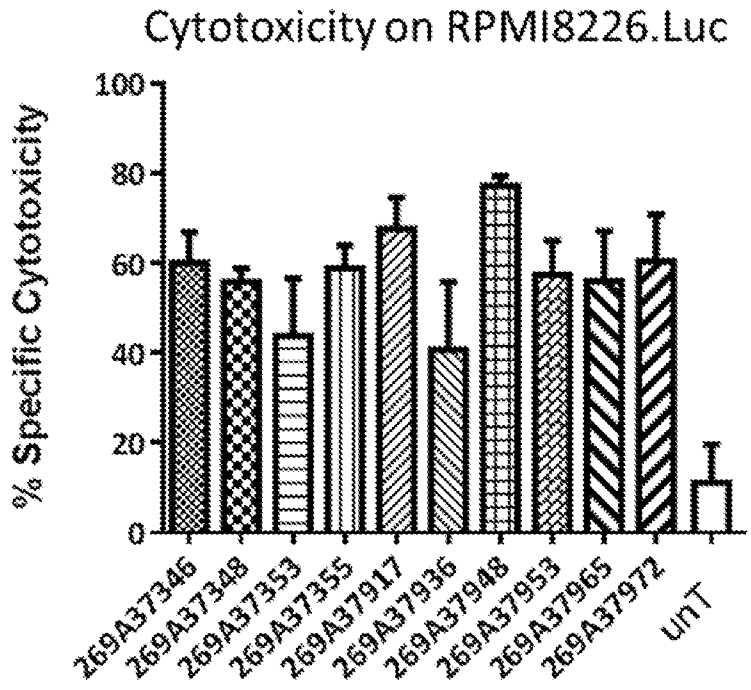
Cytotoxicity on RPMI8226.Luc
% Specific Cytotoxicity
100
80
60
40
20
0
269A37346
269A37348
269A37353
269A37355
269A37917
269A37936
269A37948
269A37953
269A37965
269A37972
UnT

FIG. 1A

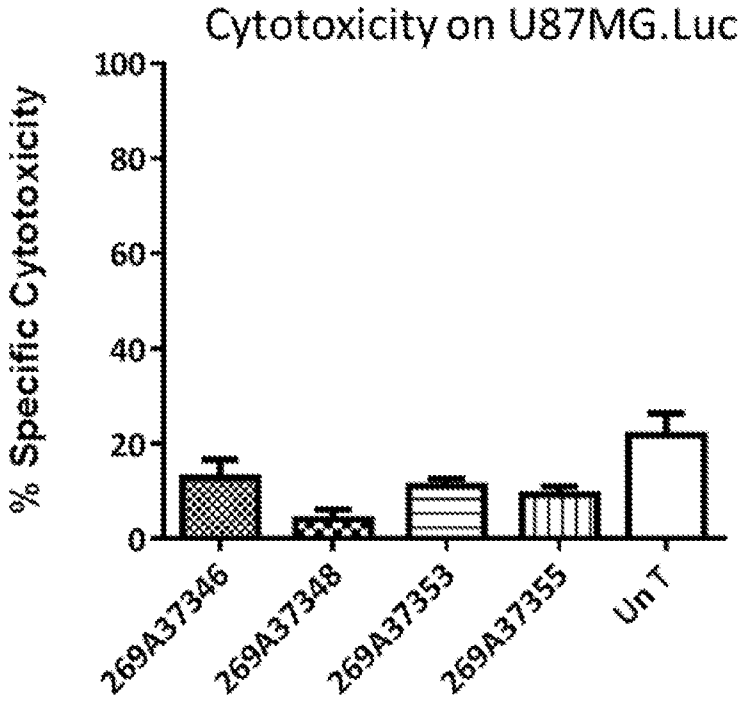
Cytotoxicity on U87MG.Luc
% Specific Cytotoxicity
100
80
60
40
20
0
269A37346
269A37348
269A37353
269A37355
UnT

FIG. 1B

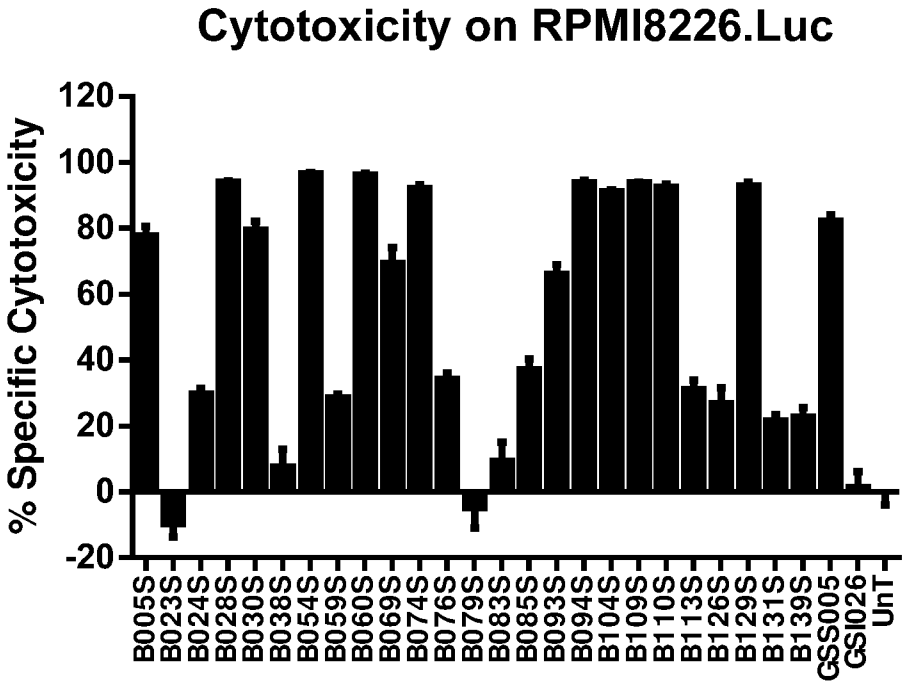
Cytotoxicity on RPMI8226.Luc
% Specific Cytotoxicity
120
100
80
60
40
20
0
-20
B005S
B023S
B024S
B028S
B030S
B038S
B054S
B059S
B060S
B069S
B074S
B076S
B079S
B083S
B085S
B093S
B094S
B104S
B109S
B110S
B113S
B126S
B129S
B131S
B139S
GSS005
GSI026
UnT

FIG. 2A

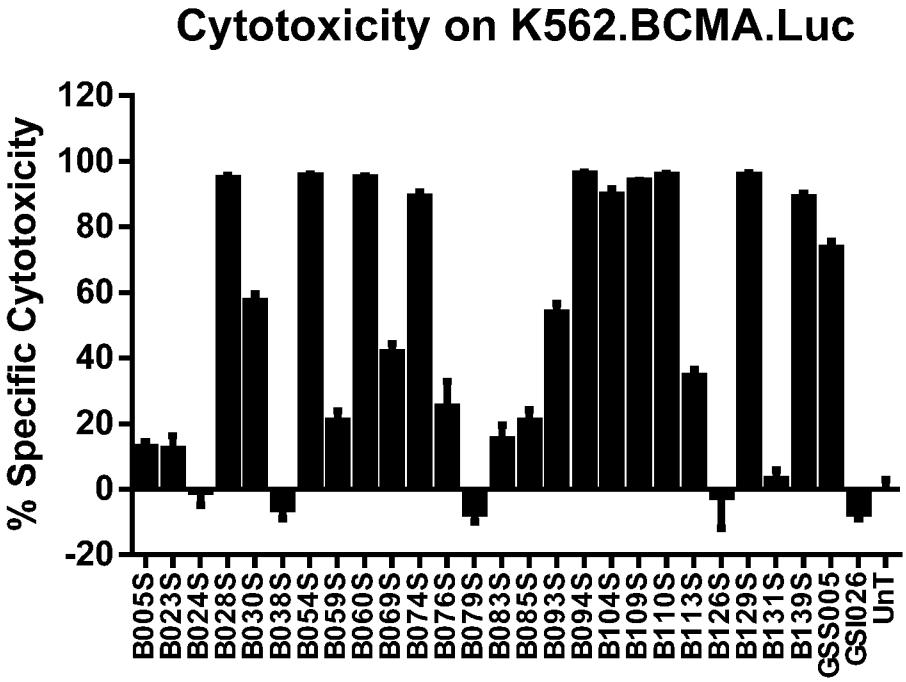
Cytotoxicity on K562.BCMA.Luc
% Specific Cytotoxicity
120
100
80
60
40
20
0
-20
B005S
B023S
B024S
B028S
B030S
B038S
B054S
B059S
B060S
B069S
B074S
B076S
B079S
B083S
B085S
B093S
B094S
B104S
B109S
B110S
B113S
B126S
B129S
B131S
B139S
GSS005
GSI026
UnT

FIG. 2B

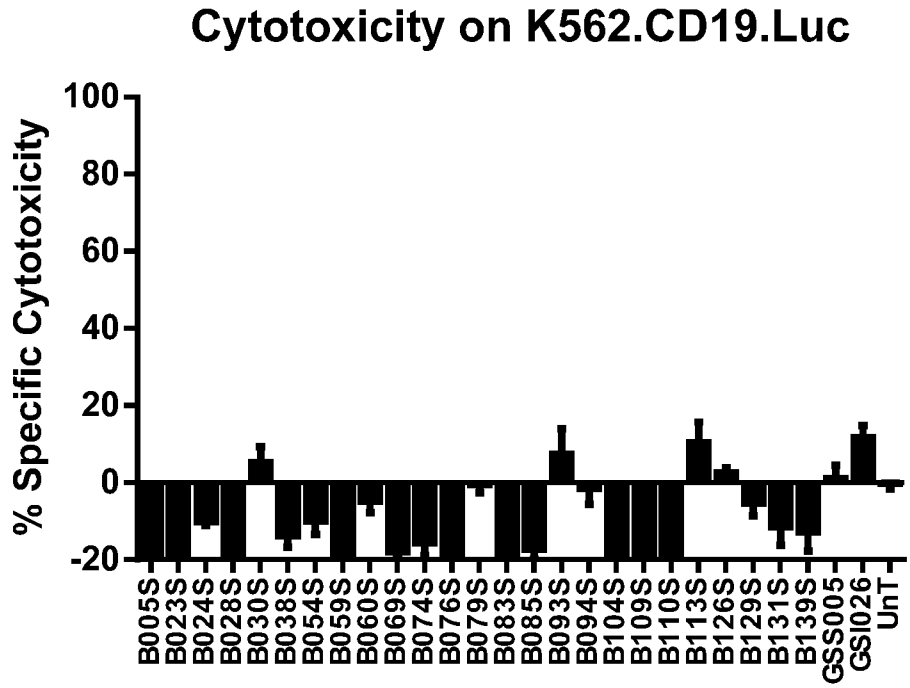
Cytotoxicity on K562.CD19.Luc
% Specific Cytotoxicity
100
80
60
40
20
0
-20
B005S
B023S
B024S
B028S
B030S
B038S
B054S
B059S
B060S
B069S
B074S
B076S
B079S
B083S
B085S
B093S
B094S
B104S
B109S
B110S
B113S
B126S
B129S
B131S
B139S
GSS005
GSI026
UnT

FIG. 2C

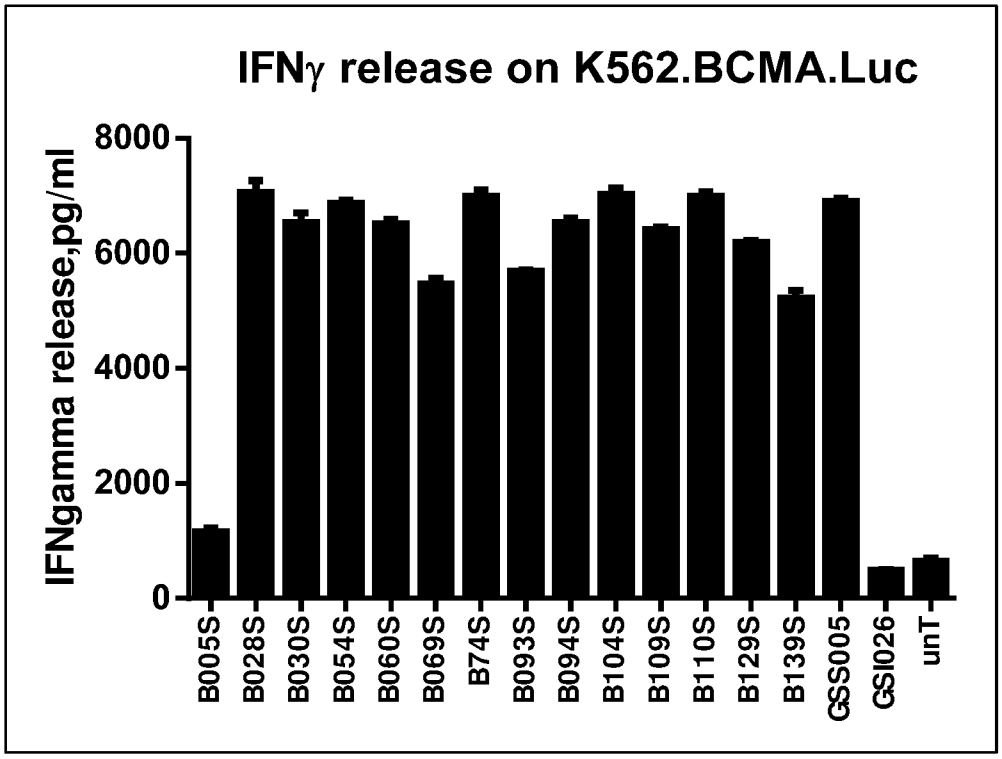
IFNγ release on K562.BCMA.Luc
IFNgamma release,pg/ml
8000
6000
4000
2000
0
B005S
B028S
B030S
B054S
B060S
B069S
B74S
B093S
B094S
B104S
B109S
B110S
B129S
B139S
GSS005
GSI026
unT

