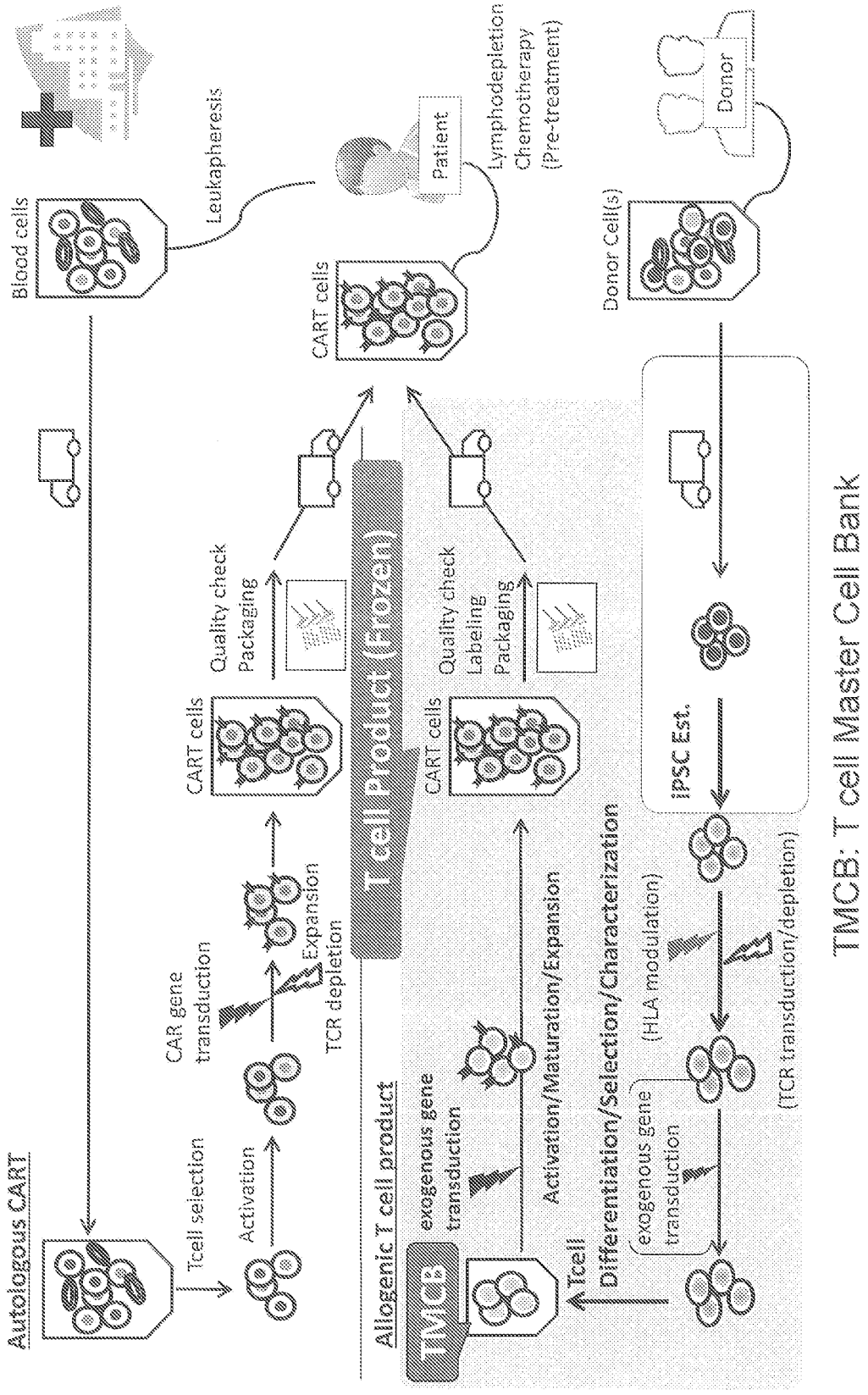
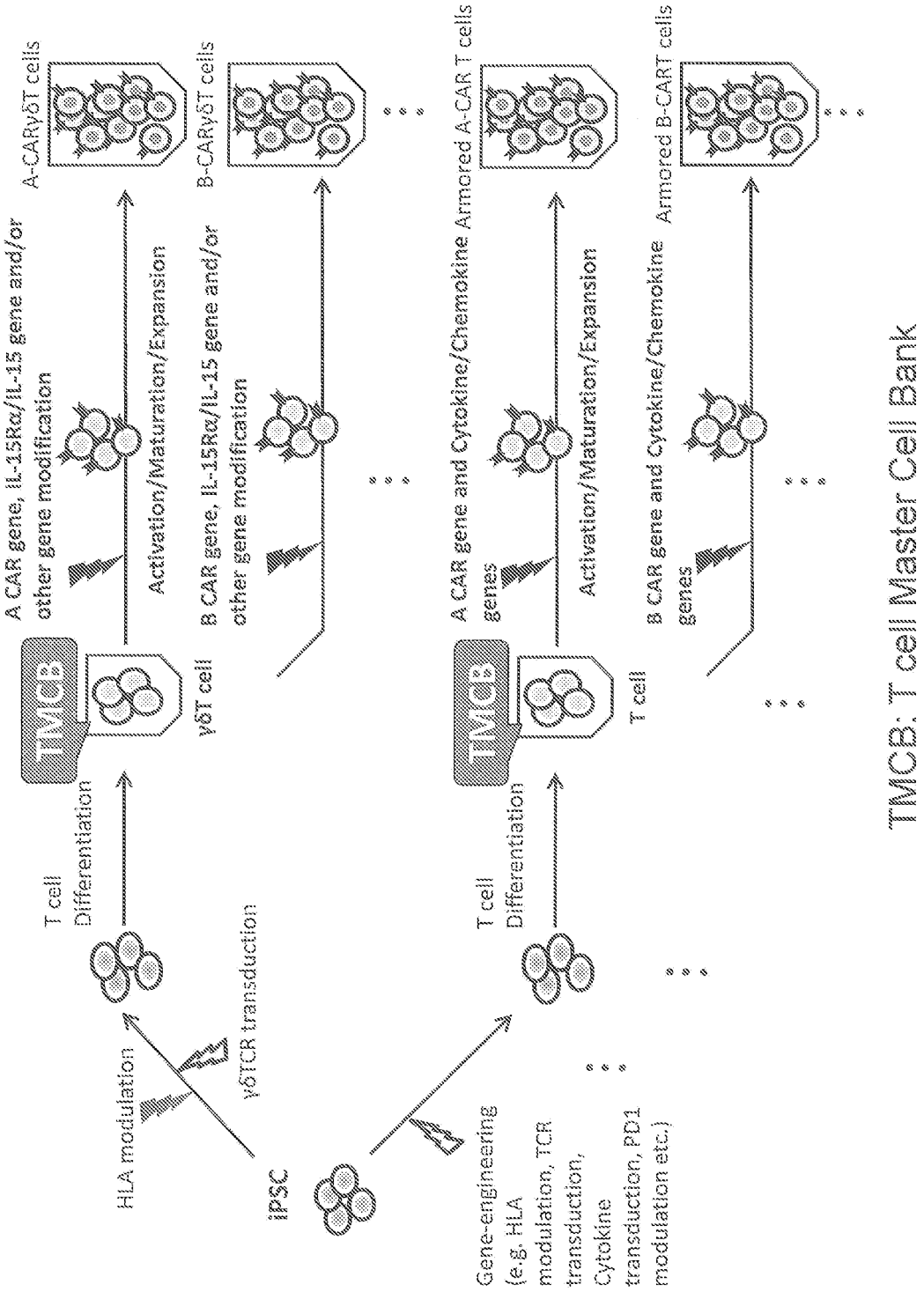
