Fig. 1

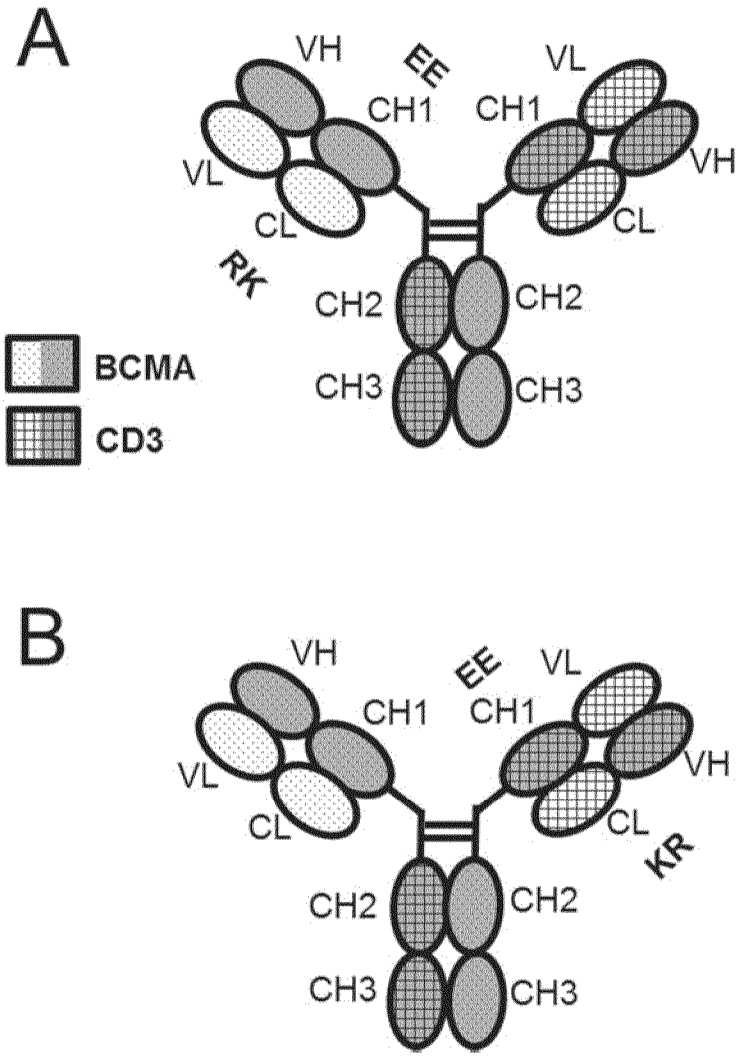

A
VH
EE
VL
CH1
CH1
VH
VL
CL
CL
RK
CH2
CH2
CH3
CH3
BCMA
CD3
B
VH
EE
VL
CH1
CH1
VH
VL
CL
CL
KR
CH2
CH2
CH3
CH3

Fig. 2

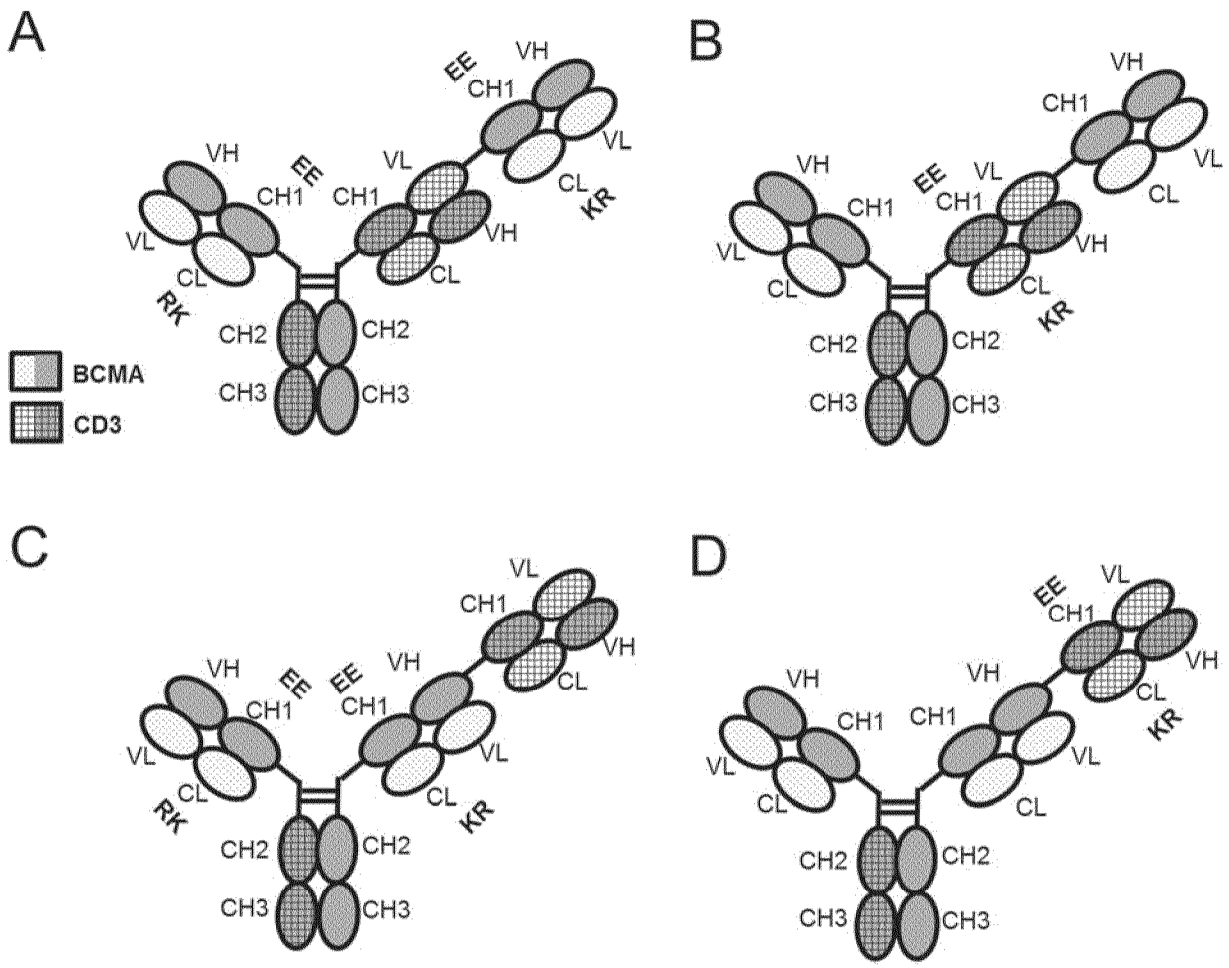


Fig. 3

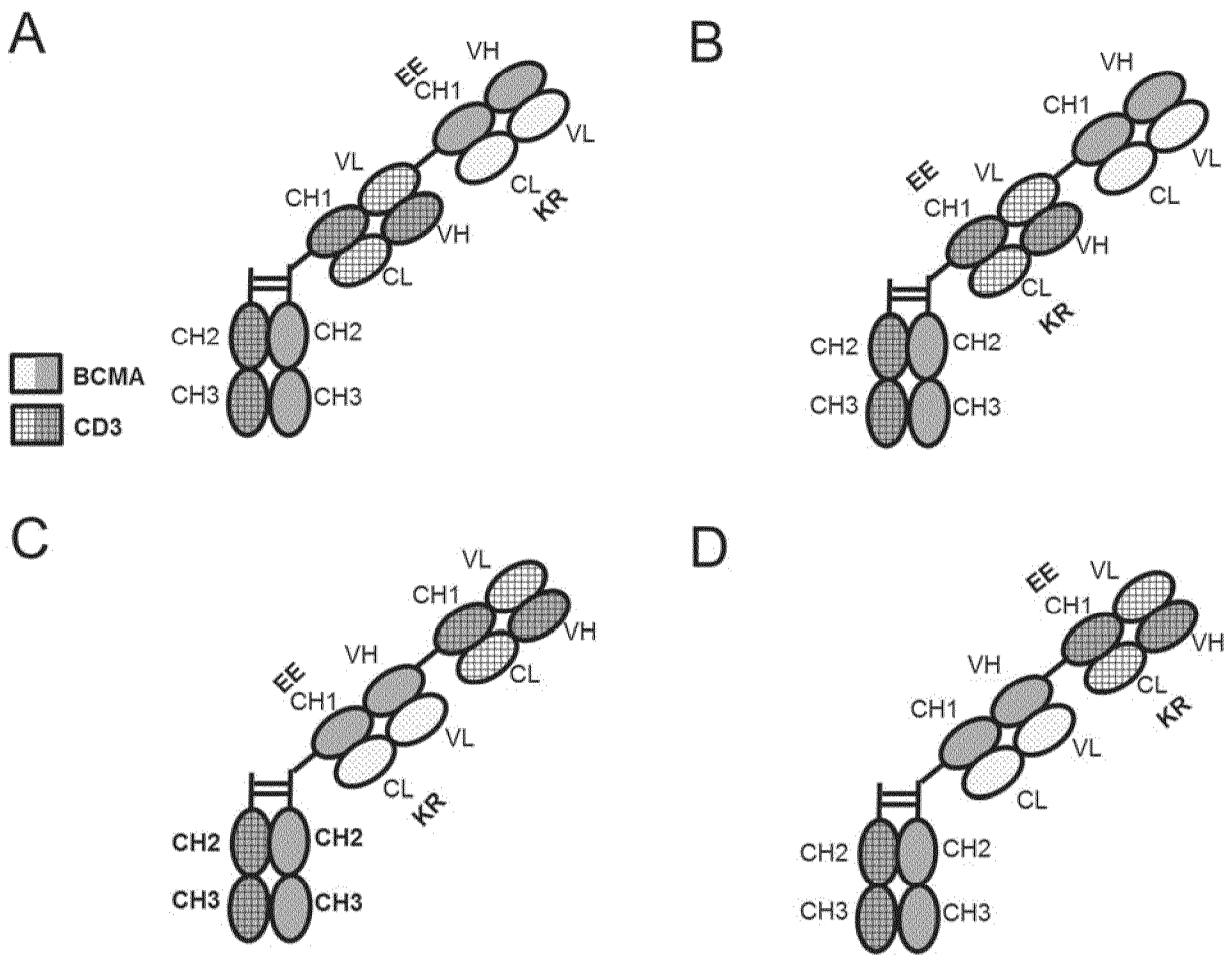


Fig. 4

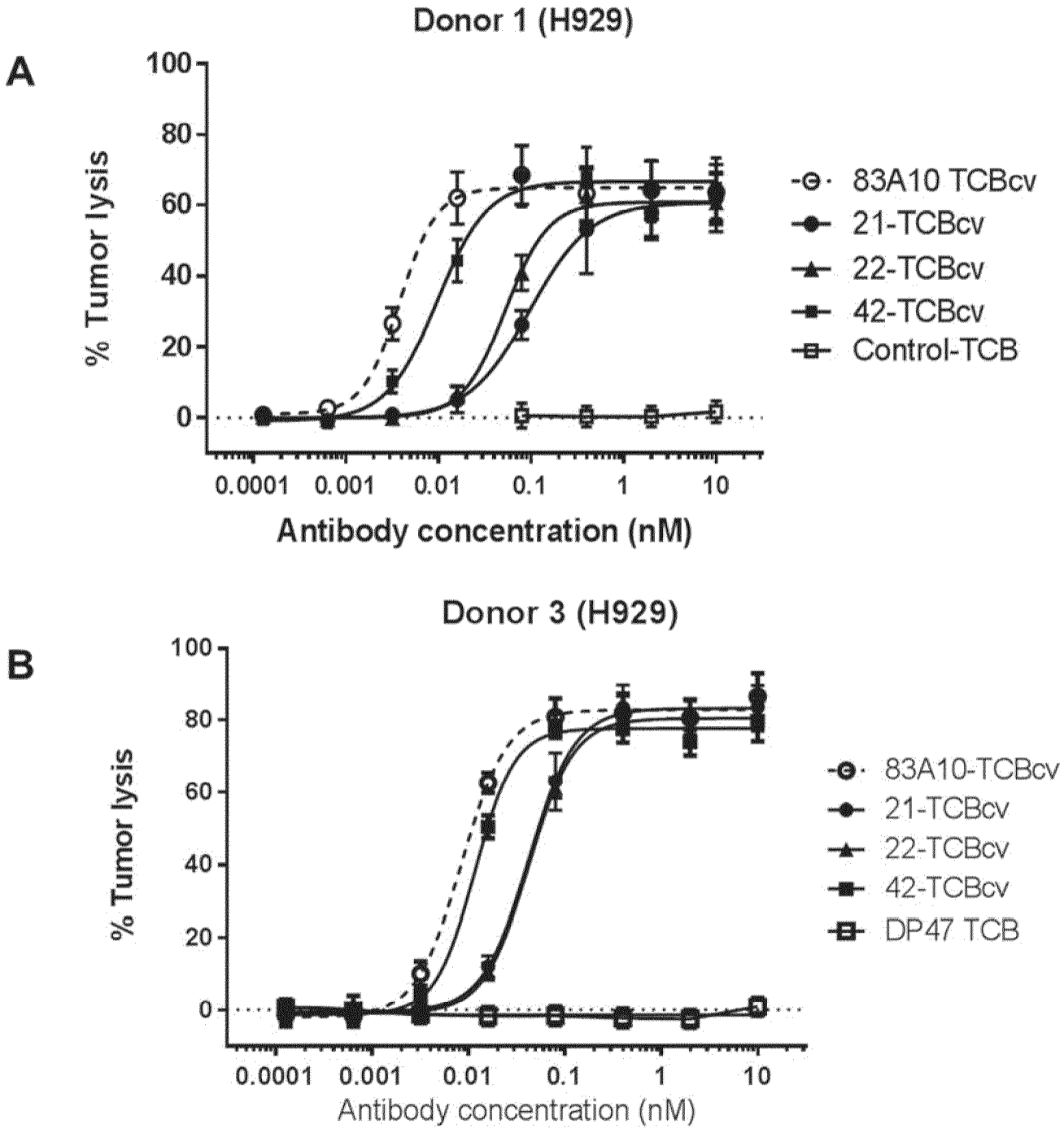

A
Donor 1 (H929)
% Tumor lysis
100
80
60
40
20
0
0.0001
0.001
0.01
0.1
1
10
Antibody concentration (nM)
83A10 TCBcv
21-TCBcv
22-TCBcv
42-TCBcv
Control-TCB
B
Donor 3 (H929)
% Tumor lysis
100
80
60
40
20
0
0.0001
0.001
0.01
0.1
1
10
Antibody concentration (nM)
83A10-TCBcv
21-TCBcv
22-TCBcv
42-TCBcv
DP47 TCB

Fig. 4 (Con't)

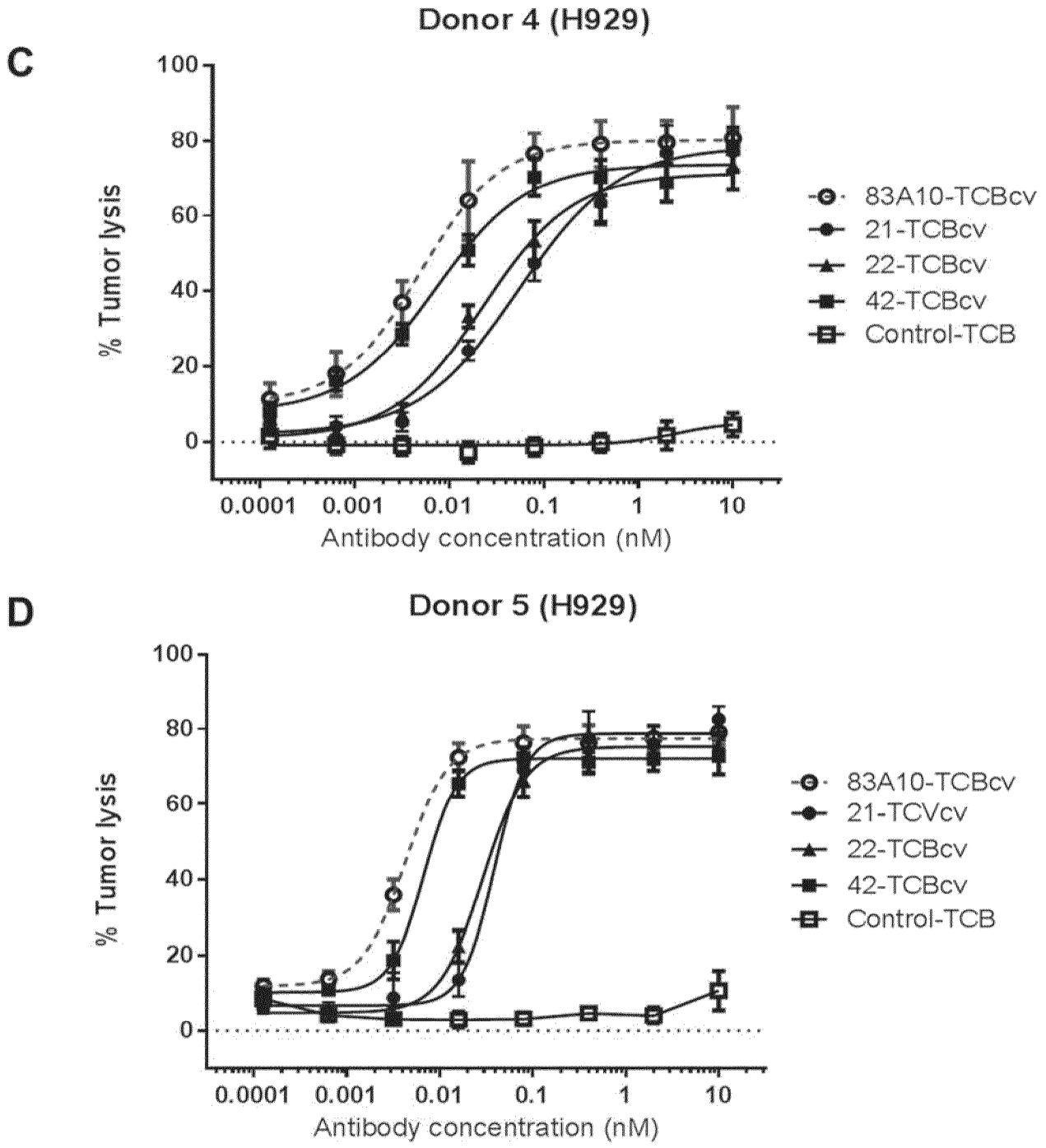

C
Donor 4 (H929)
% Tumor lysis
100
80
60
40
20
0
0.0001
0.001
0.01
0.1
1
10
Antibody concentration (nM)
83A10-TCBcv
21-TCBcv
22-TCBcv
42-TCBcv
Control-TCB
D
Donor 5 (H929)
% Tumor lysis
100
80
60
40
20
0
0.0001
0.001
0.01
0.1
1
10
Antibody concentration (nM)
83A10-TCBcv
21-TCVcv
22-TCBcv
42-TCBcv
Control-TCB

