

Fig. 1A

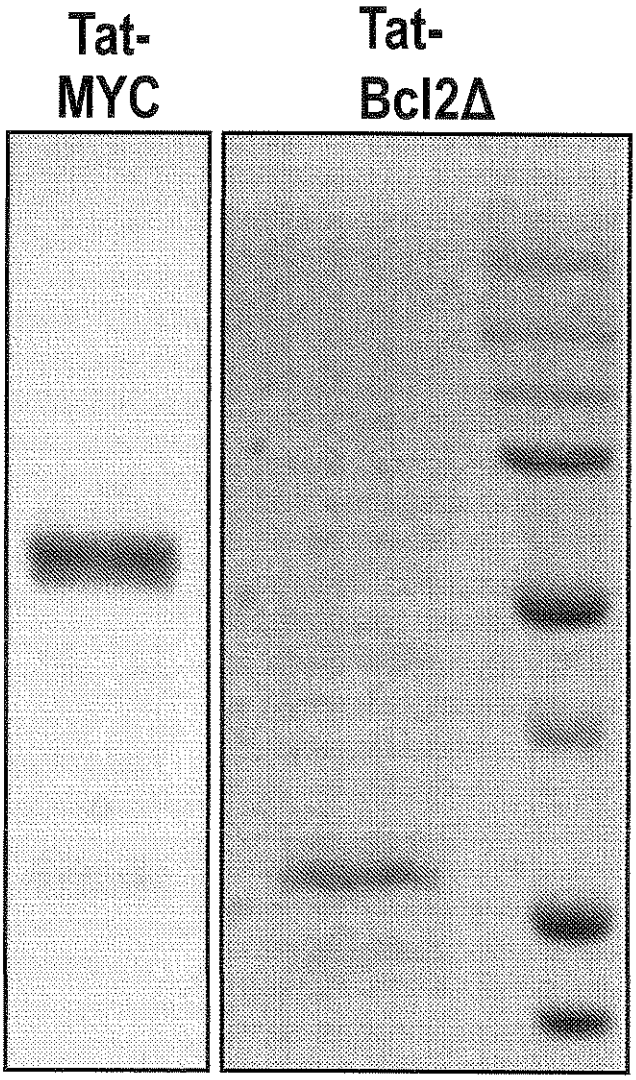


Fig. 1B

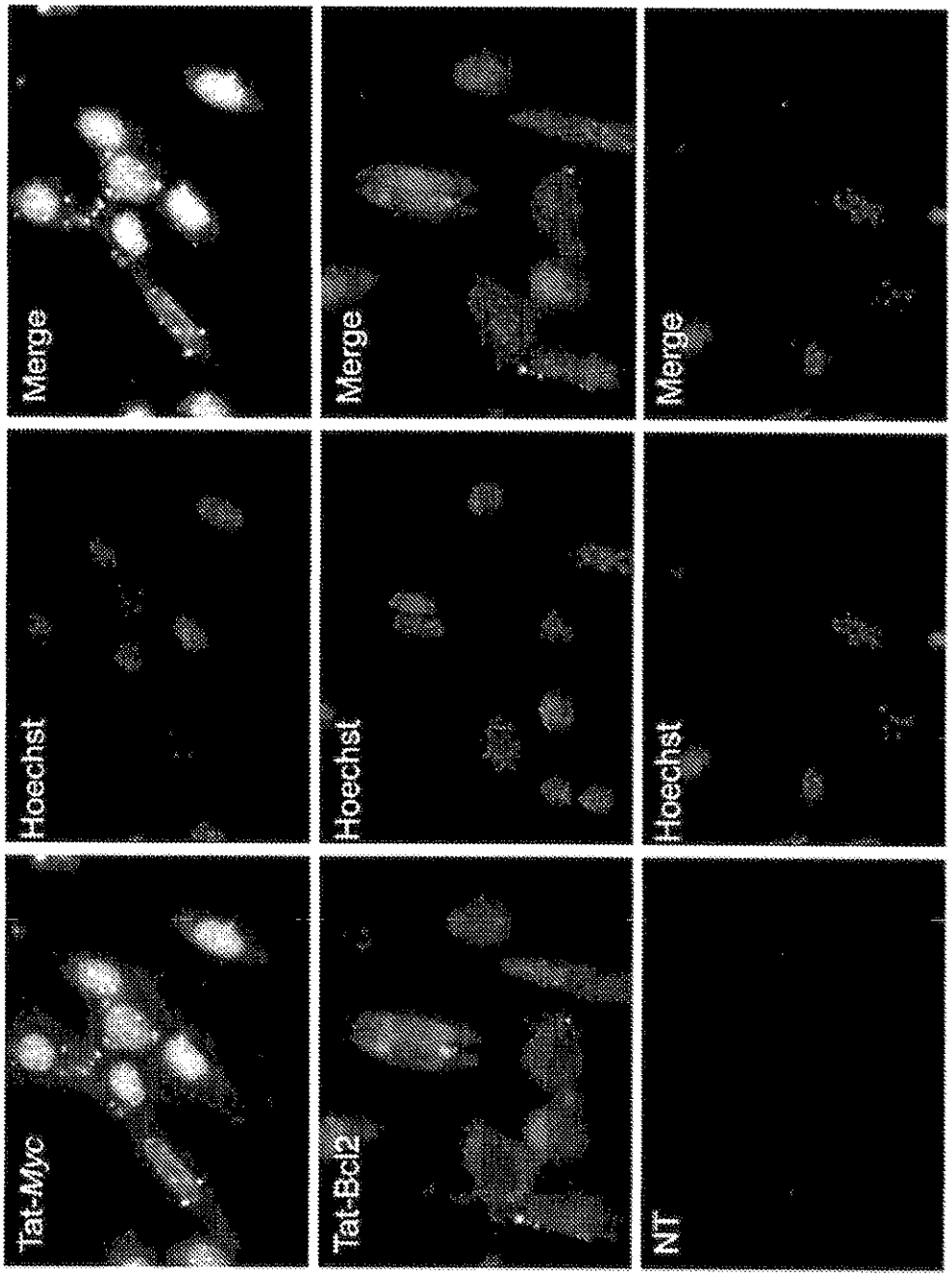

Tat-Myc
Hoechst
Merge
Tat-Bcl2
Hoechst
Merge
NT
Hoechst
Merge

Fig. 1C

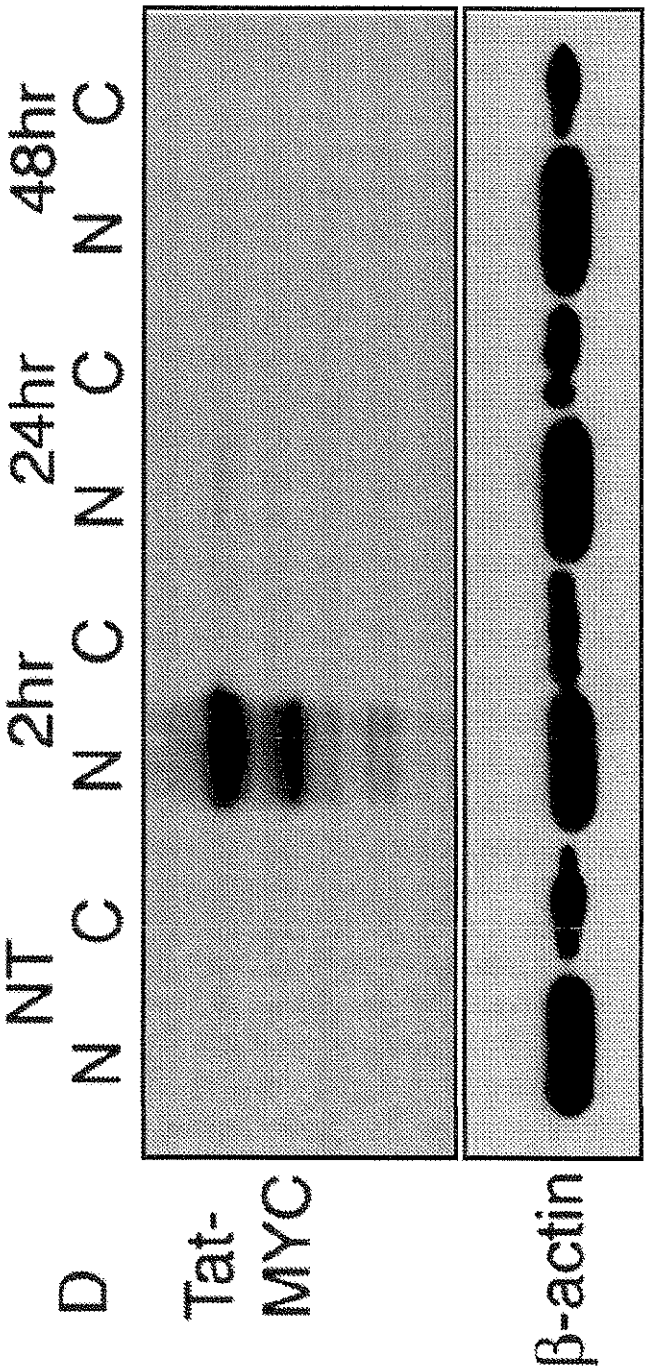


Fig. 1D

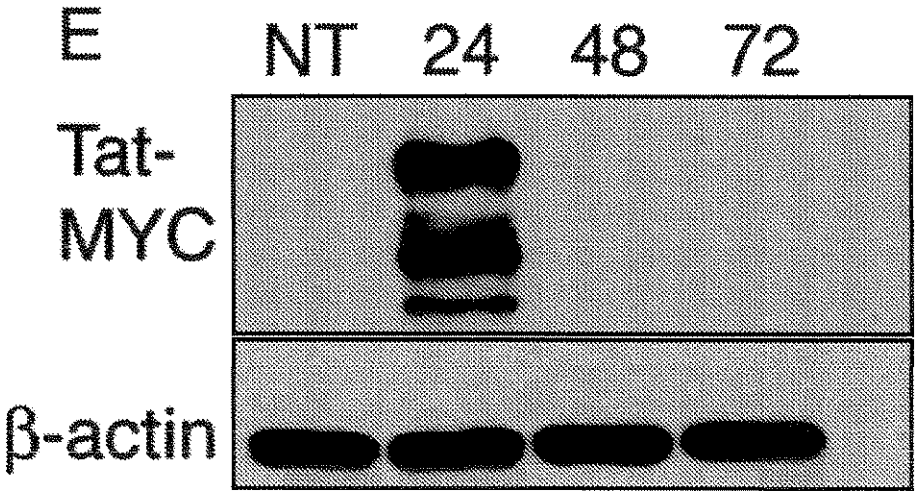


Fig. 1E

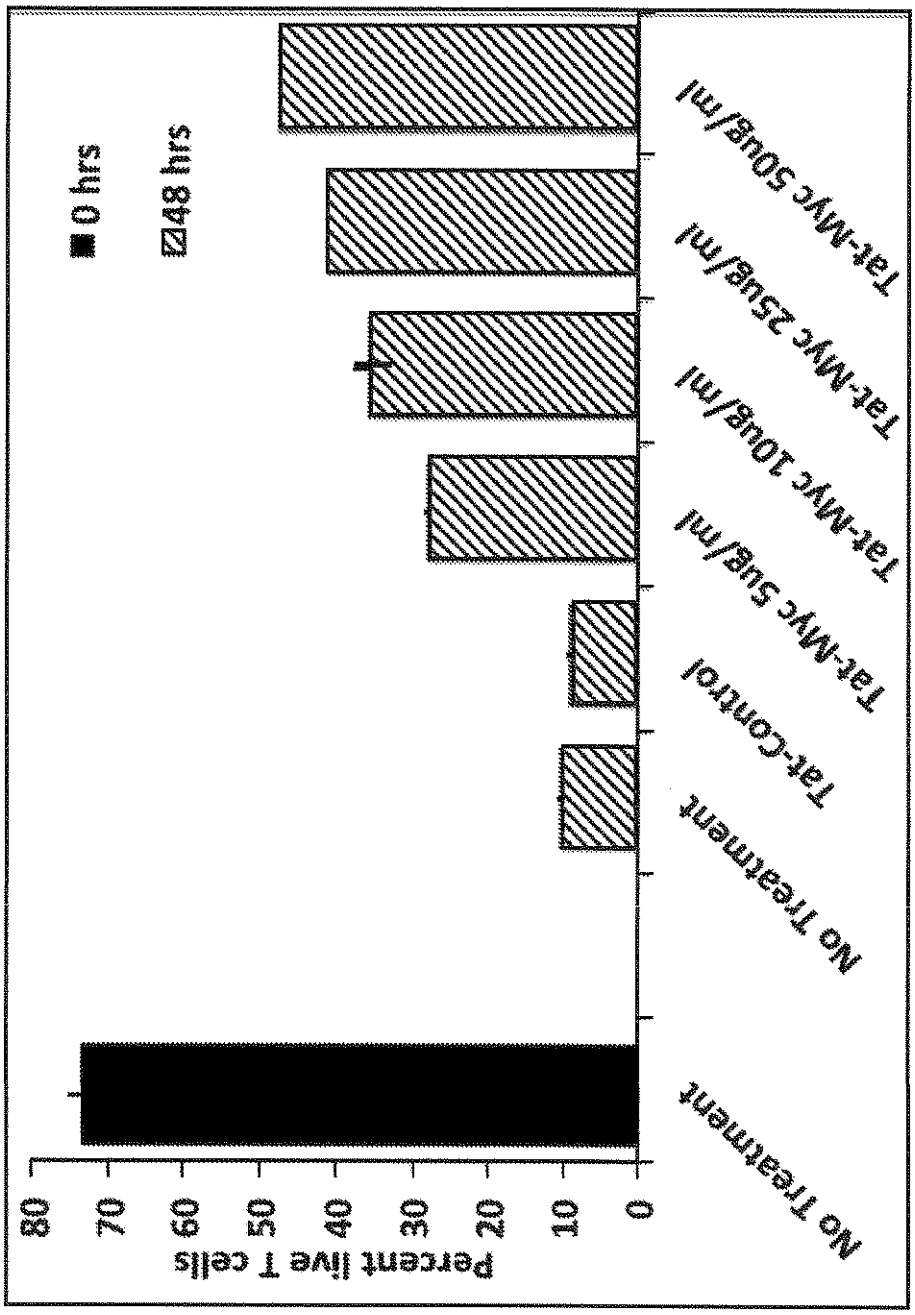

0 hrs
48 hrs
Percent live T cells
0
10
20
30
40
50
60
70
80
No Treatment
No Treatment
Tat-Control
Tat-Myc 5ug/ml
Tat-Myc 10ug/ml
Tat-Myc 25ug/ml
Tat-Myc 50ug/ml

