

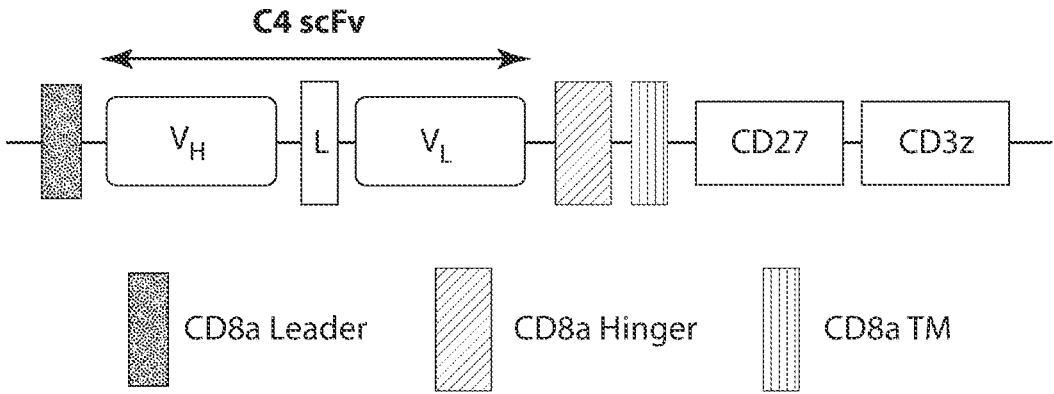


Fig. 1A

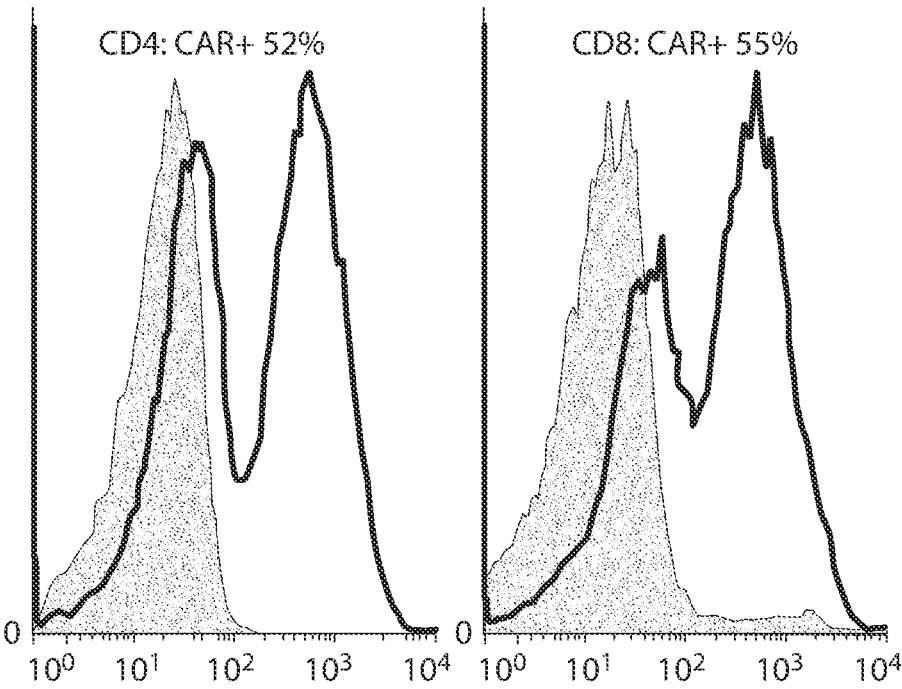


Fig. 1B

