

Fig. 1A

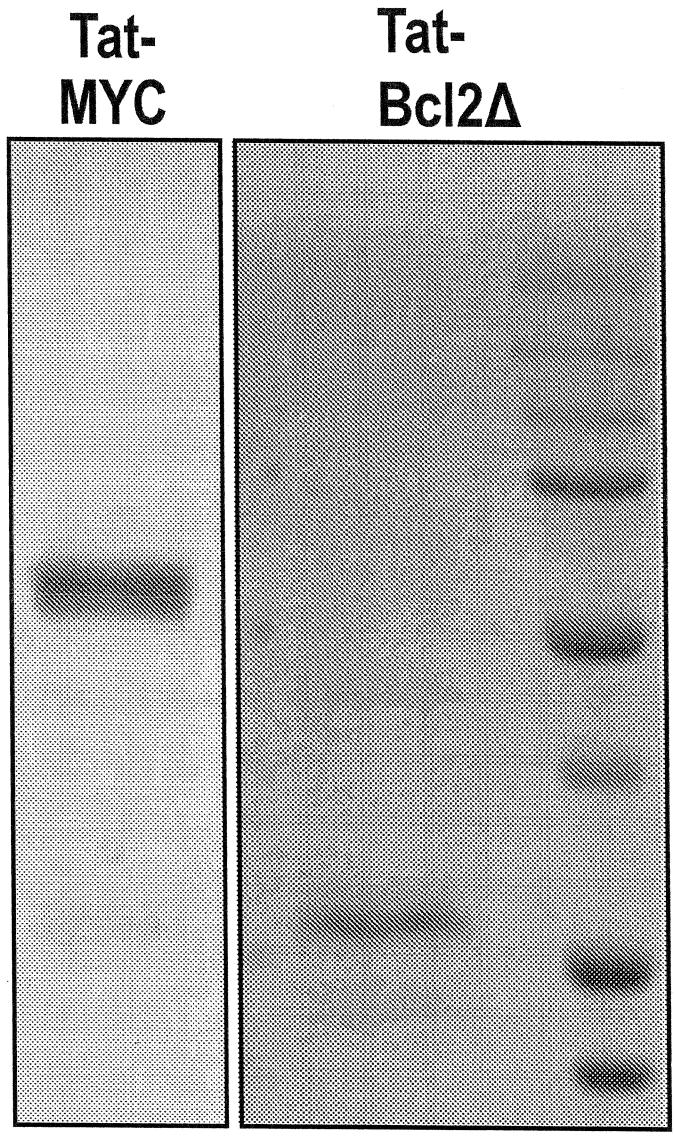


Fig. 1B

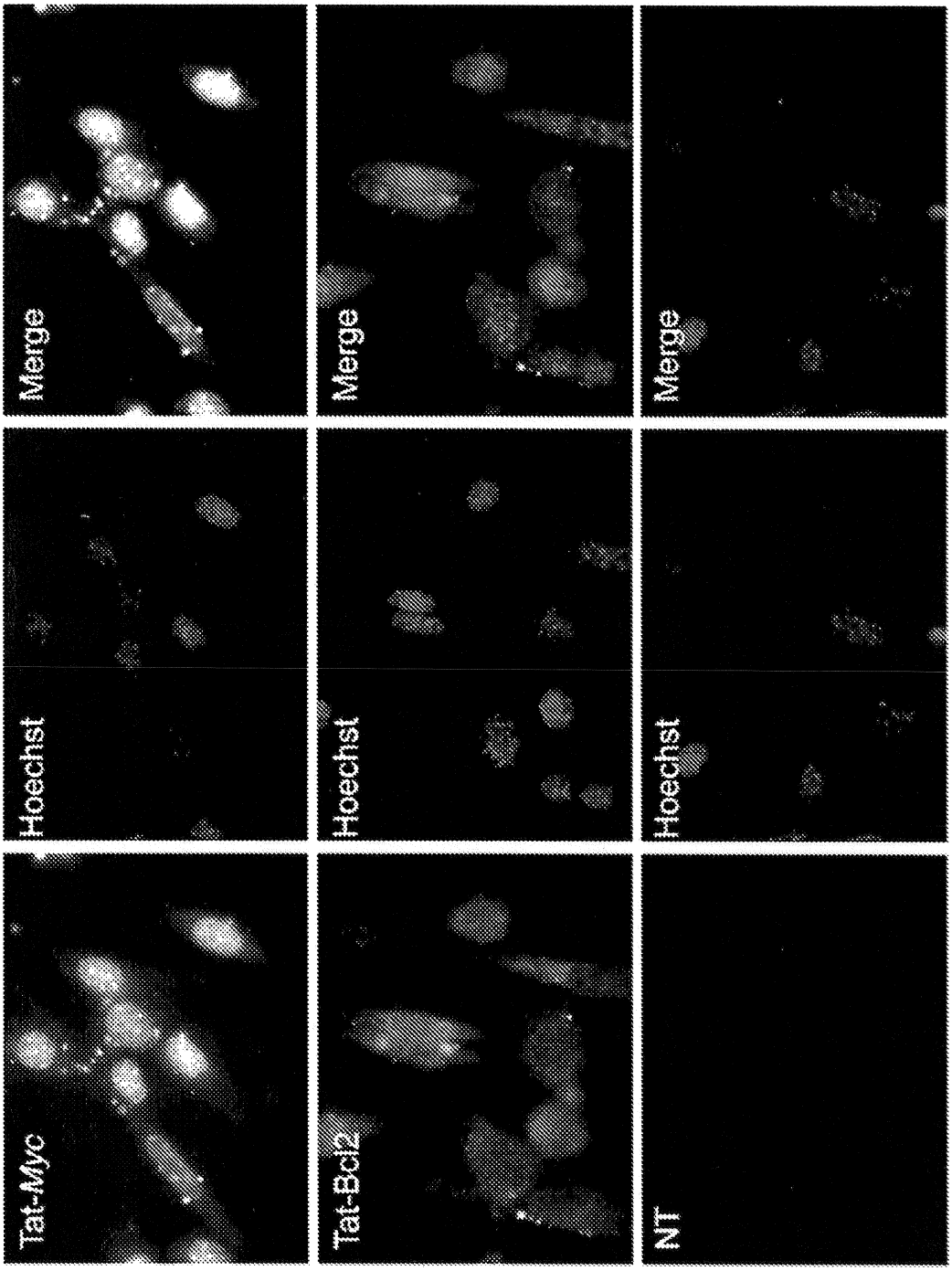

Tat-Myc
Hoechst
Merge
Tat-Bcl2
Hoechst
Merge
NT
Hoechst
Merge

Fig. 1C

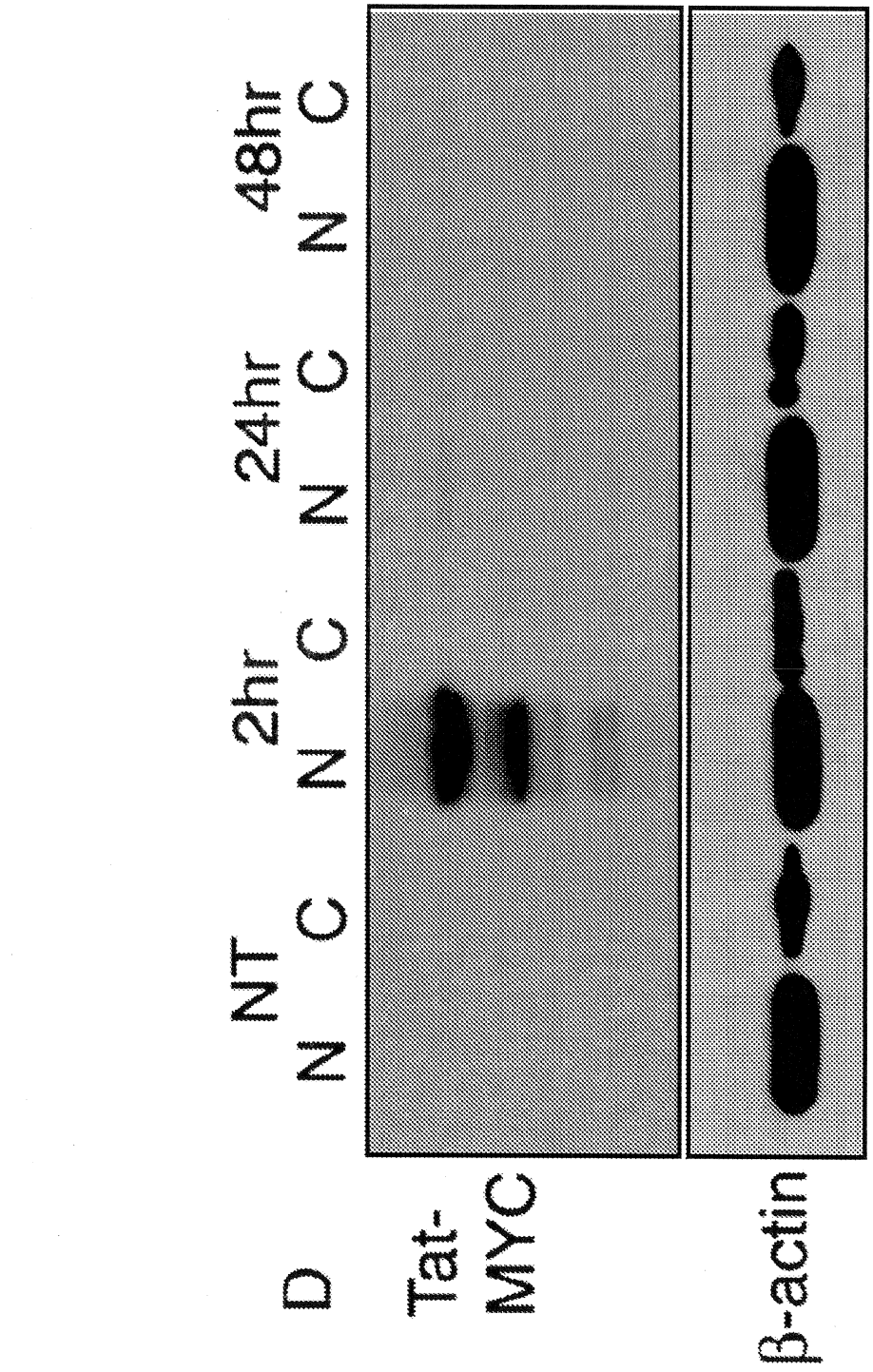


Fig. 1D

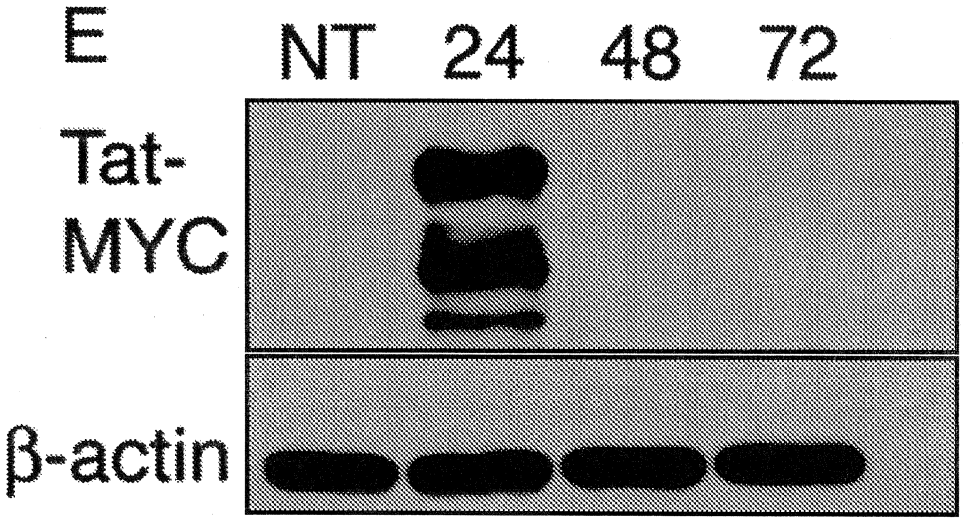


Fig. 1E

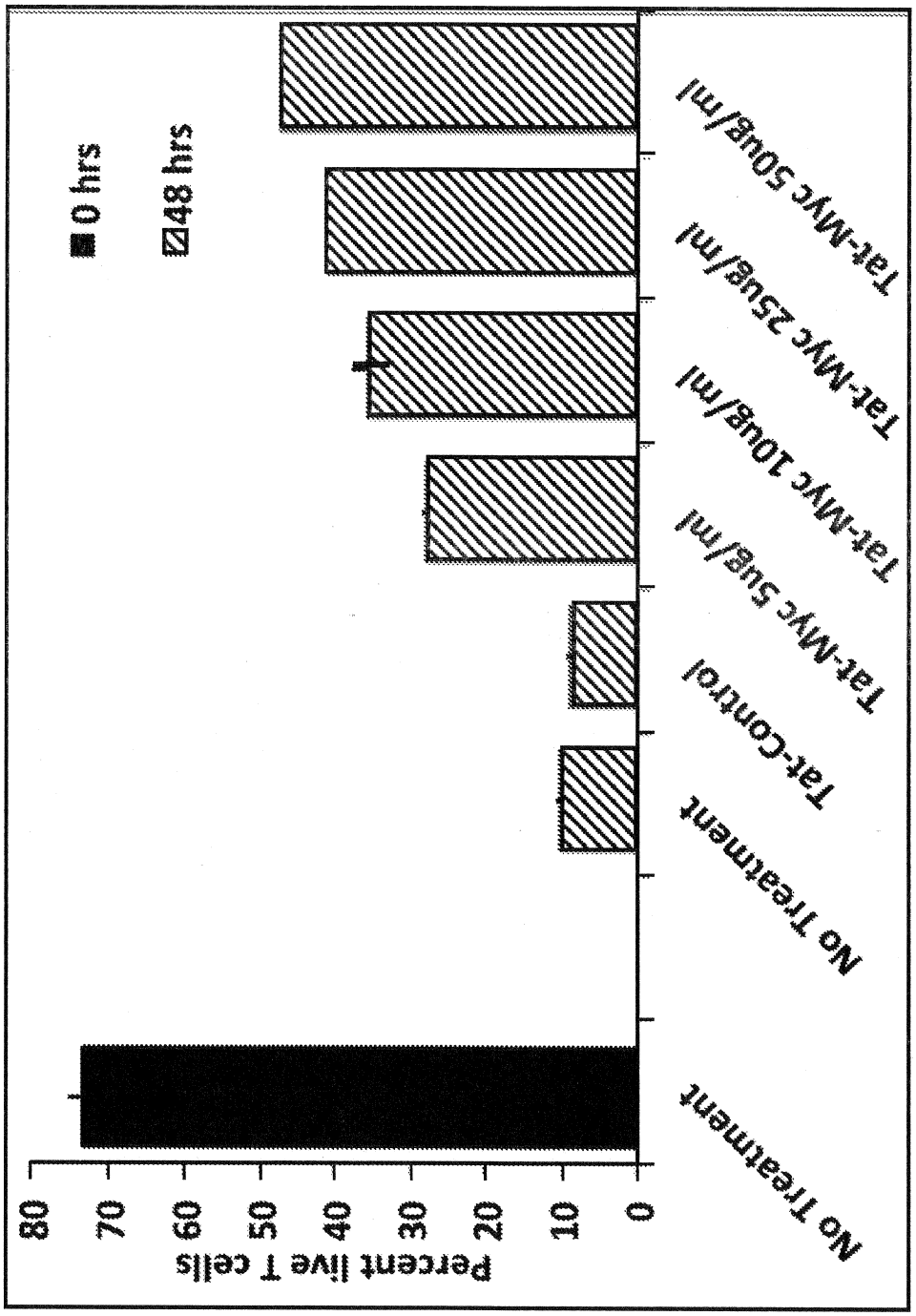

Percent live T cells
0
10
20
30
40
50
60
70
80
0 hrs
48 hrs
No Treatment
No Treatment
Tat-Control
Tat-MVc 5ug/ml
Tat-MVc 10ug/ml
Tat-MVc 25ug/ml
Tat-MVc 50ug/ml