Fig. 2A

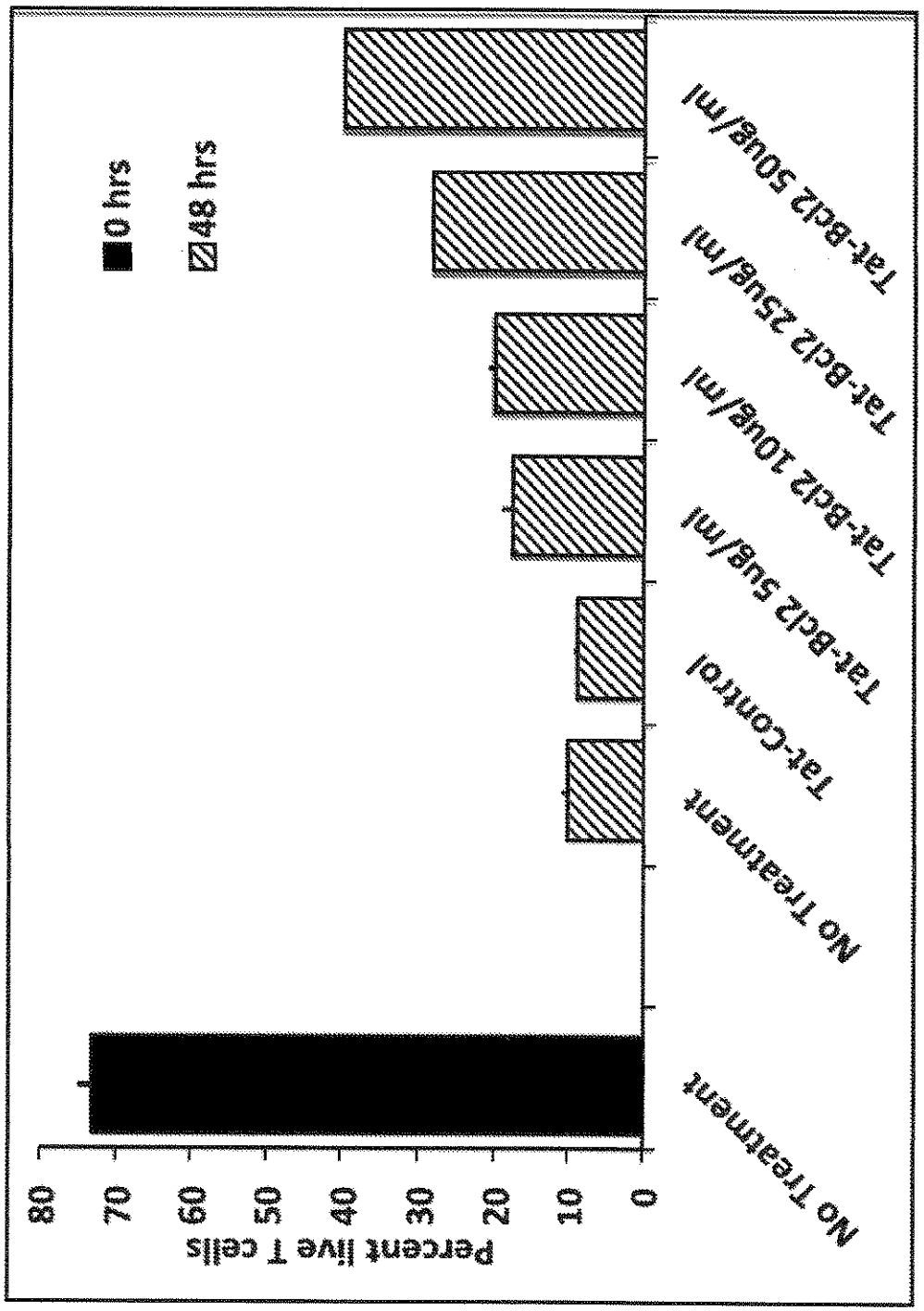

0 hrs
48 hrs
Percent live T cells
0
10
20
30
40
50
60
70
80
No Treatment
Tat-Control
Tat-Bcl2 5ug/ml
Tat-Bcl2 10ug/ml
Tat-Bcl2 25ug/ml
Tat-Bcl2 50ug/ml

Fig. 2B

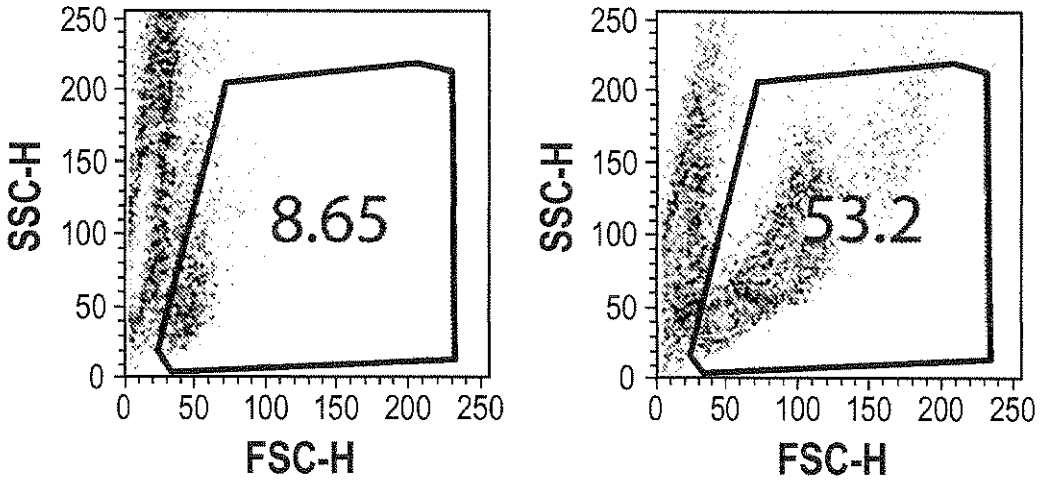

250
200
150
100
50
0
SSC-H
8.65
0 50 100 150 200 250
FSC-H
250
200
150
100
50
0
SSC-H
53.2
0 50 100 150 200 250
FSC-H

Fig. 2C

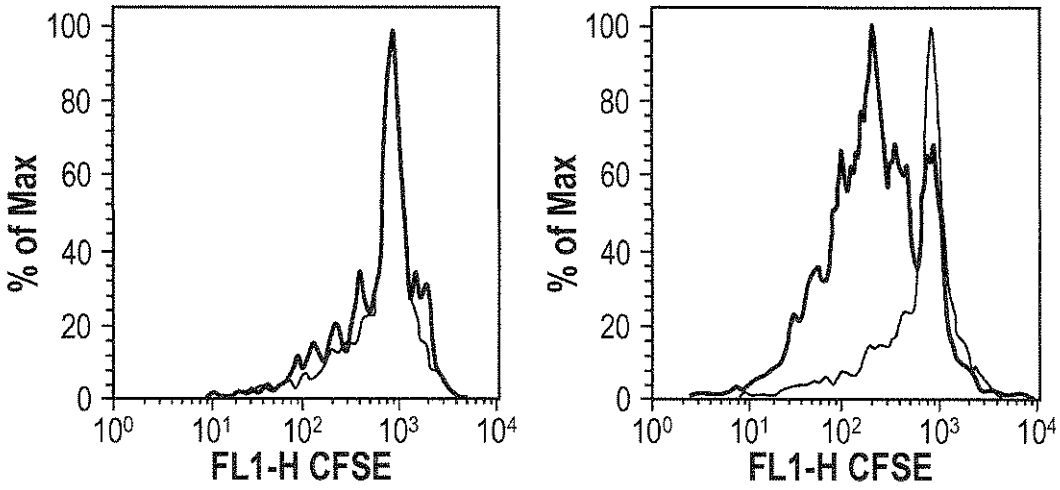
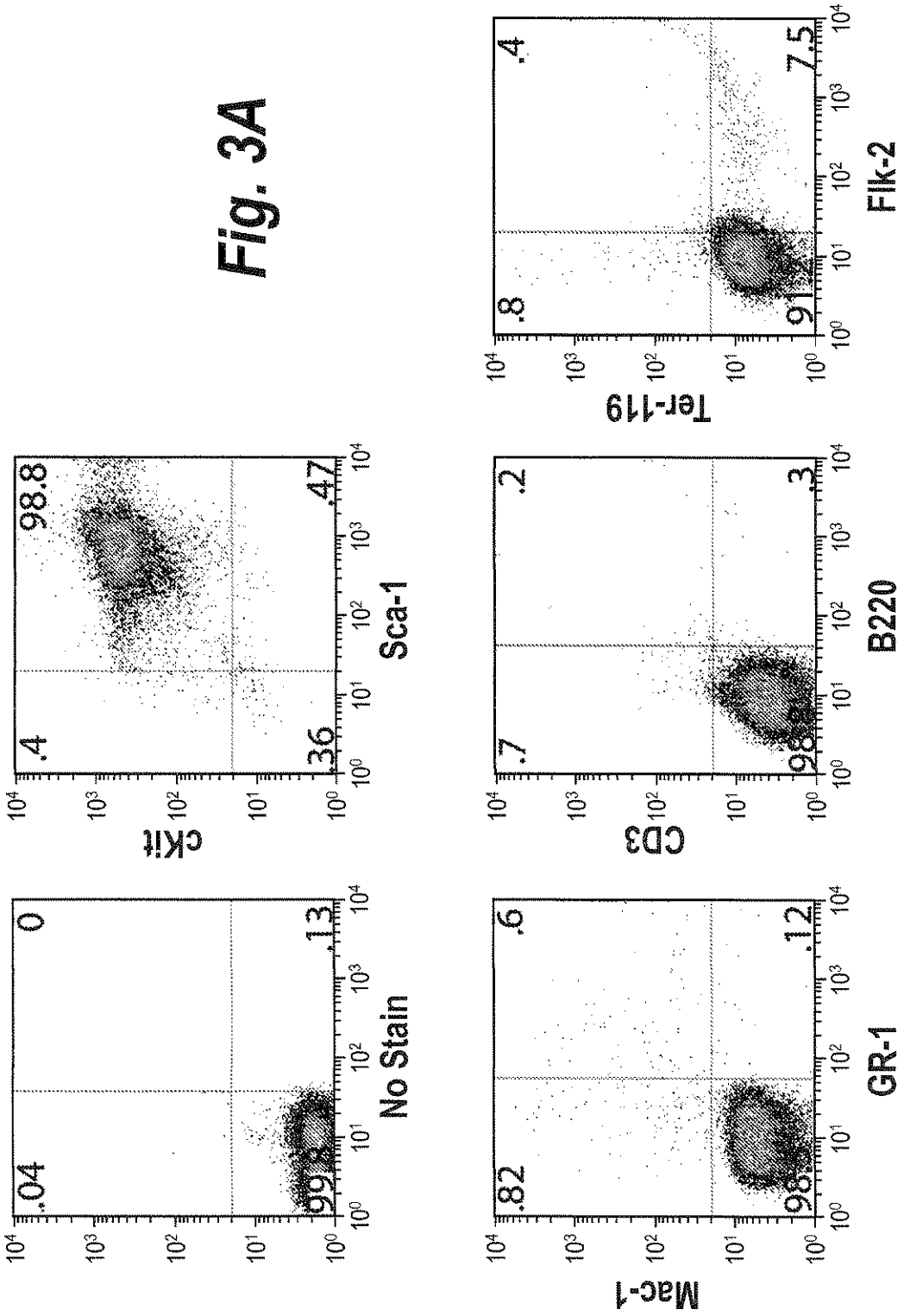

100
80
60
40
20
0
% of Max
10^0 10^1 10^2 10^3 10^4
FL1-H CFSE
100
80
60
40
20
0
% of Max
10^0 10^1 10^2 10^3 10^4
FL1-H CFSE

Fig. 2D

Fig. 3A


No Stain
.04
0
99.3
.13
cKit
.4
98.8
36
.47
Sca-1
CD3
.7
98
.2
3
B220
Mac-1
.82
98.5
.6
.12
GR-1
Ter-119
.8
91
.4
7.5
Flk-2

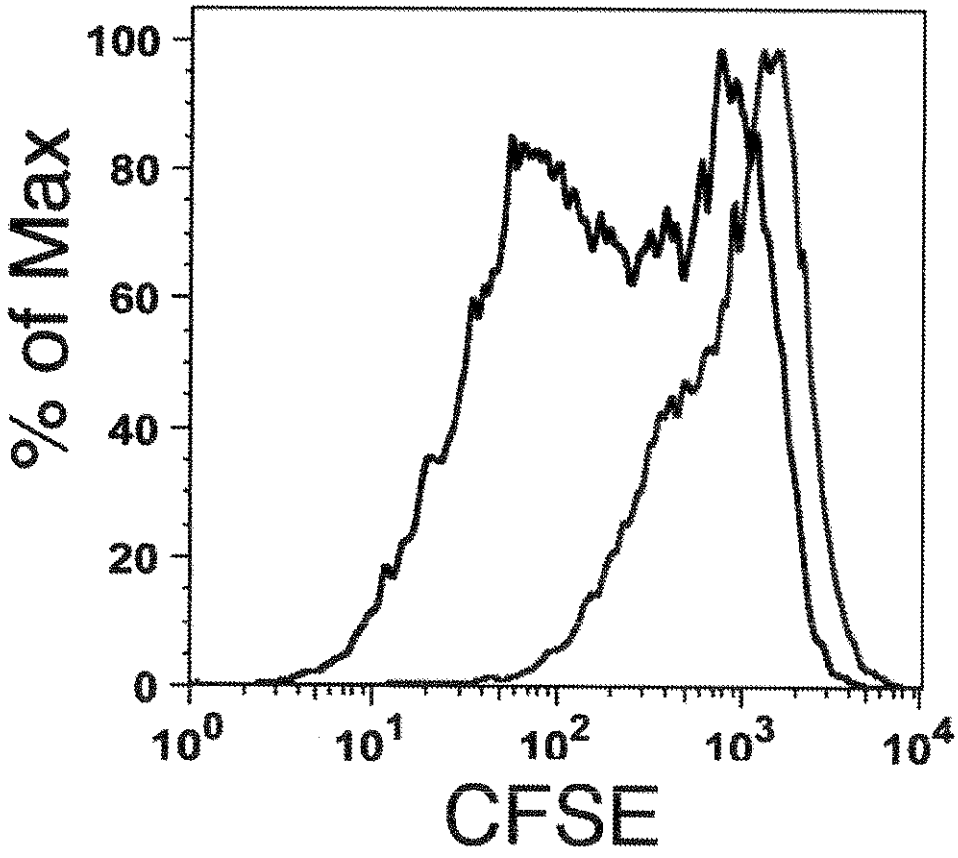


Fig. 3B

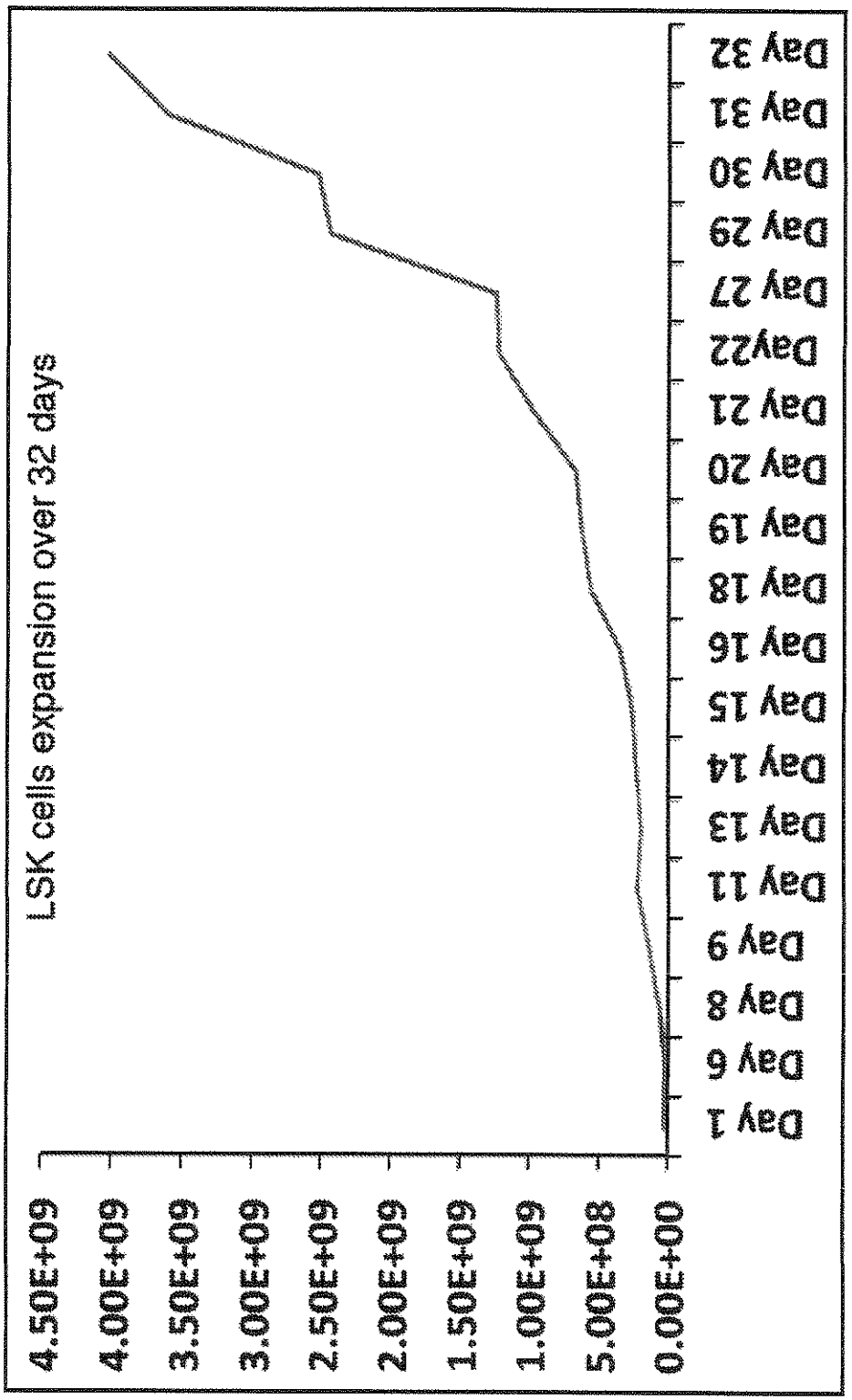

LSK cells expansion over 32 days
4.50E+09
4.00E+09
3.50E+09
3.00E+09
2.50E+09
2.00E+09
1.50E+09
1.00E+09
5.00E+08
0.00E+00
Day 1
Day 6
Day 8
Day 9
Day 11
Day 13
Day 14
Day 15
Day 16
Day 18
Day 19
Day 20
Day 21
Day22
Day 27
Day 29
Day 30
Day 31
Day 32