Fig. 5

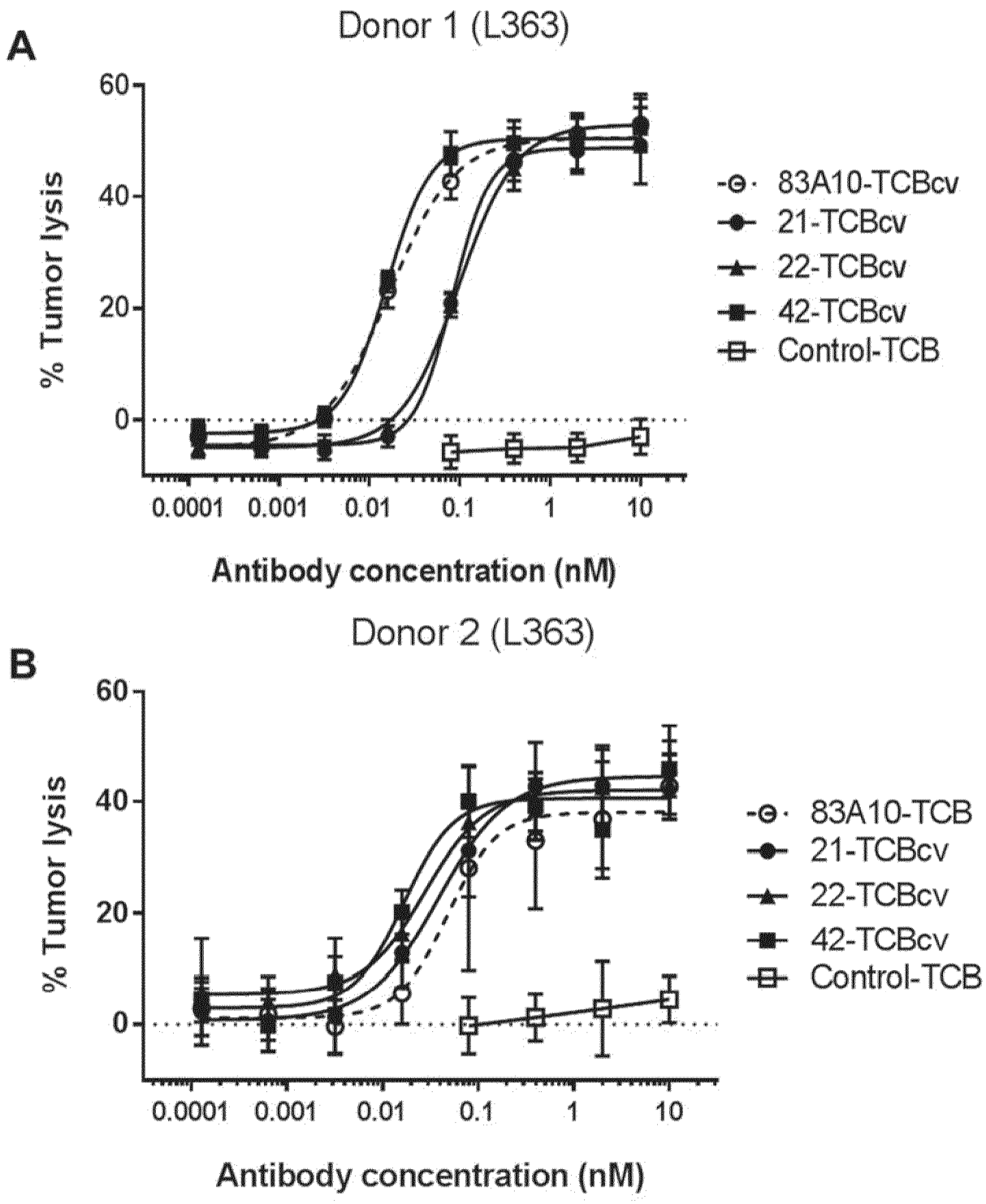

A
Donor 1 (L363)
% Tumor lysis
60
40
20
0
0.0001
0.001
0.01
0.1
1
10
Antibody concentration (nM)
83A10-TCBcv
21-TCBcv
22-TCBcv
42-TCBcv
Control-TCB
B
Donor 2 (L363)
% Tumor lysis
60
40
20
0
0.0001
0.001
0.01
0.1
1
10
Antibody concentration (nM)
83A10-TCB
21-TCBcv
22-TCBcv
42-TCBcv
Control-TCB

Fig. 5 (Con't)

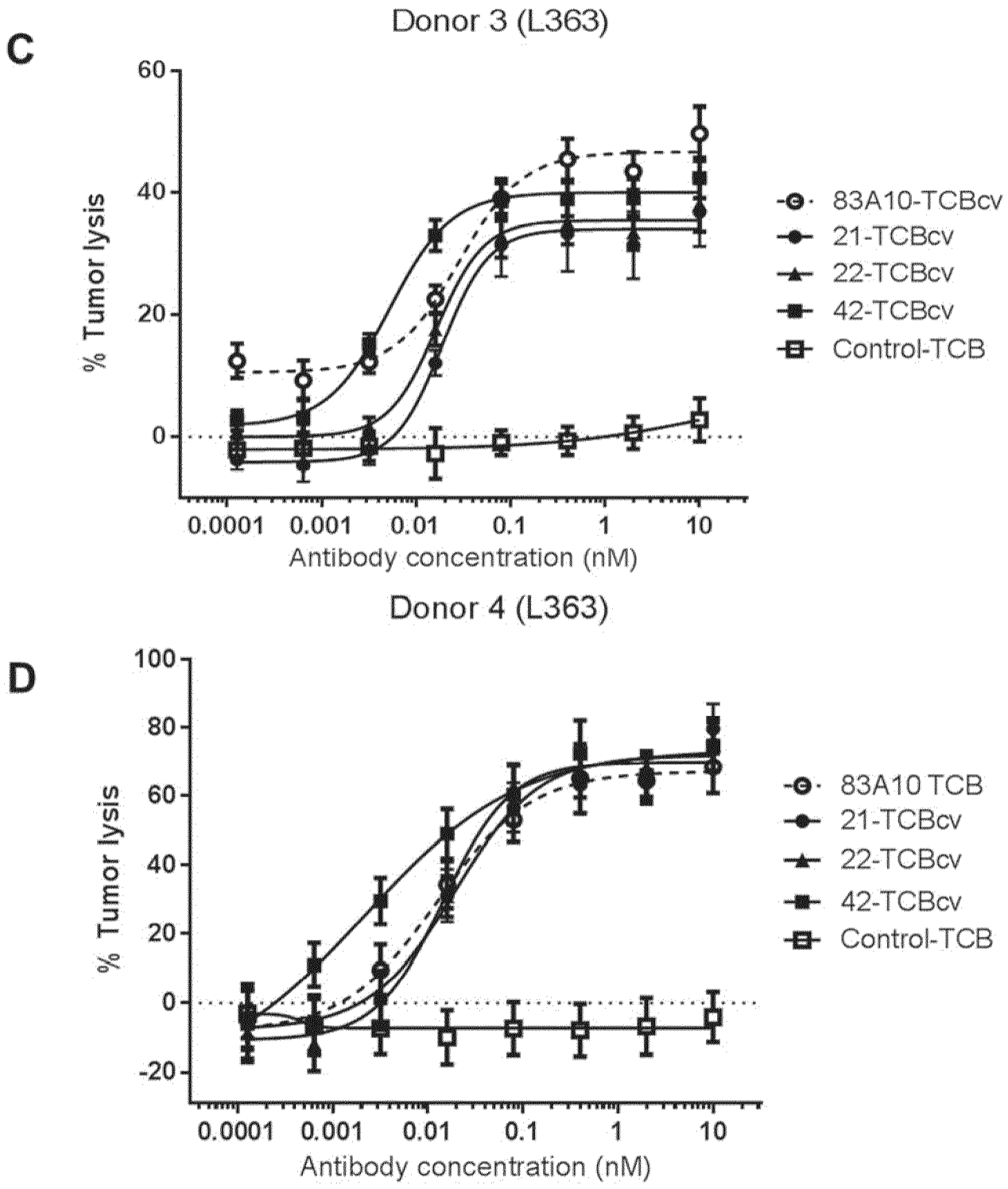

C
Donor 3 (L363)
% Tumor lysis
60
40
20
0
0.0001
0.001
0.01
0.1
1
10
Antibody concentration (nM)
83A10-TCBcv
21-TCBcv
22-TCBcv
42-TCBcv
Control-TCB
D
Donor 4 (L363)
% Tumor lysis
100
80
60
40
20
0
-20
0.0001
0.001
0.01
0.1
1
10
Antibody concentration (nM)
83A10 TCB
21-TCBcv
22-TCBcv
42-TCBcv
Control-TCB

Fig. 5 (Con't)

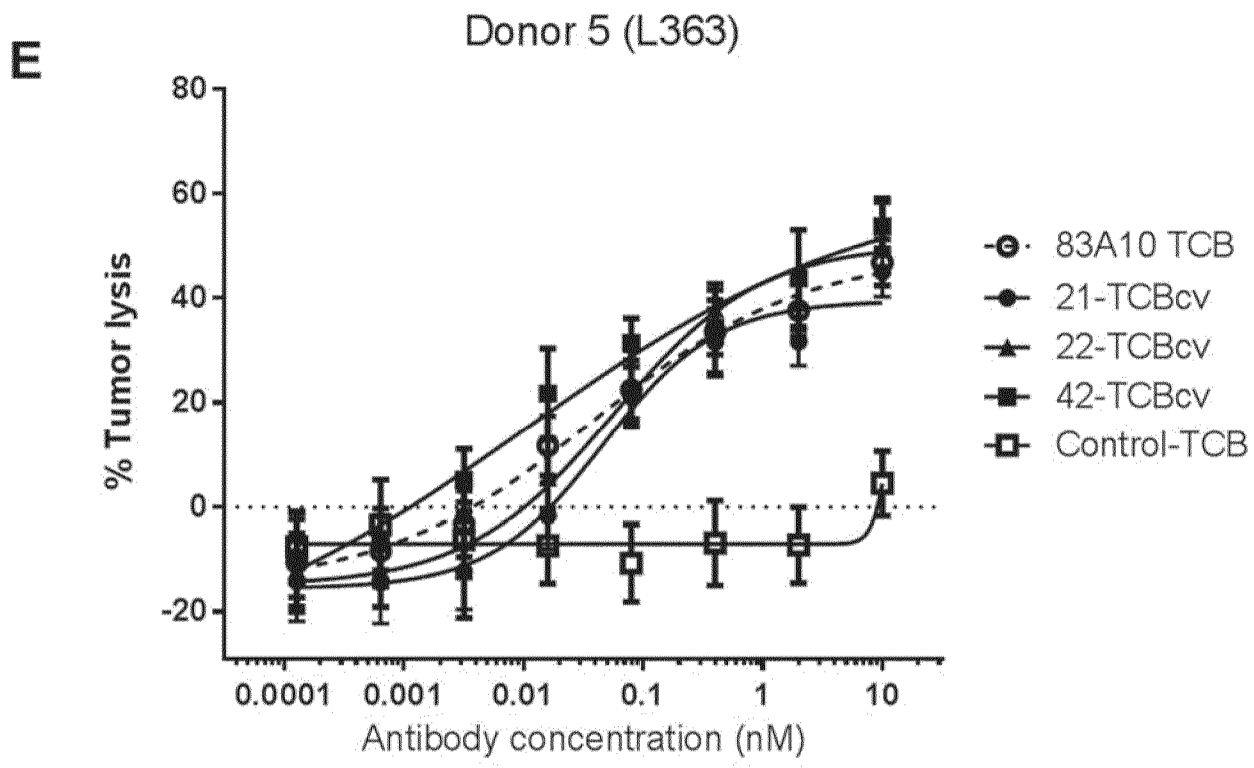

E
Donor 5 (L363)
% Tumor lysis
80
60
40
20
0
-20
0.0001
0.001
0.01
0.1
1
10
Antibody concentration (nM)
83A10 TCB
21-TCBcv
22-TCBcv
42-TCBcv
Control-TCB

Fig. 6

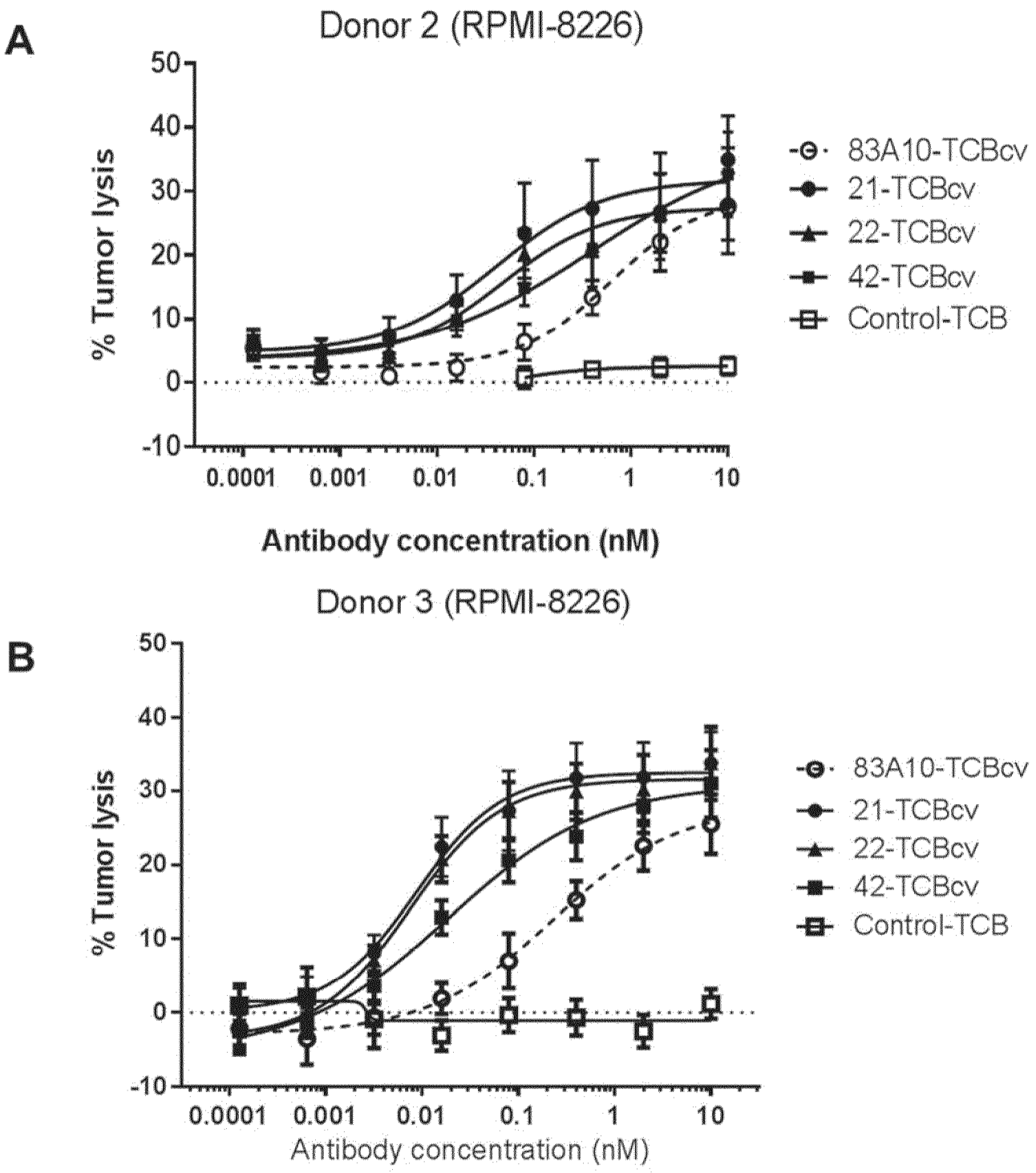

A
Donor 2 (RPMI-8226)
% Tumor lysis
50
40
30
20
10
0
-10
0.0001
0.001
0.01
0.1
1
10
Antibody concentration (nM)
83A10-TCBcv
21-TCBcv
22-TCBcv
42-TCBcv
Control-TCB
B
Donor 3 (RPMI-8226)
% Tumor lysis
50
40
30
20
10
0
-10
0.0001
0.001
0.01
0.1
1
10
Antibody concentration (nM)
83A10-TCBcv
21-TCBcv
22-TCBcv
42-TCBcv
Control-TCB