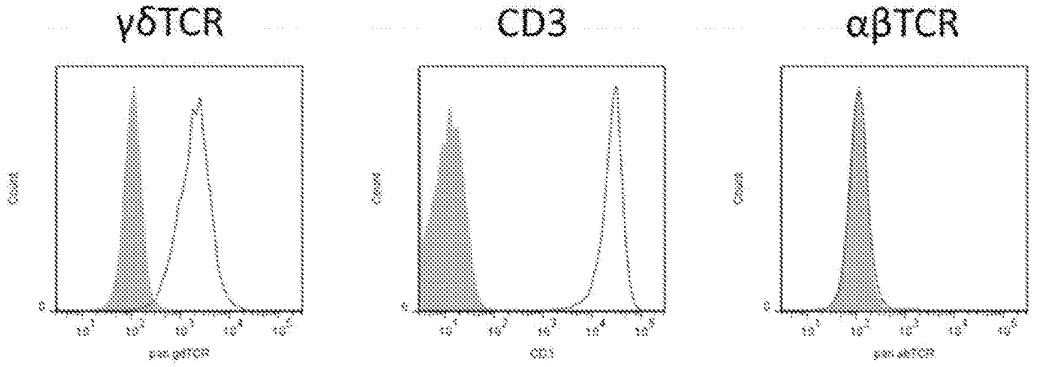
[図1]


