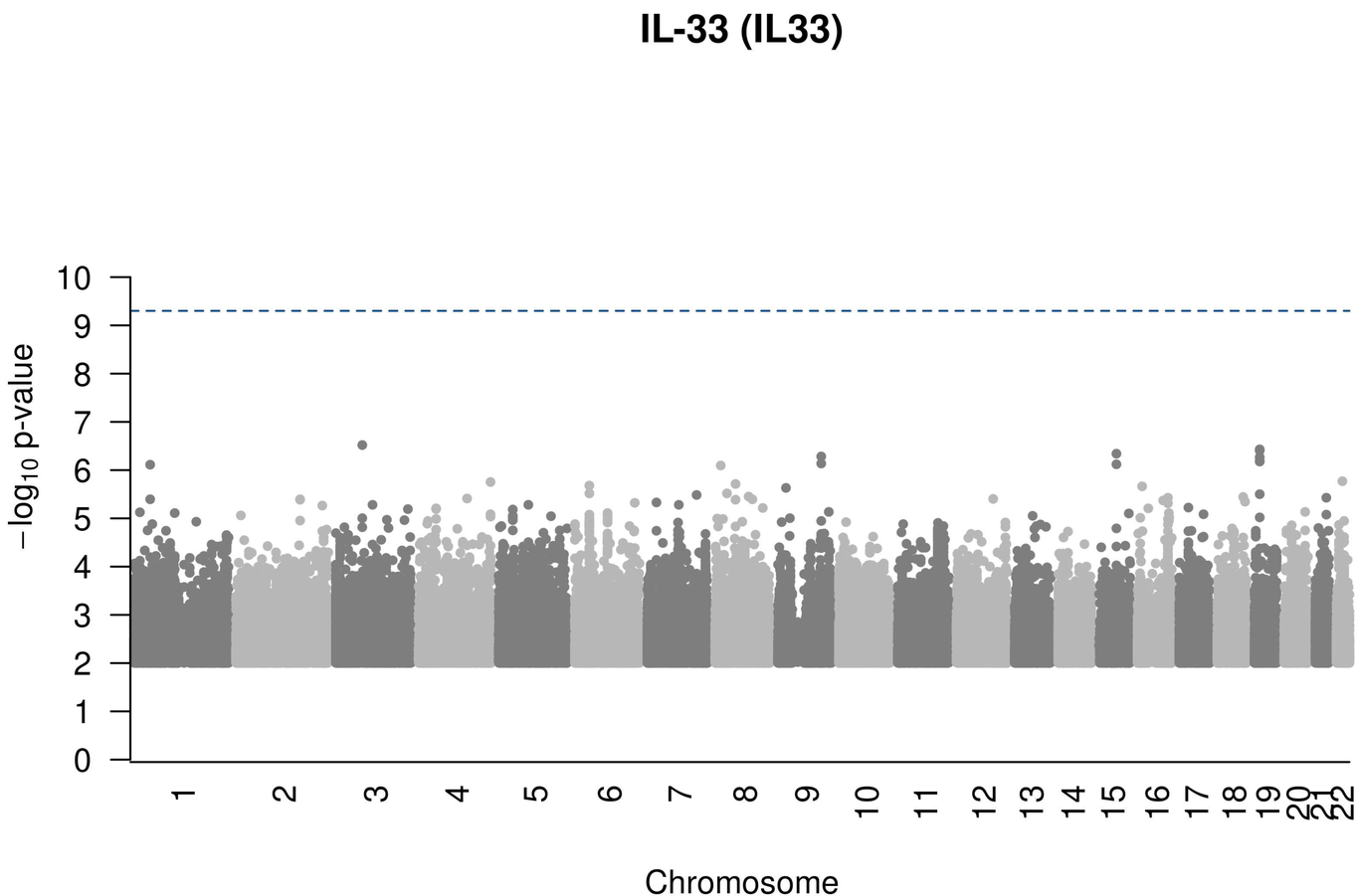

IL-24 (IL24)
λGC=0.997
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7
8
0
1
2
3
4
5
6
7

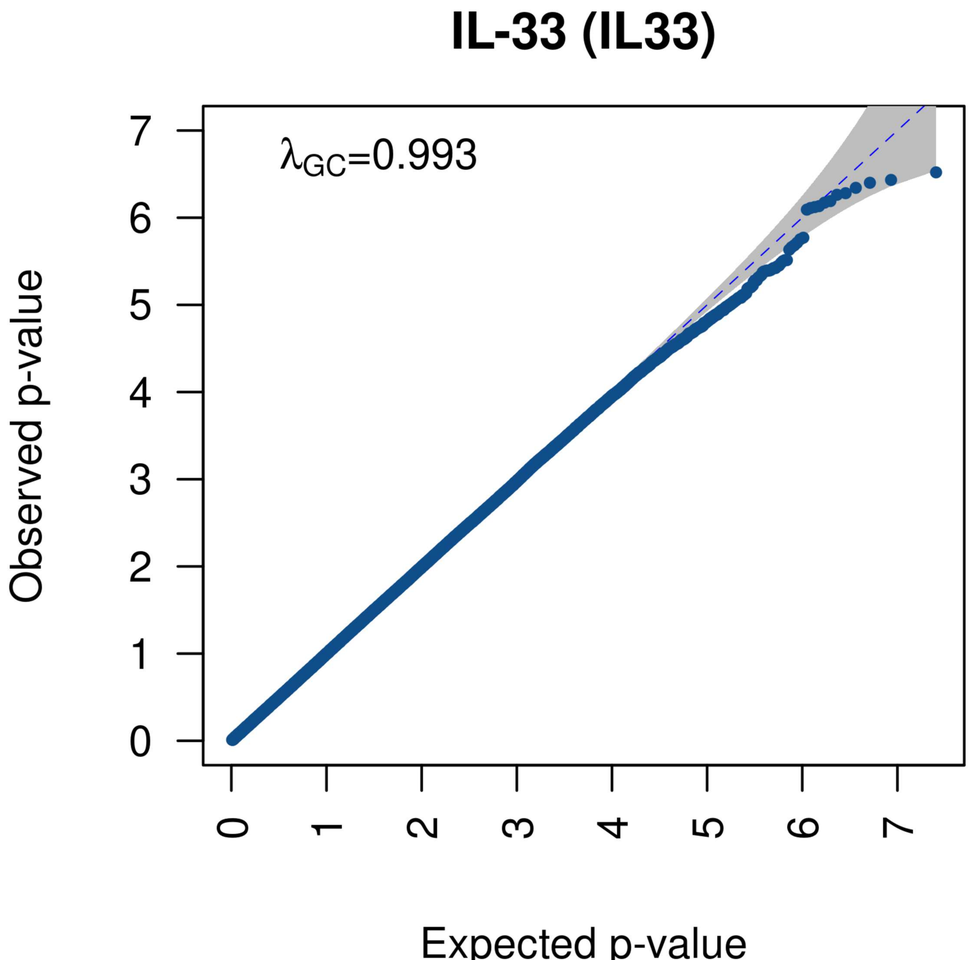

IL-2 (IL2)
−log10 p-value
Chromosome

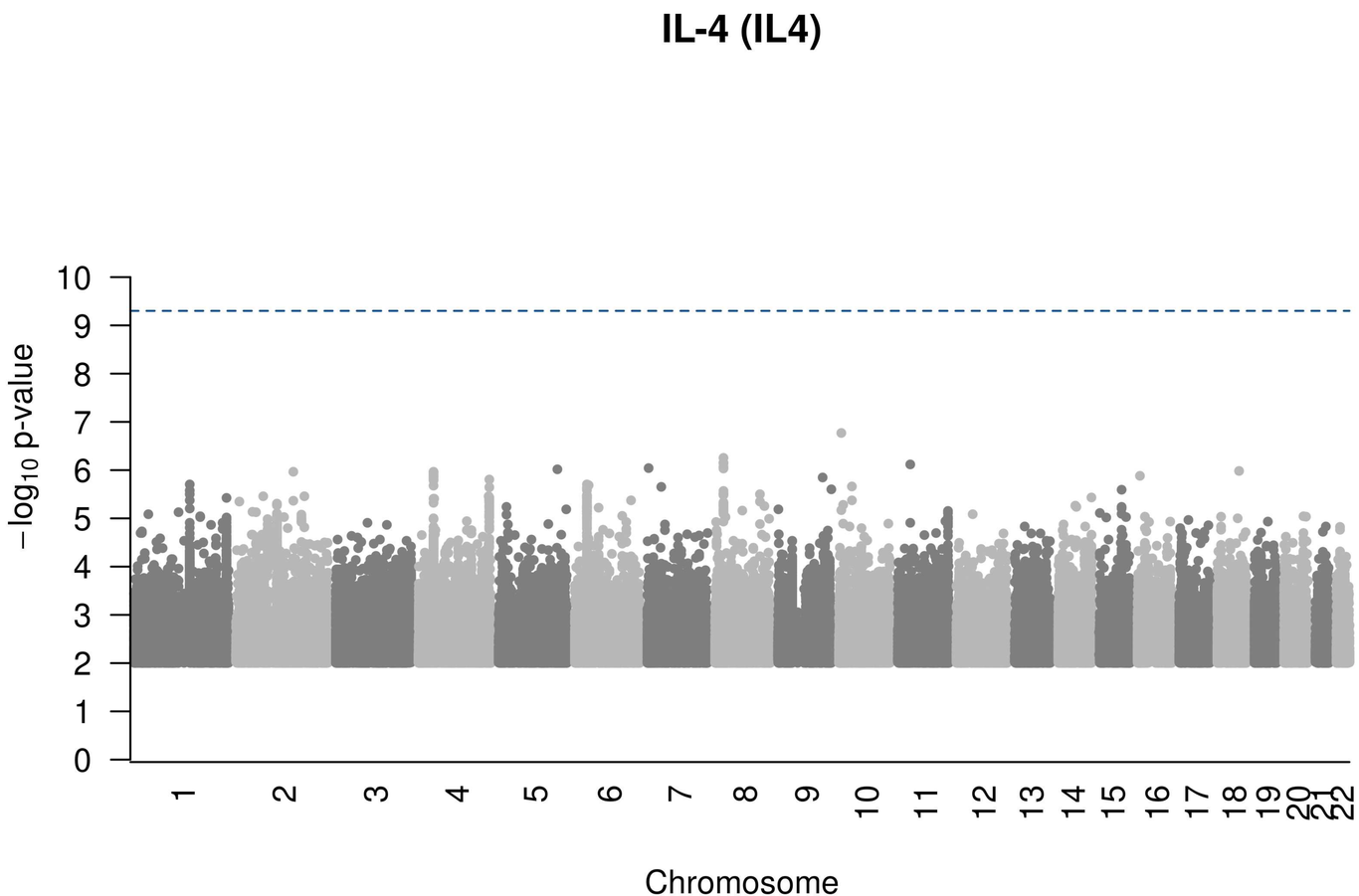

IL-2 (IL2)
λGC=1.010
Observed p-value
Expected p-value

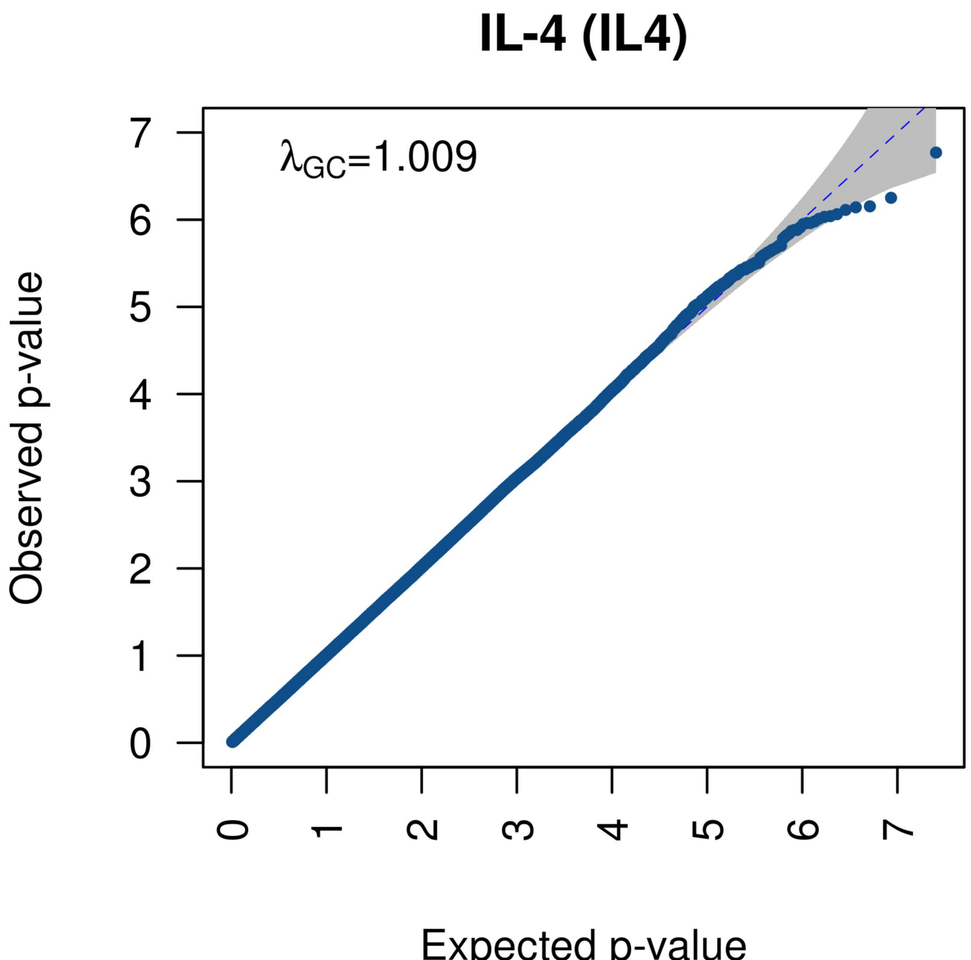

IL-2RB (IL2RB)
−log10 p-value
Chromosome
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

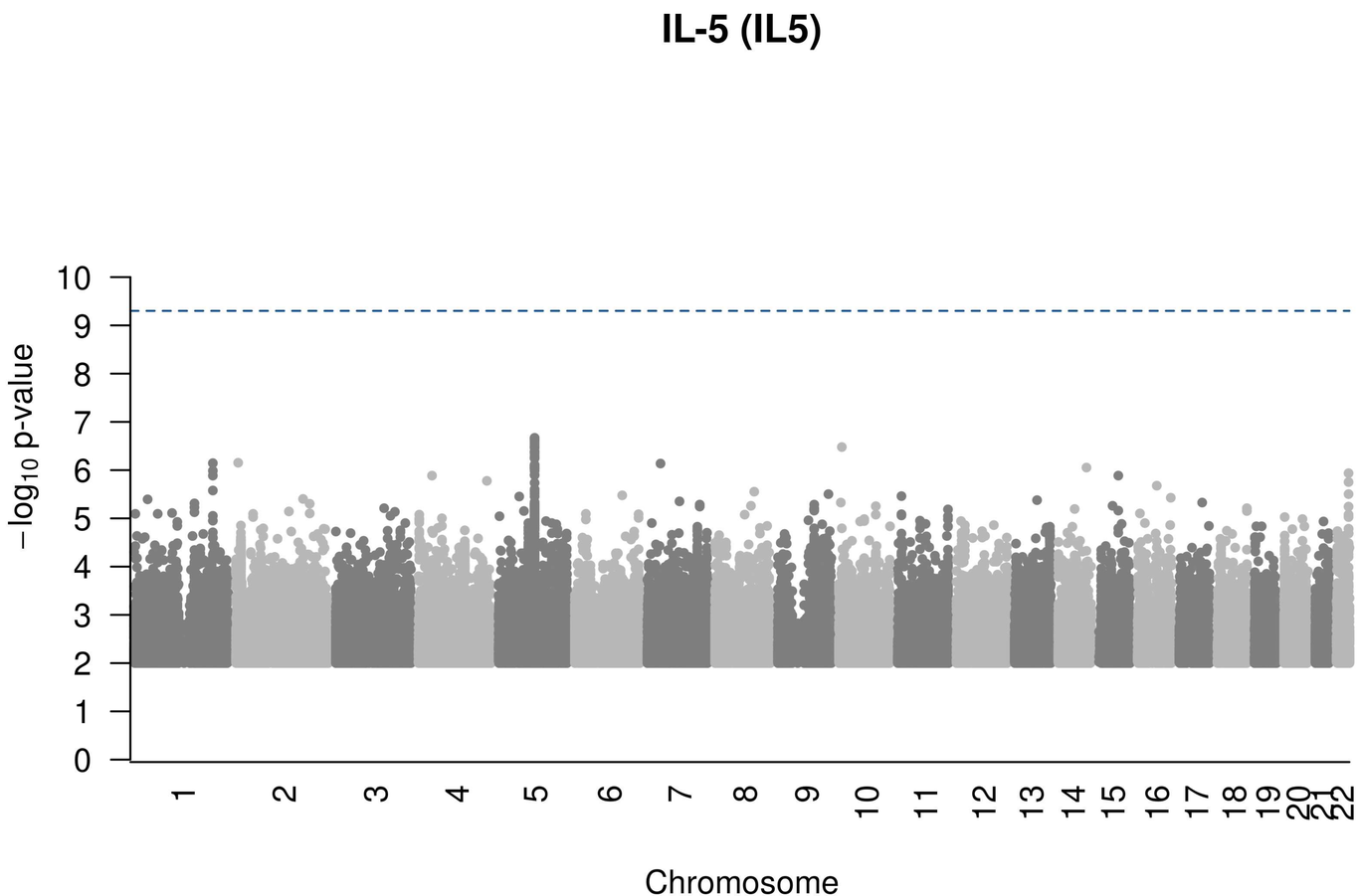

IL-2RB (IL2RB)
λGC=0.994
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7

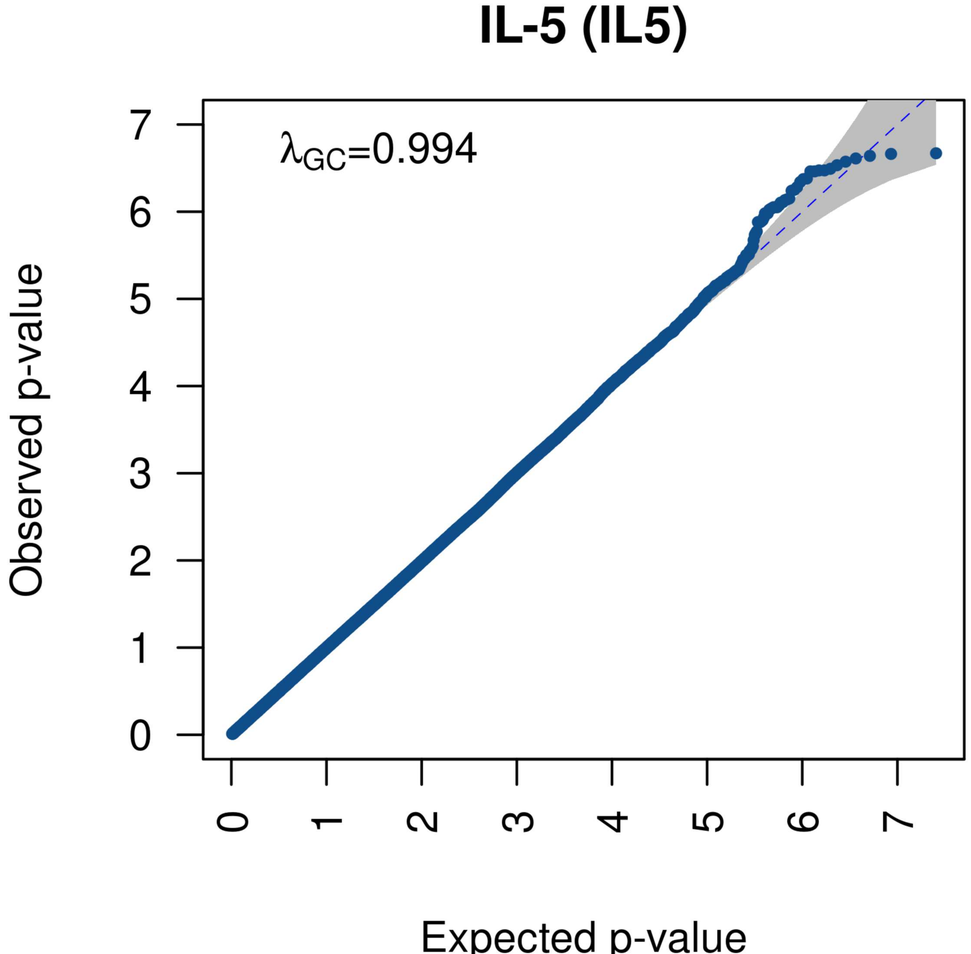

IL-33 (IL33)
−log10 p-value
Chromosome
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

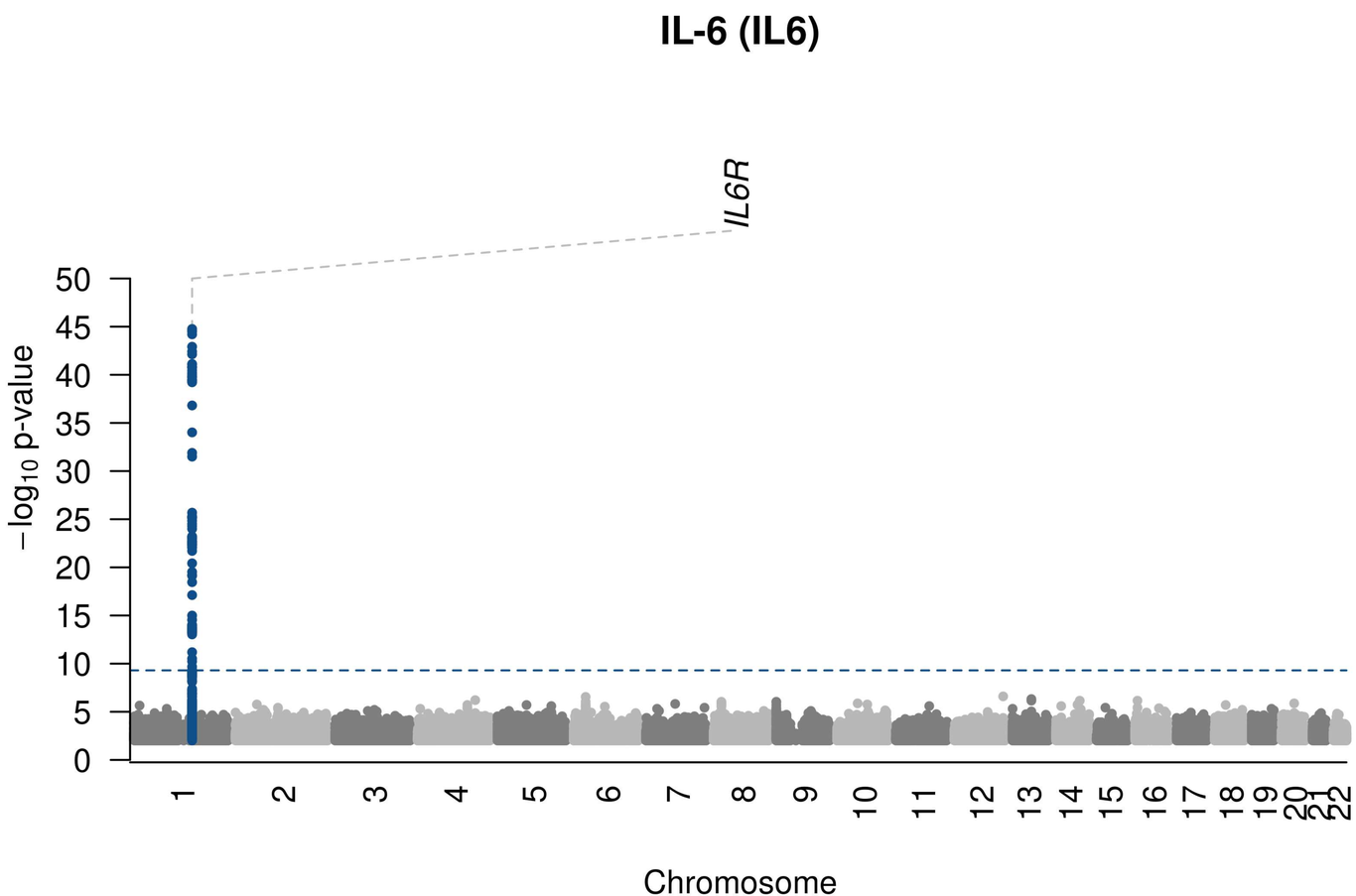

IL-33 (IL33)
λGC=0.993
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7

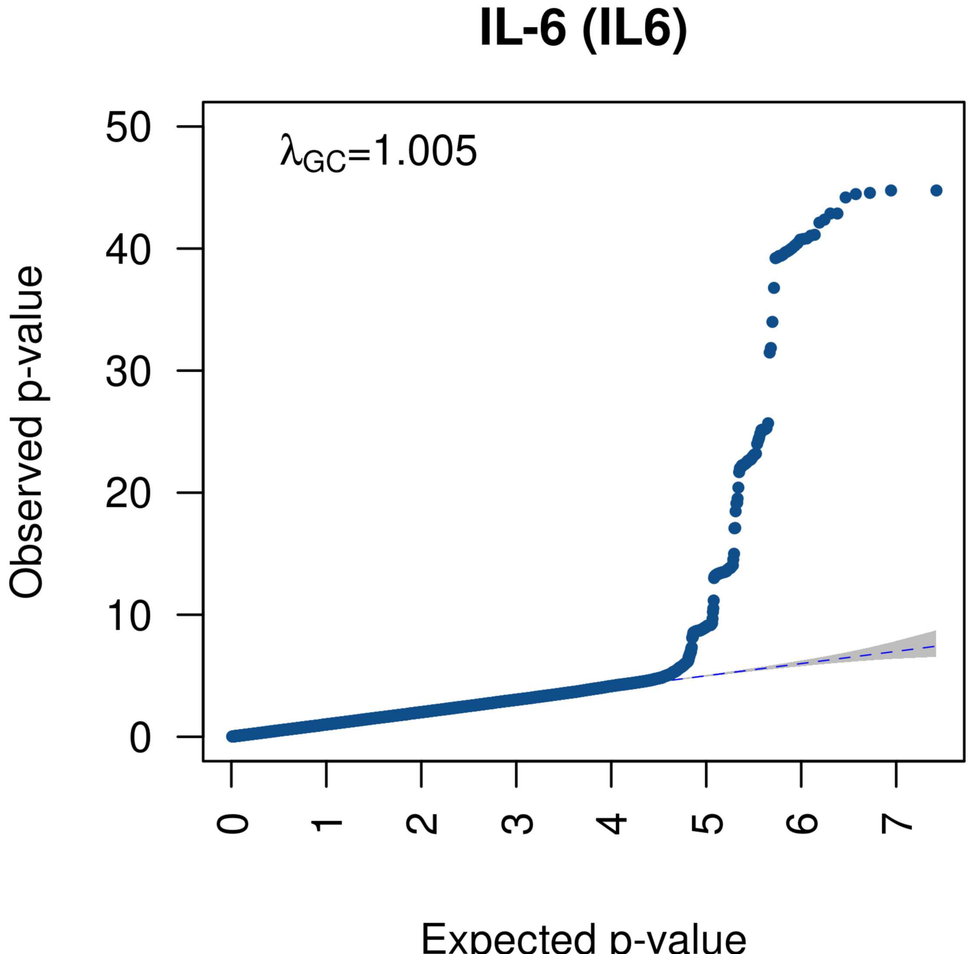

IL-4 (IL4)
−log10 p-value
Chromosome

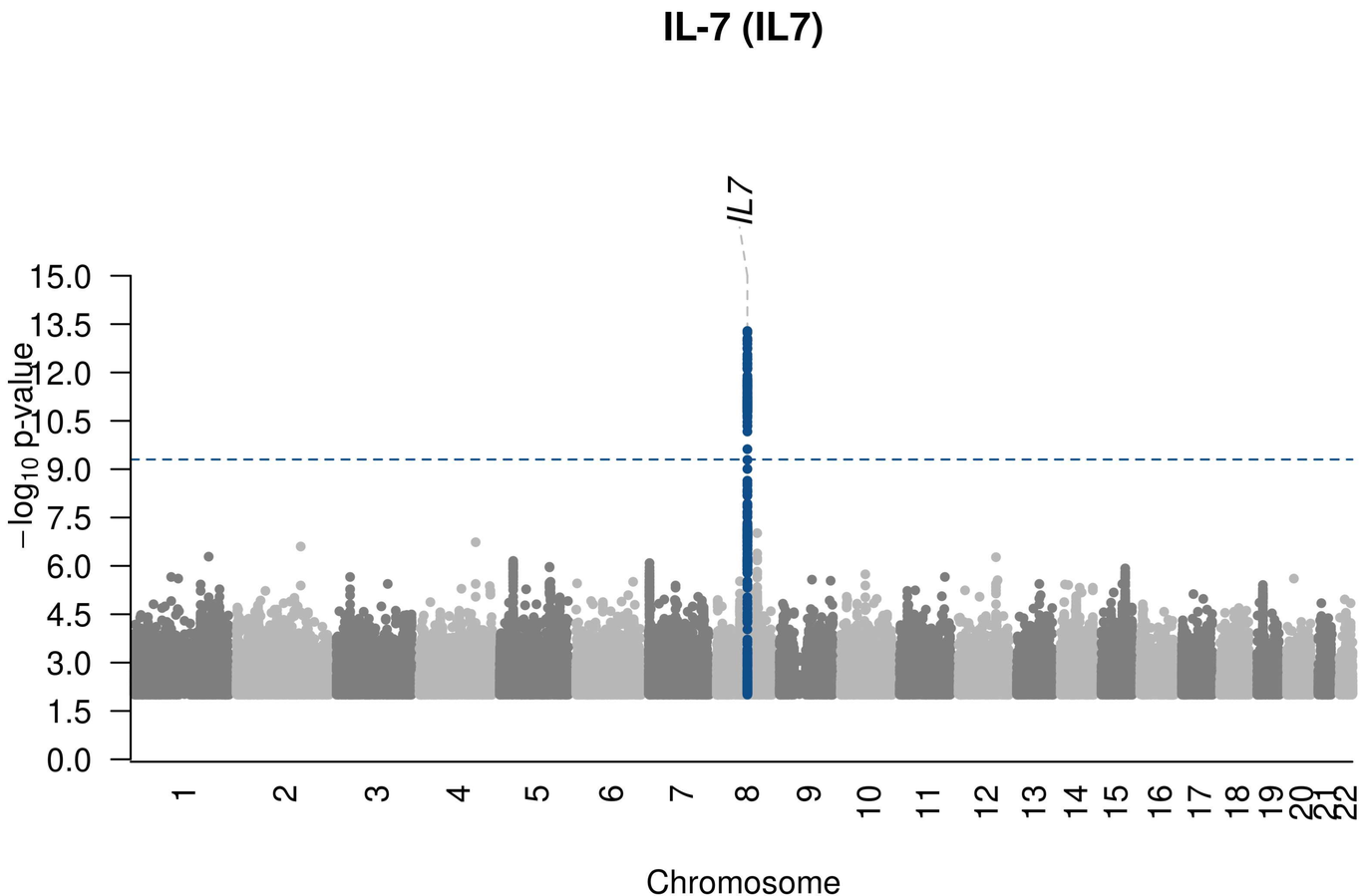

IL-4 (IL4)
λGC=1.009
Observed p-value
Expected p-value

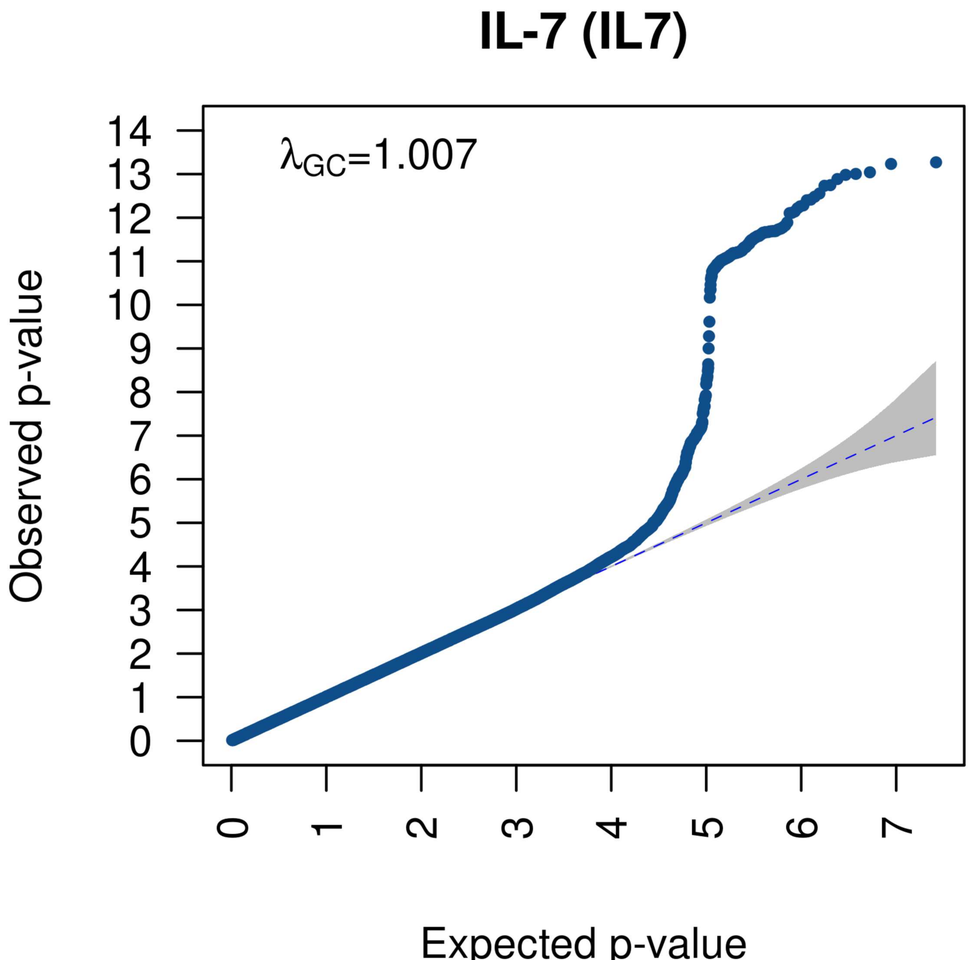

IL-5 (IL5)
−log10 p-value
Chromosome
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