Fig. 6 (Con't)

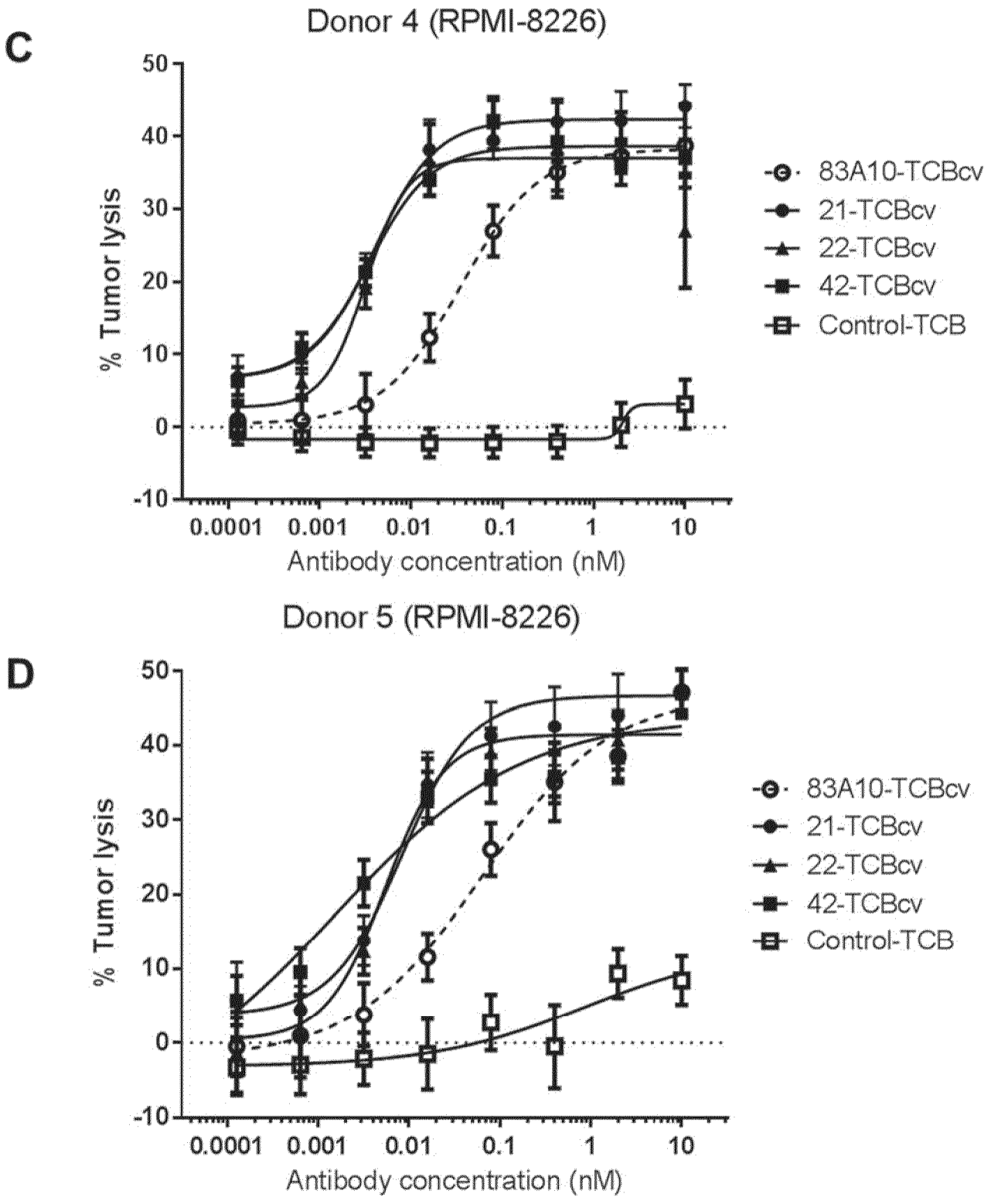

C
Donor 4 (RPMI-8226)
% Tumor lysis
50
40
30
20
10
0
-10
0.0001
0.001
0.01
0.1
1
10
Antibody concentration (nM)
83A10-TCBcv
21-TCBcv
22-TCBcv
42-TCBcv
Control-TCB
D
Donor 5 (RPMI-8226)
% Tumor lysis
50
40
30
20
10
0
-10
0.0001
0.001
0.01
0.1
1
10
Antibody concentration (nM)
83A10-TCBcv
21-TCBcv
22-TCBcv
42-TCBcv
Control-TCB

Fig. 7

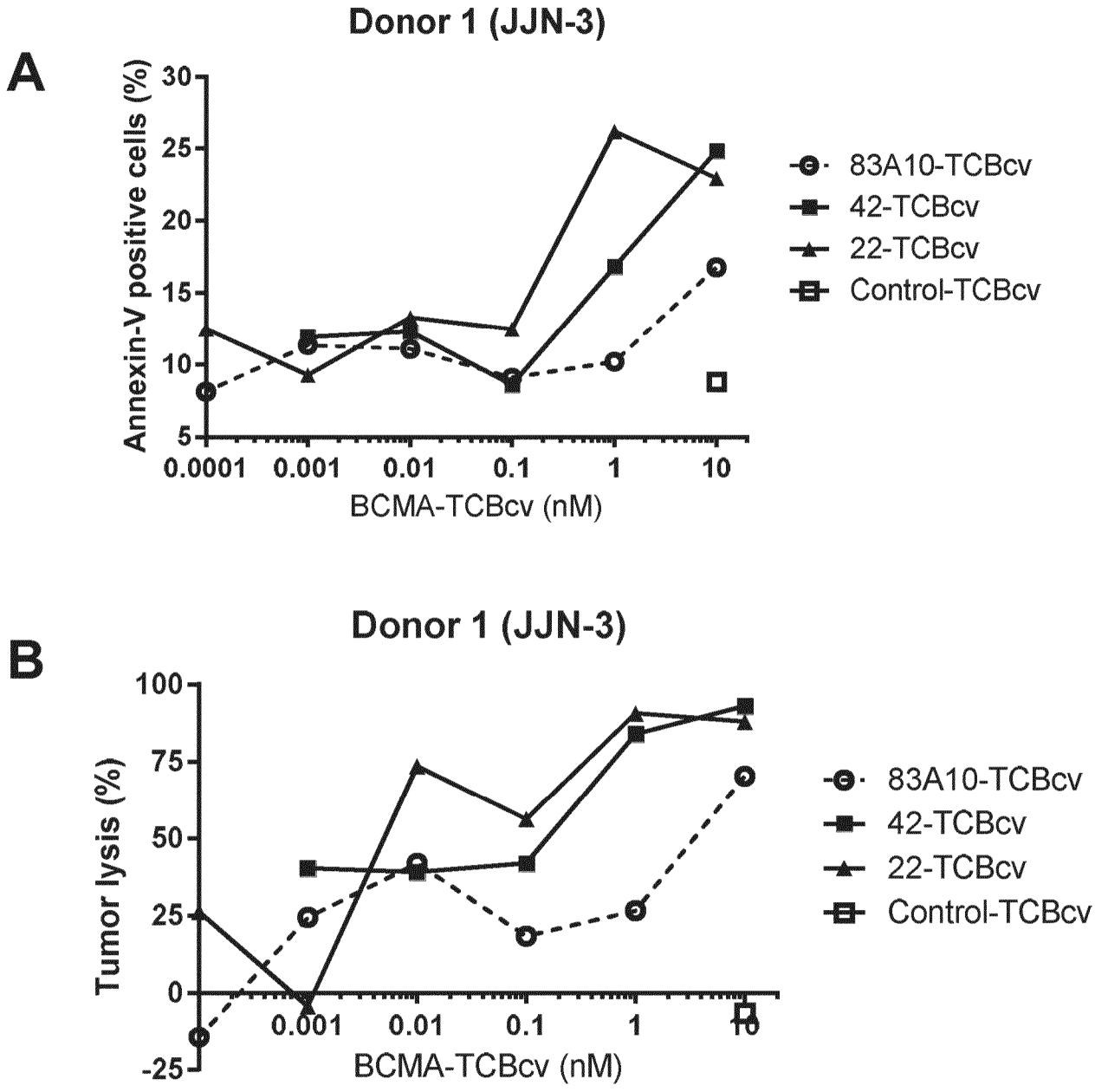

A
Donor 1 (JJN-3)
Annexin-V positive cells (%)
30
25
20
15
10
5
0.0001
0.001
0.01
0.1
1
10
BCMA-TCBcv (nM)
83A10-TCBcv
42-TCBcv
22-TCBcv
Control-TCBcv
B
Donor 1 (JJN-3)
Tumor lysis (%)
100
75
50
25
0
-25
0.001
0.01
0.1
1
10
BCMA-TCBcv (nM)
83A10-TCBcv
42-TCBcv
22-TCBcv
Control-TCBcv

Fig. 7 (Con't)

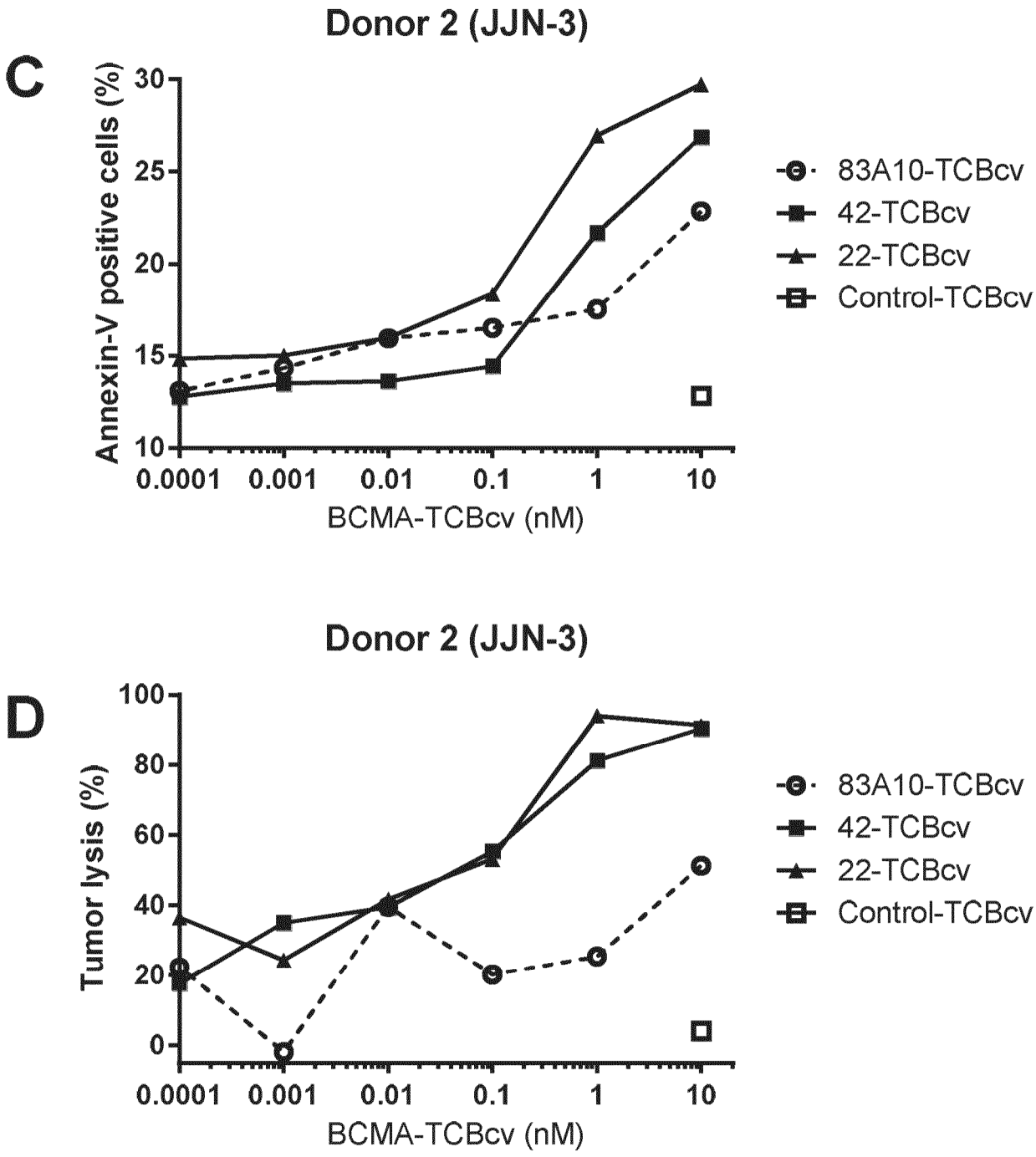

C
Donor 2 (JJN-3)
Annexin-V positive cells (%)
30
25
20
15
10
0.0001
0.001
0.01
0.1
1
10
BCMA-TCBcv (nM)
83A10-TCBcv
42-TCBcv
22-TCBcv
Control-TCBcv
D
Donor 2 (JJN-3)
Tumor lysis (%)
100
80
60
40
20
0
0.0001
0.001
0.01
0.1
1
10
BCMA-TCBcv (nM)
83A10-TCBcv
42-TCBcv
22-TCBcv
Control-TCBcv

Fig. 8

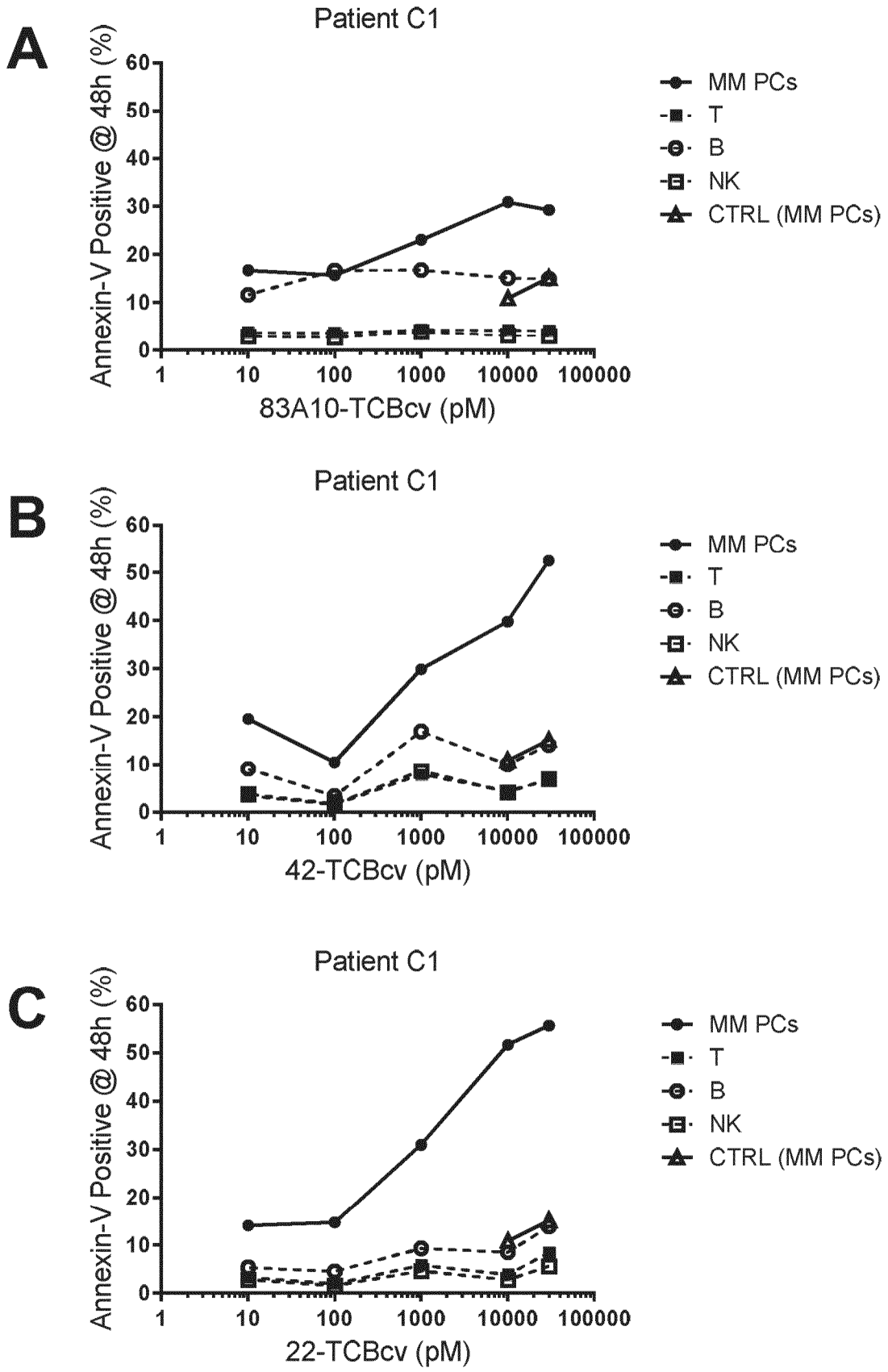

A
Patient C1
Annexin-V Positive @ 48h (%)
83A10-TCBcv (pM)
MM PCs
T
B
NK
CTRL (MM PCs)
B
Patient C1
Annexin-V Positive @ 48h (%)
42-TCBcv (pM)
MM PCs
T
B
NK
CTRL (MM PCs)
C
Patient C1
Annexin-V Positive @ 48h (%)
22-TCBcv (pM)
MM PCs
T
B
NK
CTRL (MM PCs)