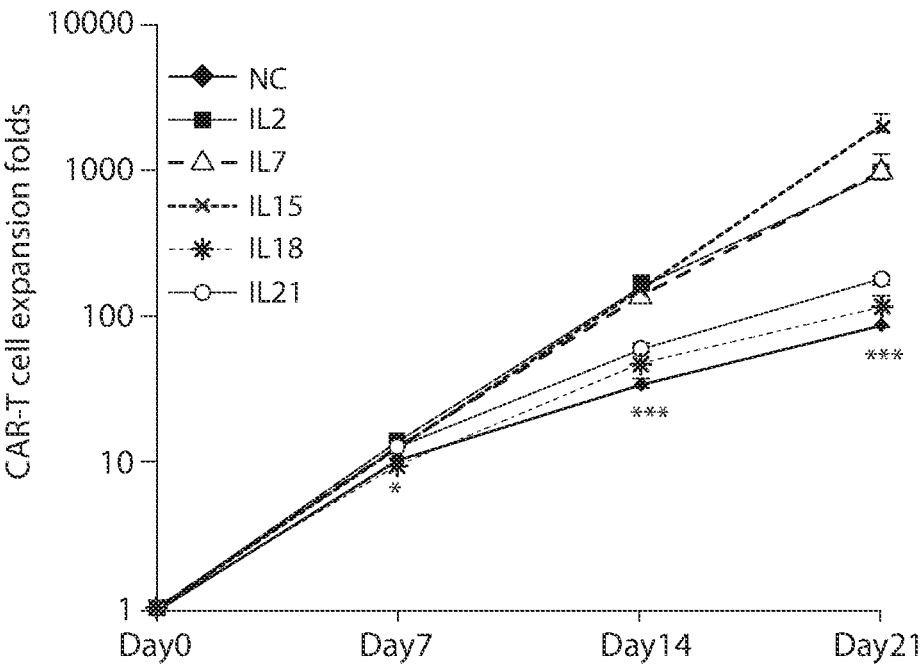


Fig. 1C

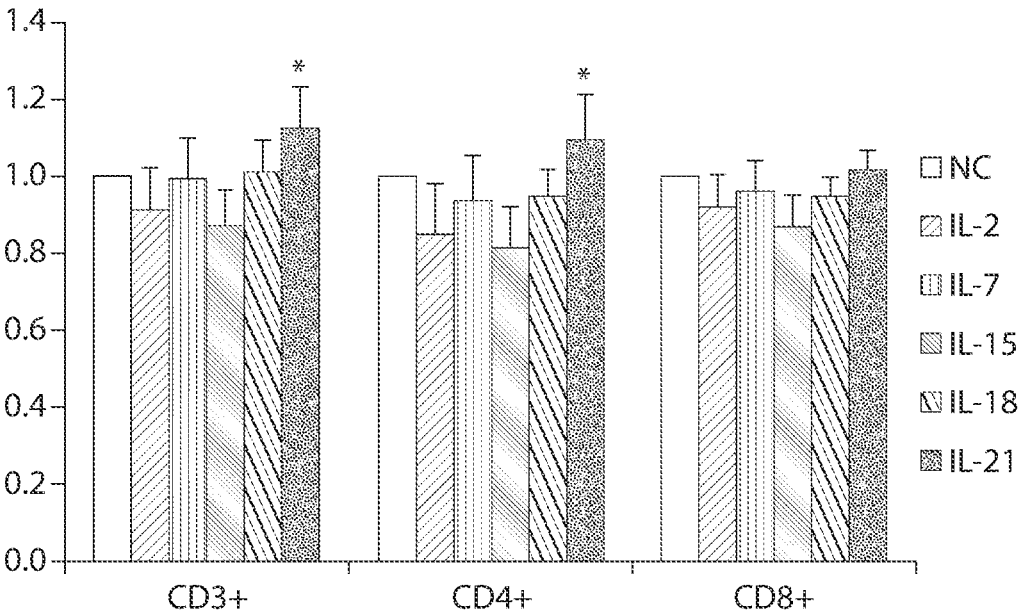


Fig. 1D

3/57