Fig. 2A

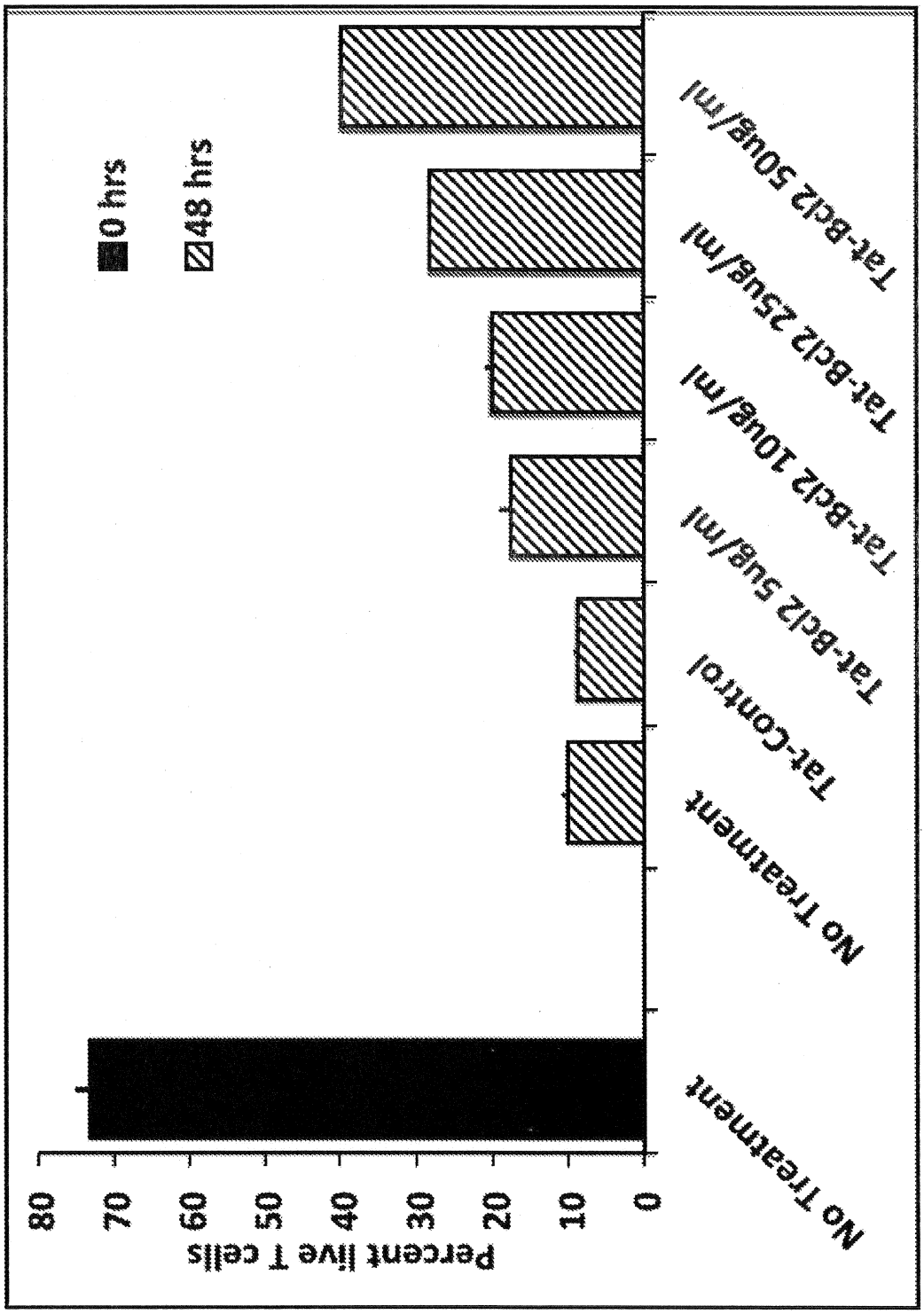

Percent live T cells
0
10
20
30
40
50
60
70
80
0 hrs
48 hrs
No Treatment
No Treatment
Tat-Control
Tat-Bcl2 5ug/ml
Tat-Bcl2 10ug/ml
Tat-Bcl2 25ug/ml
Tat-Bcl2 50ug/ml

Fig. 2B

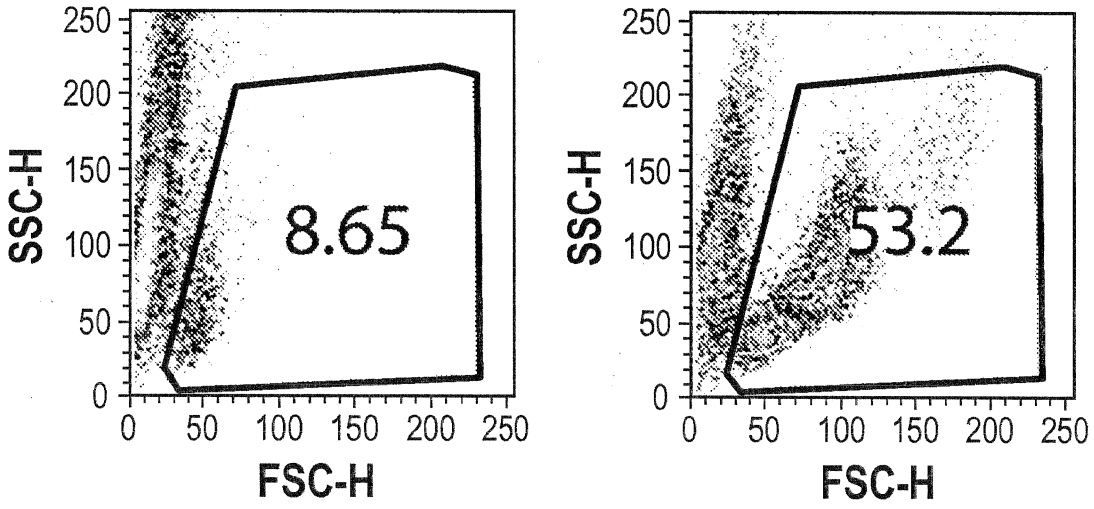


Fig. 2C

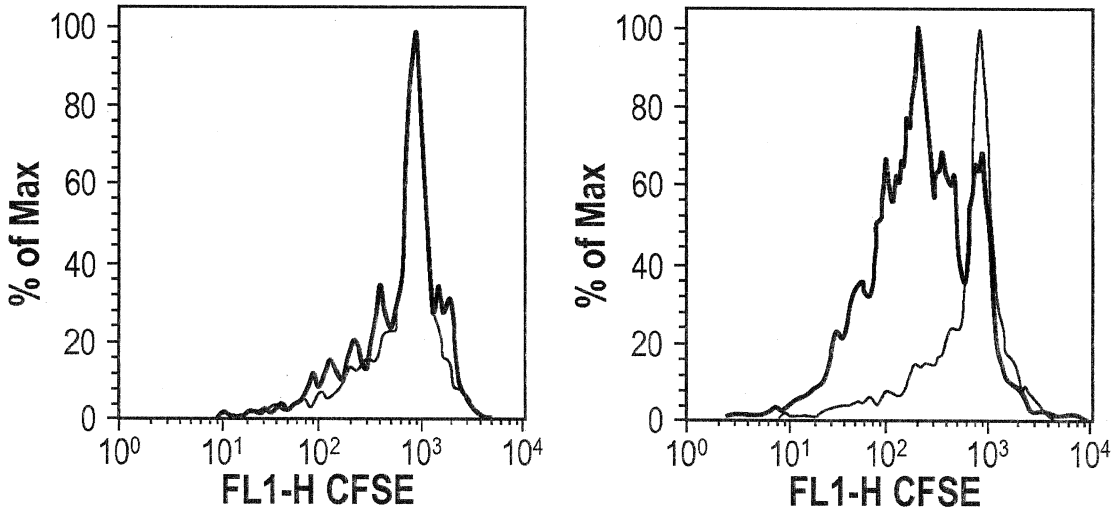

100
80
60
40
20
0
% of Max
10^0
10^1
10^2
10^3
10^4
FL1-H CFSE
100
80
60
40
20
0
% of Max
10^0
10^1
10^2
10^3
10^4
FL1-H CFSE

Fig. 2D

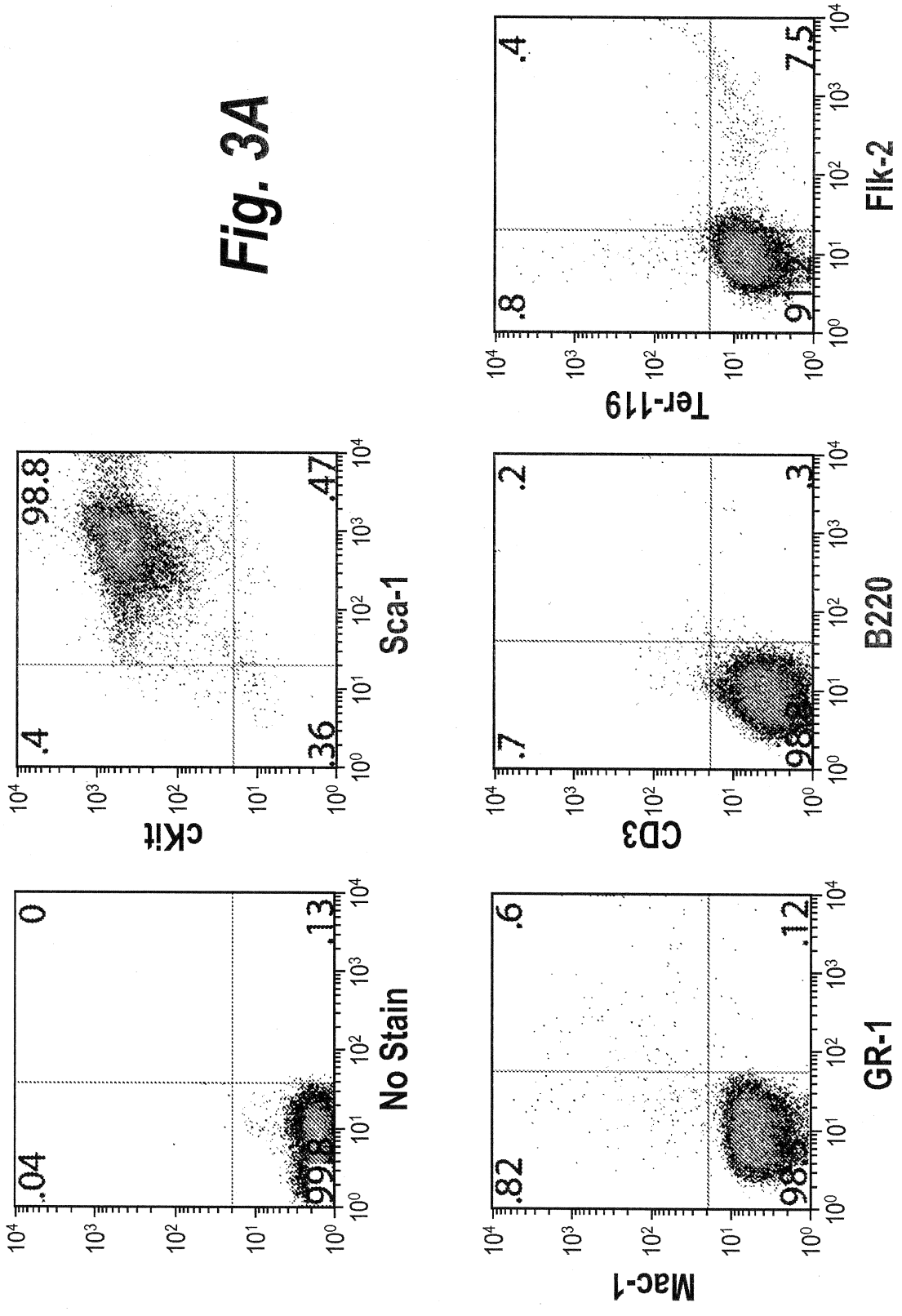

No Stain
.04
0
99.8
.13
cKit
.4
98.8
.36
.47
Sca-1
GR-1
.82
.6
98.
.12
Mac-1
CD3
.7
.2
98.9
.3
B220
Ter-119
.8
.4
91
7.5
Flk-2

Fig. 3A

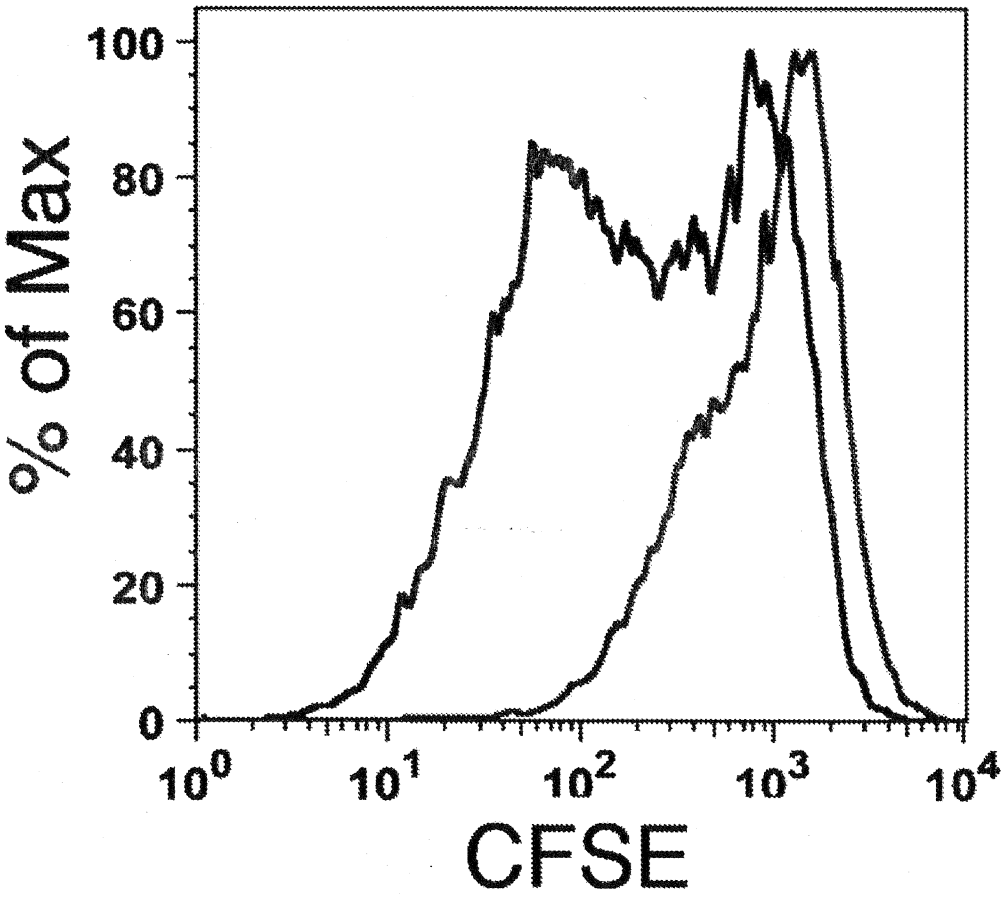


Fig. 3B

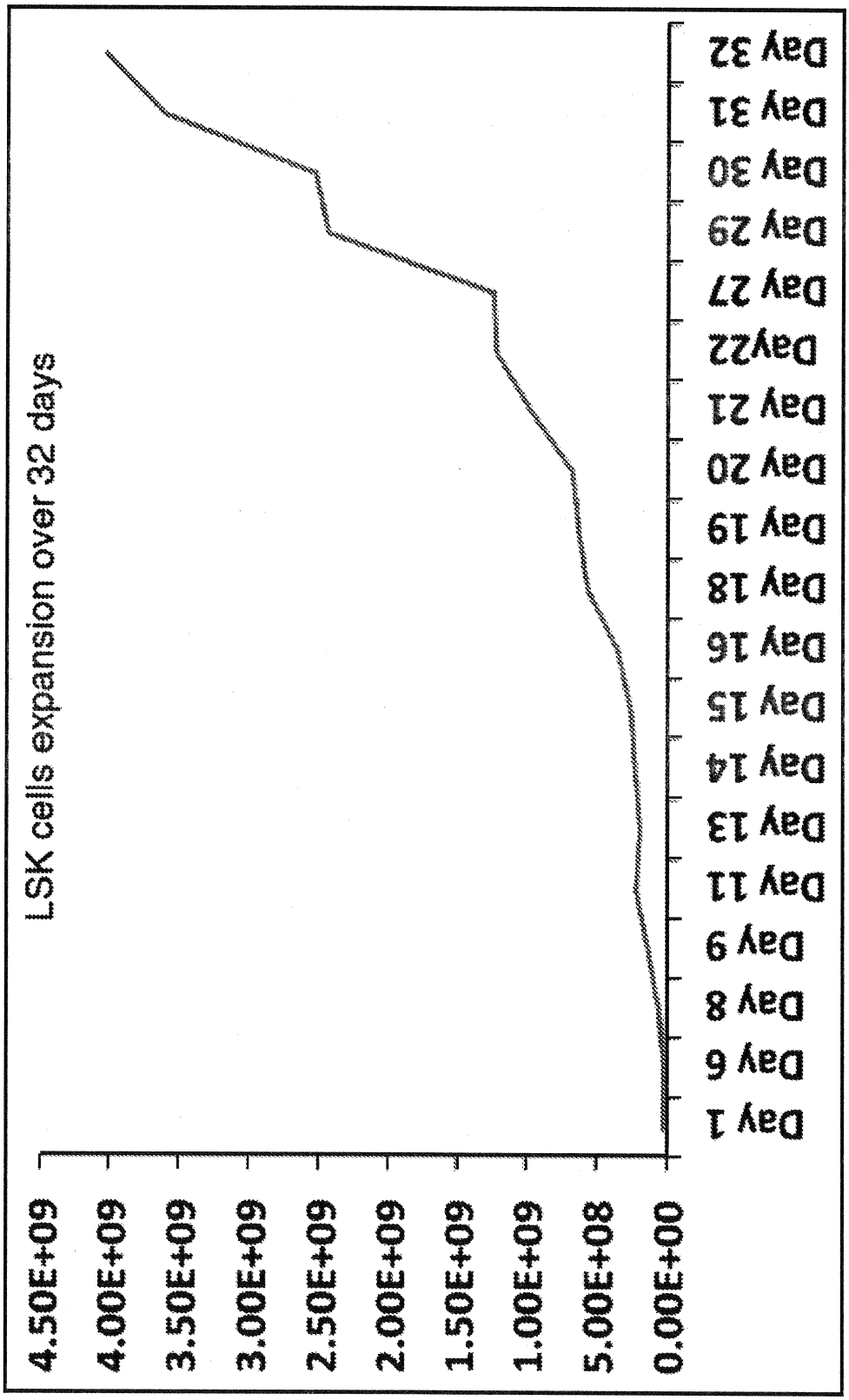

LSK cells expansion over 32 days
4.50E+09
4.00E+09
3.50E+09
3.00E+09
2.50E+09
2.00E+09
1.50E+09
1.00E+09
5.00E+08
0.00E+00
Day 1
Day 6
Day 8
Day 9
Day 11
Day 13
Day 14
Day 15
Day 16
Day 18
Day 19
Day 20
Day 21
Day22
Day 27
Day 29
Day 30
Day 31
Day 32