Autologous CART
Tcell selection
Activation
CAR gene transduction
Expansion
TCR depletion
Blood cells
Leukapheresis
Patient
Lymphodepletion Chemotherapy (Pre-treatment)
CART cells
Quality check Packaging
T cell Product (Frozen)
Allogenic T cell product
TMCB
exogenous gene transduction
Activation/Maturation/Expansion
CART cells
Quality check Labeling Packaging
Tcell
Differentiation/Selection/Characterization
exogenous gene transduction
(HLA modulation)
(TCR transduction/depletion)
iPSC Est.
Donor Cell(s)
Donor
TMCB: T cell Master Cell Bank

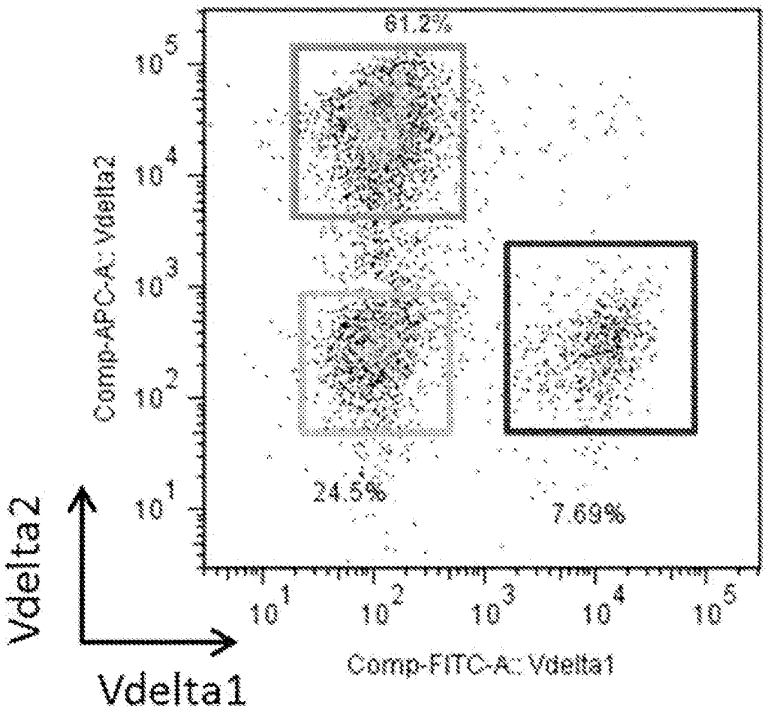
[図2]


iPSC
HLA modulation
γδTCR transduction
T cell Differentiation
γδT cell
TMCB
A CAR gene, IL-15Rα/IL-15 gene and/or other gene modification
Activation/Maturation/Expansion
A-CARγδT cells
B CAR gene, IL-15Rα/IL-15 gene and/or other gene modification
B-CARγδT cells
Gene-engineering (e.g. HLA modulation, TCR transduction, Cytokine transduction, PD1 modulation etc.)
T cell Differentiation
T cell
TMCB
A CAR gene and Cytokine/Chemokine genes
Activation/Maturation/Expansion
Armored A-CAR T cells
B CAR gene and Cytokine/Chemokine genes
Armored B-CART cells
TMCB: T cell Master Cell Bank

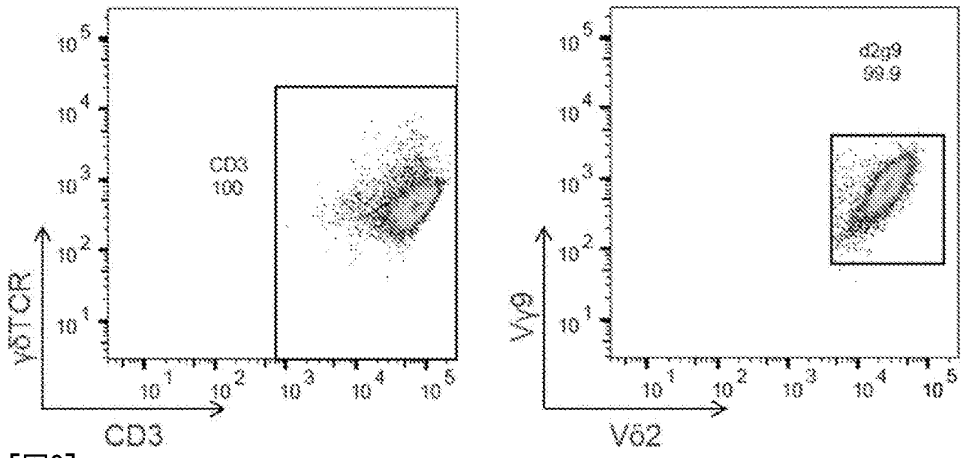
[図3]