Fig. 3C

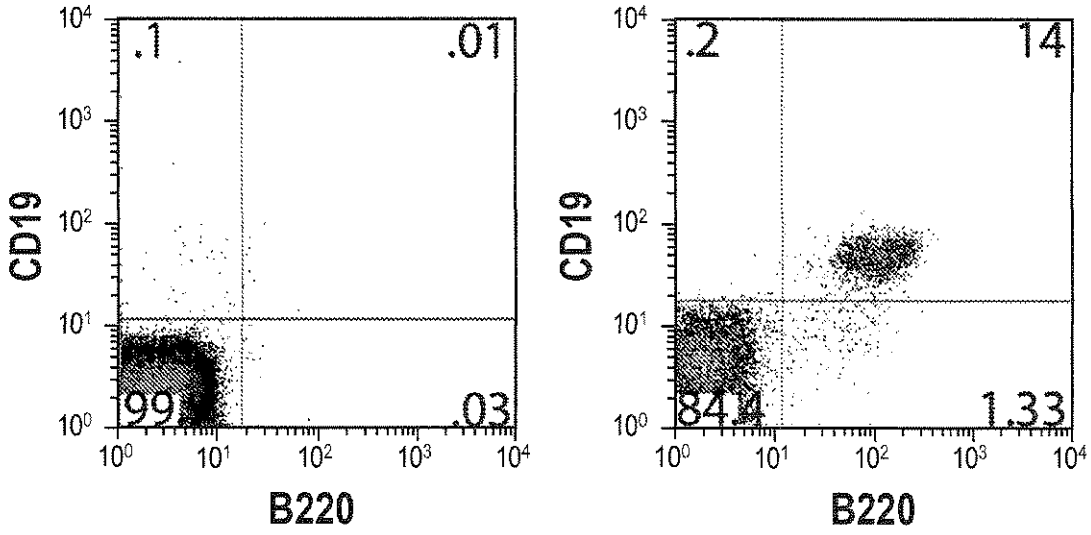


Fig. 4A

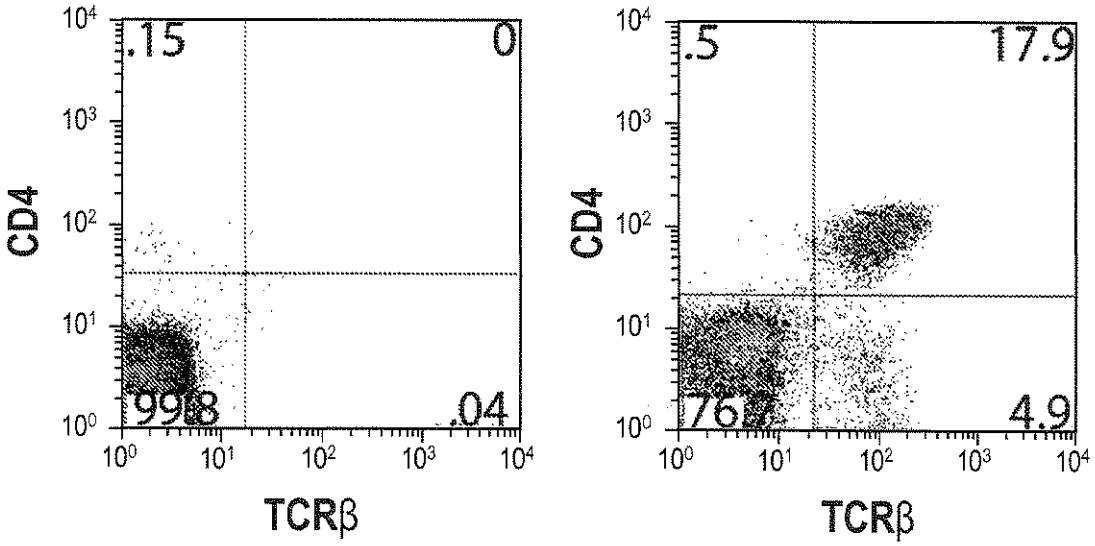


Fig. 4B

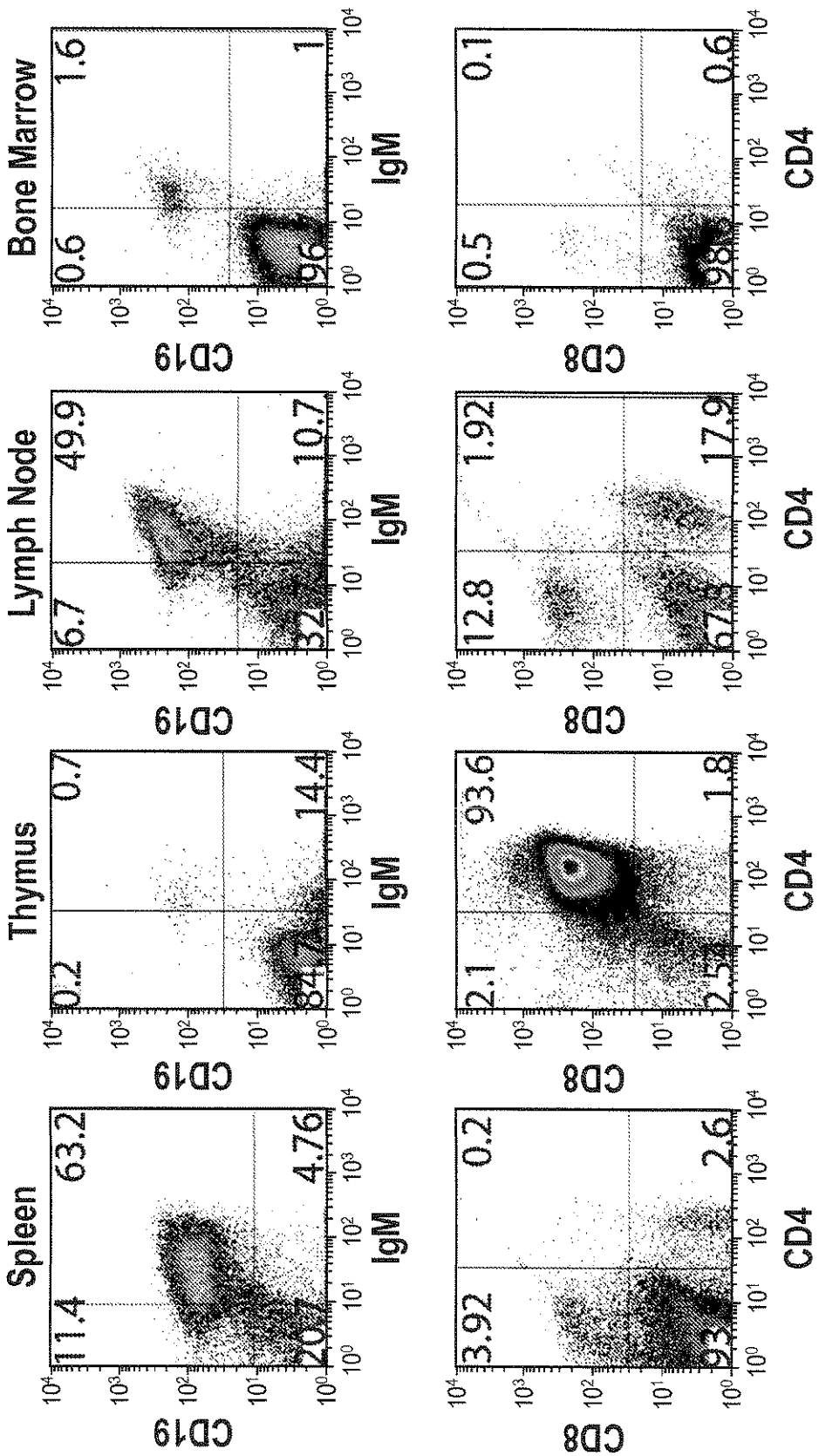

Bone Marrow
Lymph Node
Thymus
Spleen
CD19
IgM
CD8
CD4
0.6
1.6
96
1
0.5
0.1
98
0.6
6.7
49.9
32
10.7
12.8
1.92
67.8
17.9
0.2
0.7
84.7
14.4
2.1
93.6
2.5
1.8
11.4
63.2
20.7
4.76
3.92
0.2
93
2.6

Fig. 4C

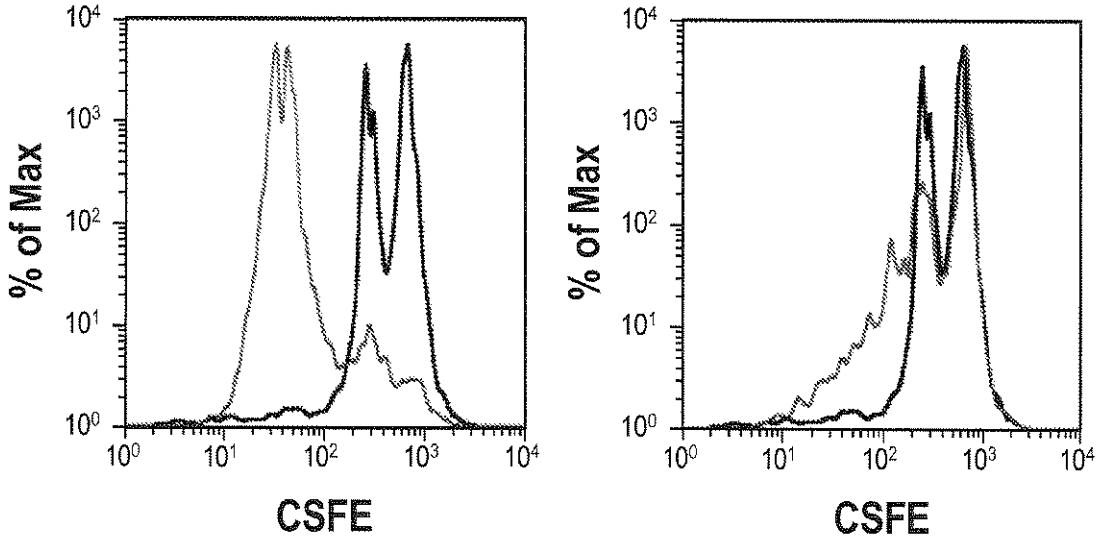


Fig. 4D

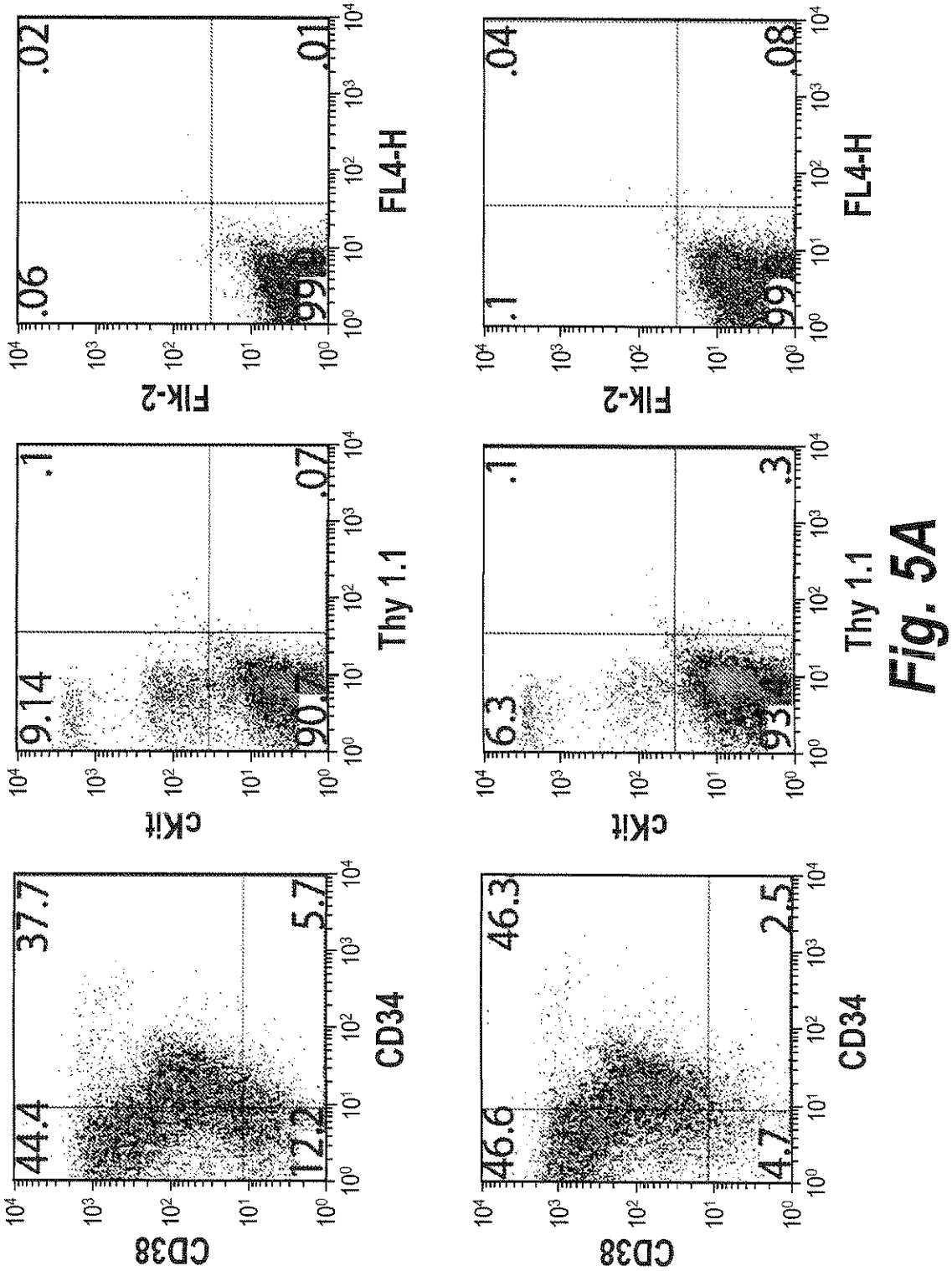

CD38
CD34
44.4
37.7
12.2
5.7
cKit
Thy 1.1
9.14
.1
90.7
.07
Flk-2
FL4-H
.06
.02
99
.01
CD38
CD34
46.6
46.3
4.7
2.5
cKit
Thy 1.1
6.3
.1
93
.3
Flk-2
FL4-H
.1
.04
99
.08