FIG. 3

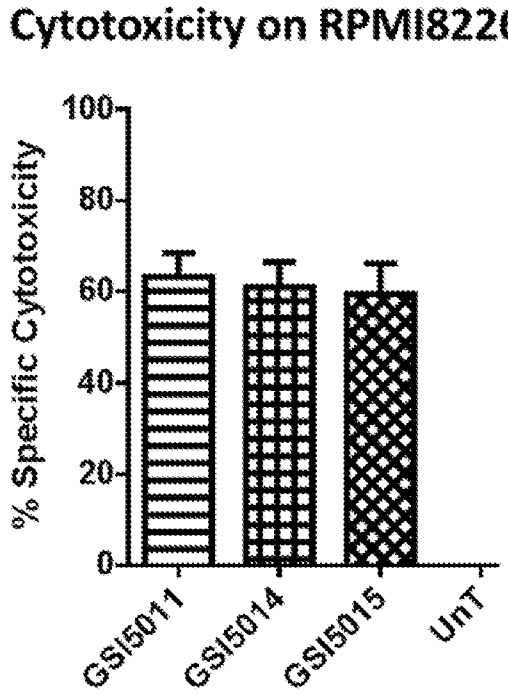
Cytotoxicity on RPMI8226-Luc
% Specific Cytotoxicity
100
80
60
40
20
0
GSI5011
GSI5014
GSI5015
UnT

FIG. 4A

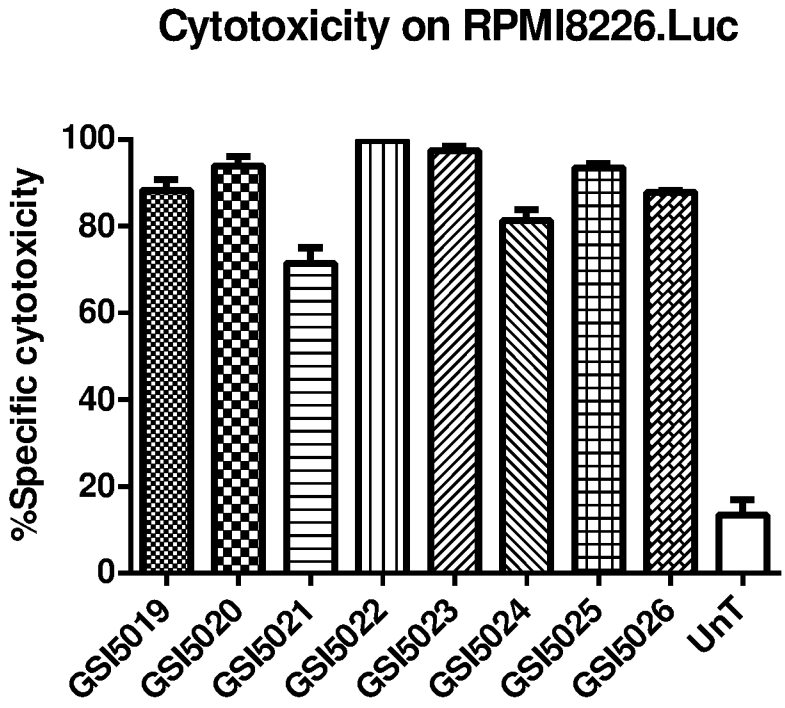
Cytotoxicity on RPMI8226.Luc
%Specific cytotoxicity
100
80
60
40
20
0
GSI5019
GSI5020
GSI5021
GSI5022
GSI5023
GSI5024
GSI5025
GSI5026
UnT

FIG. 4B

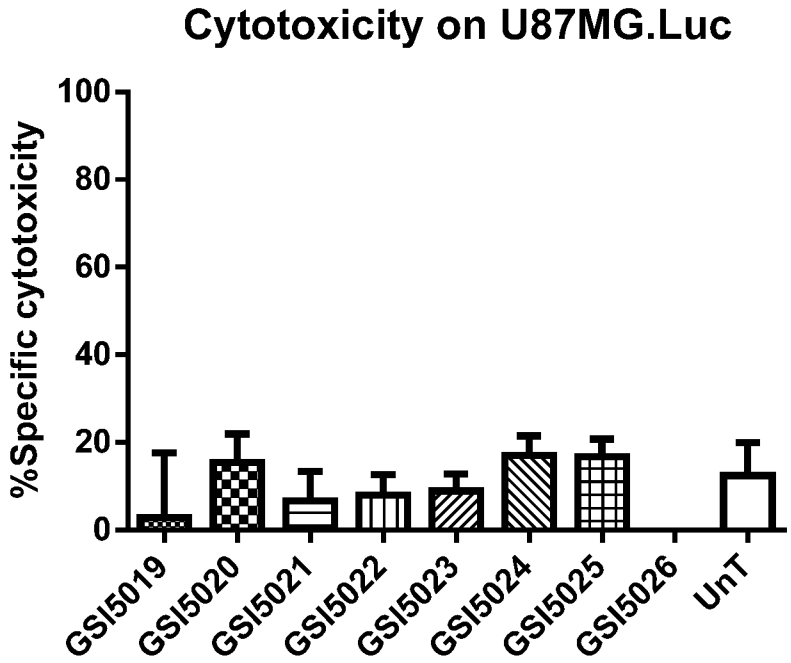
Cytotoxicity on U87MG.Luc
%Specific cytotoxicity
100
80
60
40
20
0
GSI5019
GSI5020
GSI5021
GSI5022
GSI5023
GSI5024
GSI5025
GSI5026
UnT

FIG.4C

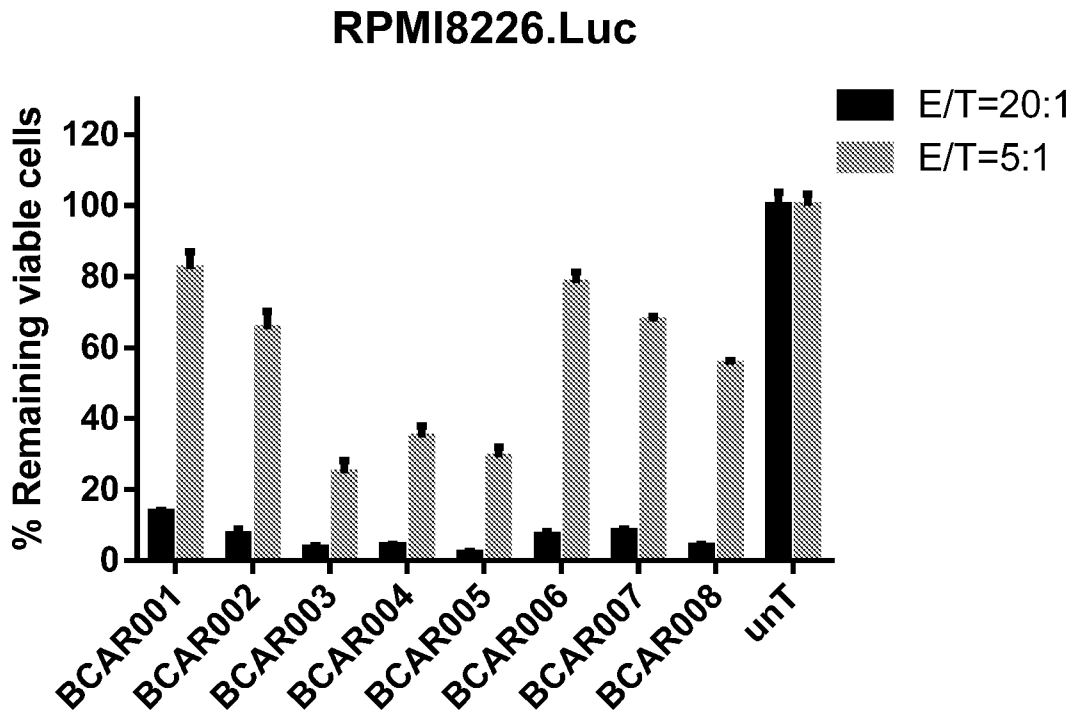
RPMI8226.Luc
% Remaining viable cells
120
100
80
60
40
20
0
E/T=20:1
E/T=5:1
BCAR001
BCAR002
BCAR003
BCAR004
BCAR005
BCAR006
BCAR007
BCAR008
unT

FIG. 5A

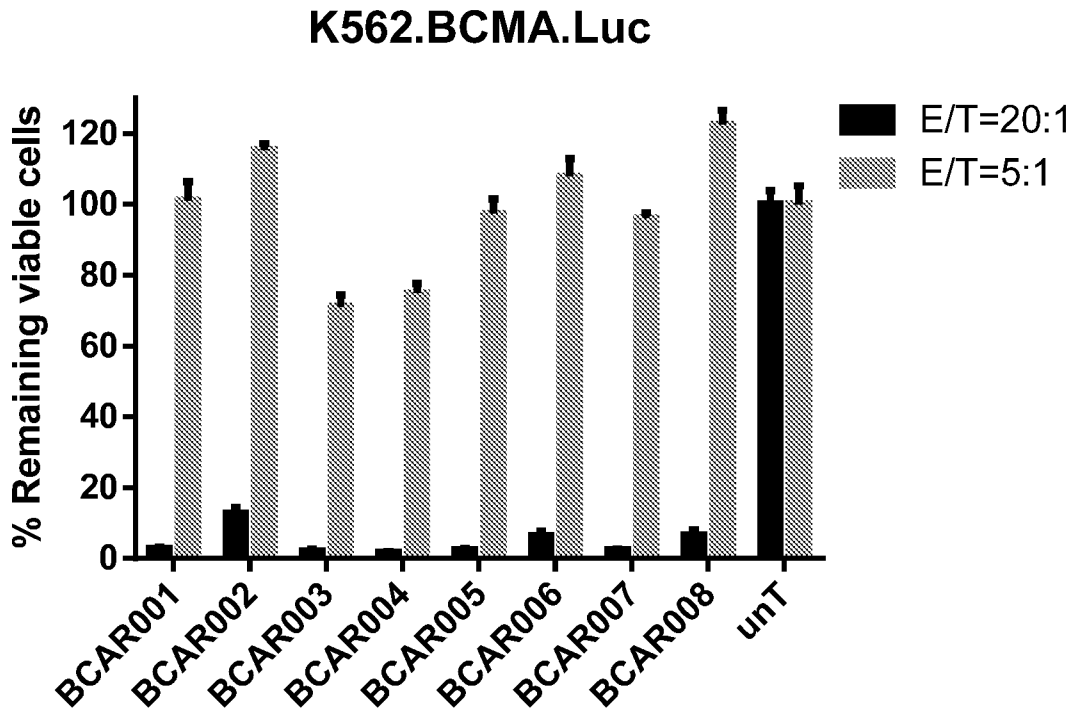
K562.BCMA.Luc
% Remaining viable cells
120
100
80
60
40
20
0
E/T=20:1
E/T=5:1
BCAR001
BCAR002
BCAR003
BCAR004
BCAR005
BCAR006
BCAR007
BCAR008
unT