Fig. 9

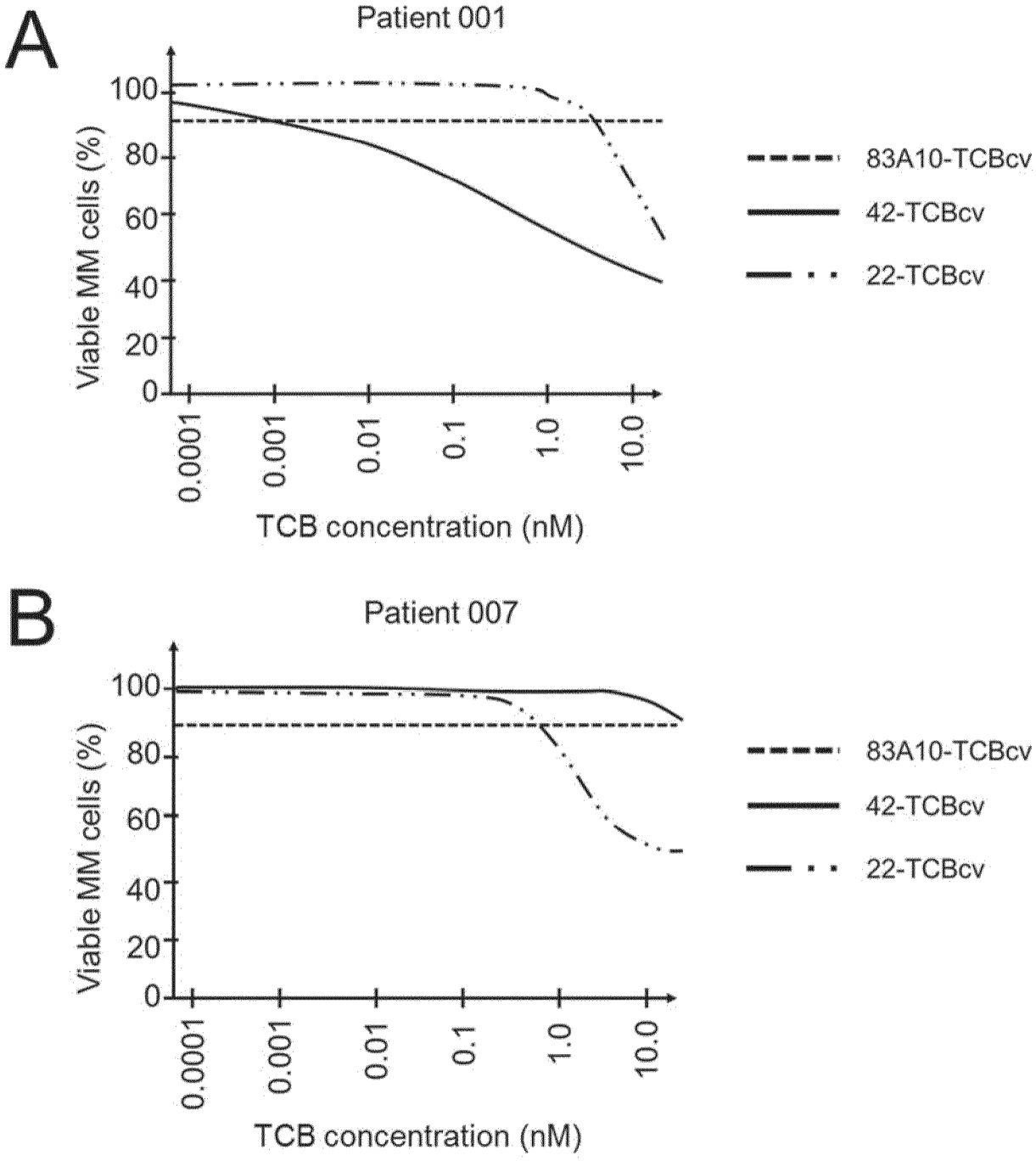

A
Patient 001
Viable MM cells (%)
100
80
60
40
20
0
0.0001
0.001
0.01
0.1
1.0
10.0
TCB concentration (nM)
83A10-TCBcv
42-TCBcv
22-TCBcv
B
Patient 007
Viable MM cells (%)
100
80
60
40
20
0
0.0001
0.001
0.01
0.1
1.0
10.0
TCB concentration (nM)
83A10-TCBcv
42-TCBcv
22-TCBcv

Fig. 10

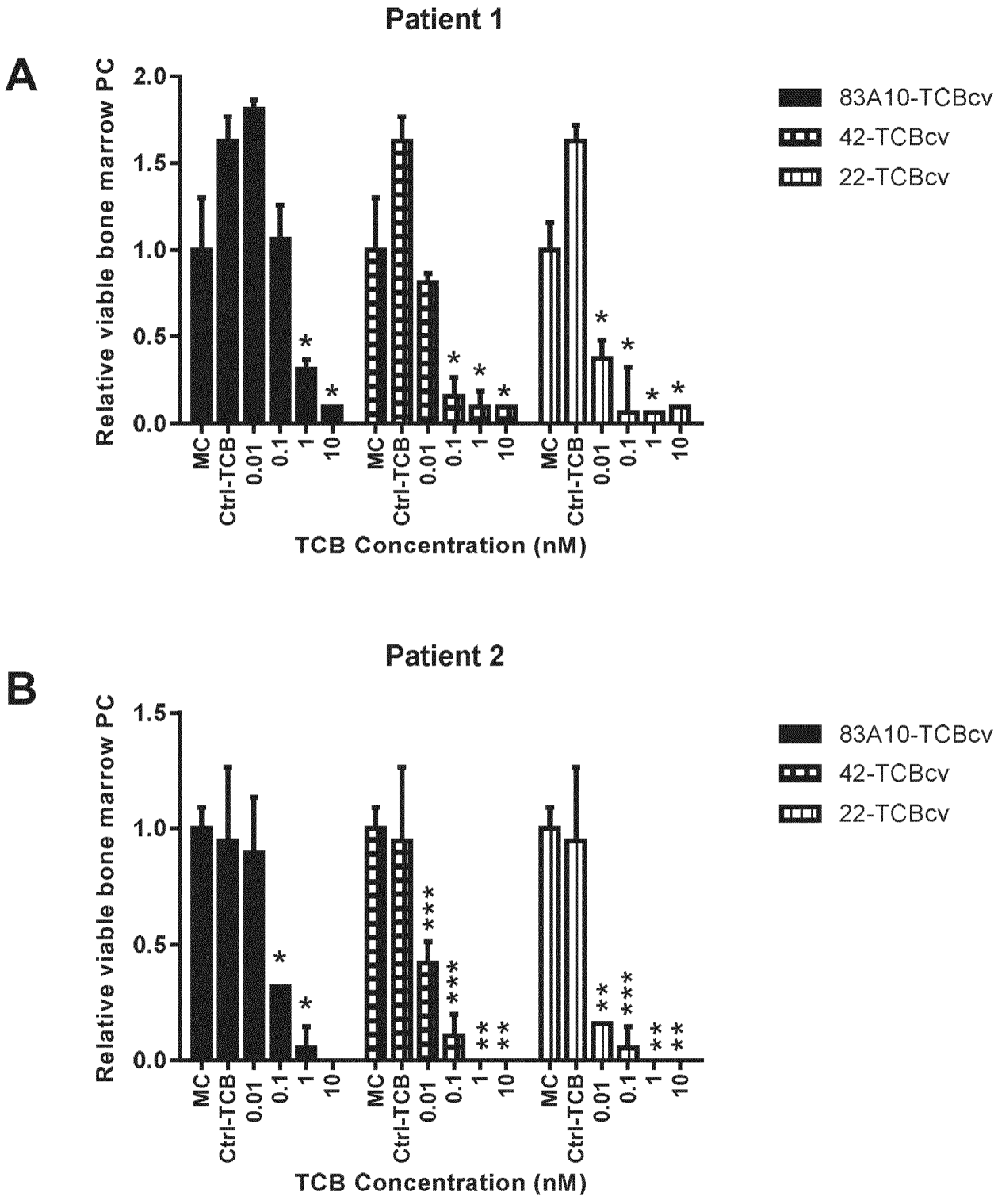

A
Patient 1
Relative viable bone marrow PC
2.0
1.5
1.0
0.5
0.0
MC
Ctrl-TCB
0.01
0.1
1
10
TCB Concentration (nM)
83A10-TCBcv
42-TCBcv
22-TCBcv
B
Patient 2
Relative viable bone marrow PC
1.5
1.0
0.5
0.0
TCB Concentration (nM)
83A10-TCBcv
42-TCBcv
22-TCBcv

Fig. 10 (Con't)

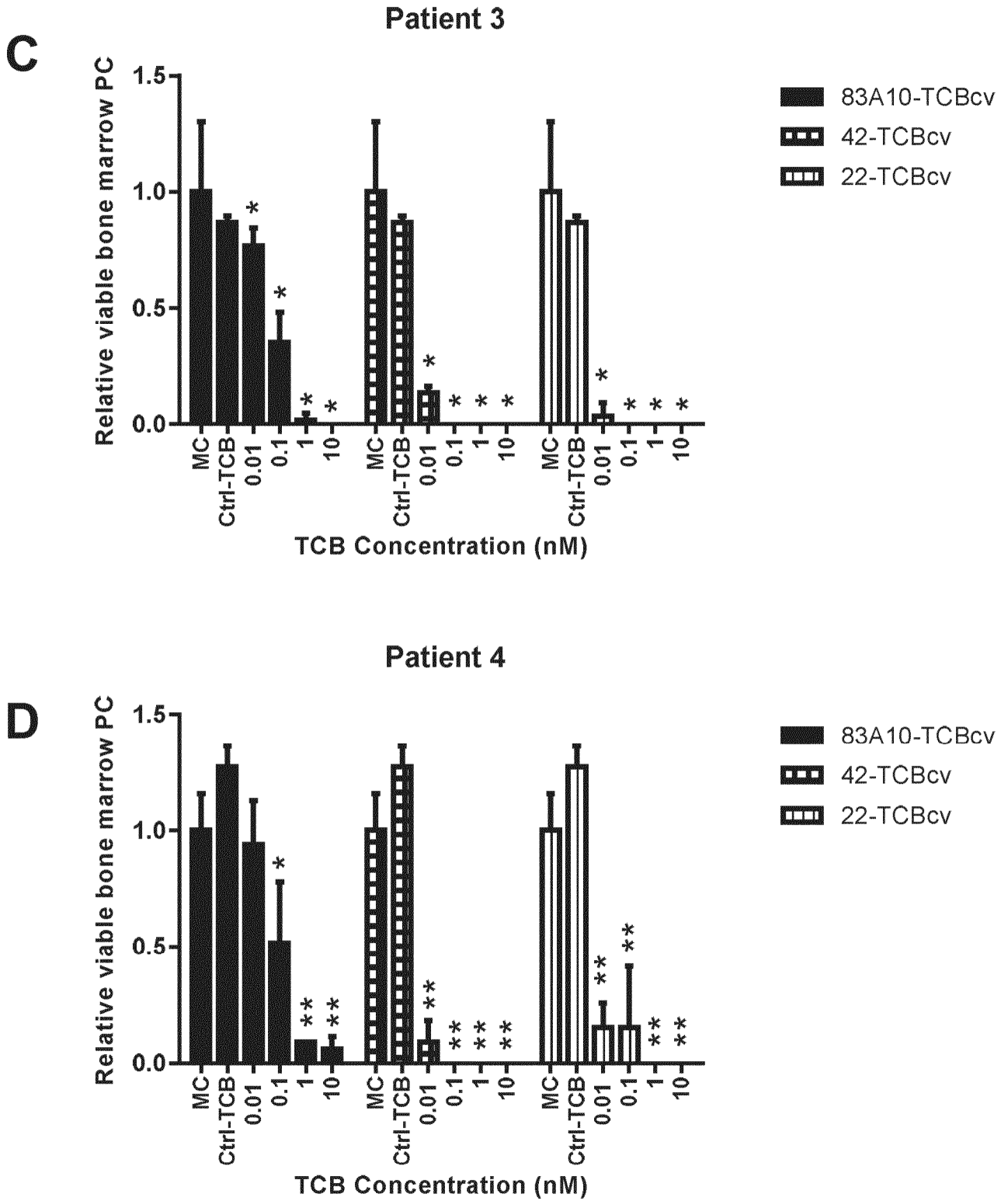

C
Patient 3
Relative viable bone marrow PC
1.5
1.0
0.5
0.0
MC
Ctrl-TCB
0.01
0.1
1
10
TCB Concentration (nM)
83A10-TCBcv
42-TCBcv
22-TCBcv
D
Patient 4
Relative viable bone marrow PC
TCB Concentration (nM)
83A10-TCBcv
42-TCBcv
22-TCBcv

Fig. 10 (Con't)

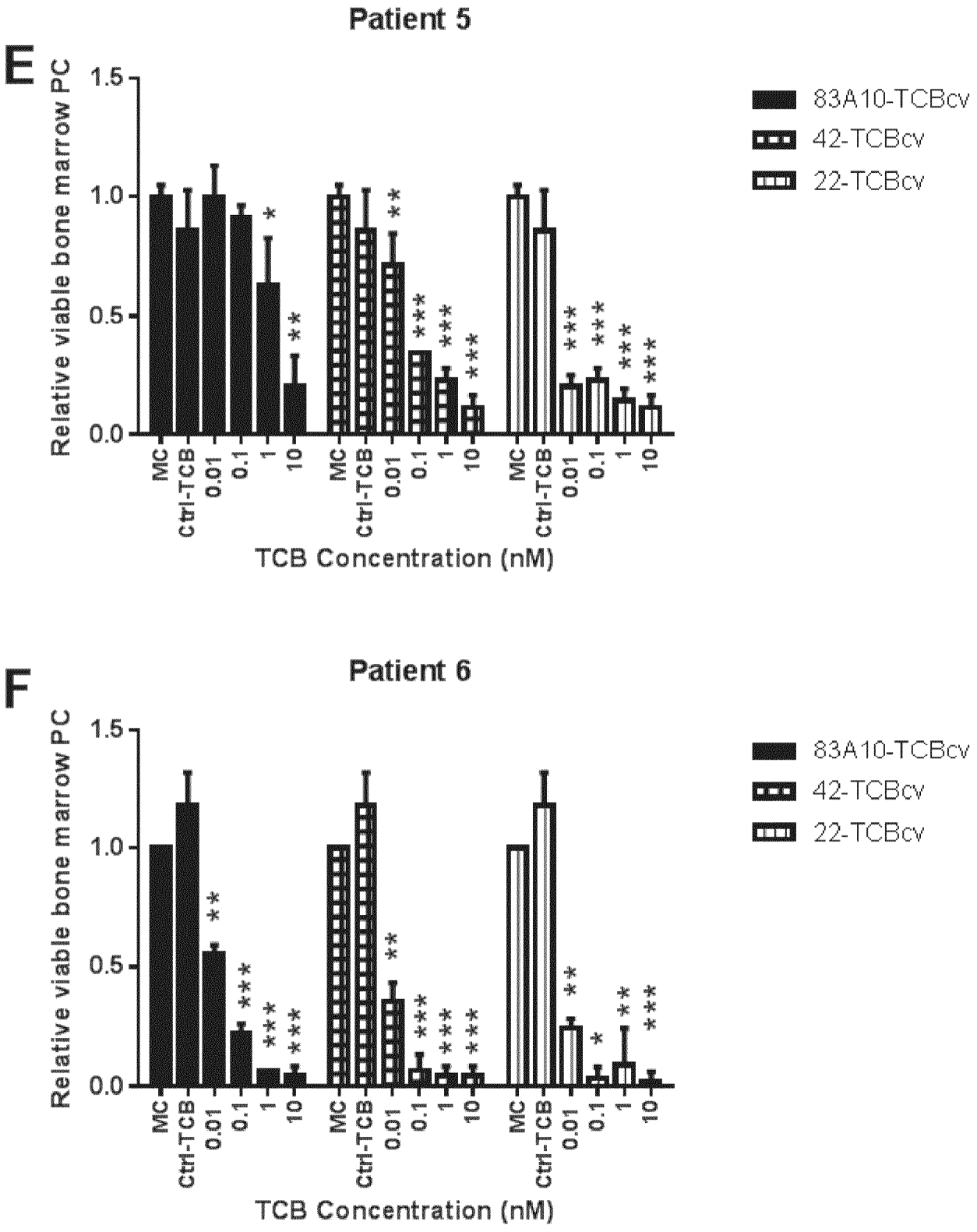

E
Patient 5
Relative viable bone marrow PC
1.5
1.0
0.5
0.0
MC
Ctrl-TCB
0.01
0.1
1
10
TCB Concentration (nM)
83A10-TCBcv
42-TCBcv
22-TCBcv
F
Patient 6
Relative viable bone marrow PC
TCB Concentration (nM)
83A10-TCBcv
42-TCBcv
22-TCBcv

Fig. 10 (Con't)