Fig. 5A

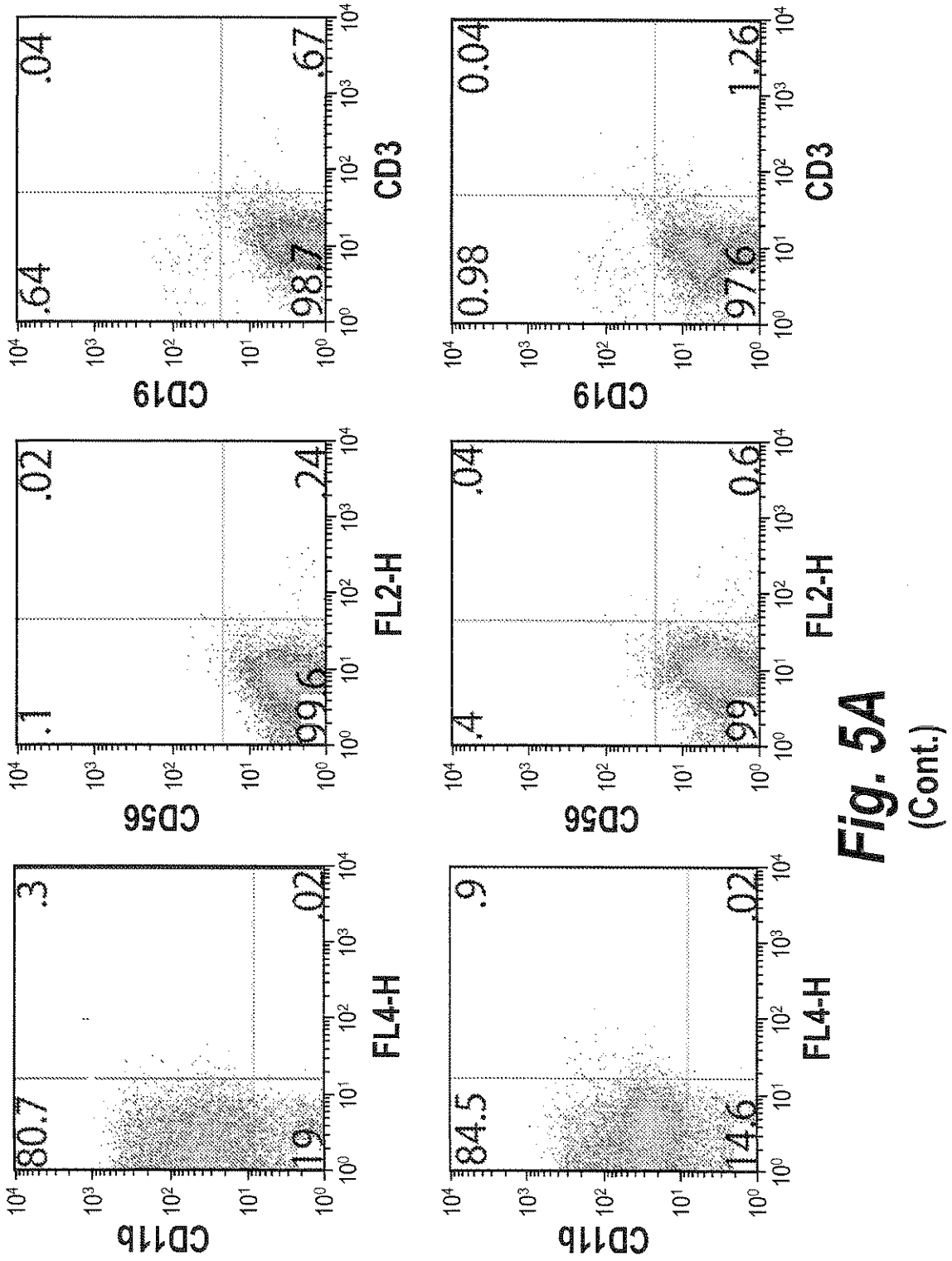

CD19
CD3
.04
.64
98.7
.67
CD19
CD3
0.04
0.98
97.6
1.26
CD56
FL2-H
.02
.1
99.6
24
CD56
FL2-H
.04
.4
99
0.6
CD11b
FL4-H
.3
80.7
19
02
CD11b
FL4-H
.9
84.5
14.6
02

Fig. 5A (Cont.)

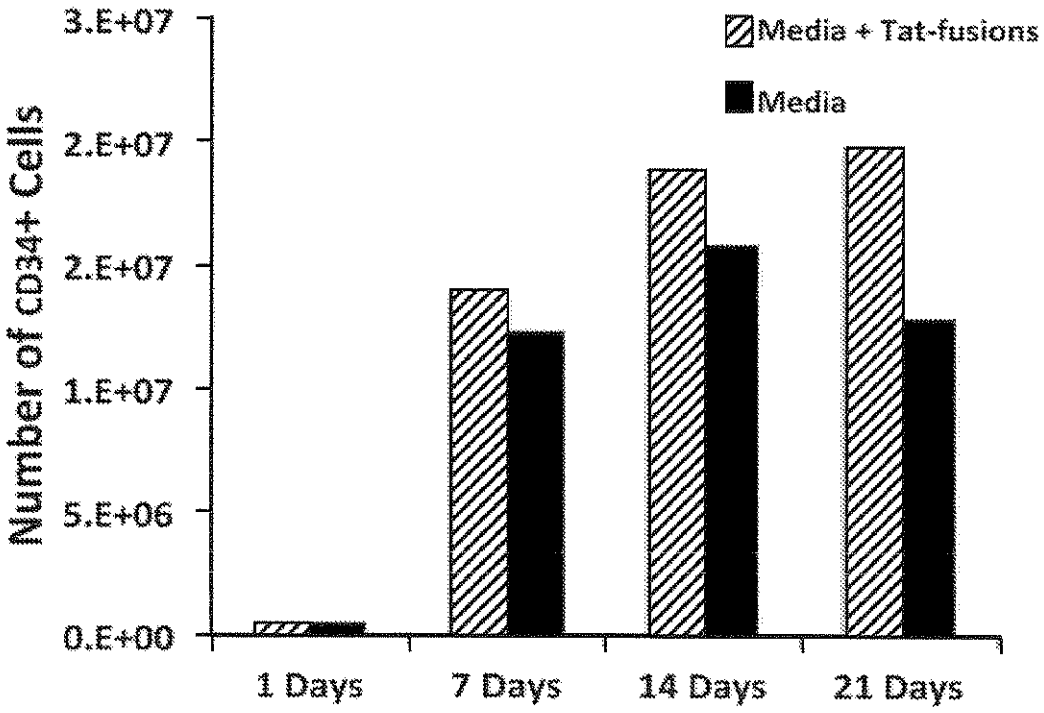

3.E+07
2.E+07
2.E+07
1.E+07
5.E+06
0.E+00
Number of CD34+ Cells
Media + Tat-fusions
Media
1 Days
7 Days
14 Days
21 Days

Fig. 5B

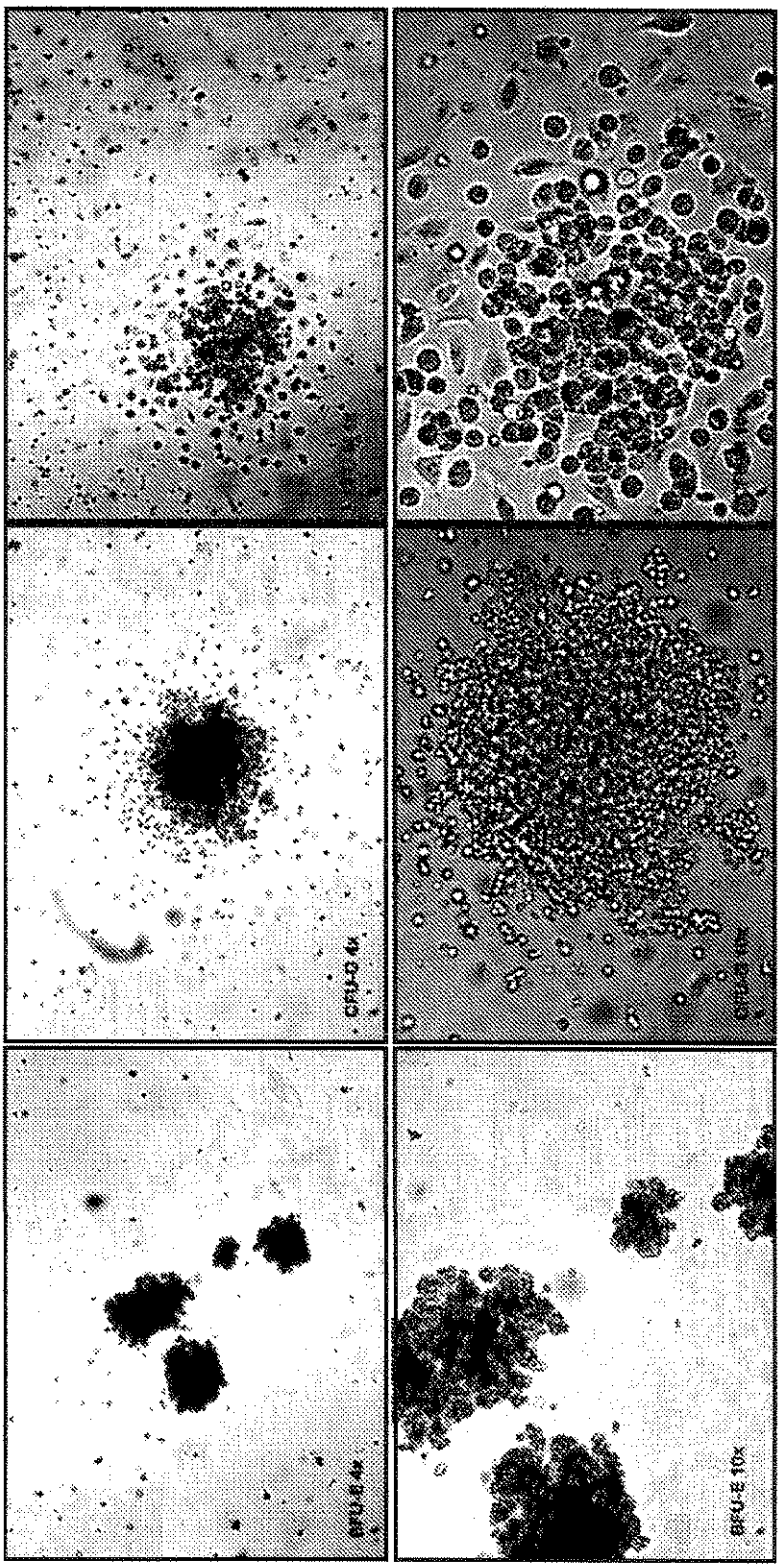


Fig. 5C

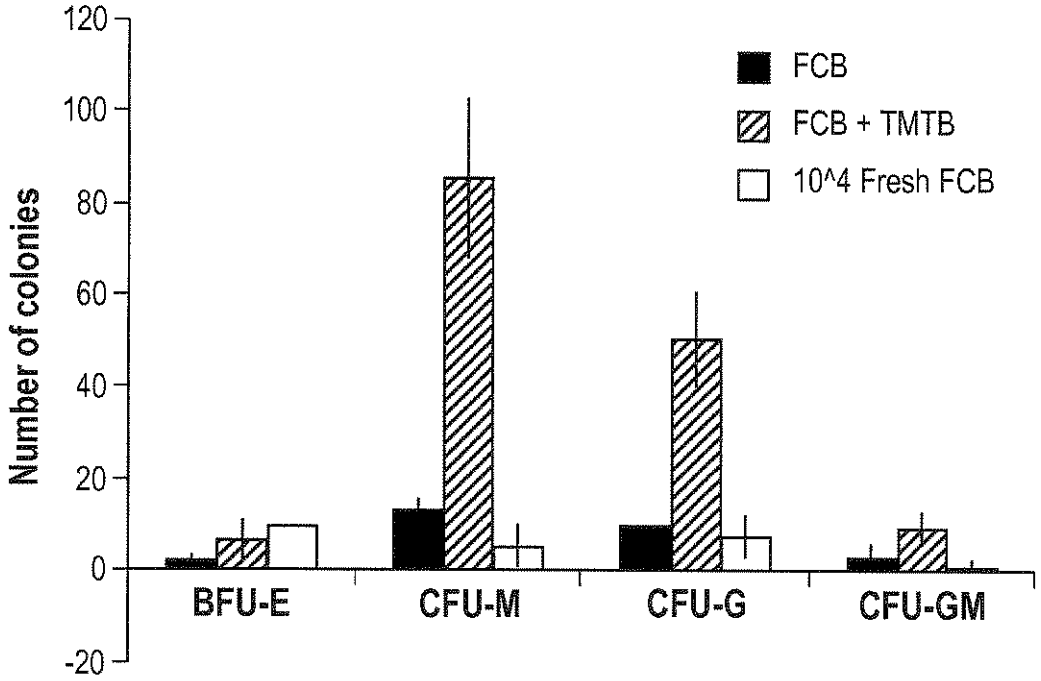

120
100
80
60
40
20
0
-20
Number of colonies
FCB
FCB + TMTB
10^4 Fresh FCB
BFU-E
CFU-M
CFU-G
CFU-GM

Fig. 5D

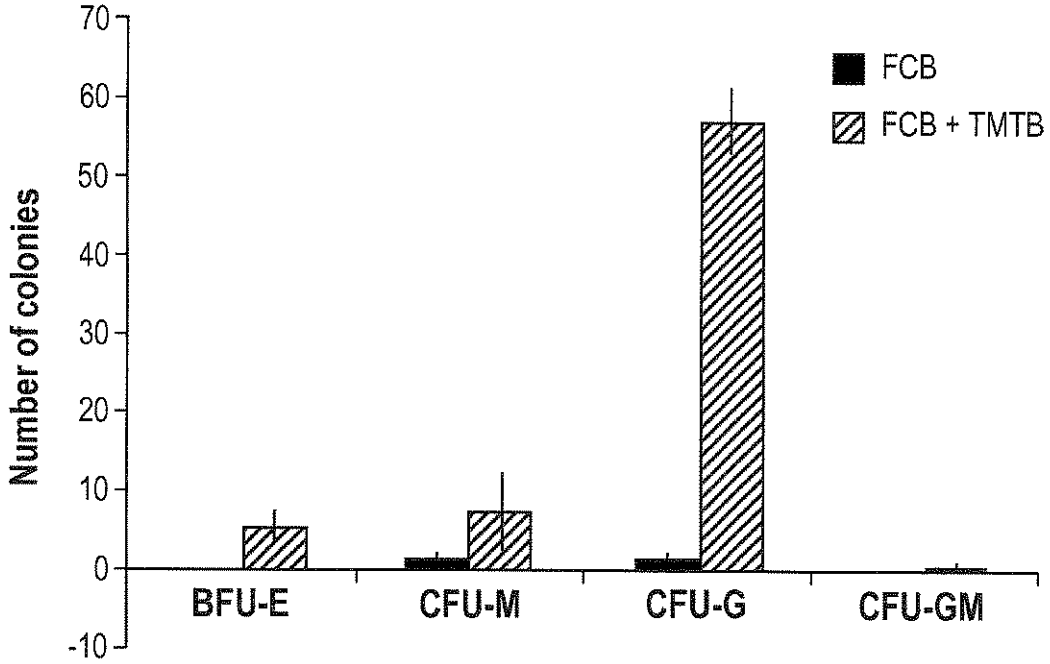

70
60
50
40
30
20
10
0
-10
Number of colonies
FCB
FCB + TMTB
BFU-E
CFU-M
CFU-G
CFU-GM