FIG. 5B

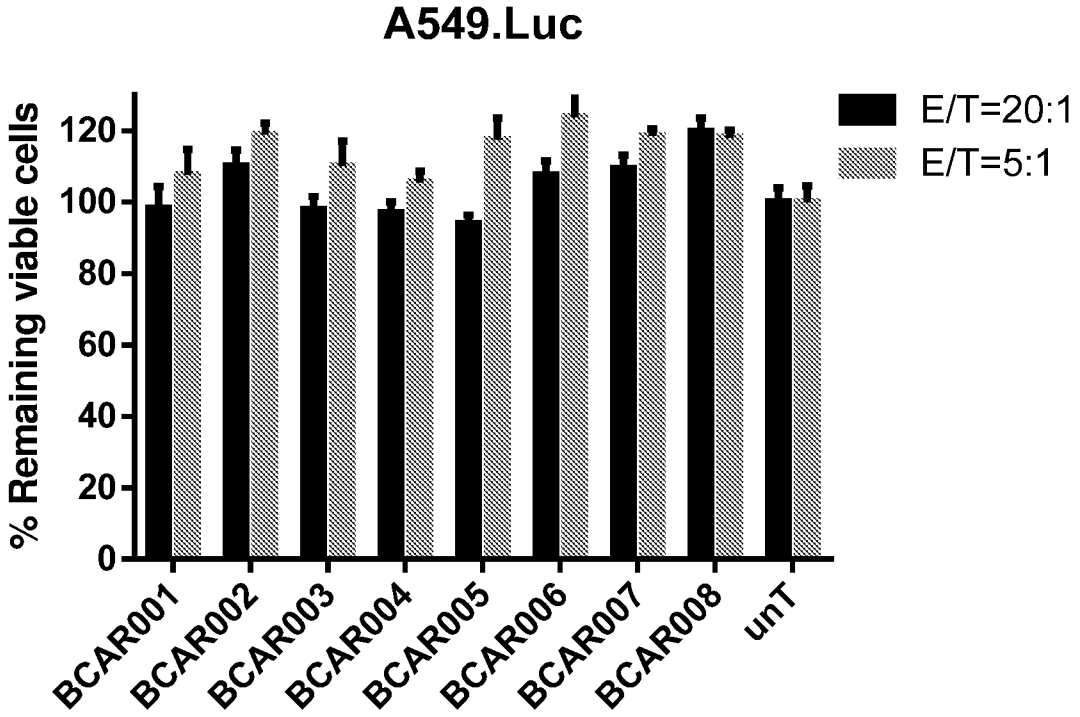
A549.Luc
% Remaining viable cells
120
100
80
60
40
20
0
E/T=20:1
E/T=5:1
BCAR001
BCAR002
BCAR003
BCAR004
BCAR005
BCAR006
BCAR007
BCAR008
unT

FIG. 5C

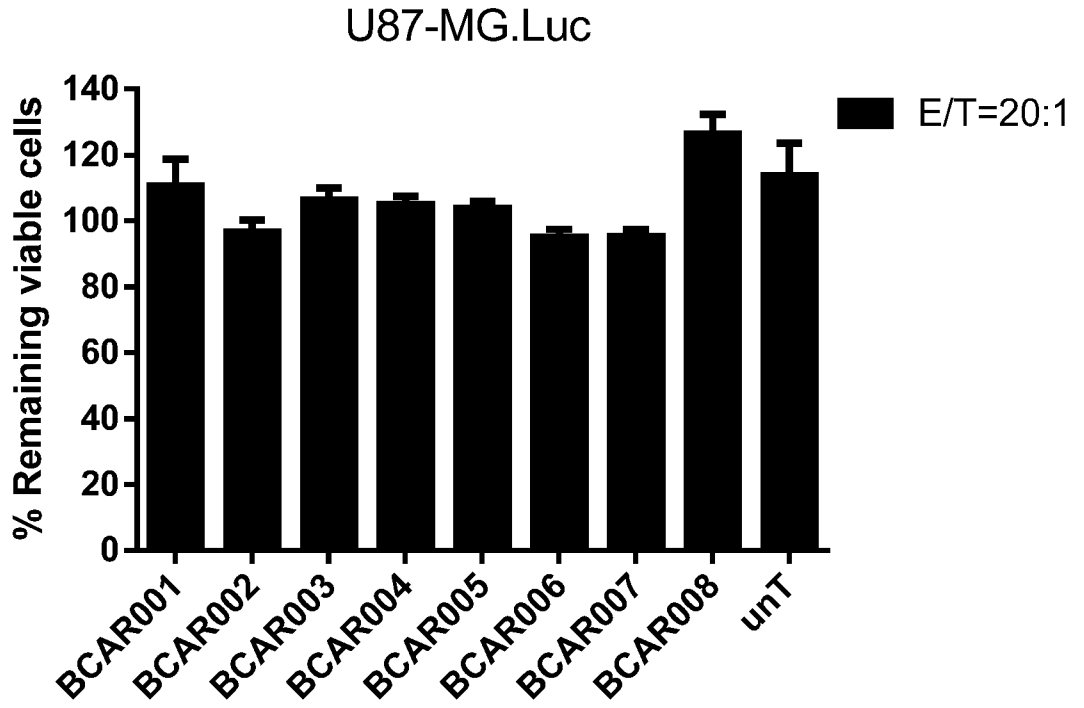
U87-MG.Luc
% Remaining viable cells
140
120
100
80
60
40
20
0
E/T=20:1
BCAR001
BCAR002
BCAR003
BCAR004
BCAR005
BCAR006
BCAR007
BCAR008
unT

FIG. 5D

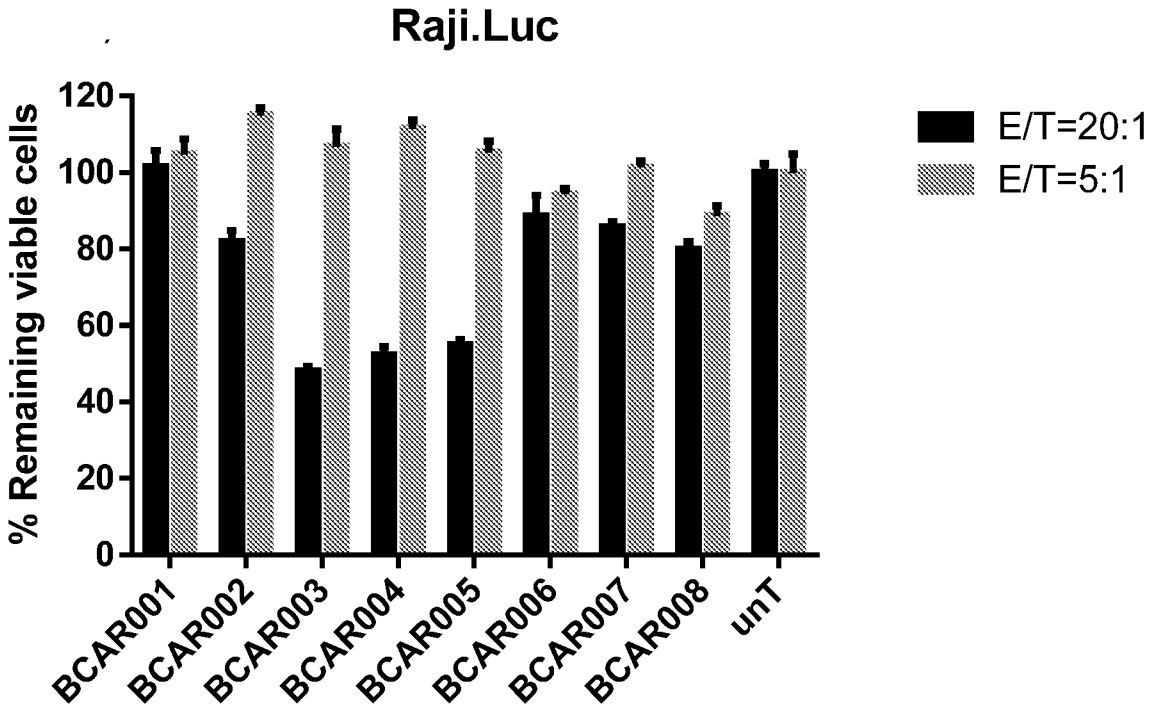
Raji.Luc
% Remaining viable cells
120
100
80
60
40
20
0
E/T=20:1
E/T=5:1
BCAR001
BCAR002
BCAR003
BCAR004
BCAR005
BCAR006
BCAR007
BCAR008
unT

FIG. 5E

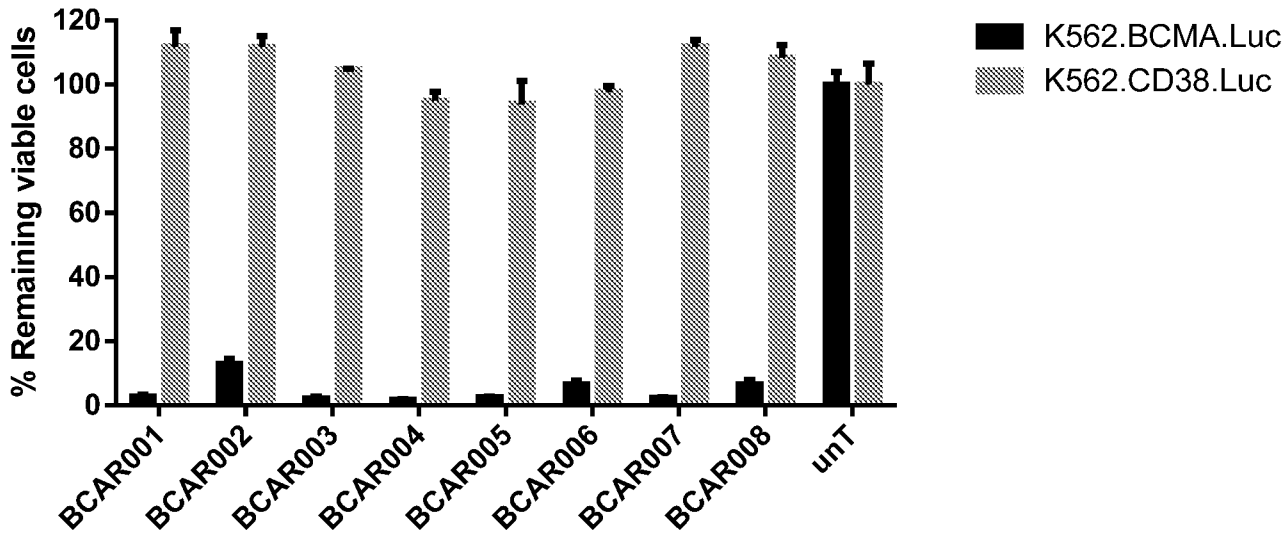
% Remaining viable cells
120
100
80
60
40
20
0
K562.BCMA.Luc
K562.CD38.Luc
BCAR001
BCAR002
BCAR003
BCAR004
BCAR005
BCAR006
BCAR007
BCAR008
unT

FIG. 5F

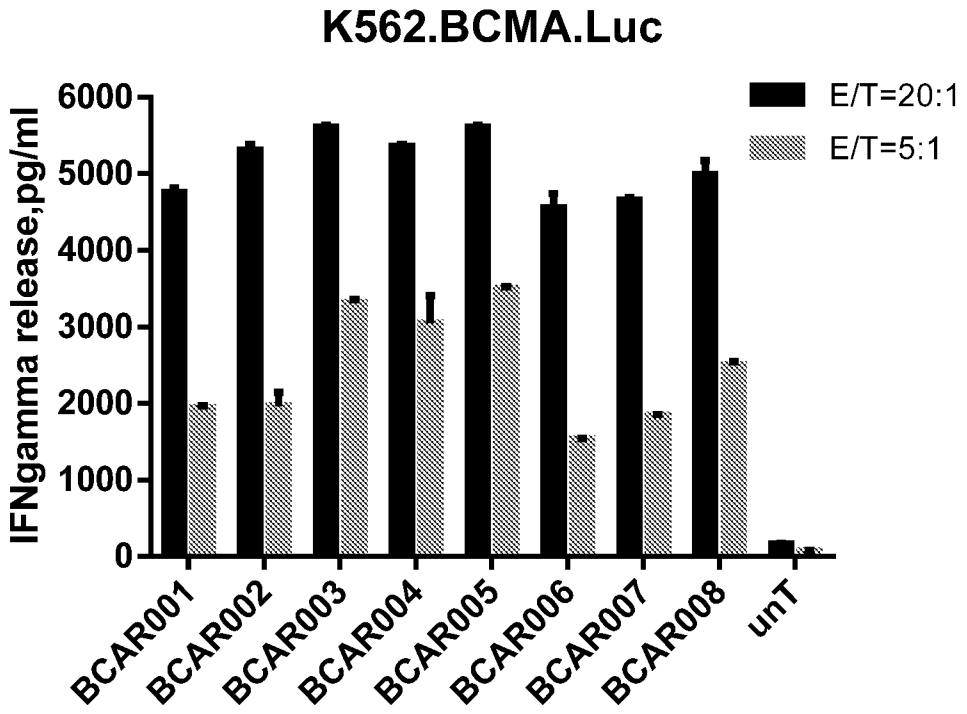
K562.BCMA.Luc
IFNgamma release,pg/ml
6000
5000
4000
3000
2000
1000
0
E/T=20:1
E/T=5:1
BCAR001
BCAR002
BCAR003
BCAR004
BCAR005
BCAR006
BCAR007
BCAR008
unT