γδTCR
CD3
αβTCR

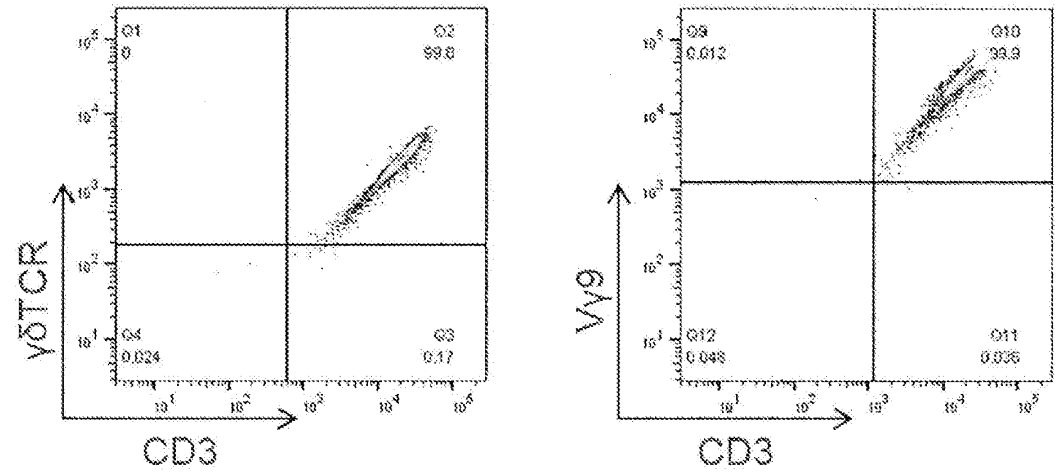
[図4]


61.2%
24.5%
7.69%
Comp-APC-A: Vdelta2
Comp-FITC-A: Vdelta1
Vdelta2
Vdelta1

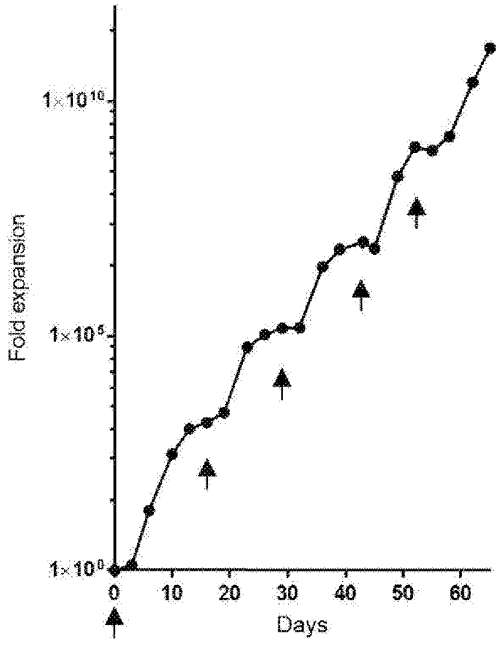
[図5]


γδTCR
CD3
CD3
100
Vγ9
Vδ2
Q2g9
99.9

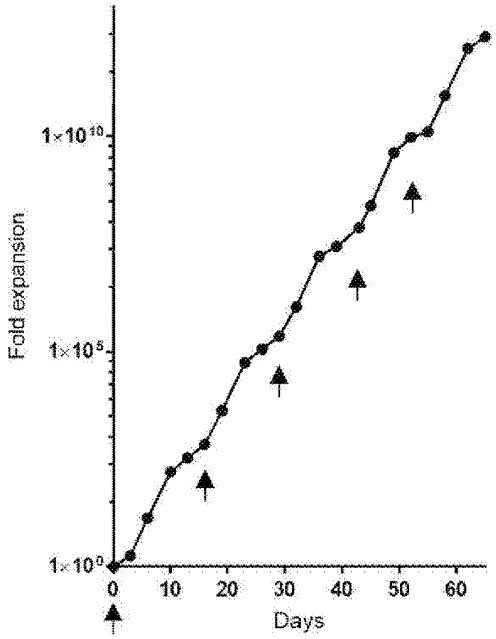
[図6]


