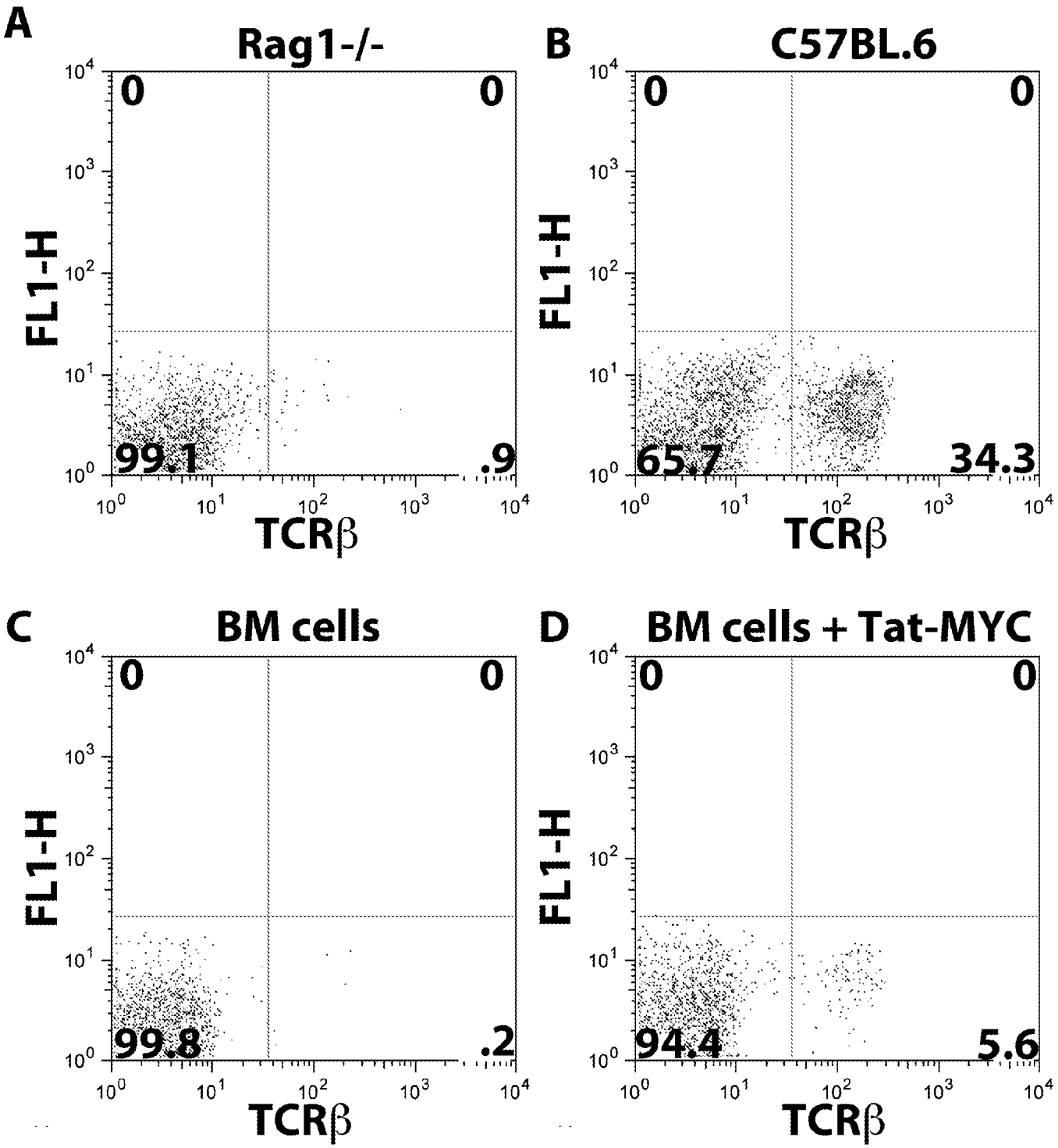

A
Rag1-/-
B
C57BL.6
C
BM cells
D
BM cells + Tat-MYC
FL1-H
TCRβ
0
0
99.1
.9
65.7
34.3
99.8
.2
94.4
5.6

Figure 1

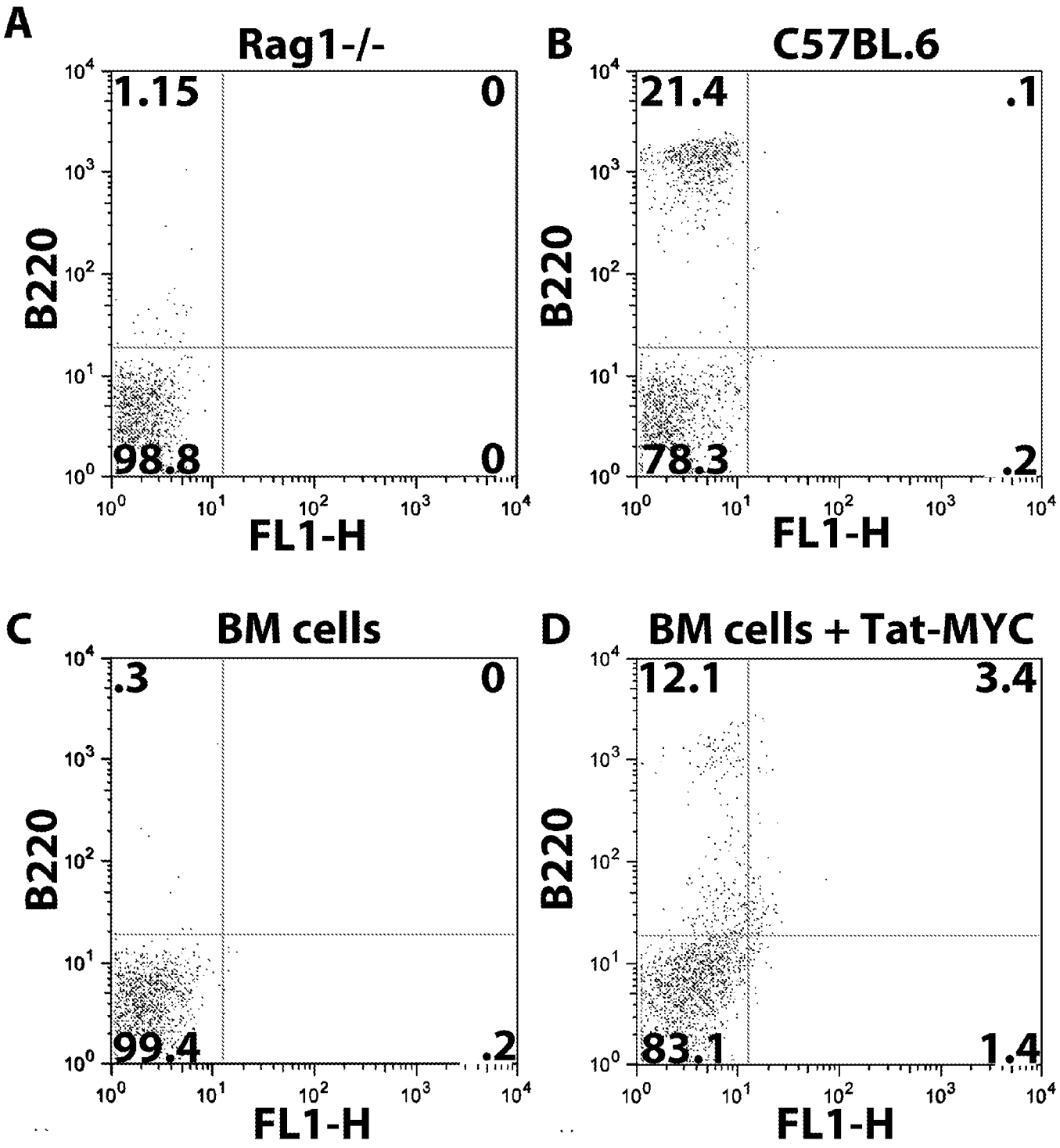

A
Rag1-/-
1.15
0
98.8
0
B220
FL1-H
B
C57BL.6
21.4
.1
78.3
.2
B220
FL1-H
C
BM cells
.3
0
99.4
.2
B220
FL1-H
D
BM cells + Tat-MYC
12.1
3.4
83.1
1.4
B220
FL1-H

Figure 2

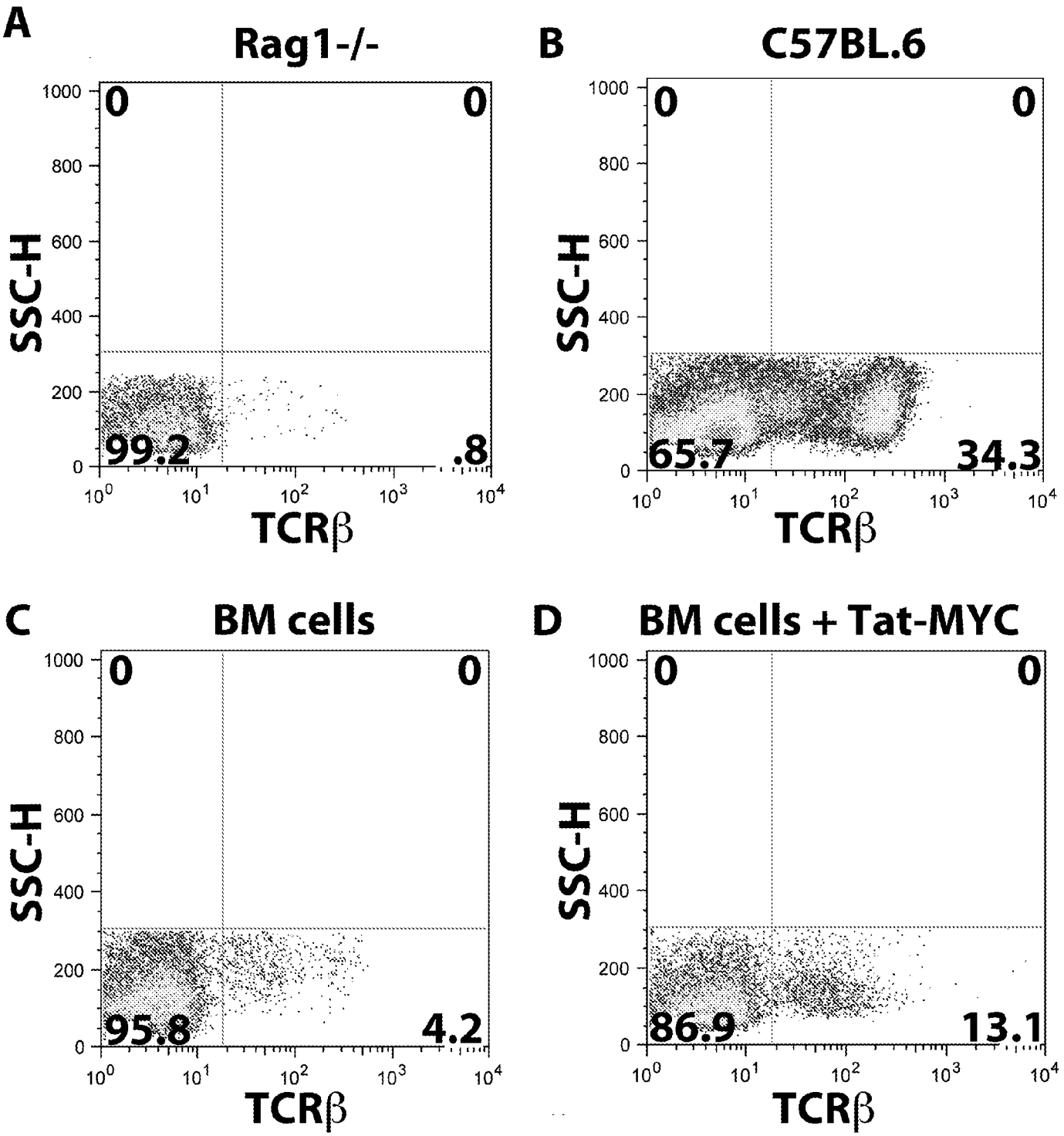

A
Rag1-/-
B
C57BL.6
C
BM cells
D
BM cells + Tat-MYC
SSC-H
TCRβ
0
99.2
.8
65.7
34.3
95.8
4.2
86.9
13.1