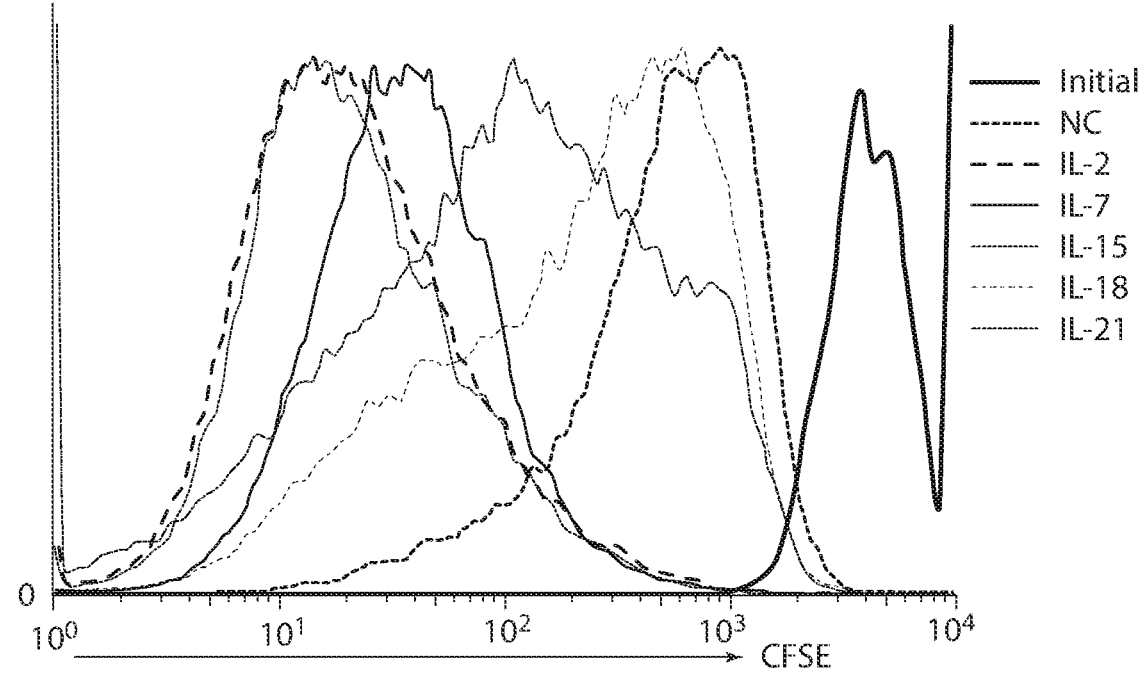


Fig. 1E

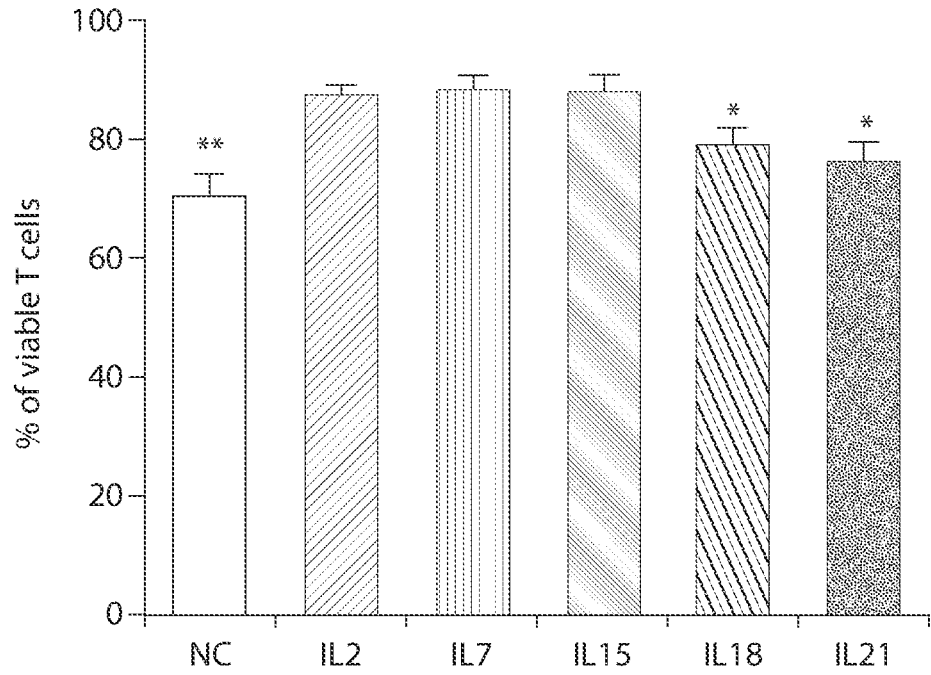


Fig. 1F

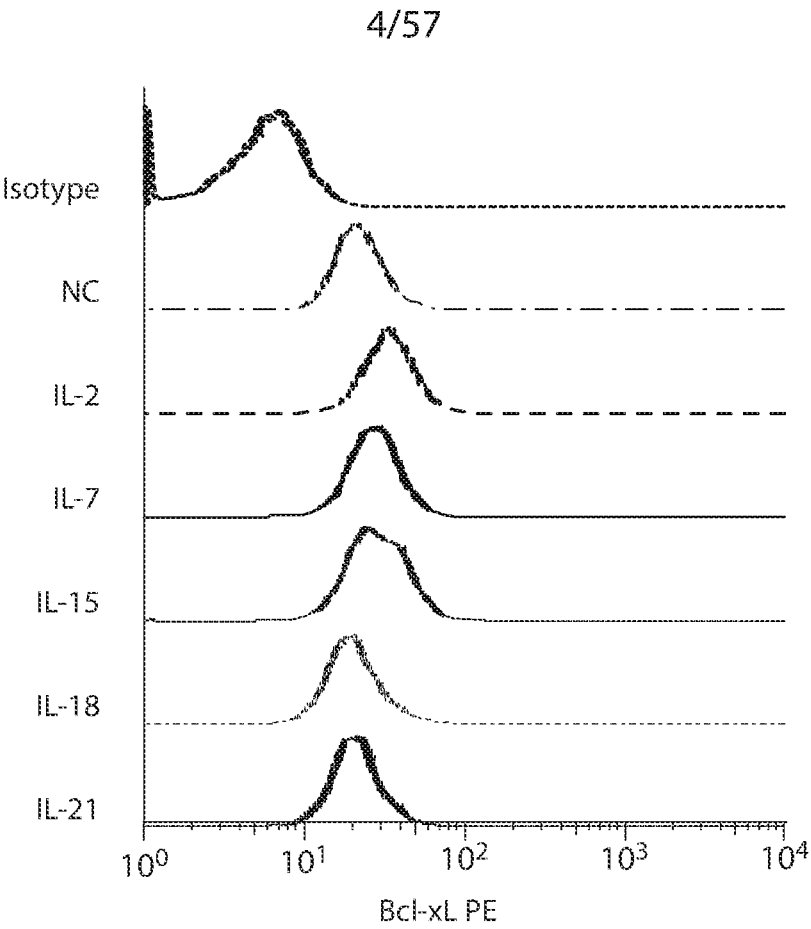