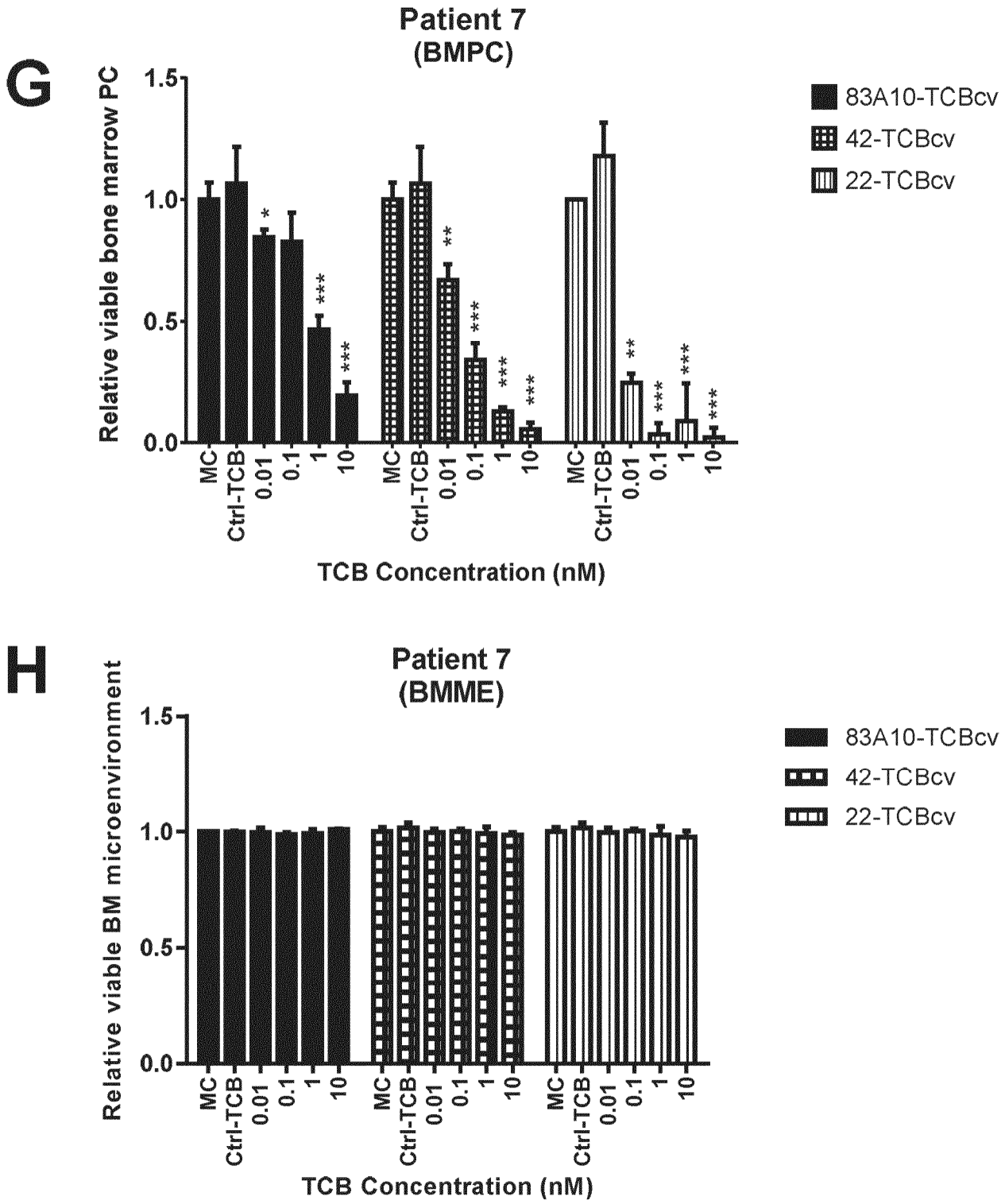

G
Patient 7
(BMPC)
Relative viable bone marrow PC
1.5
1.0
0.5
0.0
MC
Ctrl-TCB
0.01
0.1
1
10
TCB Concentration (nM)
83A10-TCBcv
42-TCBcv
22-TCBcv
H
Patient 7
(BMME)
Relative viable BM microenvironment
TCB Concentration (nM)
83A10-TCBcv
42-TCBcv
22-TCBcv

Fig. 11A

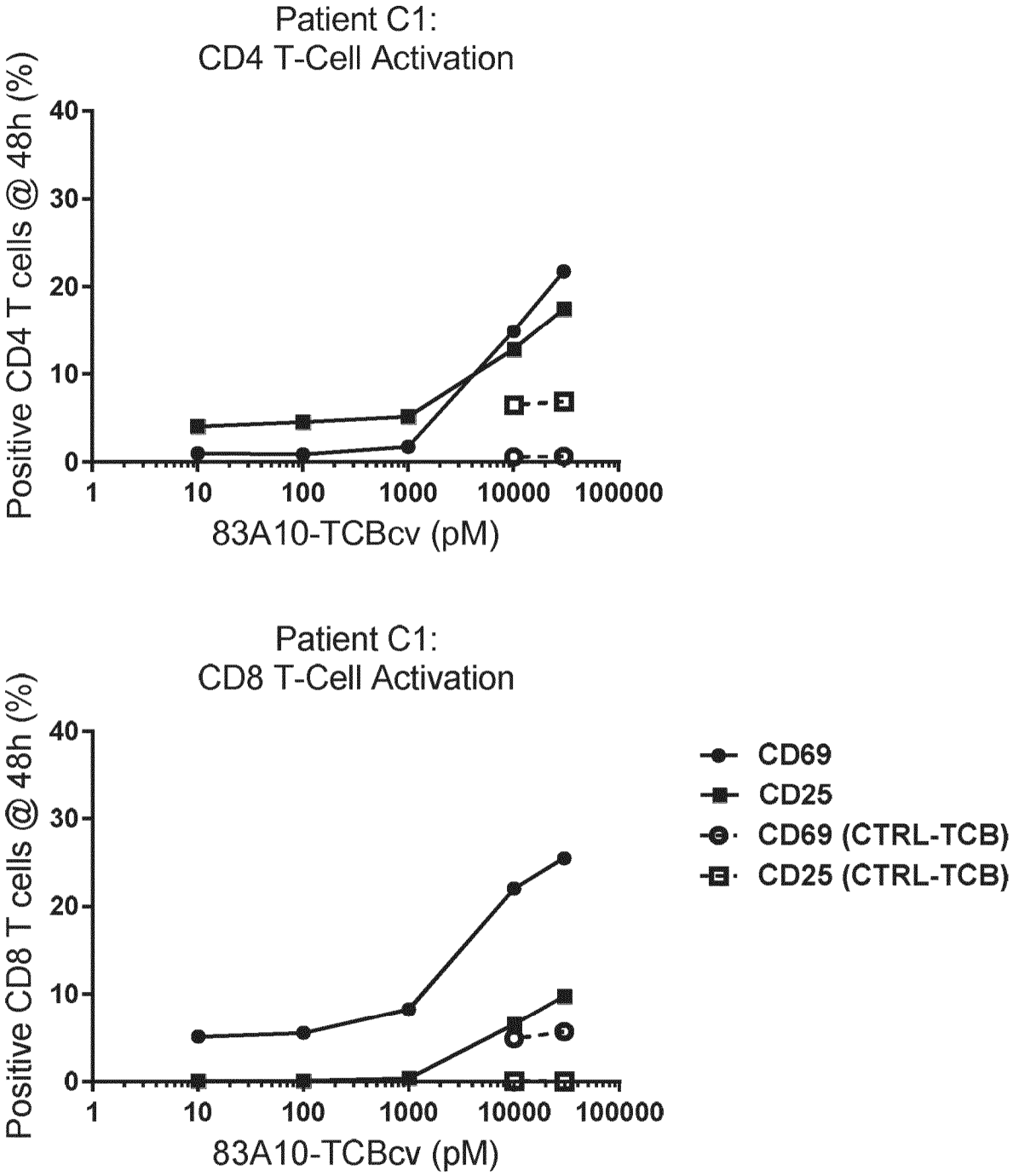

Patient C1:
CD4 T-Cell Activation
Positive CD4 T cells @ 48h (%)
40
30
20
10
0
1
10
100
1000
10000
100000
83A10-TCBcv (pM)
Patient C1:
CD8 T-Cell Activation
Positive CD8 T cells @ 48h (%)
40
30
20
10
0
1
10
100
1000
10000
100000
83A10-TCBcv (pM)
CD69
CD25
CD69 (CTRL-TCB)
CD25 (CTRL-TCB)

Fig. 11B

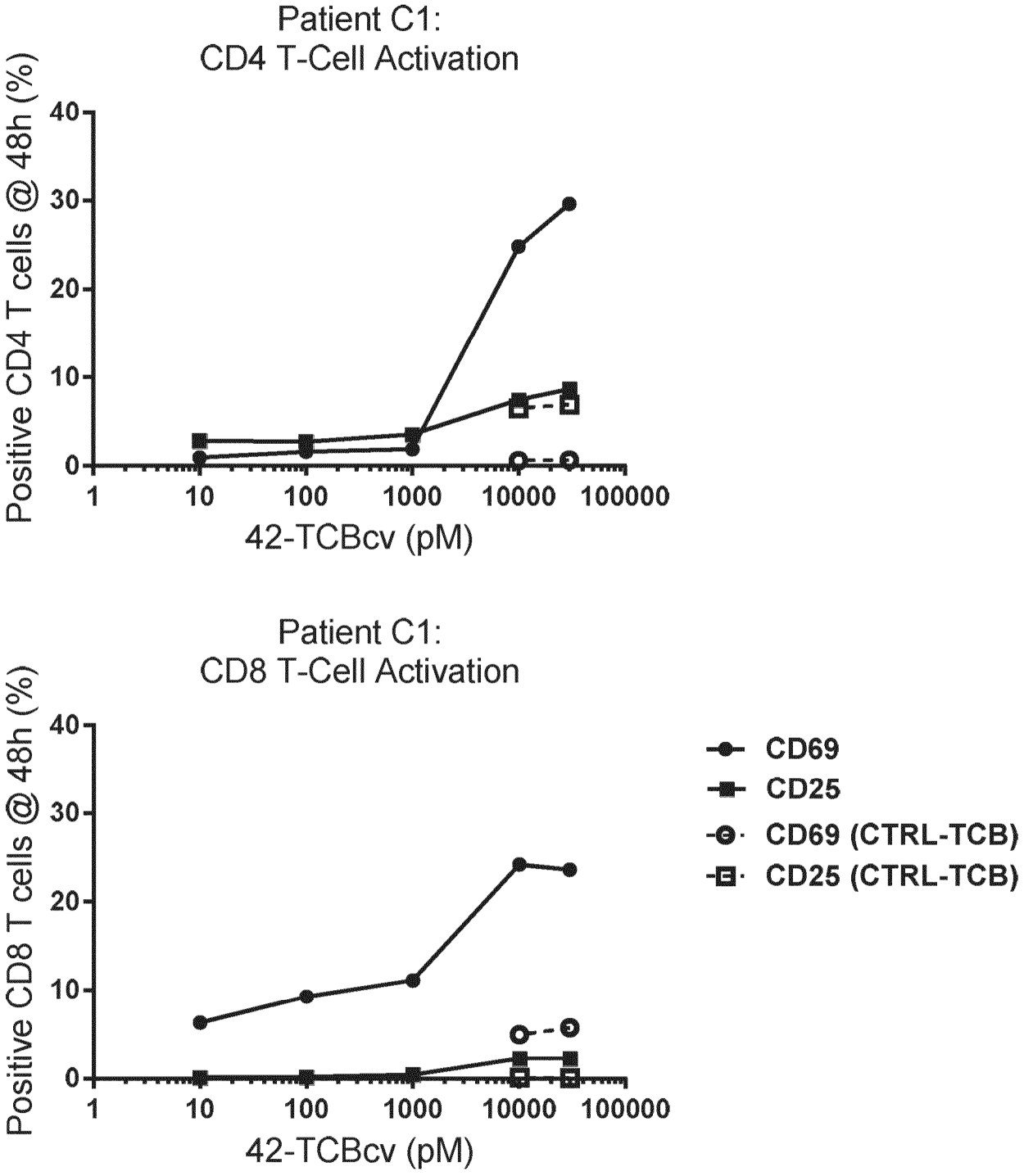

Patient C1:
CD4 T-Cell Activation
Positive CD4 T cells @ 48h (%)
40
30
20
10
0
1
10
100
1000
10000
100000
42-TCBcv (pM)
Patient C1:
CD8 T-Cell Activation
Positive CD8 T cells @ 48h (%)
40
30
20
10
0
1
10
100
1000
10000
100000
42-TCBcv (pM)
CD69
CD25
CD69 (CTRL-TCB)
CD25 (CTRL-TCB)

Fig. 11C

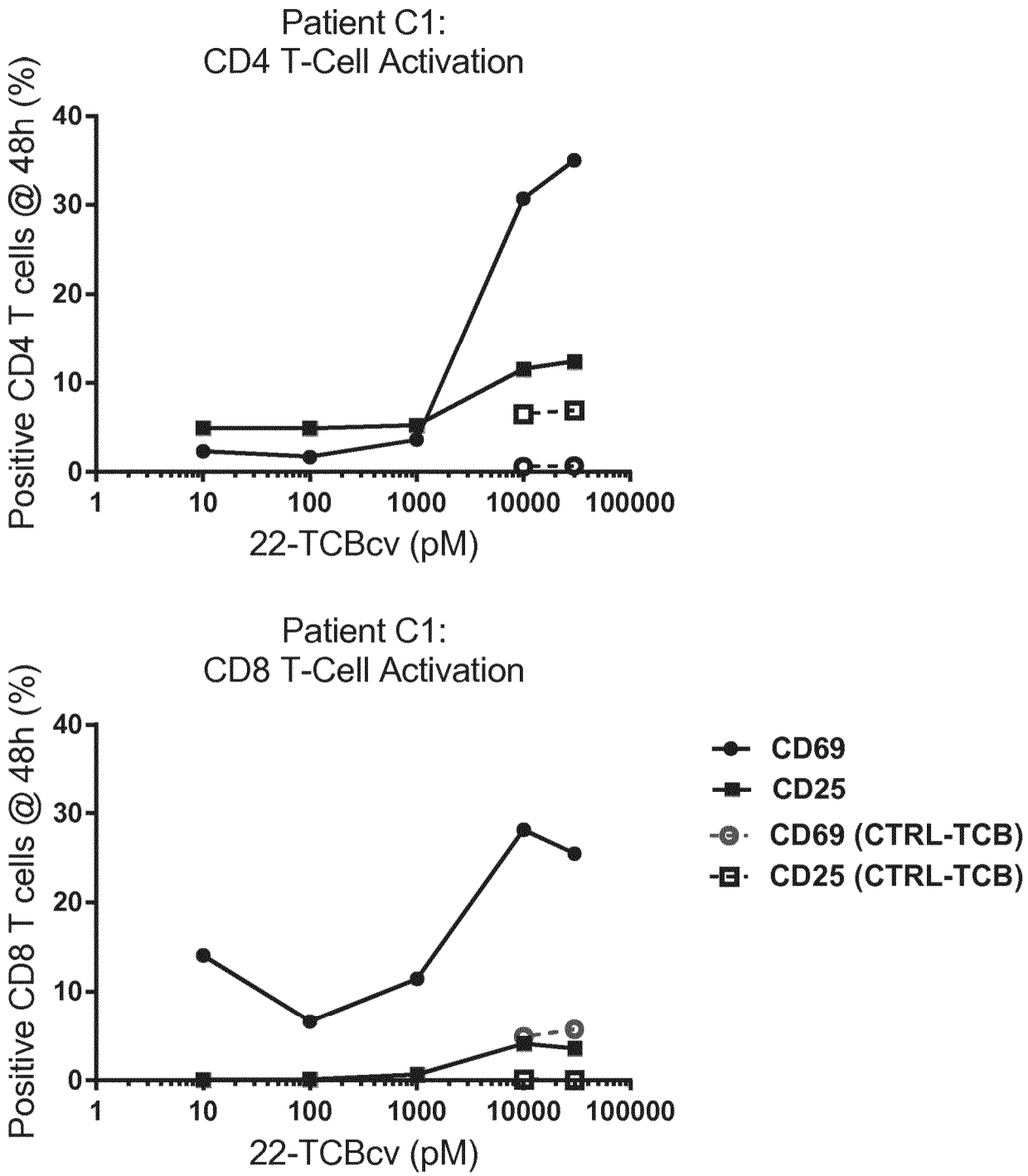

Patient C1:
CD4 T-Cell Activation
Positive CD4 T cells @ 48h (%)
40
30
20
10
0
1
10
100
1000
10000
100000
22-TCBcv (pM)
Patient C1:
CD8 T-Cell Activation
Positive CD8 T cells @ 48h (%)
40
30
20
10
0
1
10
100
1000
10000
100000
22-TCBcv (pM)
CD69
CD25
CD69 (CTRL-TCB)
CD25 (CTRL-TCB)