Figure 3

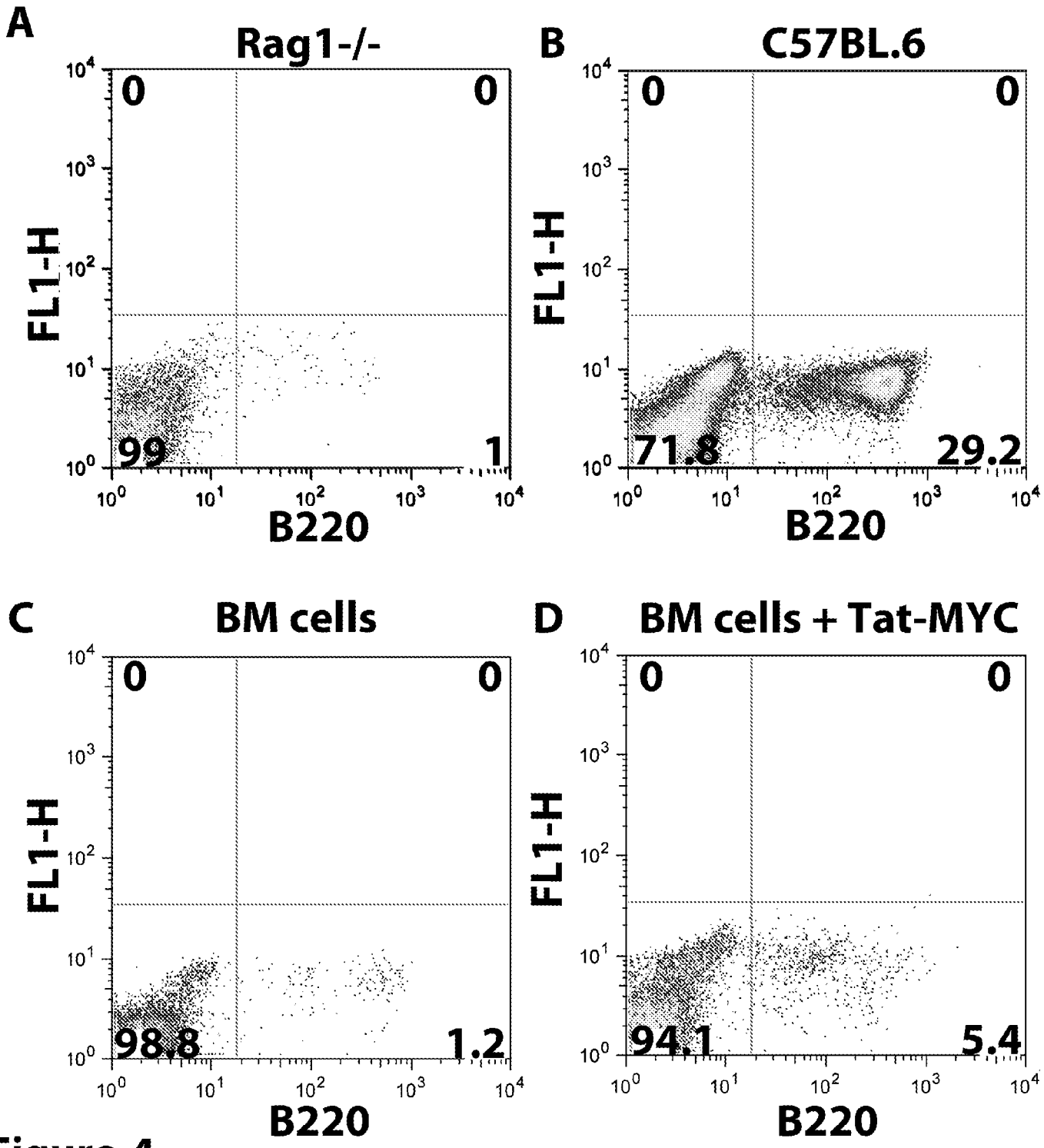

A
Rag1-/-
0
0
99
1
FL1-H
B220
B
C57BL.6
0
0
71.8
29.2
FL1-H
B220
C
BM cells
0
0
98.8
1.2
FL1-H
B220
D
BM cells + Tat-MYC
0
0
94.1
5.4
FL1-H
B220

Figure 4

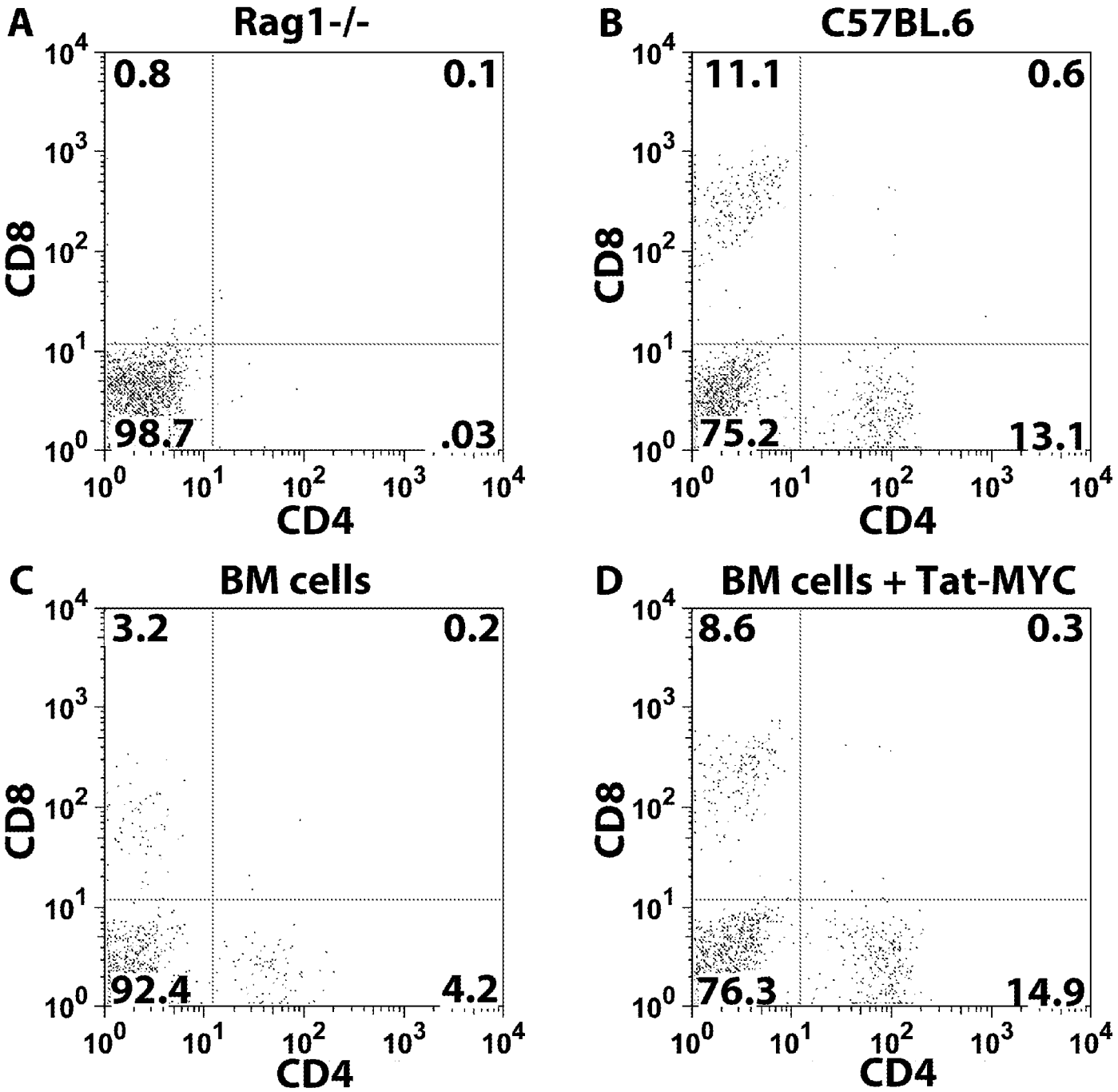
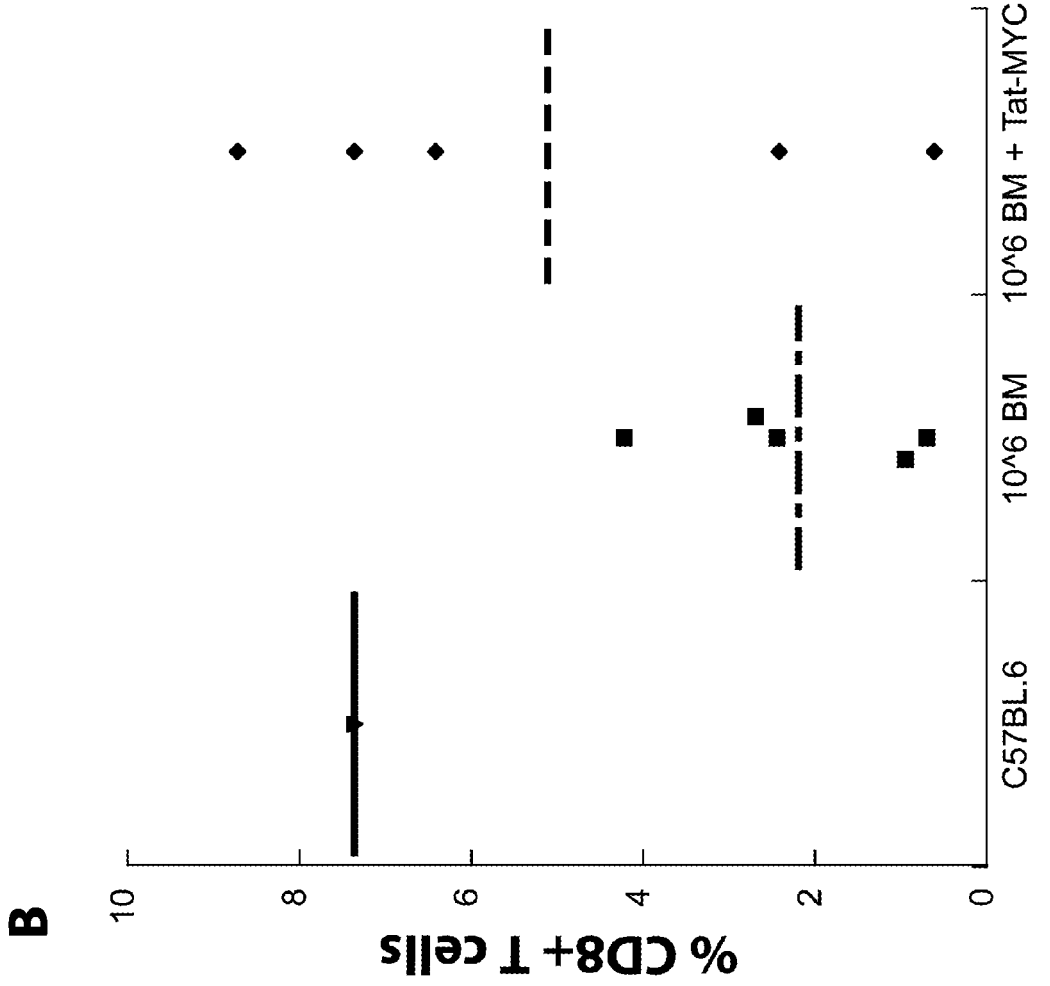

A
Rag1-/-
0.8
0.1
98.7
.03
B
C57BL.6
11.1
0.6
75.2
13.1
C
BM cells
3.2
0.2
92.4
4.2
D
BM cells + Tat-MYC
8.6
0.3
76.3
14.9
CD8
CD4
10^0
10^1
10^2
10^3
10^4