Fig. 3C

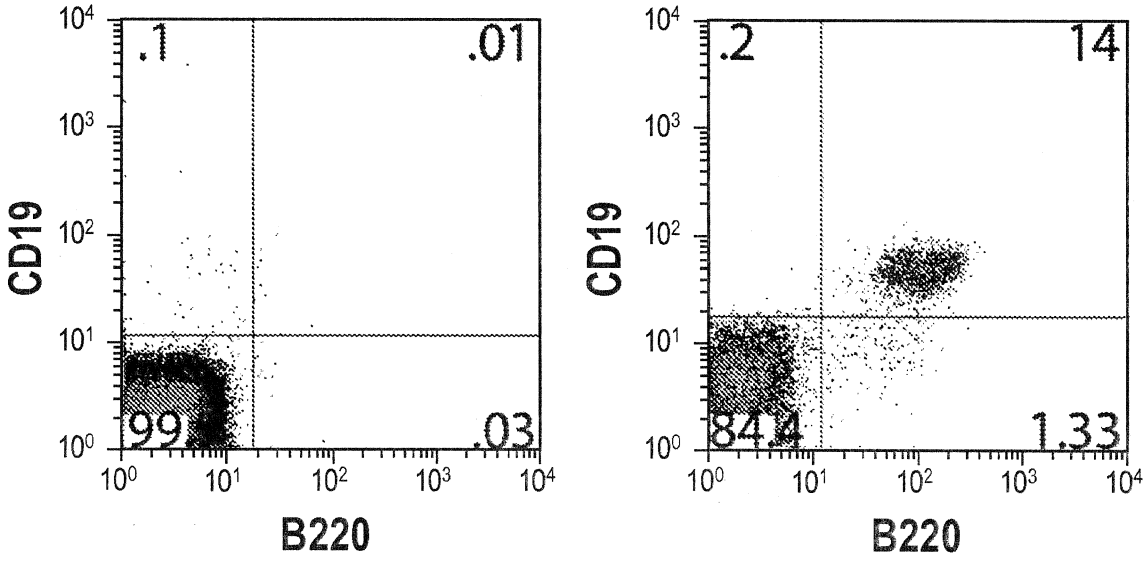


Fig. 4A

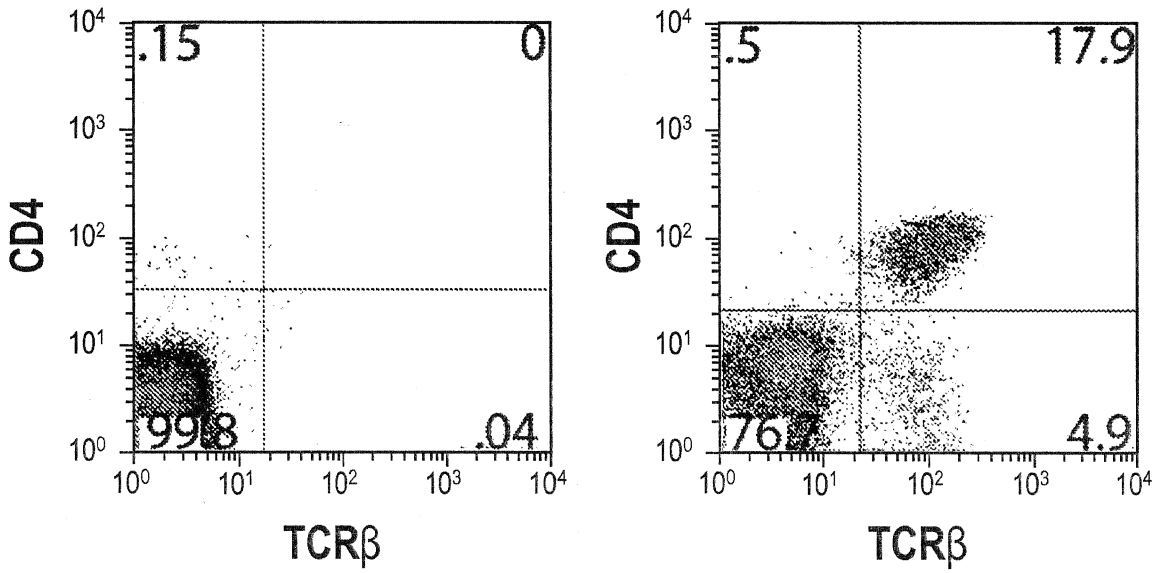


Fig. 4B

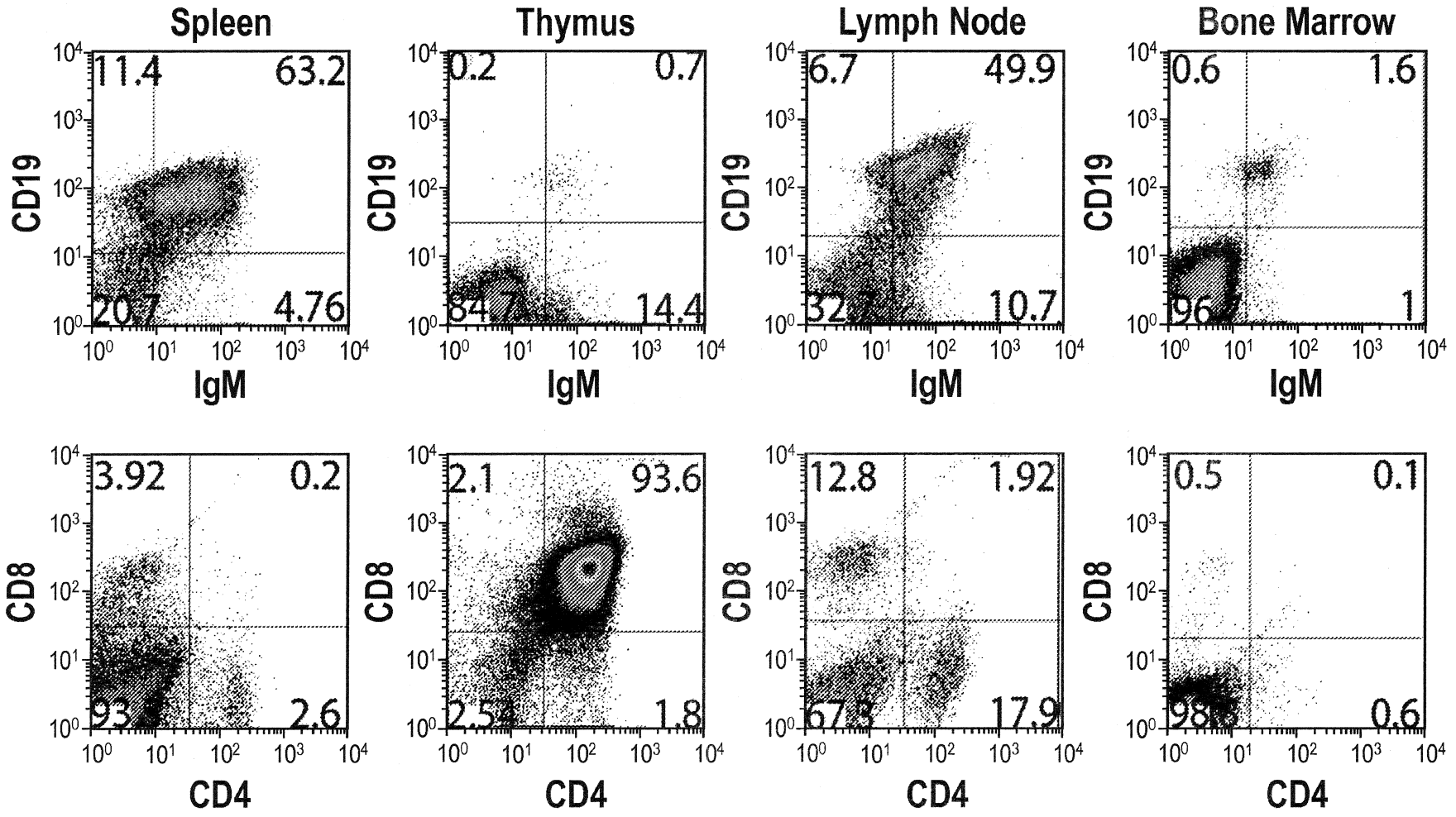

Spleen
Thymus
Lymph Node
Bone Marrow
CD19
IgM
CD8
CD4
11.4
63.2
20.7
4.76
0.2
0.7
84.7
14.4
6.7
49.9
32.7
10.7
0.6
1.6
96.7
1
3.92
0.2
93
2.6
2.1
93.6
2.5
1.8
12.8
1.92
67.3
17.9
0.5
0.1
98.5
0.6

Fig. 4C

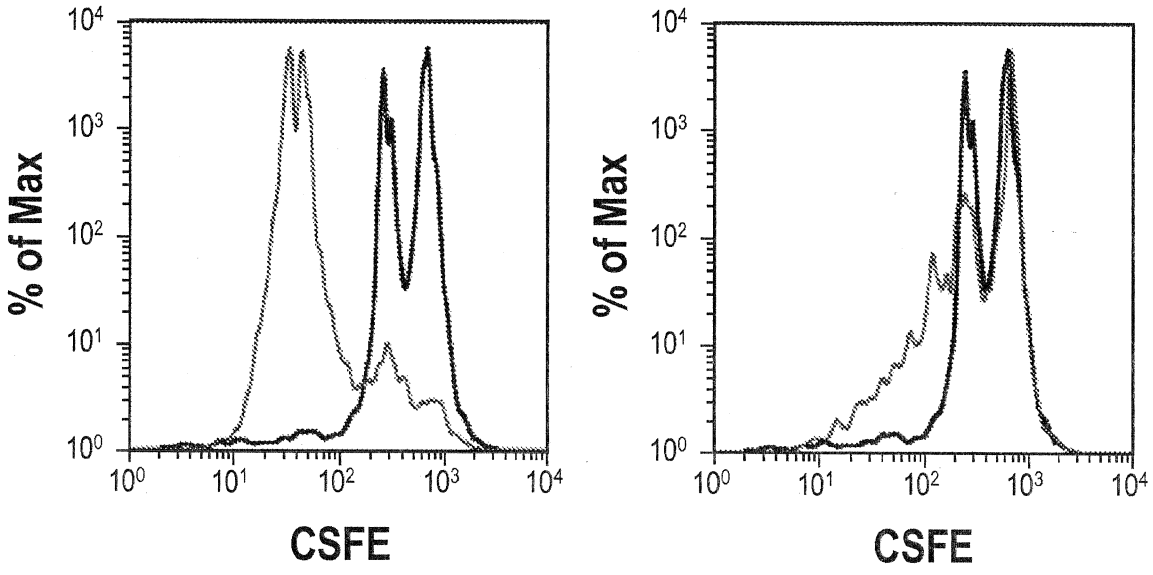


Fig. 4D

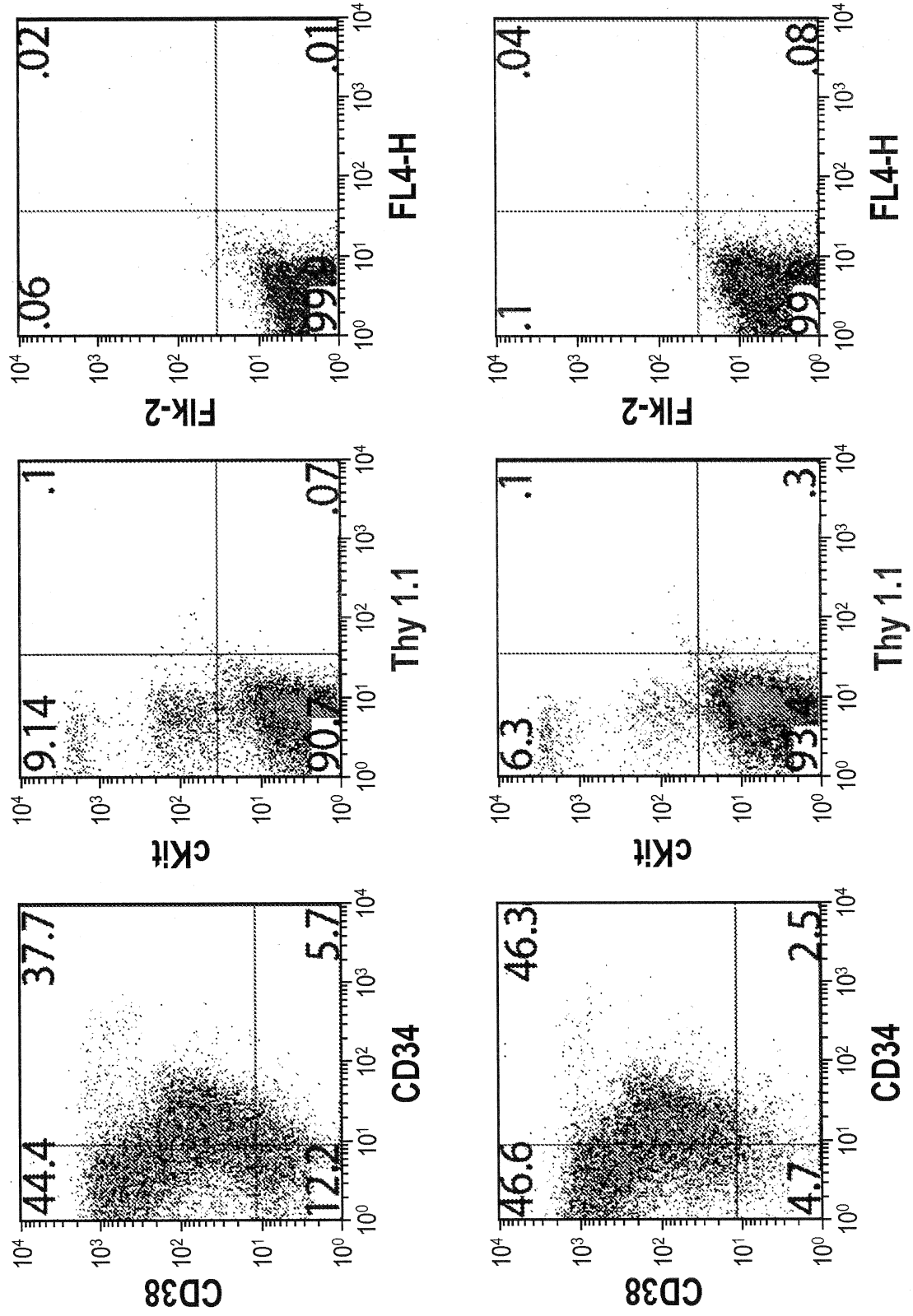

CD38
CD34
44.4
37.7
12.2
5.7
46.6
46.3
4.7
2.5
cKit
Thy 1.1
9.14
.1
90.7
.07
6.3
.1
93.4
.3
Flk-2
FL4-H
.06
.02
99.6
.01
.1
.04
99.1
.08