Fig. 12

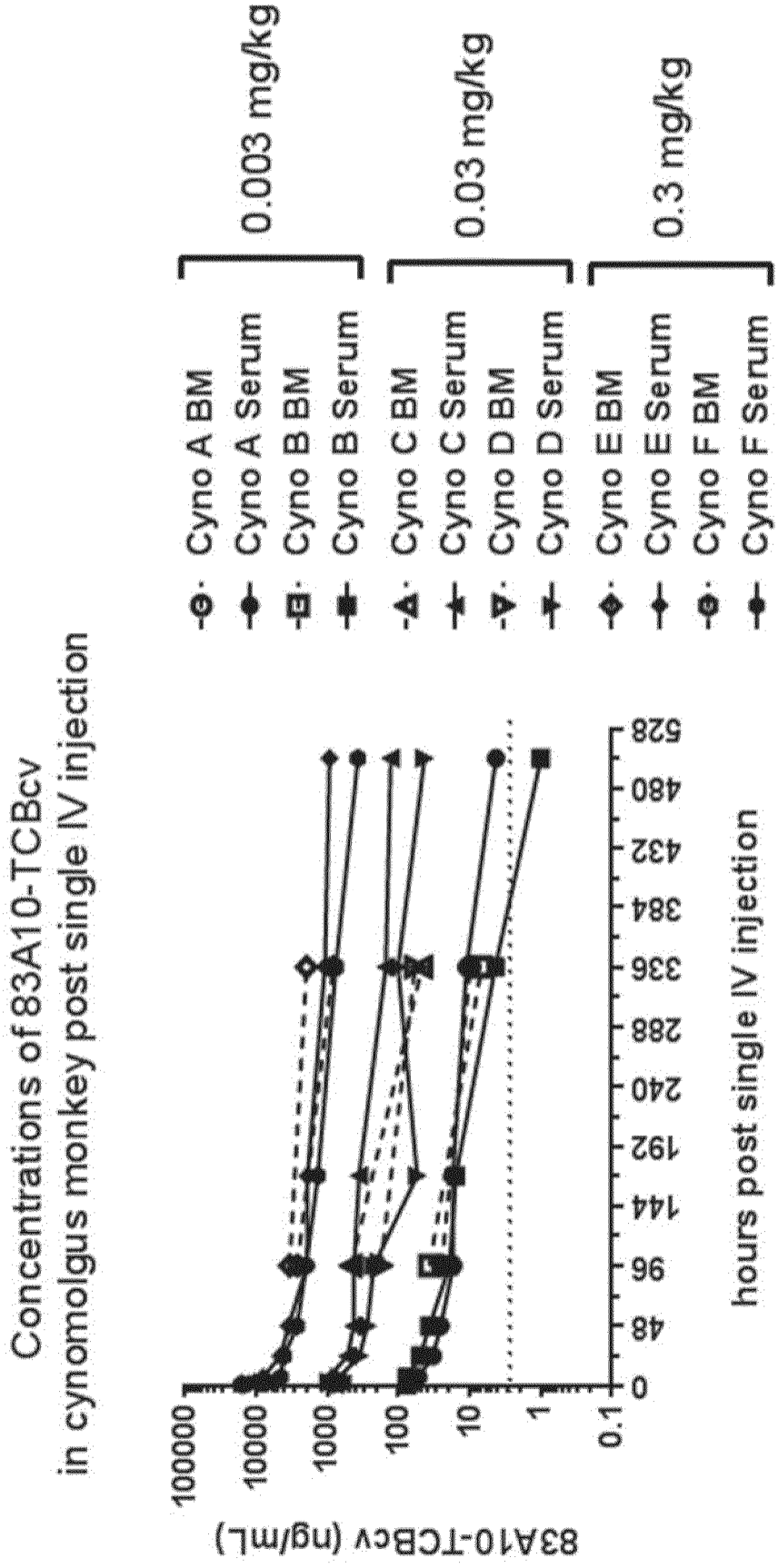

Concentrations of 83A10-TCBcv
in cynomolgus monkey post single IV injection
0.003 mg/kg
0.03 mg/kg
0.3 mg/kg
Cyno A BM
Cyno A Serum
Cyno B BM
Cyno B Serum
Cyno C BM
Cyno C Serum
Cyno D BM
Cyno D Serum
Cyno E BM
Cyno E Serum
Cyno F BM
Cyno F Serum
83A10-TCBcv (ng/mL)
100000
10000
1000
100
10
1
0.1
0
48
96
144
192
240
288
336
384
432
480
528
hours post single IV injection

Fig. 13

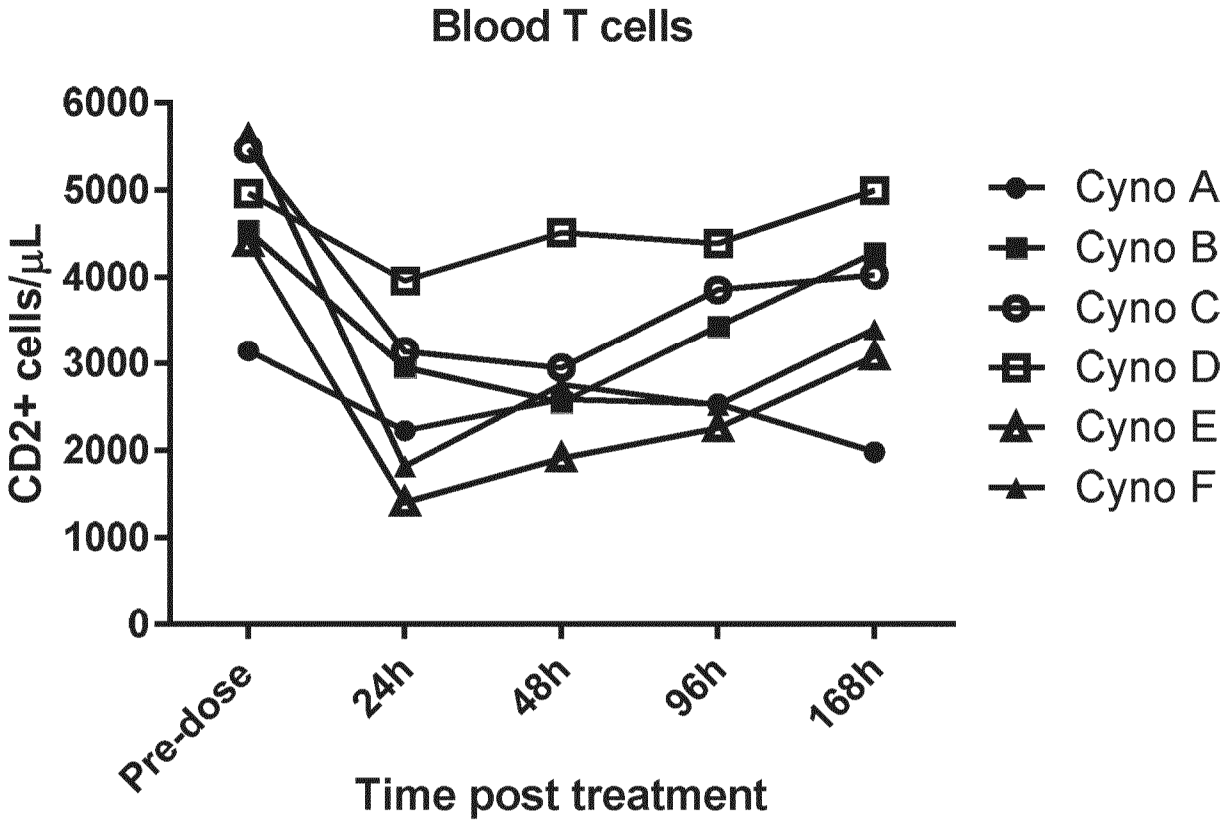

Blood T cells
6000
5000
4000
3000
2000
1000
0
CD2+ cells/µL
Pre-dose
24h
48h
96h
168h
Time post treatment
Cyno A
Cyno B
Cyno C
Cyno D
Cyno E
Cyno F

Fig. 14A

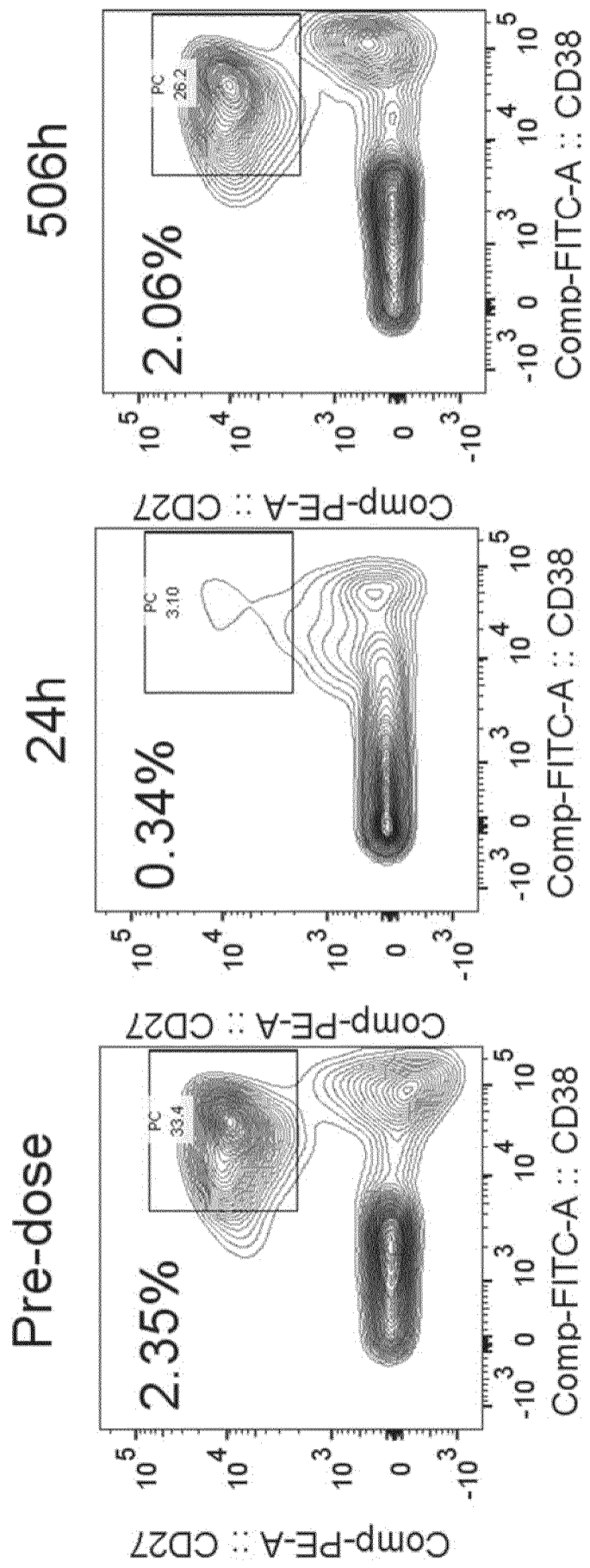

Pre-dose
24h
506h
2.35%
0.34%
2.06%
PC
33.4
PC
3.10
PC
26.2
Comp-PE-A :: CD27
Comp-FITC-A :: CD38

Fig. 14B

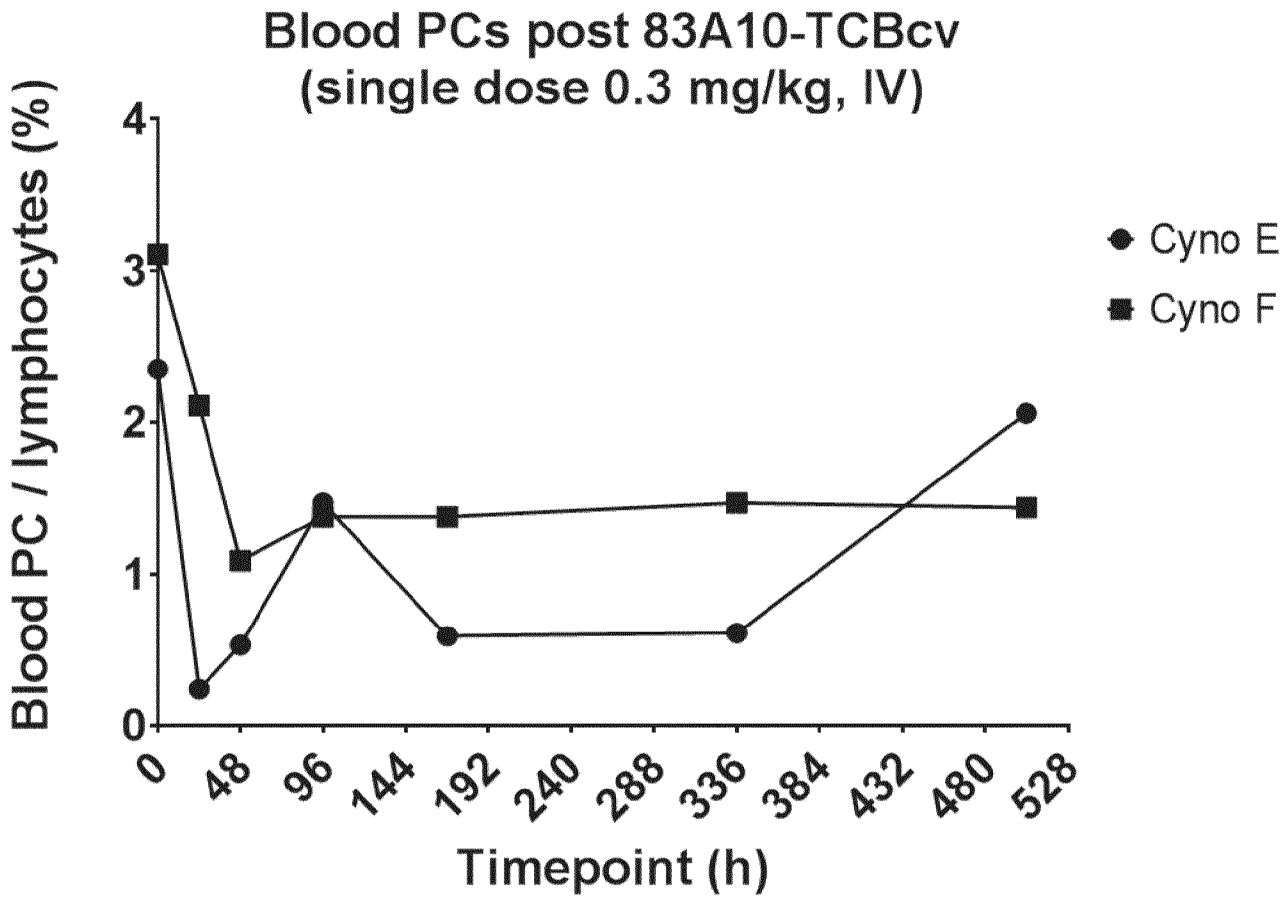

Blood PCs post 83A10-TCBcv
(single dose 0.3 mg/kg, IV)
Blood PC / lymphocytes (%)
0
1
2
3
4
0
48
96
144
192
240
288
336
384
432
480
528
Timepoint (h)
Cyno E
Cyno F

Fig. 15

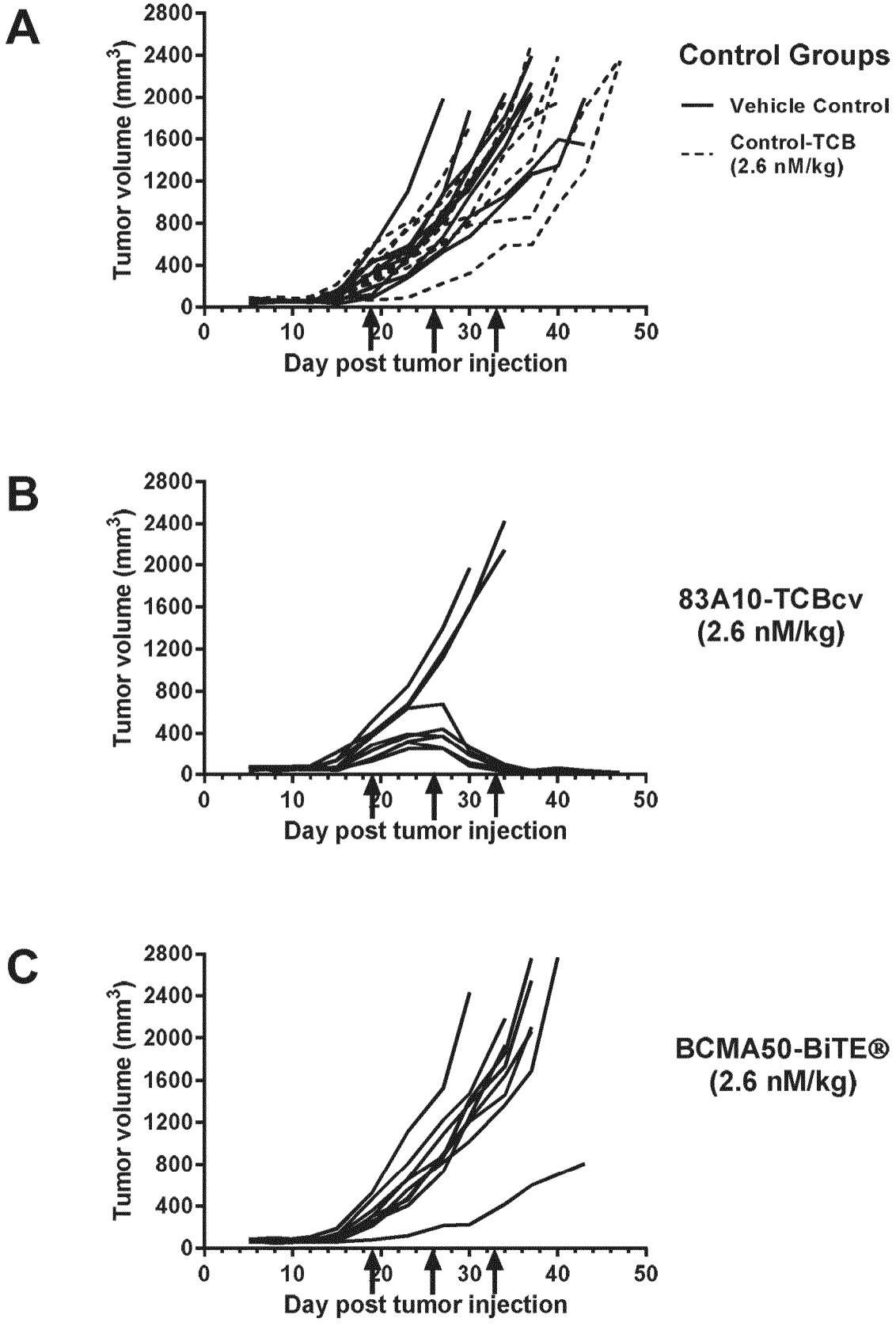

A
Tumor volume (mm3)
2800
2400
2000
1600
1200
800
400
0
0
10
20
30
40
50
Day post tumor injection
Control Groups
Vehicle Control
Control-TCB
(2.6 nM/kg)
B
Tumor volume (mm3)
Day post tumor injection
83A10-TCBcv
(2.6 nM/kg)
C
Tumor volume (mm3)
Day post tumor injection
BCMA50-BiTE®
(2.6 nM/kg)