γδTCR
CD3
Q1
0
Q2
99.8
Q4
0.024
Q3
0.17
Vγ9
CD3
Q9
0.012
Q10
99.9
Q12
0.048
Q11
0.036

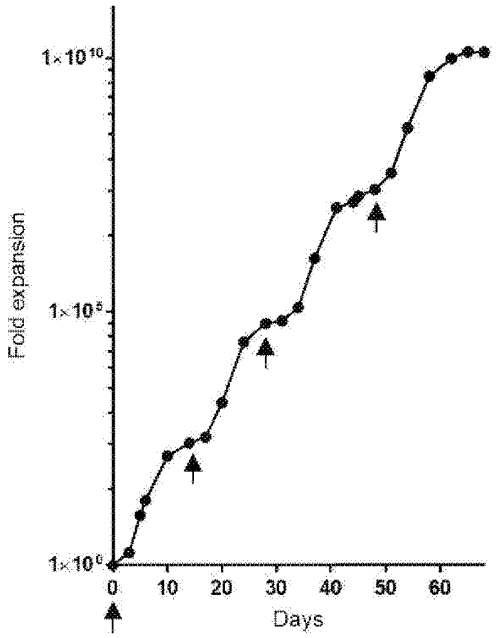
[図7]


Fold expansion
1×10^10
1×10^5
1×10^0
0
10
20
30
40
50
60
Days

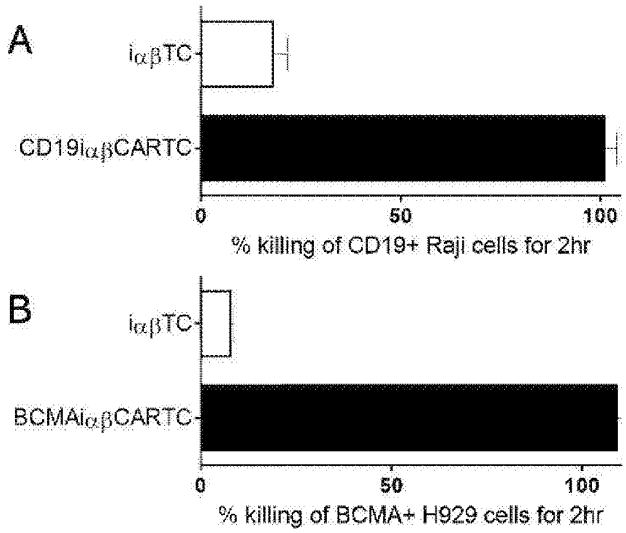
[図8]


Fold expansion
1×10^10
1×10^5
1×10^0
0
10
20
30
40
50
60
Days

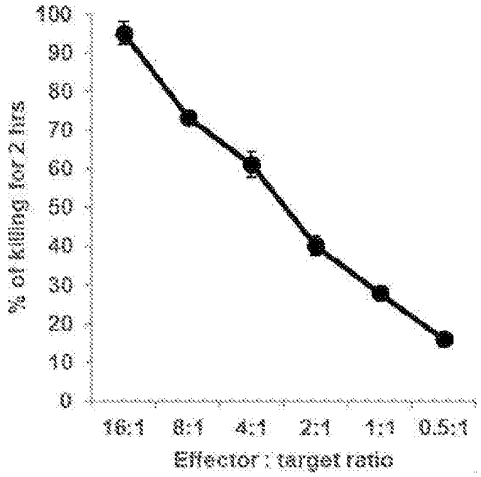
[図9]


Fold expansion
1×10^10
1×10^5
1×10^0
0
10
20
30
40
50
60
Days

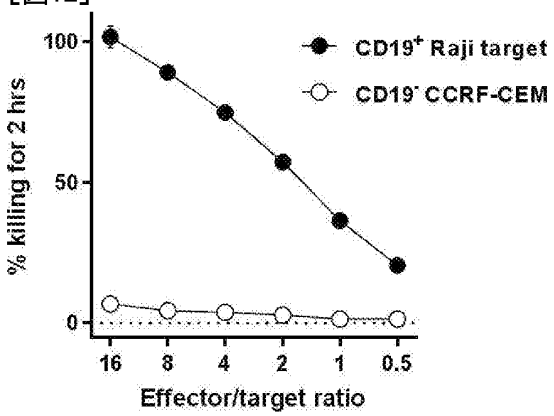
[図10]