Fig. 5E

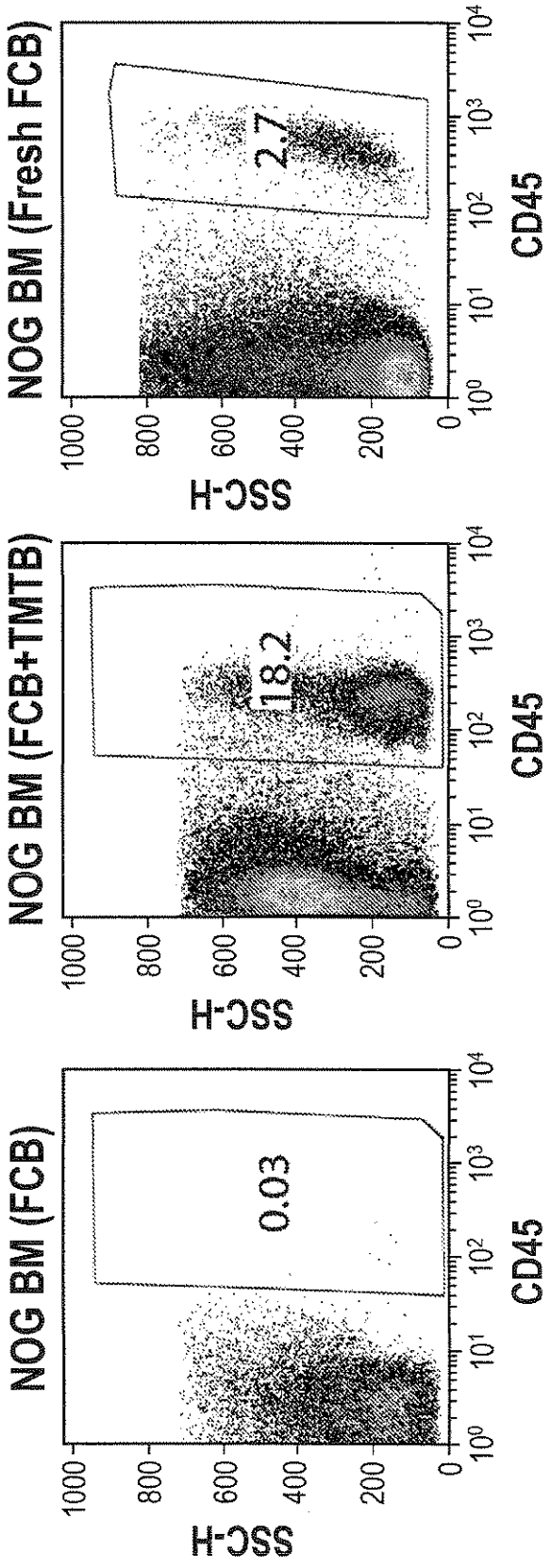

NOG BM (Fresh FCB)
2.7
SSC-H
CD45
NOG BM (FCB+TMTB)
18.2
SSC-H
CD45
NOG BM (FCB)
0.03
SSC-H
CD45

Fig. 6A

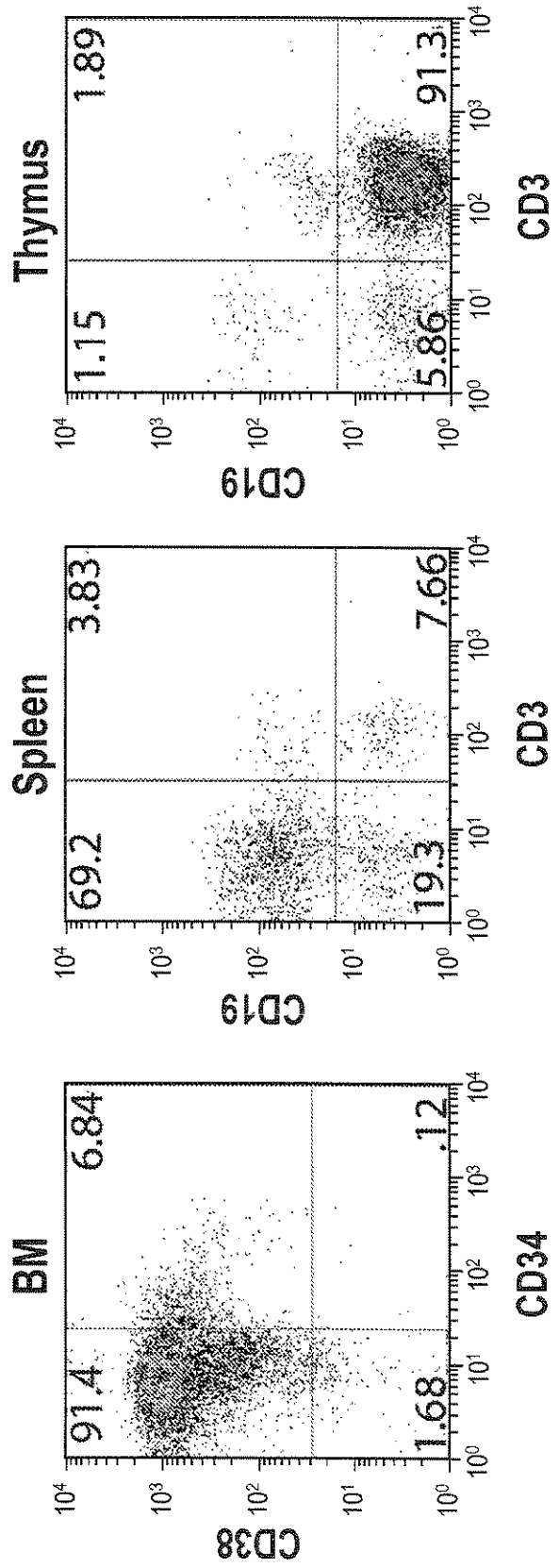

Thymus
1.89
91.3
1.15
5.86
CD19
CD3
Spleen
3.83
7.66
69.2
19.3
CD19
CD3
BM
6.84
.12
91.4
1.68
CD38
CD34

Fig. 6B

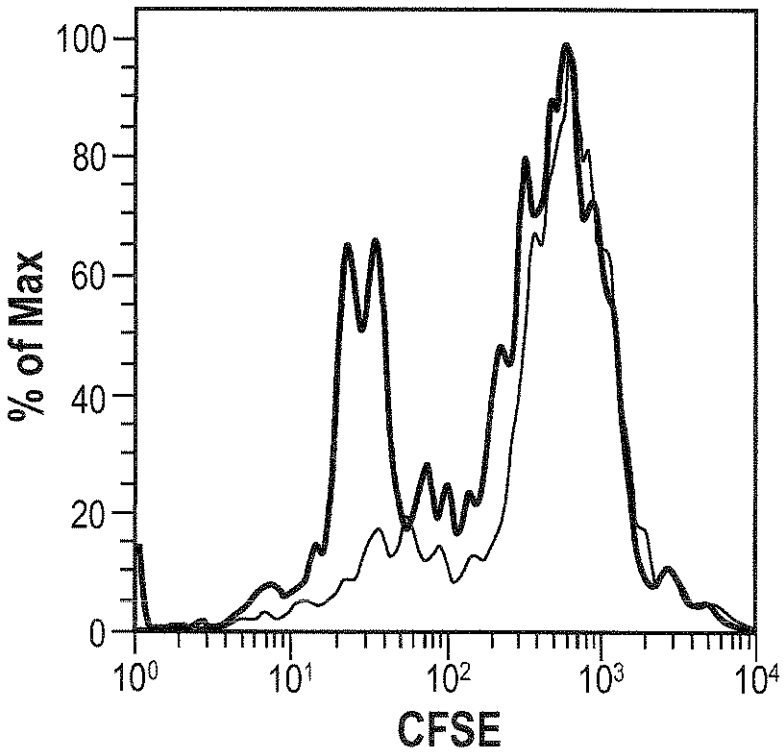


Fig. 6C

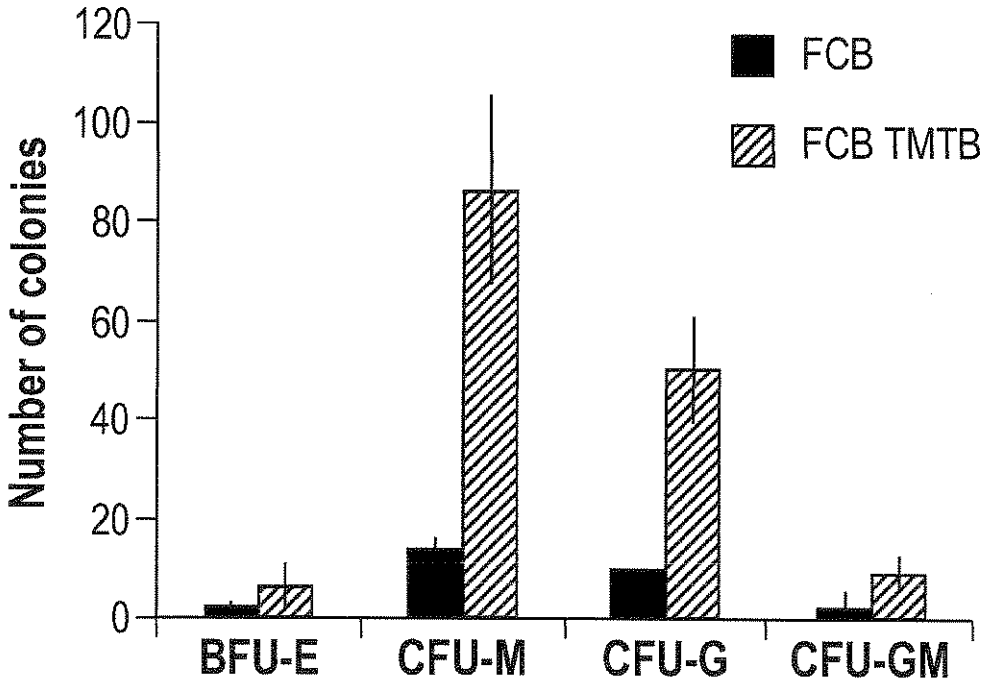

120
100
80
60
40
20
0
Number of colonies
FCB
FCB TMTB
BFU-E
CFU-M
CFU-G
CFU-GM

Fig. 6D

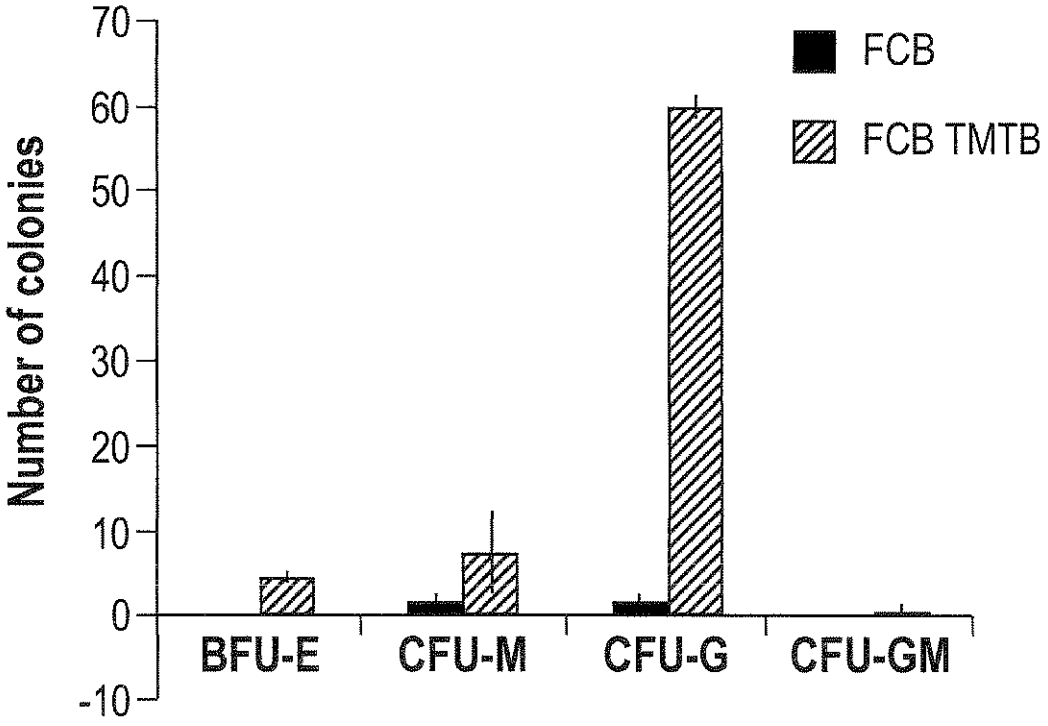

70
60
50
40
30
20
10
0
-10
Number of colonies
FCB
FCB TMTB
BFU-E
CFU-M
CFU-G
CFU-GM