Fig. 5A

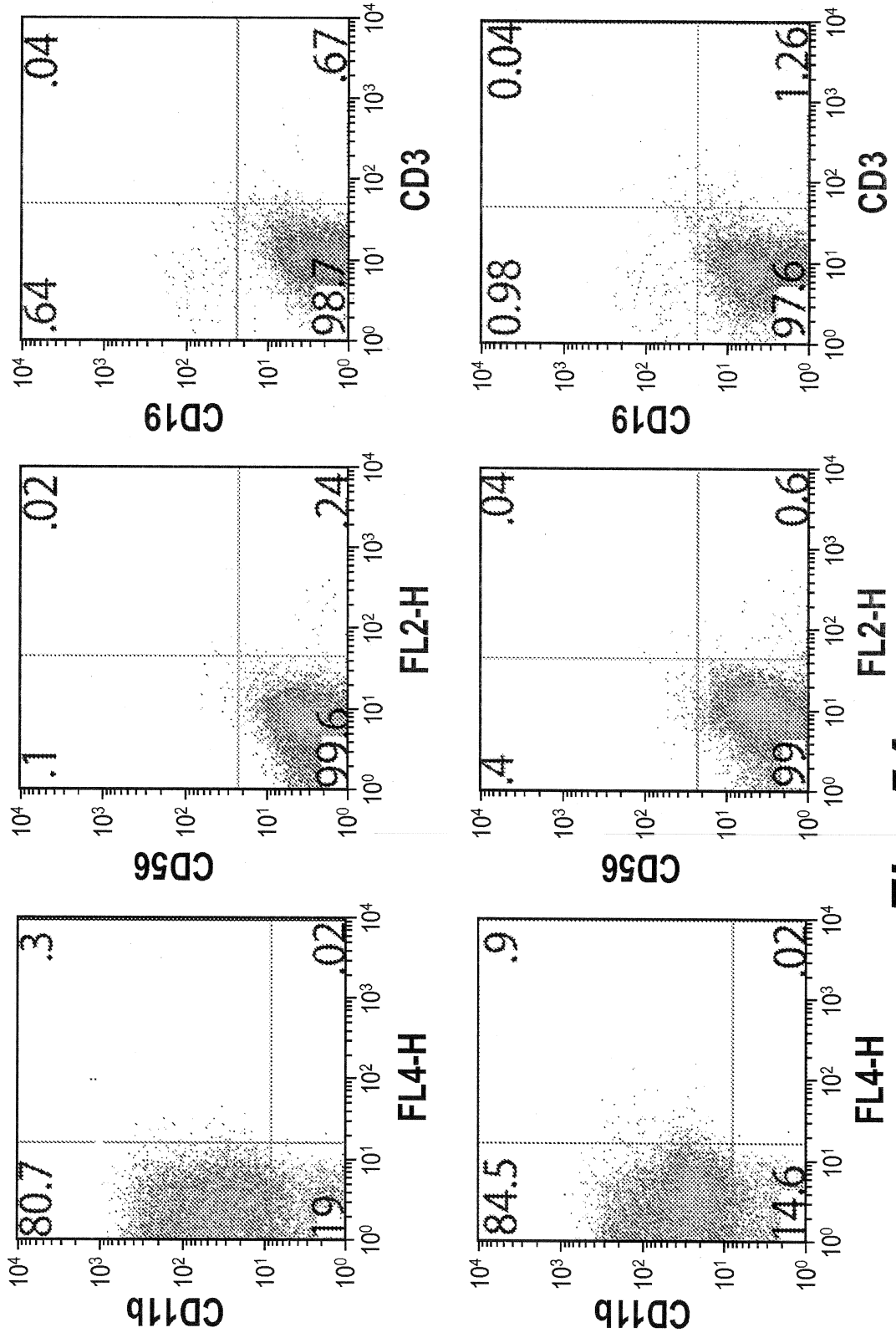

CD19
CD3
.64
.04
98.7
.67
CD56
FL2-H
.1
.02
99.6
.24
CD11b
FL4-H
80.7
.3
19
.02
CD19
CD3
0.98
0.04
97.6
1.26
CD56
FL2-H
.4
.04
99
0.6
CD11b
FL4-H
84.5
.9
14.6
.02

Fig. 5A
(Cont.)

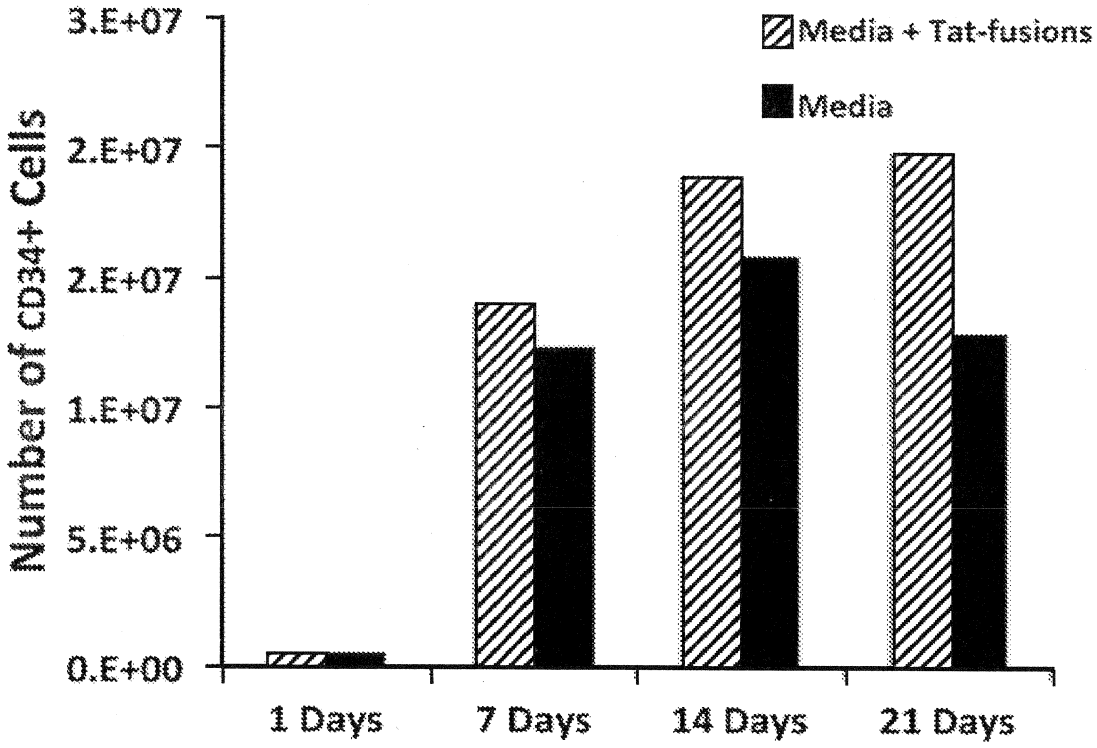

3.E+07
2.E+07
2.E+07
1.E+07
5.E+06
0.E+00
Number of CD34+ Cells
Media + Tat-fusions
Media
1 Days
7 Days
14 Days
21 Days

Fig. 5B

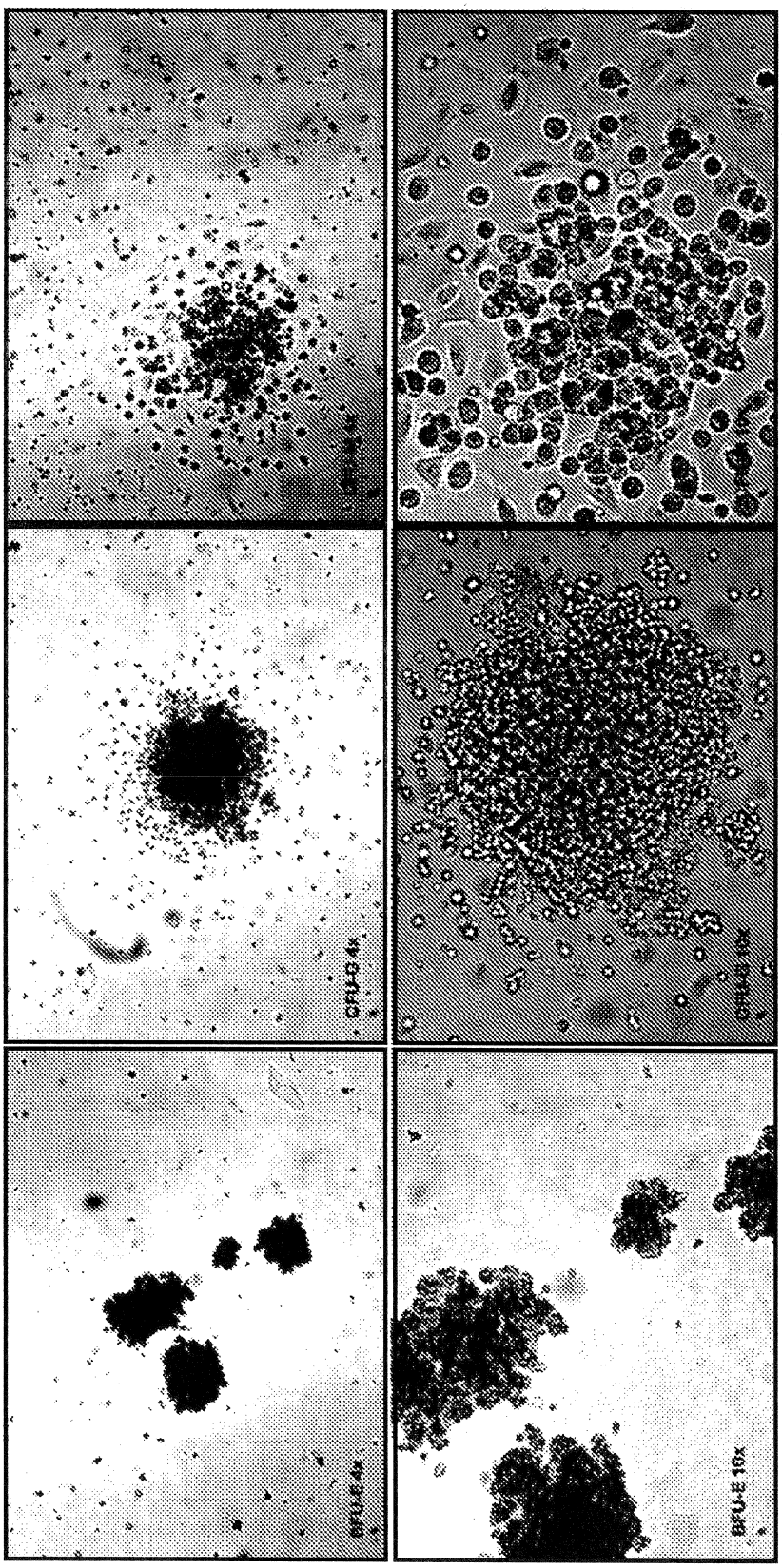


Fig. 5C

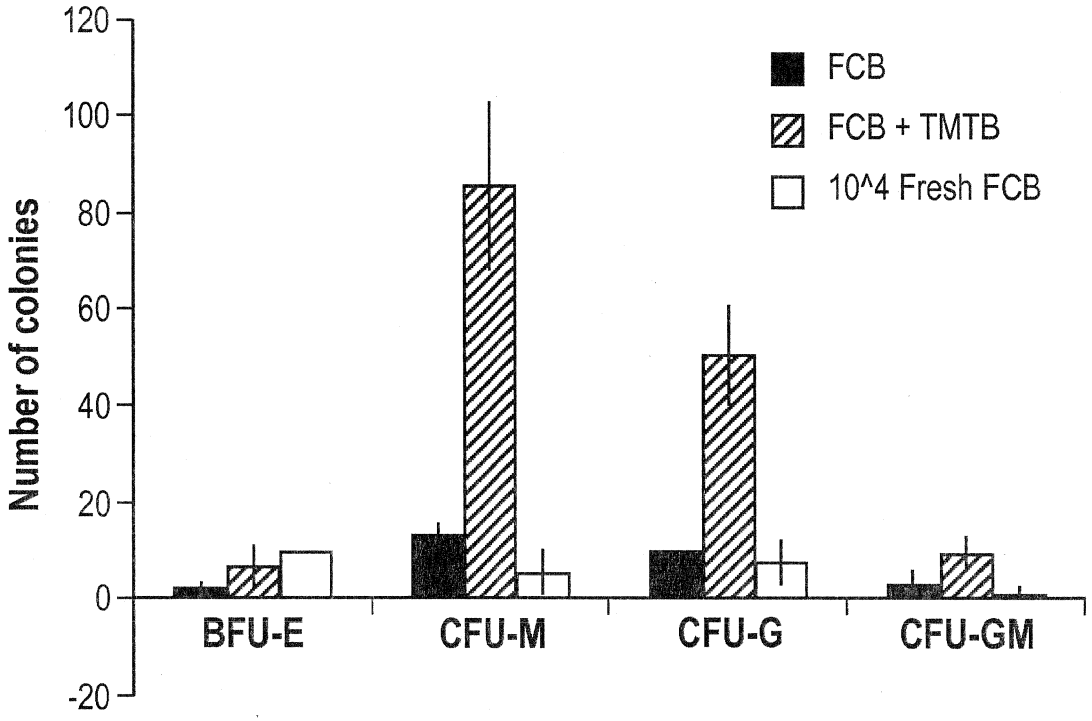

120
100
80
60
40
20
0
-20
Number of colonies
FCB
FCB + TMTB
10^4 Fresh FCB
BFU-E
CFU-M
CFU-G
CFU-GM

Fig. 5D

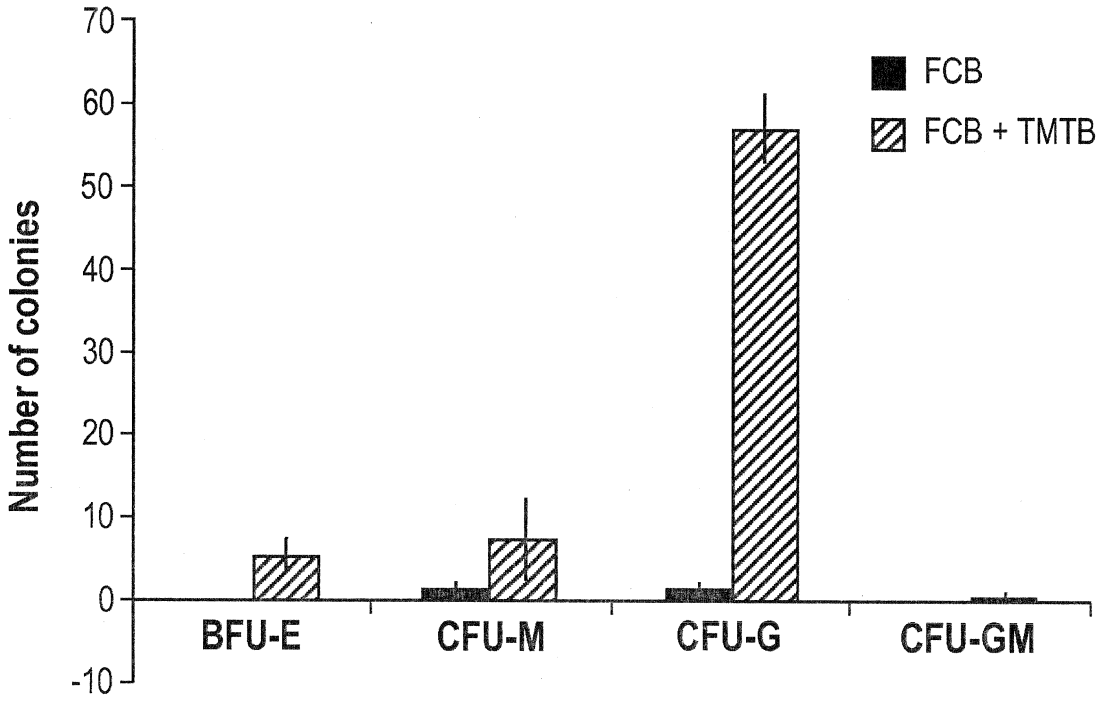

70
60
50
40
30
20
10
0
-10
Number of colonies
FCB
FCB + TMTB
BFU-E
CFU-M
CFU-G
CFU-GM

Fig. 5E

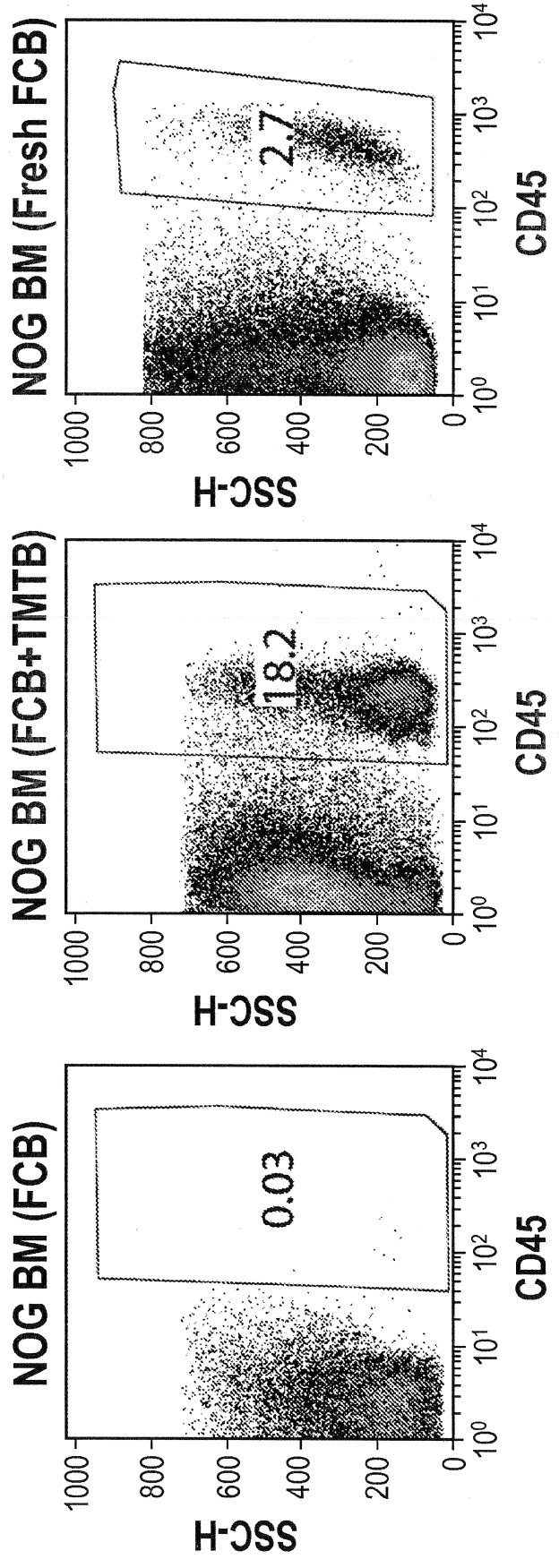

NOG BM (FCB)
NOG BM (FCB+TMTB)
NOG BM (Fresh FCB)
SSC-H
CD45
0.03
18.2
2.7
0
200
400
600
800
1000
10^0
10^1
10^2
10^3
10^4