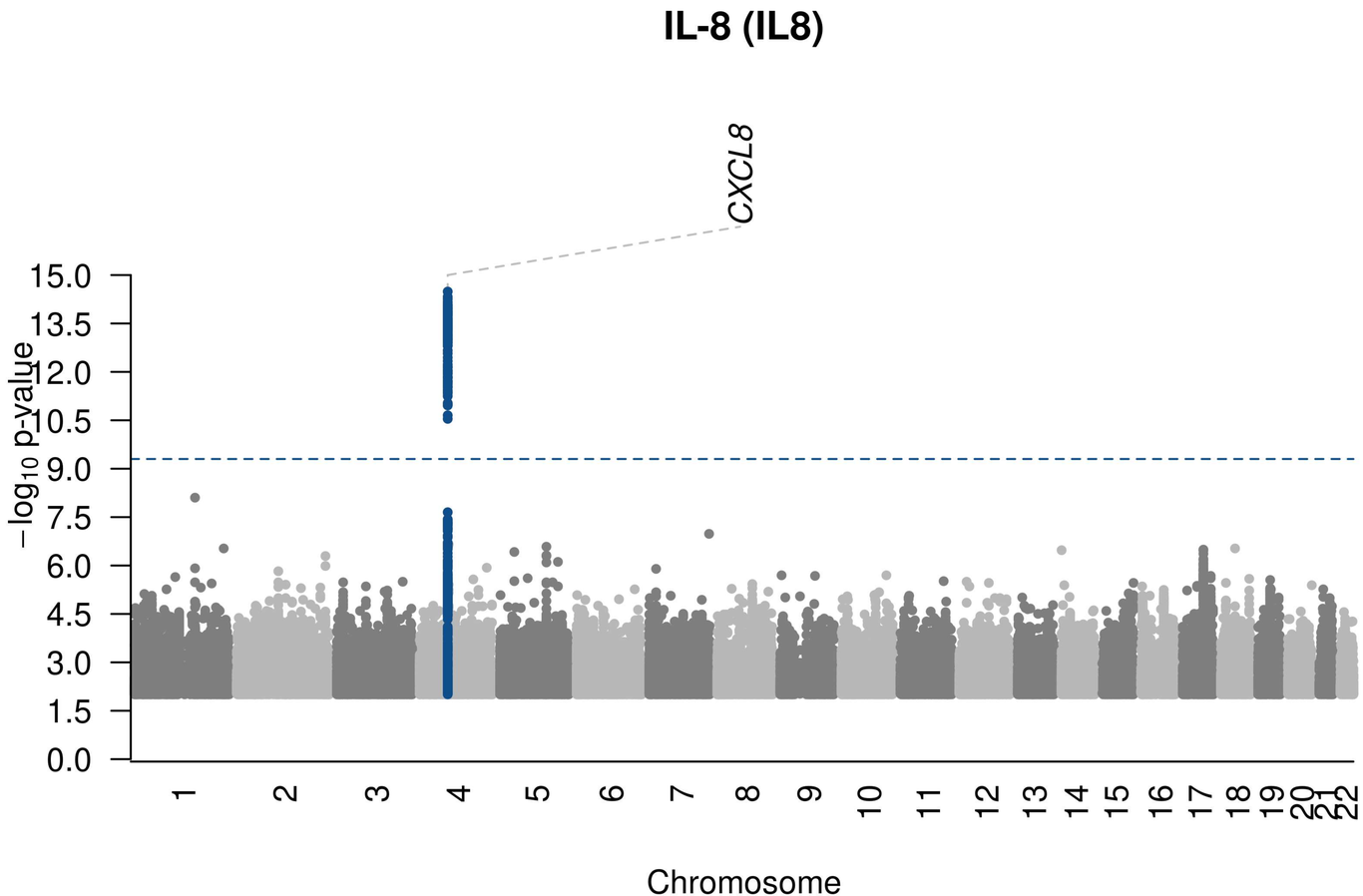

IL-5 (IL5)
λGC=0.994
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7

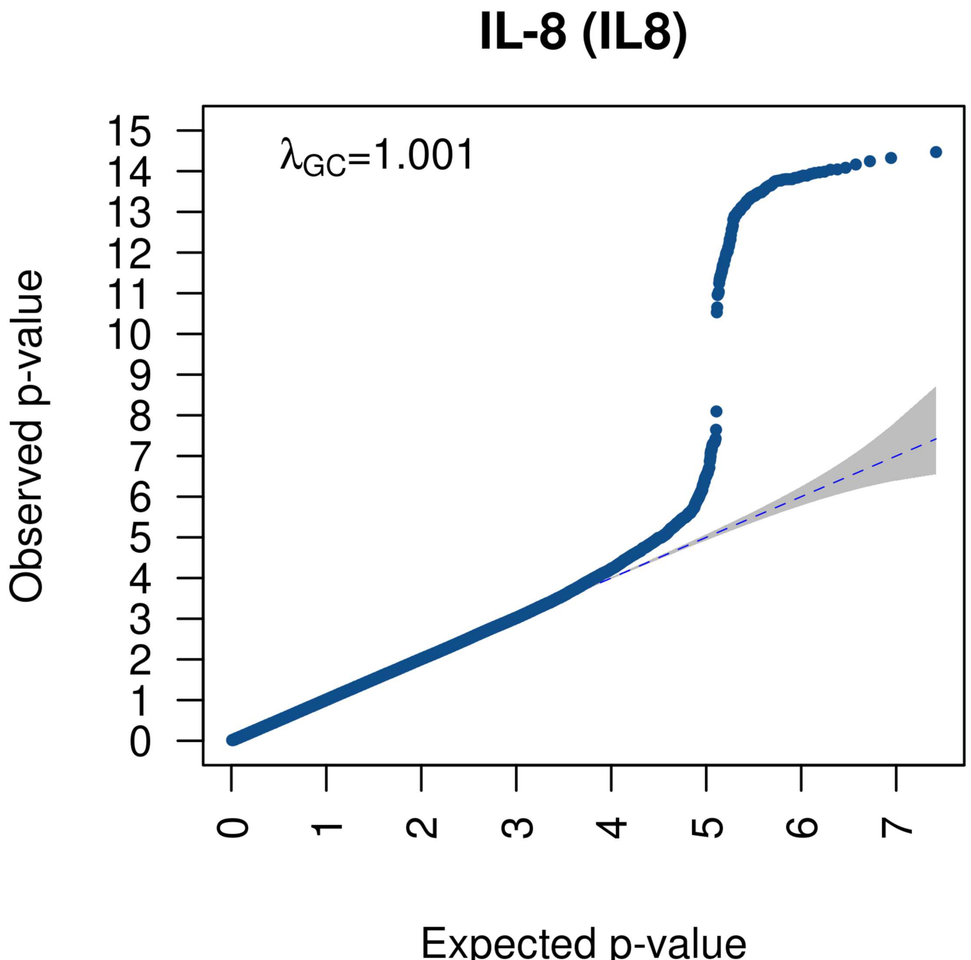

IL-6 (IL6)
IL6R
−log10 p-value
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

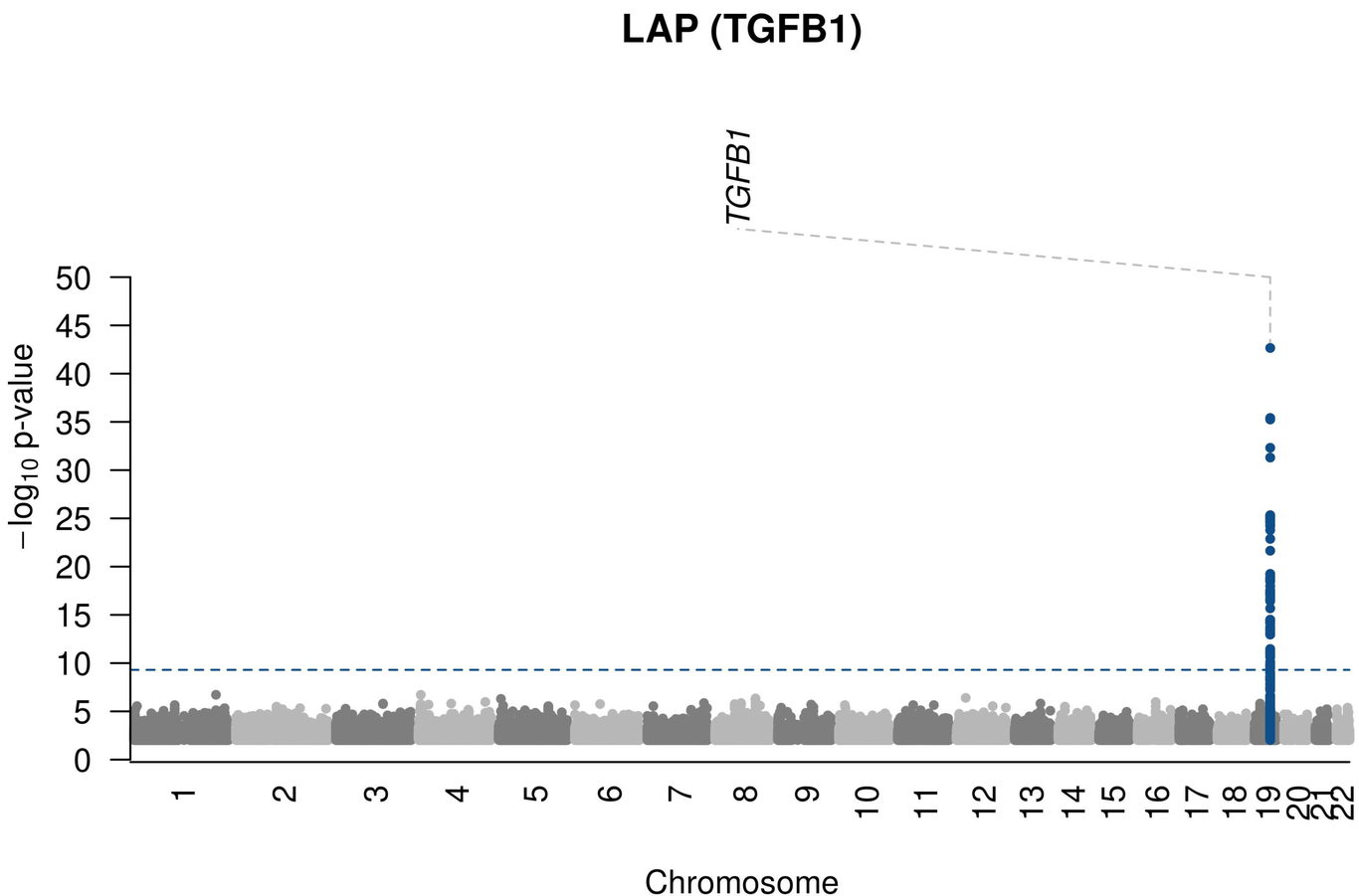

IL-6 (IL6)
λGC=1.005
Observed p-value
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

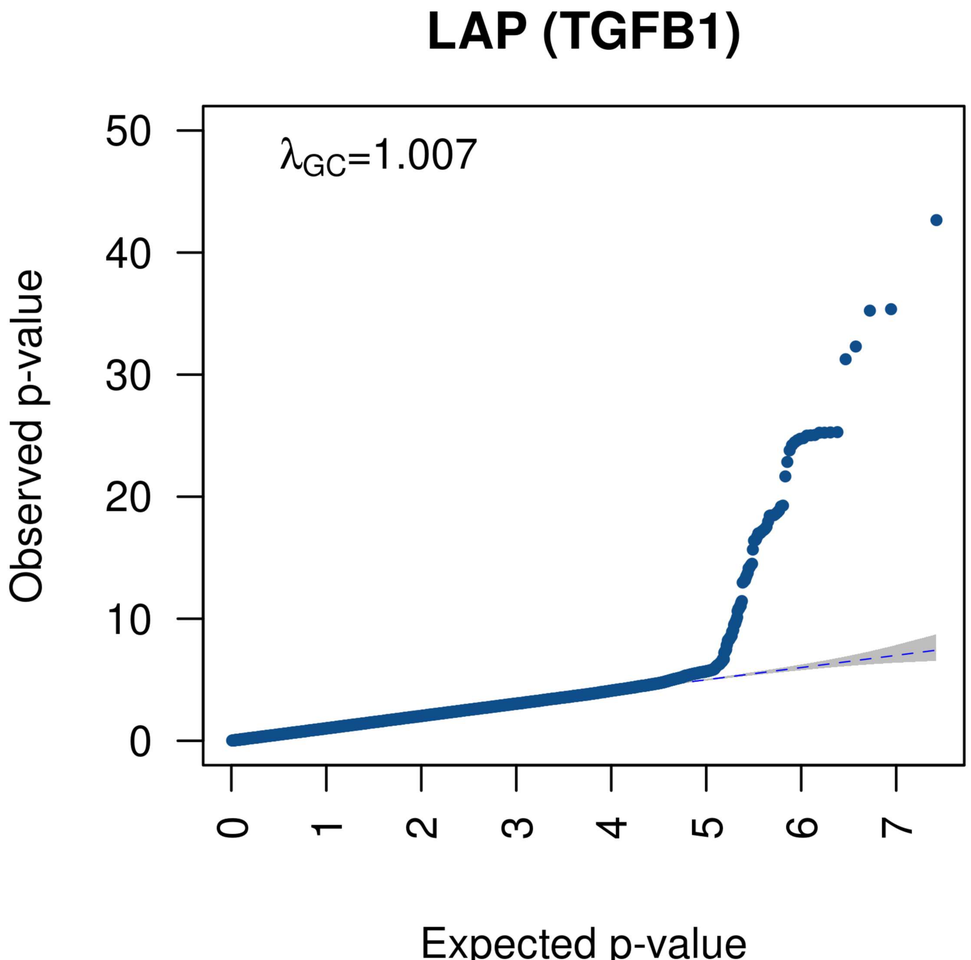

IL-7 (IL7)
IL7
15.0
13.5
12.0
10.5
9.0
7.5
6.0
4.5
3.0
1.5
0.0
−log10 p-value
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

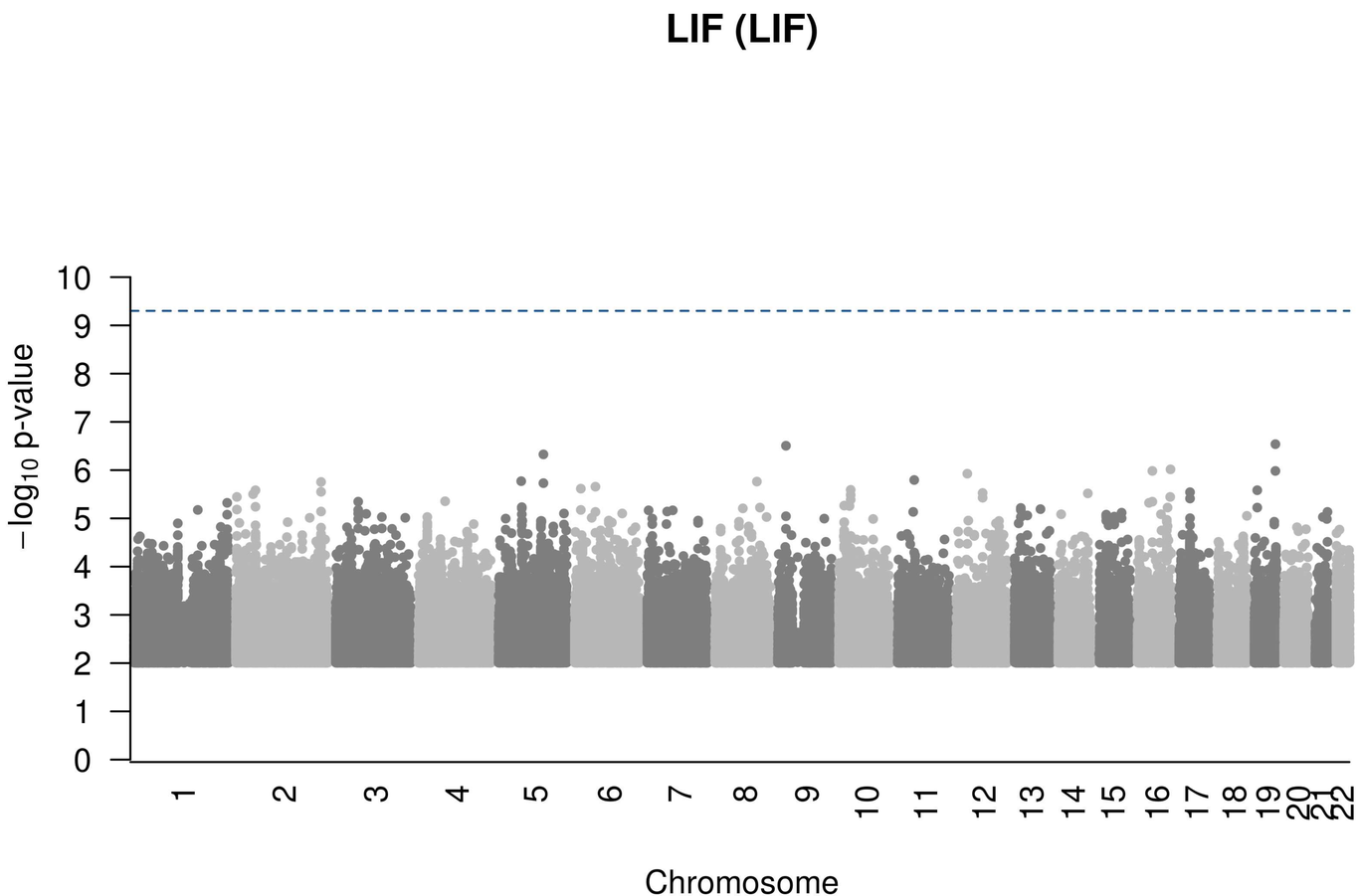

IL-7 (IL7)
λGC=1.007
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14

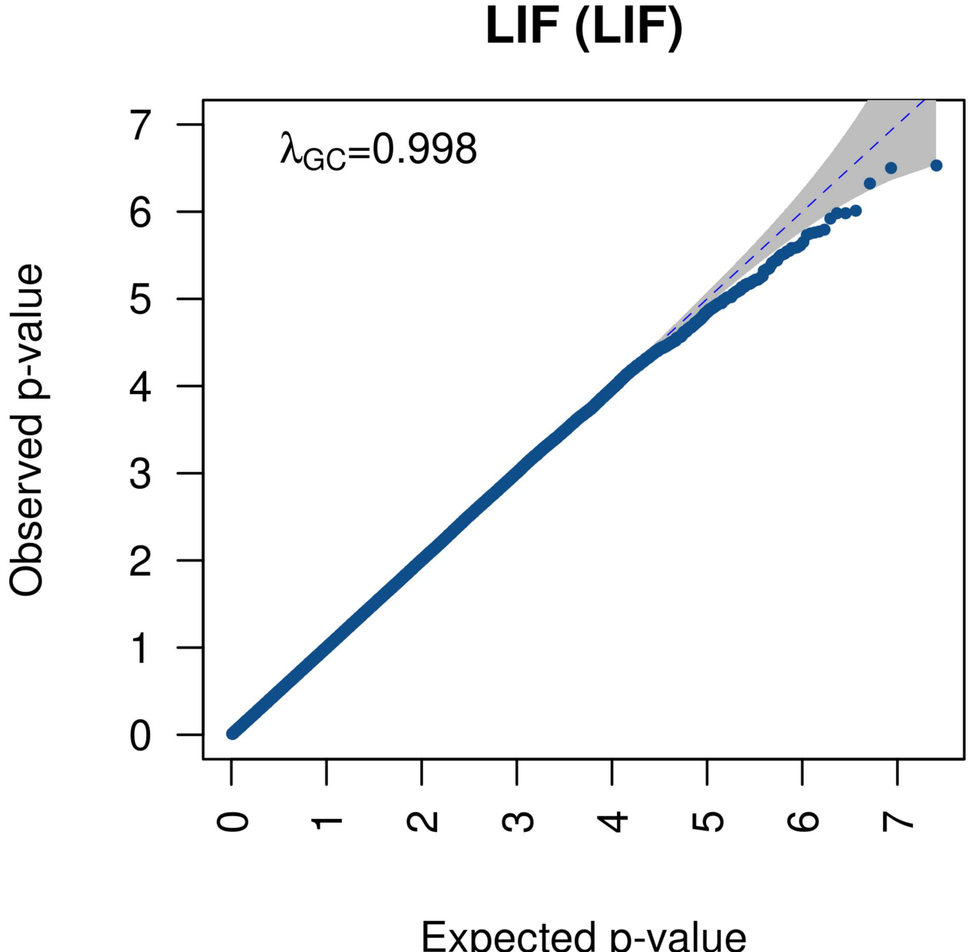

IL-8 (IL8)
CXCL8
−log10 p-value
15.0
13.5
12.0
10.5
9.0
7.5
6.0
4.5
3.0
1.5
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Chromosome

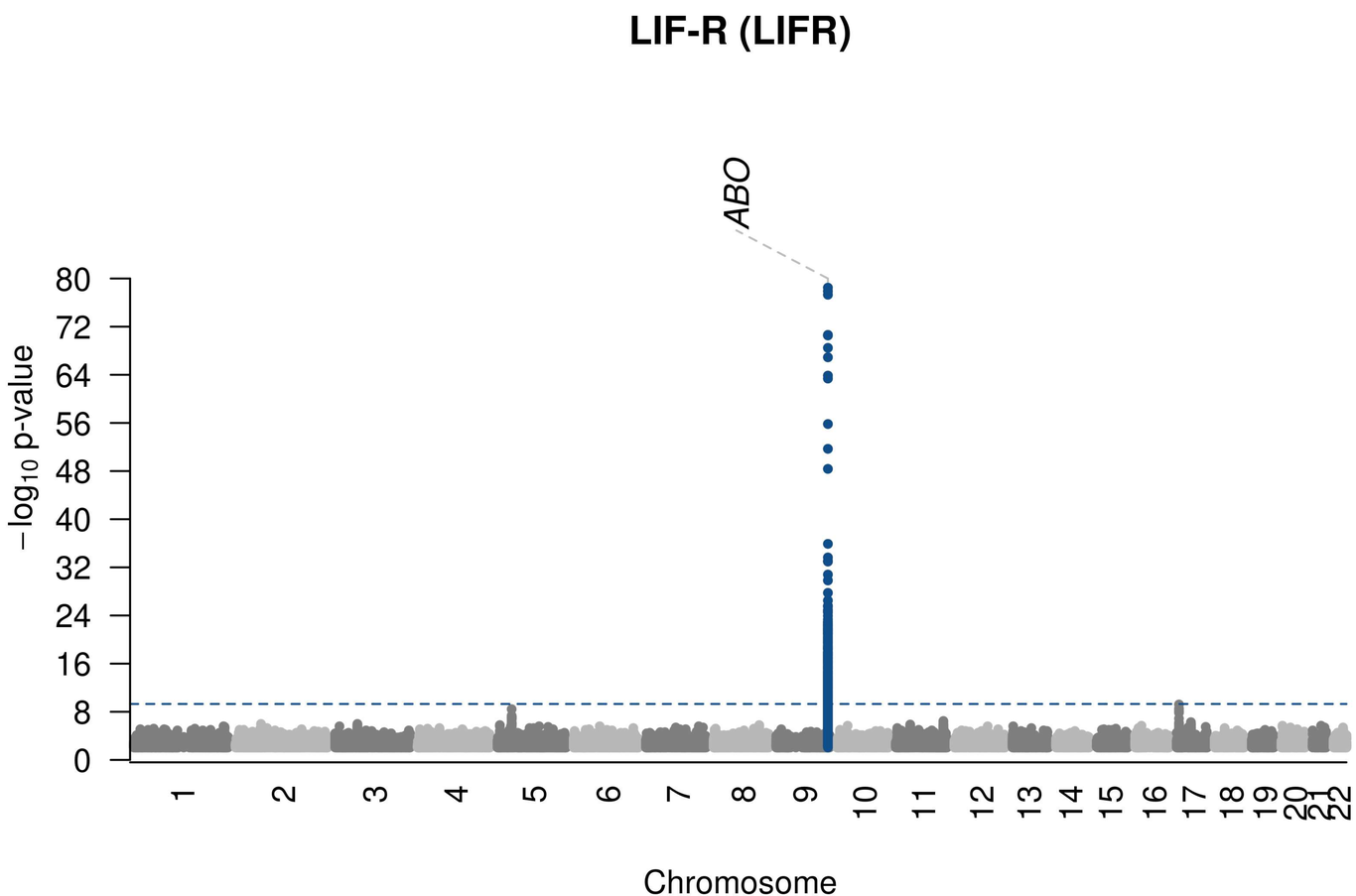

IL-8 (IL8)
λGC=1.001
Observed p-value
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
0 1 2 3 4 5 6 7
Expected p-value

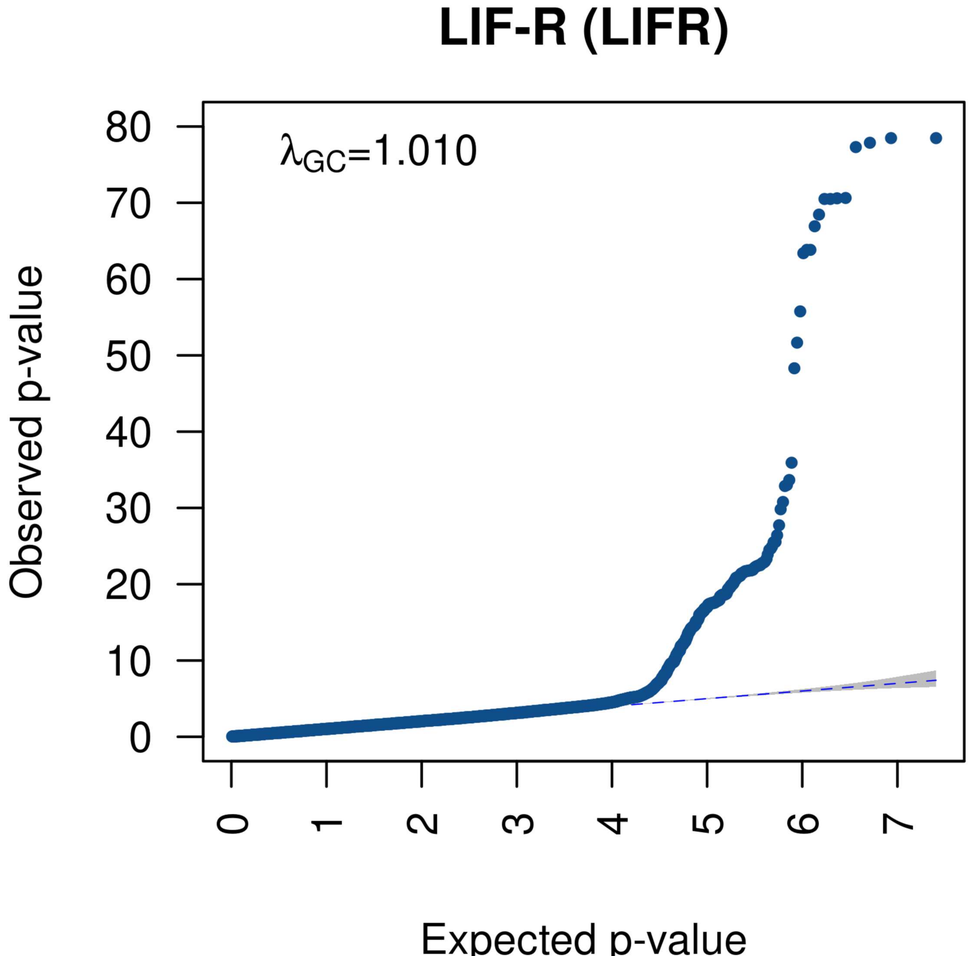

LAP (TGFB1)
TGFB1
−log10 p-value
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

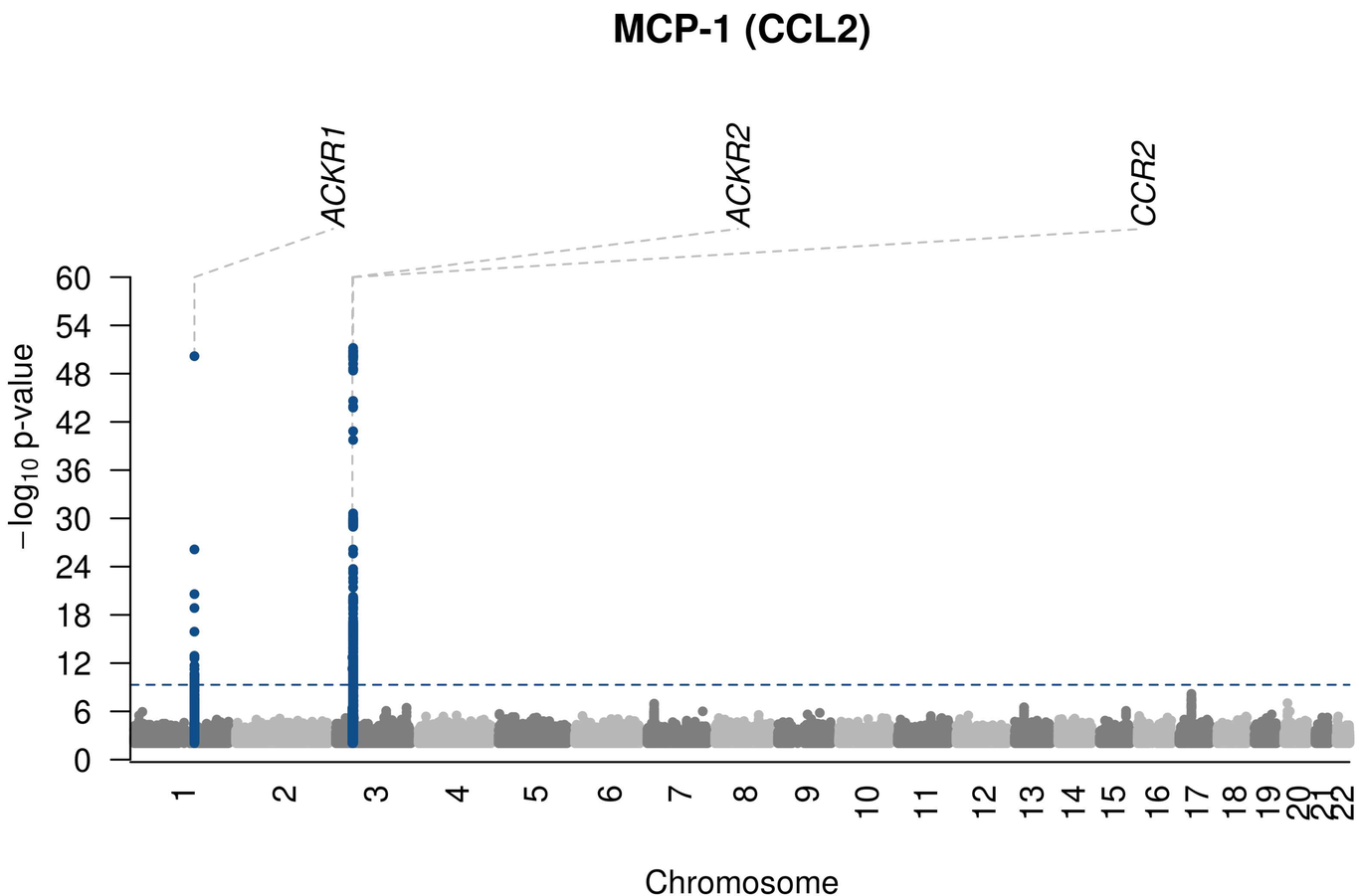

LAP (TGFB1)
λGC=1.007
Observed p-value
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