FIG. 6A

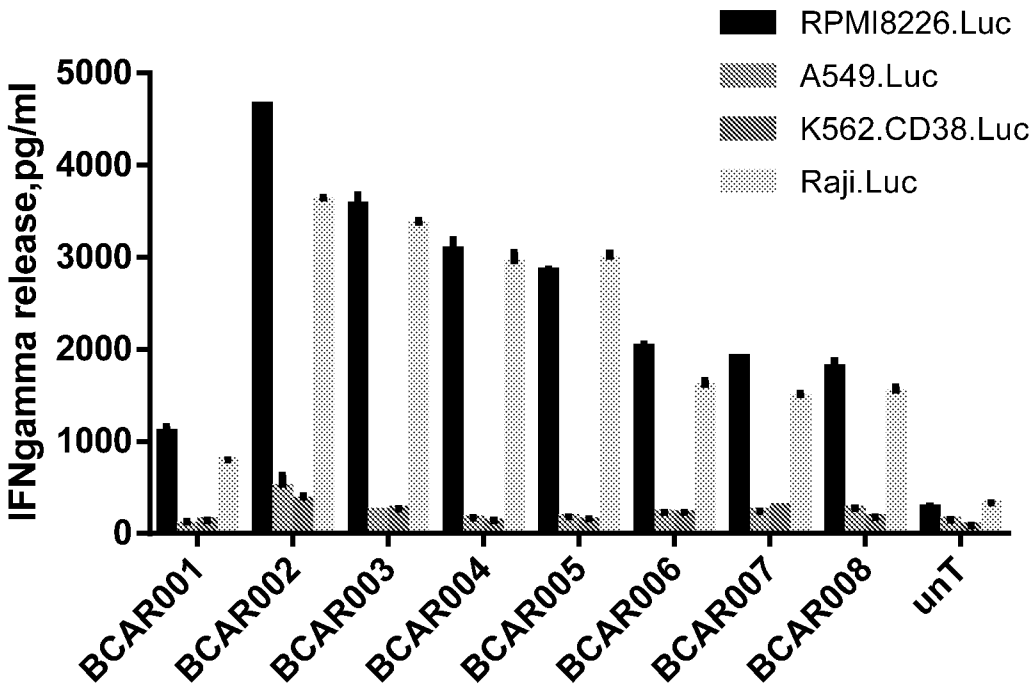
RPMI8226.Luc
A549.Luc
K562.CD38.Luc
Raji.Luc
IFNgamma release,pg/ml
5000
4000
3000
2000
1000
0
BCAR001
BCAR002
BCAR003
BCAR004
BCAR005
BCAR006
BCAR007
BCAR008
unT

FIG. 6B

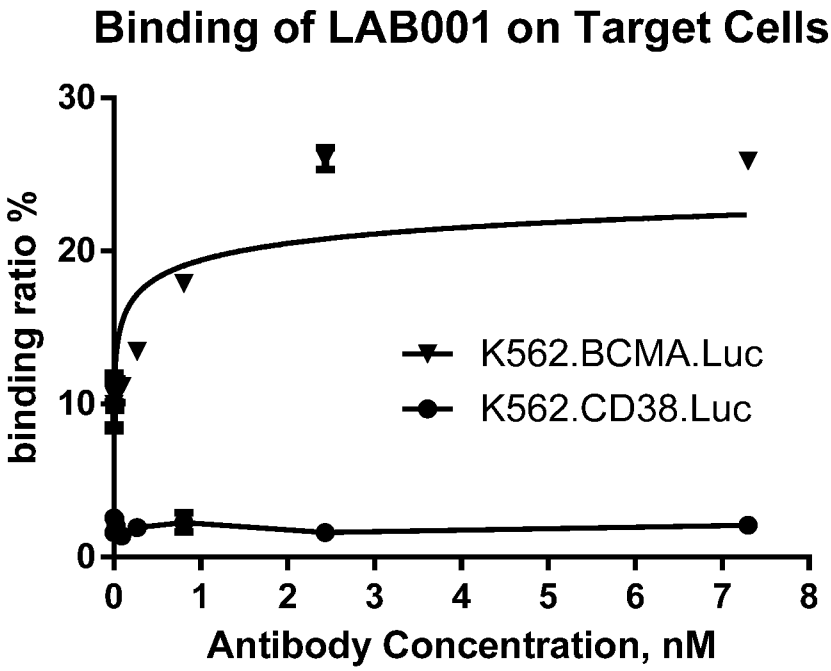
Binding of LAB001 on Target Cells
binding ratio %
30
20
10
0
K562.BCMA.Luc
K562.CD38.Luc
0 1 2 3 4 5 6 7 8
Antibody Concentration, nM

FIG. 7A

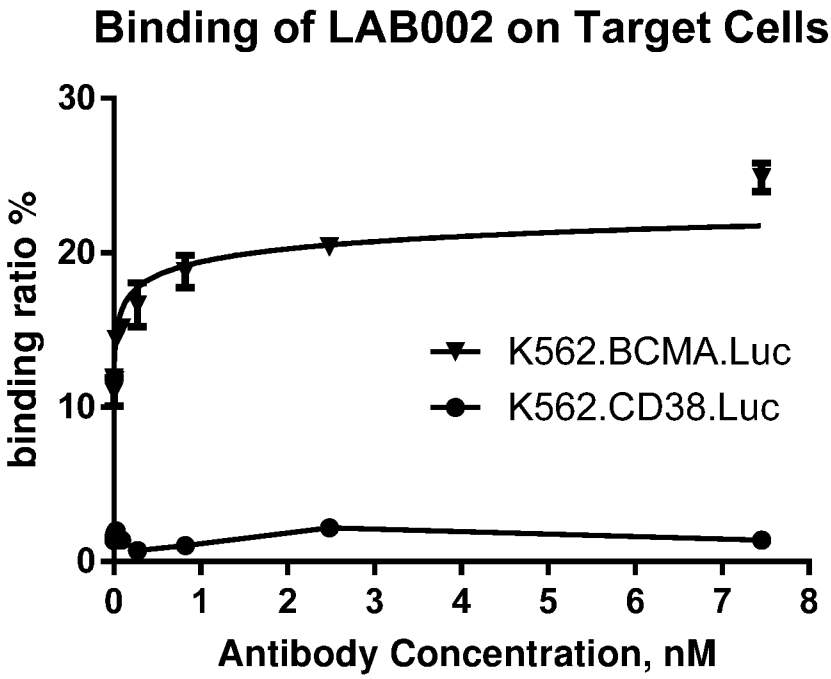
Binding of LAB002 on Target Cells
binding ratio %
30
20
10
0
K562.BCMA.Luc
K562.CD38.Luc
0 1 2 3 4 5 6 7 8
Antibody Concentration, nM

FIG. 7B

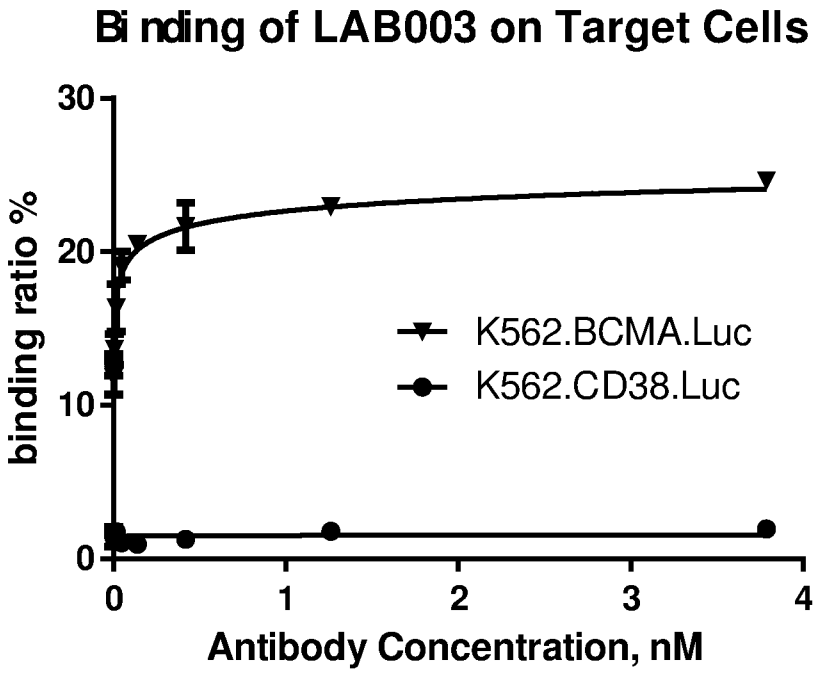
Binding of LAB003 on Target Cells
binding ratio %
30
20
10
0
0
1
2
3
4
Antibody Concentration, nM
K562.BCMA.Luc
K562.CD38.Luc

FIG. 7C

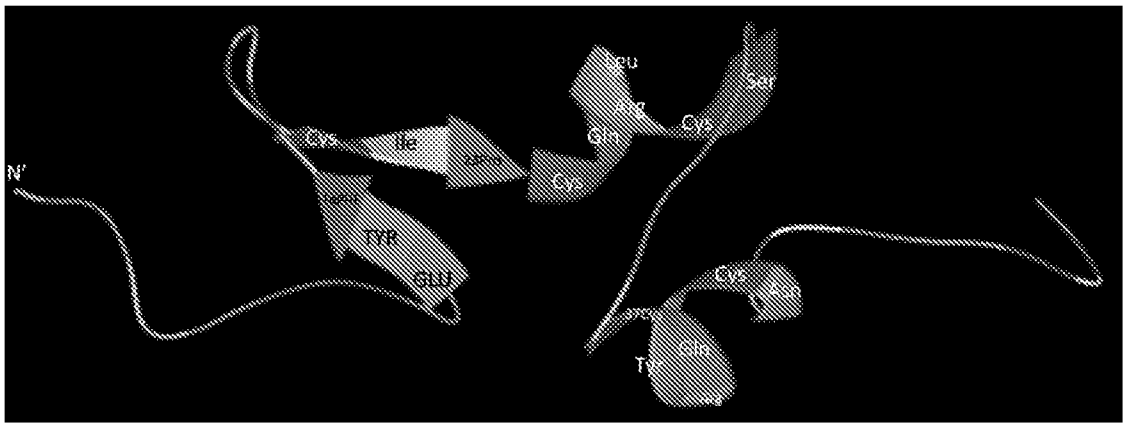

FIG. 8A

1 11 21 31 41 51
(SEQ ID NO: 396) MLQMAGQCSQ NEYFDSLLHA CIPCQLRCSS NTPPLTCQRY CNASVTNSVK GTNA
Disulfide bonds
Code Position
269EP001 1-10 MLQMAGQCSQ (SEQ ID NO: 389)
269EP002 8-21 CSQ NEYFDSLLHA C (SEQ ID NO: 390)
269EP003 11-23 NEYFDSLLHA CIP (SEQ ID NO: 391)
269EP004 20-30 A CIPCQLRCSS (SEQ ID NO: 392)
269EP005 24-42 CQLRCSS NTPPLTCQRY CN (SEQ ID NO: 393)
269EP006 36-43 TCQRY CNA (SEQ ID NO: 394)
269EP007 43-54 ASVTNSVK GTNA
(SEQ ID NO: 395)

FIG. 8B

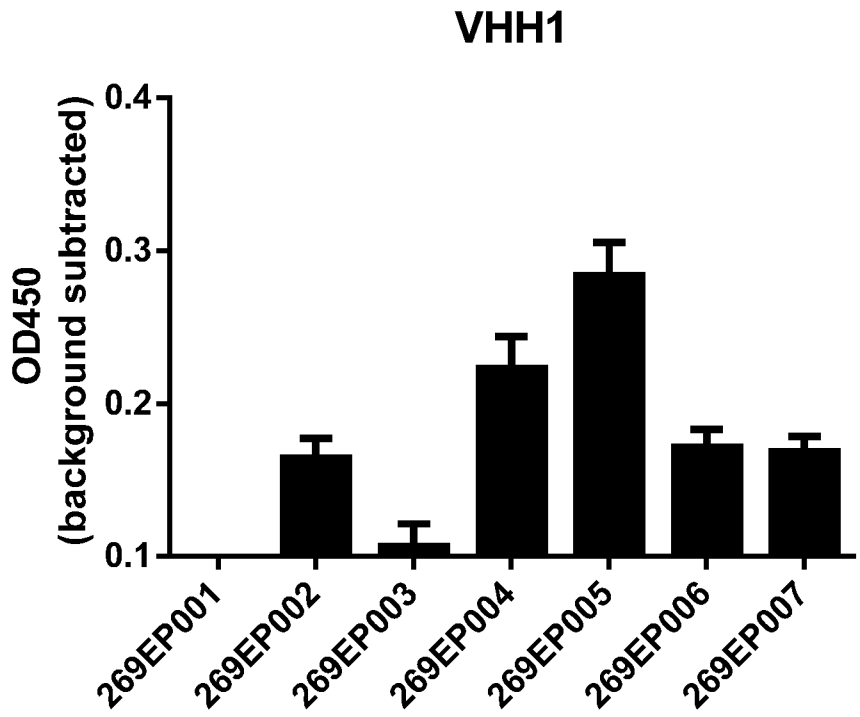
VHH1
OD450
(background subtracted)
0.4
0.3
0.2
0.1
269EP001
269EP002
269EP003
269EP004
269EP005
269EP006
269EP007