Figure 5


B
% CD8+ T cells
0
2
4
6
8
10
C57BL.6
10^6 BM
10^6 BM + Tat-MYC

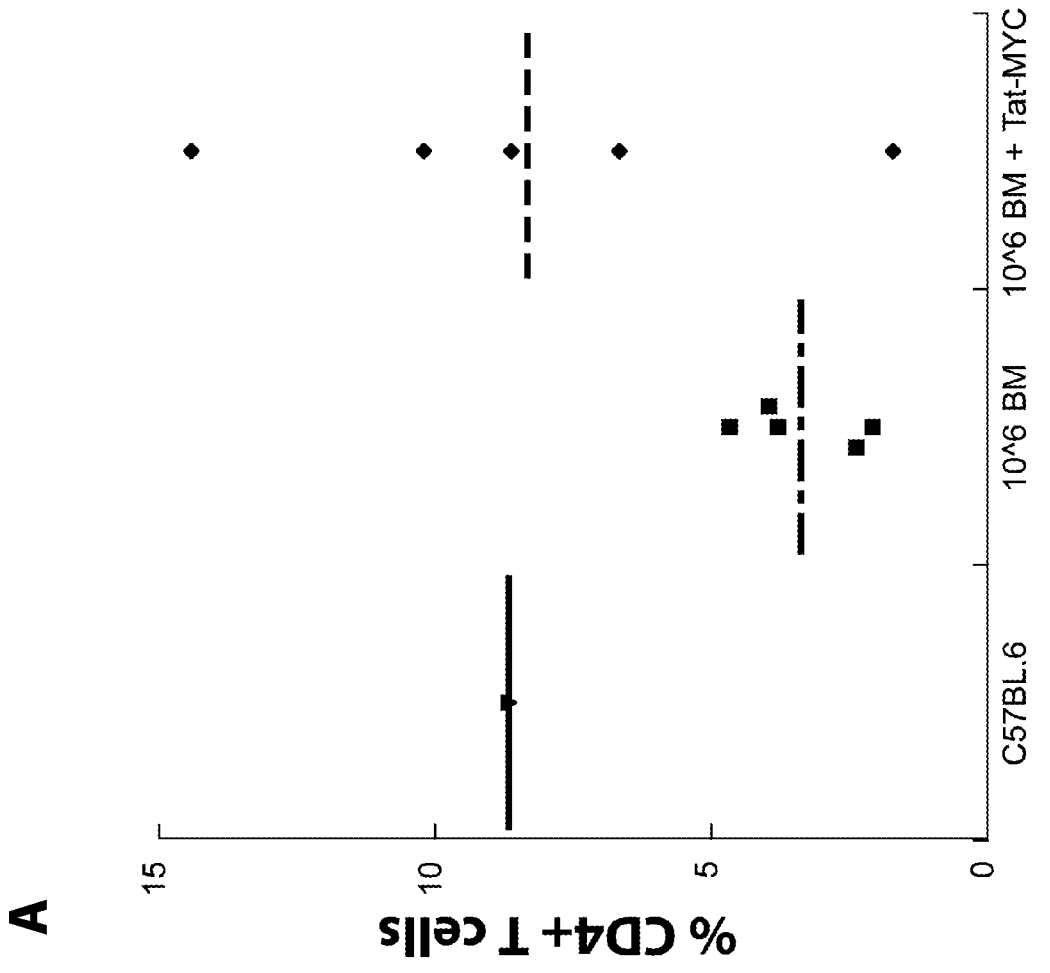

A
% CD4+ T cells
0
5
10
15
C57BL.6
10^6 BM
10^6 BM + Tat-MYC

Figure 6

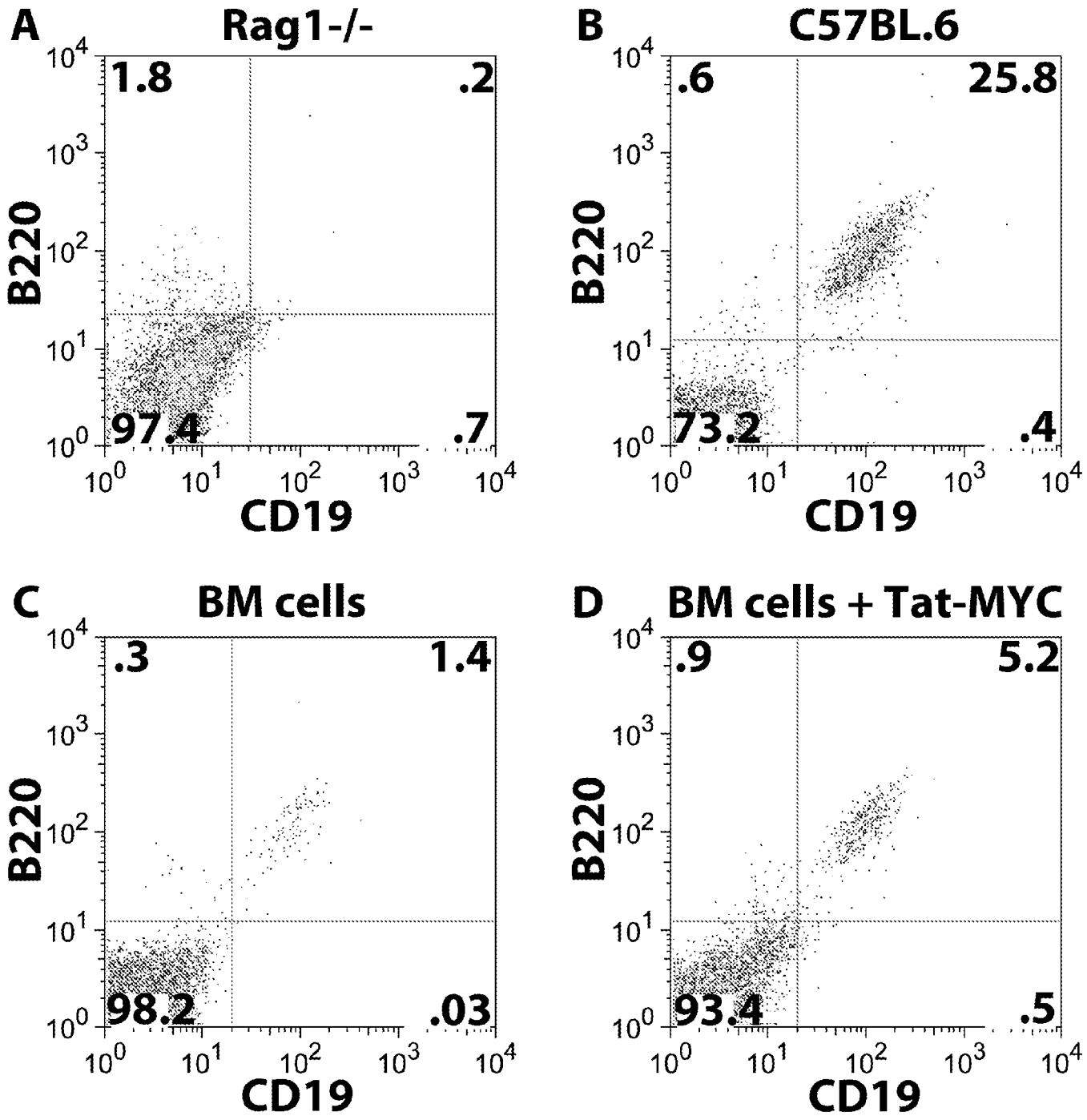

A
Rag1-/-
1.8
.2
97.4
.7
B220
CD19
B
C57BL.6
.6
25.8
73.2
.4
B220
CD19
C
BM cells
.3
1.4
98.2
.03
B220
CD19
D
BM cells + Tat-MYC
.9
5.2
93.4
.5
B220
CD19