Fig. 6E

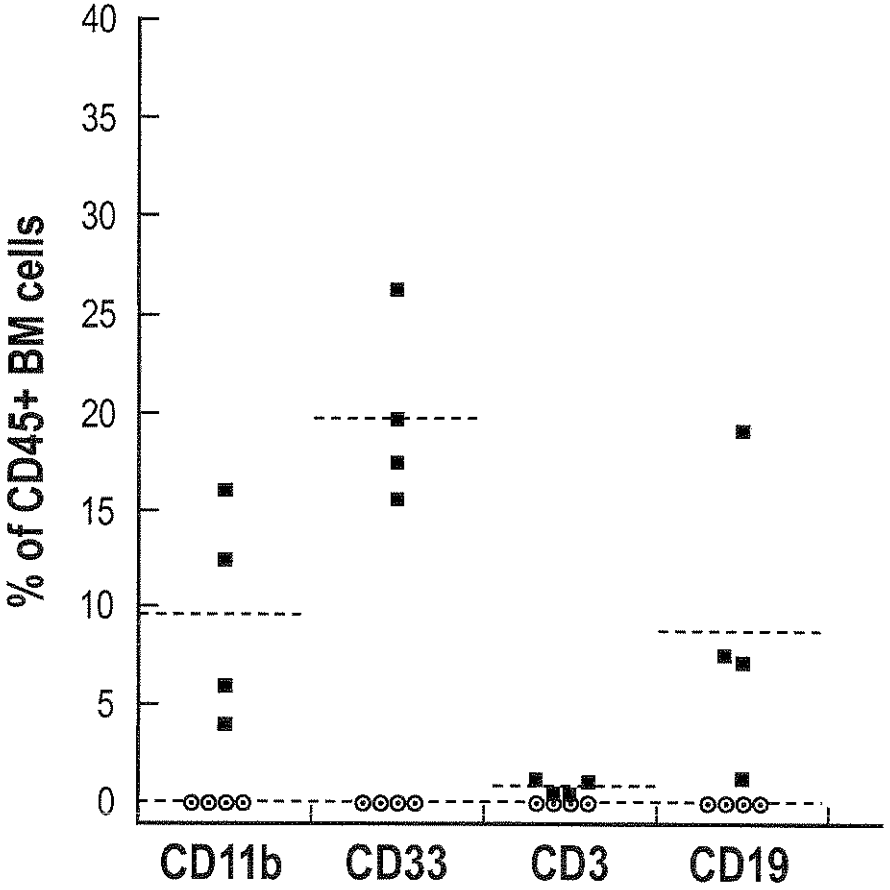


Fig. 6F

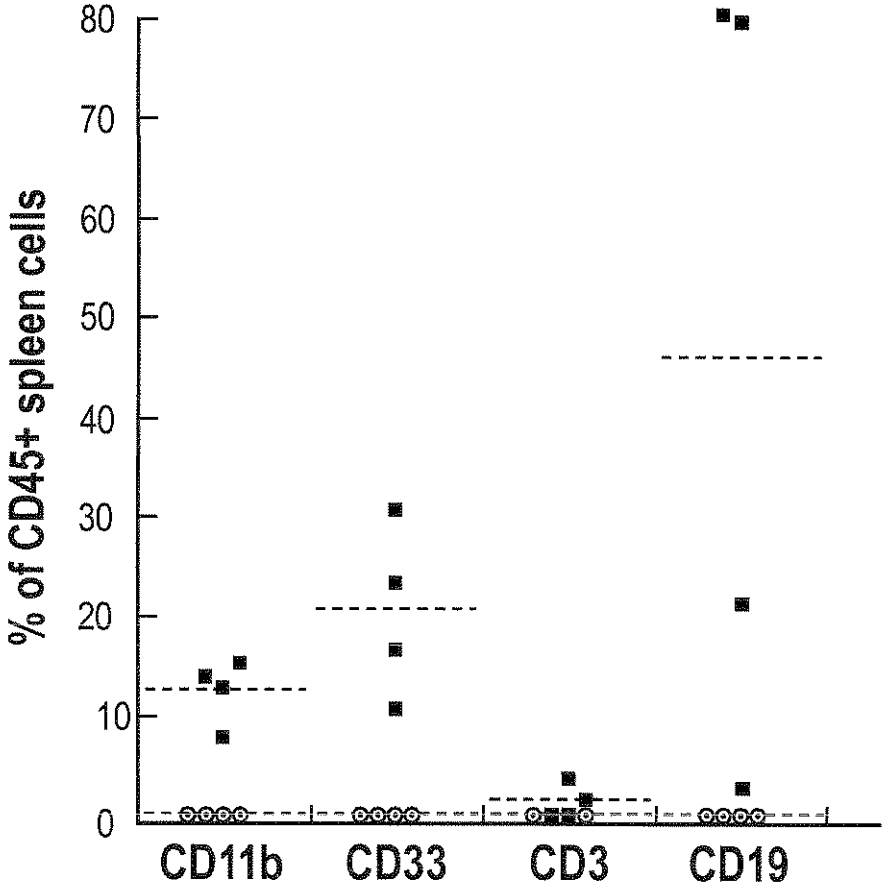

% of CD45+ spleen cells
80
70
60
50
40
30
20
10
0
CD11b
CD33
CD3
CD19

Fig. 6G

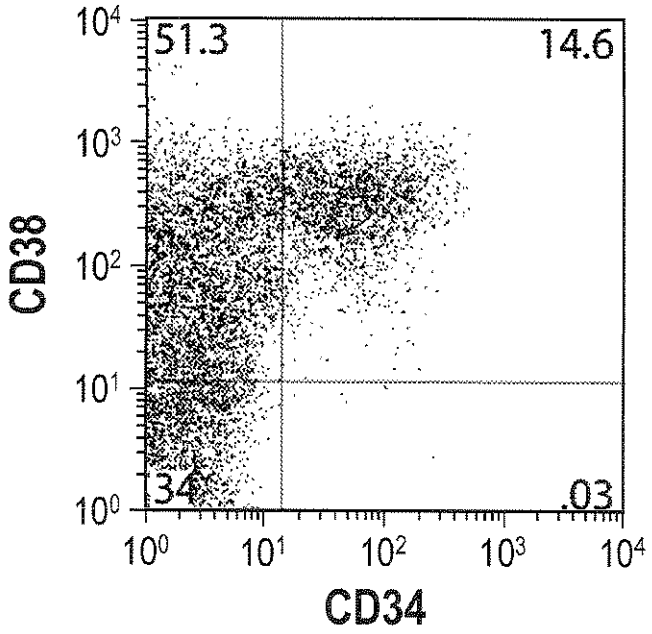


Fig. 7A

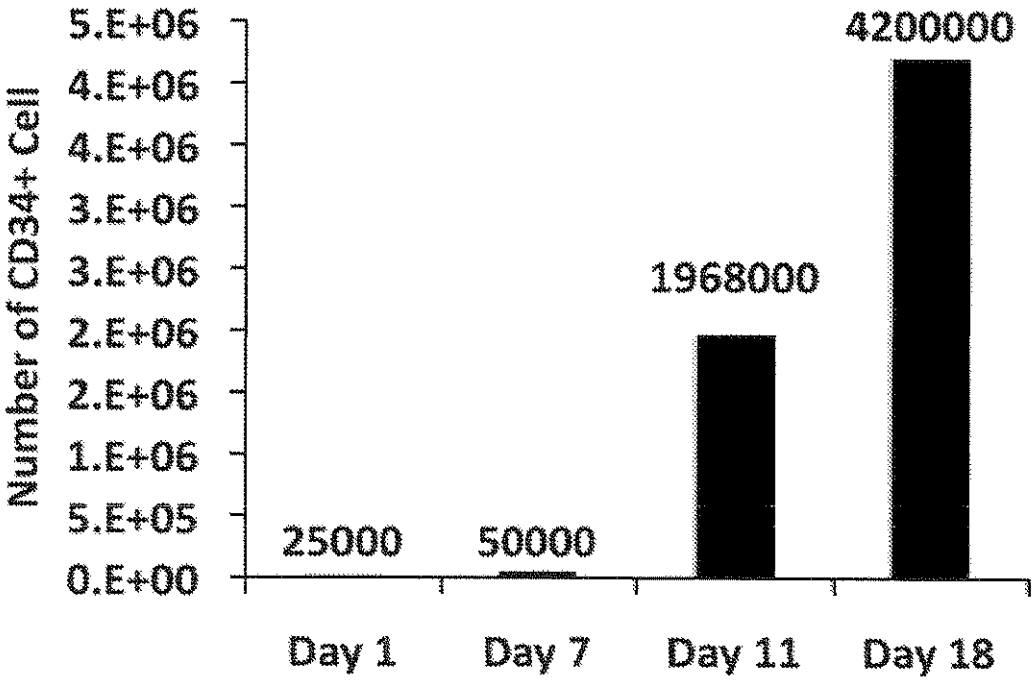

Number of CD34+ Cell
5.E+06
4.E+06
4.E+06
3.E+06
3.E+06
2.E+06
2.E+06
1.E+06
5.E+05
0.E+00
25000
50000
1968000
4200000
Day 1
Day 7
Day 11
Day 18

Fig. 7B

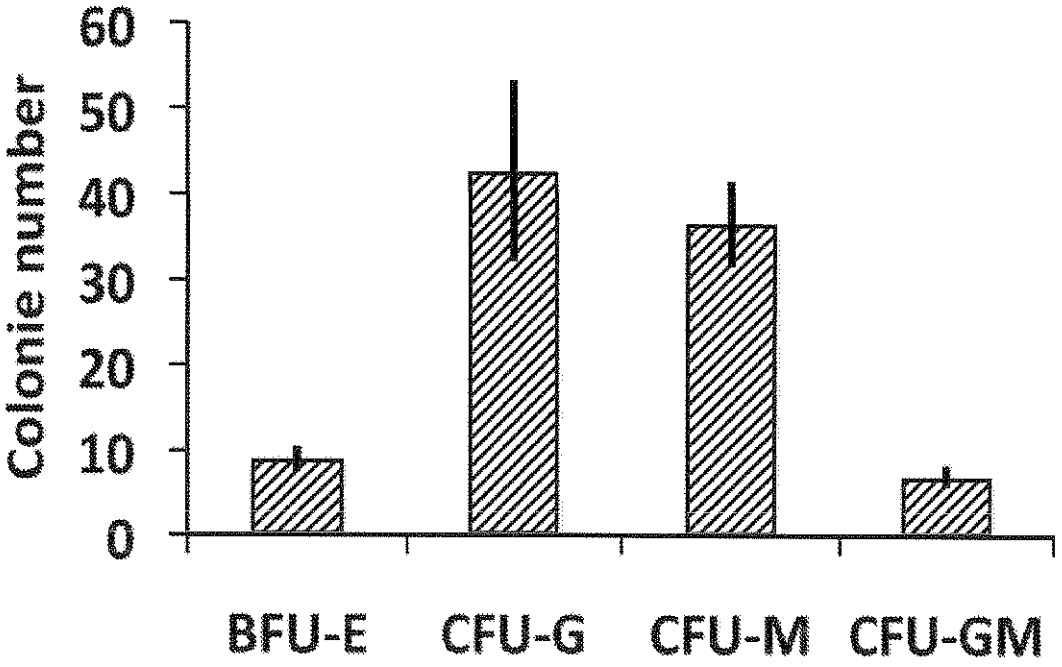


Fig. 7C

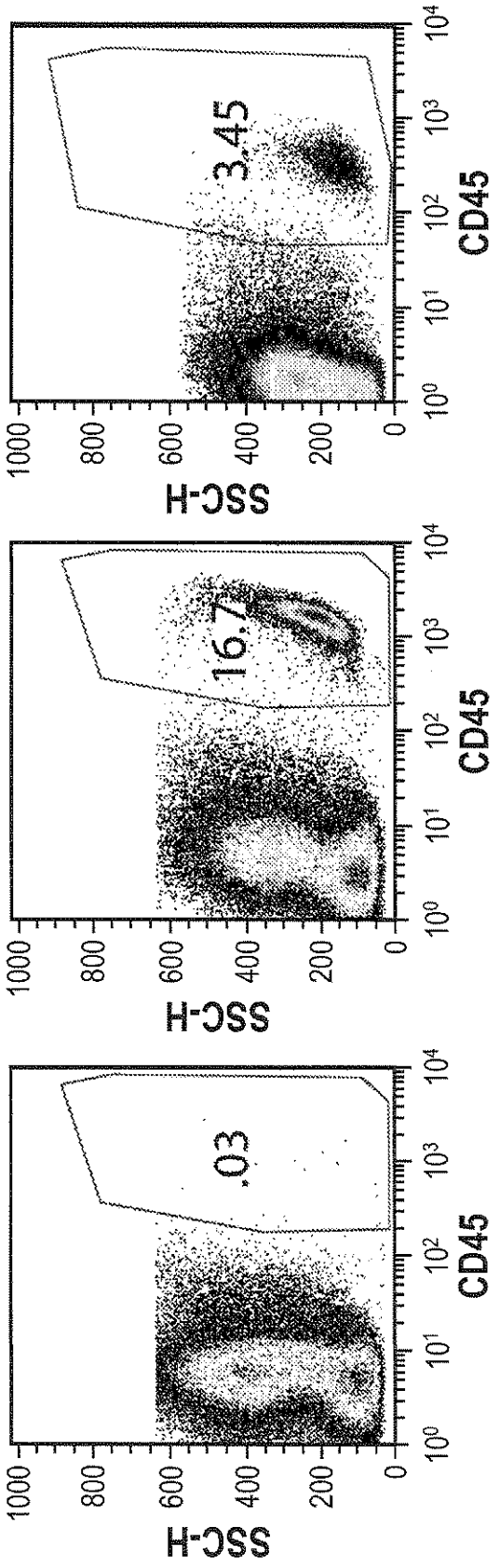


Fig. 7D

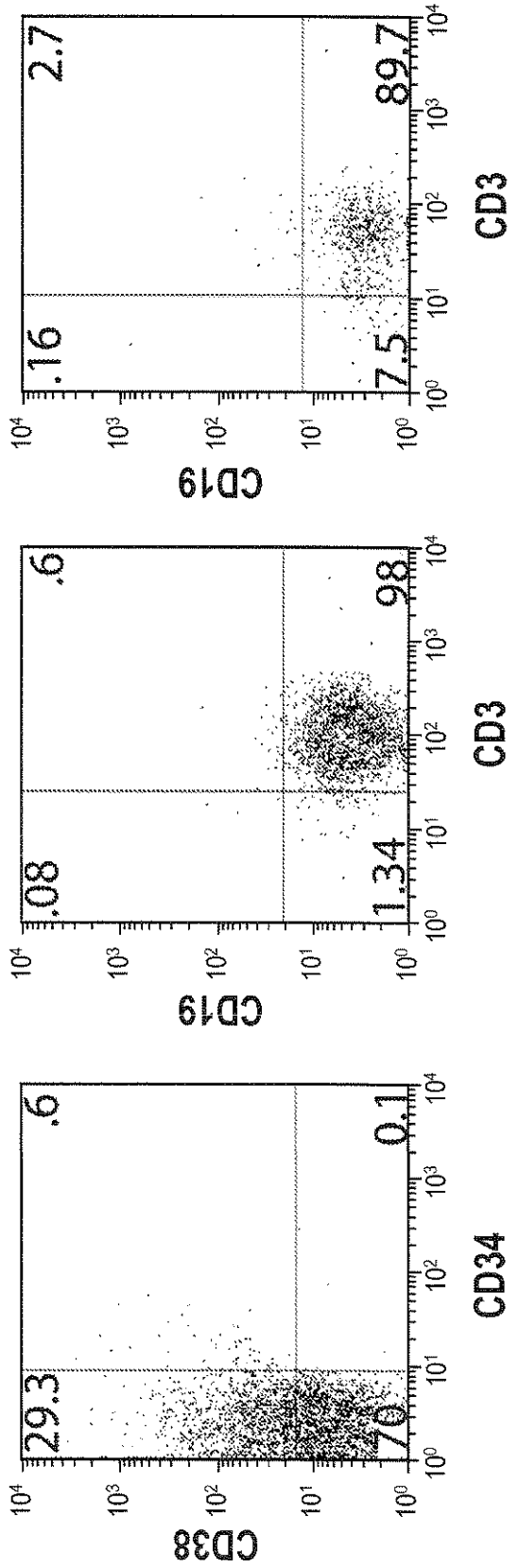


Fig. 7E

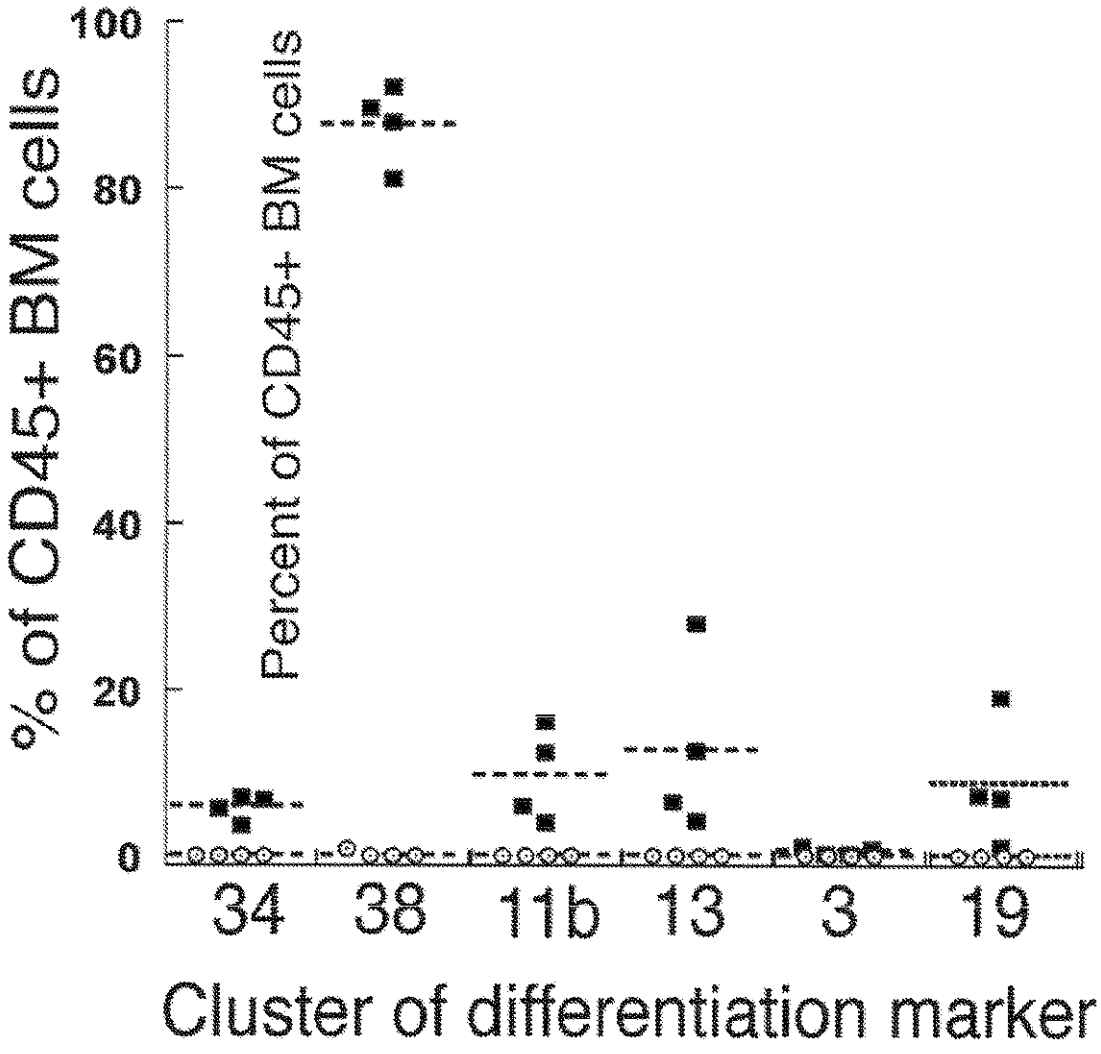

% of CD45+ BM cells
Percent of CD45+ BM cells
100
80
60
40
20
0
34
38
11b
13
3
19
Cluster of differentiation marker