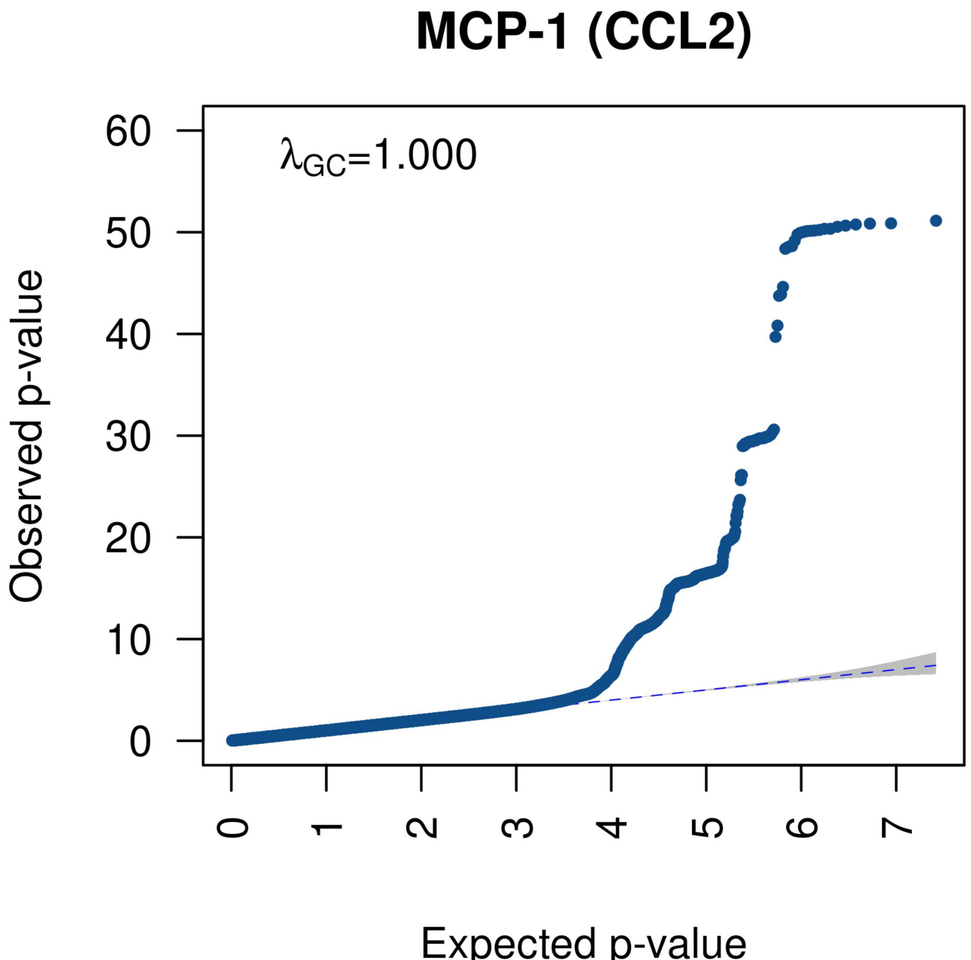

LIF (LIF)
−log10 p-value
Chromosome
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

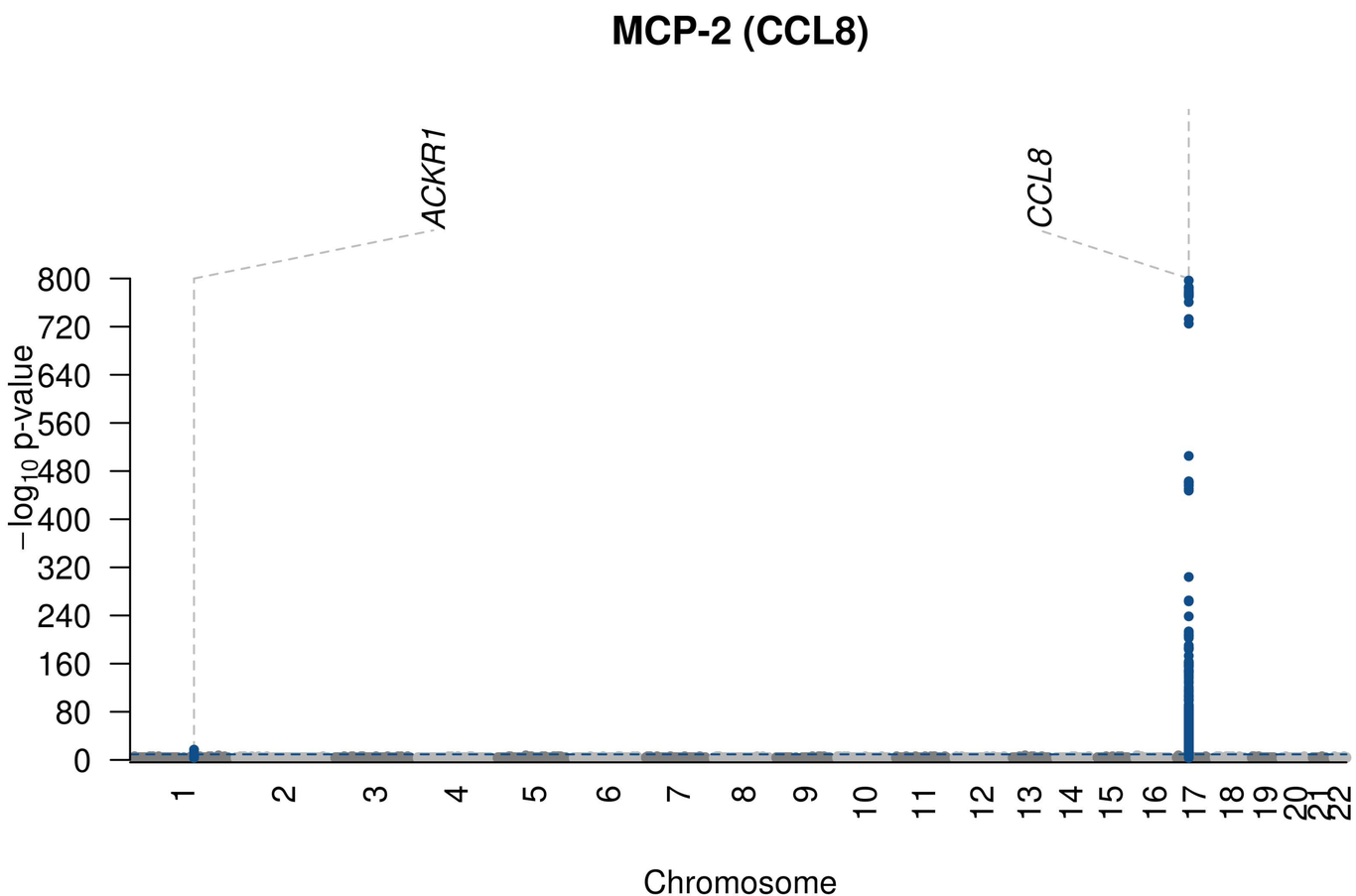

LIF (LIF)
λGC=0.998
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7

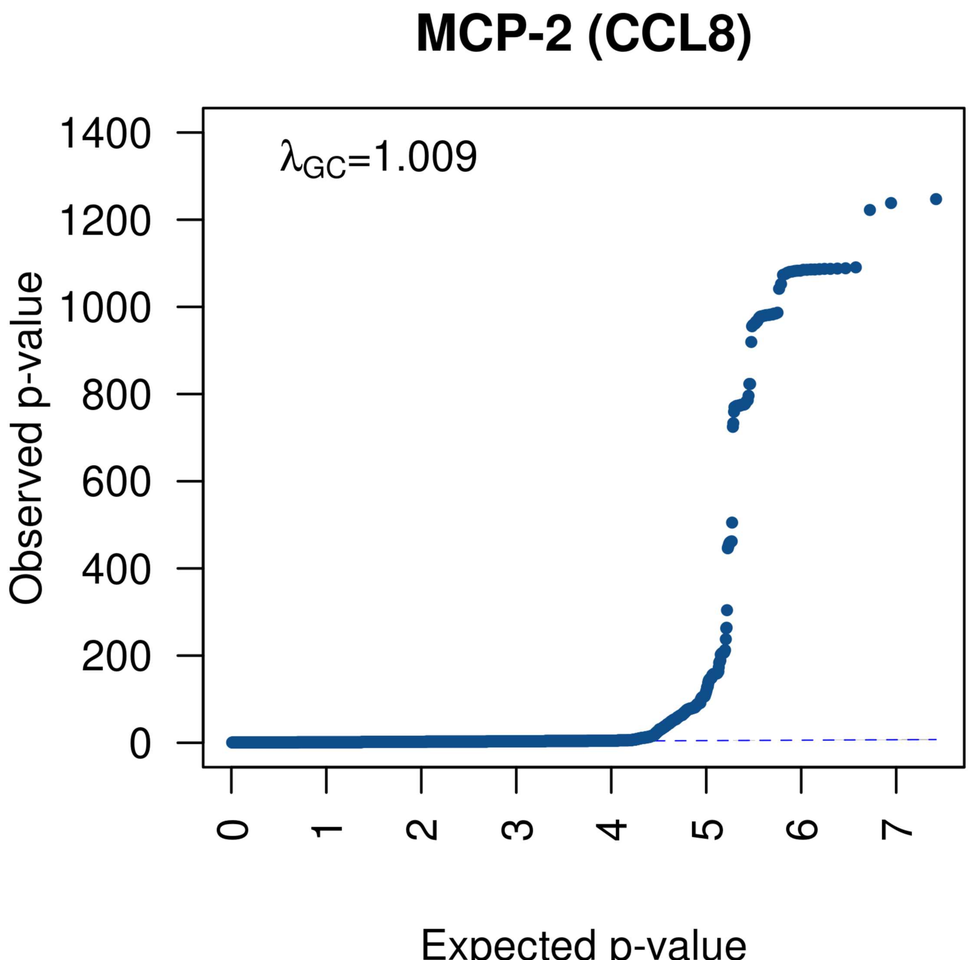

LIF-R (LIFR)
ABO
−log10 p-value
80
72
64
56
48
40
32
24
16
8
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

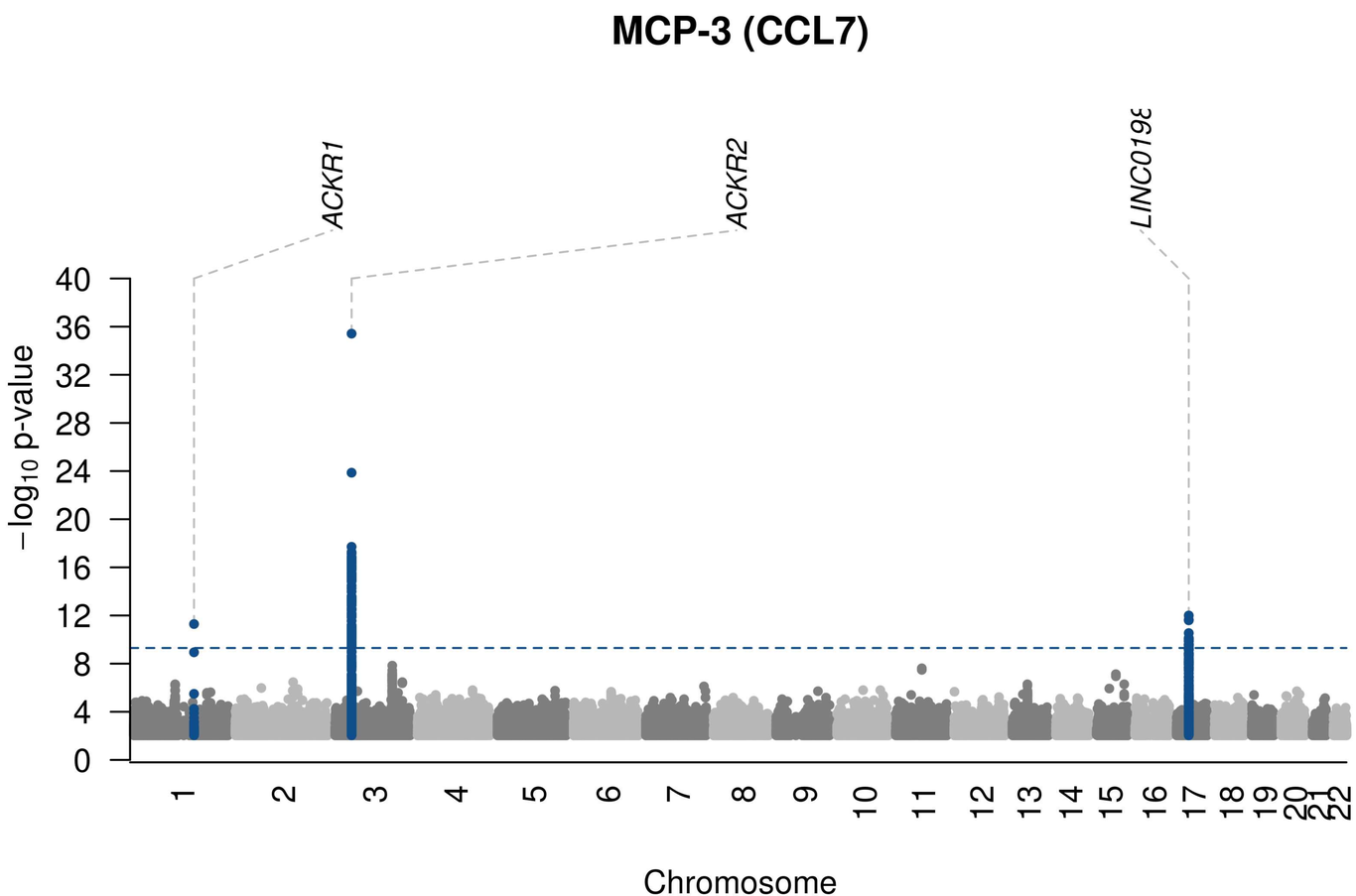

LIF-R (LIFR)
λGC=1.010
Observed p-value
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

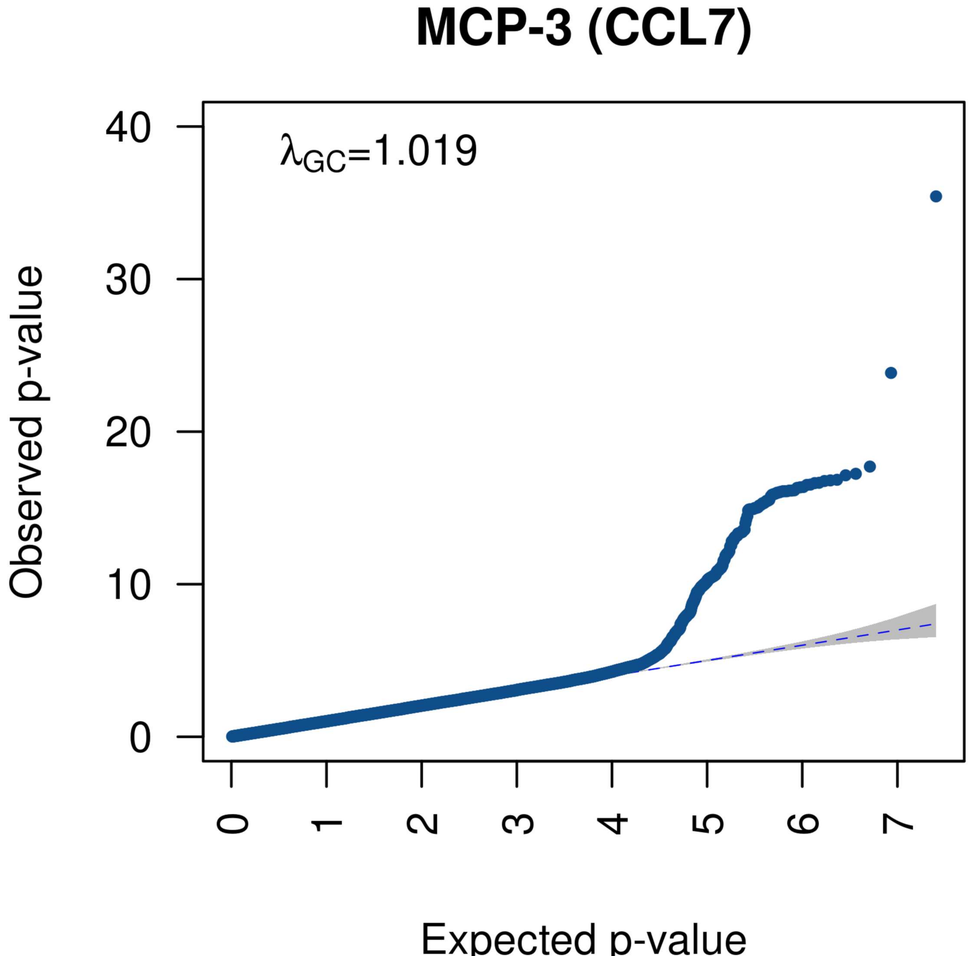

MCP-1 (CCL2)
ACKR1
ACKR2
CCR2
−log10 p-value
60
54
48
42
36
30
24
18
12
6
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

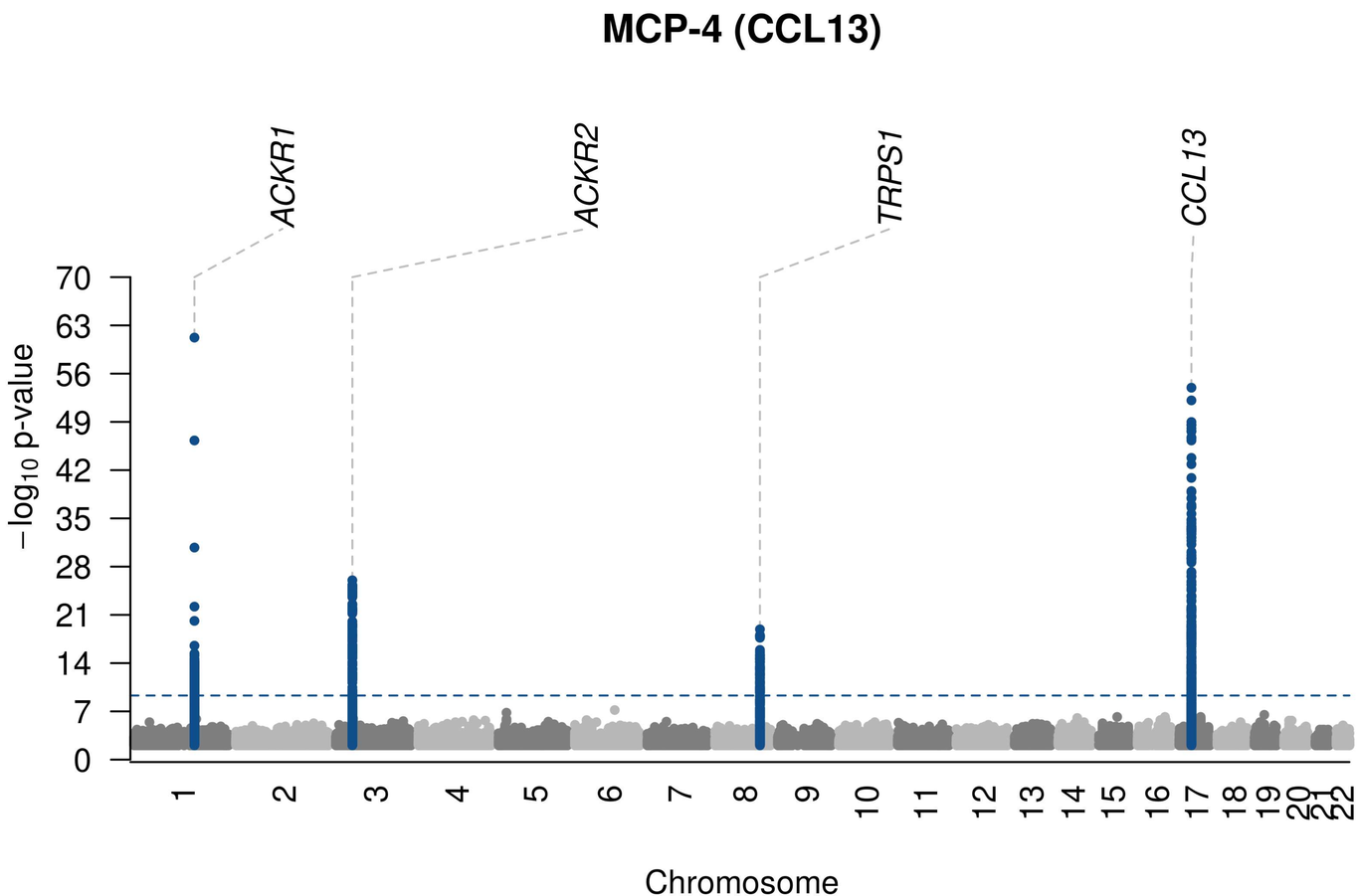

MCP-1 (CCL2)
λGC=1.000
Observed p-value
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

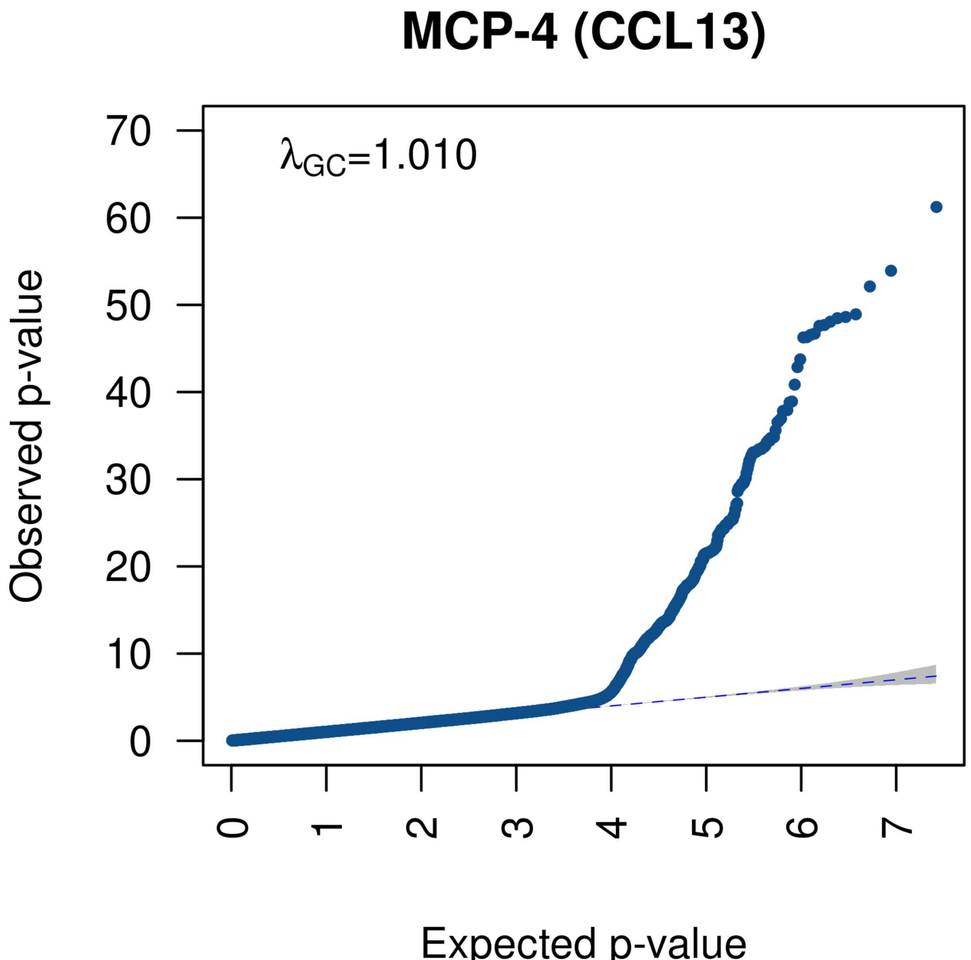

MCP-2 (CCL8)
ACKR1
CCL8
−log10 p-value
800
720
640
560
480
400
320
240
160
80
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

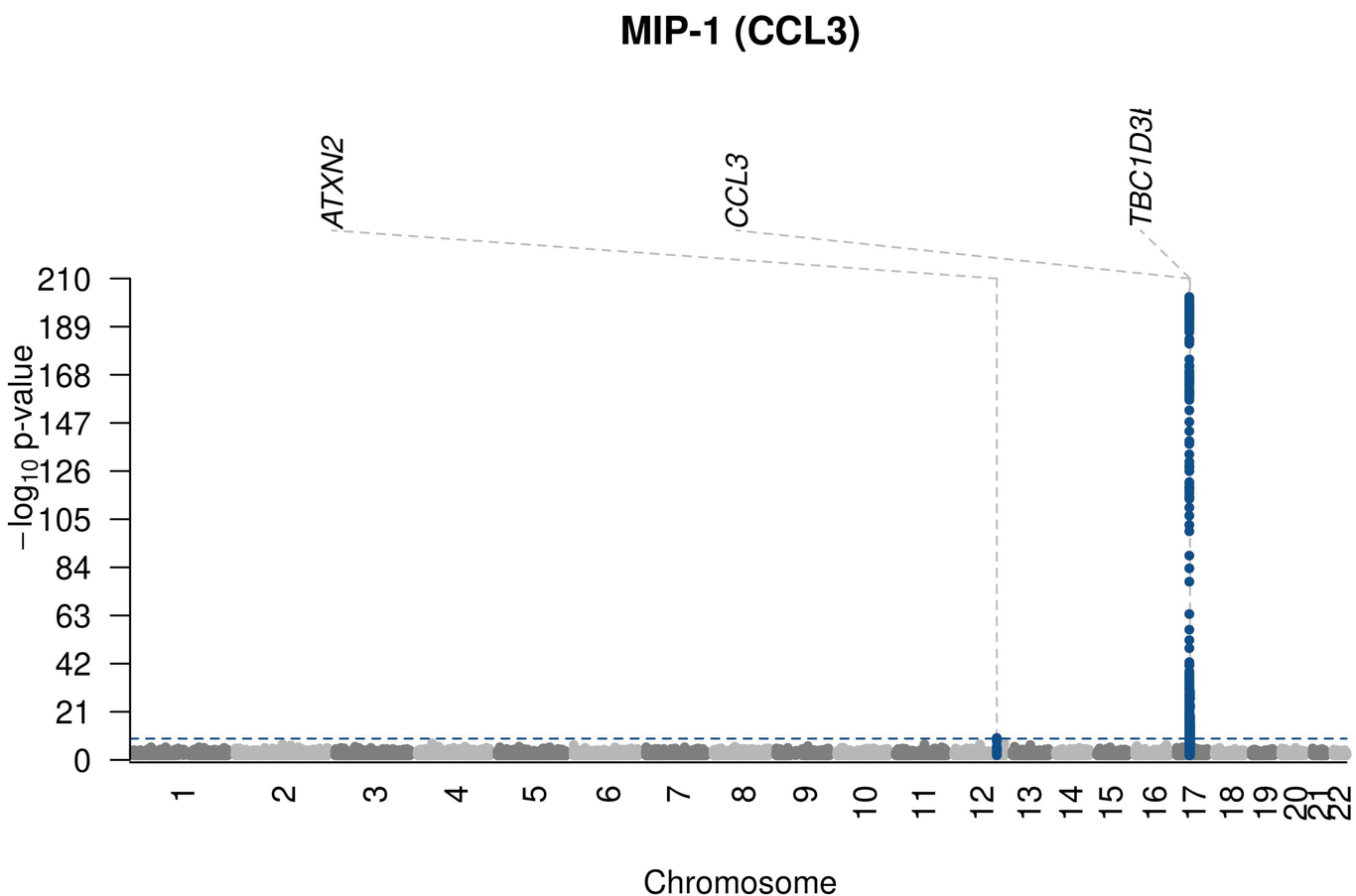

MCP-2 (CCL8)
λGC=1.009
Observed p-value
1400
1200
1000
800
600
400
200
0
0
1
2
3
4
5
6
7
Expected p-value

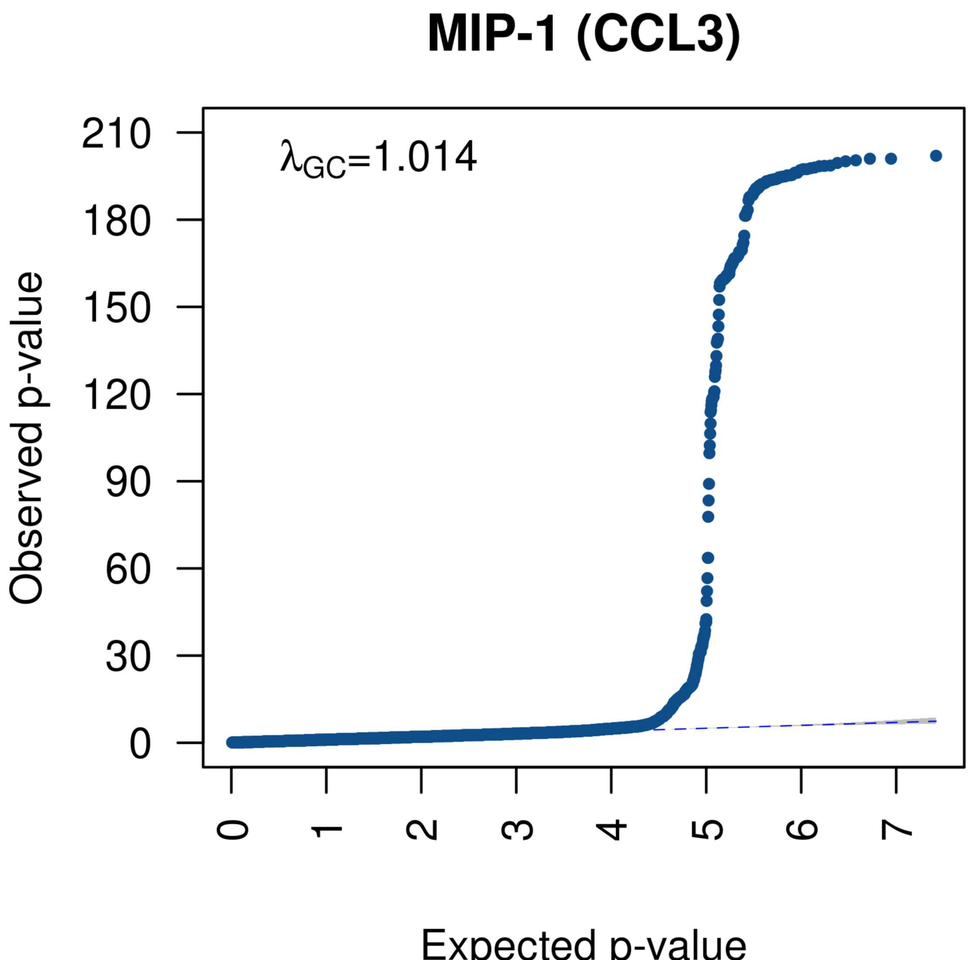

MCP-3 (CCL7)
ACKR1
ACKR2
LINC019
−log10 p-value
40
36
32
28
24
20
16
12
8
4
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