Figure 7

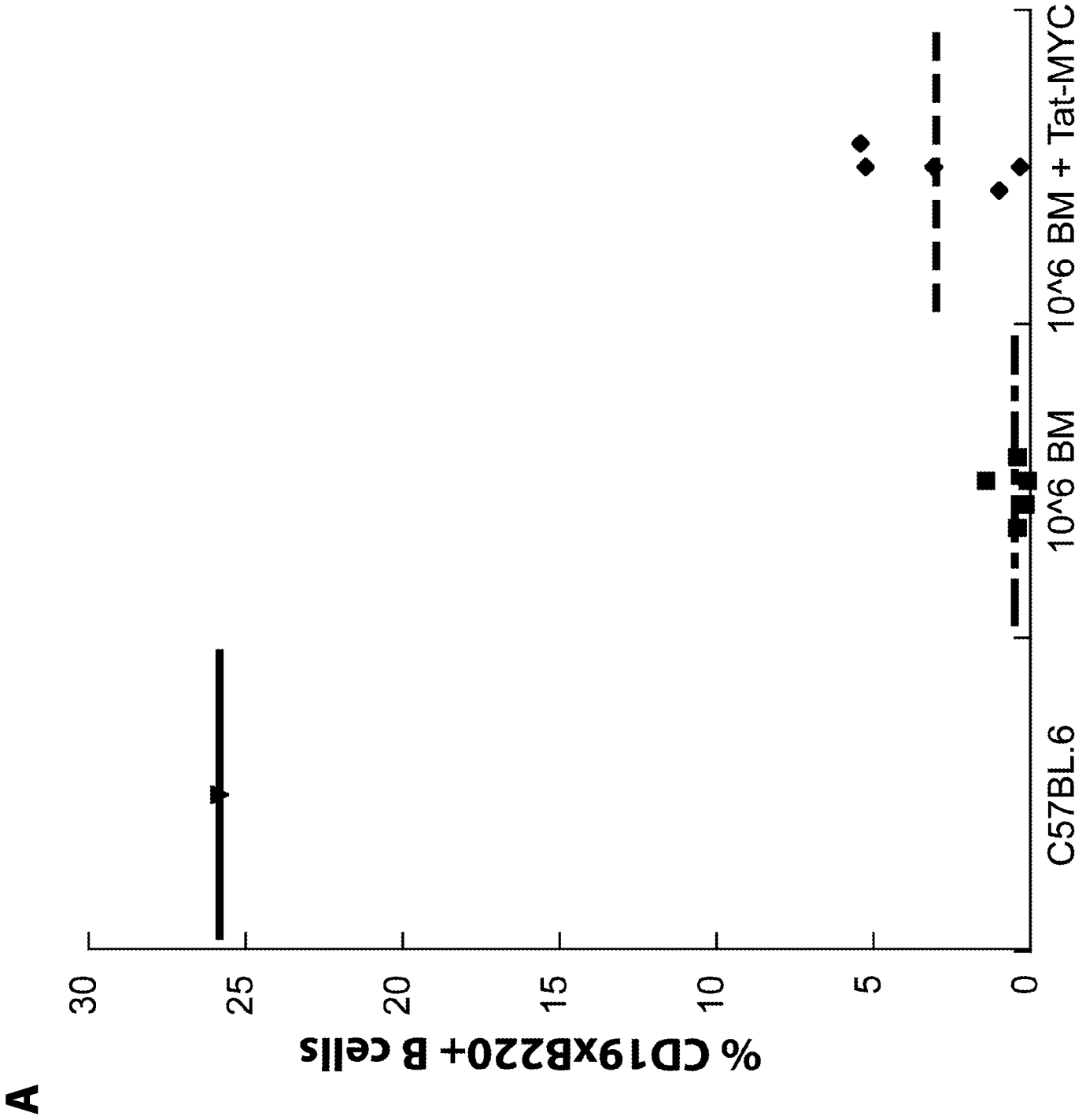

A
% CD19xB220+ B cells
30
25
20
15
10
5
0
C57BL.6
10^6 BM
10^6 BM + Tat-MYC

Figure 8

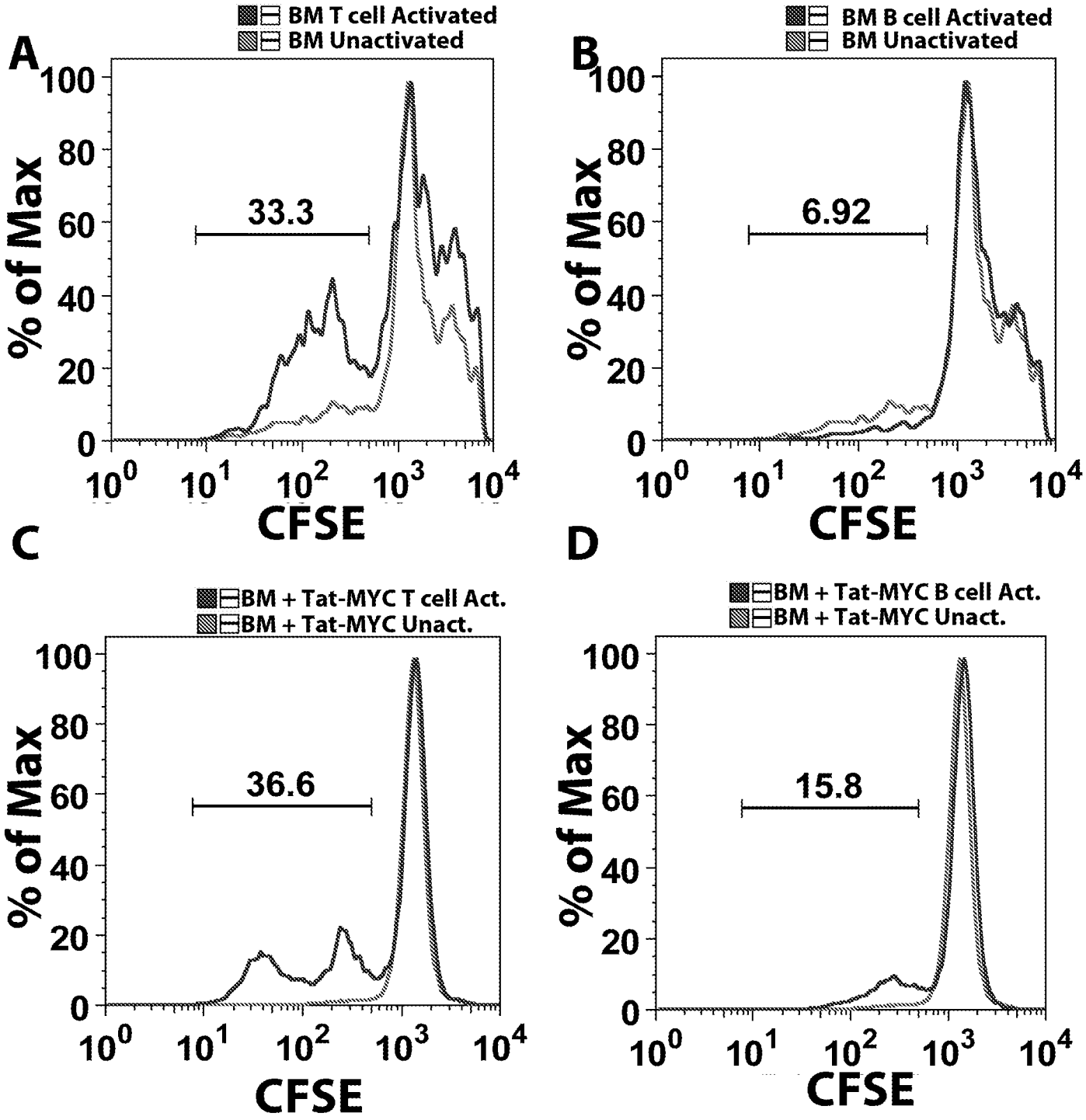

A
BM T cell Activated
BM Unactivated
33.3
% of Max
CFSE
B
BM B cell Activated
BM Unactivated
6.92
% of Max
CFSE
C
BM + Tat-MYC T cell Act.
BM + Tat-MYC Unact.
36.6
% of Max
CFSE
D
BM + Tat-MYC B cell Act.
BM + Tat-MYC Unact.
15.8
% of Max
CFSE

Figure 9

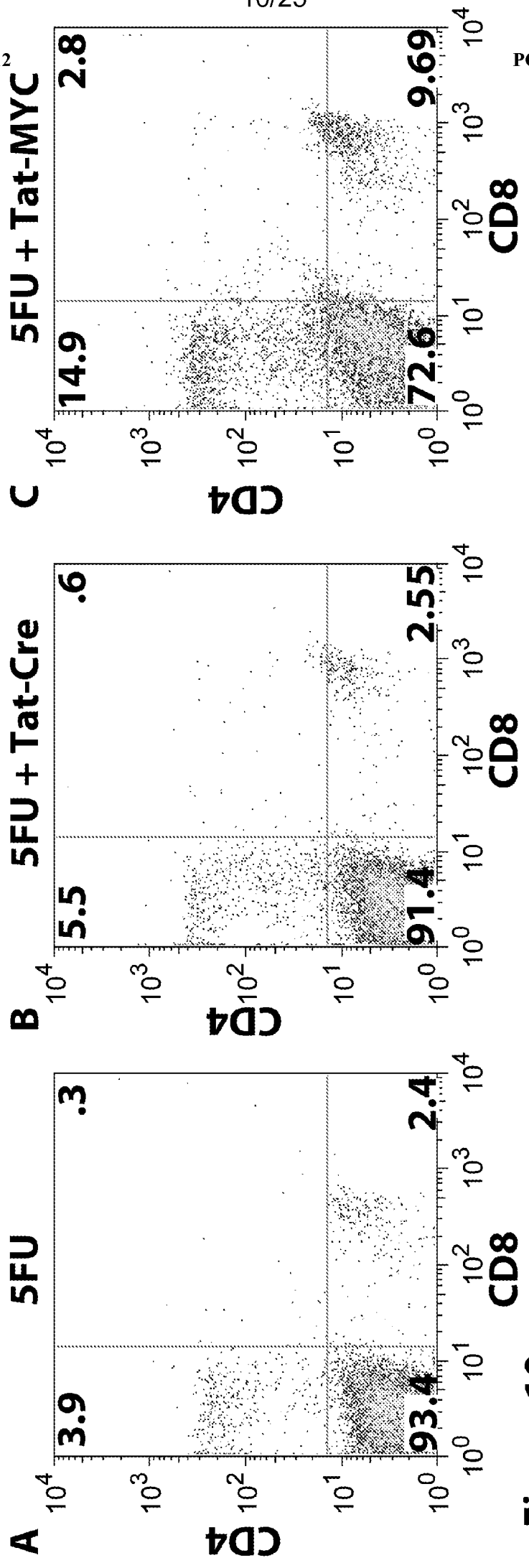

A
5FU
3.9
.3
93.4
2.4
B
5FU + Tat-Cre
5.5
.6
91.4
2.55
C
5FU + Tat-MYC
14.9
2.8
72.6
9.69
CD4
CD8
10^0
10^1
10^2
10^3
10^4