FIG. 9A

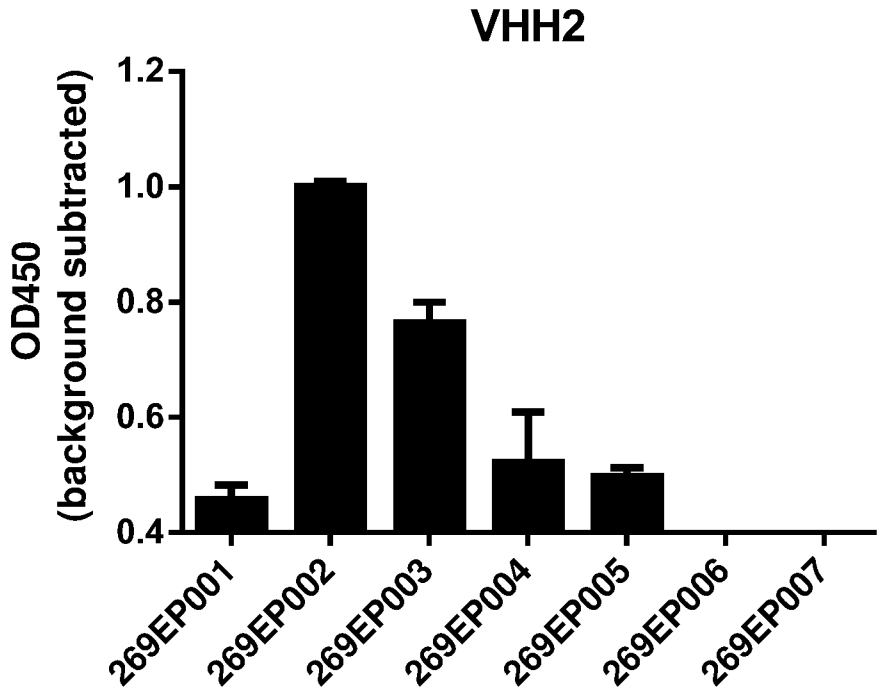
VHH2
OD450
(background subtracted)
1.2
1.0
0.8
0.6
0.4
269EP001
269EP002
269EP003
269EP004
269EP005
269EP006
269EP007

FIG. 9B

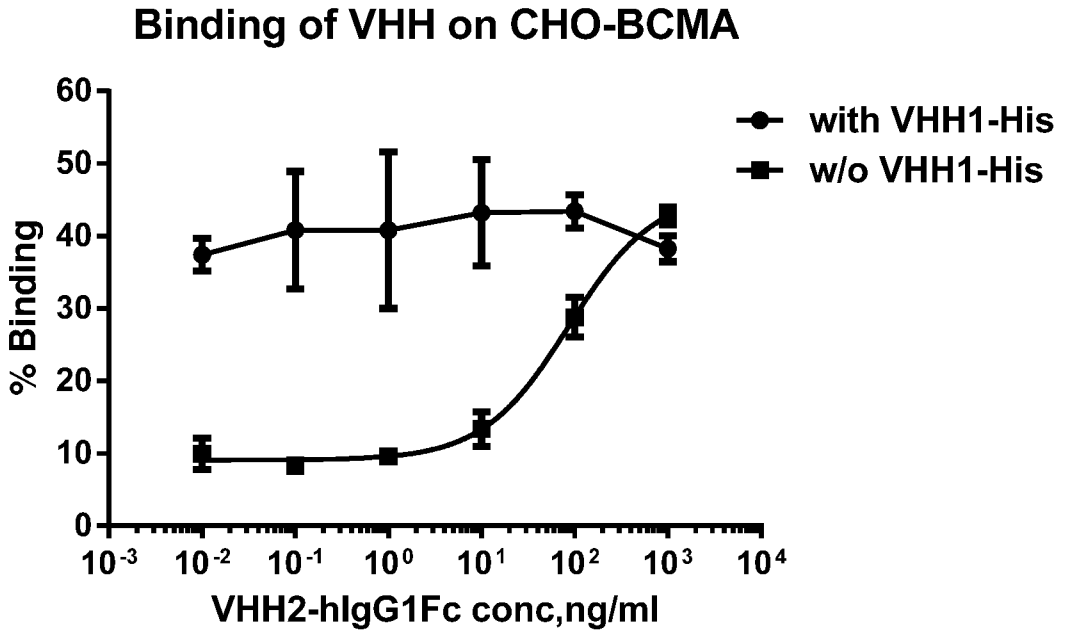
Binding of VHH on CHO-BCMA
with VHH1-His
w/o VHH1-His
% Binding
0
10
20
30
40
50
60
10-3
10-2
10-1
100
101
102
103
104
VHH2-hIgG1Fc conc,ng/ml

FIG. 10

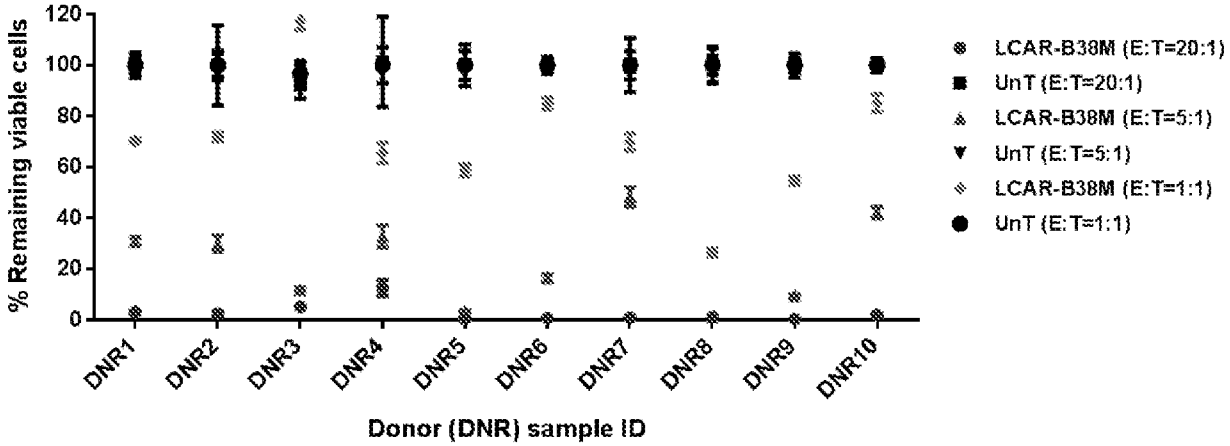
% Remaining viable cells
0
20
40
60
80
100
120
DNR1
DNR2
DNR3
DNR4
DNR5
DNR6
DNR7
DNR8
DNR9
DNR10
Donor (DNR) sample ID
LCAR-B38M (E:T=20:1)
UnT (E:T=20:1)
LCAR-B38M (E:T=5:1)
UnT (E:T=5:1)
LCAR-B38M (E:T=1:1)
UnT (E:T=1:1)