Fig. 6A

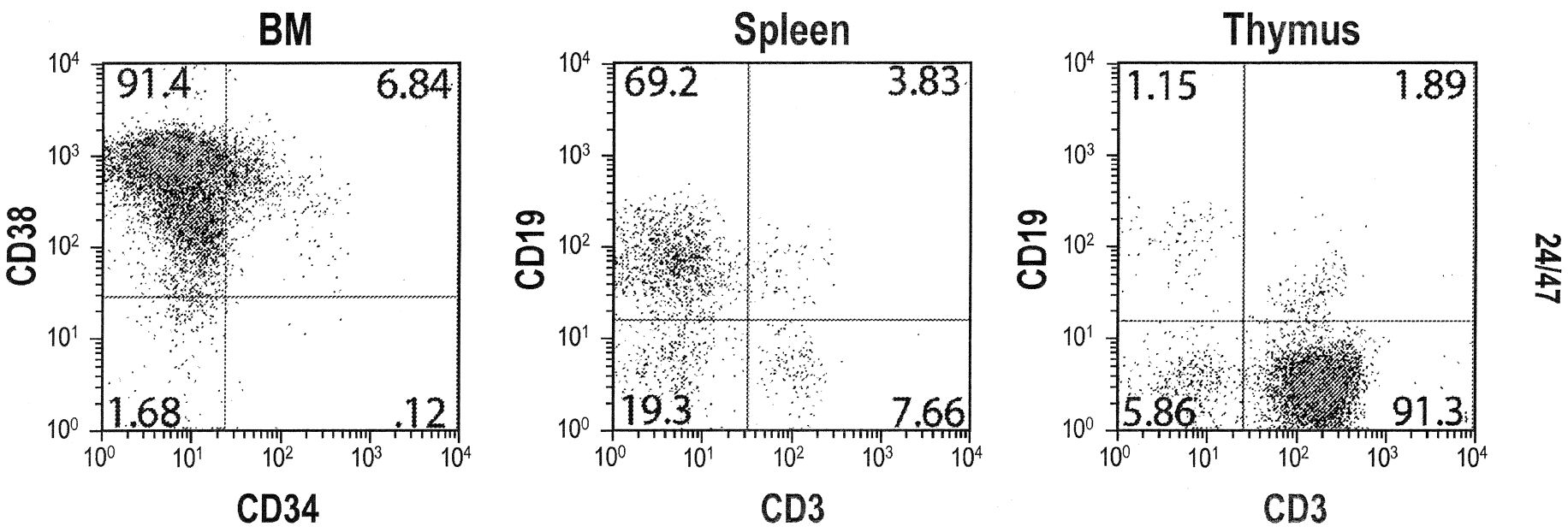

BM
Spleen
Thymus
CD38
CD19
CD19
CD34
CD3
CD3
91.4
6.84
1.68
.12
69.2
3.83
19.3
7.66
1.15
1.89
5.86
91.3
10^0
10^1
10^2
10^3
10^4

Fig. 6B

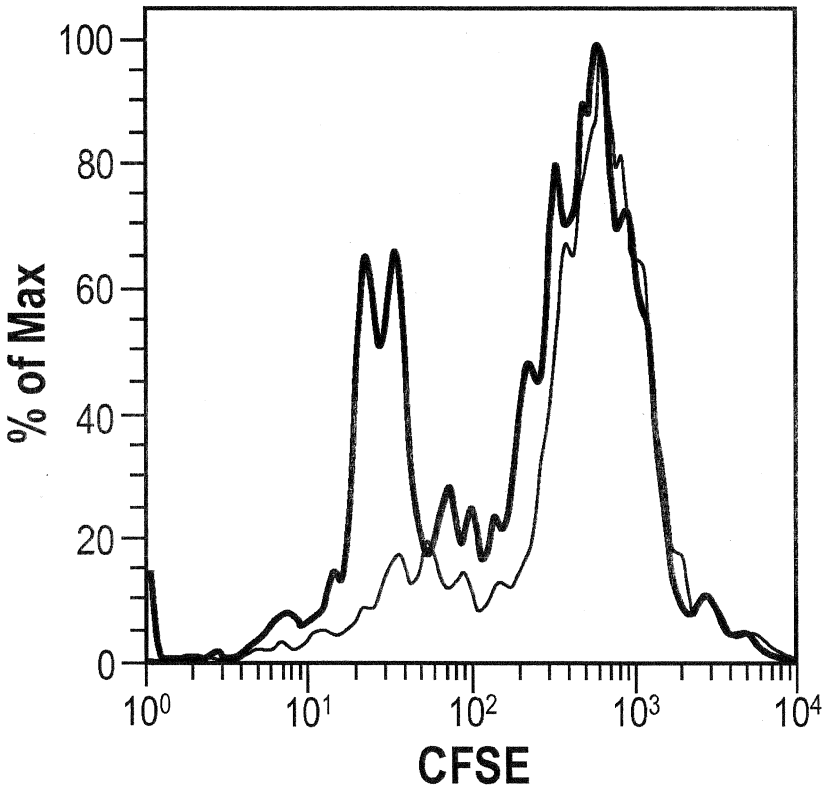


Fig. 6C

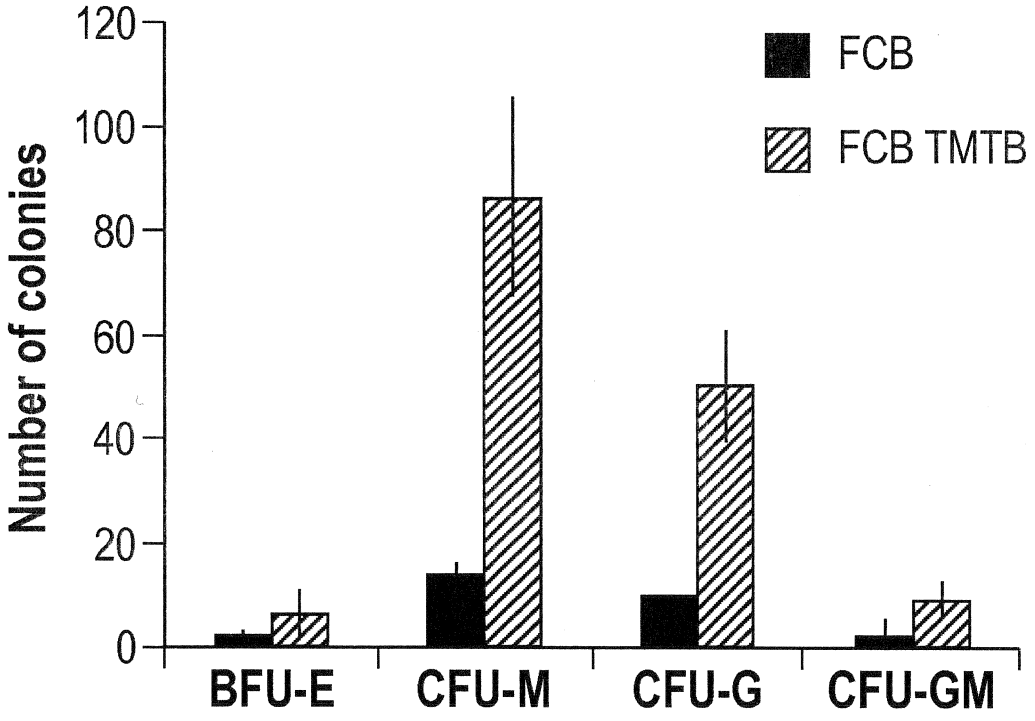

120
100
80
60
40
20
0
Number of colonies
FCB
FCB TMTB
BFU-E
CFU-M
CFU-G
CFU-GM

Fig. 6D

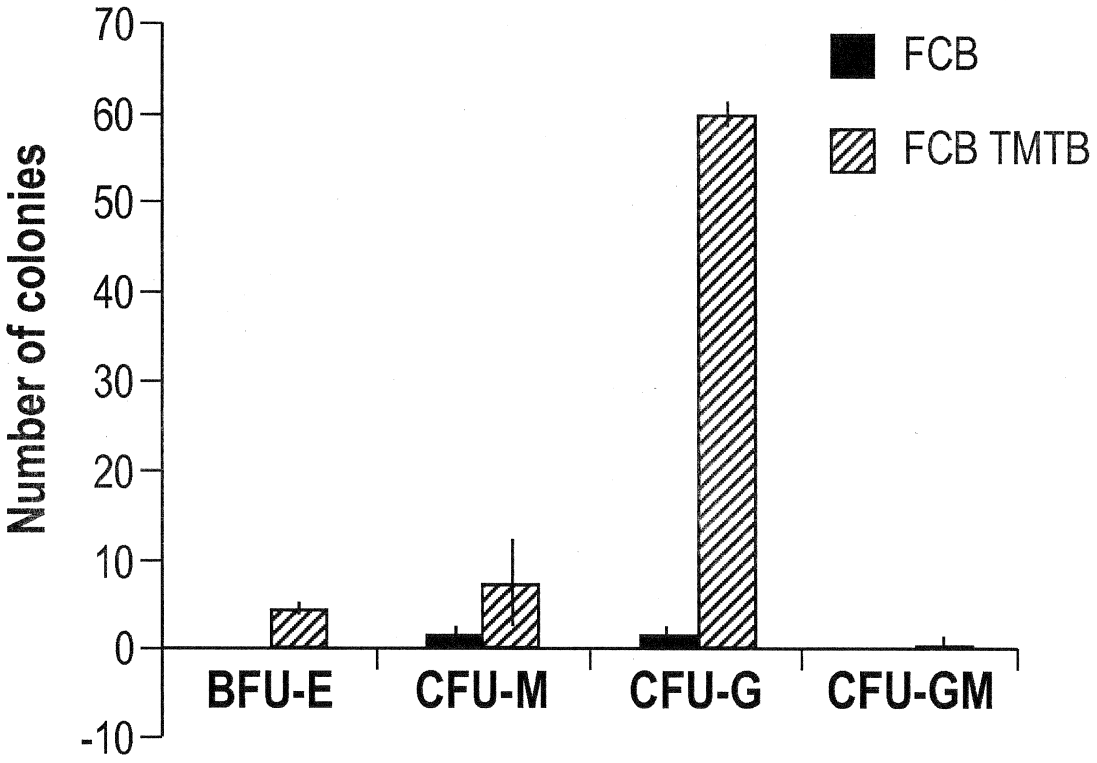

70
60
50
40
30
20
10
0
-10
Number of colonies
FCB
FCB TMTB
BFU-E
CFU-M
CFU-G
CFU-GM