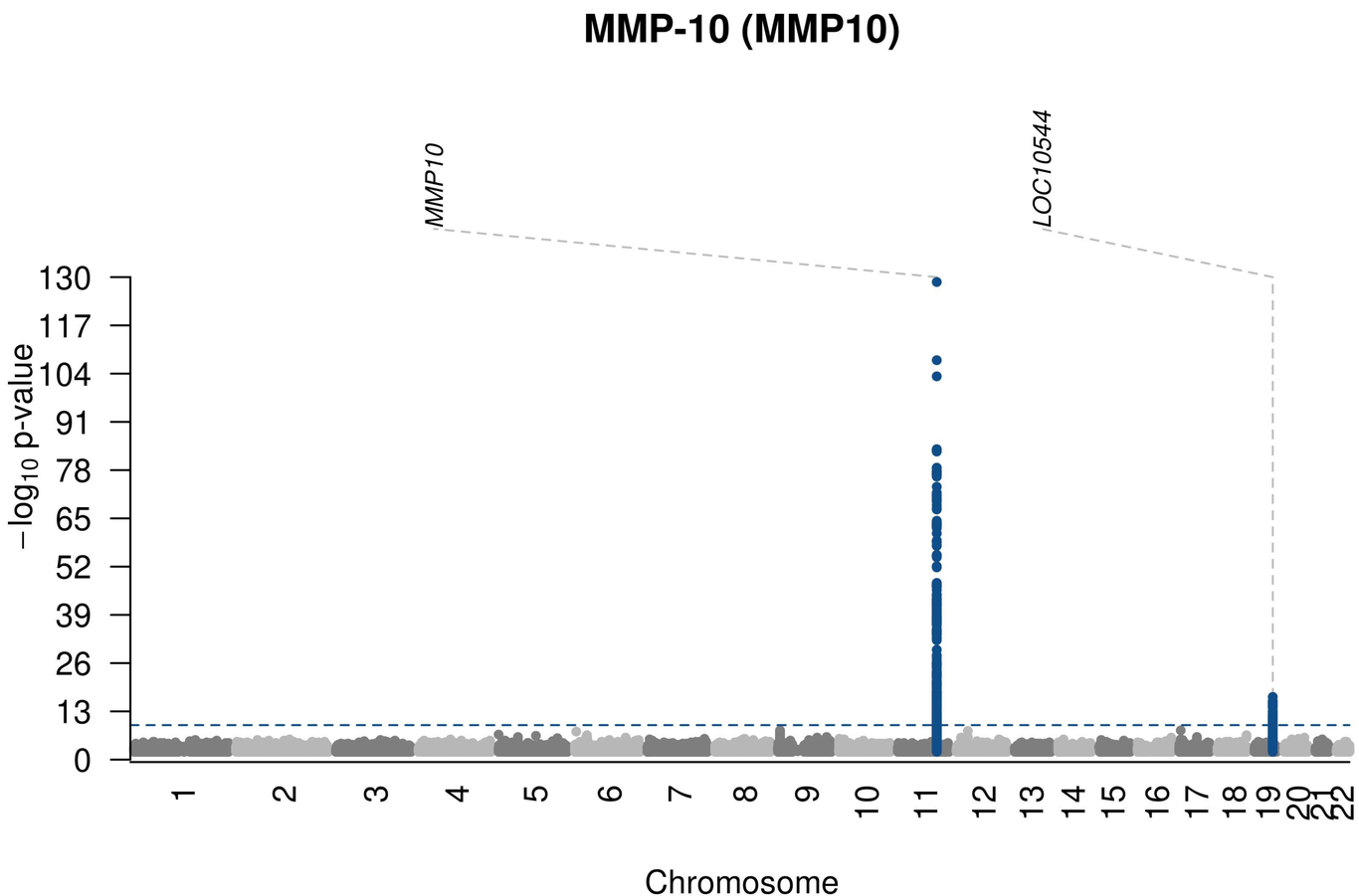

MCP-3 (CCL7)
λGC=1.019
Observed p-value
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

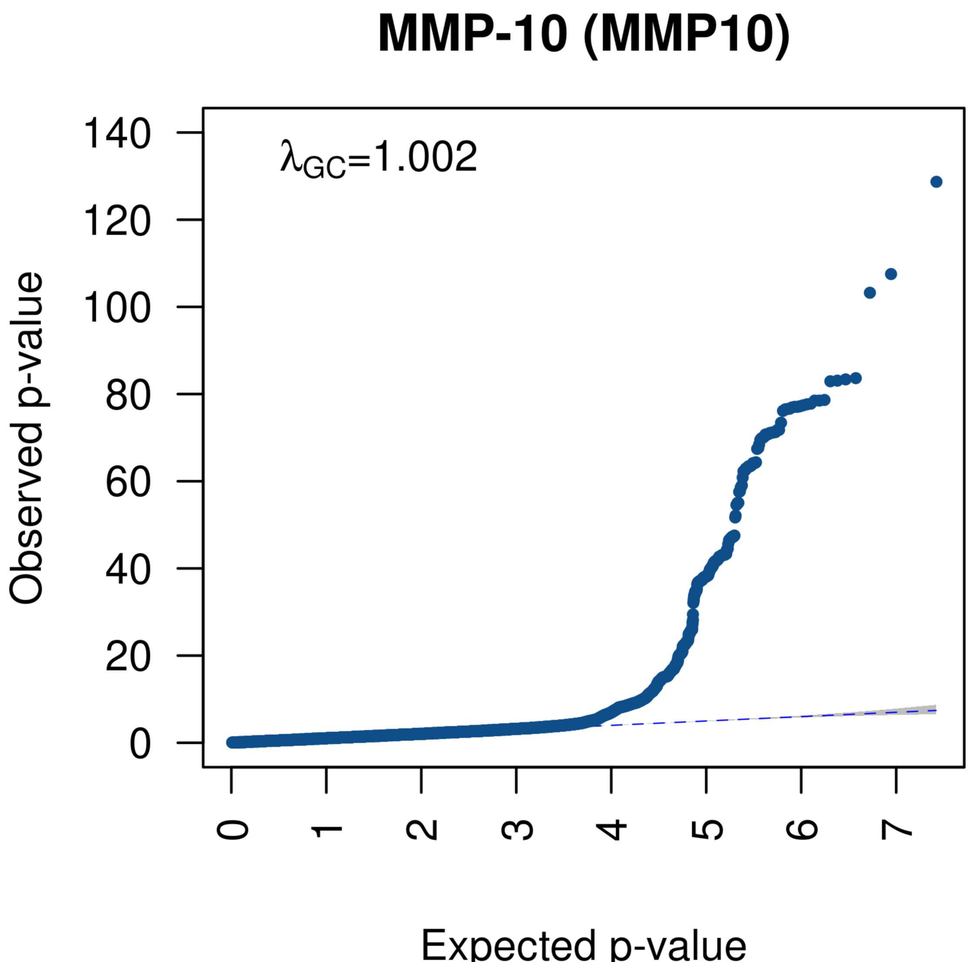

MCP-4 (CCL13)
ACKR1
ACKR2
TRPS1
CCL13
−log10 p-value
70
63
56
49
42
35
28
21
14
7
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

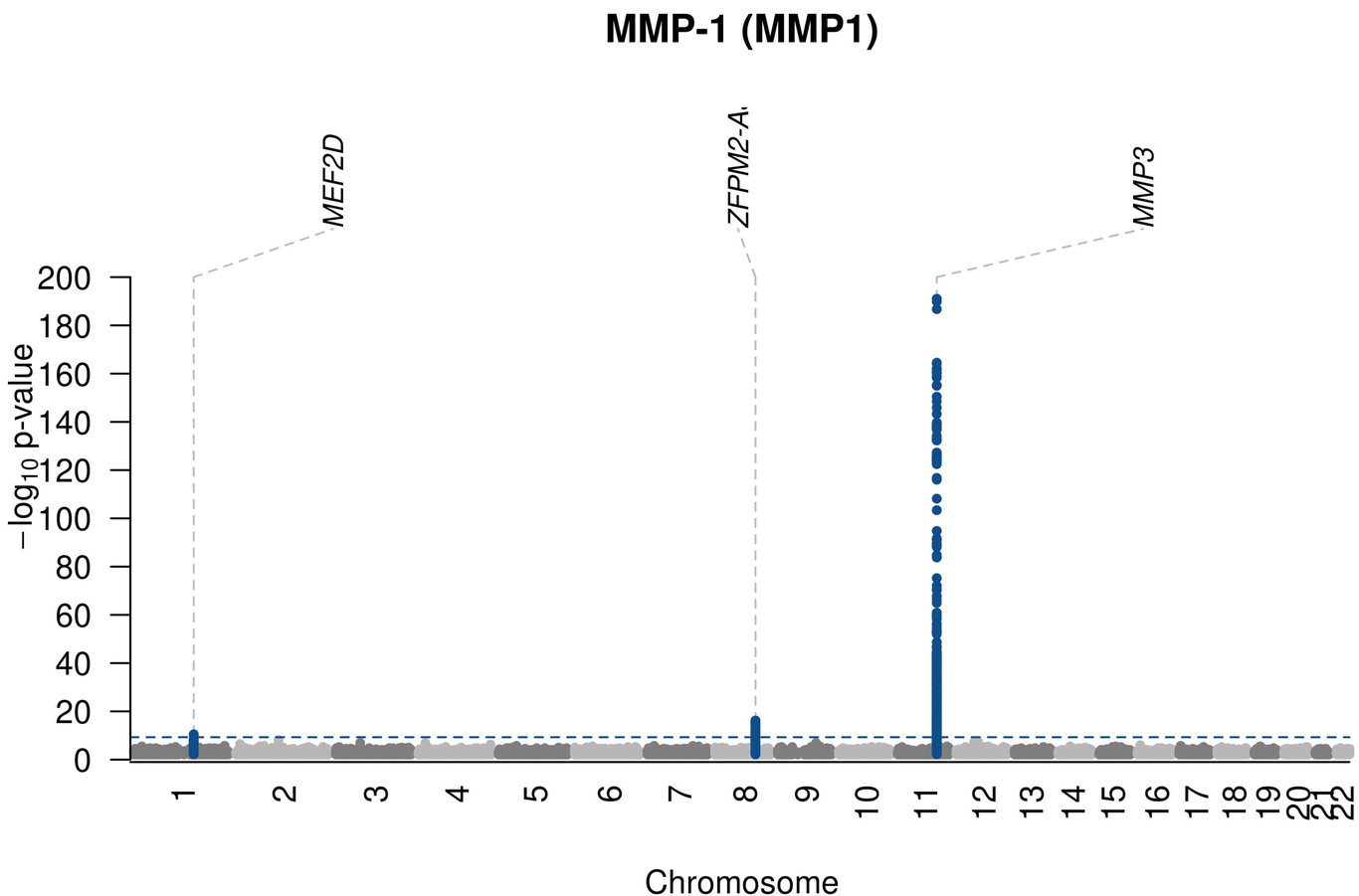

MCP-4 (CCL13)
λGC=1.010
Observed p-value
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

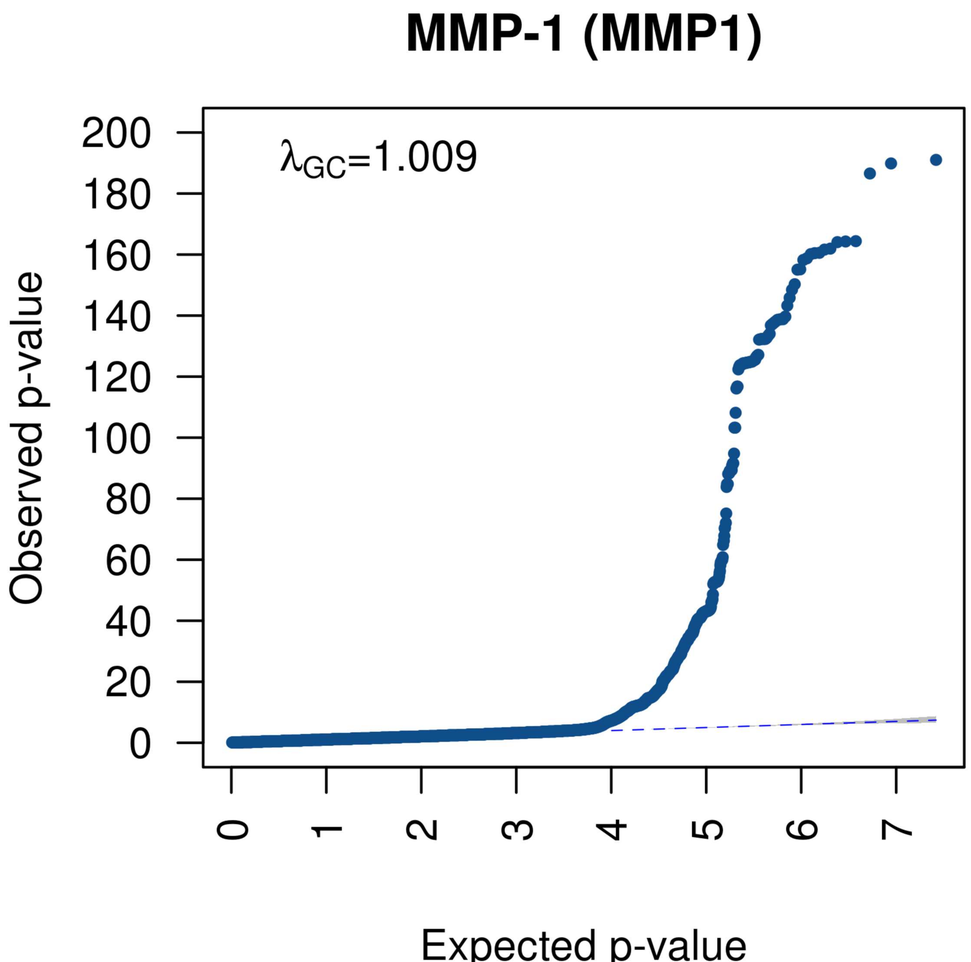

MIP-1 (CCL3)
ATXN2
CCL3
TBC1D3t
−log10 p-value
210
189
168
147
126
105
84
63
42
21
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

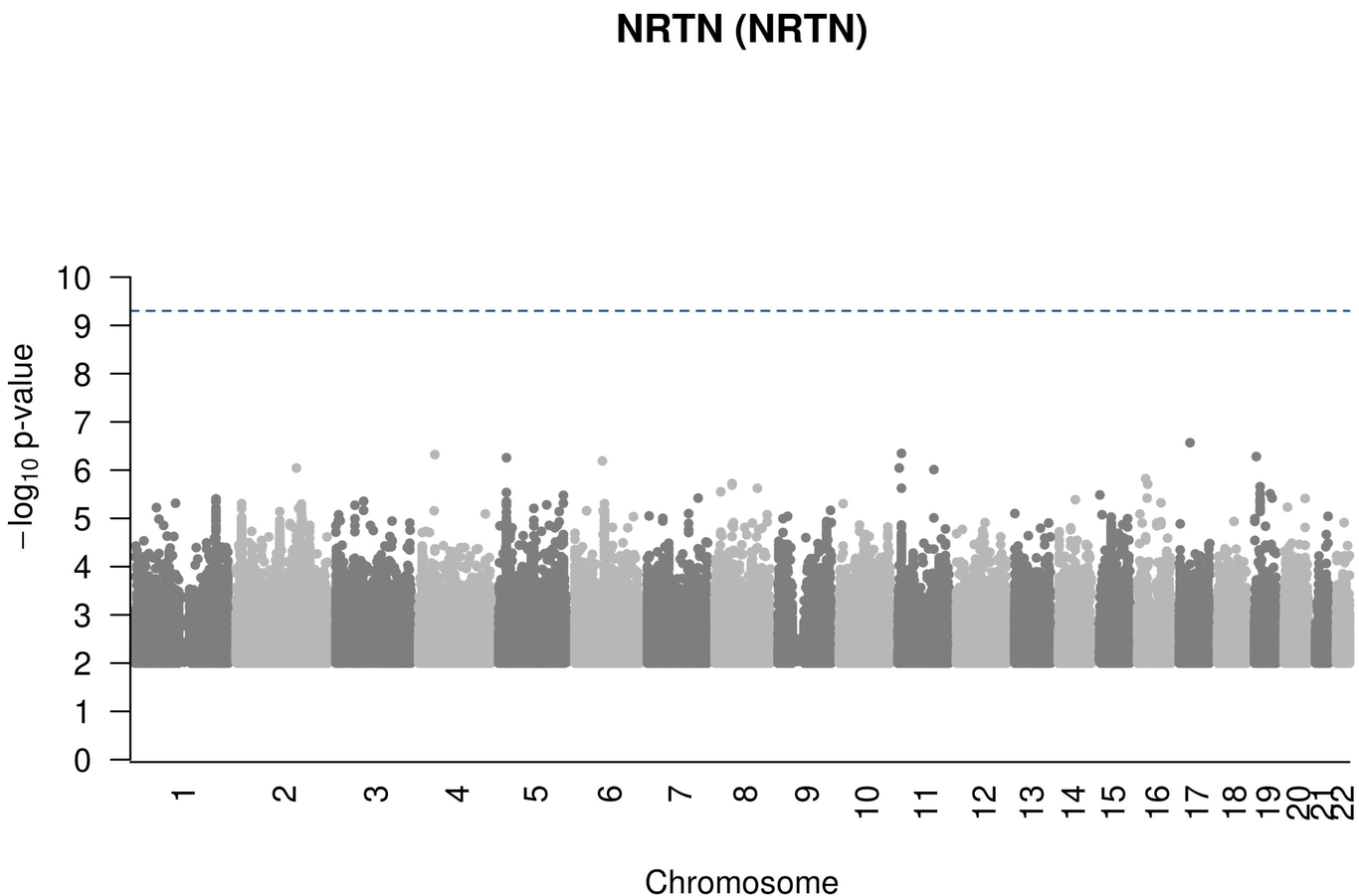

MIP-1 (CCL3)
λGC=1.014
Observed p-value
210
180
150
120
90
60
30
0
0
1
2
3
4
5
6
7
Expected p-value

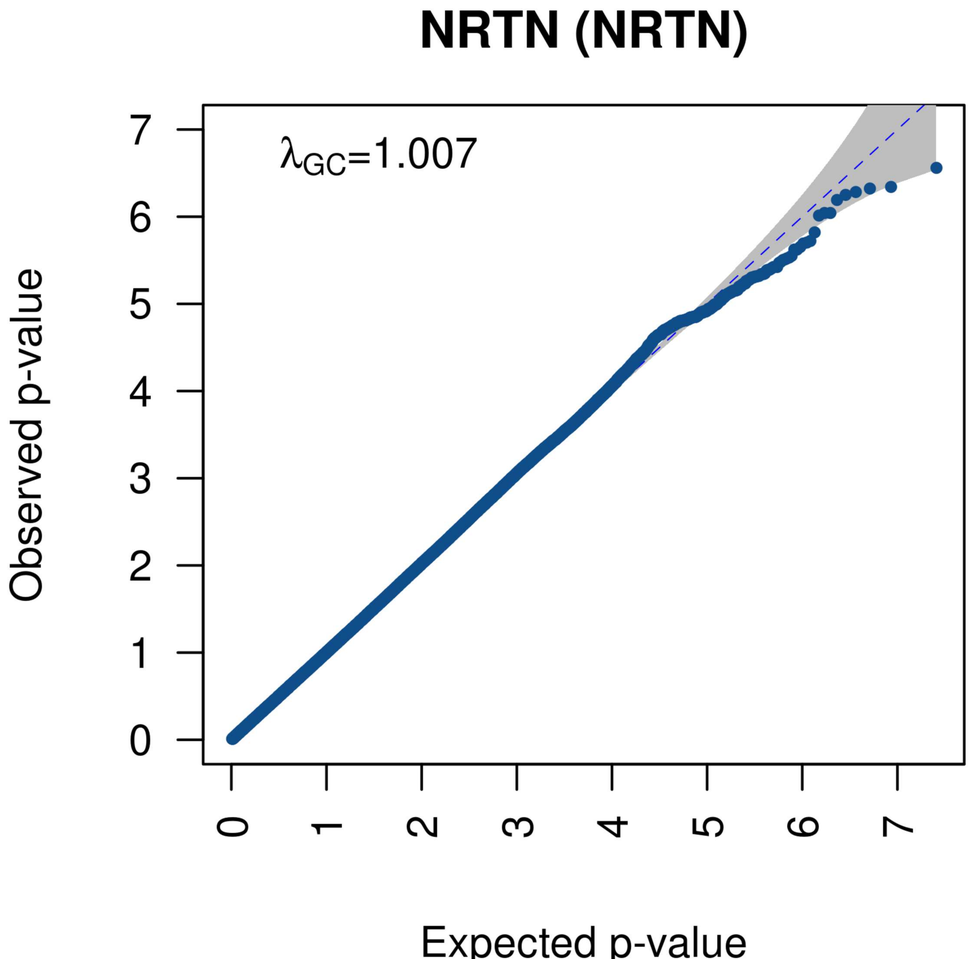

MMP-10 (MMP10)
MMP10
LOC10544
130
117
104
91
78
65
52
39
26
13
0
−log10 p-value
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

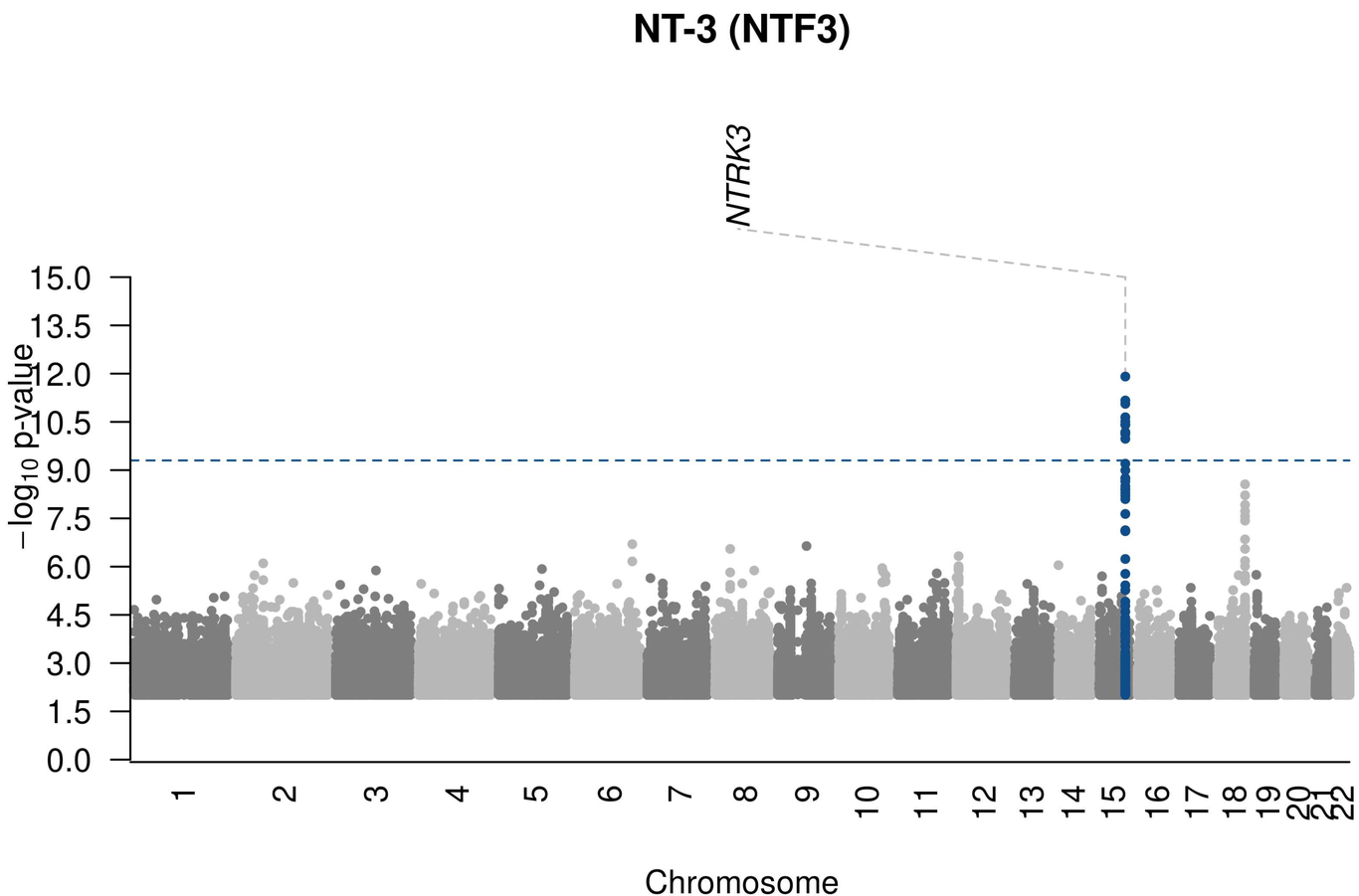

MMP-10 (MMP10)
λGC=1.002
140
120
100
80
60
40
20
0
Observed p-value
0
1
2
3
4
5
6
7
Expected p-value

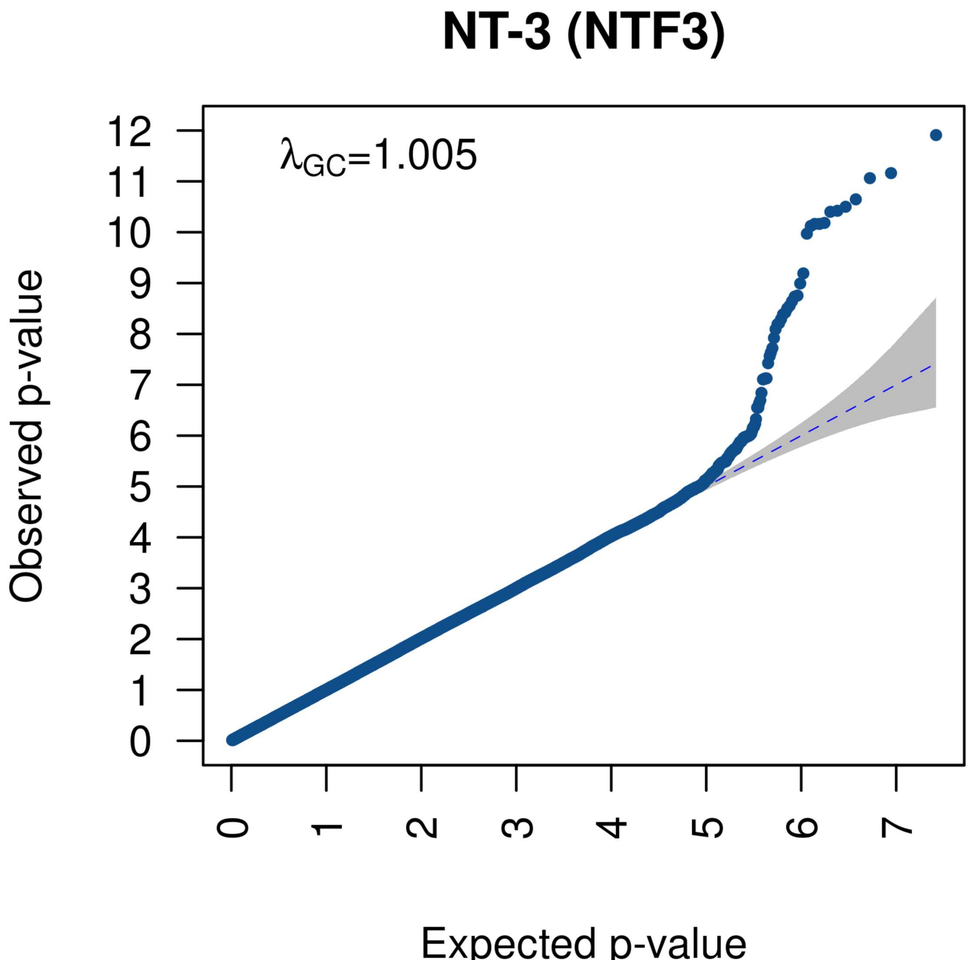

MMP-1 (MMP1)
MEF2D
ZFPM2-A
MMP3
−log10 p-value
200
180
160
140
120
100
80
60
40
20
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

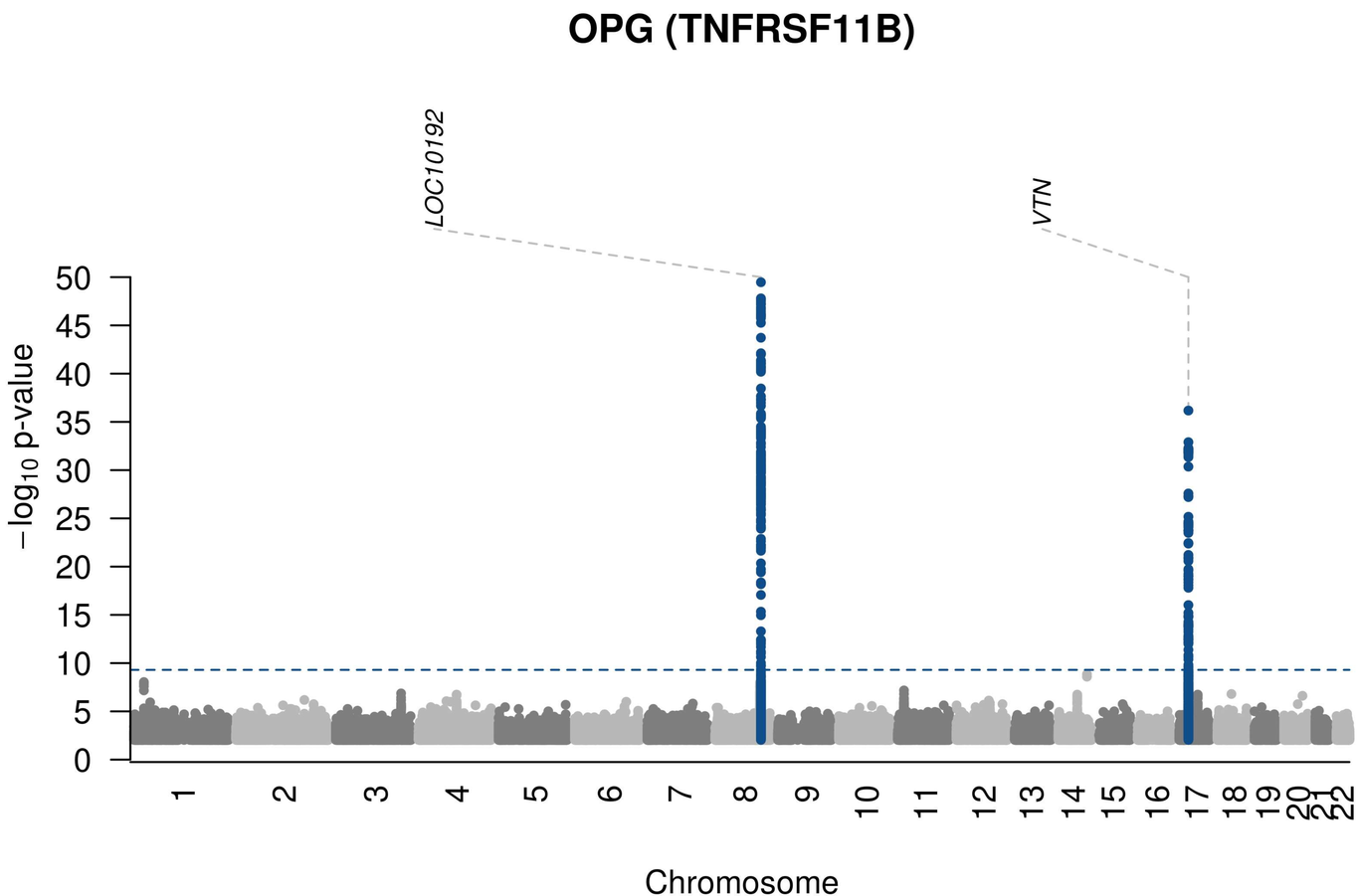

MMP-1 (MMP1)
λGC=1.009
Observed p-value
200
180
160
140
120
100
80
60
40
20
0
0
1
2
3
4
5
6
7
Expected p-value