Fig. 16

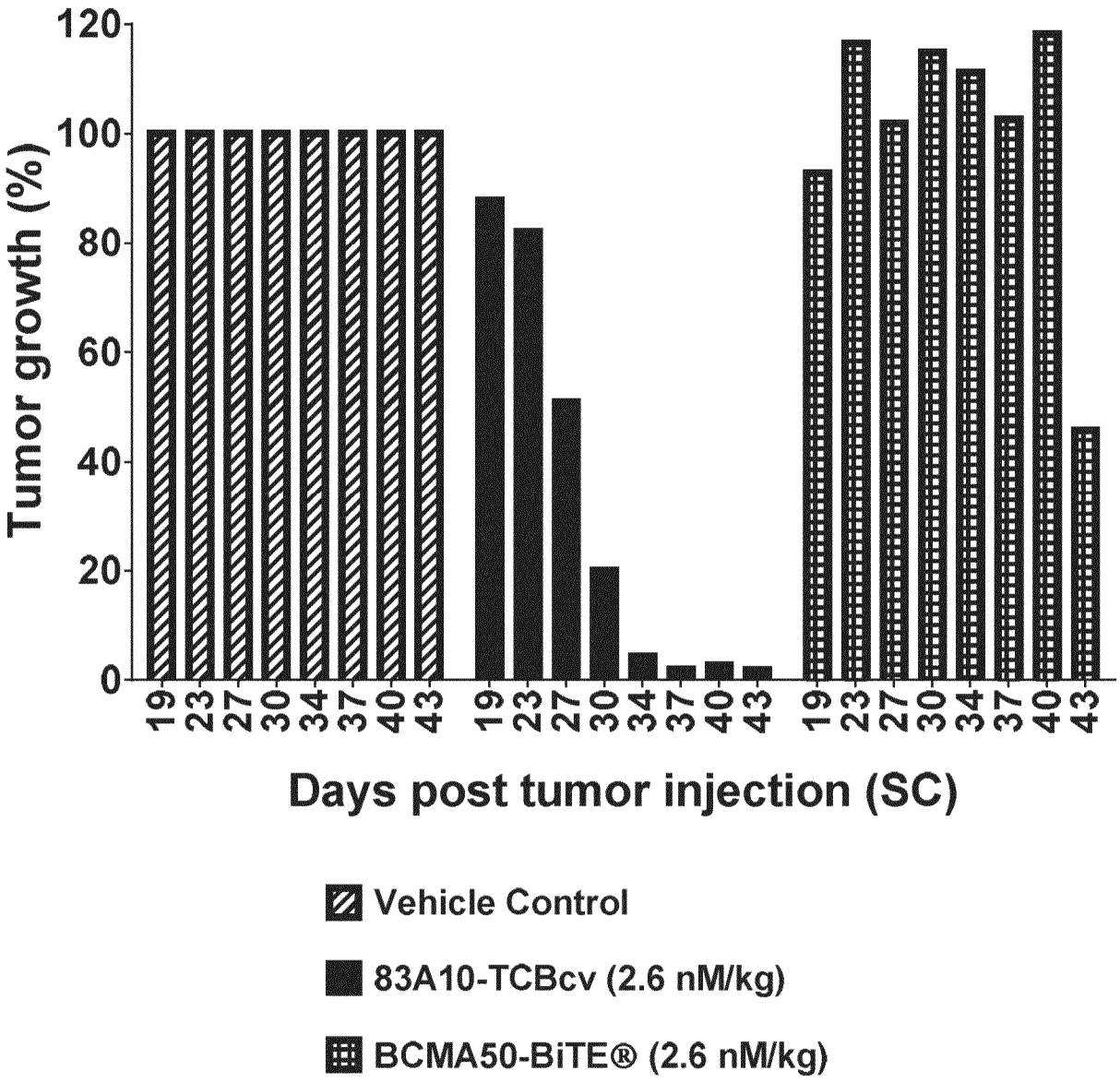

120
100
80
60
40
20
0
Tumor growth (%)
19
23
27
30
34
37
40
43
Days post tumor injection (SC)
Vehicle Control
83A10-TCBcv (2.6 nM/kg)
BCMA50-BiTE® (2.6 nM/kg)

Fig. 17

A

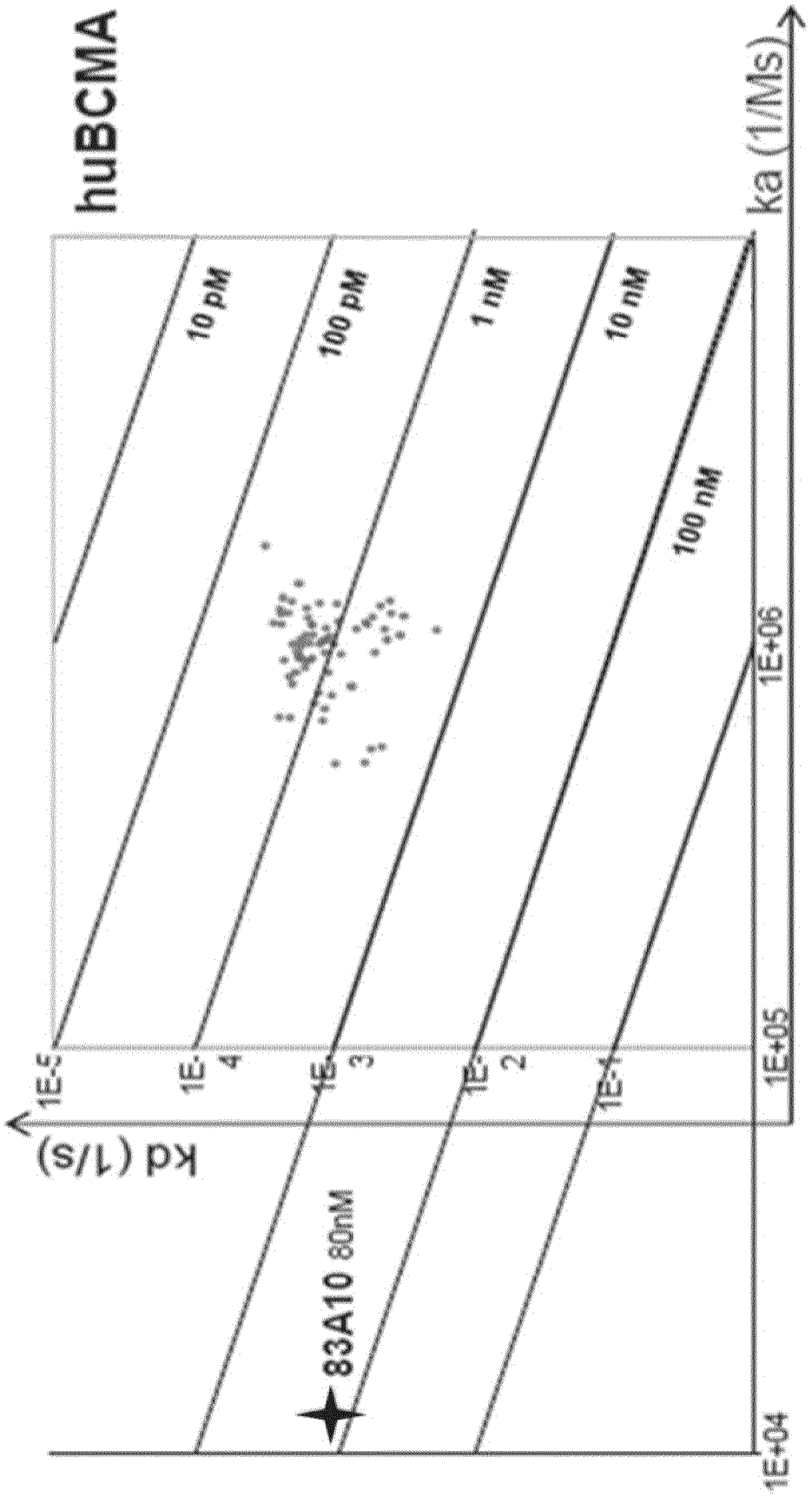

huBCMA
ka (1/Ms)
kd (1/s)
10 pM
100 pM
1 nM
10 nM
100 nM
1E-5
1E-4
1E-3
1E-2
1E-1
1E+06
1E+05
1E+04
83A10 80nM

Fig. 17

B

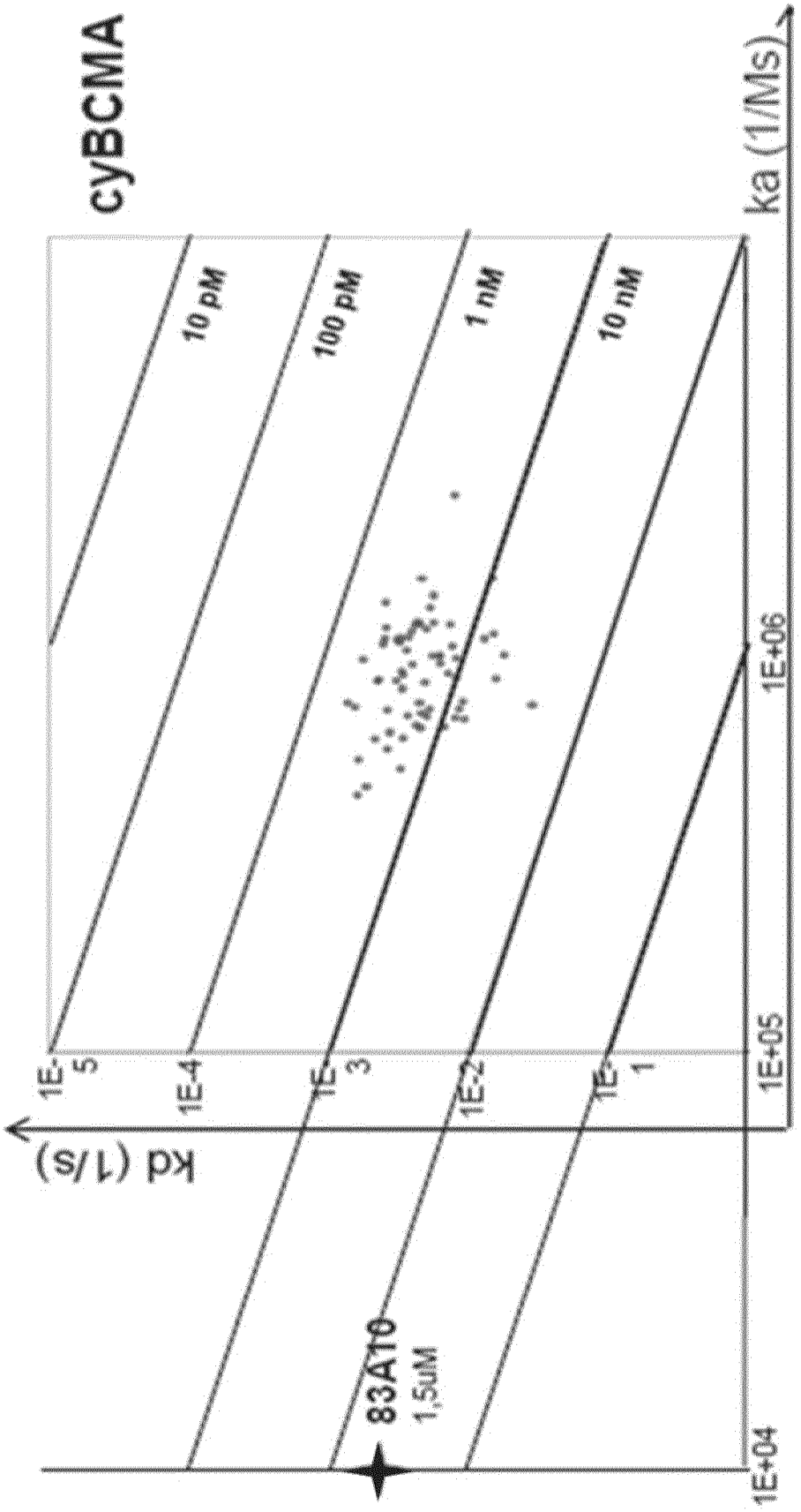
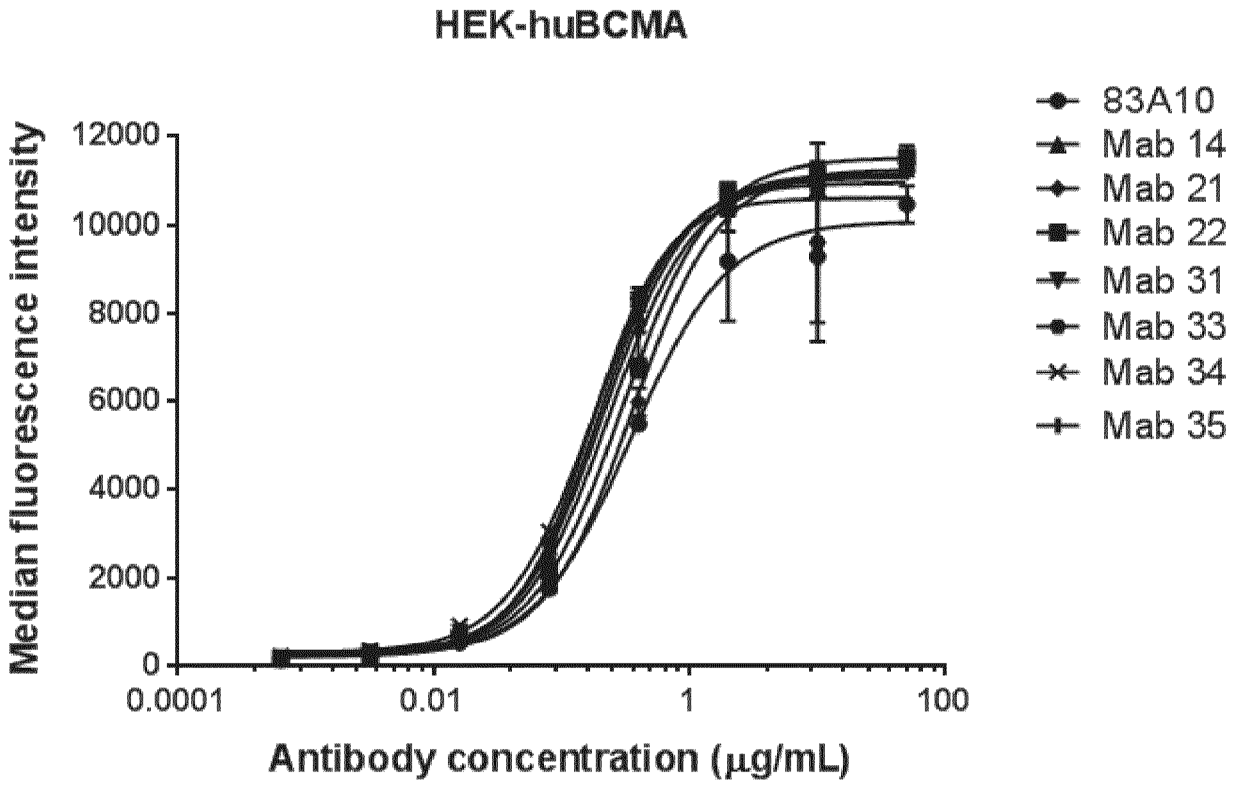

cyBCMA
ka (1/Ms)
10 pM
100 pM
1 nM
10 nM
1E+06
1E+05
1E+04
1E-5
1E-4
1E-3
1E-2
1E-1
kd (1/s)
83A10
1,5uM

Fig. 18

A


HEK-huBCMA
Median fluorescence intensity
12000
10000
8000
6000
4000
2000
0
0.0001
0.01
1
100
Antibody concentration (µg/mL)
83A10
Mab 14
Mab 21
Mab 22
Mab 31
Mab 33
Mab 34
Mab 35