Figure 10

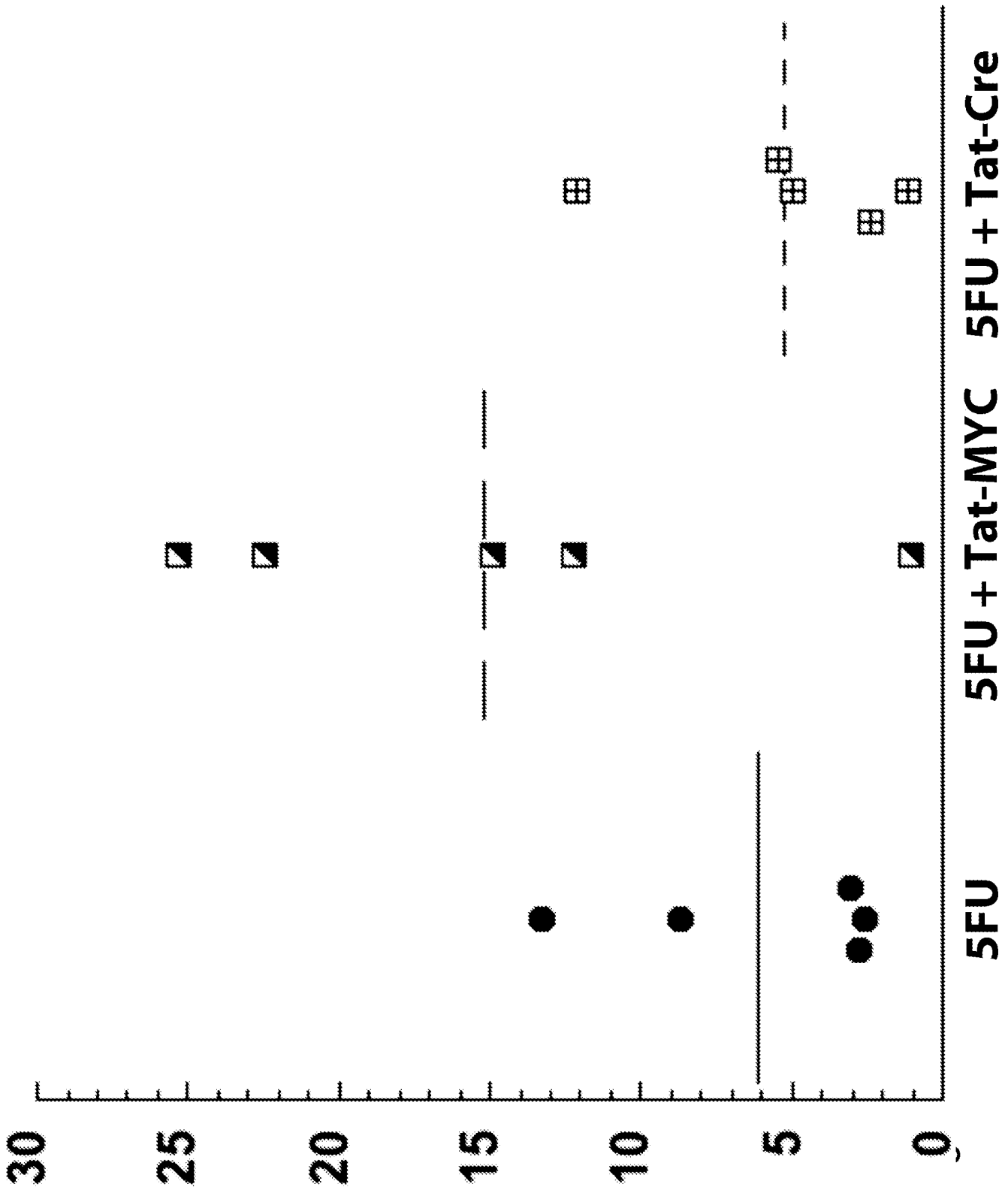


Figure 11

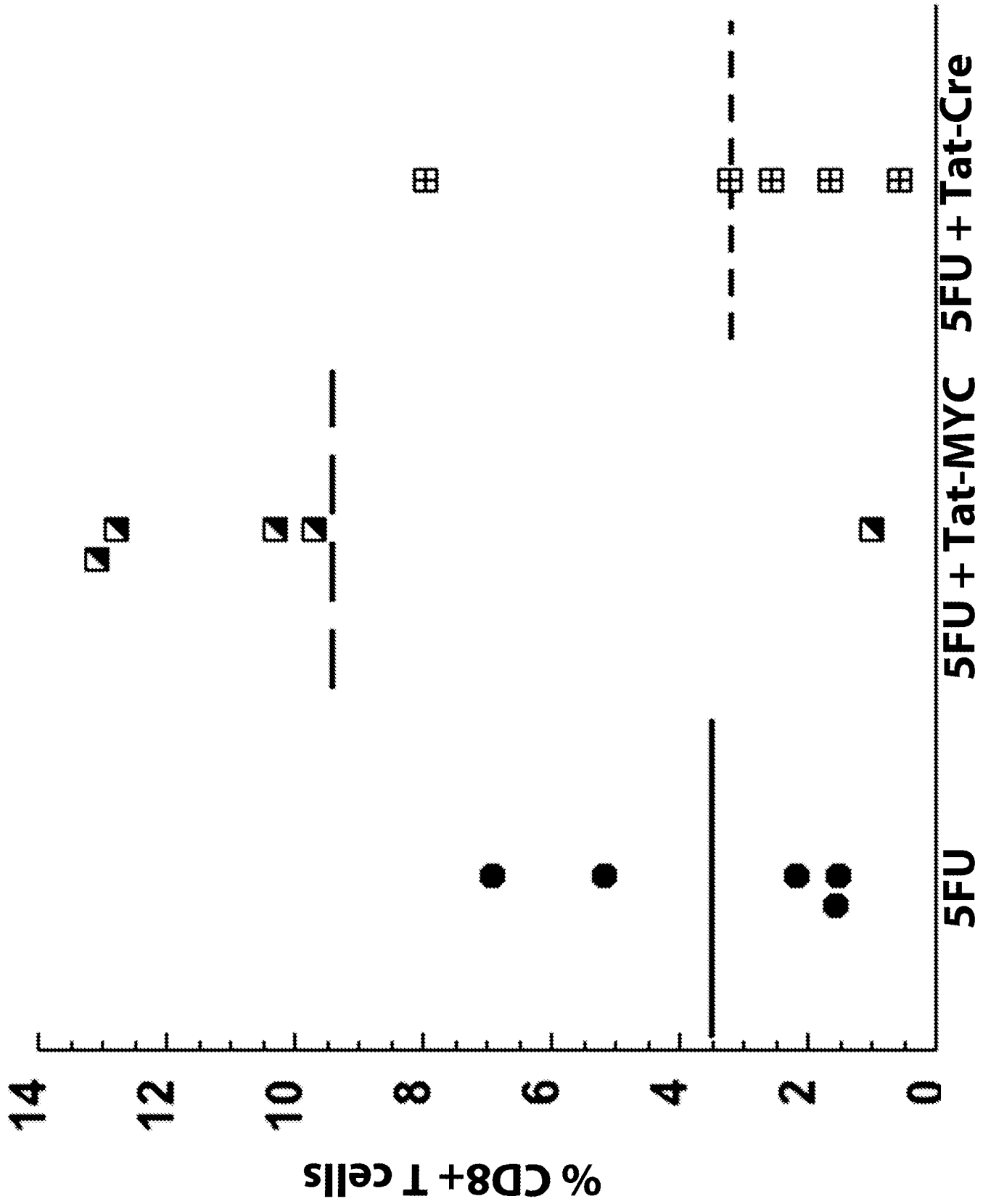


Figure 12

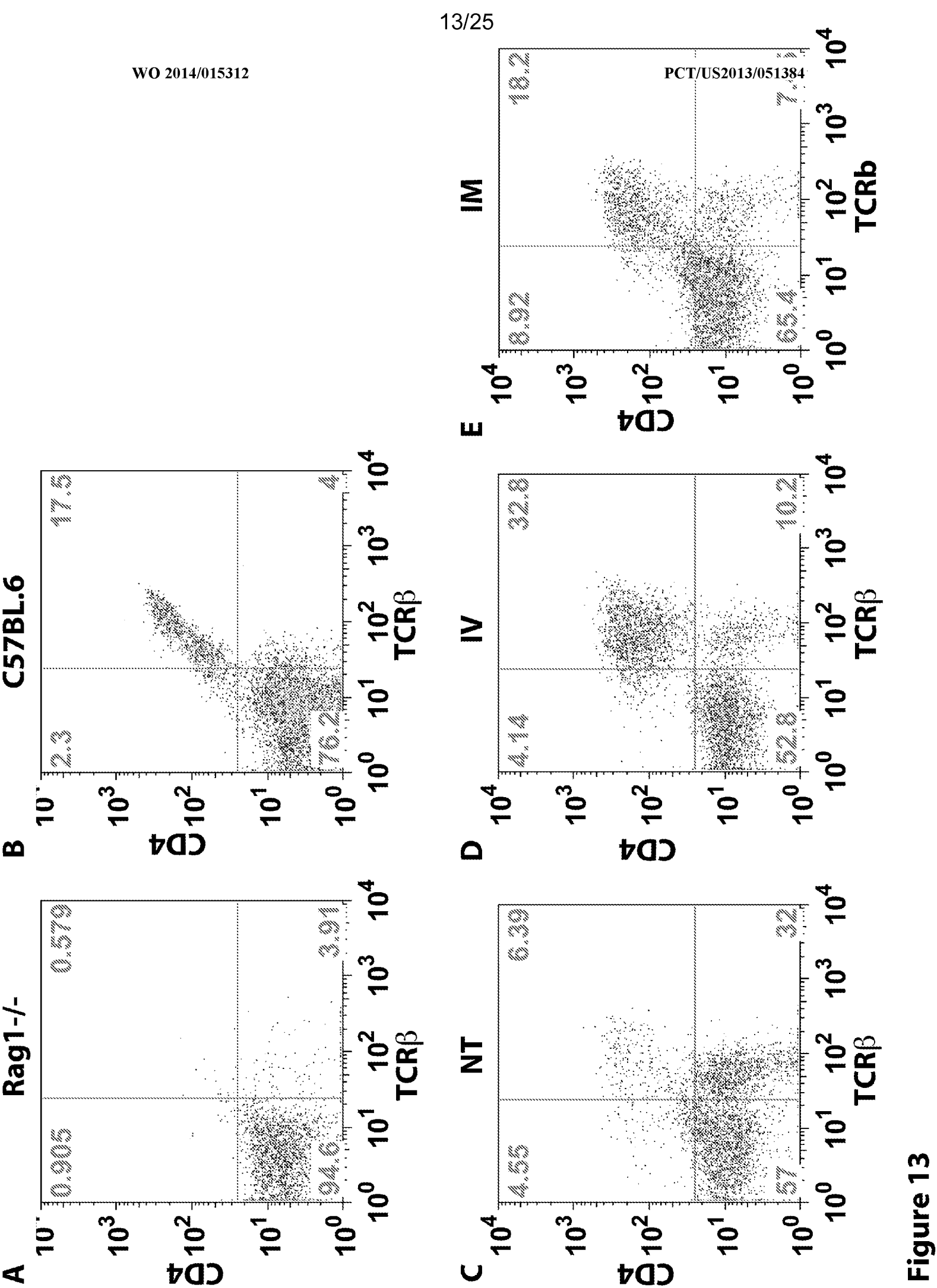

A
Rag1-/-
B
C57BL.6
C
NT
D
IV
E
IM
CD4
TCRβ
TCRb
0.905
0.570
94.6
3.91
2.3
17.5
76.2
4
4.55
6.39
57
32
4.14
32.8
52.8
10.2
8.92
18.2
65.4

Figure 13

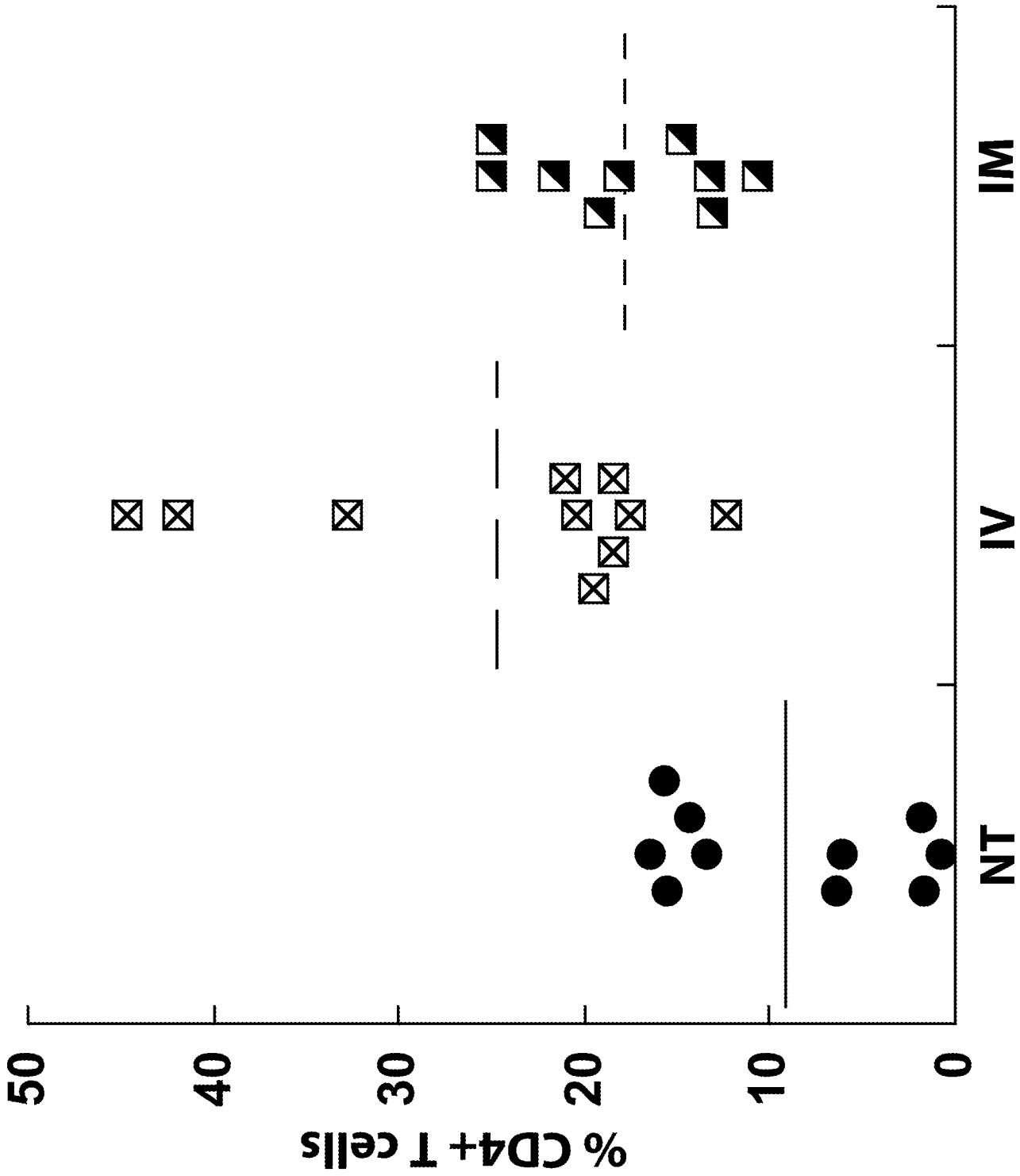


Figure 14

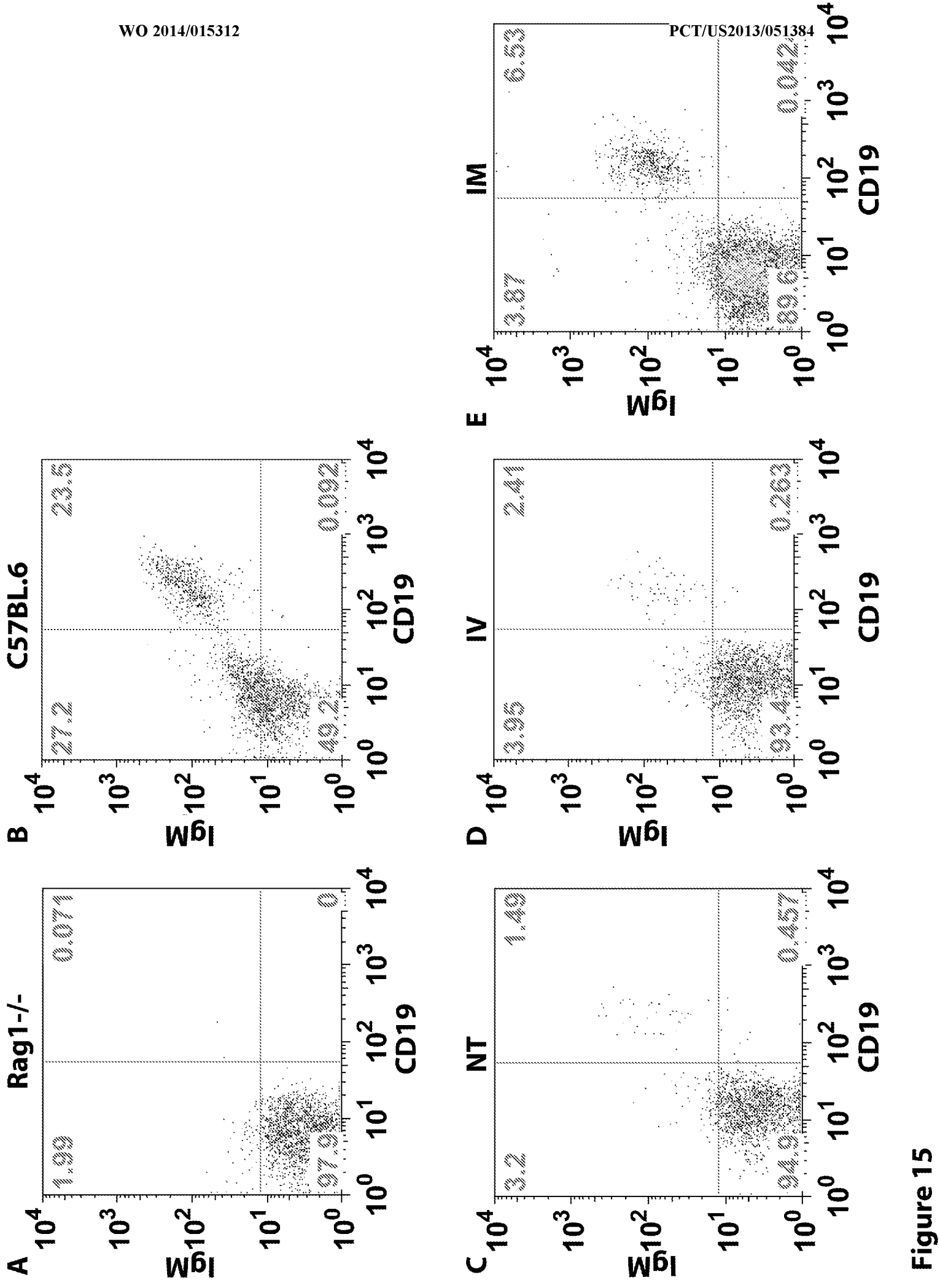

A
Rag1-/-
1.99
0.071
97.9
0
B
C57BL.6
27.2
23.5
49.2
0.092
C
NT
3.2
1.40
94.9
0.457
D
IV
3.95
2.41
93.4
0.263
E
IM
3.87
6.53
89.6
0.042
IgM
CD19