Fig. 1G

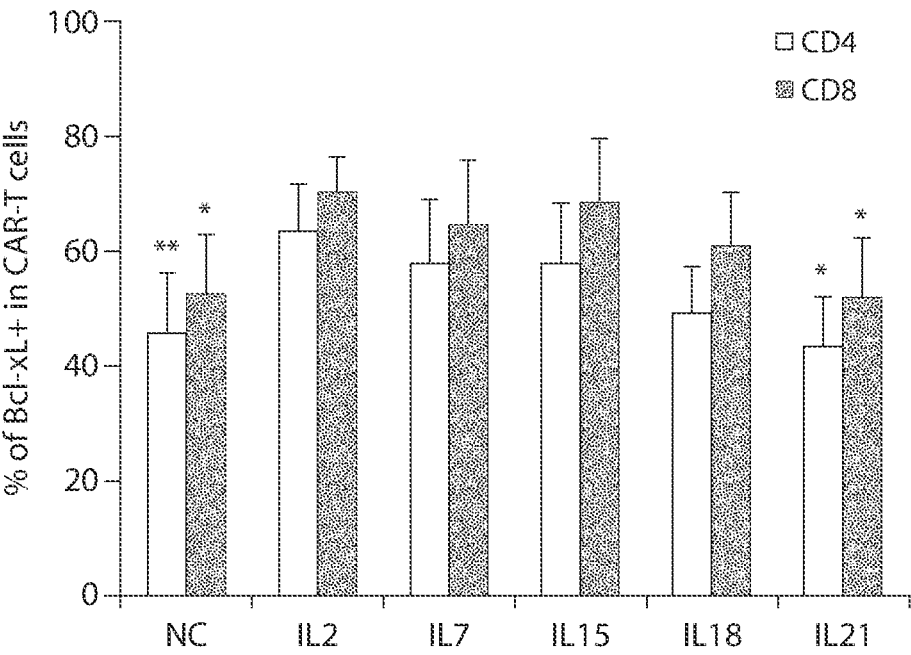


Fig. 1H

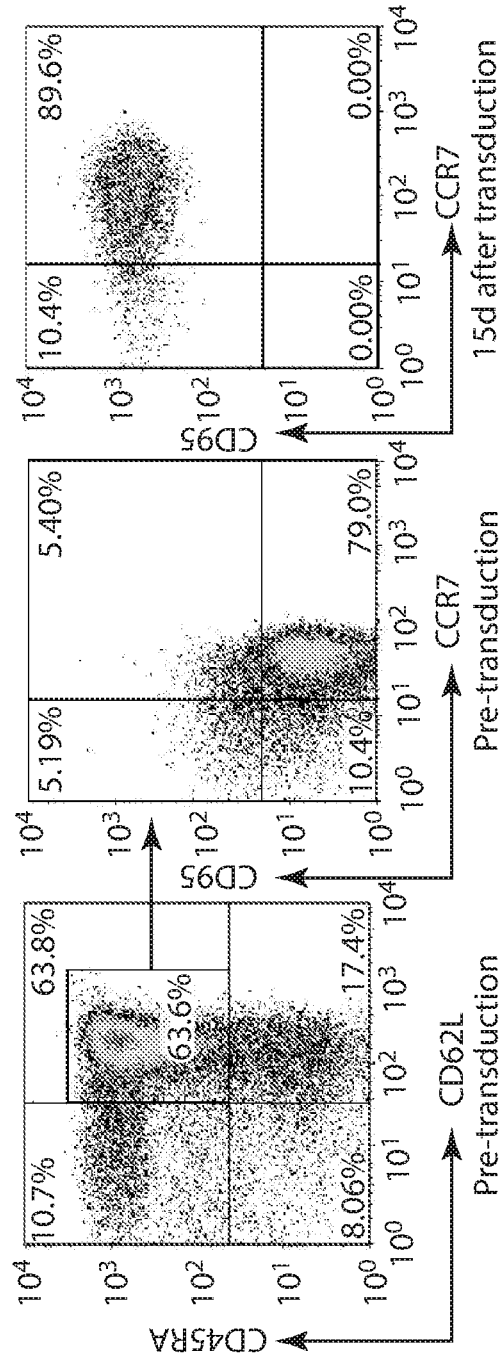