Fig. 6E

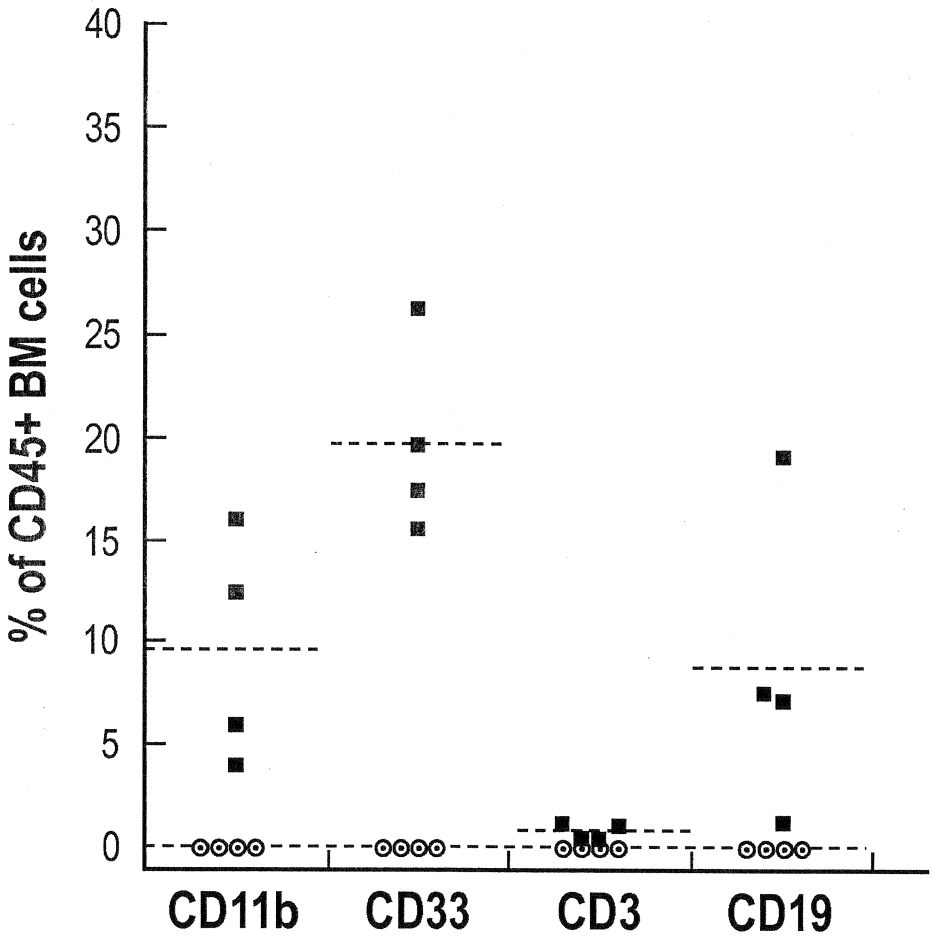


Fig. 6F

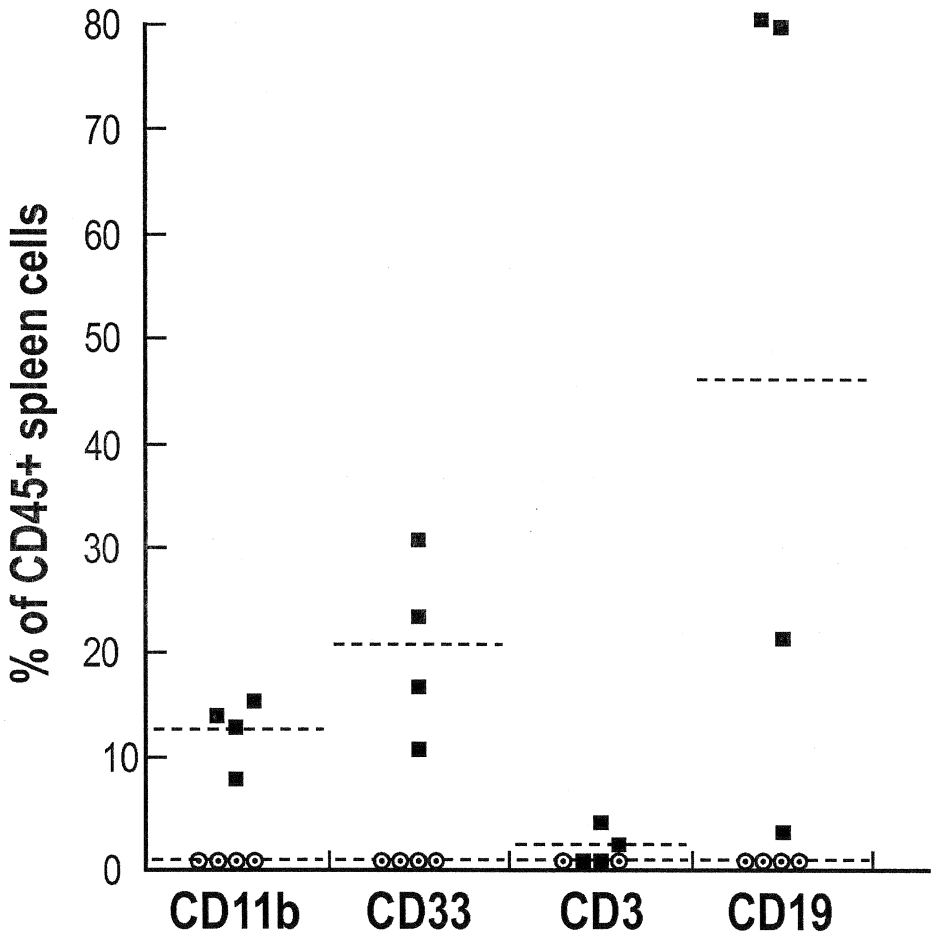

80
70
60
50
40
30
20
10
0
% of CD45+ spleen cells
CD11b
CD33
CD3
CD19

Fig. 6G

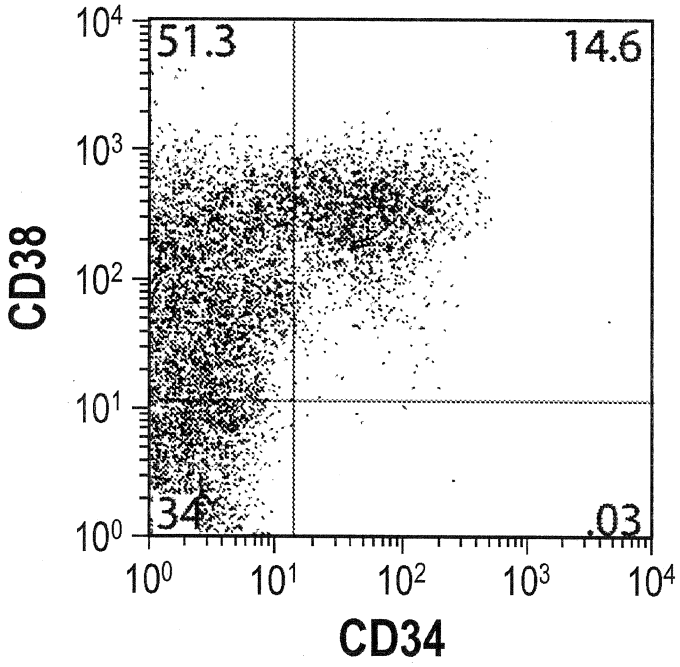


Fig. 7A

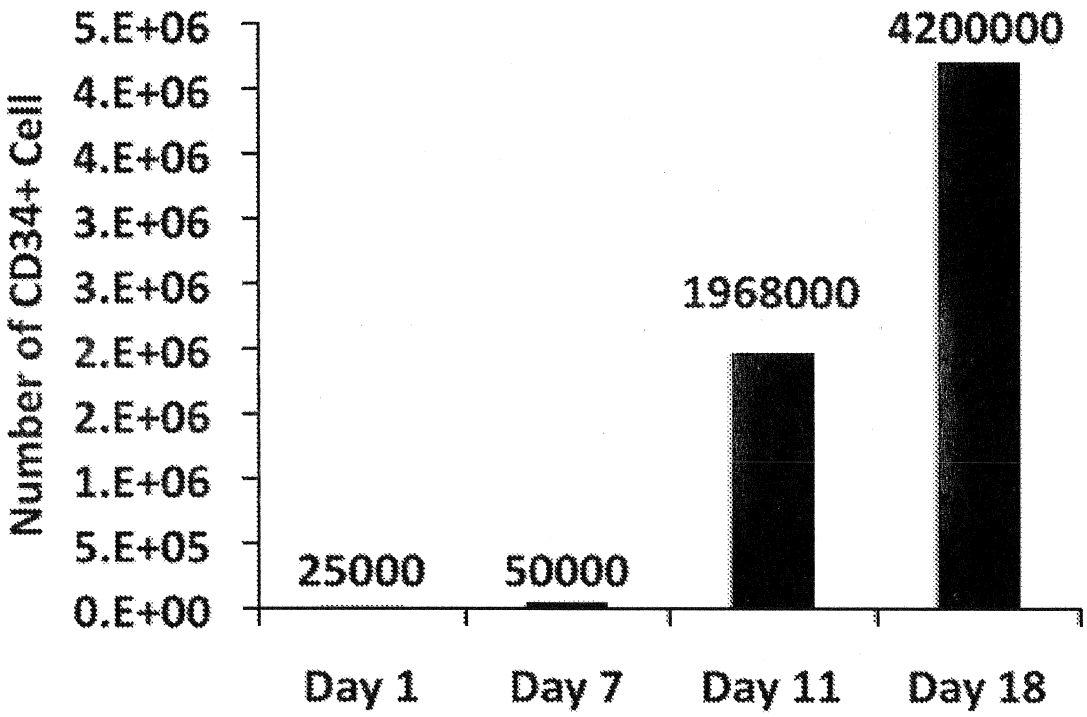

Number of CD34+ Cell
5.E+06
4.E+06
4.E+06
3.E+06
3.E+06
2.E+06
2.E+06
1.E+06
5.E+05
0.E+00
25000
50000
1968000
4200000
Day 1
Day 7
Day 11
Day 18

Fig. 7B

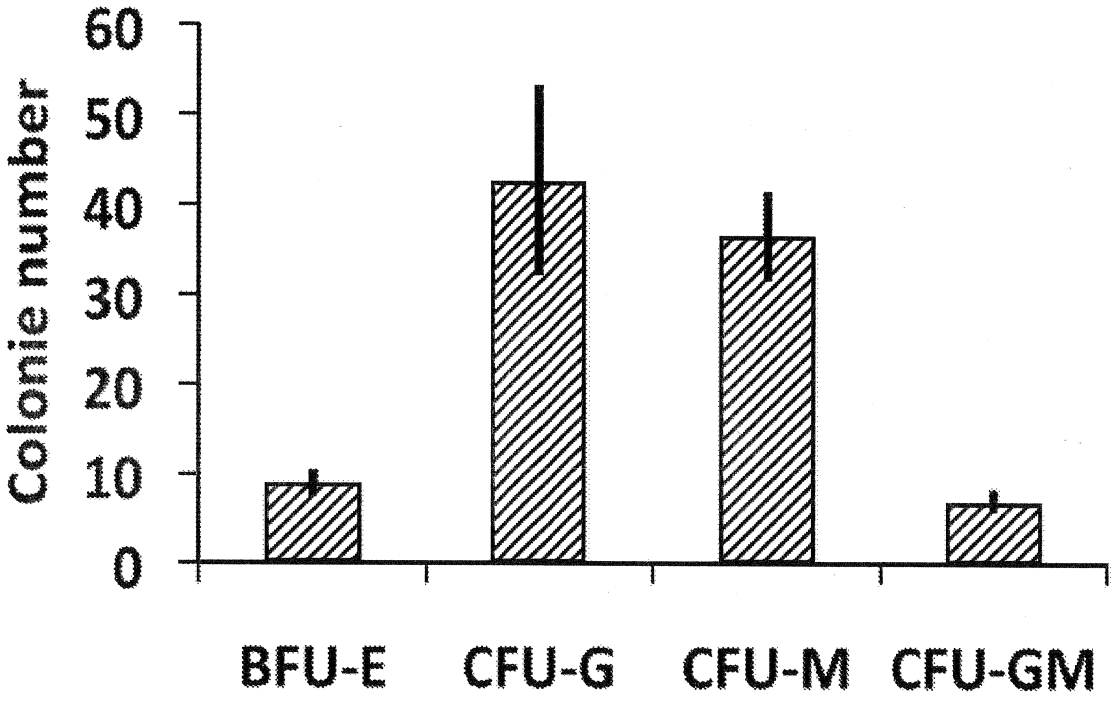


Fig. 7C

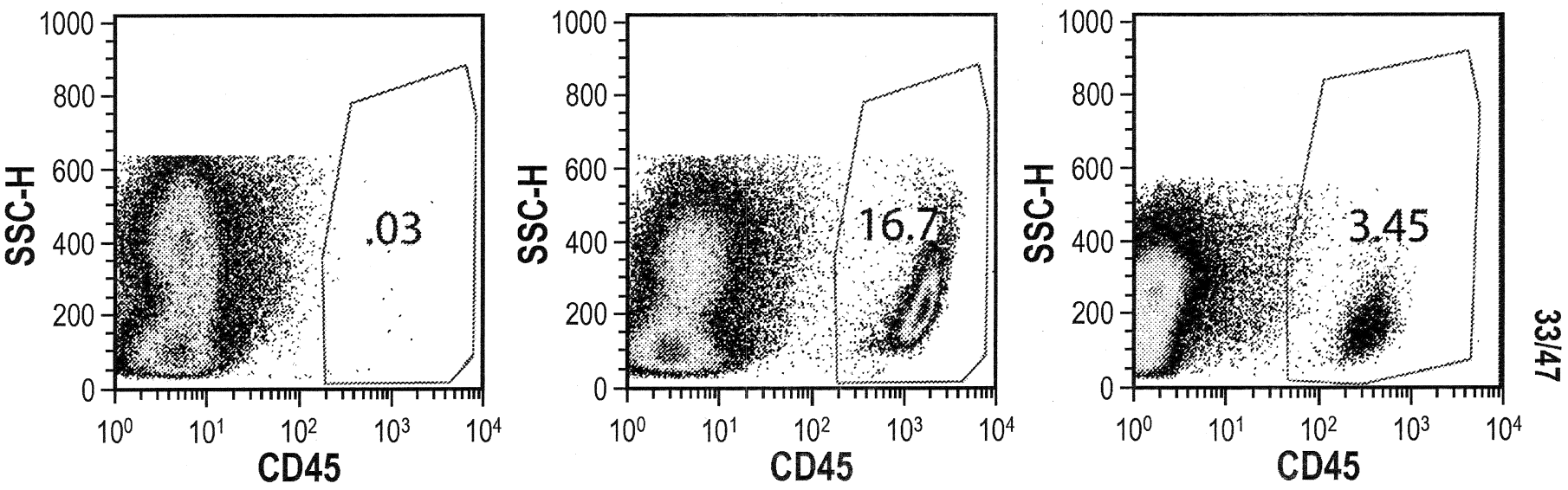


Fig. 7D

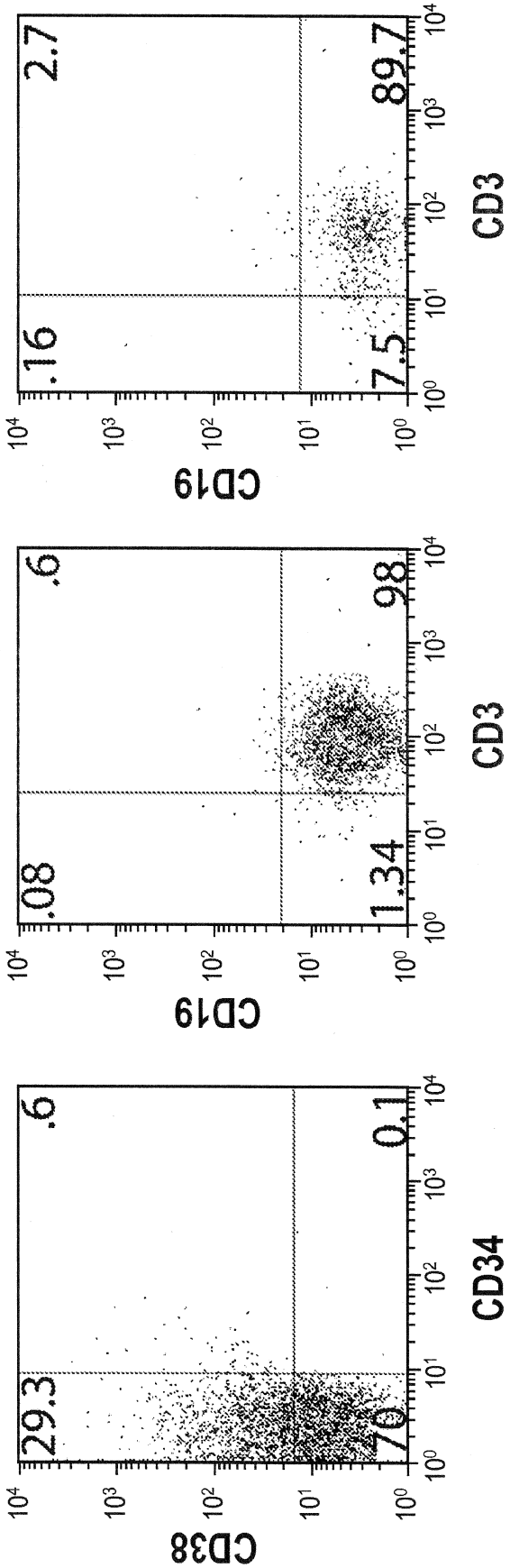


Fig. 7E

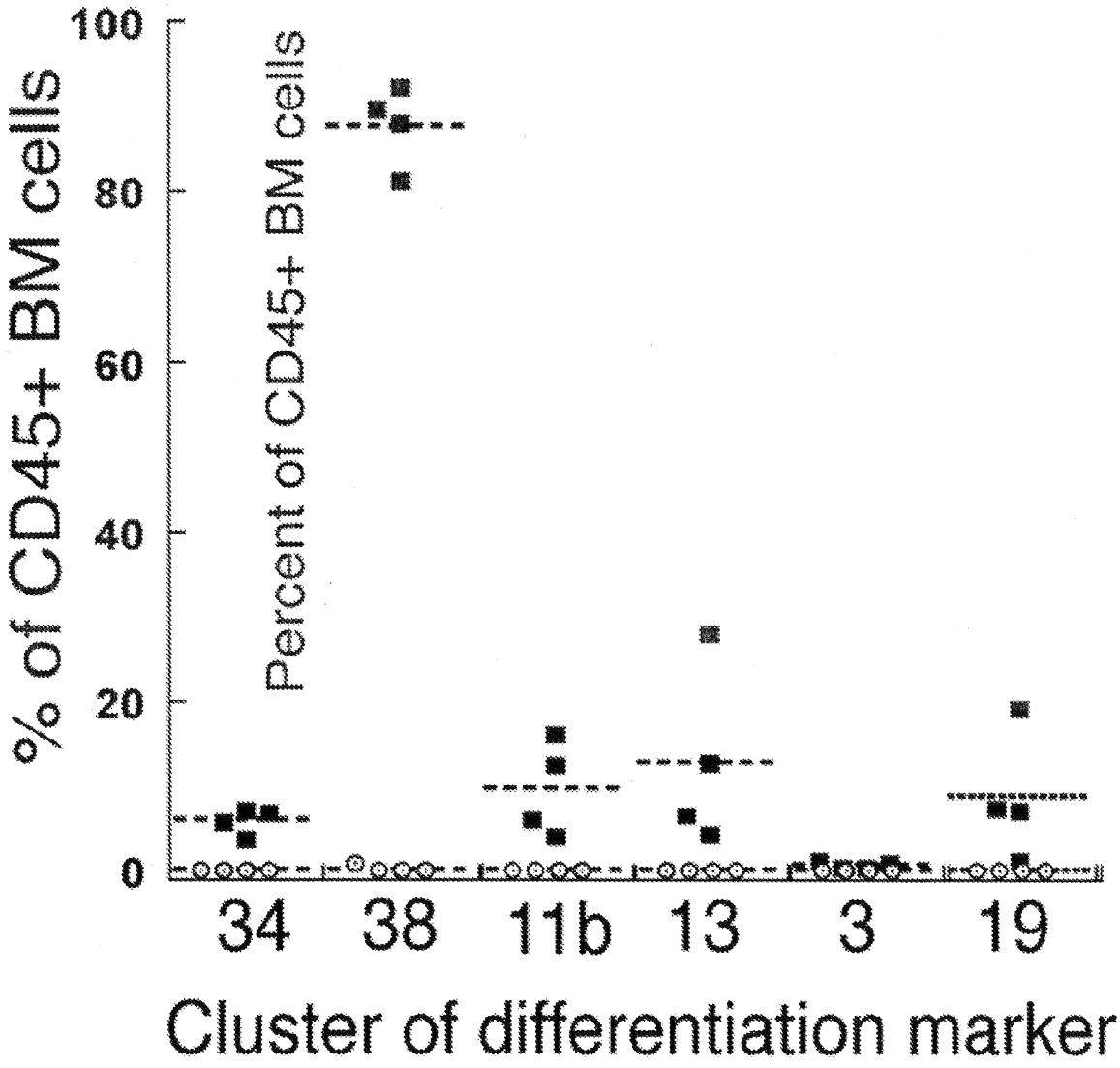

% of CD45+ BM cells
100
80
60
40
20
0
Percent of CD45+ BM cells
34
38
11b
13
3
19
Cluster of differentiation marker