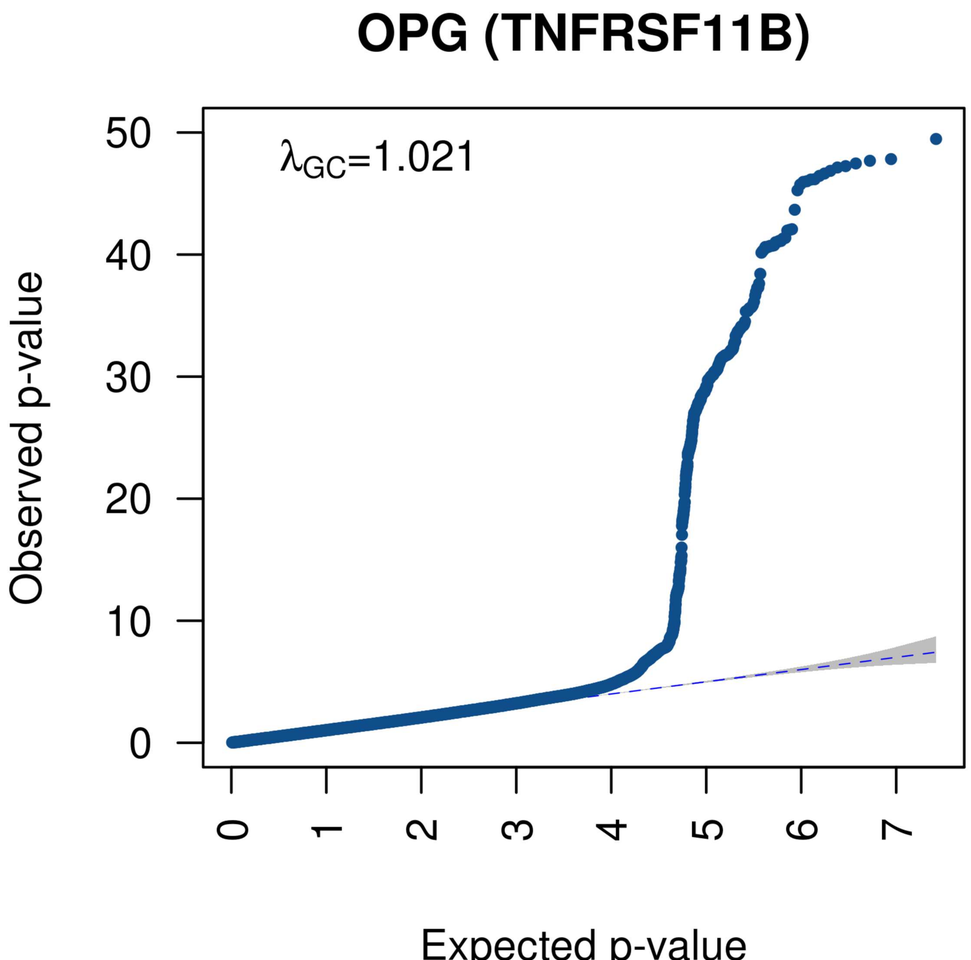

NRTN (NRTN)
−log10 p-value
Chromosome
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

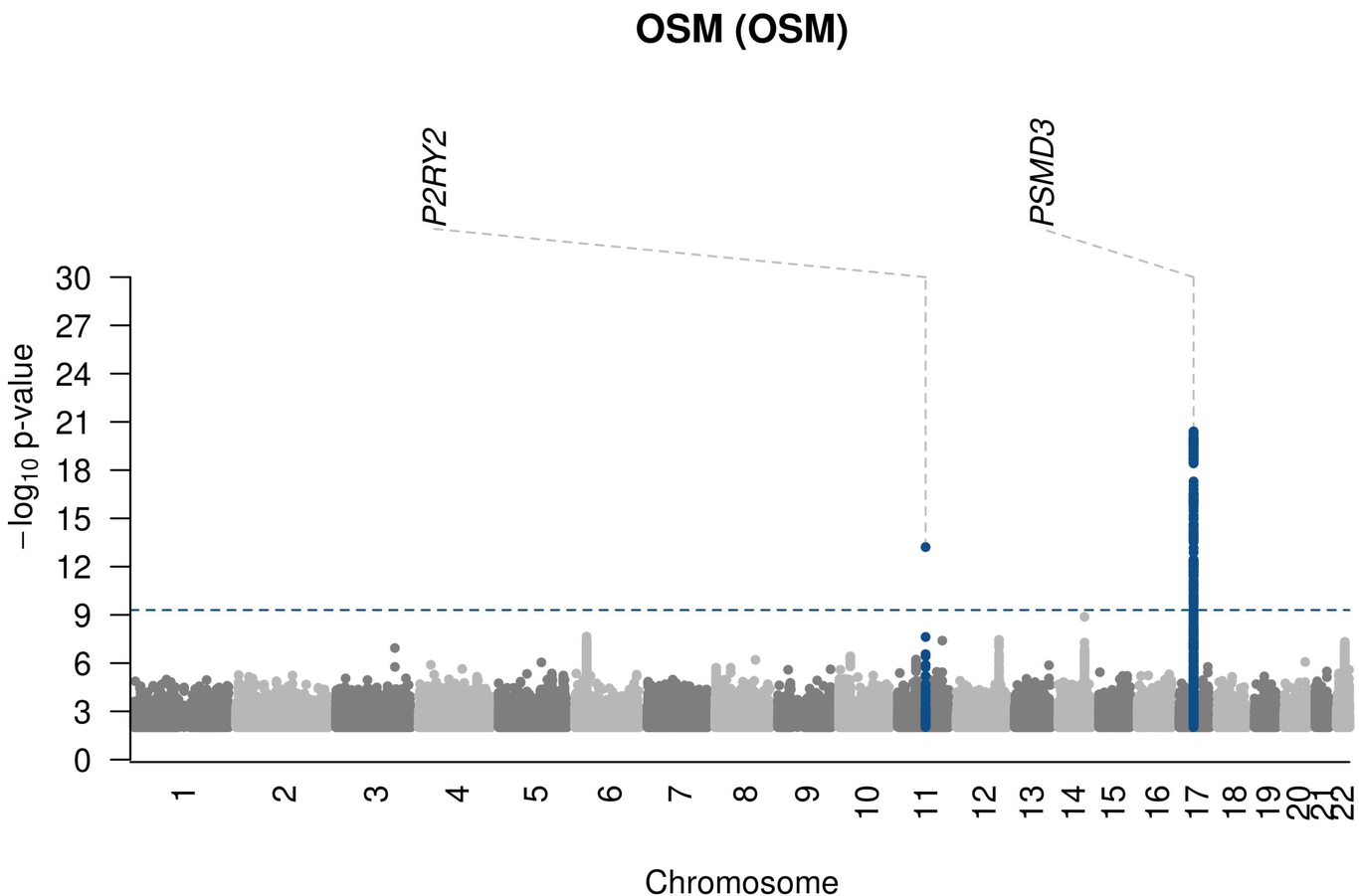

NRTN (NRTN)
λGC=1.007
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7

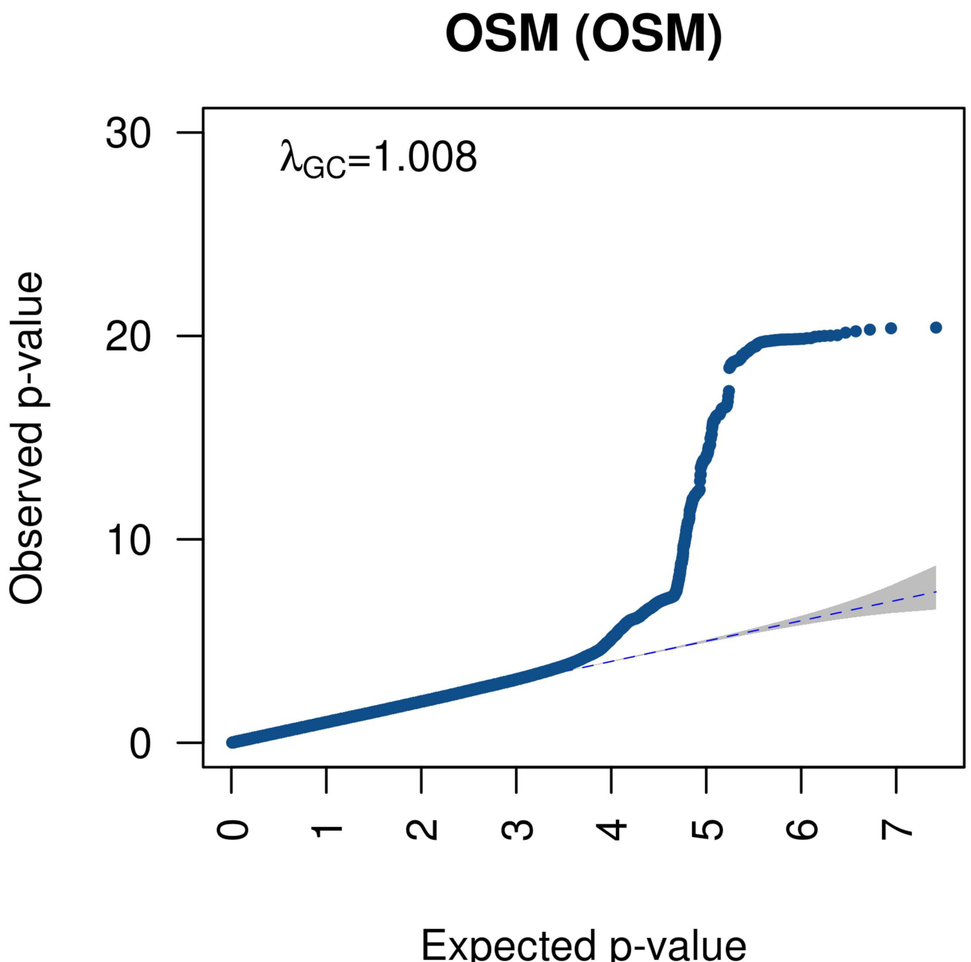

NT-3 (NTF3)
NTRK3
−log10 p-value
15.0
13.5
12.0
10.5
9.0
7.5
6.0
4.5
3.0
1.5
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Chromosome

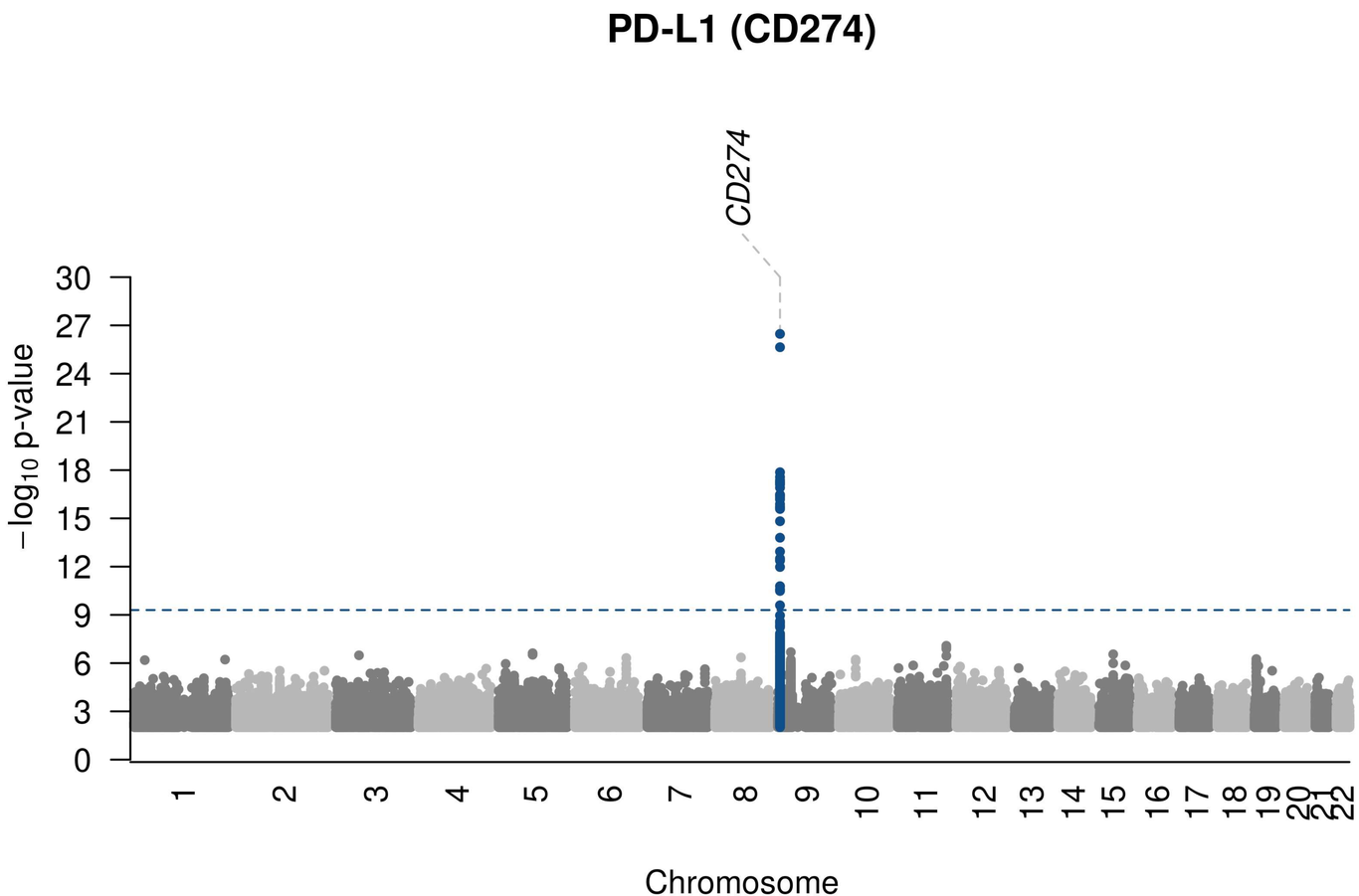

NT-3 (NTF3)
λGC=1.005
Observed p-value
0 1 2 3 4 5 6 7 8 9 10 11 12
0 1 2 3 4 5 6 7
Expected p-value

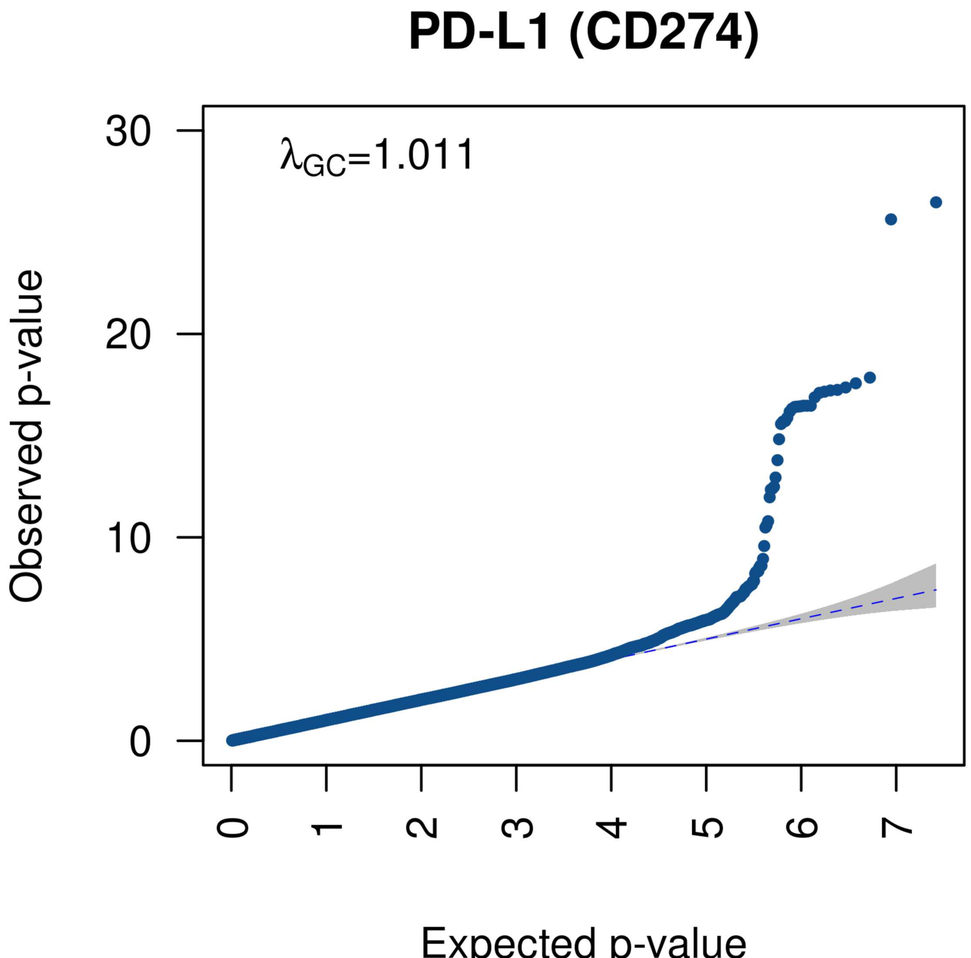

OPG (TNFRSF11B)
LOC10192
VTN
−log10 p-value
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

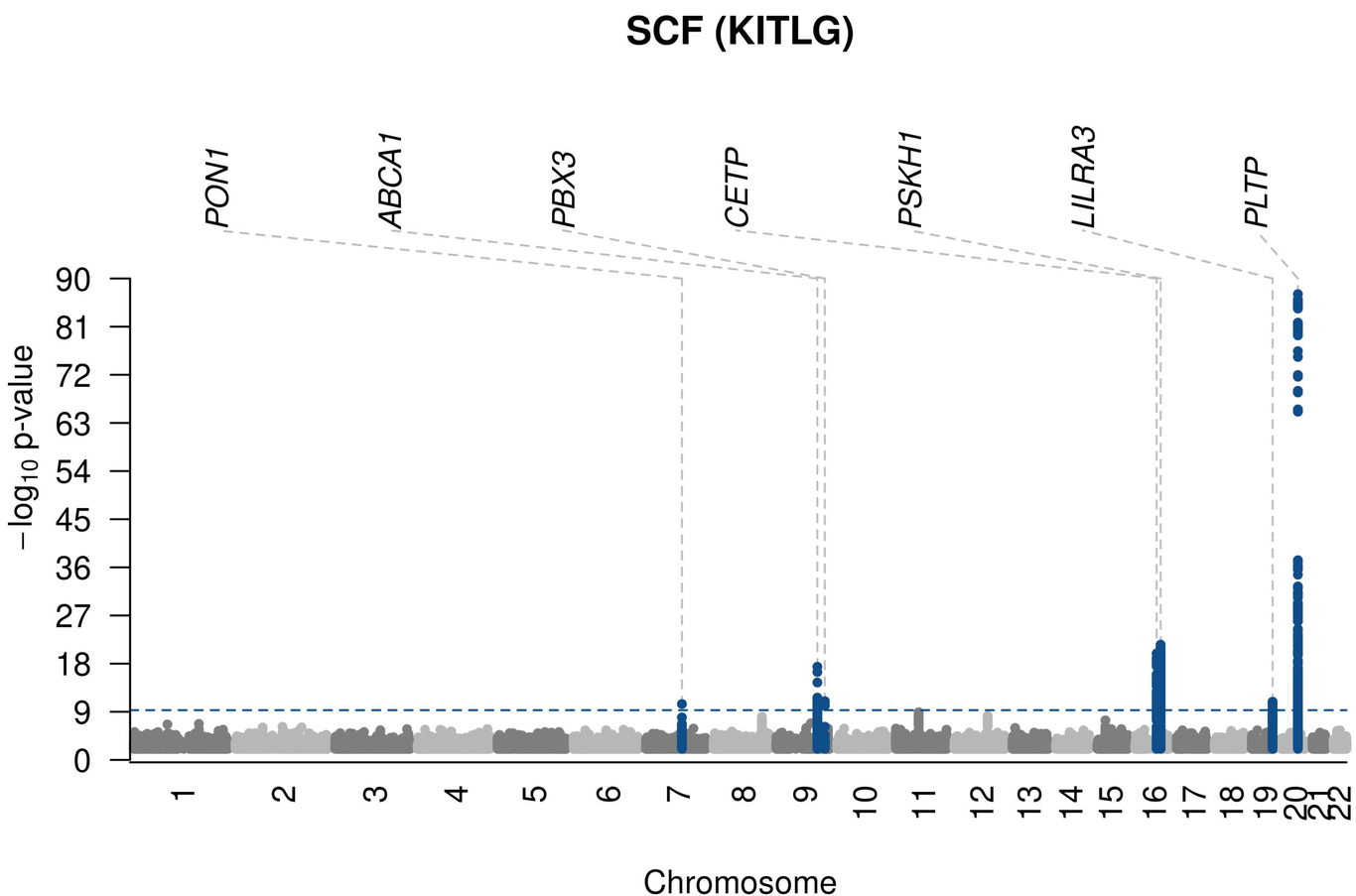

OPG (TNFRSF11B)
λGC=1.021
Observed p-value
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

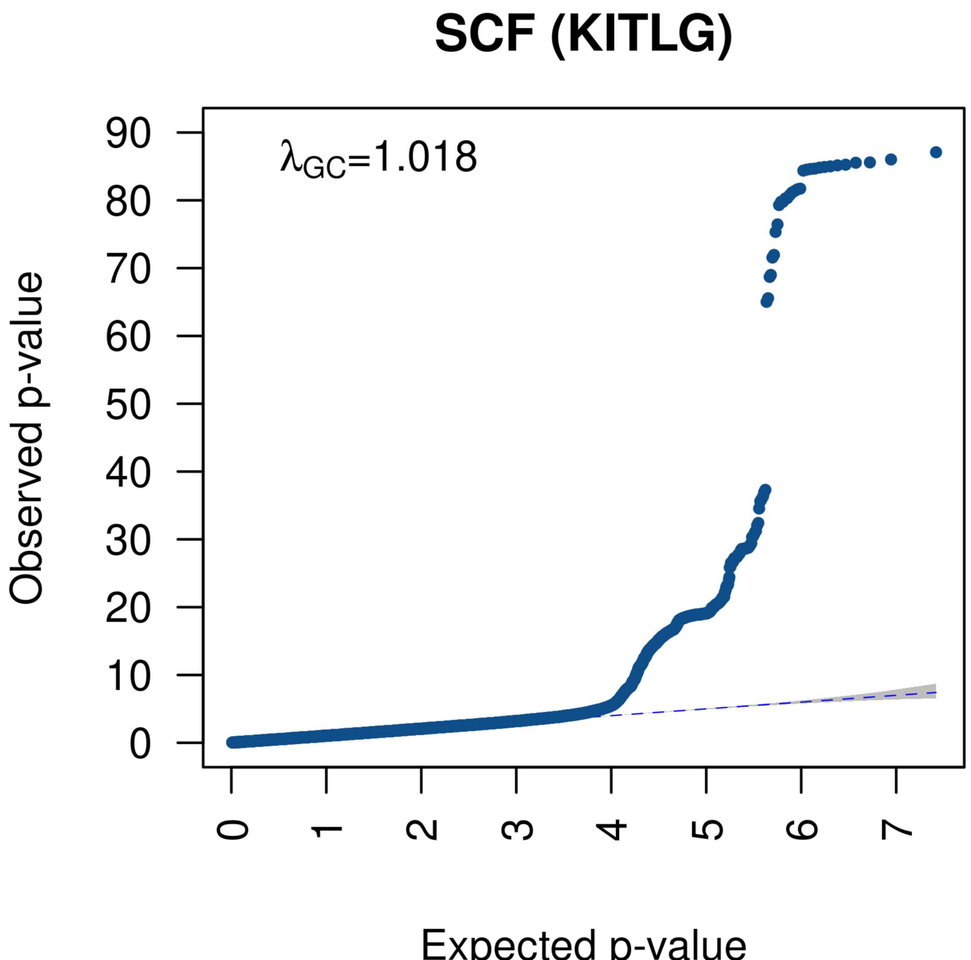

OSM (OSM)
P2RY2
PSMD3
−log10 p-value
30
27
24
21
18
15
12
9
6
3
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

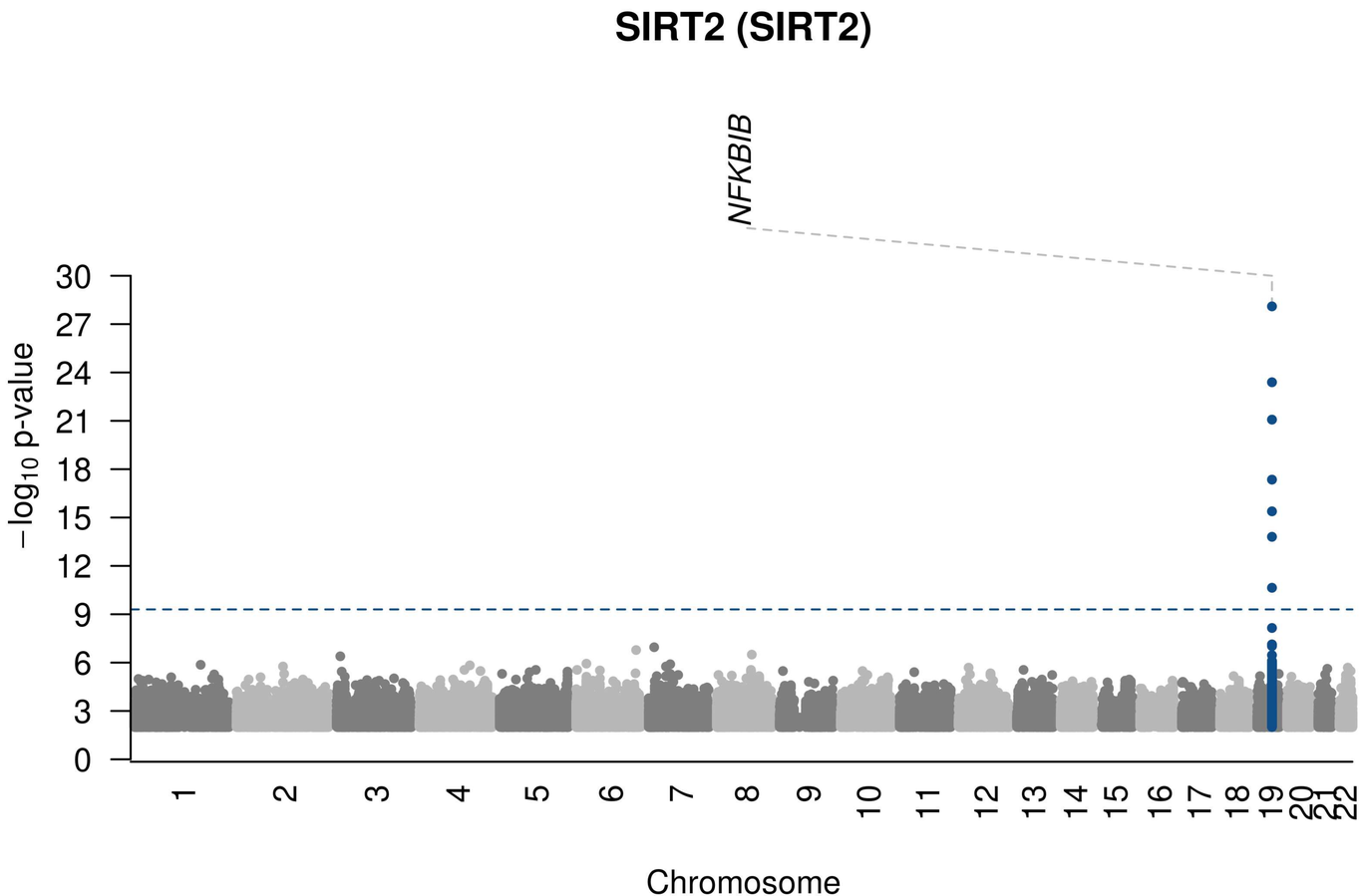

OSM (OSM)
λGC=1.008
Observed p-value
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

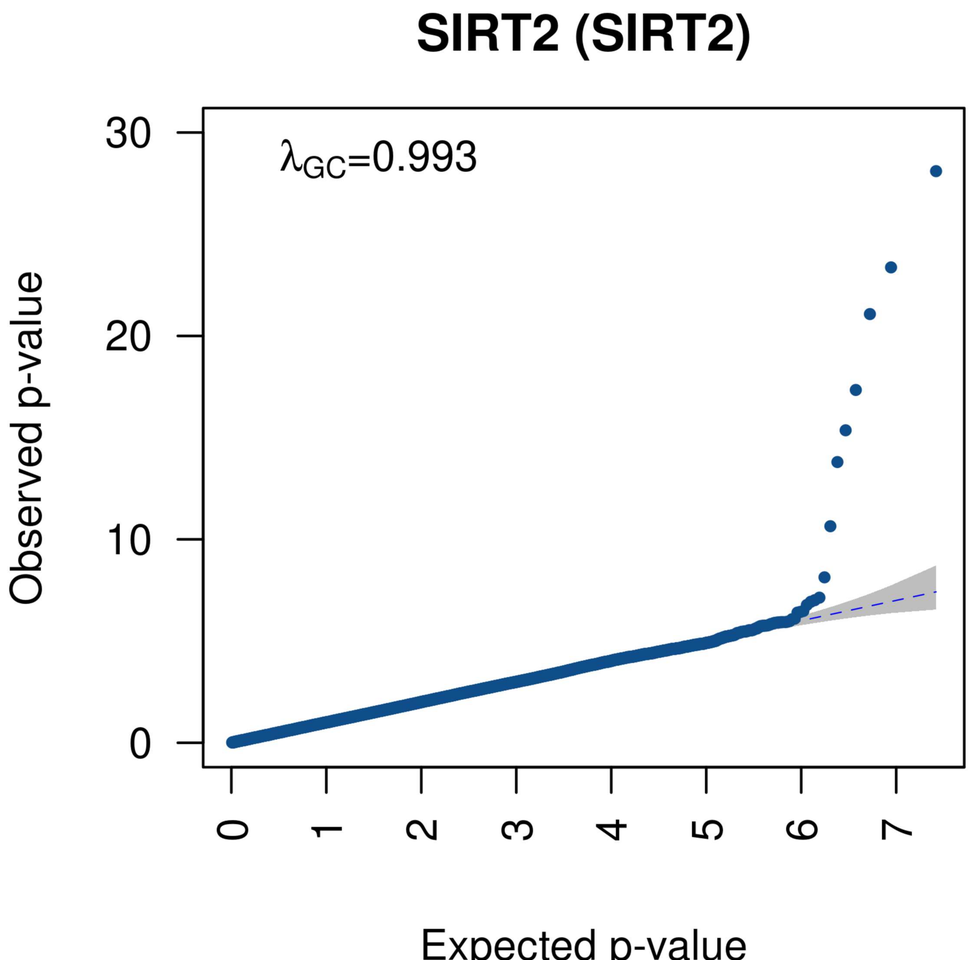

PD-L1 (CD274)
CD274
−log10 p-value
30
27
24
21
18
15
12
9
6
3
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