Fig. 2A

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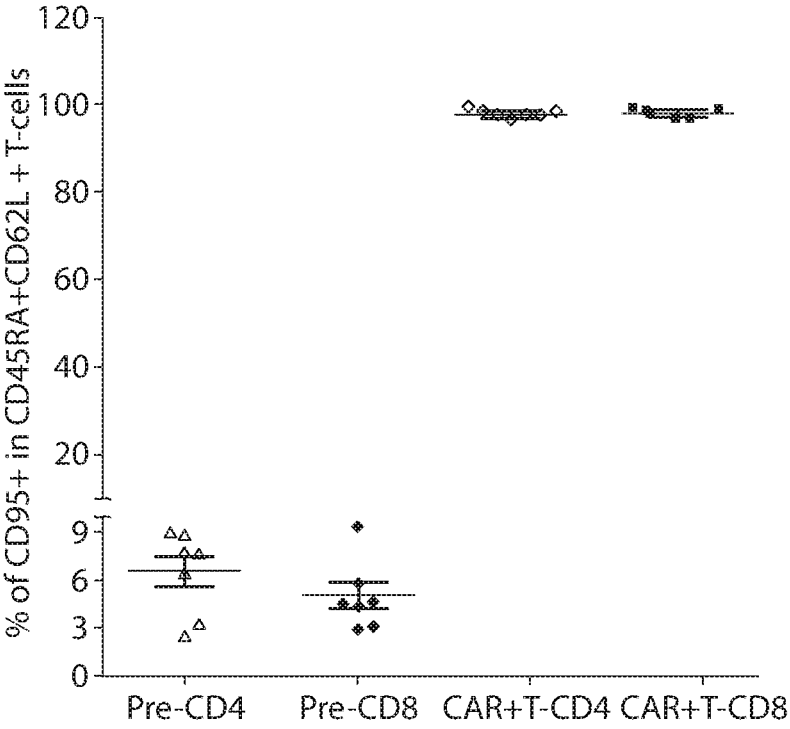