FIG. 11

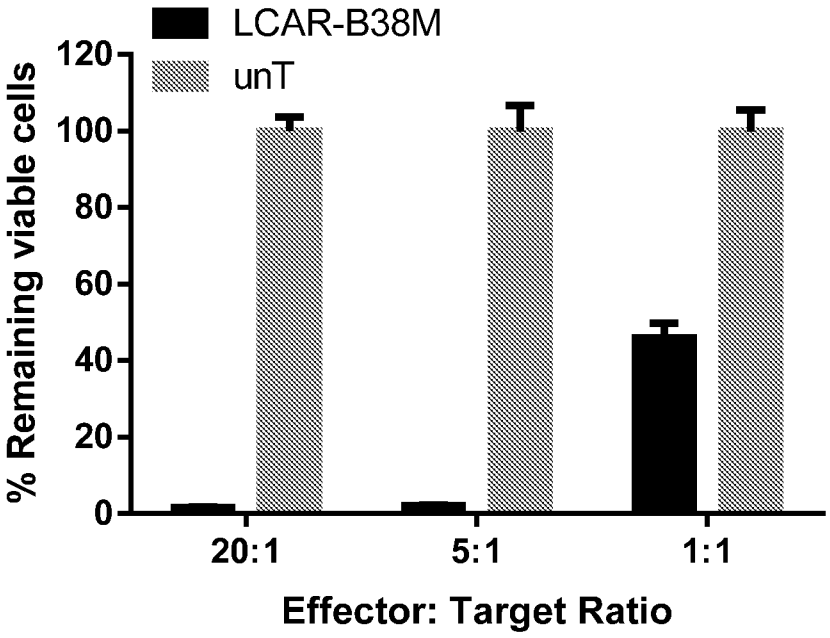

FIG. 12A

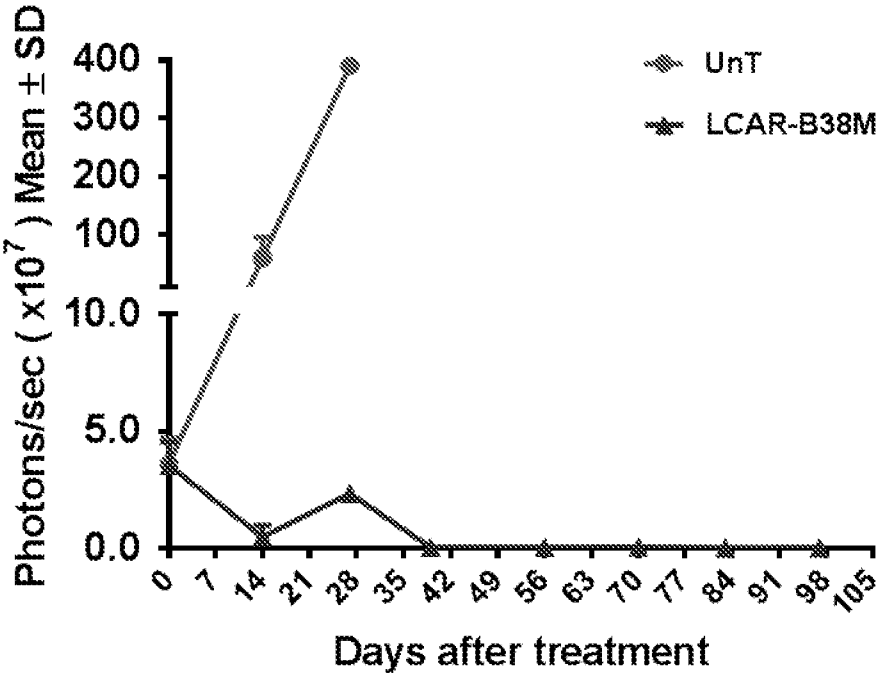

FIG. 12B

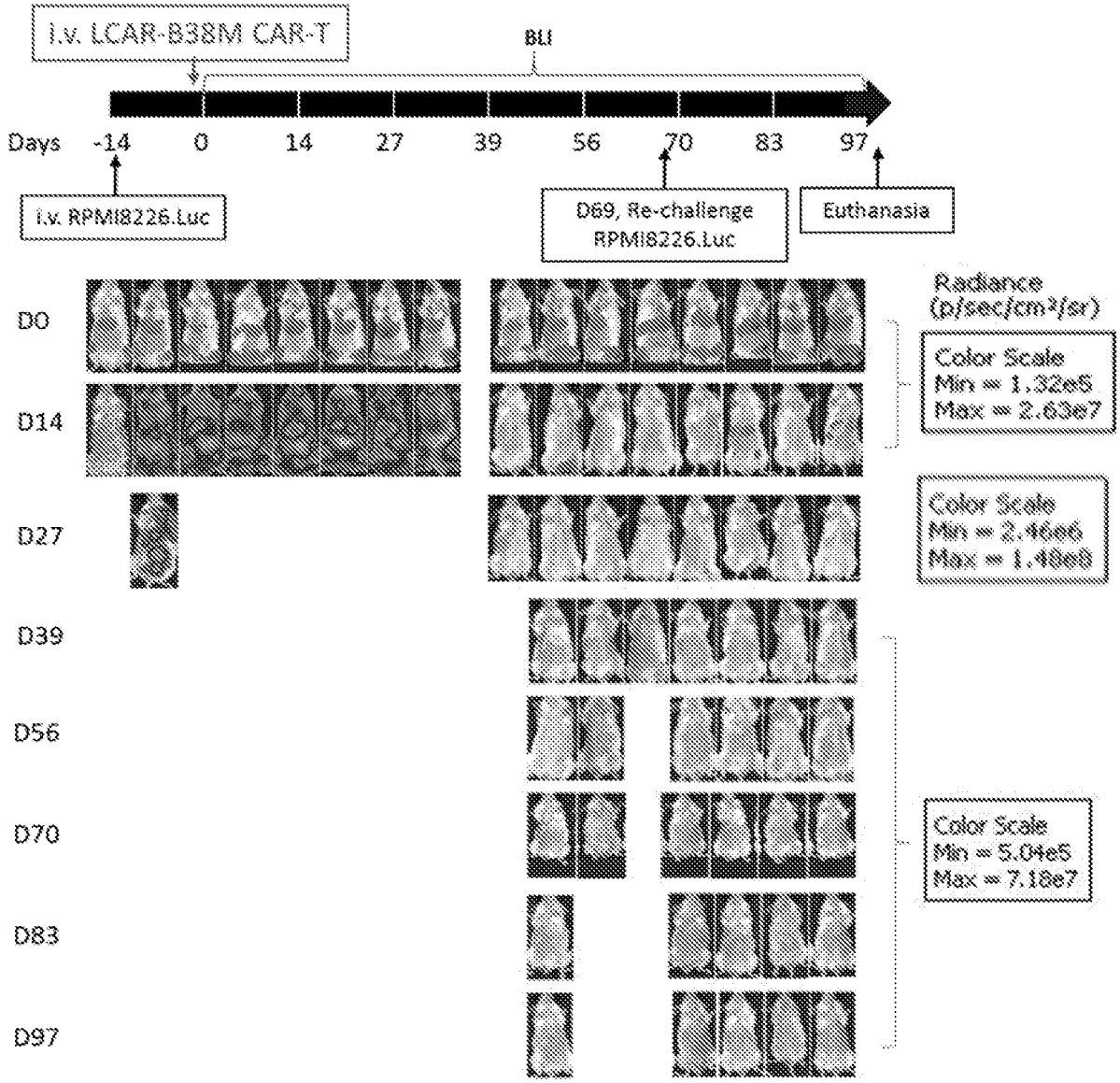

FIG. 12C

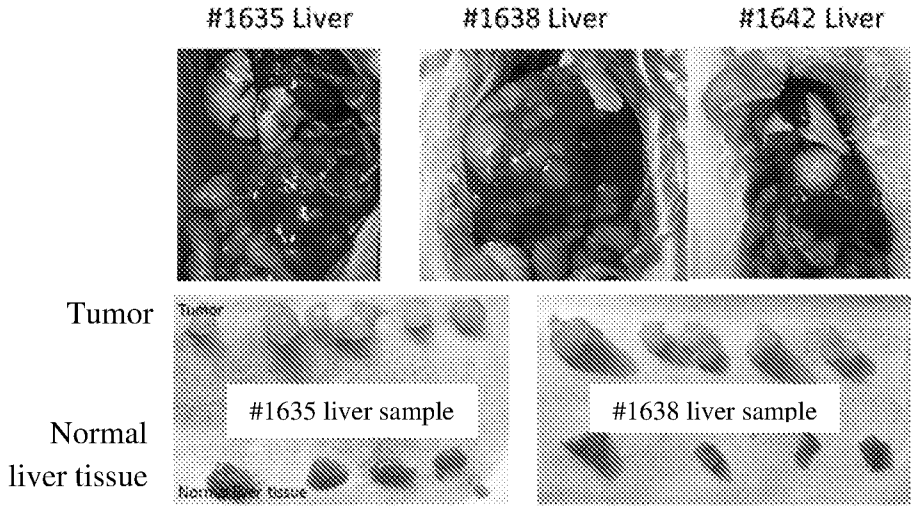

FIG. 12D

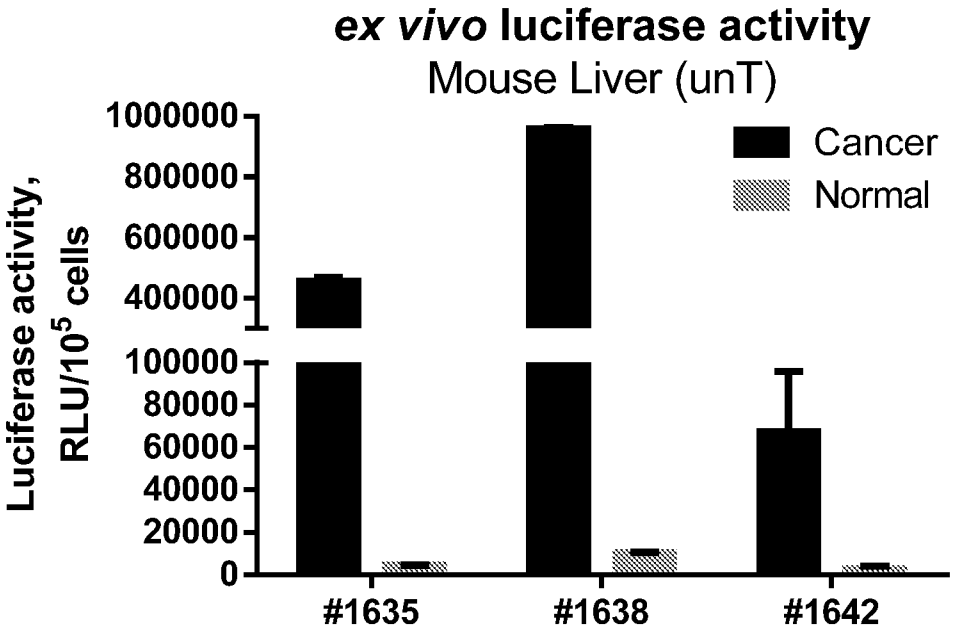

FIG. 12E

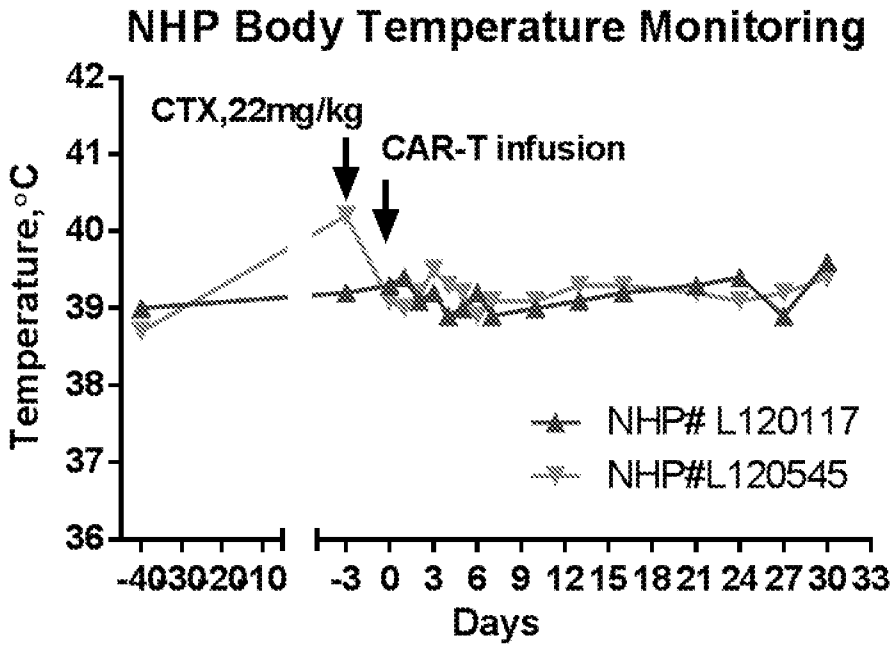

FIG. 13A

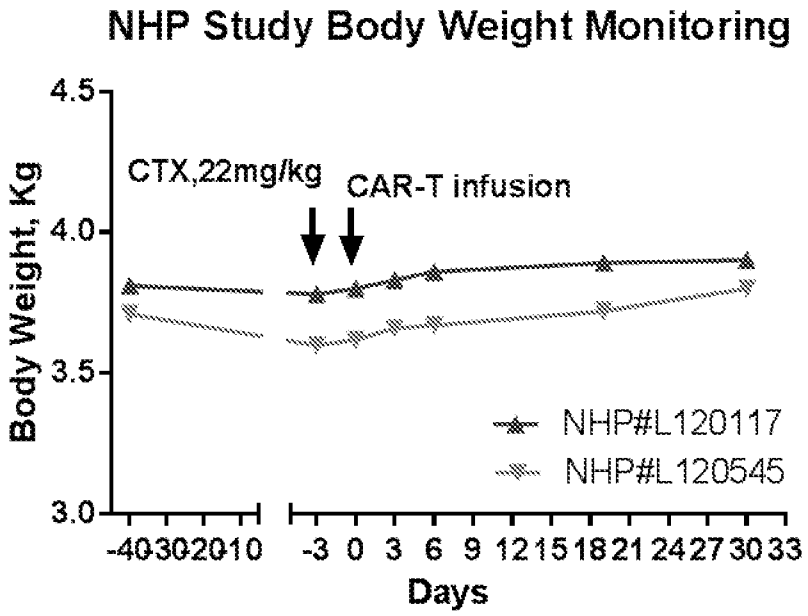

FIG. 13B

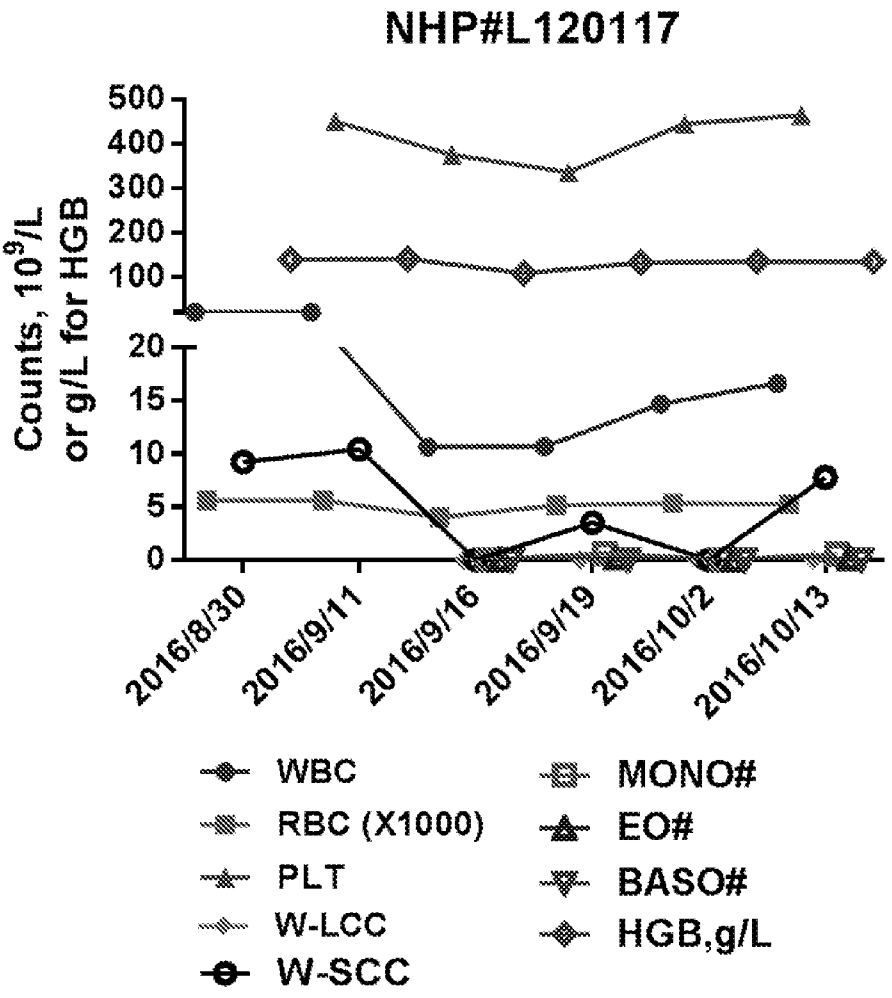

FIG. 13C

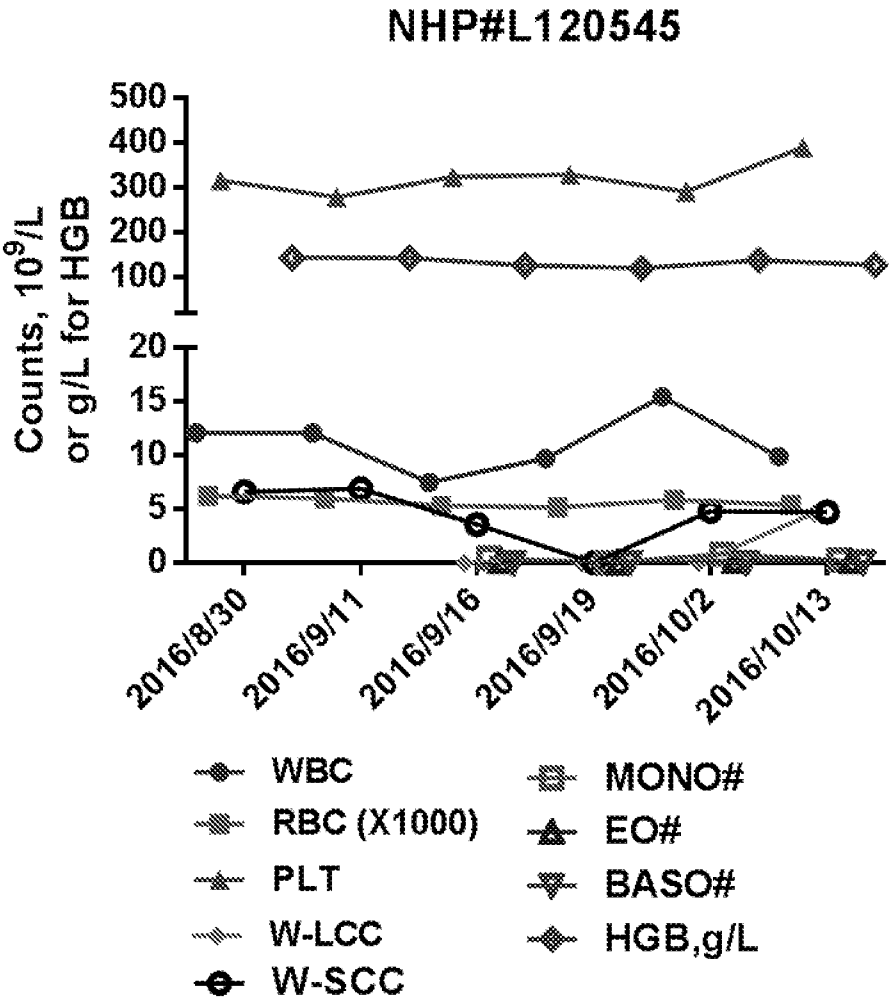
NHP#L120545
Counts, 10^9/L or g/L for HGB
500
400
300
200
100
20
15
10
5
0
2016/8/30
2016/9/11
2016/9/16
2016/9/19
2016/10/2
2016/10/13
WBC
RBC (X1000)
PLT
W-LCC
W-SCC
MONO#
EO#
BASO#
HGB,g/L