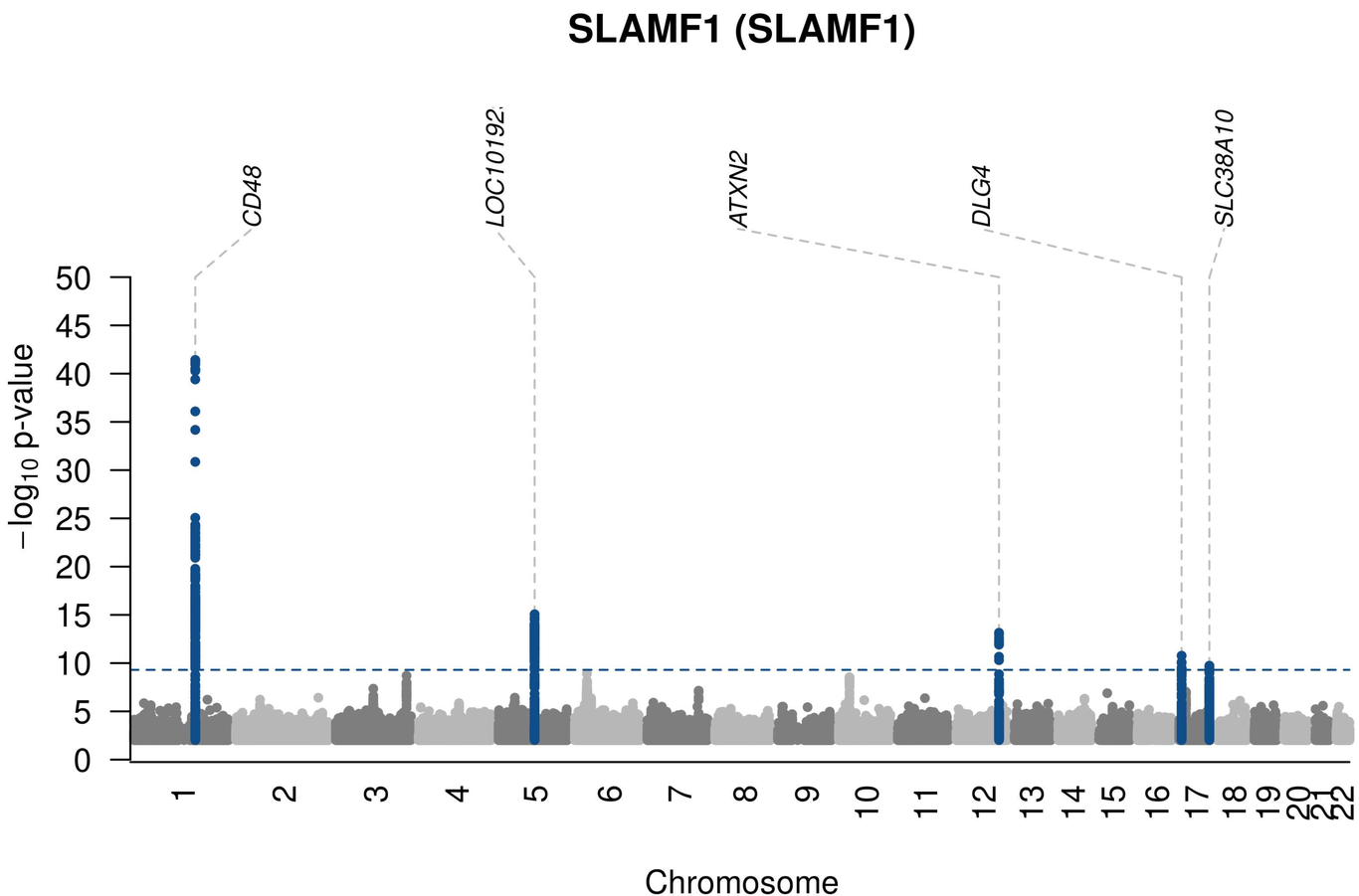

PD-L1 (CD274)
λGC=1.011
Observed p-value
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

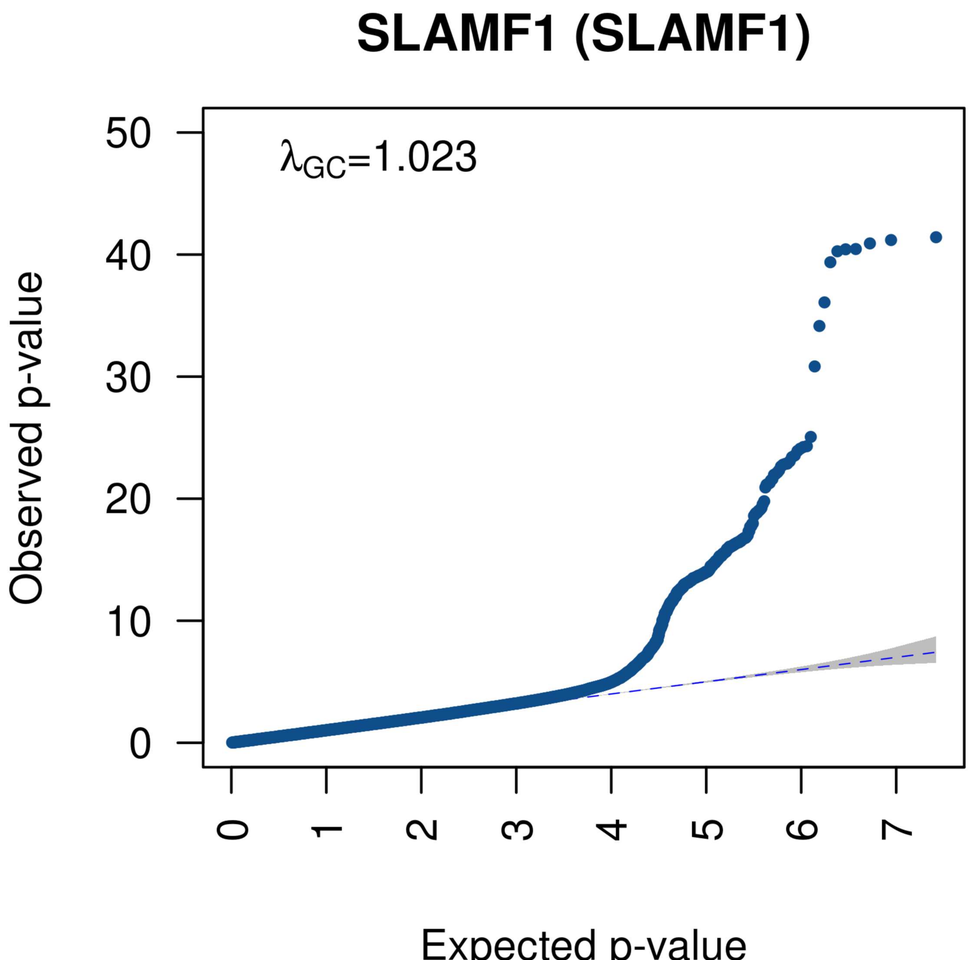

SCF (KITLG)
PON1
ABCA1
PBX3
CETP
PSKH1
LILRA3
PLTP
−log10 p-value
90
81
72
63
54
45
36
27
18
9
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

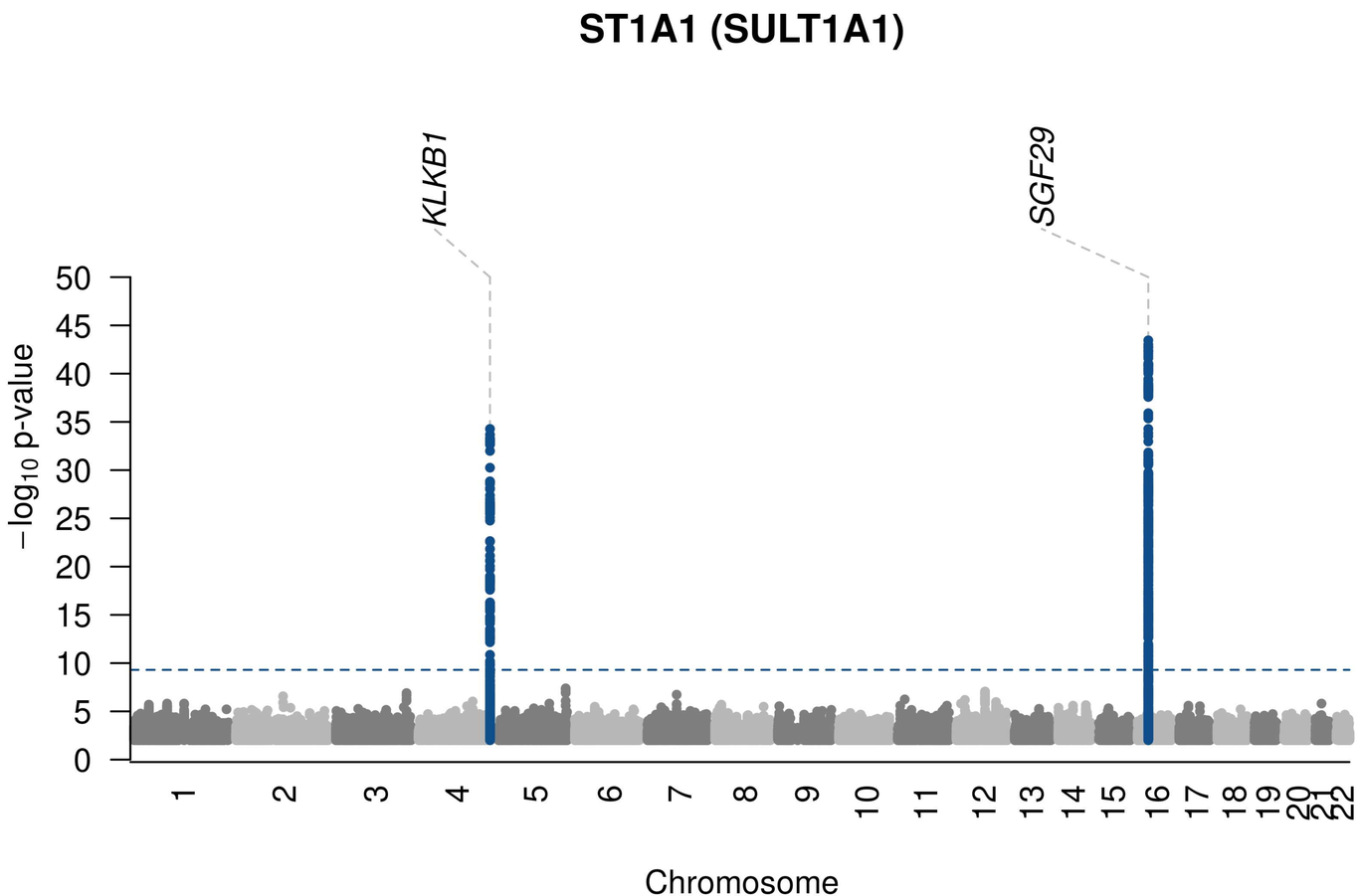

SCF (KITLG)
λGC=1.018
Observed p-value
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

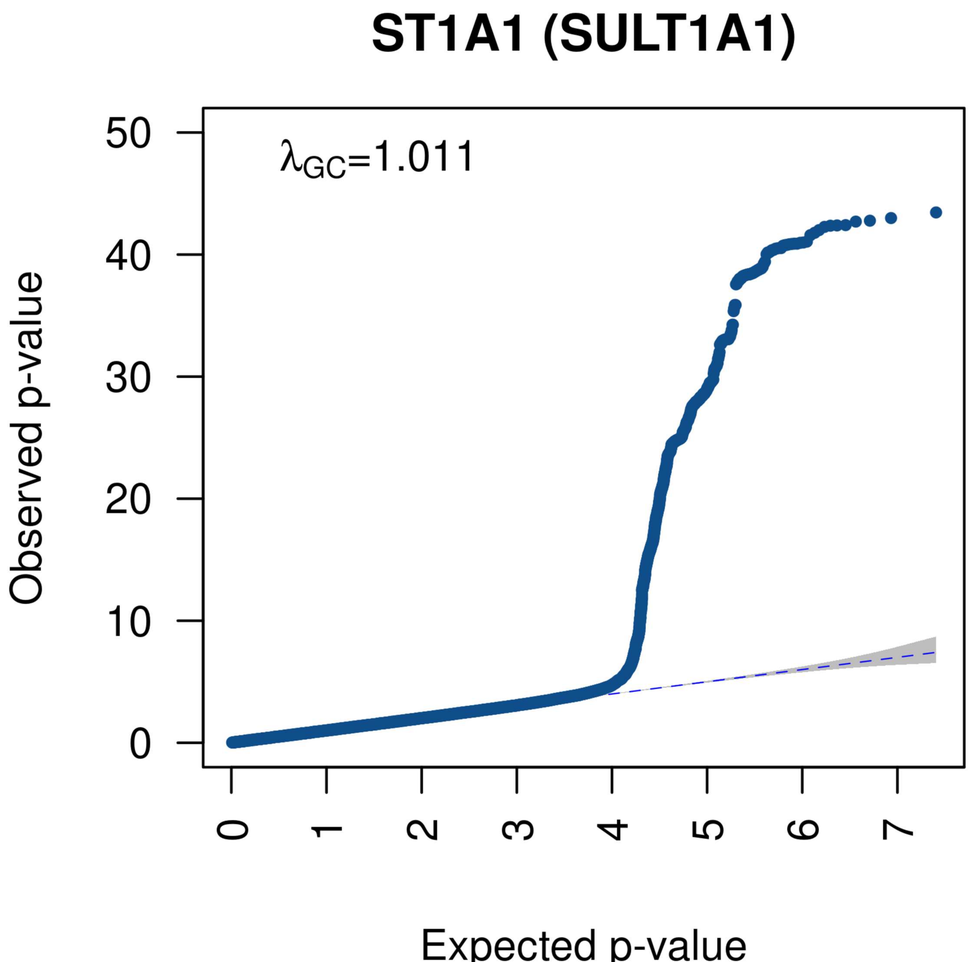

SIRT2 (SIRT2)
NFKBIB
−log10 p-value
30
27
24
21
18
15
12
9
6
3
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

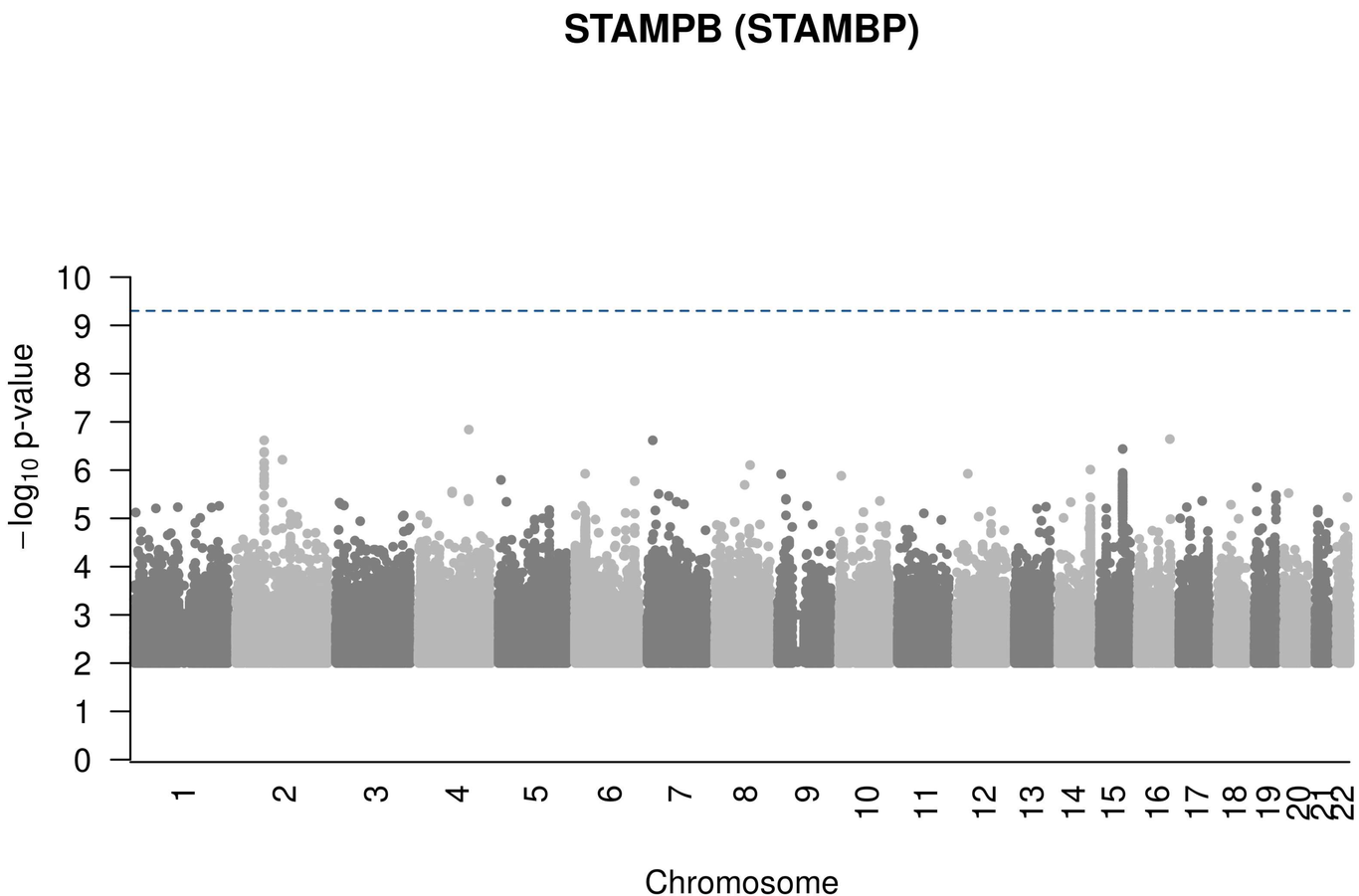

SIRT2 (SIRT2)
λGC=0.993
Observed p-value
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

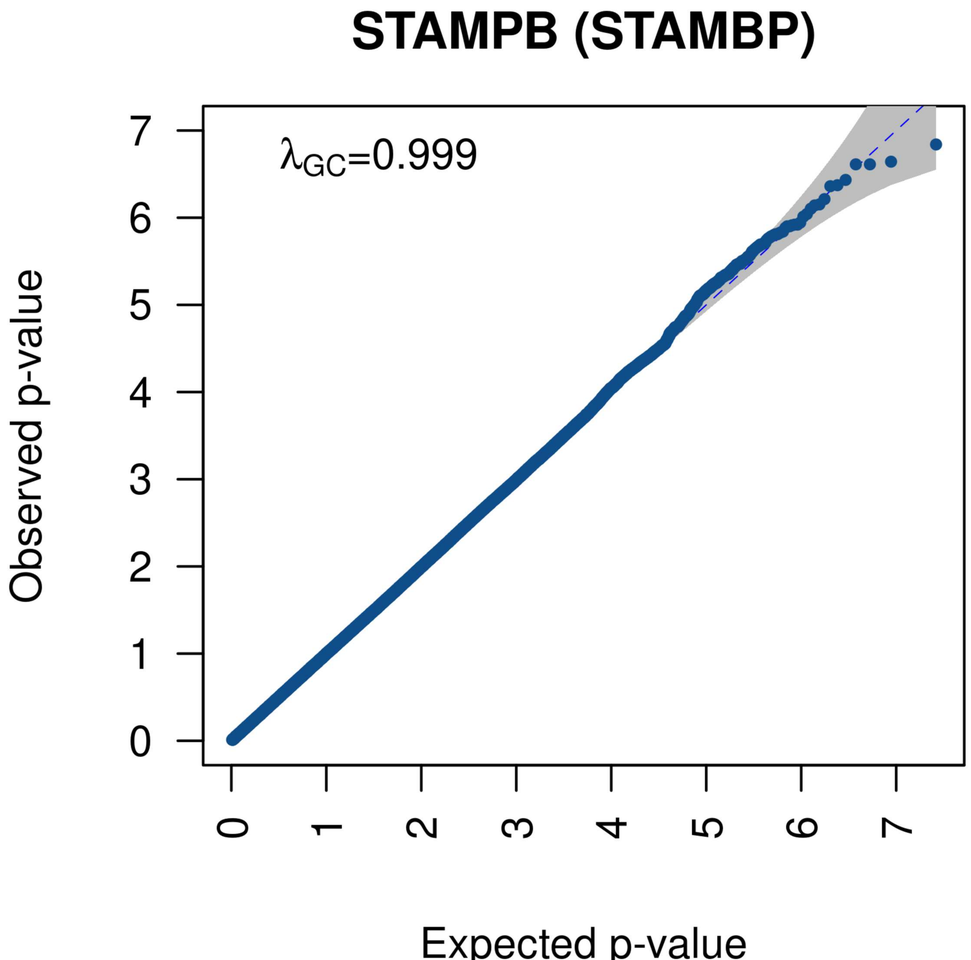

SLAMF1 (SLAMF1)
CD48
LOC10192
ATXN2
DLG4
SLC38A10
−log10 p-value
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

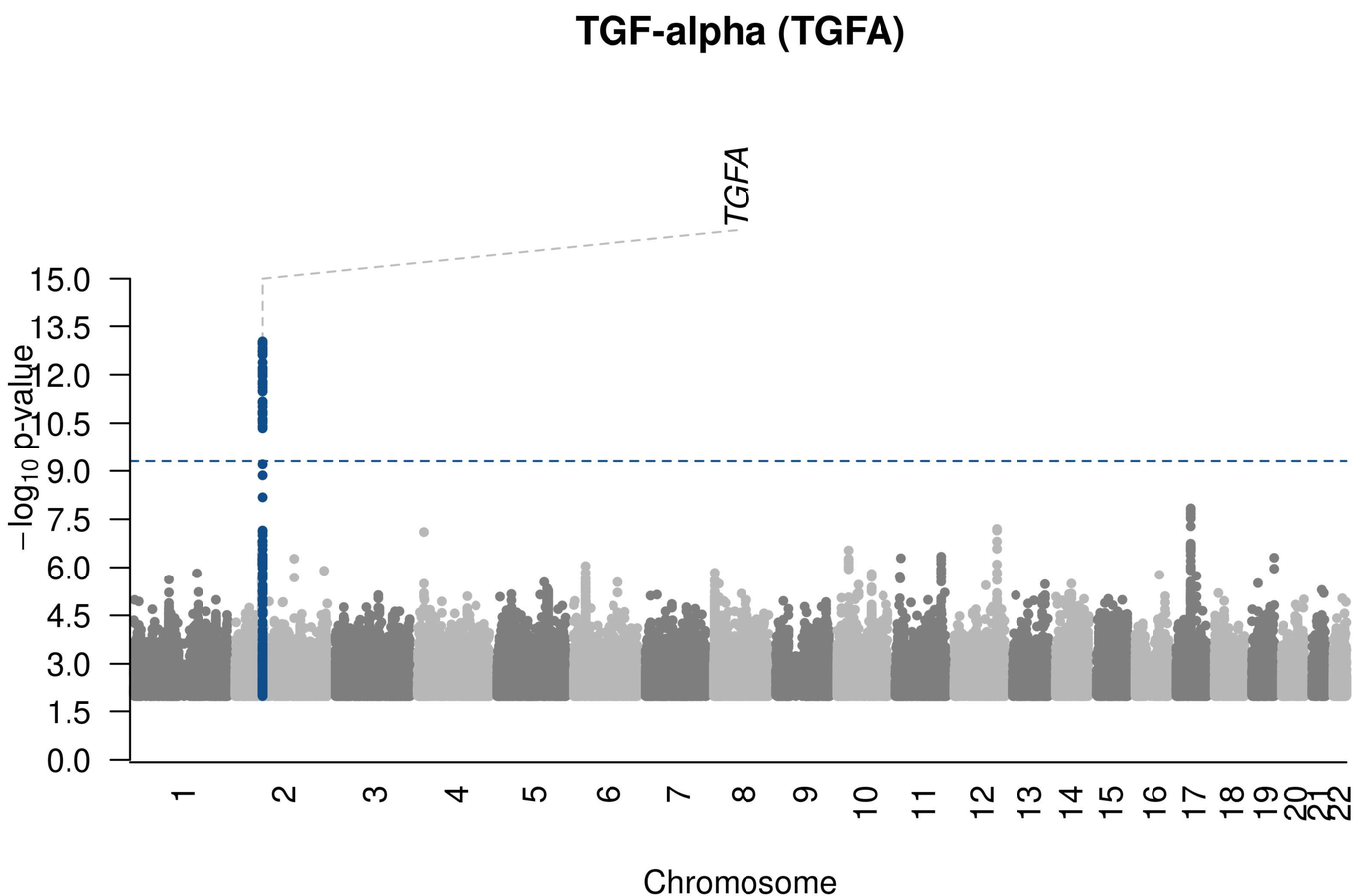

SLAMF1 (SLAMF1)
λGC=1.023
Observed p-value
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

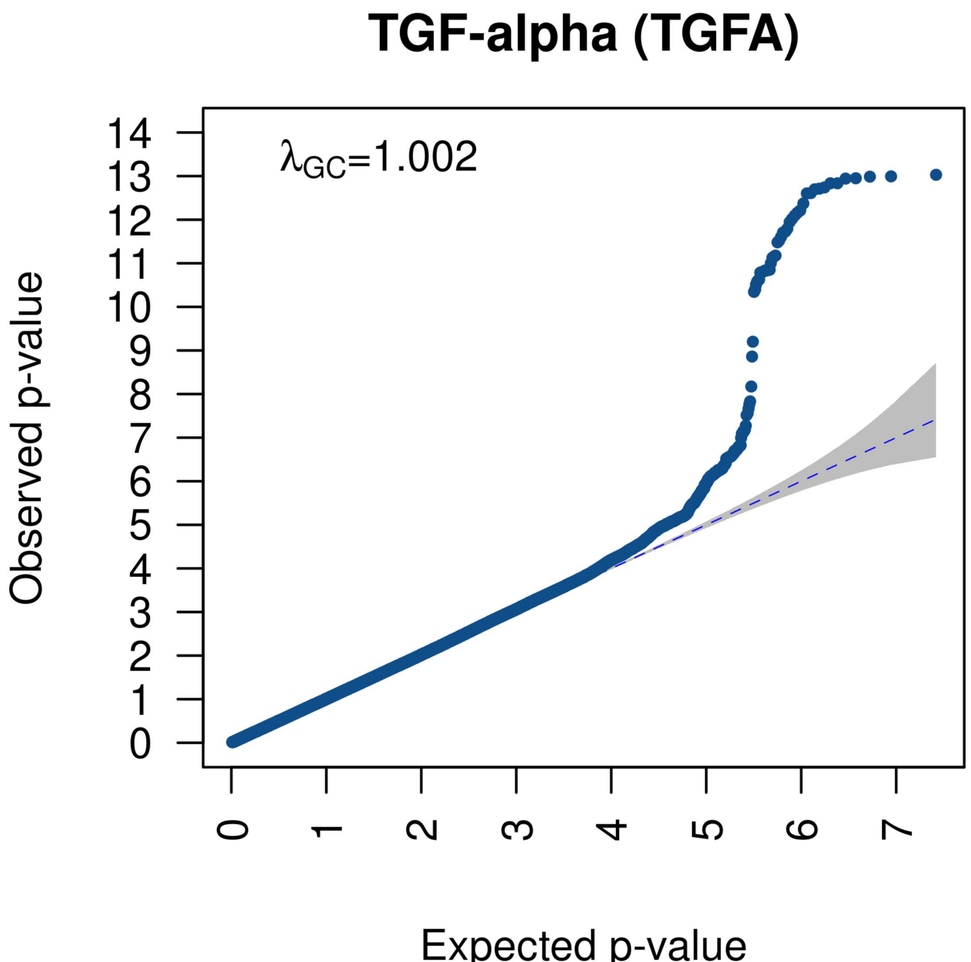

ST1A1 (SULT1A1)
KLKB1
SGF29
−log10 p-value
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

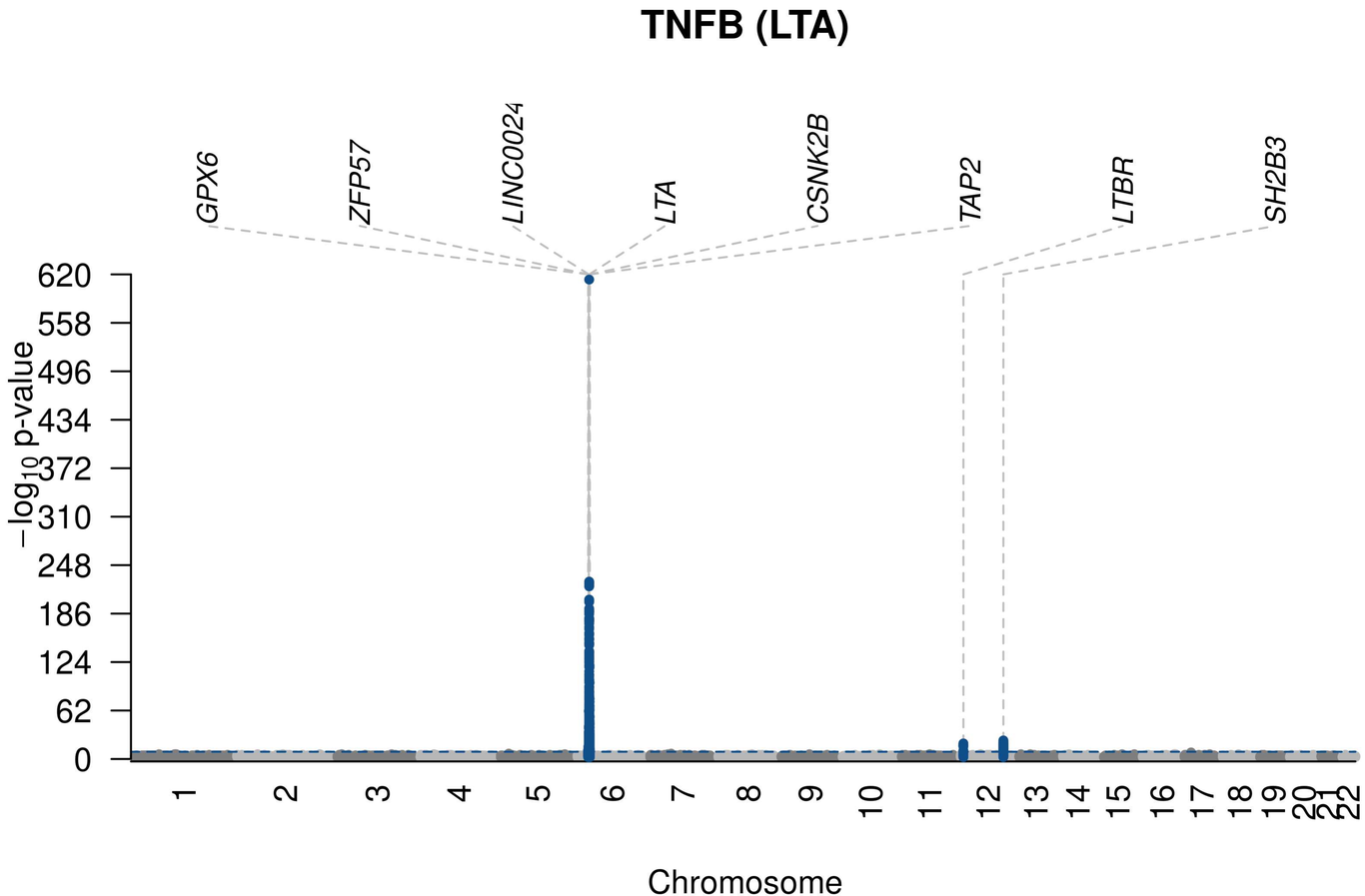

ST1A1 (SULT1A1)
λGC=1.011
Observed p-value
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

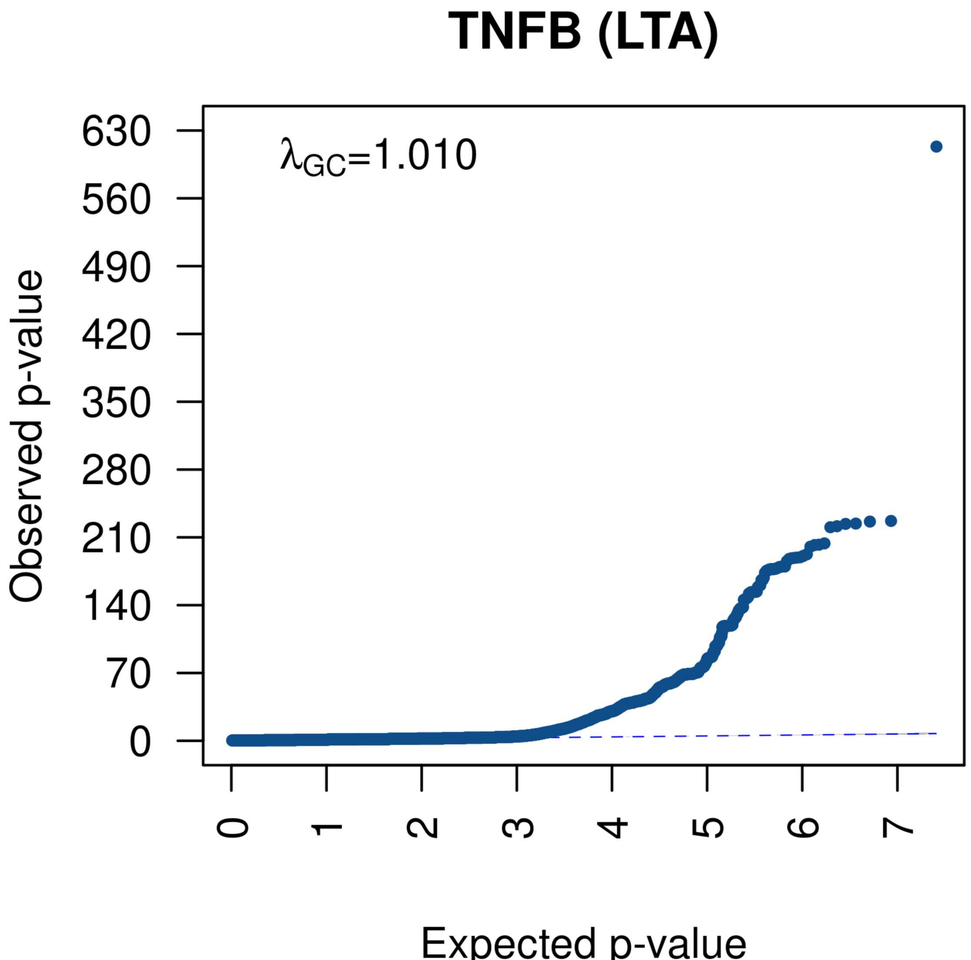

STAMPB (STAMBP)
−log10 p-value
Chromosome
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