Fig. 2B

7/57

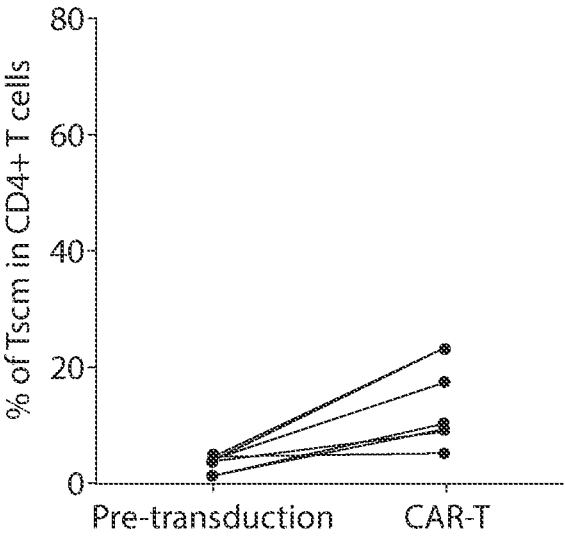


Fig. 2C

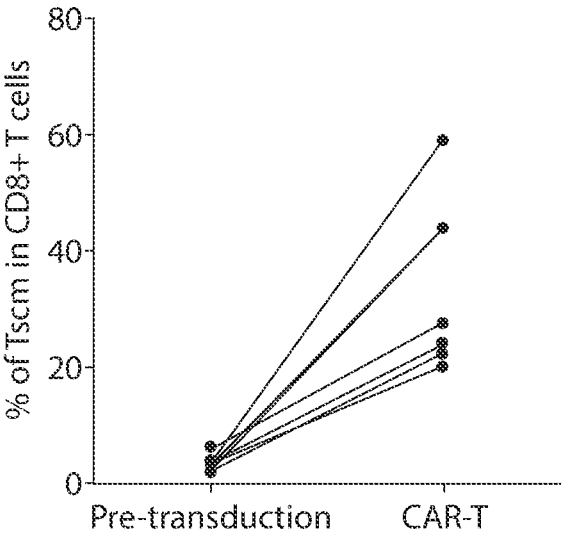


Fig. 2D

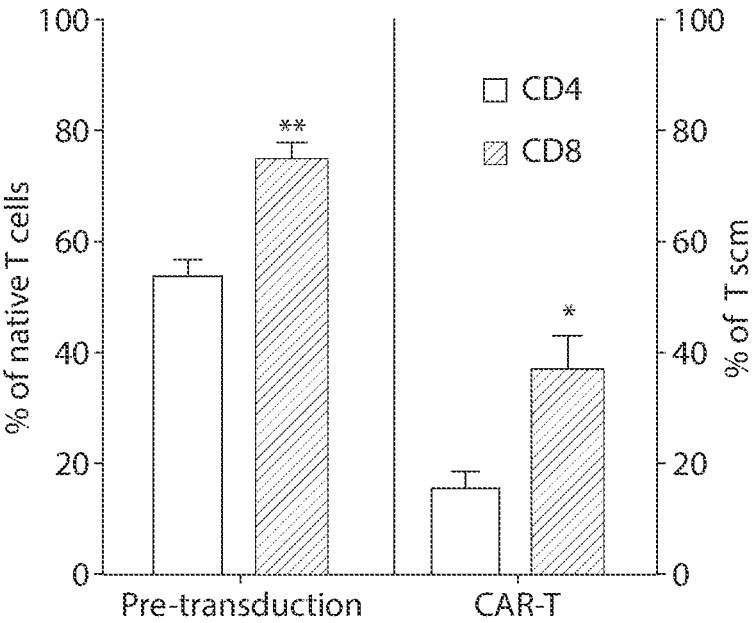


Fig. 2E

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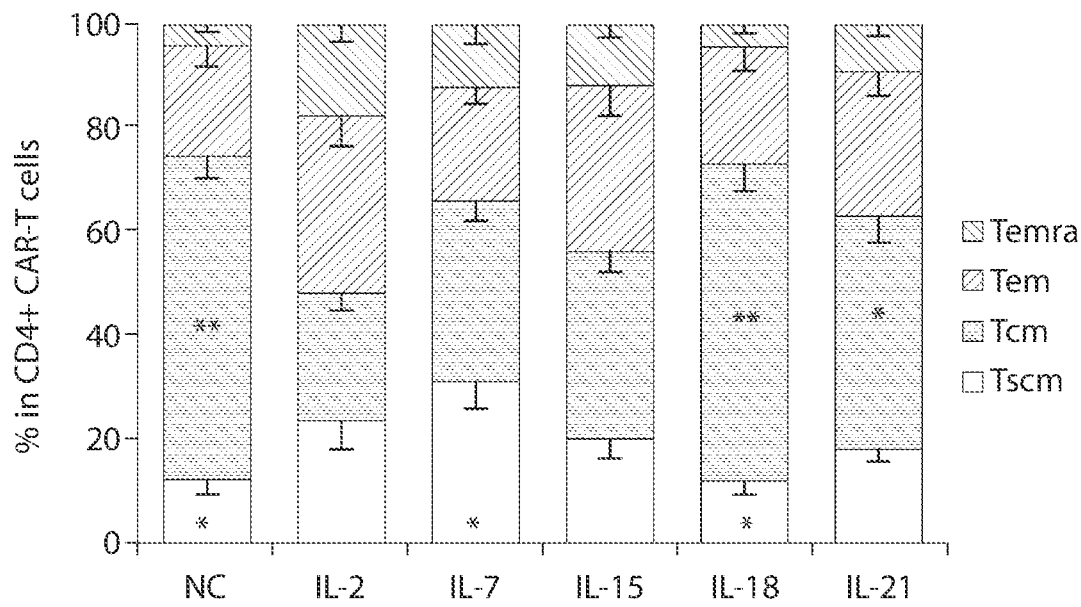