FIG. 13D

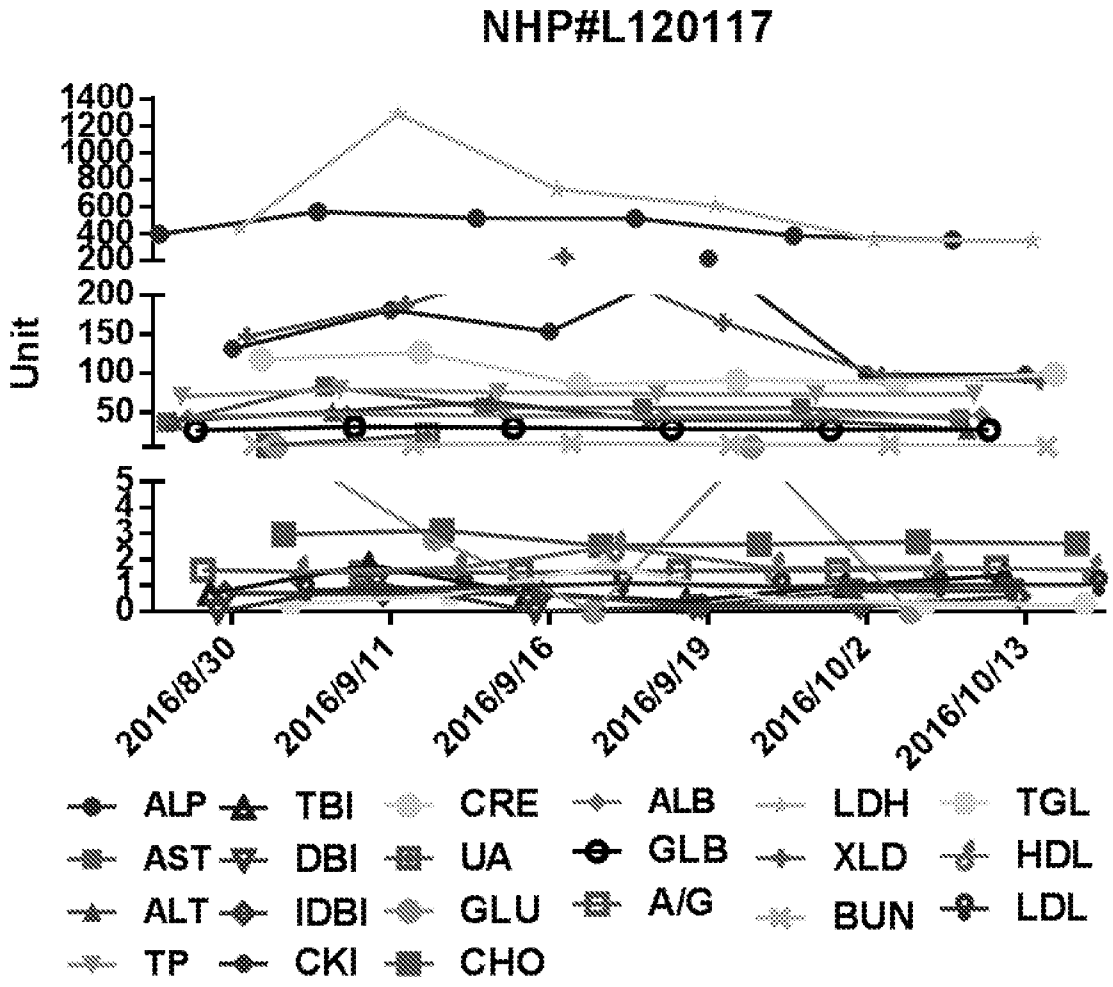
NHP#L120117
Unit
1400
1200
1000
800
600
400
200
200
150
100
50
5
4
3
2
1
0
2016/8/30
2016/9/11
2016/9/16
2016/9/19
2016/10/2
2016/10/13
ALP
TBI
CRE
ALB
LDH
TGL
AST
DBI
UA
GLB
XLD
HDL
ALT
IDBI
GLU
A/G
BUN
LDL
TP
CKI
CHO

FIG. 13E

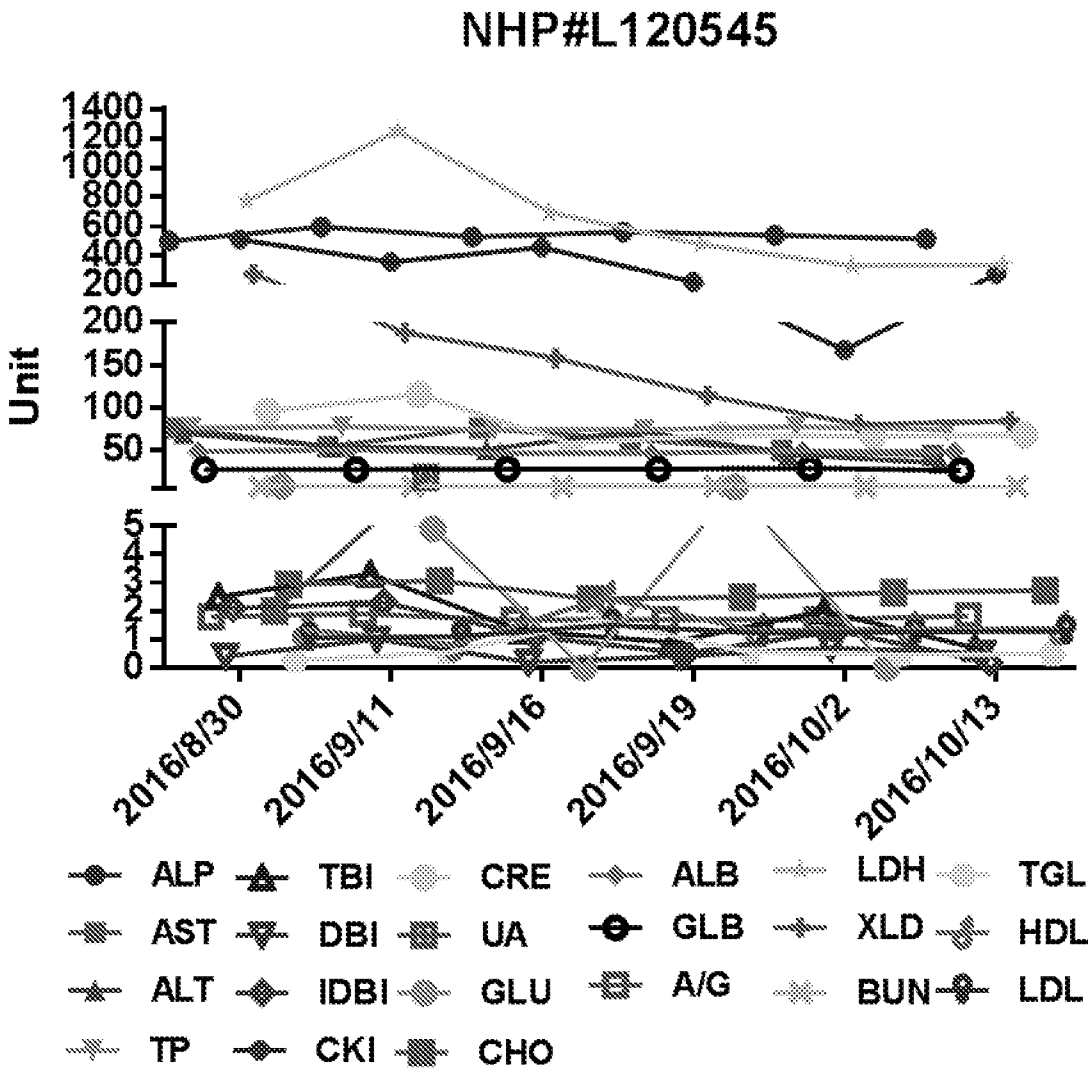
NHP#L120545
Unit
1400
1200
1000
800
600
400
200
200
150
100
50
5
4
3
2
1
0
2016/8/30
2016/9/11
2016/9/16
2016/9/19
2016/10/2
2016/10/13
ALP
TBI
CRE
ALB
LDH
TGL
AST
DBI
UA
GLB
XLD
HDL
ALT
IDBI
GLU
A/G
BUN
LDL
TP
CKI
CHO