Fig. 7F

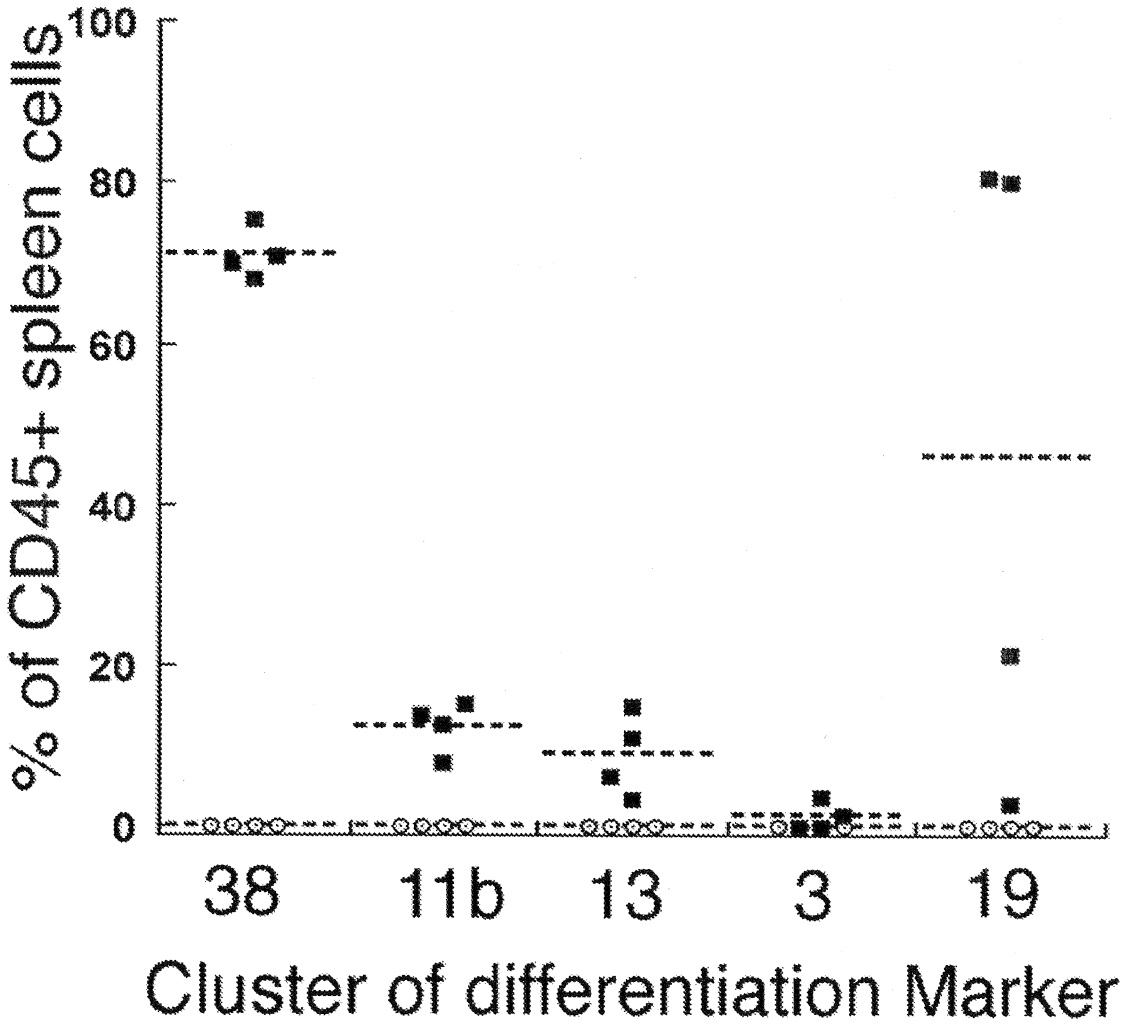

% of CD45+ spleen cells
100
80
60
40
20
0
38
11b
13
3
19
Cluster of differentiation Marker

Fig. 7G

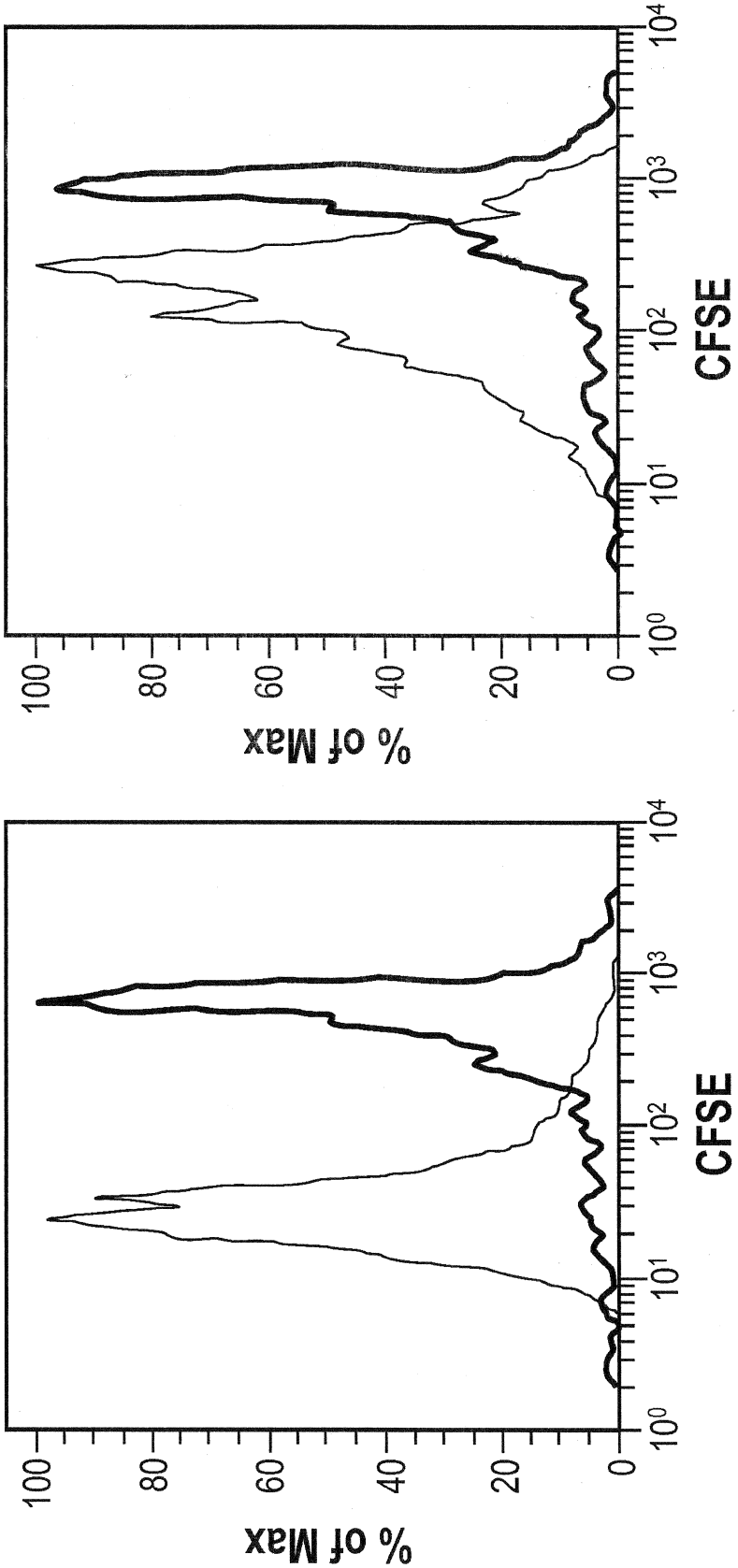

% of Max
100
80
60
40
20
0
10^0
10^1
10^2
10^3
10^4
CFSE
% of Max
100
80
60
40
20
0
10^0
10^1
10^2
10^3
10^4
CFSE

Fig. 8

Tat	*MYC*	V5	6xHis
Tat	*3AMYC*	V5	6xHis
EPTD	*MYC*	V5	6xHis
EPTD	*3AMYC*	V5	6xHis
VPR	*MYC*	V5	6xHis
MYC	*VPR*	V5	6xHis

Fig. 9A

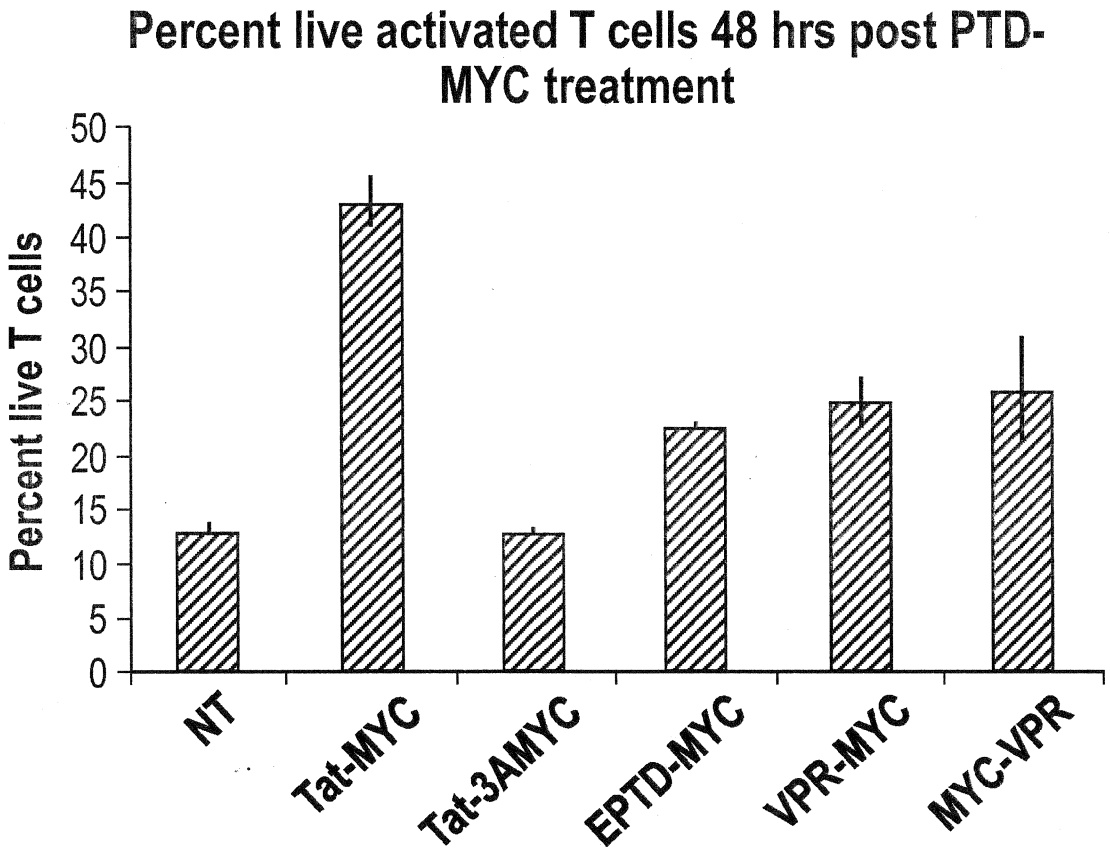

Percent live activated T cells 48 hrs post PTD-MYC treatment
Percent live T cells
50
45
40
35
30
25
20
15
10
5
0
NT
Tat-MYC
Tat-3AMYC
EPTD-MYC
VPR-MYC
MYC-VPR

Fig. 9B

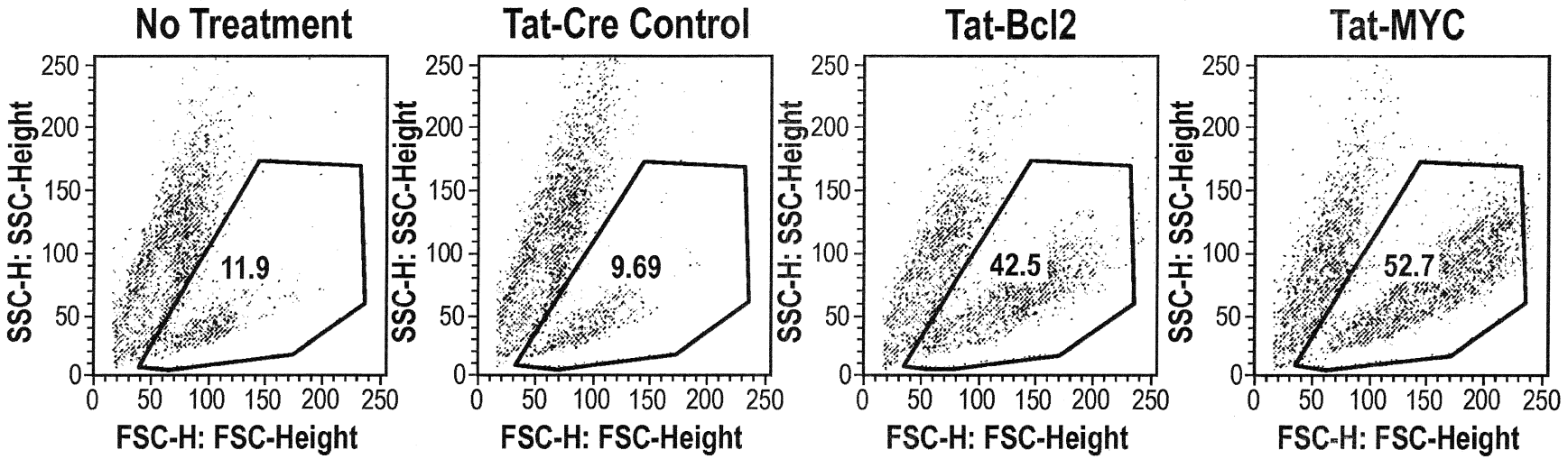


Fig. 10A Fig. 10B Fig. 10C Fig. 10D

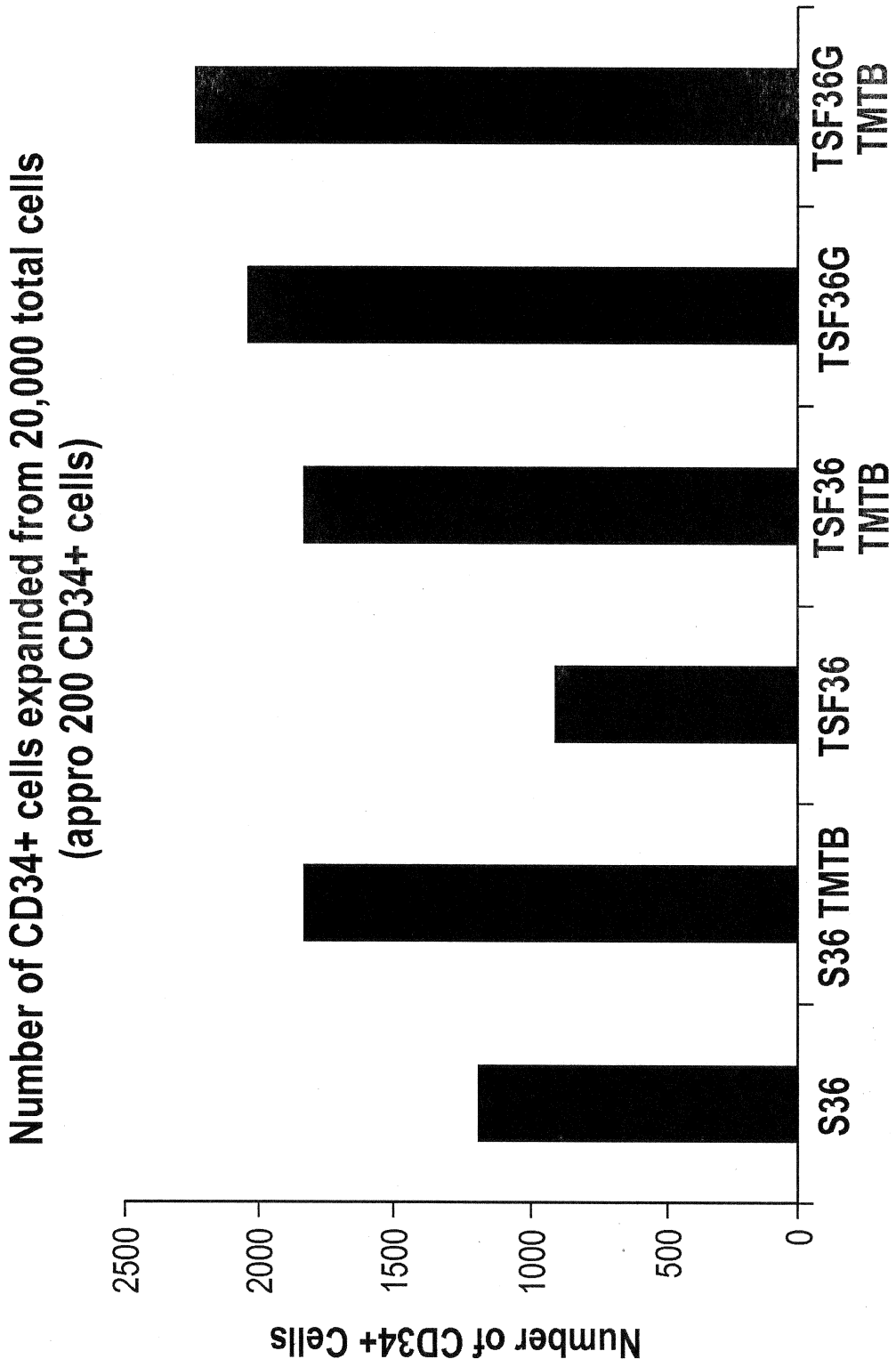

Number of CD34+ cells expanded from 20,000 total cells
(appro 200 CD34+ cells)
Number of CD34+ Cells
2500
2000
1500
1000
500
0
S36
S36 TMTB
TSF36
TSF36 TMTB
TSF36G
TSF36G TMTB

Fig. 11

Bone Marrow from NOG transplanted with 5 x 10^6 FCB84 cultured for 13 days with and without TMTB in the media