Fig. 2F

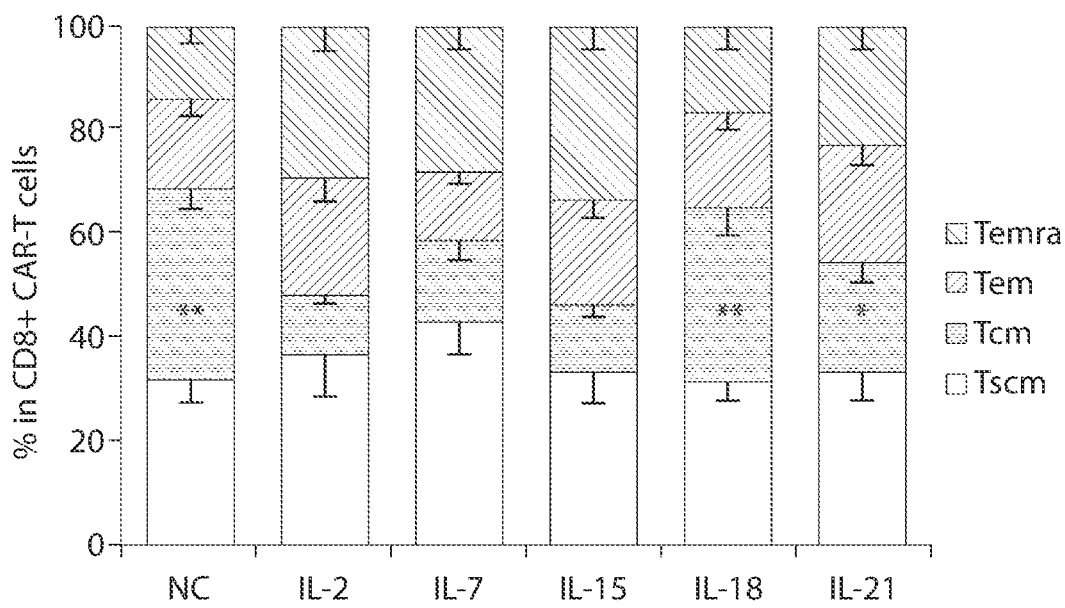


Fig. 2G

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