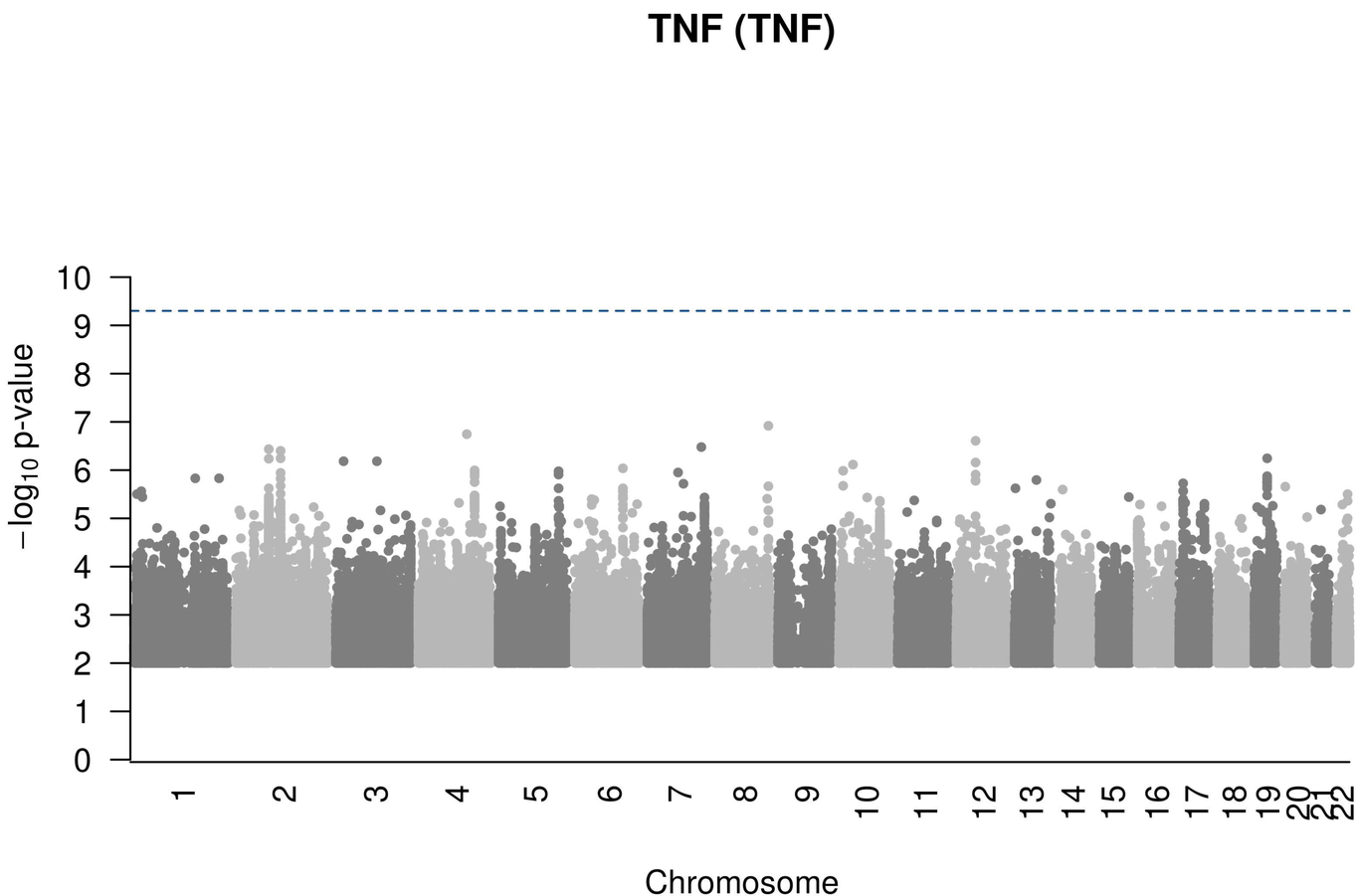

STAMPB (STAMBP)
λGC=0.999
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7

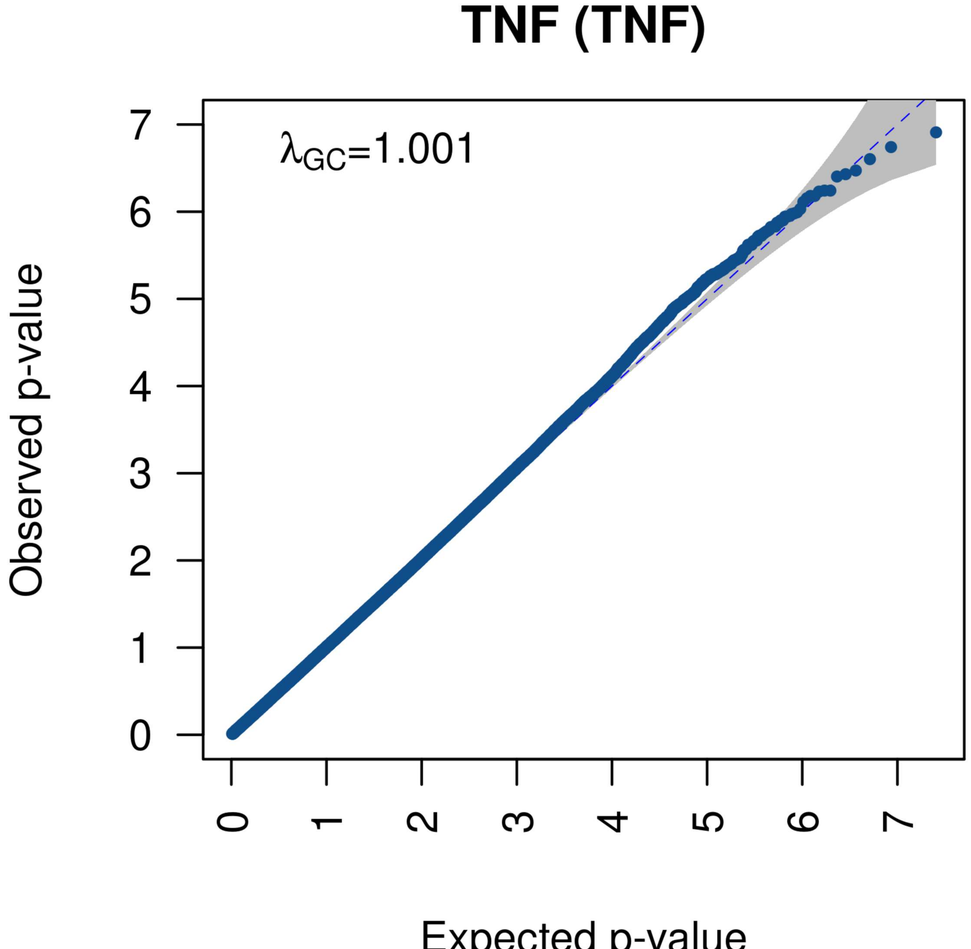

TGF-alpha (TGFA)
TGFA
−log10 p-value
15.0
13.5
12.0
10.5
9.0
7.5
6.0
4.5
3.0
1.5
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Chromosome

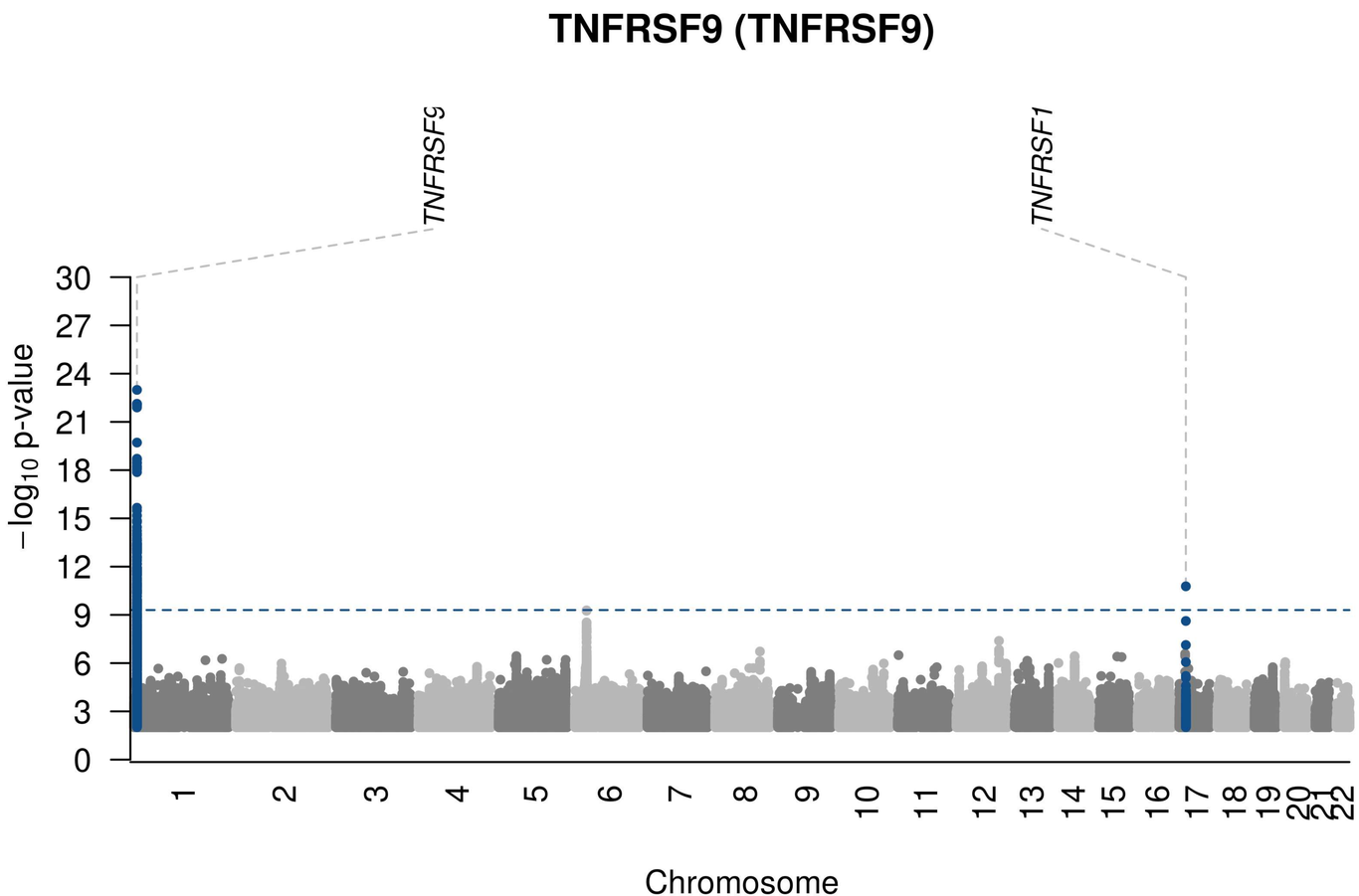

TGF-alpha (TGFA)
λGC=1.002
Observed p-value
14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
0 1 2 3 4 5 6 7
Expected p-value

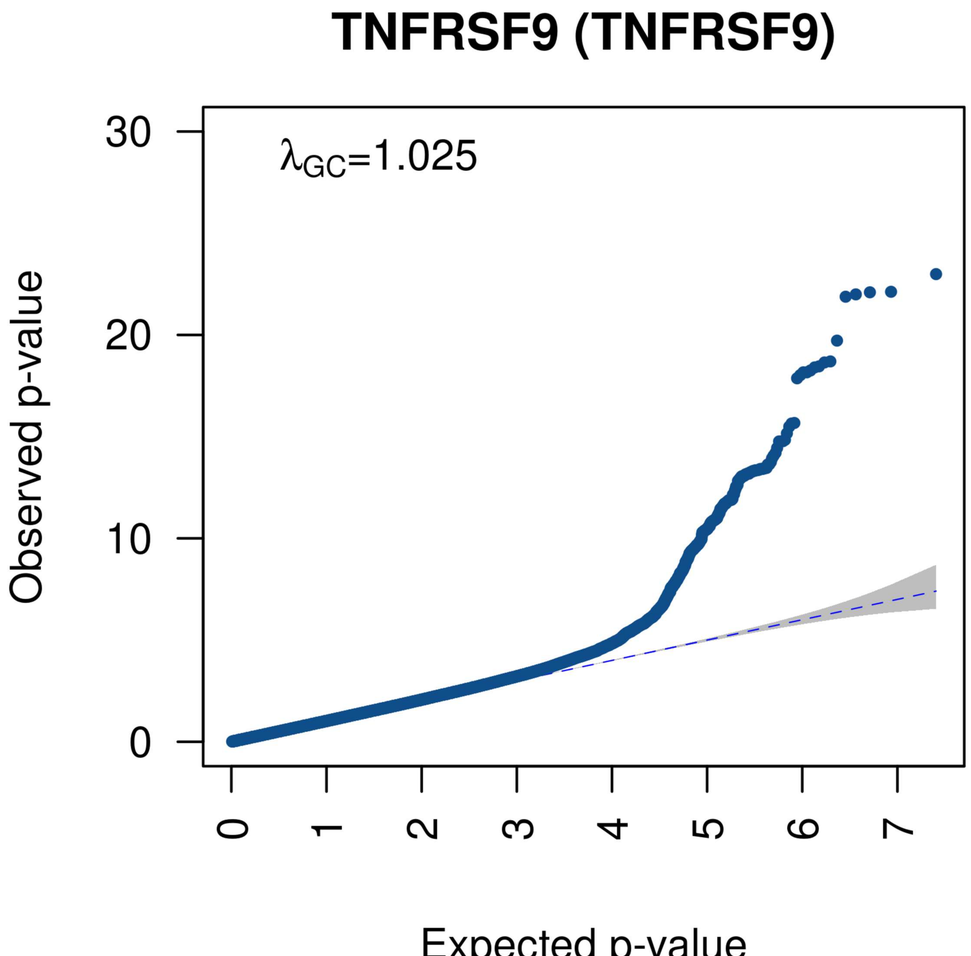

TNFB (LTA)
GPX6
ZFP57
LINC0024
LTA
CSNK2B
TAP2
LTBR
SH2B3
620
558
496
434
372
310
248
186
124
62
0
−log10 p-value
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

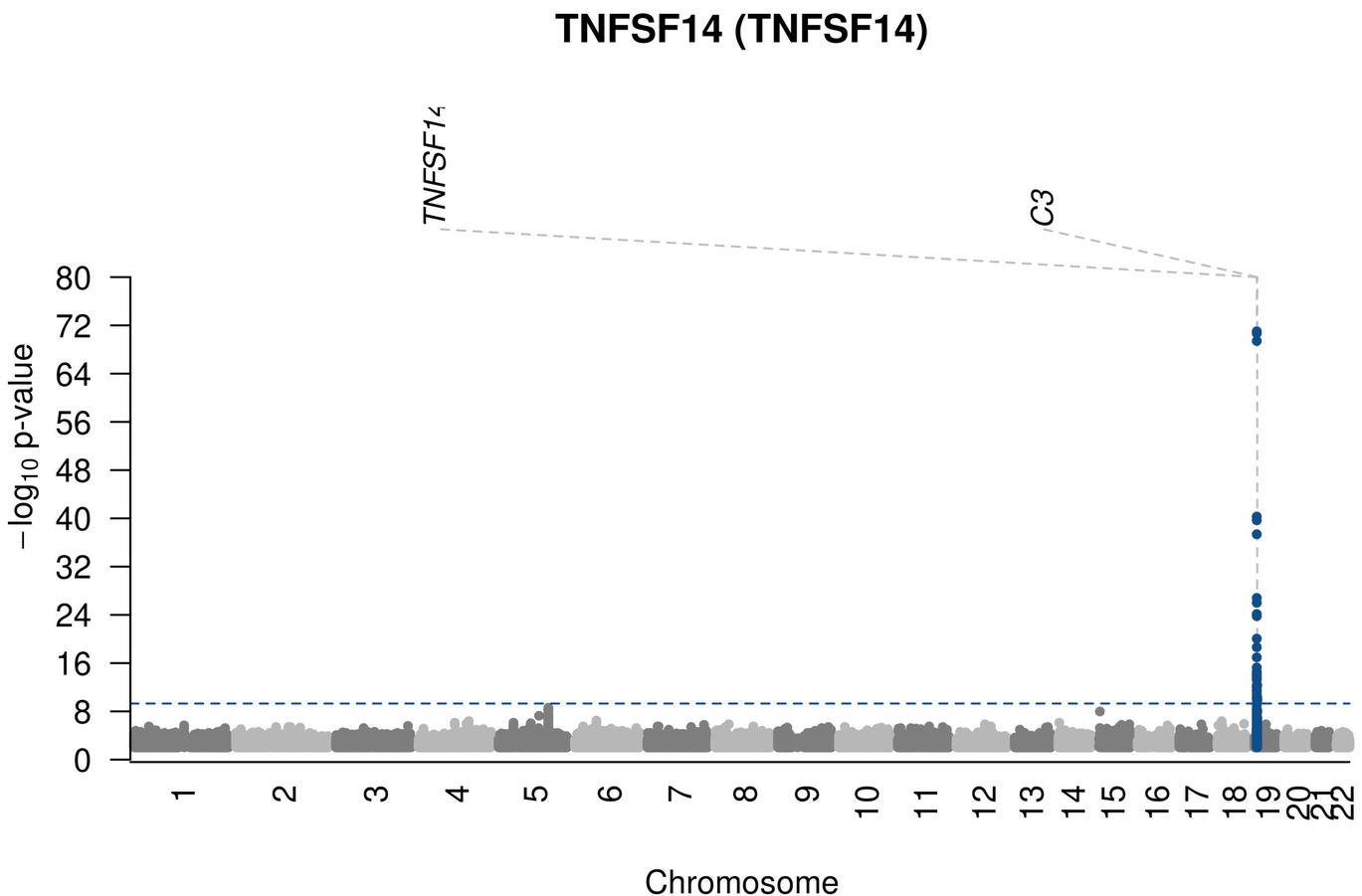

TNFB (LTA)
λGC=1.010
630
560
490
420
350
280
210
140
70
0
Observed p-value
0
1
2
3
4
5
6
7
Expected p-value

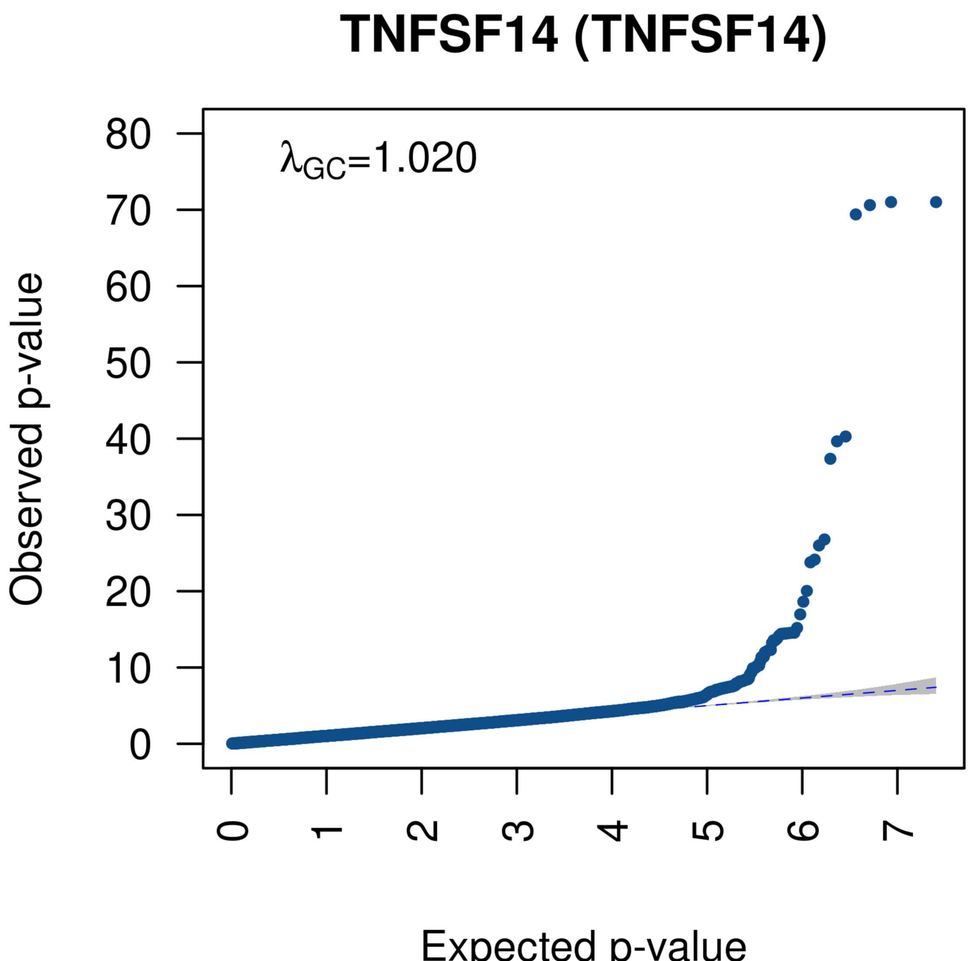

TNF (TNF)
−log10 p-value
Chromosome
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

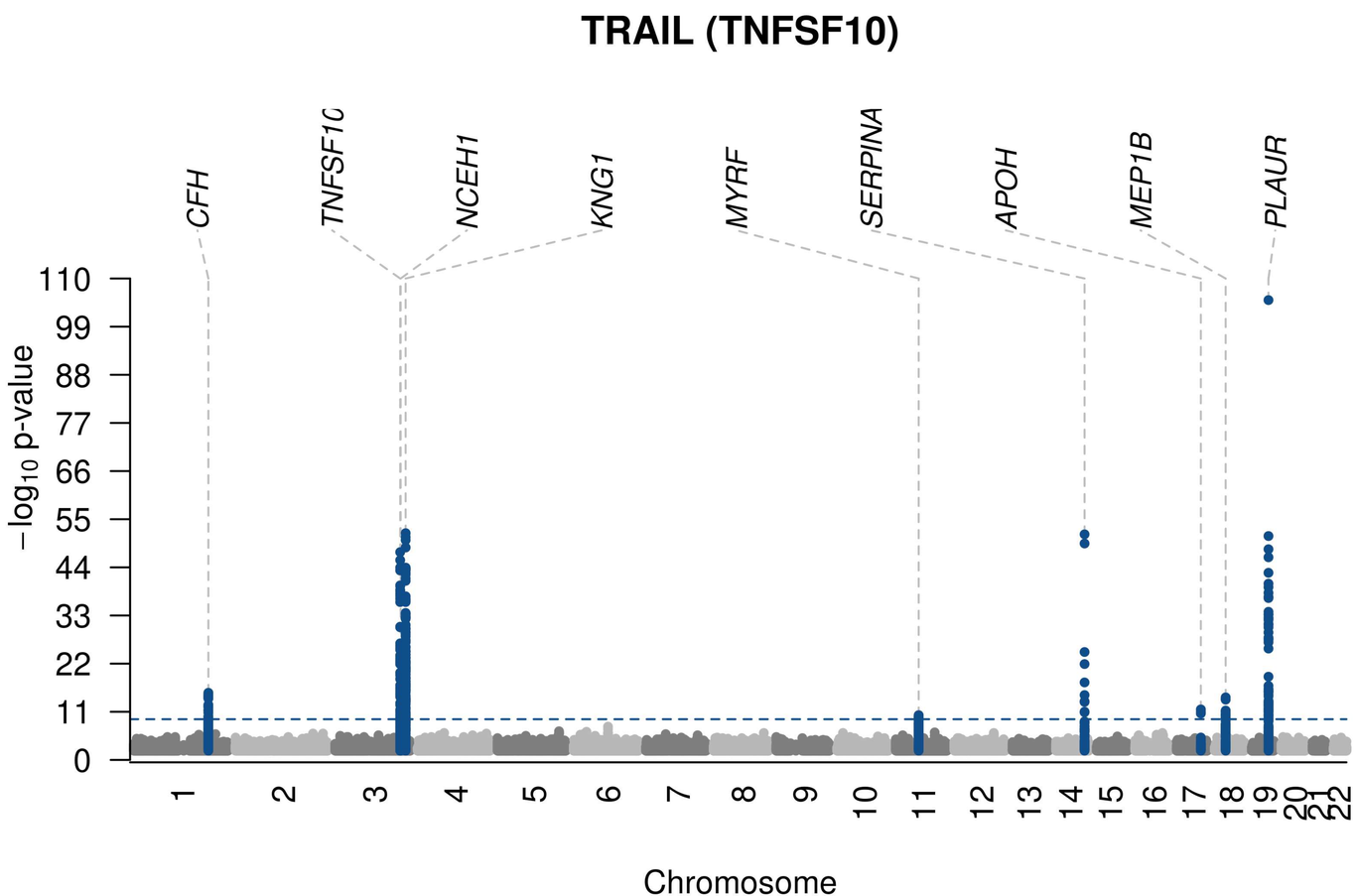

TNF (TNF)
λGC=1.001
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7

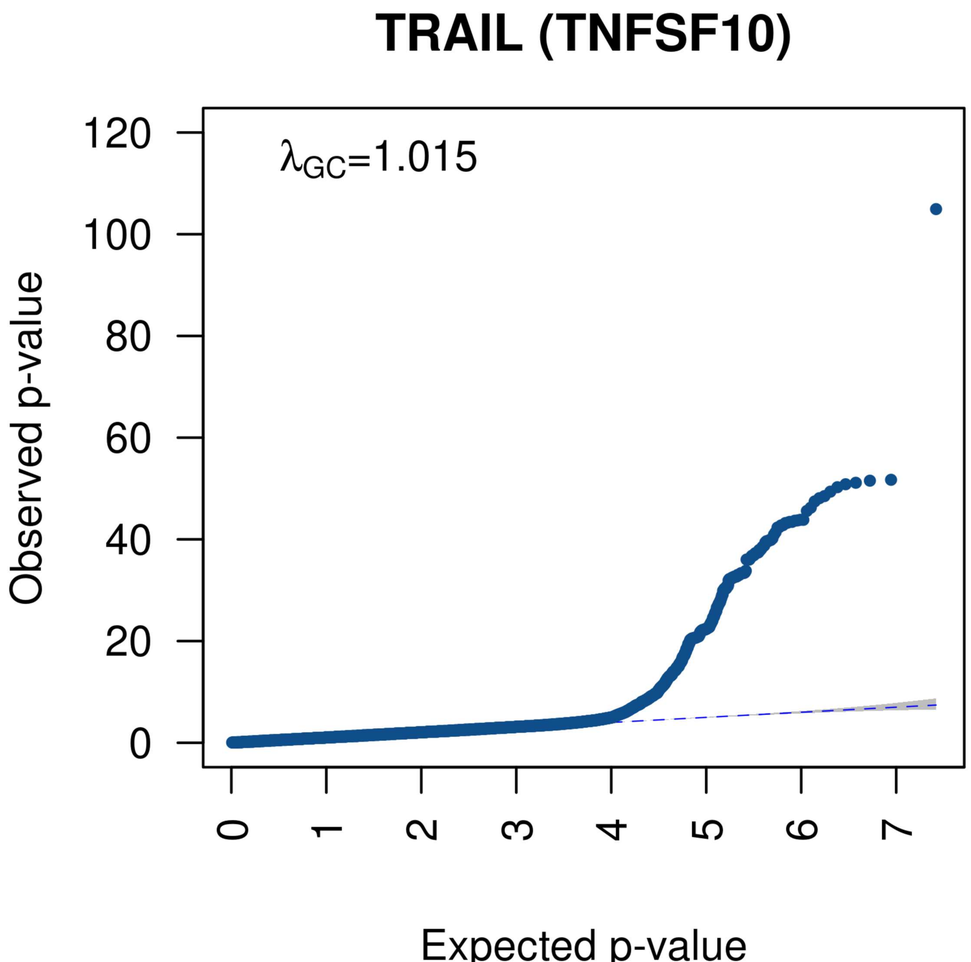

TNFRSF9 (TNFRSF9)
TNFRSF9
TNFRSF1
−log10 p-value
30
27
24
21
18
15
12
9
6
3
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

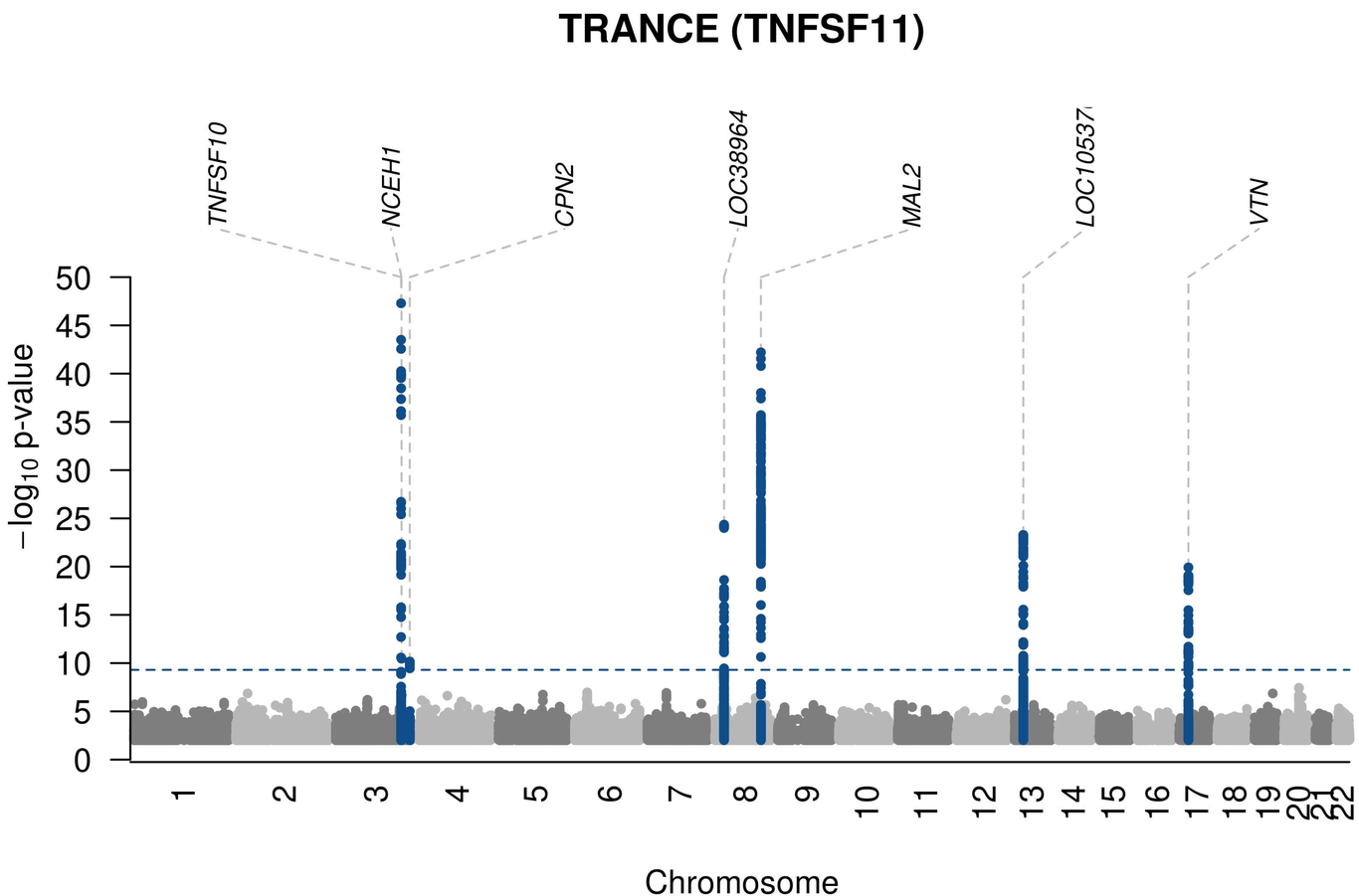

TNFRSF9 (TNFRSF9)
λGC=1.025
Observed p-value
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