A
iαβTC
CD19iαβCARTC
0
50
100
% killing of CD19+ Raji cells for 2hr
B
iαβTC
BCMAiαβCARTC
0
50
100
% killing of BCMA+ H929 cells for 2hr

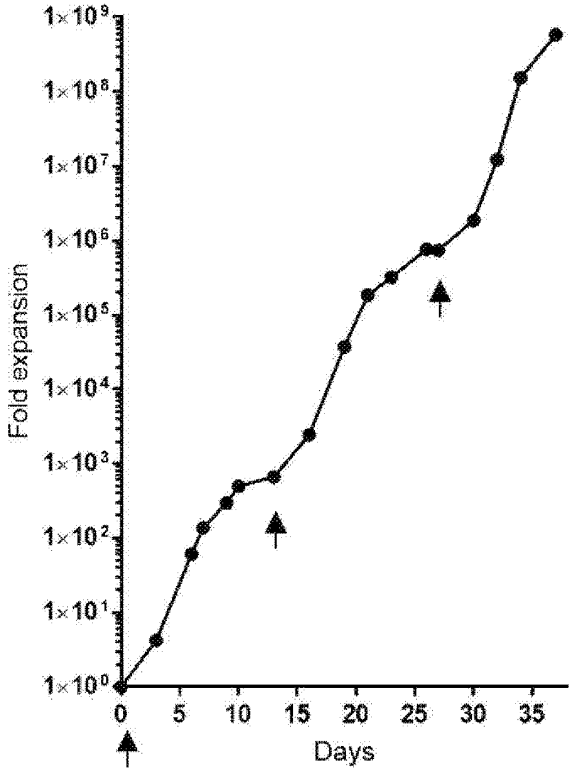
[図11]


% of killing for 2 hrs
100
90
80
70
60
50
40
30
20
10
0
16:1
8:1
4:1
2:1
1:1
0.5:1
Effector : target ratio

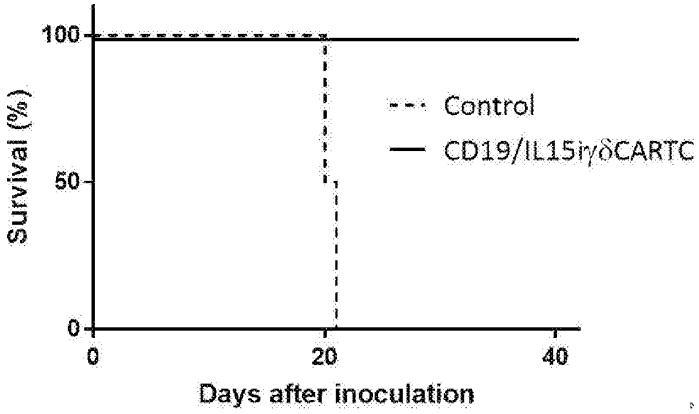
[図12]


% killing for 2 hrs
100
50
0
CD19+ Raji target
CD19- CCRF-CEM
16
8
4
2
1
0.5
Effector/target ratio

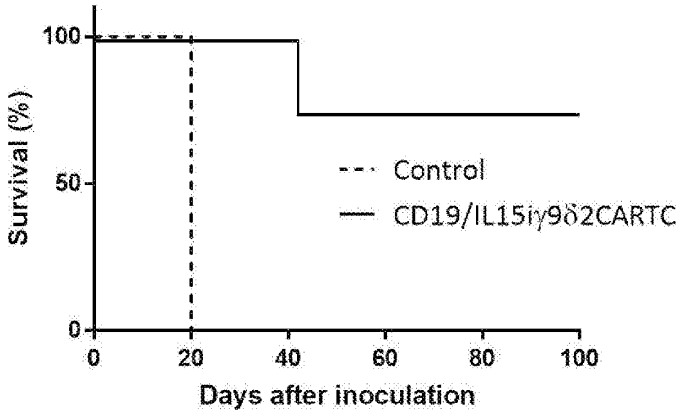
[図13]


Fold expansion
1×10⁹
1×10⁸
1×10⁷
1×10⁶
1×10⁵
1×10⁴
1×10³
1×10²
1×10¹
1×10⁰
0 5 10 15 20 25 30 35
Days