Figure 15

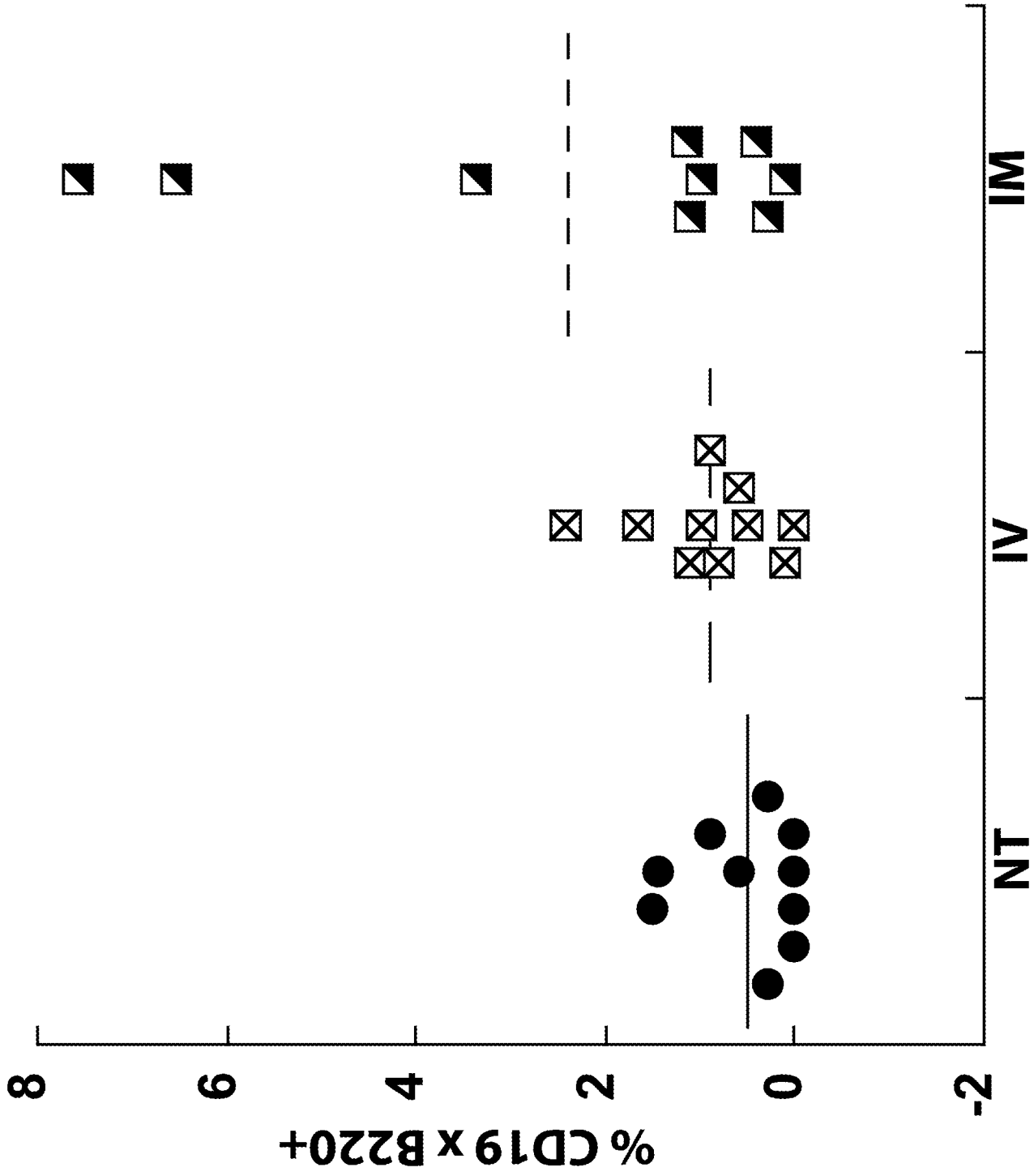


Figure 16

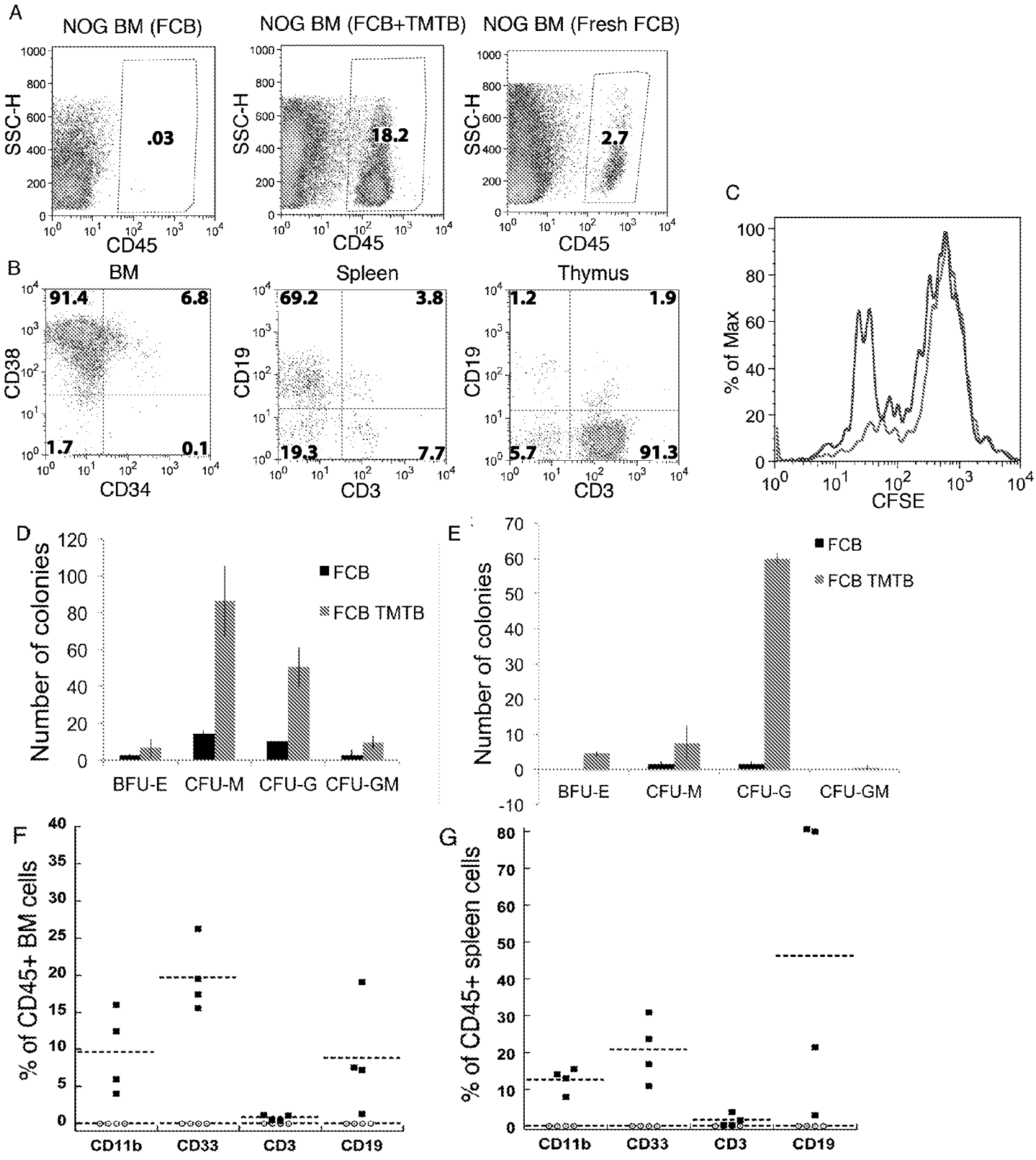

A
NOG BM (FCB)
NOG BM (FCB+TMTB)
NOG BM (Fresh FCB)
SSC-H
CD45
.03
18.2
2.7
B
BM
Spleen
Thymus
CD38
CD34
CD19
CD3
91.4
6.8
1.7
0.1
69.2
3.8
19.3
7.7
1.2
1.9
5.7
91.3
C
% of Max
CFSE
D
Number of colonies
FCB
FCB TMTB
BFU-E
CFU-M
CFU-G
CFU-GM
E
Number of colonies
FCB
FCB TMTB
BFU-E
CFU-M
CFU-G
CFU-GM
F
% of CD45+ BM cells
CD11b
CD33
CD3
CD19
G
% of CD45+ spleen cells
CD11b
CD33
CD3
CD19

Figure 17

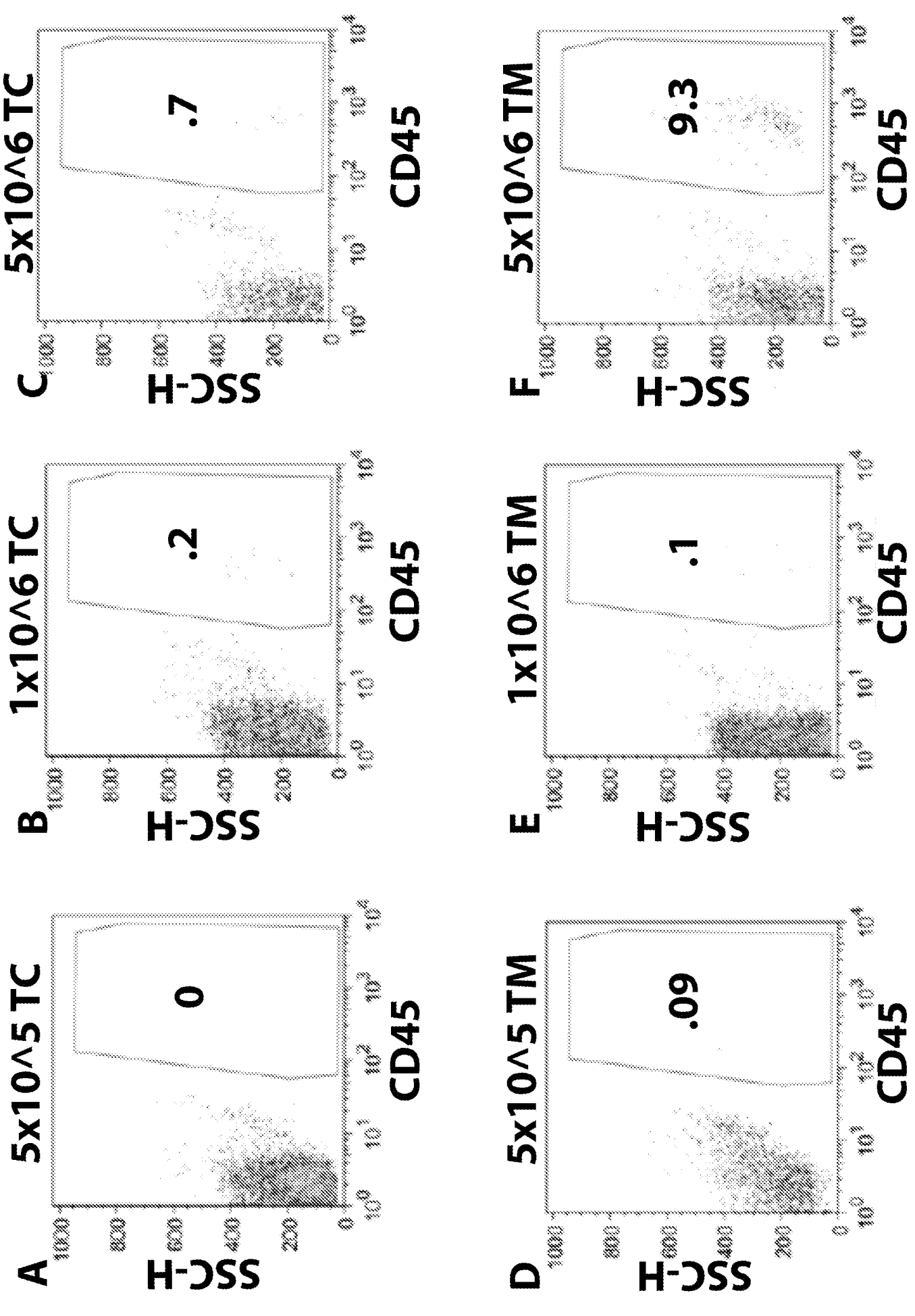

A
5x10^5 TC
0
SSC-H
CD45
B
1x10^6 TC
.2
SSC-H
CD45
C
5x10^6 TC
.7
SSC-H
CD45
D
5x10^5 TM
.09
SSC-H
CD45
E
1x10^6 TM
.1
SSC-H
CD45
F
5x10^6 TM
9.3
SSC-H
CD45