B

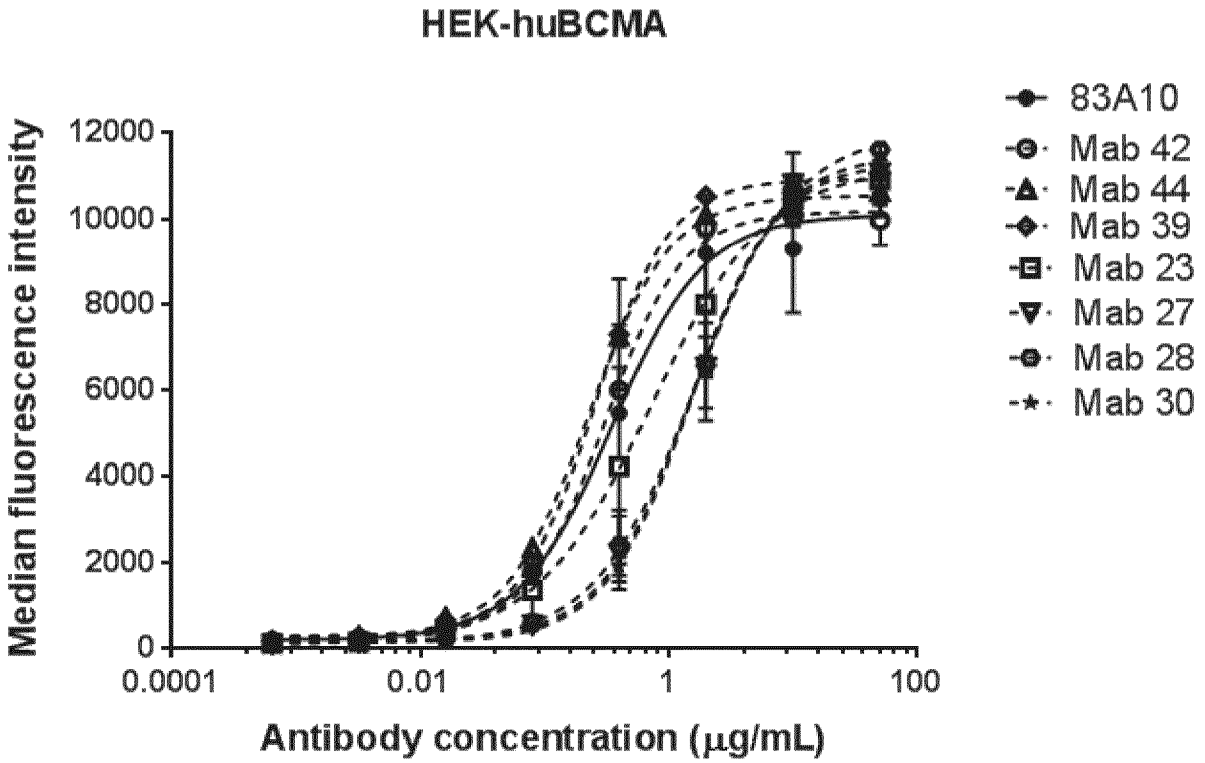
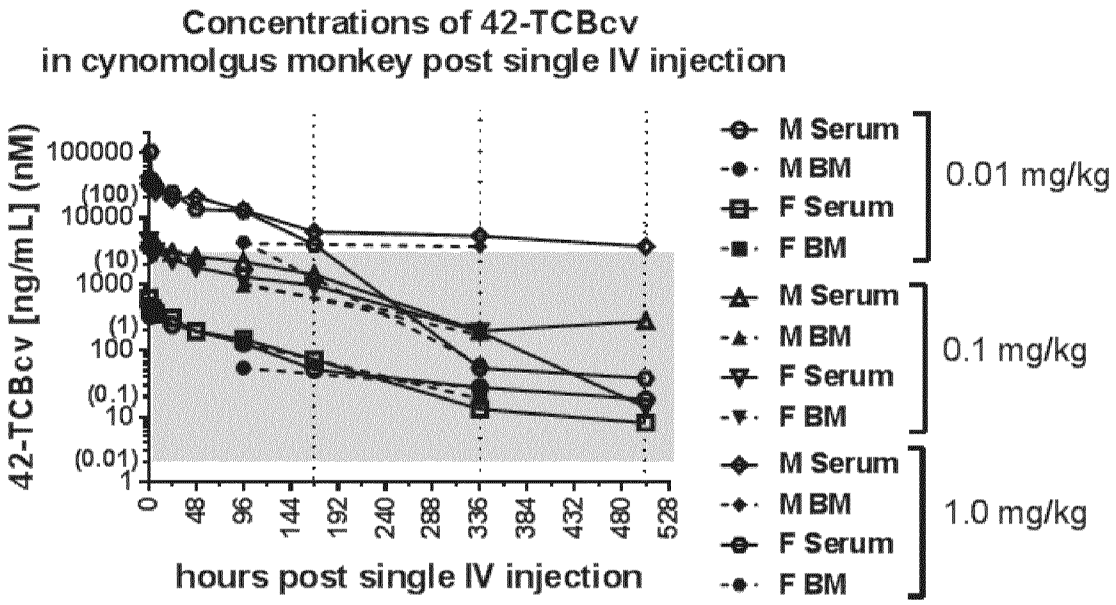

HEK-huBCMA
Median fluorescence intensity
12000
10000
8000
6000
4000
2000
0
0.0001
0.01
1
100
Antibody concentration (µg/mL)
83A10
Mab 42
Mab 44
Mab 39
Mab 23
Mab 27
Mab 28
Mab 30

Fig. 19

A.


Concentrations of 42-TCBcv
in cynomolgus monkey post single IV injection
42-TCBcv [ng/mL] (nM)
100000
(100)
10000
(10)
1000
(1)
100
(0.1)
10
(0.01)
1
0
48
96
144
192
240
288
336
384
432
480
528
hours post single IV injection
M Serum
M BM
F Serum
F BM
0.01 mg/kg
M Serum
M BM
F Serum
F BM
0.1 mg/kg
M Serum
M BM
F Serum
F BM
1.0 mg/kg

B.

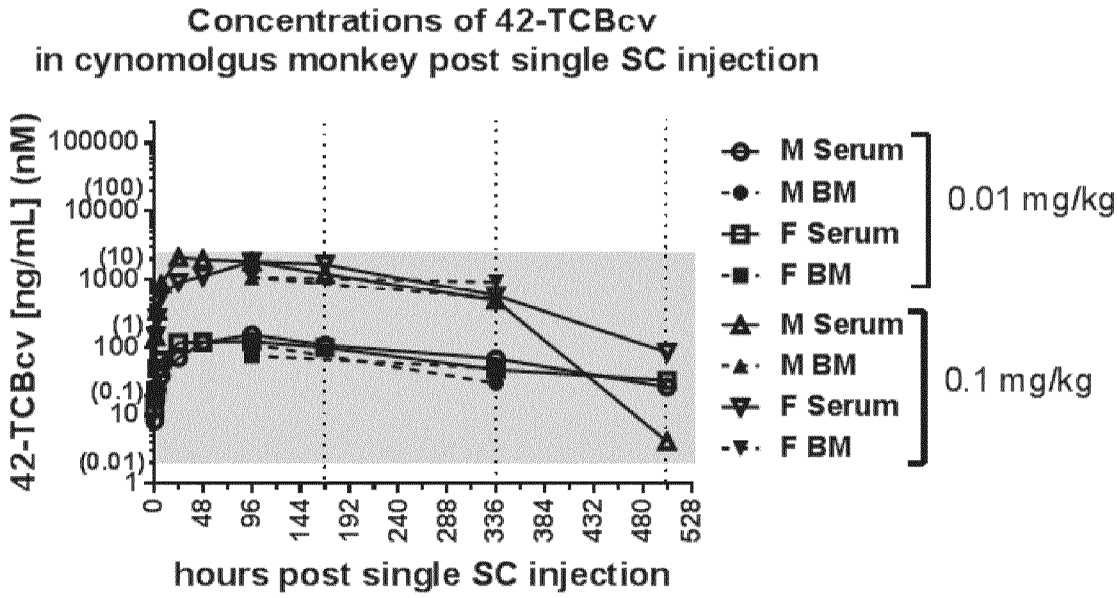

Concentrations of 42-TCBcv
in cynomolgus monkey post single SC injection
42-TCBcv [ng/mL] (nM)
100000
(100)
10000
(10)
1000
(1)
100
(0.1)
10
(0.01)
1
0
48
96
144
192
240
288
336
384
432
480
528
hours post single SC injection
M Serum
M BM
F Serum
F BM
0.01 mg/kg
M Serum
M BM
F Serum
F BM
0.1 mg/kg

Fig. 20

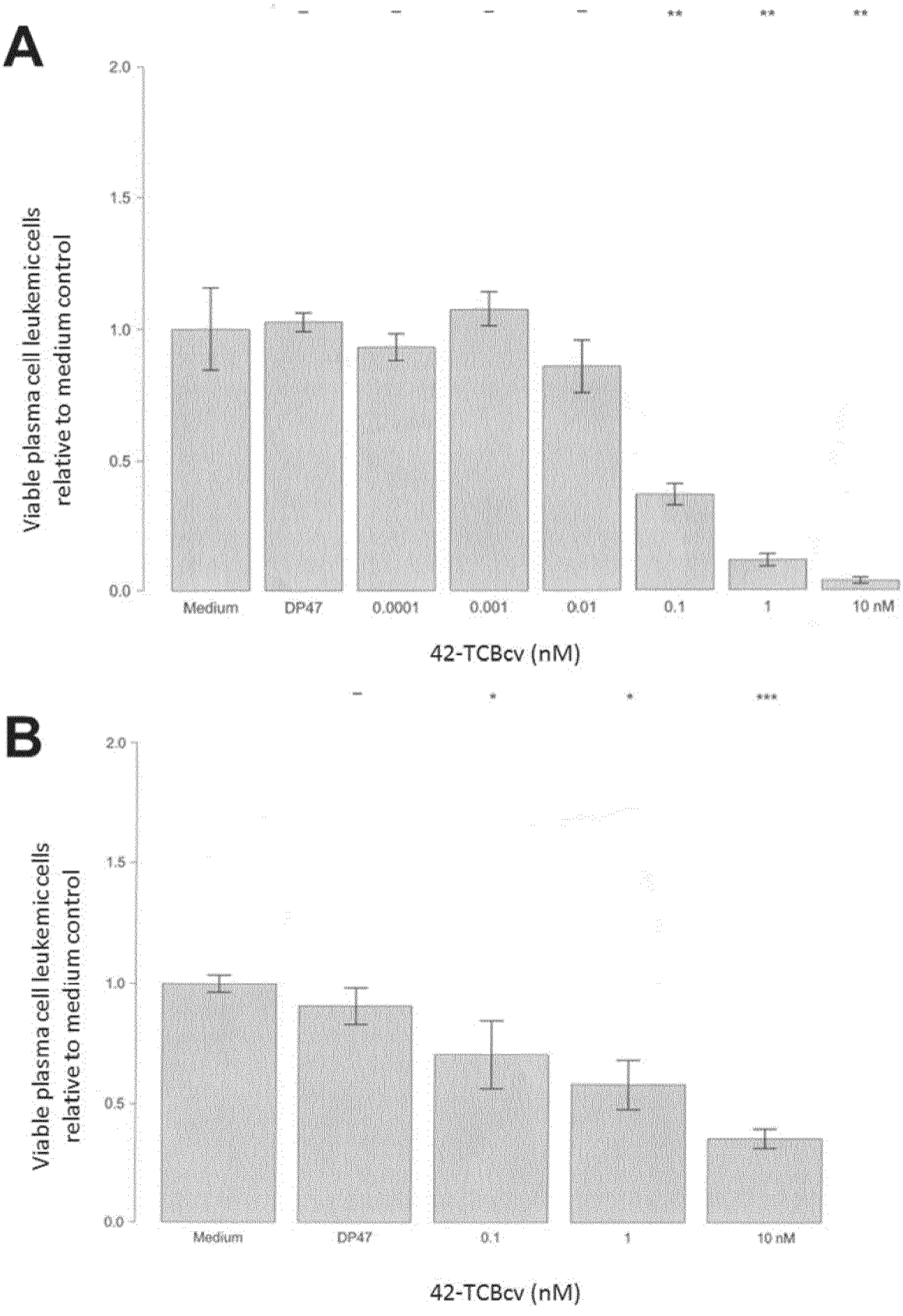
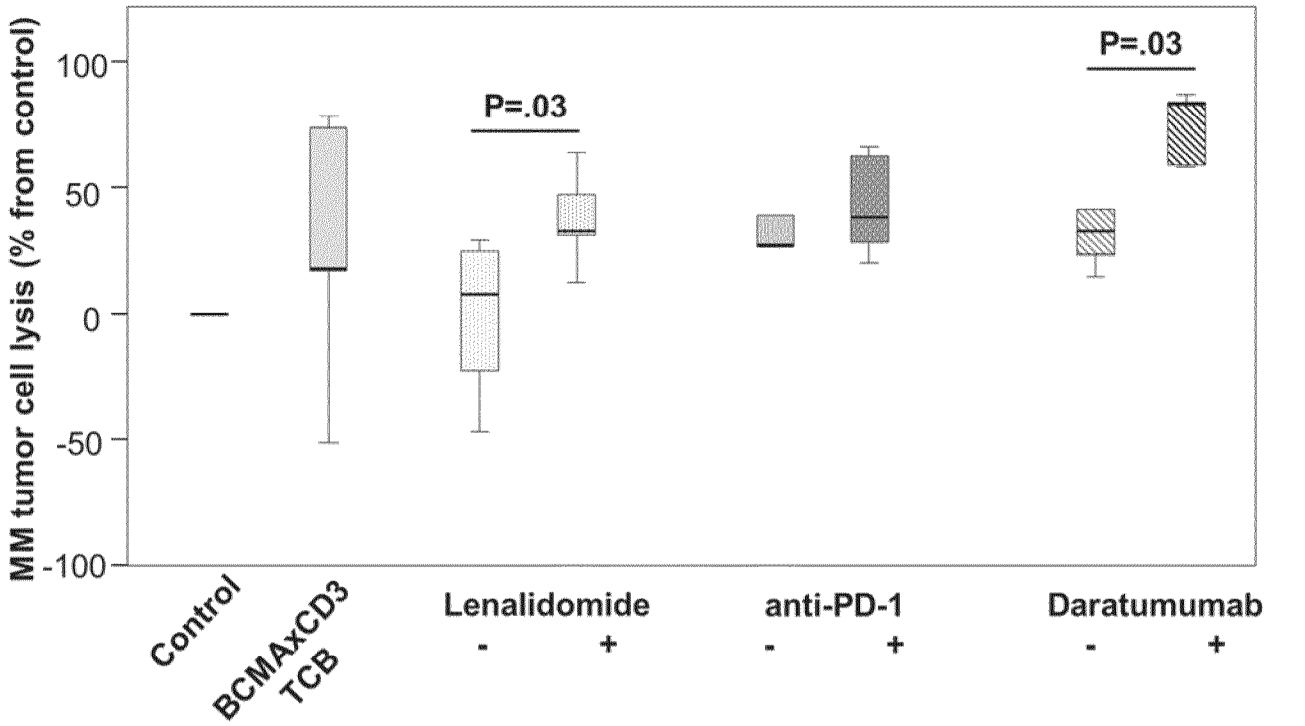
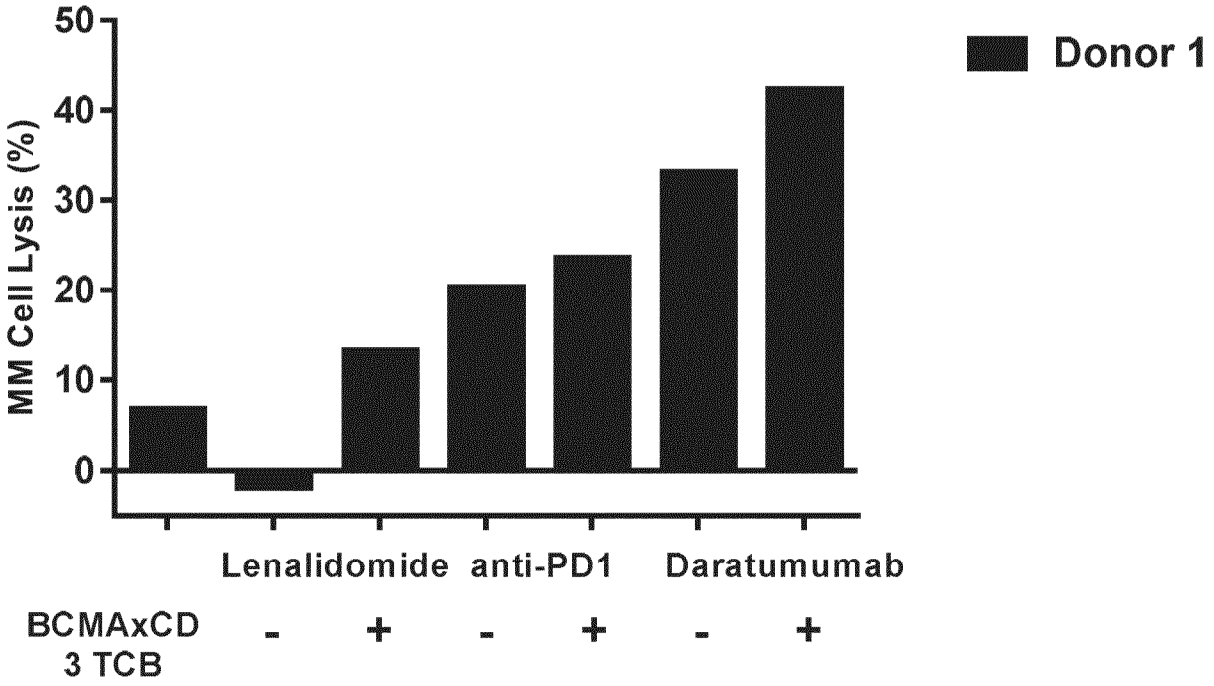

A
–
–
–
–
**
**
**
2.0
1.5
1.0
0.5
0.0
Viable plasma cell leukemic cells relative to medium control
Medium
DP47
0.0001
0.001
0.01
0.1
1
10 nM
42-TCBcv (nM)
B
–
*
*
***
2.0
1.5
1.0
0.5
0.0
Viable plasma cell leukemic cells relative to medium control
Medium
DP47
0.1
1
10 nM
42-TCBcv (nM)

Fig. 21

A.


MM tumor cell lysis (% from control)
100
50
0
-50
-100
P=.03
P=.03
Control
BCMAxCD3 TCB
Lenalidomide
anti-PD-1
Daratumumab
-
+
-
+
-
+

B.


MM Cell Lysis (%)
50
40
30
20
10
0
Donor 1
Lenalidomide
anti-PD1
Daratumumab
BCMAxCD 3 TCB
-
+
-
+
-
+