Fig. 7F

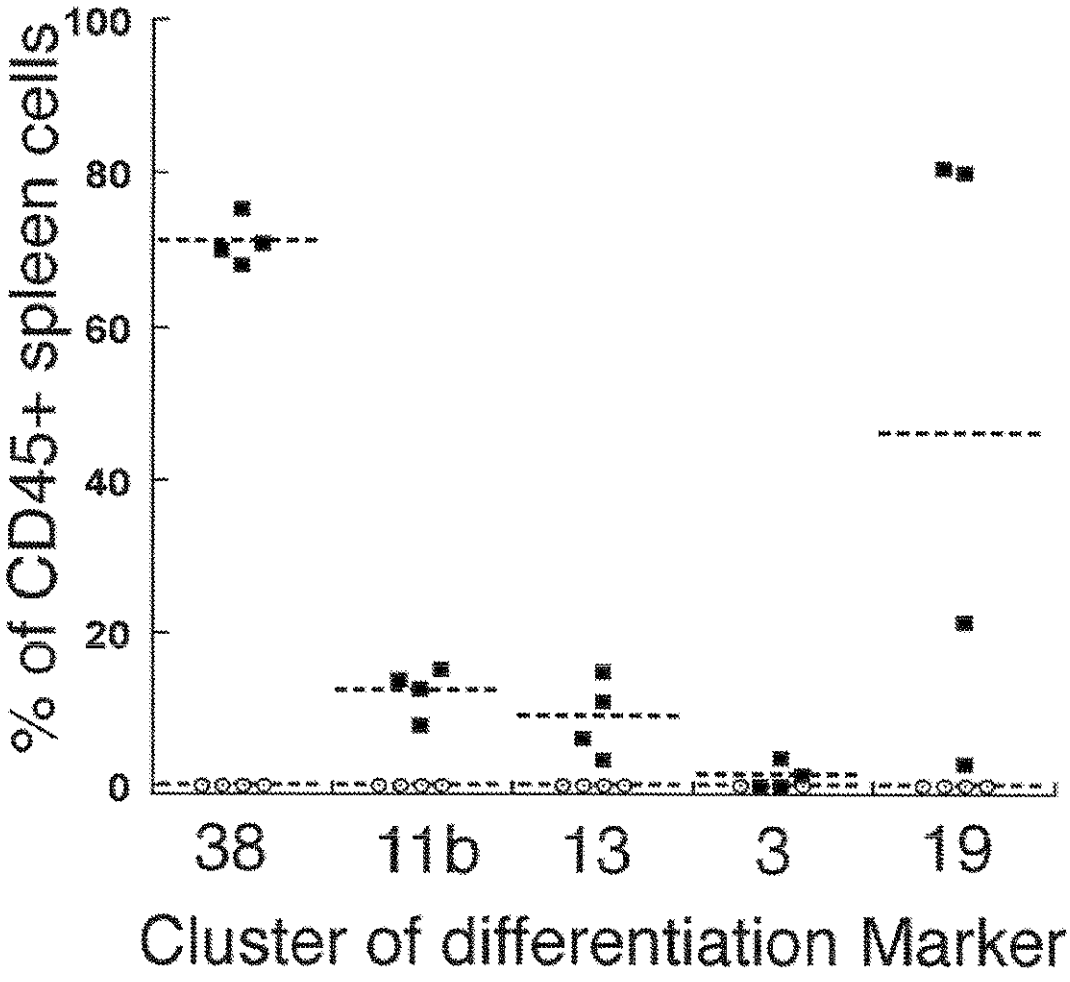

% of CD45+ spleen cells
100
80
60
40
20
0
38
11b
13
3
19
Cluster of differentiation Marker

Fig. 7G

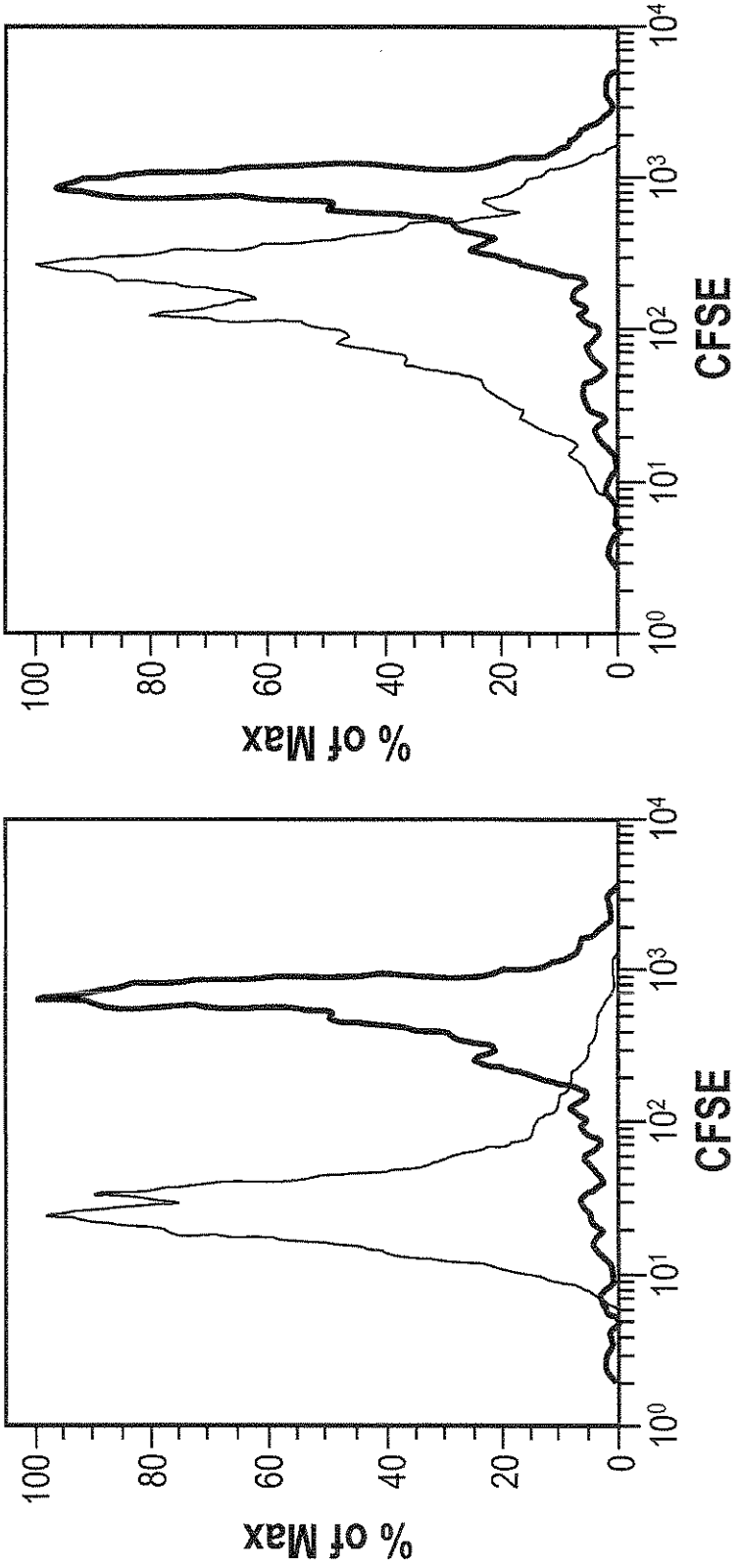

% of Max
100
80
60
40
20
0
10^0
10^1
10^2
10^3
10^4
CFSE
% of Max
100
80
60
40
20
0
10^0
10^1
10^2
10^3
10^4
CFSE

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

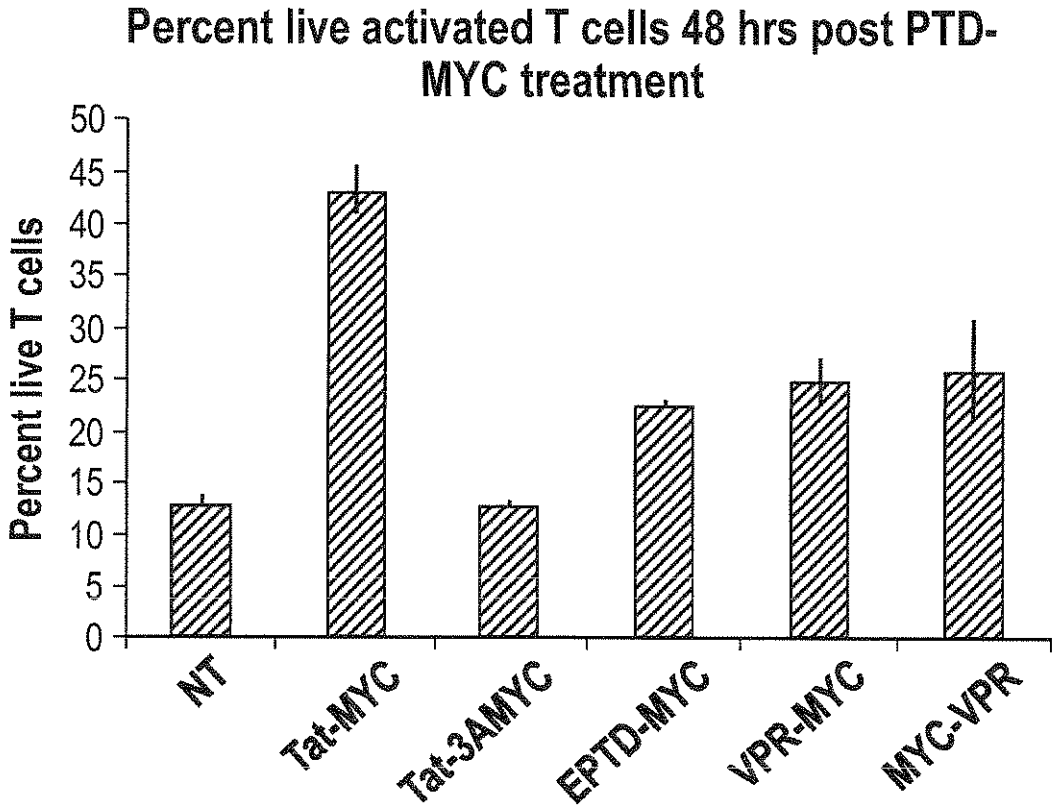

Percent live activated T cells 48 hrs post PTD-MYC treatment
Percent live T cells
50
45
40
35
30
25
20
15
10
5
0
NT
Tat-MYC
Tat-3AMYC
EPTD-MYC
VPR-MYC
MYC-VPR