Figure 18

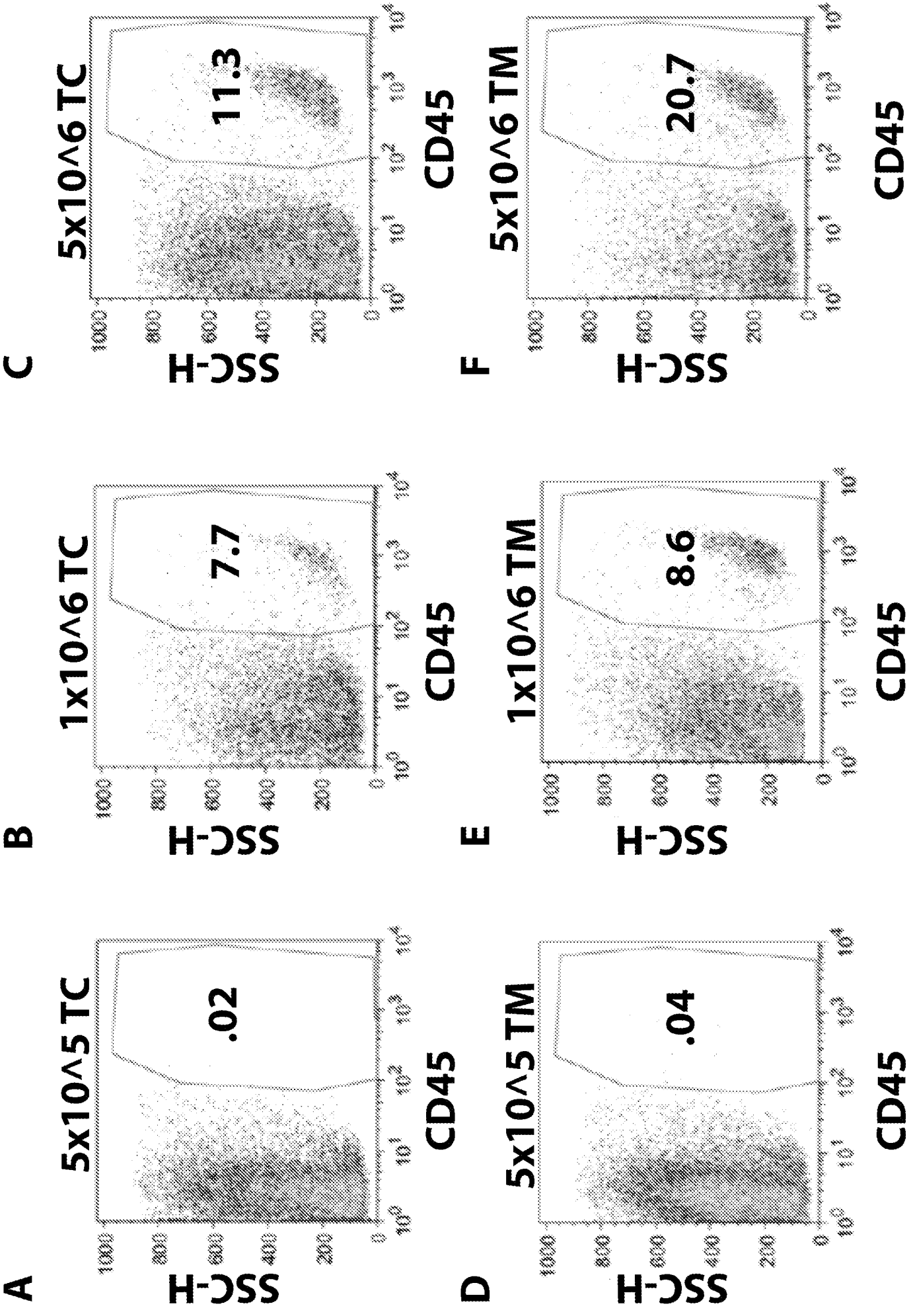

A
5x10^5 TC
.02
SSC-H
CD45
B
1x10^6 TC
7.7
SSC-H
CD45
C
5x10^6 TC
11.3
SSC-H
CD45
D
5x10^5 TM
.04
SSC-H
CD45
E
1x10^6 TM
8.6
SSC-H
CD45
F
5x10^6 TM
20.7
SSC-H
CD45

Figure 19

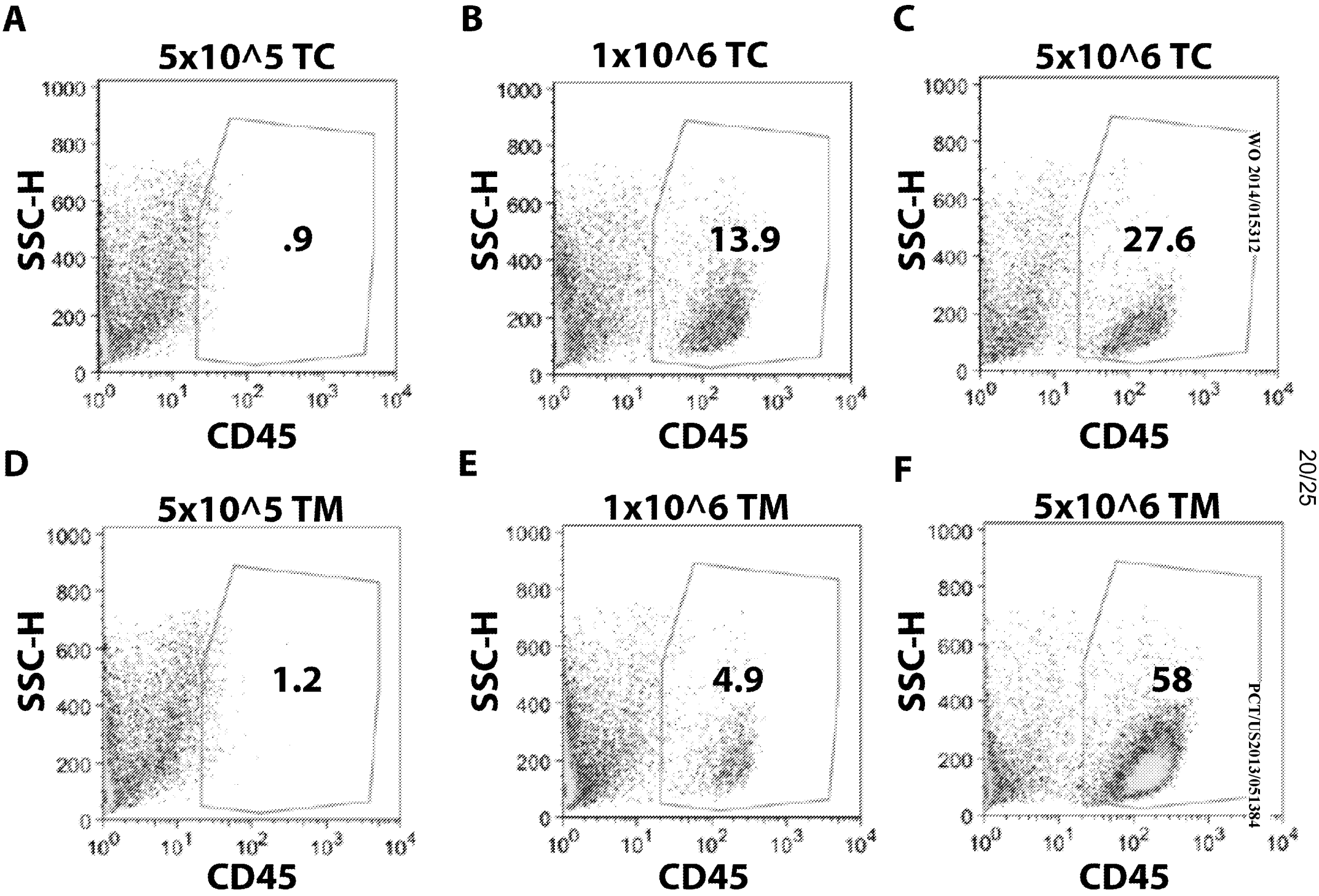


Figure 20

WO 2014/015312
PCT/US2013/051384

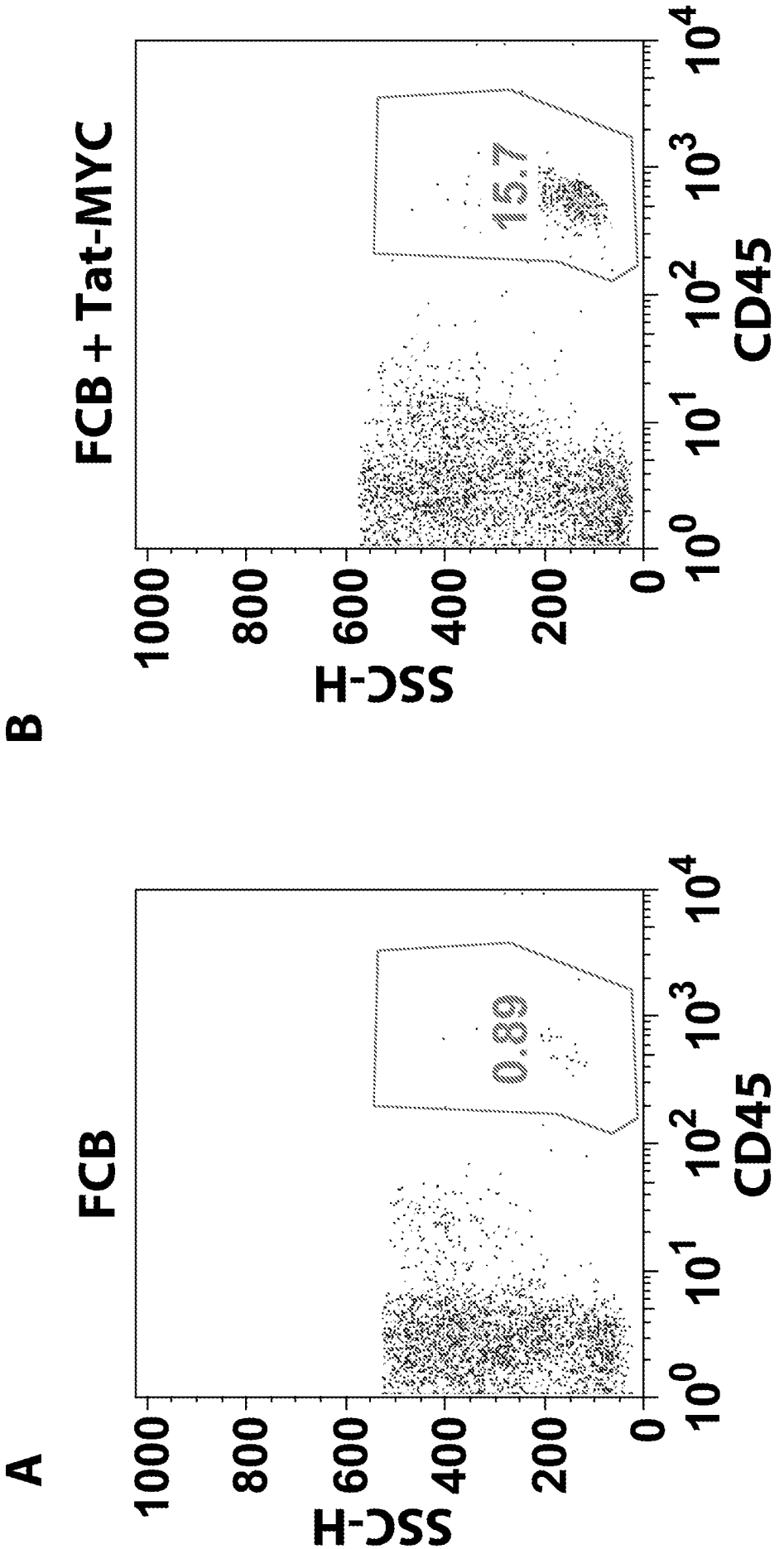

A
FCB
0.89
SSC-H
1000
800
600
400
200
0
10^0
10^1
10^2
10^3
10^4
CD45
B
FCB + Tat-MYC
15.7
SSC-H
1000
800
600
400
200
0
10^0
10^1
10^2
10^3
10^4
CD45