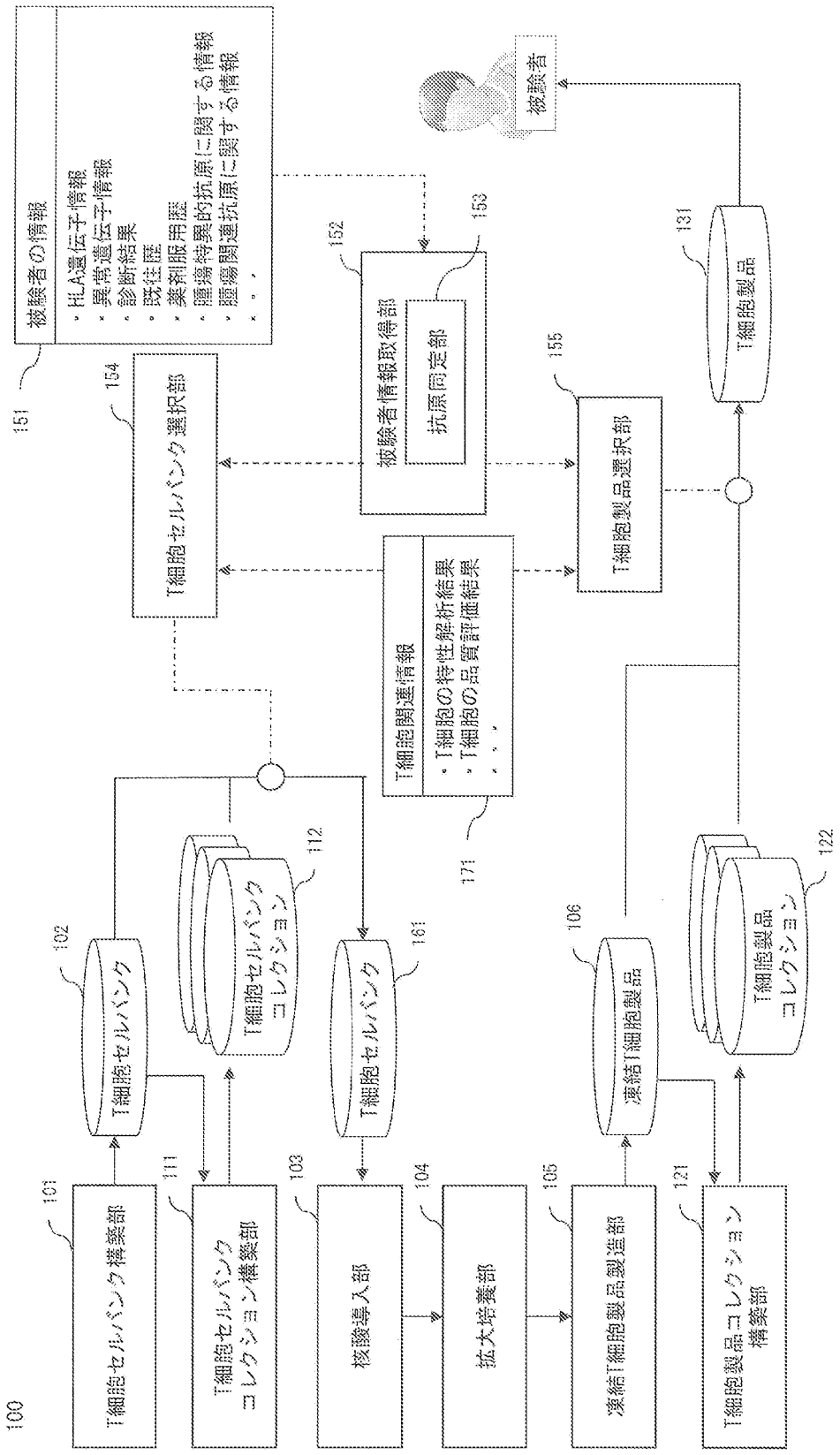
[図14]