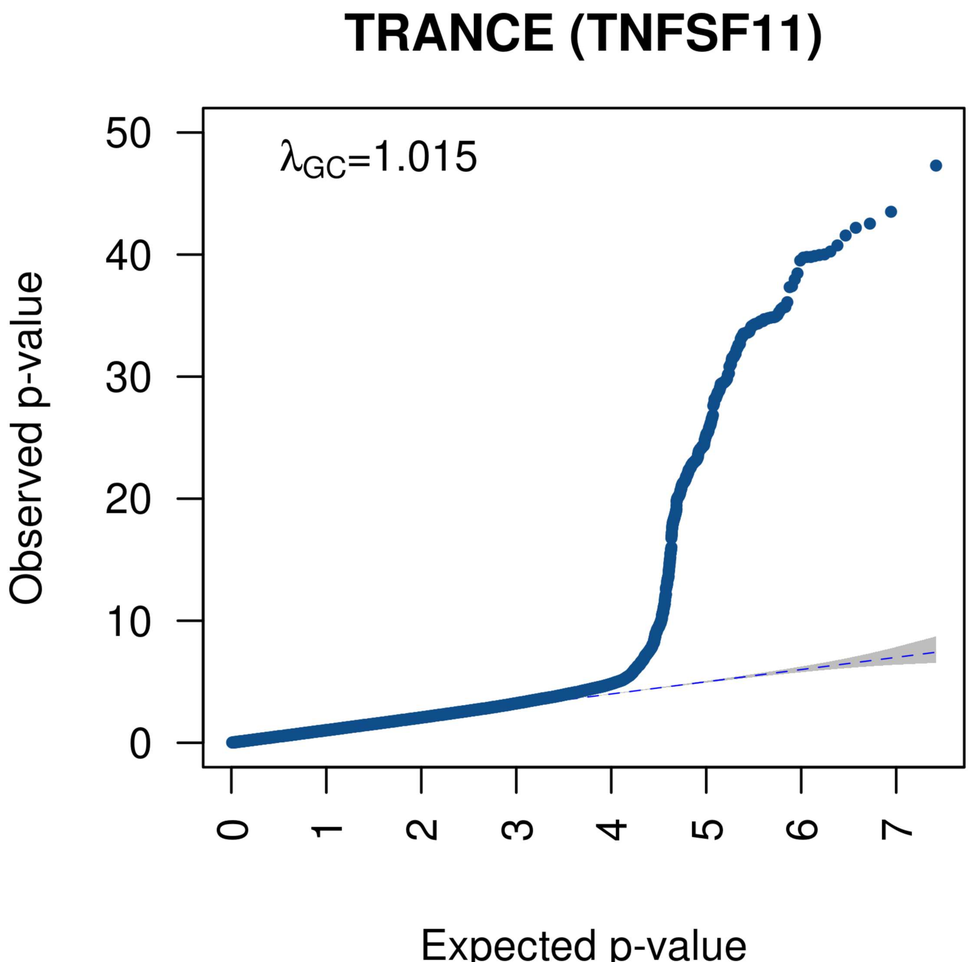

TNFSF14 (TNFSF14)
TNFSF14
C3
−log10 p-value
80
72
64
56
48
40
32
24
16
8
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

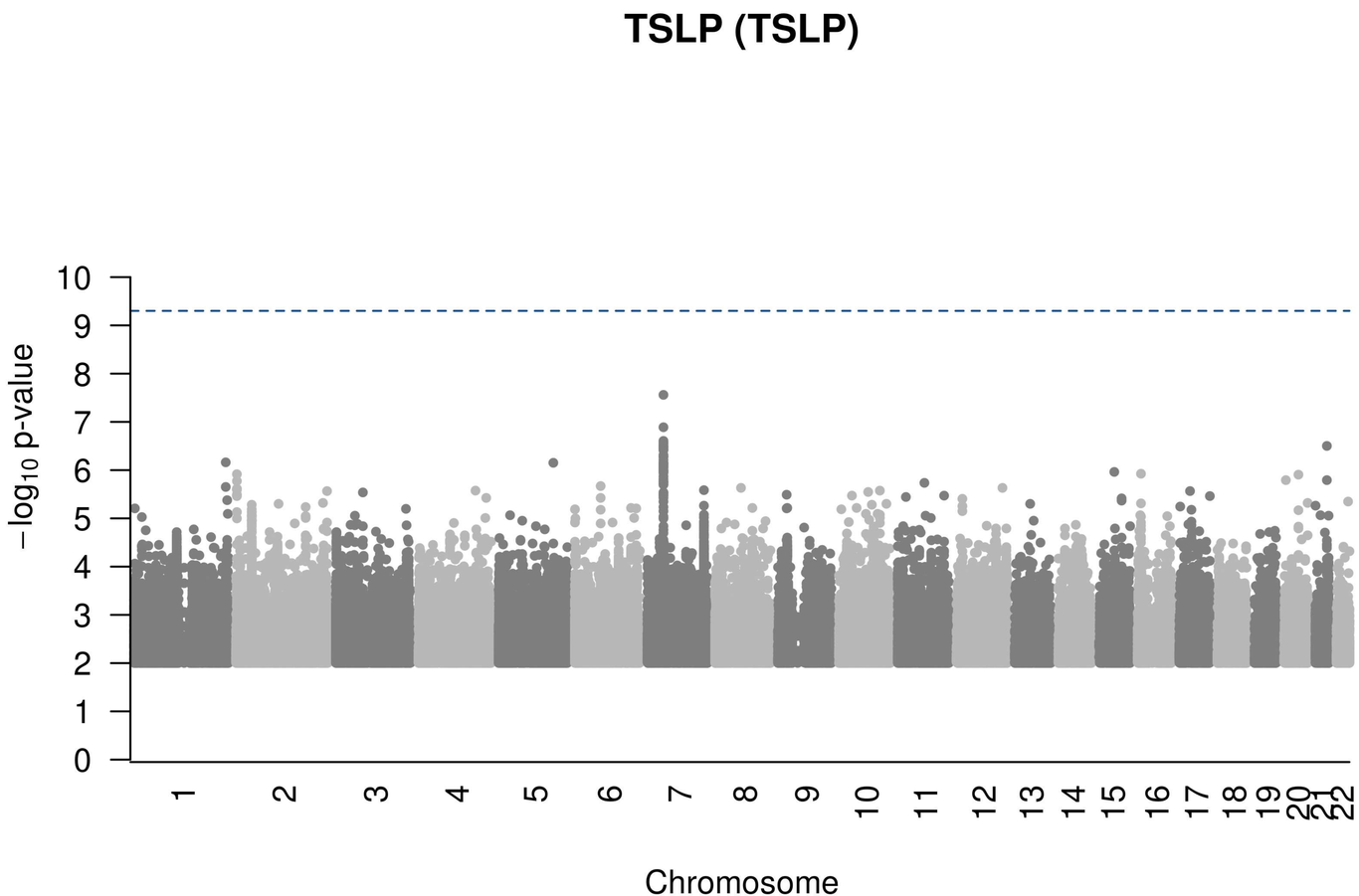

TNFSF14 (TNFSF14)
λGC=1.020
Observed p-value
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

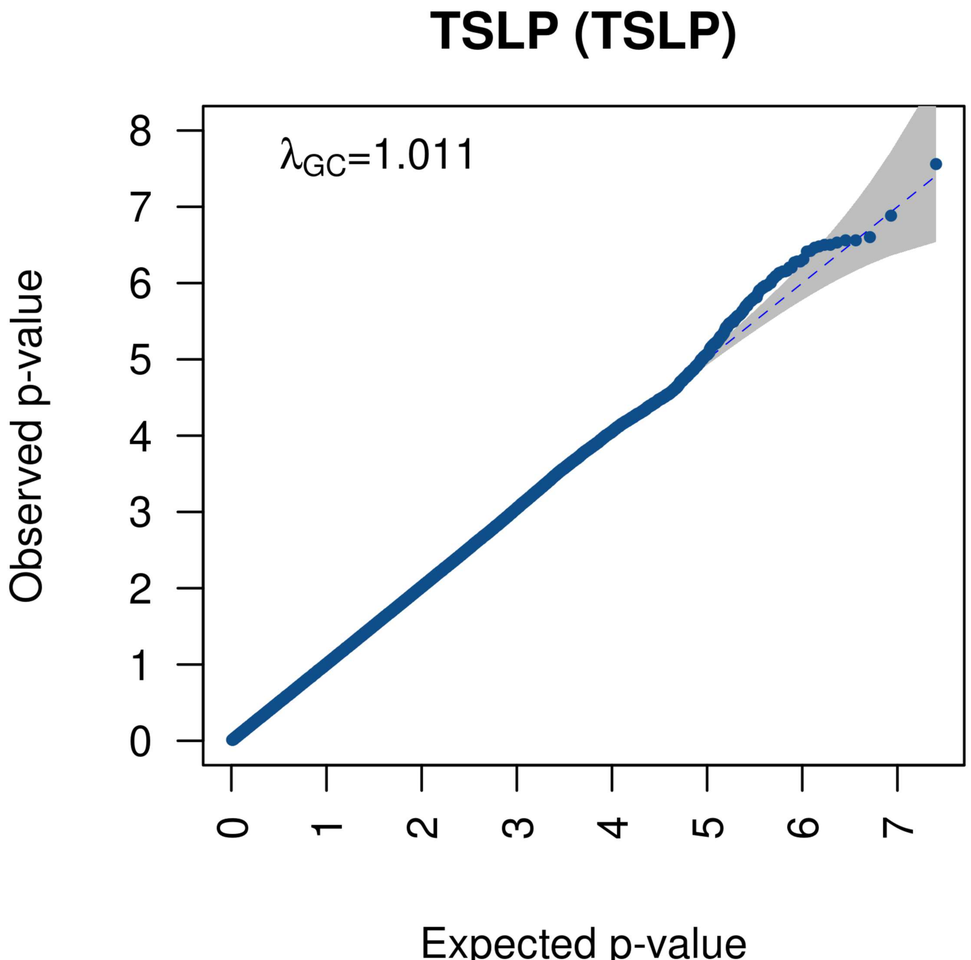

TRAIL (TNFSF10)
CFH
TNFSF10
NCEH1
KNG1
MYRF
SERPINA
APOH
MEP1B
PLAUR
−log10 p-value
110
99
88
77
66
55
44
33
22
11
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

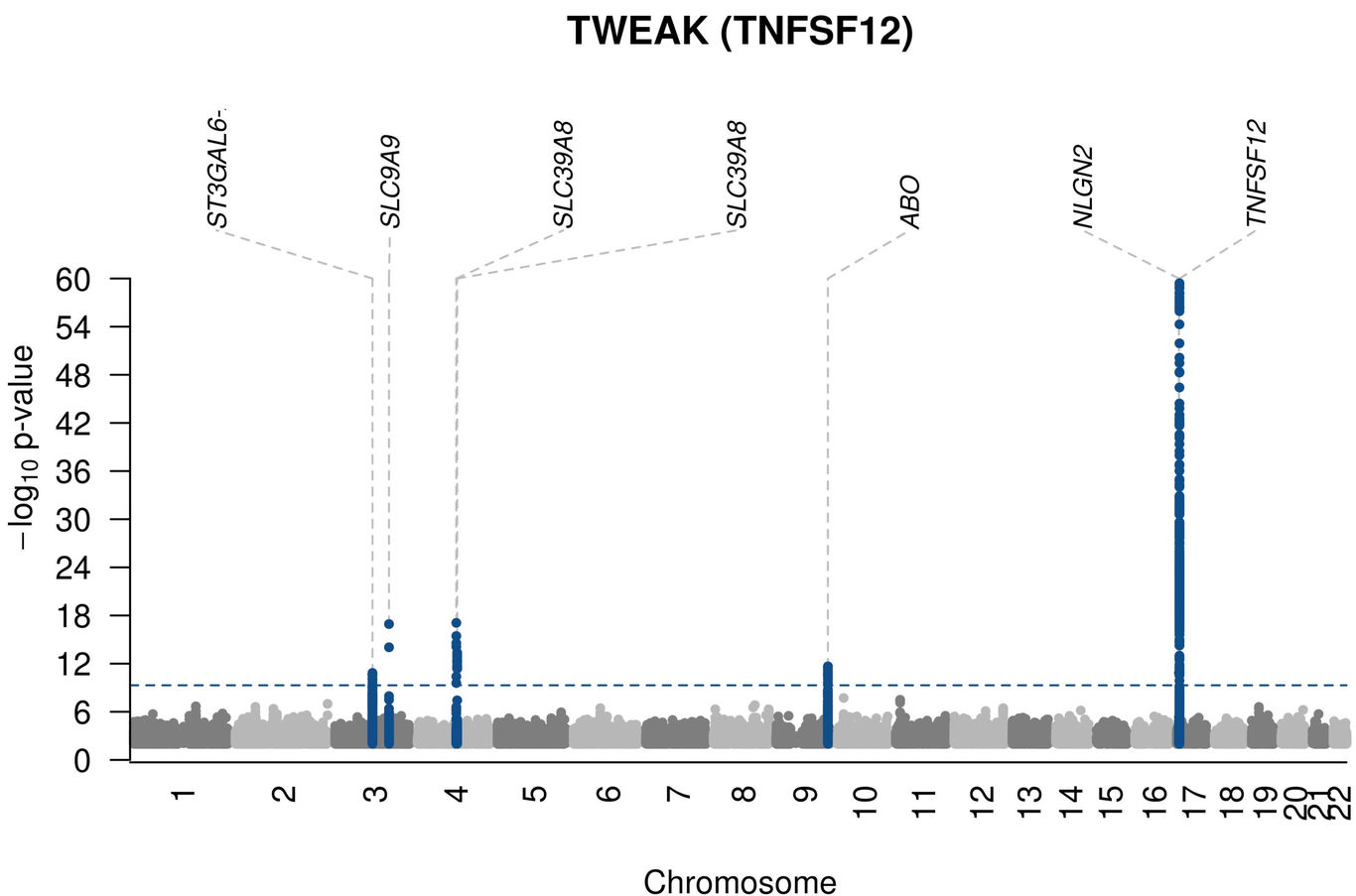

TRAIL (TNFSF10)
λGC=1.015
Observed p-value
120
100
80
60
40
20
0
0
1
2
3
4
5
6
7
Expected p-value

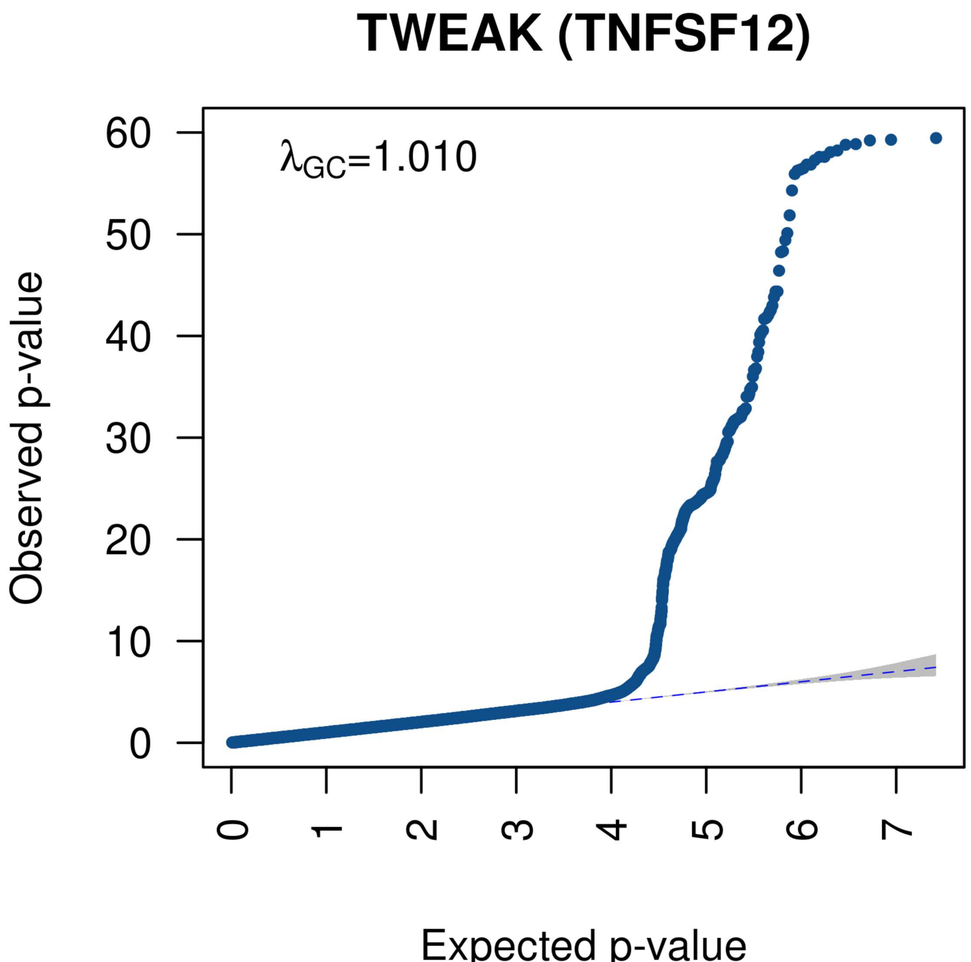

TRANCE (TNFSF11)
TNFSF10
NCEH1
CPN2
LOC38964
MAL2
LOC105374
VTN
−log10 p-value
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome

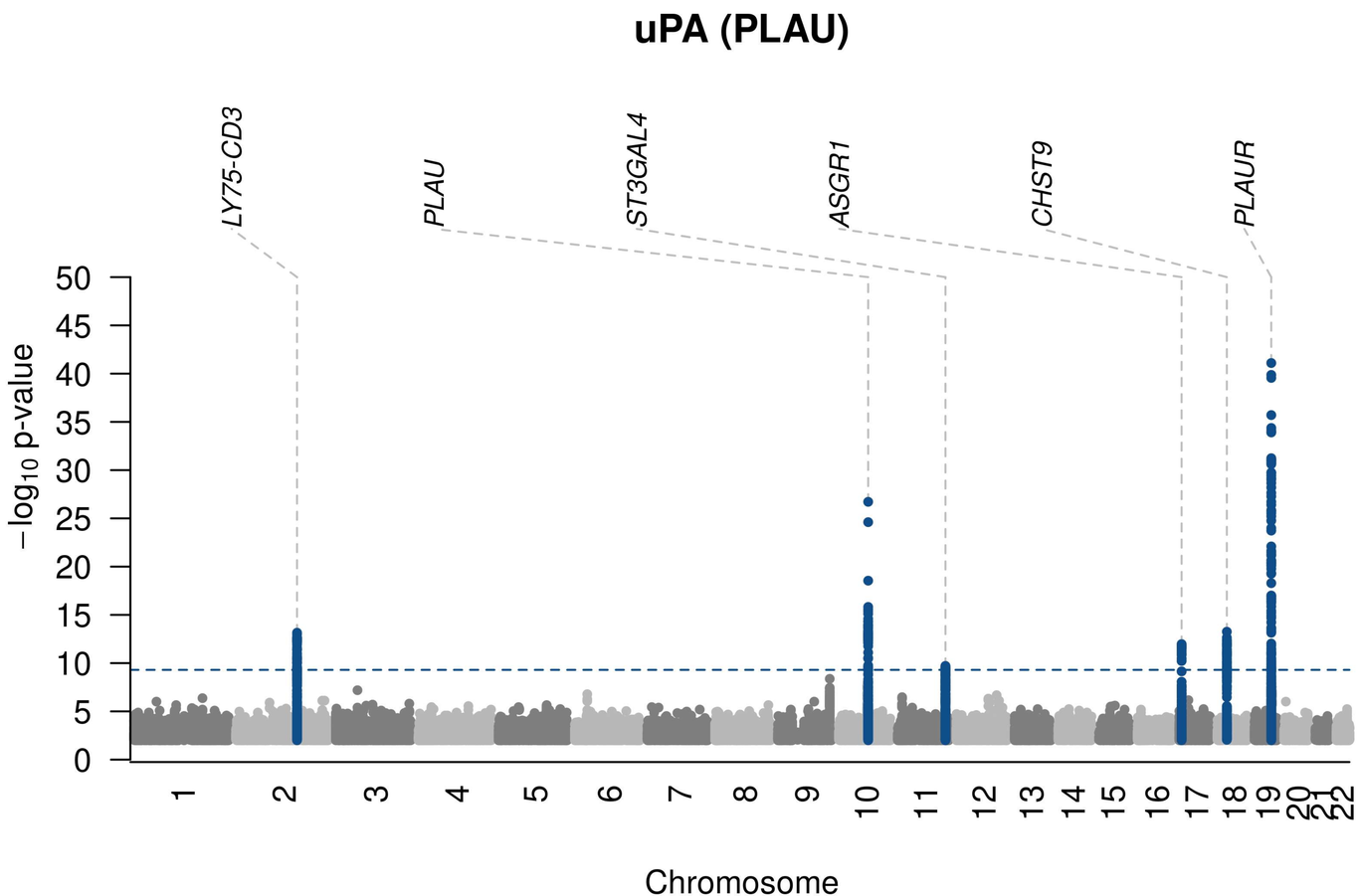

TRANCE (TNFSF11)
λGC=1.015
Observed p-value
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value

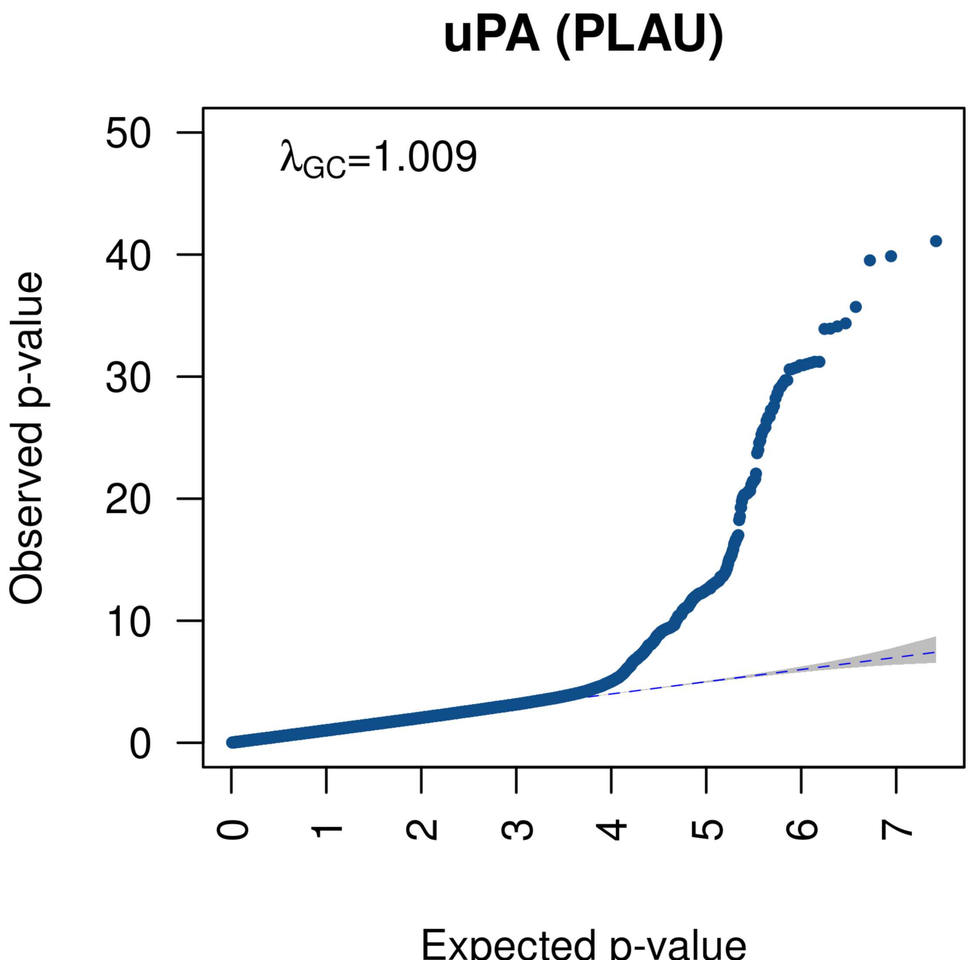

TSLP (TSLP)
−log10 p-value
Chromosome
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

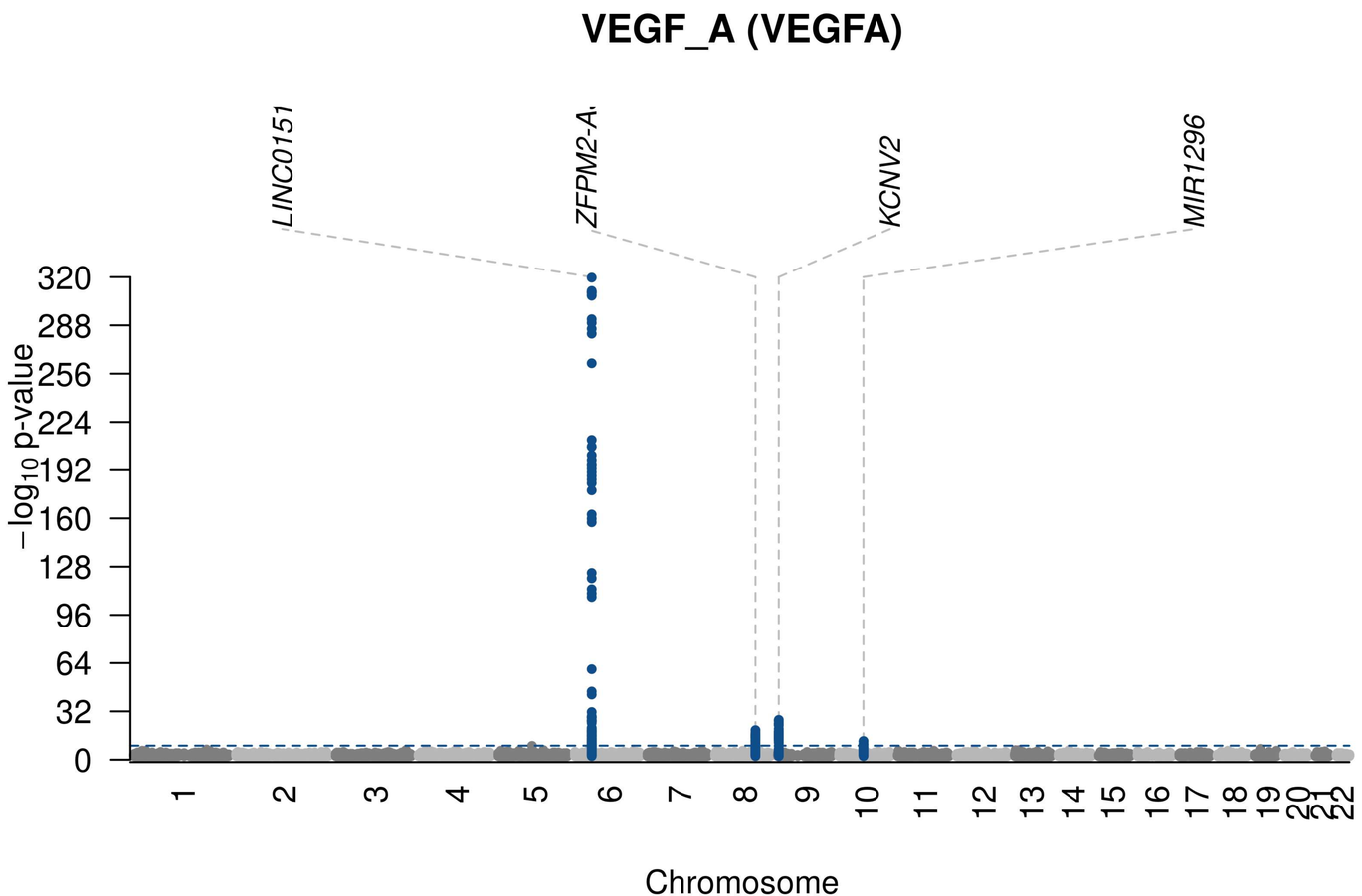

TSLP (TSLP)
λGC=1.011
Observed p-value
Expected p-value
0
1
2
3
4
5
6
7
8
0
1
2
3
4
5
6
7

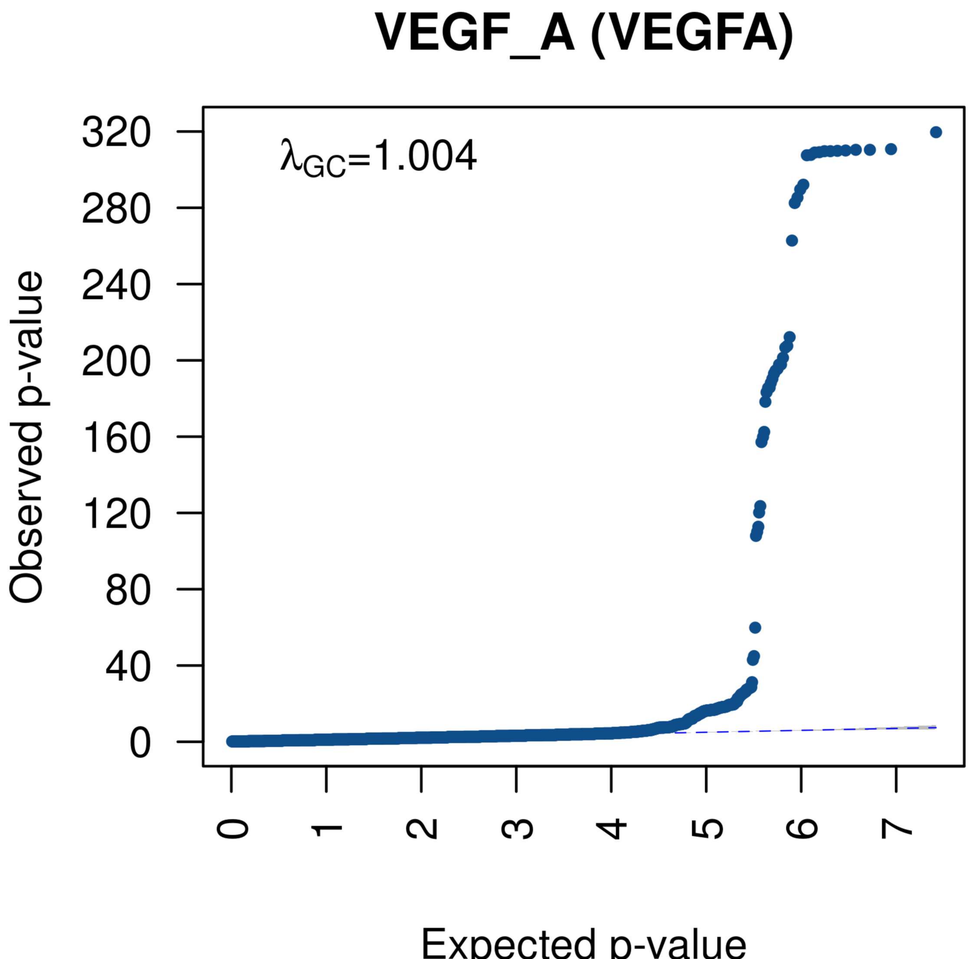

TWEAK (TNFSF12)
ST3GAL6-
SLC9A9
SLC39A8
SLC39A8
ABO
NLGN2
TNFSF12
−log10 p-value
60
54
48
42
36
30
24
18
12
6
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome


TWEAK (TNFSF12)
λGC=1.010
Observed p-value
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value


uPA (PLAU)
LY75-CD3
PLAU
ST3GAL4
ASGR1
CHST9
PLAUR
−log10 p-value
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome


uPA (PLAU)
λGC=1.009
Observed p-value
50
40
30
20
10
0
0
1
2
3
4
5
6
7
Expected p-value


VEGF_A (VEGFA)
LINC0151
ZFPM2-A
KCNV2
MIR1296
−log10 p-value
320
288
256
224
192
160
128
96
64
32
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Chromosome


VEGF_A (VEGFA)
λGC=1.004
Observed p-value
320
280
240
200
160
120
80
40
0
0
1
2
3
4
5
6
7
Expected p-value