Figure 21

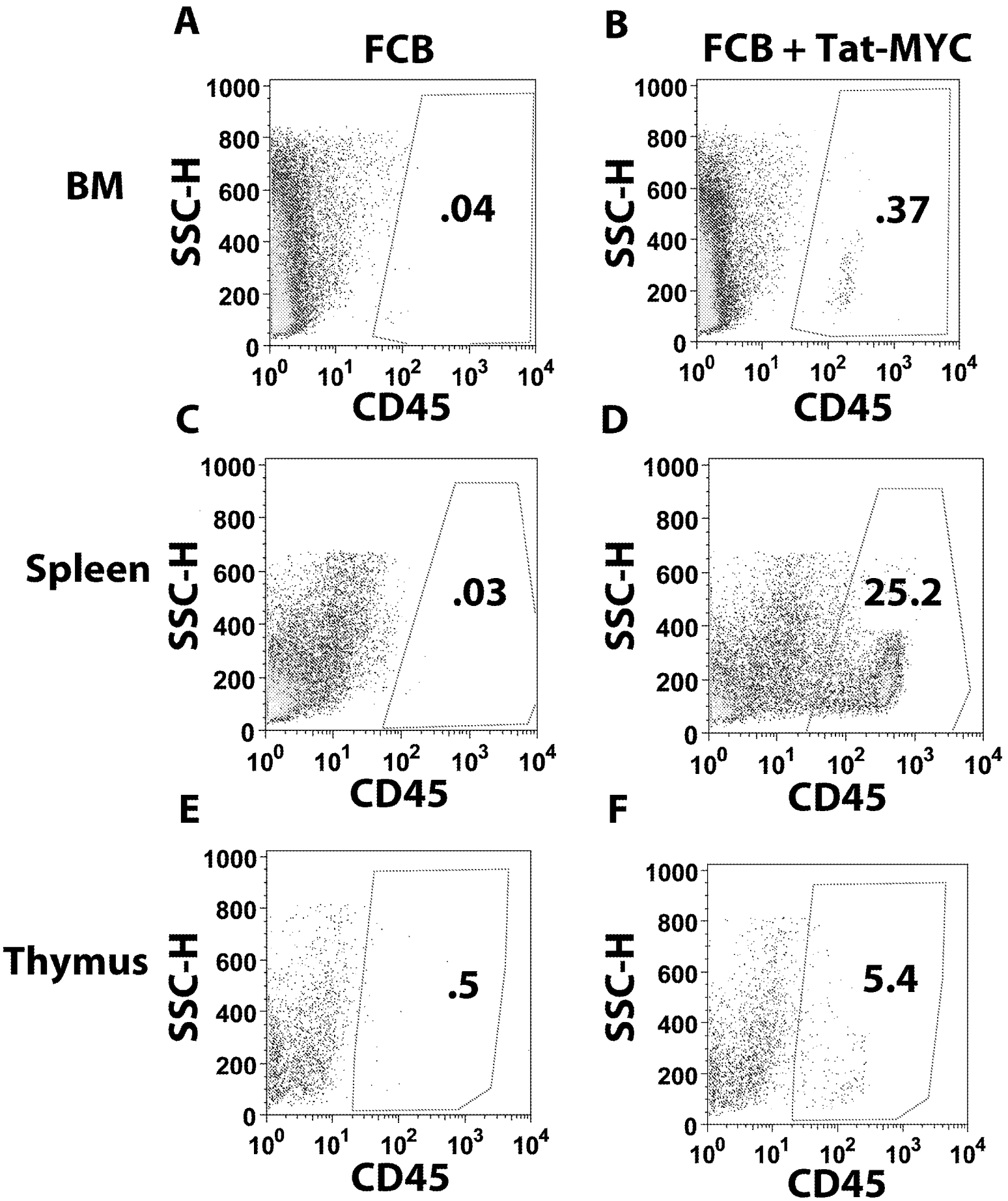

A
FCB
B
FCB + Tat-MYC
BM
SSC-H
CD45
.04
.37
C
D
Spleen
.03
25.2
E
F
Thymus
.5
5.4
1000
800
600
400
200
0
10^0
10^1
10^2
10^3
10^4

Figure 22

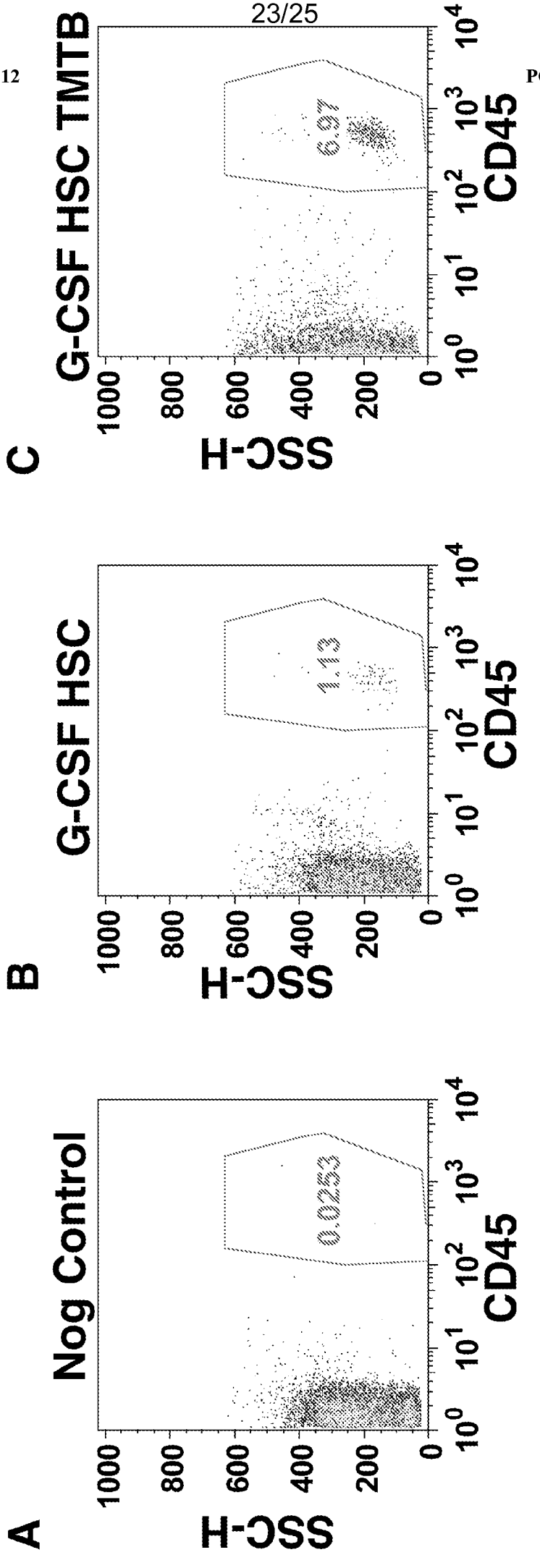

A
Nog Control
0.0253
SSC-H
CD45
B
G-CSF HSC
1.13
SSC-H
CD45
C
G-CSF HSC TMTB
6.97
SSC-H
CD45

Figure 23

TAT-MYC Amino Acid sequence (SEQ ID NO: 1)

MRKKRRQRRRMPLNVSFTNRNYDLDYDSVQPYFYCDEEENFYQQQQQSELQPP
APSEDIWKKFELLPTPPLSPSRRSGLCSPSYVAVTPFSLRGDNDGGGGSFSTADQL
EMVTELLGGDMVNQSFICDPDDETFIKNIIIQDCMWSGFSAAAKLVSEKLASYQA
ARKDSGSPNPARGHSVCSTSSLYLQDLSAAASECIDPSVVFPYPLNDSSSPKSCAS
QDSSAFSPSSDSLLSSTESSPQGSPEPLVLHEETPPTTSSDSEEEQEDEEEIDVVSVE
KRQAPGKRSESGSPSAGGHSKPPHSPLVLKRCHVSTHQHNYAAPPSTRKDYPAA
KRVKLDSVRVLRQISNNRKCTSPRSSDTEENVKRRTHNVLERQRRNELKRSFFAL
RDQIPELENNEKAPKVVILKKATAYILSVQAEEQKLISEEDLLRKRREQLKHKLEQ
LRKGELNSKLEGKPIPNPLLGLDSTRTGHHHHHH

Amino acids 2-10 are the HIV Tat protein transduction domain
Amino acids 11-454 are c-Myc
Amino acids 455-468 are the 14 amino acid V5 epitope
Amino acids 472-477 are the 6 Histidine tag

TAT-MYC Nucleotide sequence (SEQ ID NO: 2)

ATGAGGAAGAAGCGGAGACAGCGACGAAGAATGCCCCTCAACGTTAGCTTC
ACCAACAGGAACTATGACCTCGACTACGACTCGGTGCAGCCGTATTTCTACT
GCGACGAGGAGGAGAACTTCTACCAGCAGCAGCAGCAGAGCGAGCTGCAGC
CCCCGGCGCCCAGCGAGGATATCTGGAAGAAATTCGAGCTGCTGCCCACCCC
GCCCCTGTCCCCTAGCCGCCGCTCCGGGCTCTGCTCGCCCTCCTACGTTGCGG
TCACACCCTTCTCCCTTCGGGGAGACAACGACGGCGGTGGCGGGAGCTTCTC
CACGGCCGACCAGCTGGAGATGGTGACCGAGCTGCTGGGAGGAGACATGGT
GAACCAGAGTTTCATCTGCGACCCGGACGACGAGACCTTCATCAAAAACATC
ATCATCCAGGACTGTATGTGGAGCGGCTTCTCGGCCGCCGCCAAGCTCGTCTC
AGAGAAGCTGGCCTCCTACCAGGCTGCGCGCAAAGACAGCGGCAGCCCGAA
CCCCGCCCGCGGCCACAGCGTCTGCTCCACCTCCAGCTTGTACCTGCAGGATC
TGAGCGCCGCCGCCTCAGAGTGCATCGACCCCTCGGTGGTCTTCCCCTACCCT
CTCAACGACAGCAGCTCGCCCAAGTCCTGCGCCTCGCAAGACTCCAGCGCCT
TCTCTCCGTCCTCGGATTCTCTGCTCTCCTCGACGGAGTCCTCCCCGCAGGGC
AGCCCCGAGCCCCTGGTGCTCCATGAGGAGACACCGCCCACCACCAGCAGCG
ACTCTGAGGAGGAACAAGAAGATGAGGAAGAAATCGATGTTGTTTCTGTGGA
AAAGAGGCAGGCTCCTGGCAAAAGGTCAGAGTCTGGATCACCTTCTGCTGGA
GGCCACAGCAAACCTCCTCACAGCCCACTGGTCCTCAAGAGGTGCCACGTCT
CCACACATCAGCACAACTACGCAGCGCCTCCCTCCACTCGGAAGGACTATCC
TGCTGCCAAGAGGGTCAAGTTGGACAGTGTCAGAGTCCTGAGACAGATCAGC
AACAACCGAAAATGCACCAGCCCCAGGTCCTCGGACACCGAGGAGAATGTC
AAGAGGCGAACACACAACGTCTTGGAGCGCCAGAGGAGGAACGAGCTAAAA
CGGAGCTTTTTTGCCCTGCGTGACCAGATCCCGGAGTTGGAAAACAATGAAA
AGGCCCCCAAGGTAGTTATCCTTAAAAAAGCCACAGCATACATCCTGTCCGT
CCAAGCAGAGGAGCAAAAGCTCATTTCTGAAGAGGACTTGTTGCGGAAACGA

Figure 24

TAT-Bcl2Δ Amino Acid sequence (SEQ ID NO: 3)

MRKKRRQRRRMAHAGRSGYDNREIVMKYIHYKLSQRATSGISIEAAGPALSPVP
PVVHLTLRQAGDDFSRRYRRDFAEMSSQLHLTPFTARGCFATVVEELFRDGVNW
GRIVAFFEFGGVMCVESVNREMSPLVDNIALWMTEYLNRHLHTWIQDNGGWDA
FVELYGPSMRPLFDFSWLSLKTLLSLALVGACITLGAYLSHKKGELNSKLEGKPIP
NPLLGLDSTRTGHHHHHH

Amino acids 2-10 are the HIV Tat protein transduction domain

Amino acids 11-212 are Bcl2Δ

Amino acids 213-226 are the 14 amino acid V5 epitope

Amino acids 230-235 are the 6 Histidine tag

TAT-Bcl2Δ Nucleotide sequence (SEQ ID NO: 4)

atgaggaagaagcggagacagcgacgaagaatggcgcacgctgggagaagtggttacgataaccgggagatagtgatgaa
gtacatccattataagctgtcgcagagggctacgagtgggatctcgatcgaggccgcggggcctgcgctcagcccggtgccac
ctgtggtccacctgaccctccgccaggccggcgacgacttctcccgccgctaccgccgcgacttcgccgagatgtccagccag
ctgcacctgacgcccttcaccgcgcggggatgctttgccacggtggtggaggagctcttcagggacggggtgaactgggggga
ggattgtggccttctttgagttcggtggggtcatgtgtgtggagagcgtcaaccgggagatgtcgcccctggtggacaacatcgc
cctgtggatgactgagtacctgaaccggcacctgcacacctggatccaggataacggaggctgggatgcctttgtggaactgta
cggccccagcatgcggcctctgtttgatttctcctggctgtctctgaagactctgctcagtttggccctggtgggagcttgcatcac
cctgggtgcctatctgagccacaagaagggcgagctcaattcgaagcttgaaggtaagcctatccctaaccctctcctcggtctc
gattctacgcgtaccggtcatcatcaccatcaccattga

Figure 25