Survival (%)
100
50
0
Control
CD19/IL15iγδCARTC
0 20 40
Days after inoculation

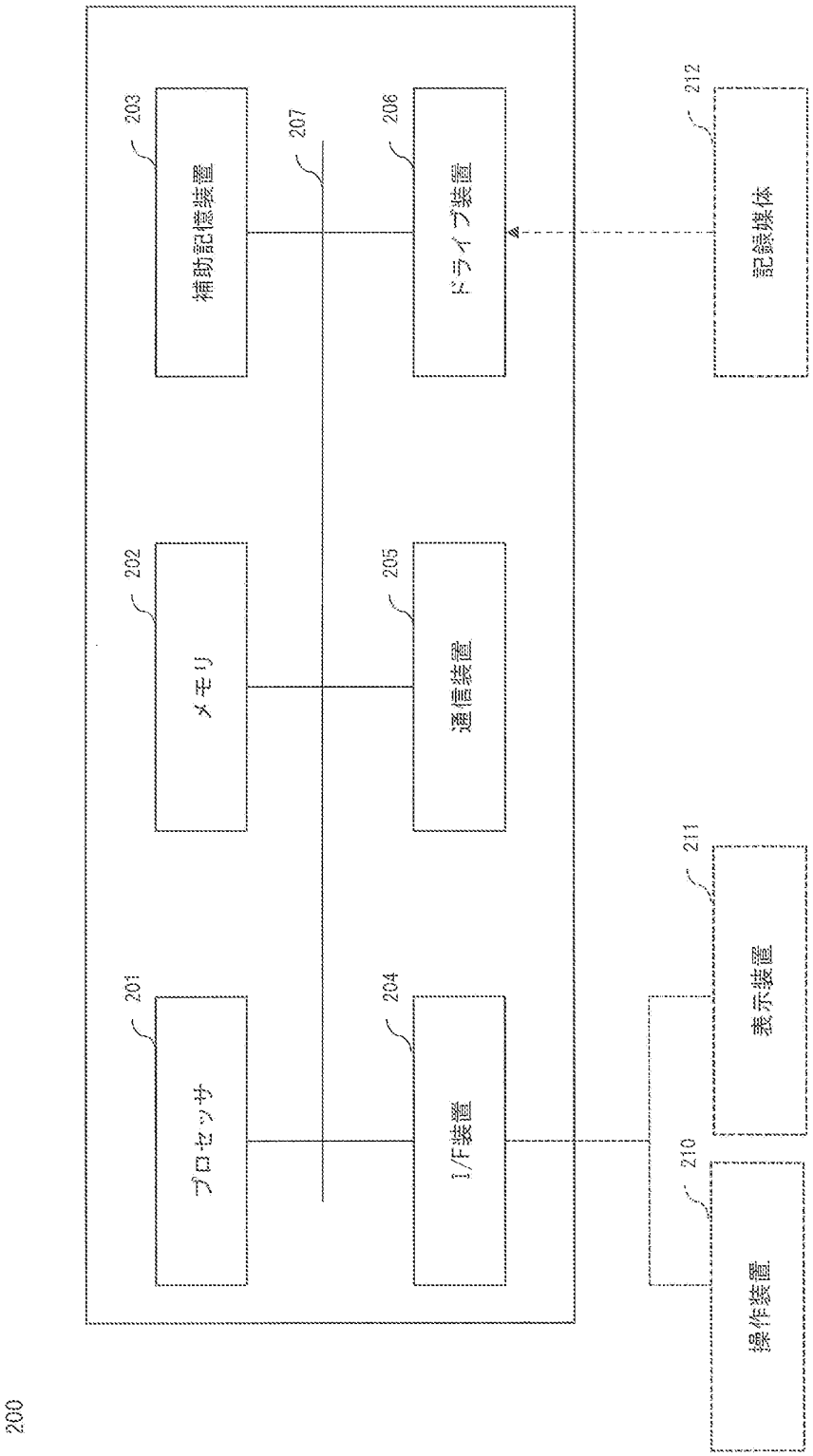
[図15]


Survival (%)
100
50
0
Control
CD19/IL15iγ9δ2CARTC
0 20 40 60 80 100
Days after inoculation

[図16]


100
T細胞セルバンク構築部
101
T細胞セルバンク
102
T細胞セルバンク
コレクション構築部
111
T細胞セルバンク
コレクション
112
核酸導入部
103
T細胞セルバンク
161
拡大培養部
104
凍結T細胞製品製造部
105
凍結T細胞製品
106
T細胞製品コレクション
構築部
121
T細胞製品
コレクション
122
T細胞関連情報
・T細胞の特性解析結果
・T細胞の品質評価結果
・・・
171
被験者の情報
・HLA遺伝子情報
・異常遺伝子情報
・診断結果
・既往歴
・薬剤服用歴
・腫瘍特異的抗原に関する情報
・腫瘍関連抗原に関する情報
・・・
151
T細胞セルバンク選択部
154
被験者情報取得部
152
抗原同定部
153
T細胞製品選択部
155
T細胞製品
131
被験者

[図17]


200
201
プロセッサ
202
メモリ
203
補助記憶装置
204
I/F装置
205
通信装置
206
ドライブ装置
207
210
操作装置
211
表示装置
212
記録媒体