FIG. 13F

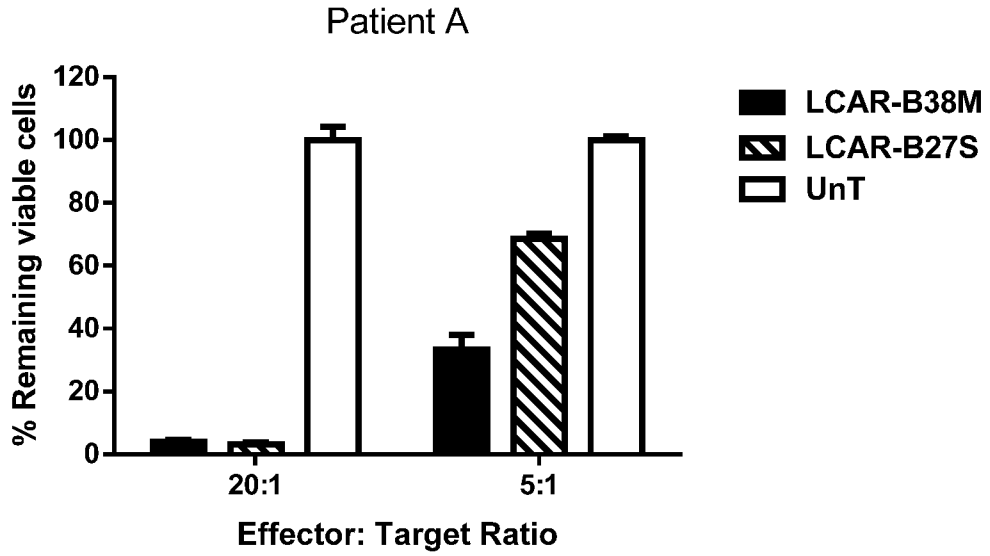

FIG. 14A

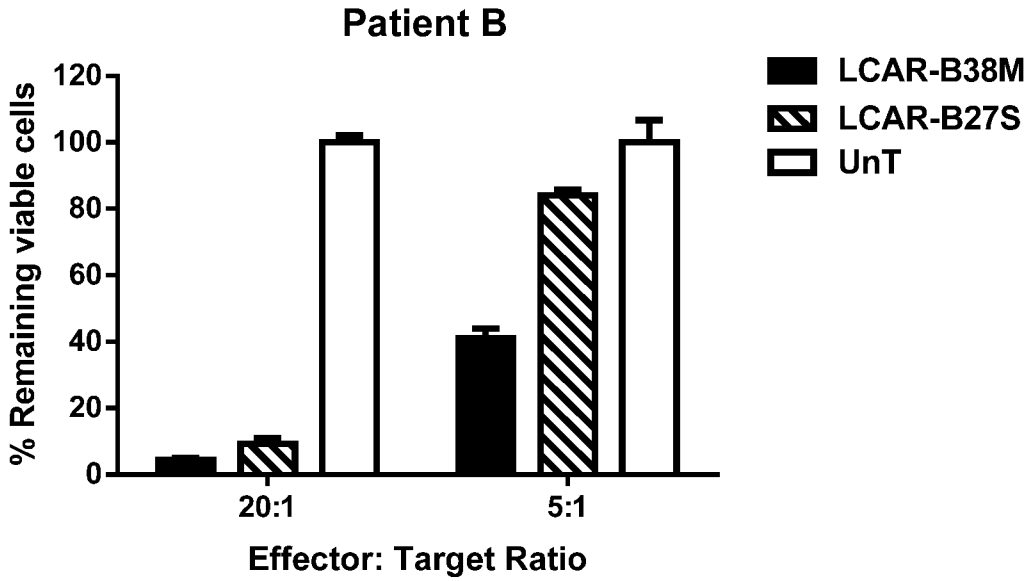

FIG. 14B

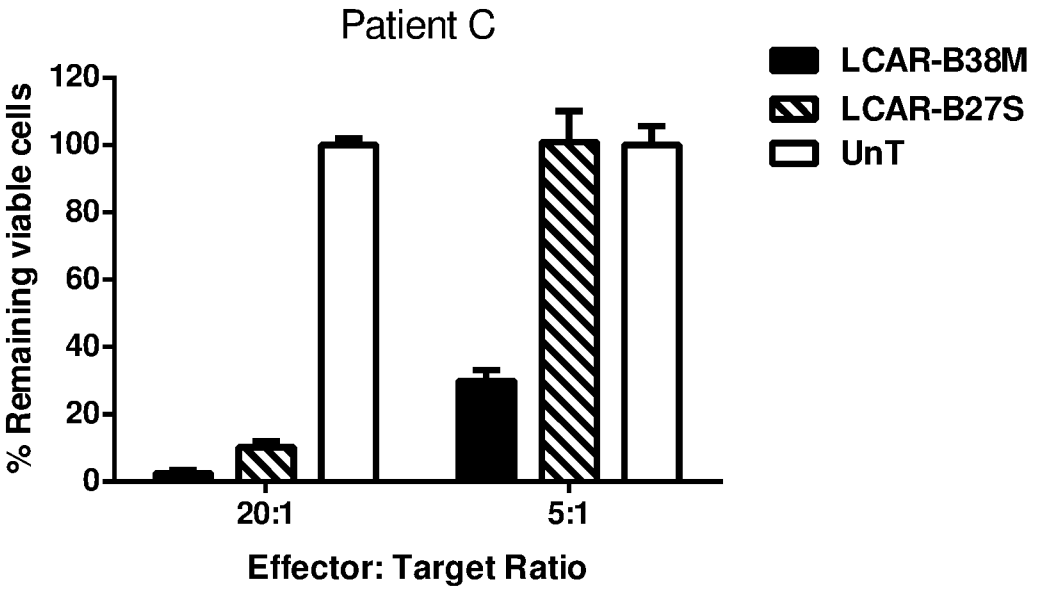

FIG. 14C

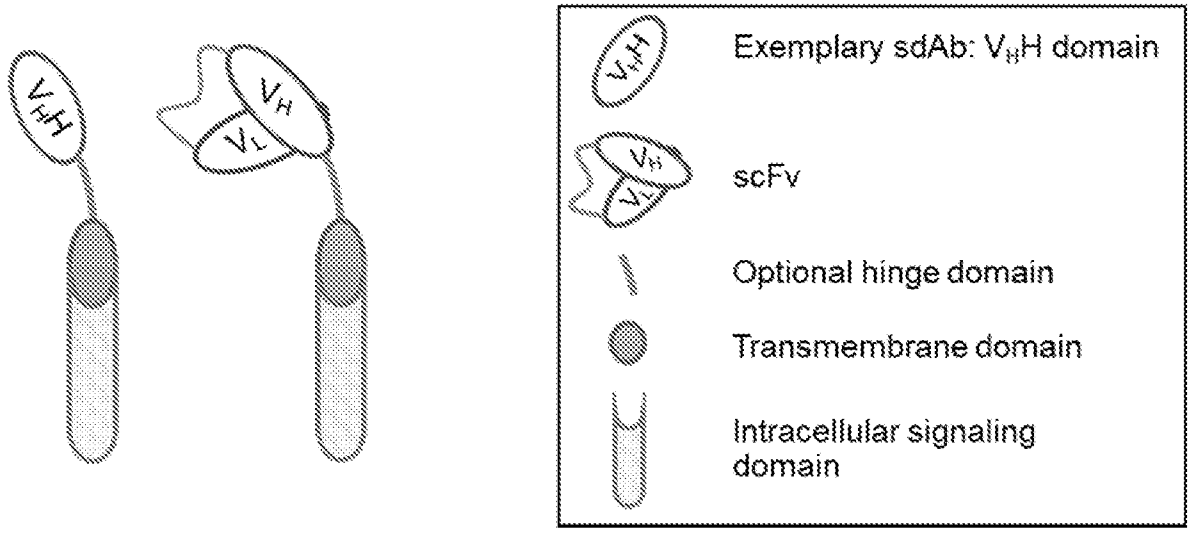

FIG. 15A

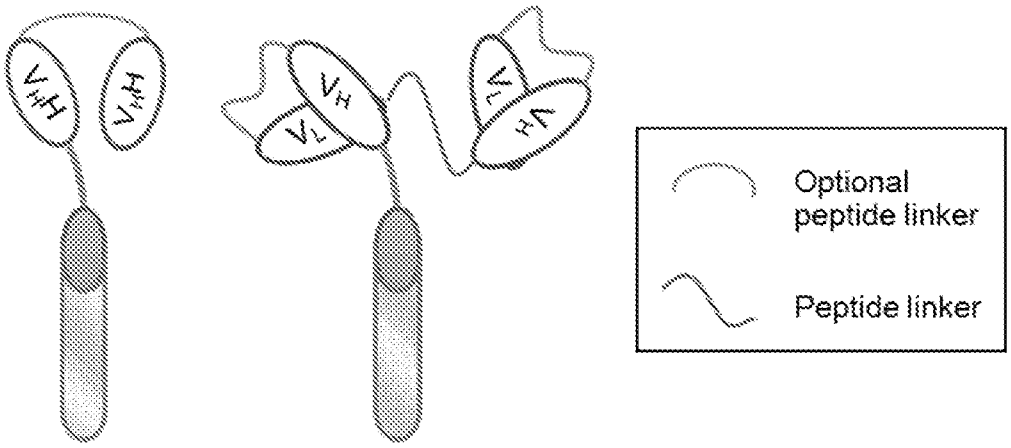

FIG. 15B

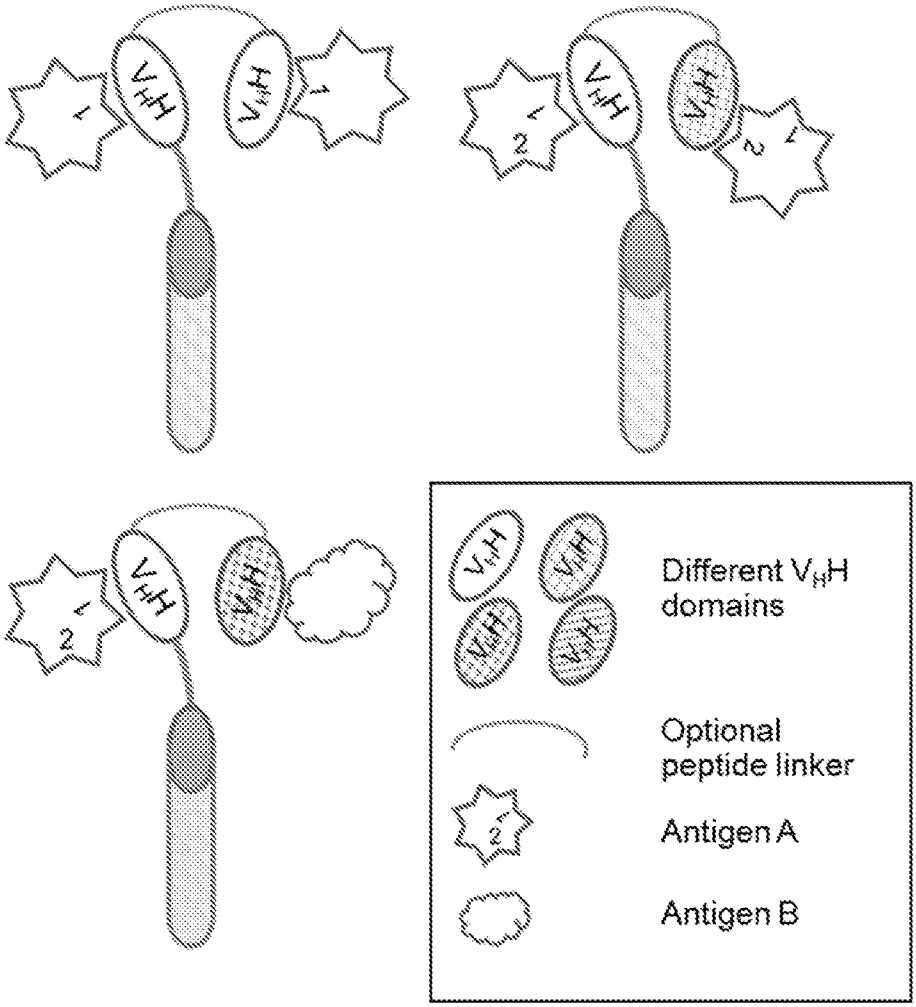

FIG. 15C

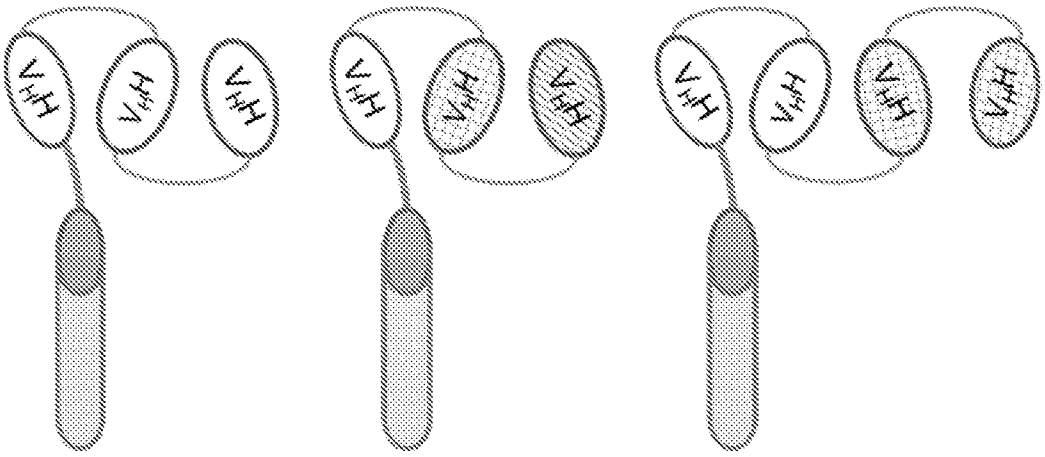

FIG. 15D

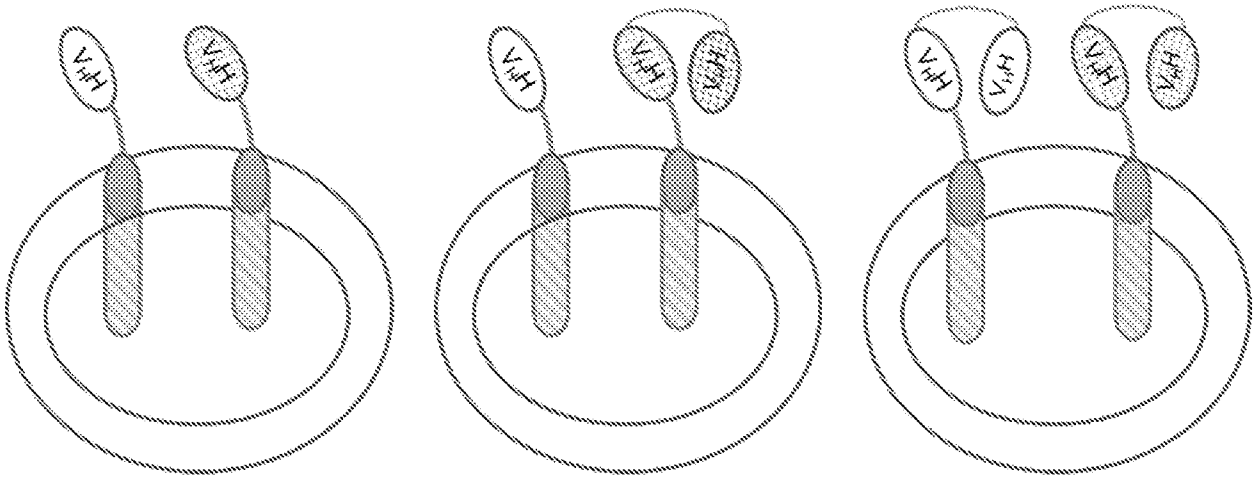

FIG. 15E