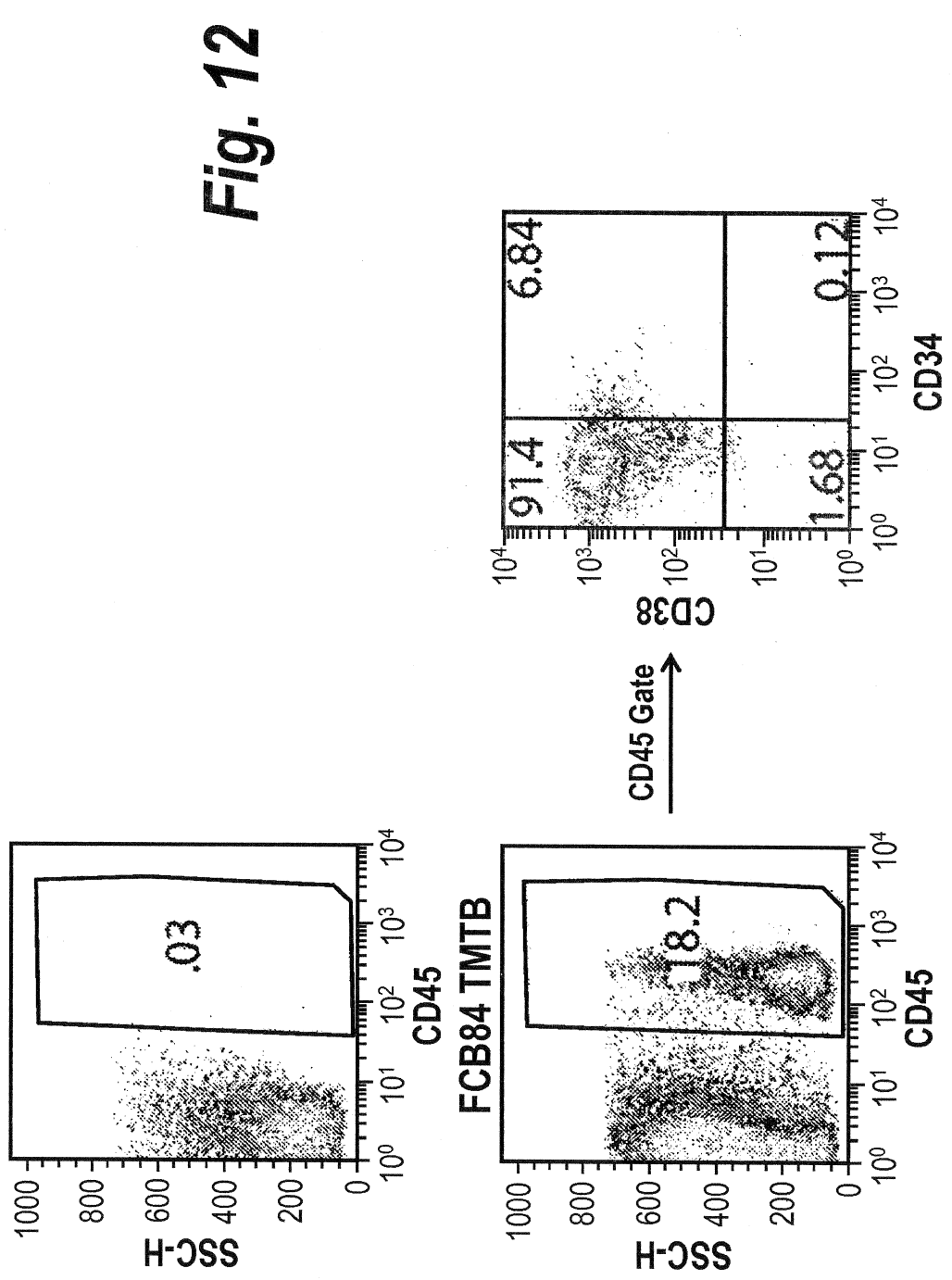


Fig. 12

Spleen from NOG transplanted with 5 x 10^6 FCB84 cultured for 13 days with and without TMTB in the media

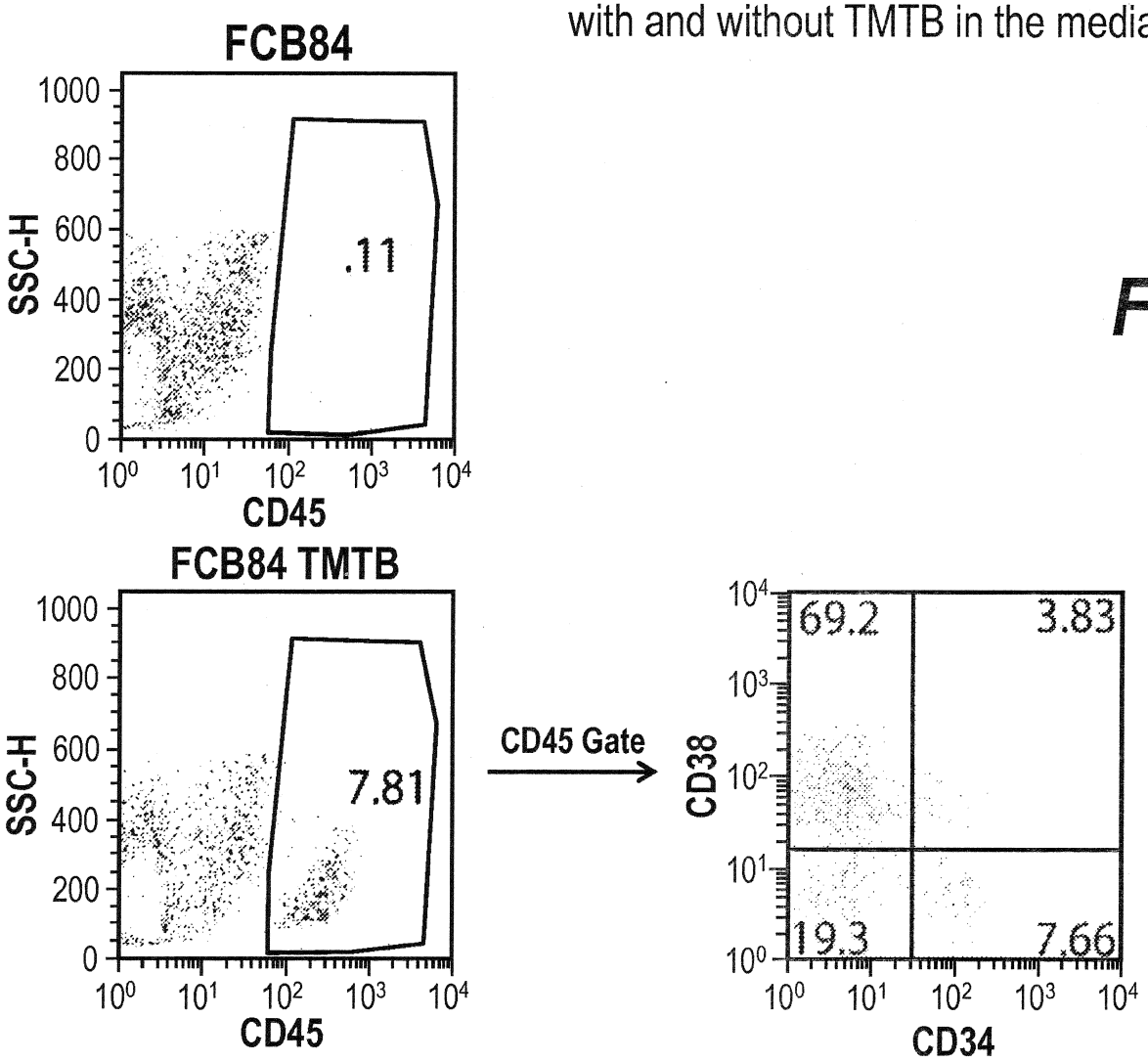


Fig. 13

Thymus from NOG transplanted with 5 x 10^6 FCB84 cultured for 13 days with and without TMTB in the media

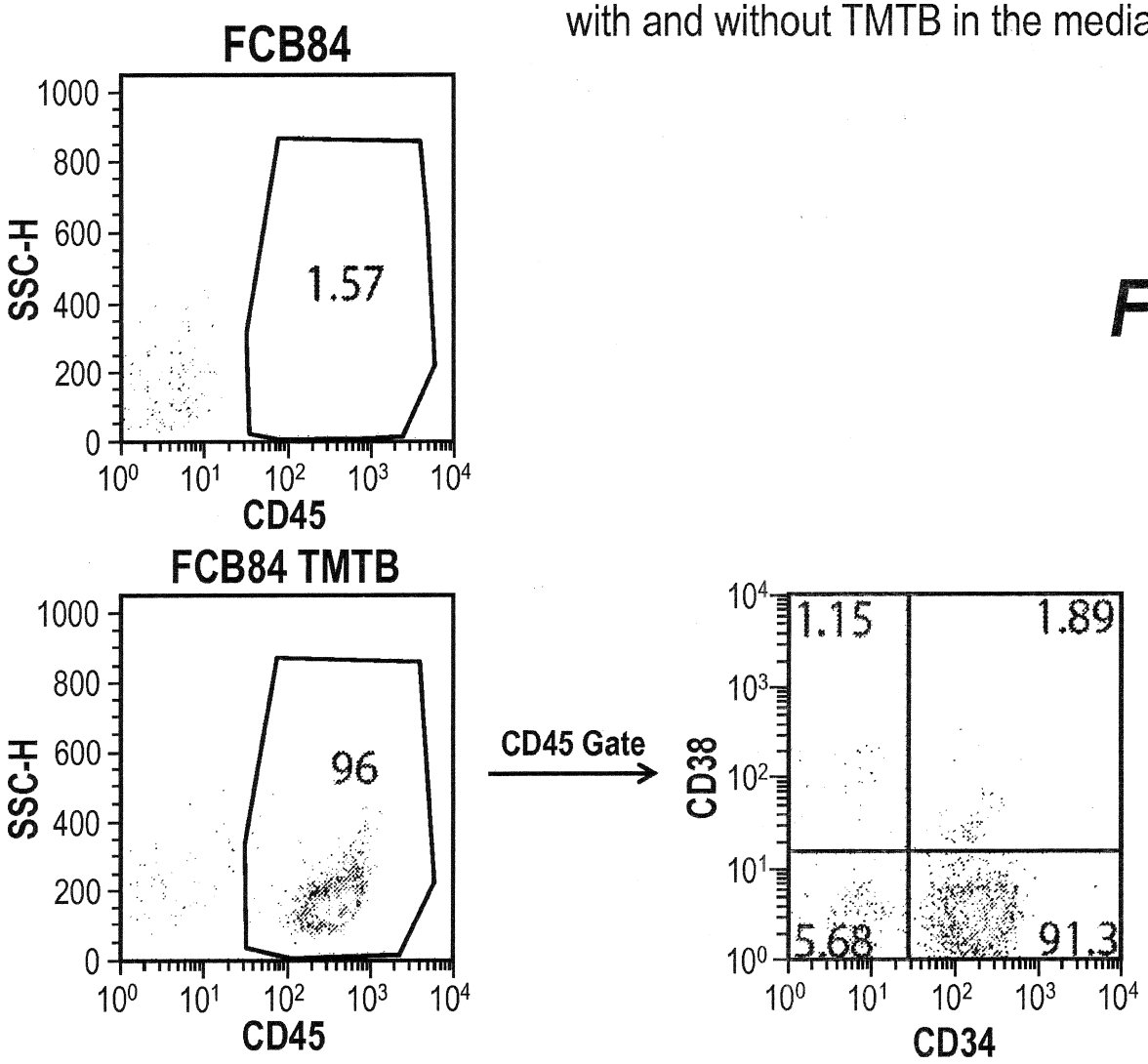


Fig. 14

Tat-MYC Amino Acid sequence

MRKKRRQRRRMPLNVSFTNRNYDLDYDSVQPYFYCDEEENFYQQQQQSELQPPAPSEDIWKKFELLPTPPLSPSRRSGLCSPS
YVAVTPFSLRGDNDGGGGSFSTADQLEMVTELLGGDMVNQSFICDPDDETFIKNIIIQDCMWSGFSAAAKLVSEKLASYQAAR
KDSGSPNPARGHSVCSTSSLYLQDLSAAASECIDPSVVFPYPLNDSSSPKSCASQDSSAFSPSSDSLLSSTESSPQGSPEPLV
LHEETPPTTSSDSEEEQEDEEEIDVVSVEKRQAPGKRSESGSPSAGGHSKPPHSPLVLKRCHVSTHQHNYAAPPSTRKDYPAA
KRVKLDSVRVLRQISNNRKCTSPRSSDTEENVKRRTHNVLERQRRNELKRSFFALRDQIPELENNEKAPKVVILKKATAYILS
VQAEEQKLISEEDLLRKRREQLKHKLEQLRKGELNSKLE**GKPIPNPLLGLDST**RTG**HHHHHH** **(SEQ ID NO: 1)**

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

Fig. 15A

Tat-MYC Nucleotide sequence

ATGAGGAAGAAGCGGAGACAGCGACGAAGAATGCCCCTCAACGTTAGCTTCACCAACAGGAACTATGACCTCGACTACGACTCGGTGCAGCCG
TATTTCTACTGCGACGAGGAGGAGAACTTCTACCAGCAGCAGCAGCAGAGCGAGCTGCAGCCCCCGGCGCCCAGCGAGGATATCTGGAAGAAA
TTCGAGCTGCTGCCCACCCCGCCCCTGTCCCCTAGCCGCCGCTCCGGGCTCTGCTCGCCCTCCTACGTTGCGGTCACACCCTTCTCCCTTCGG
GGAGACAACGACGGCGGTGGCGGGAGCTTCTCCACGGCCGACCAGCTGGAGATGGTGACCGAGCTGCTGGGAGGAGACATGGTGAACCAGAGT
TTCATCTGCGACCCGGACGACGAGACCTTCATCAAAAACATCATCATCCAGGACTGTATGTGGAGCGGCTTCTCGGCCGCCGCCAAGCTCGTC
TCAGAGAAGCTGGCCTCCTACCAGGCTGCGCGCAAAGACAGCGGCAGCCCGAACCCCGCCCGCGGCCACAGCGTCTGCTCCACCTCCAGCTTG
TACCTGCAGGATCTGAGCGCCGCCGCCTCAGAGTGCATCGACCCCTCGGTGGTCTTCCCCTACCCTCTCAACGACAGCAGCTCGCCCAAGTCC
TGCGCCTCGCAAGACTCCAGCGCCTTCTCTCCGTCCTCGGATTCTCTGCTCTCCTCGACGGAGTCCTCCCCGCAGGGCAGCCCCGAGCCCCTG
GTGCTCCATGAGGAGACACCGCCCACCACCAGCAGCGACTCTGAGGAGGAACAAGAAGATGAGGAAGAAATCGATGTTGTTTCTGTGGAAAAG
AGGCAGGCTCCTGGCAAAAGGTCAGAGTCTGGATCACCTTCTGCTGGAGGCCACAGCAAACCTCCTCACAGCCCACTGGTCCTCAAGAGGTGC
CACGTCTCCACACATCAGCACAACTACGCAGCGCCTCCCTCCACTCGGAAGGACTATCCTGCTGCCAAGAGGGTCAAGTTGGACAGTGTCAGA
GTCCTGAGACAGATCAGCAACAACCGAAAATGCACCAGCCCCAGGTCCTCGGACACCGAGGAGAATGTCAAGAGGCGAACACACAACGTCTTG
GAGCGCCAGAGGAGGAACGAGCTAAAACGGAGCTTTTTTGCCCTGCGTGACCAGATCCCGGAGTTGGAAAACAATGAAAAGGCCCCCAAGGTA
GTTATCCTTAAAAAAGCCACAGCATACATCCTGTCCGTCCAAGCAGAGGAGCAAAAGCTCATTTCTGAAGAGGACTTGTTGCGGAAACGACGA
GAACAGTTGAAACACAAACTTGAACAGCTACGGAAGGGCGAGCTCAATTCGAAGCTTGAAGGTAAGCCTATCCCTAACCCTCTCCTCGGTCTC
GATTCTACGCGTACCGGTCATCATCACCATCACCATTGA (SEQ ID NO: 2)

Fig. 15A
(Cont)

Tat-Bcl2Δ Animo Acid sequence

MRKKRRQRRRMAHAGRSGYDNREIVMKYIHYKLSQRATSGISIEAAGPALSPVPPVVHLTLRQAGDDFSRRYRRDFAEMSSQLHLTPFTARG
CFATVVEELFRDGVNWGRIVAFFEFGGVMCVESVNREMSPLVDNIALWMTEYLNRHLHTWIQDNGGWDAFVELYGPSMRPLFDFSWLSLKTL
LSLALVGACITLGAYLSHKKGELNSKLEGKPIPNPLLGLDSTRTG**HHHHHH** (SEQ ID NO: 3)

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

atgaggaagaagcggagacagcgacgaagaatggcgcacgctgggagaagtggttacgataaccgggagatagtgatgaagtacatccatta
taagctgtcgcagagggctacgagtgggatctcgatcgaggccgcggggcctgcgctcagcccggtgccacctgtggtccacctgaccctcc
gccaggccggcgacgacttctcccgccgctaccgccgcgacttcgccgagatgtccagccagctgcacctgacgcccttcaccgcgcgggga
tgctttgccacggtggtggaggagctcttcagggacggggtgaactgggggaggattgtggccttctttgagttcggtggggtcatgtgtgt
ggagagcgtcaaccgggagatgtcgcccctggtggacaacatcgccctgtggatgactgagtacctgaaccggcacctgcacacctggatcc
aggataacggaggctgggatgcctttgtggaactgtacggccccagcatgcggcctctgtttgatttctcctggctgtctctgaagactctg
ctcagtttggccctggtgggagcttgcatcaccctgggtgcctatctgagccacaagaagggcgagctcaattcgaagcttgaaggtaagcc
tatccctaaccctctcctcggtctcgattctacgcgtaccggtcatcatcaccatcaccattga **(SEQ ID NO: 4)**

Fig. 15B