Fig. 9B

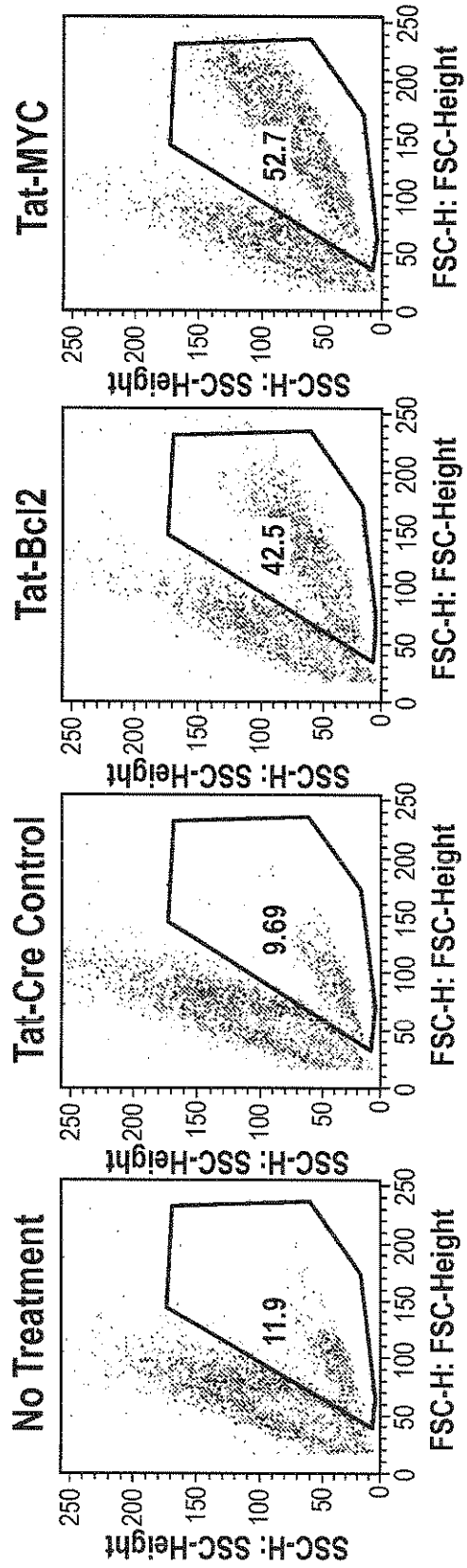


Fig. 10A Fig. 10B Fig. 10C Fig. 10D

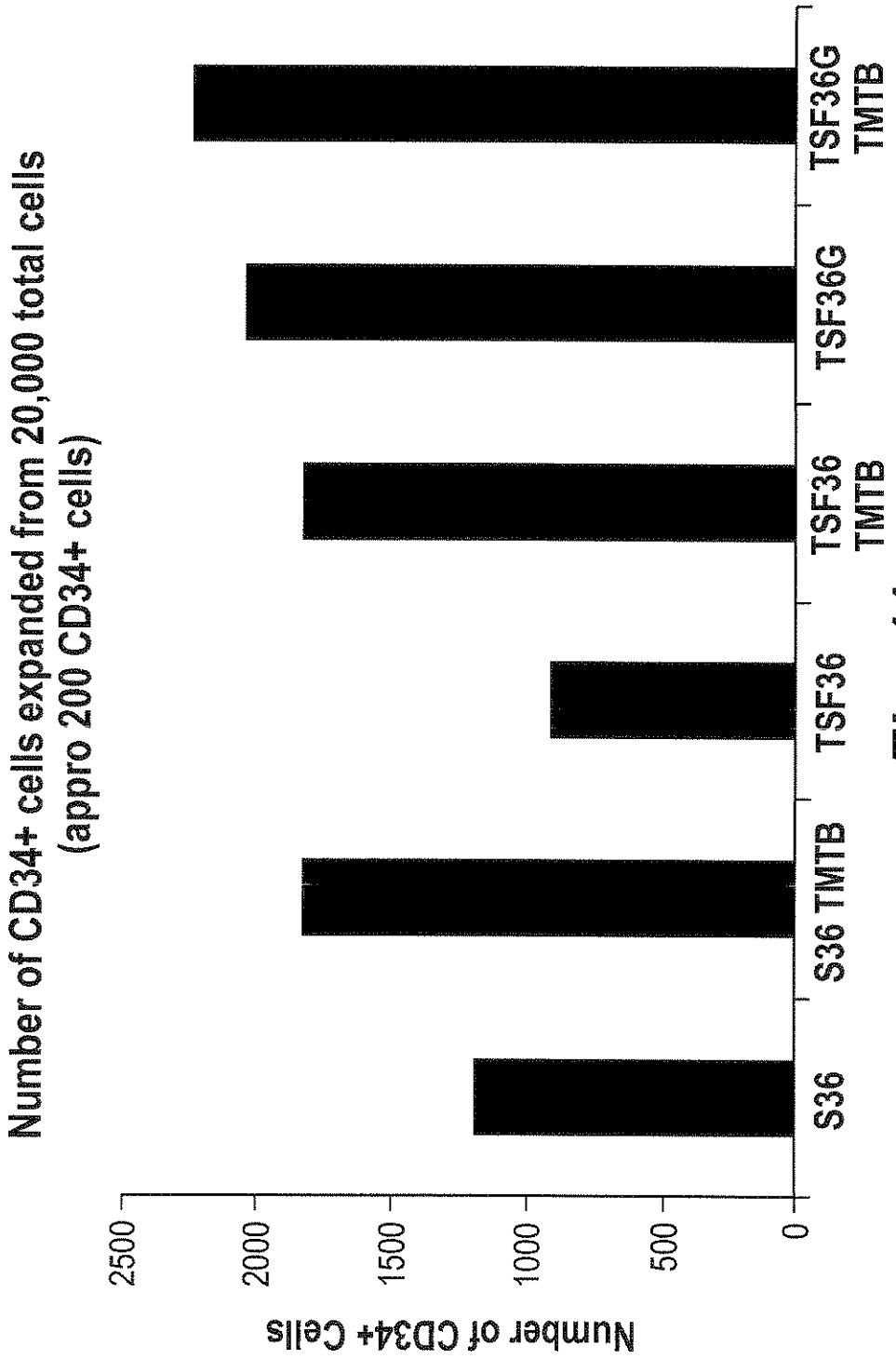

Number of CD34+ cells expanded from 20,000 total cells
(appro 200 CD34+ cells)
Number of CD34+ Cells
2500
2000
1500
1000
500
0
S36
S36 TMTB
TSF36
TSF36 TMTB
TSF36G
TSF36G TMTB

Fig. 11

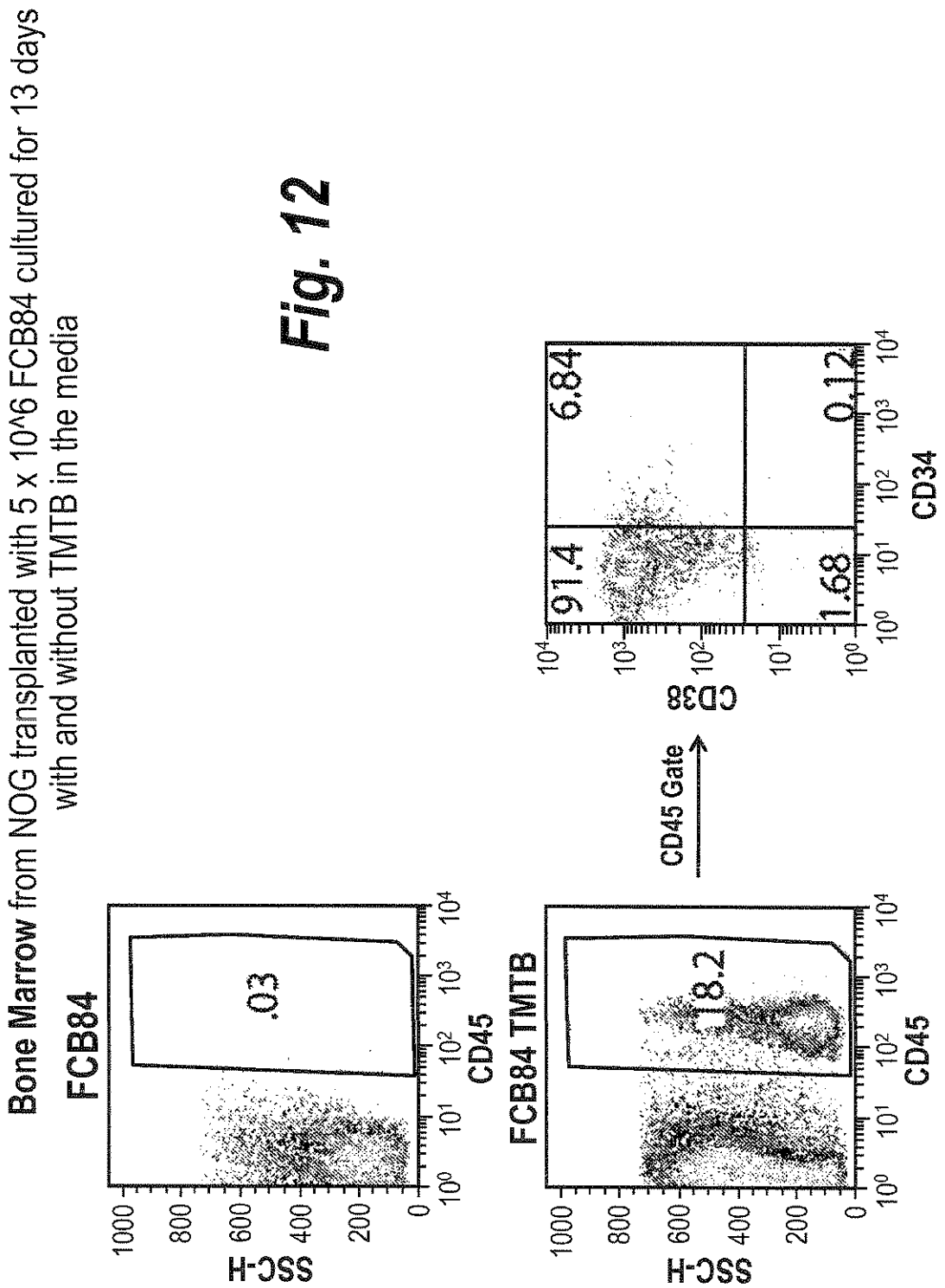

Bone Marrow from NOG transplanted with 5 x 10^6 FCB84 cultured for 13 days
with and without TMTB in the media
FCB84
.03
SSC-H
CD45
FCB84 TMTB
18.2
CD45 Gate
CD38
CD34
91.4
6.84
1.68
0.12

Fig. 12

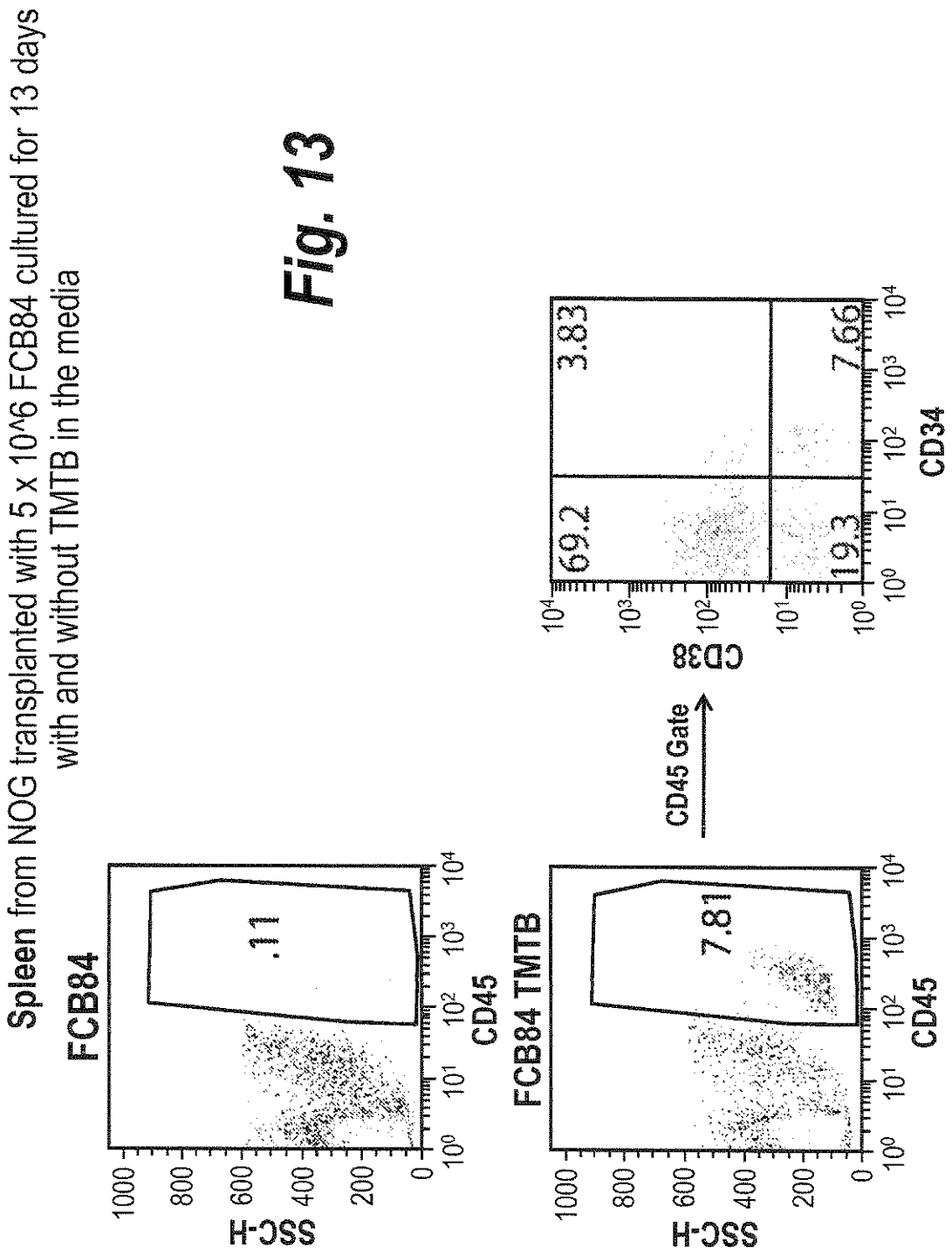

Spleen from NOG transplanted with 5 x 10^6 FCB84 cultured for 13 days with and without TMTB in the media
FCB84
.11
SSC-H
CD45
FCB84 TMTB
7.81
CD45 Gate
CD38
CD34
69.2
3.83
19.3
7.66

Fig. 13

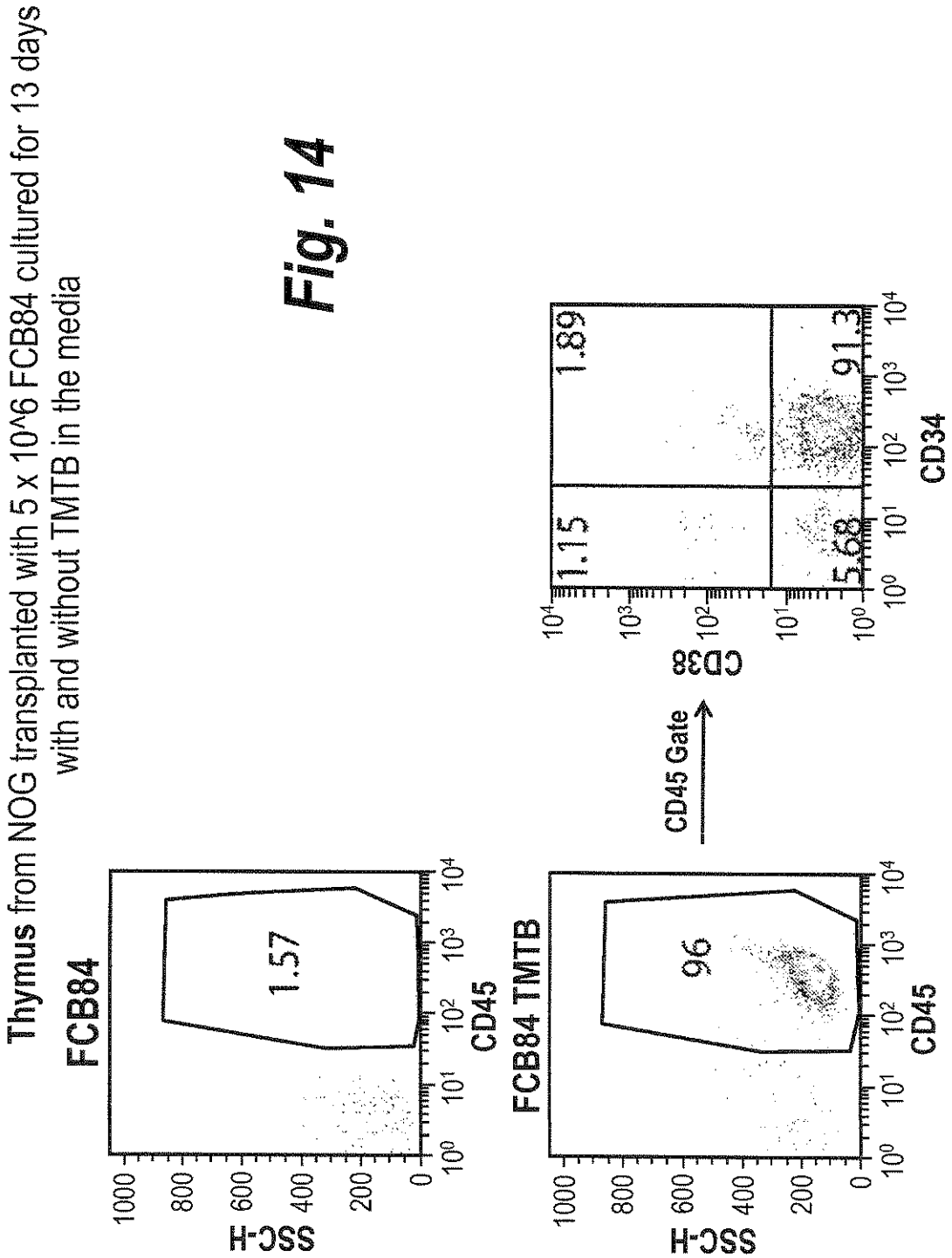

Thymus from NOG transplanted with 5 x 10^6 FCB84 cultured for 13 days
with and without TMTB in the media
FCB84
1.57
SSC-H
CD45
FCB84 TMTB
96
CD45 Gate
CD38
CD34
1.15
1.89
5.68
91.3

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

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Tat-MYC Nucleotide sequence

ATGAGGAAGAAGCGGAGACAGCGACGAAGAATGCCCCTCAACGTTAGCTTCACCAACAGGAACTATGACCTCGACTACGACTCGGTGCAGCCG
TATTTCTACTGCGACGAGGAGGAGAACTTCTACCAGCAGCAGCAGCAGAGCGAGCTGCAGCCCCCGGCGCCCAGCGAGGATATCTGGAAGAAA
TTCGAGCTGCTGCCCACCCCGCCCCTGTCCCCTAGCCGCCGCTCCGGGCTCTGCTCGCCCTCCTACGTTGCGGTCACACCCTTCTCCCTTCGG
GGAGACAACGACGGCGGTGGCGGGAGCTTCTCCACGGCCGACCAGCTGGAGATGGTGACCGAGCTGCTGGGAGGAGACATGGTGAACCAGAGT
TTCATCTGCGACCCGGACGACGAGACCTTCATCAAAAACATCATCATCCAGGACTGTATGTGGAGCGGCTTCTCGGCCGCCGCCAAGCTCGTC
TCAGAGAAGCTGGCCTCCTACCAGGCTGCGCGCAAAGACAGCGGCAGCCCGAACCCCGCCCCGCGGCCACAGCGTCTGCTCCACCTCCAGCTTG
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