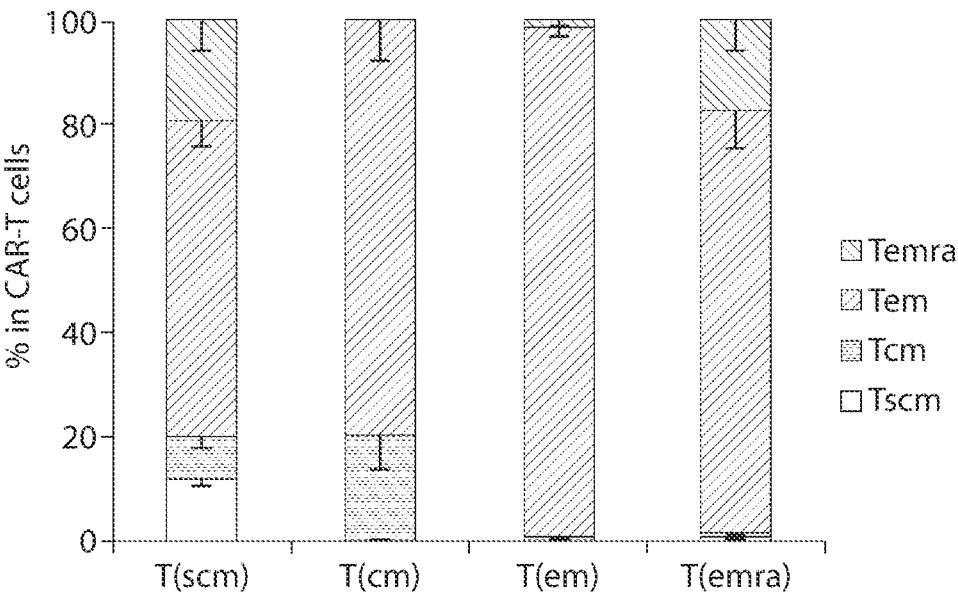


Fig. 2H

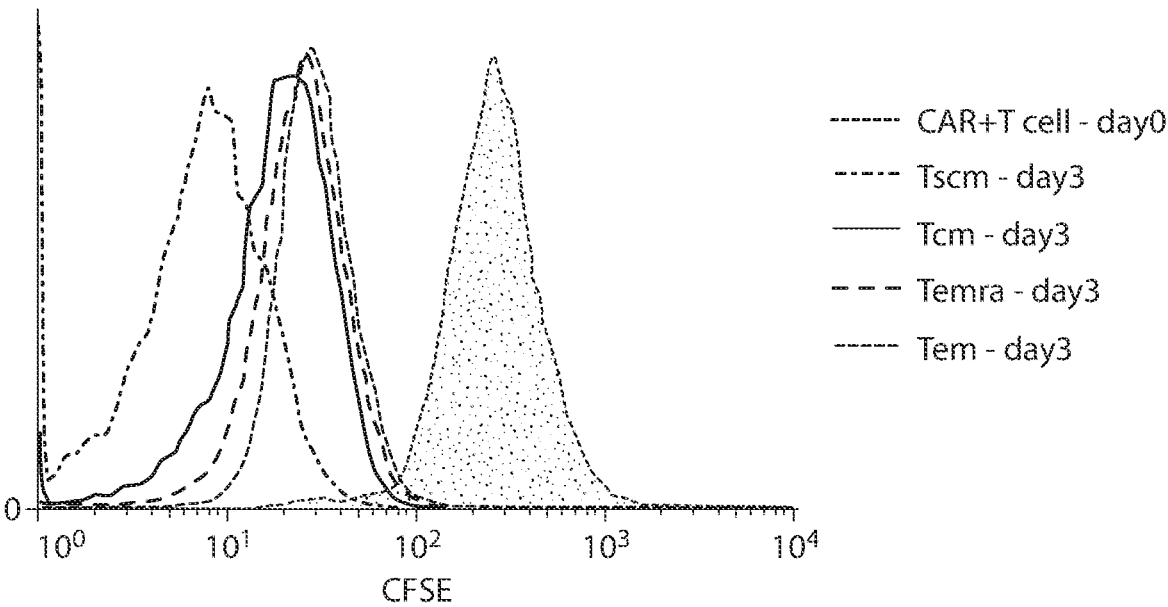


Fig. 2I

10/57

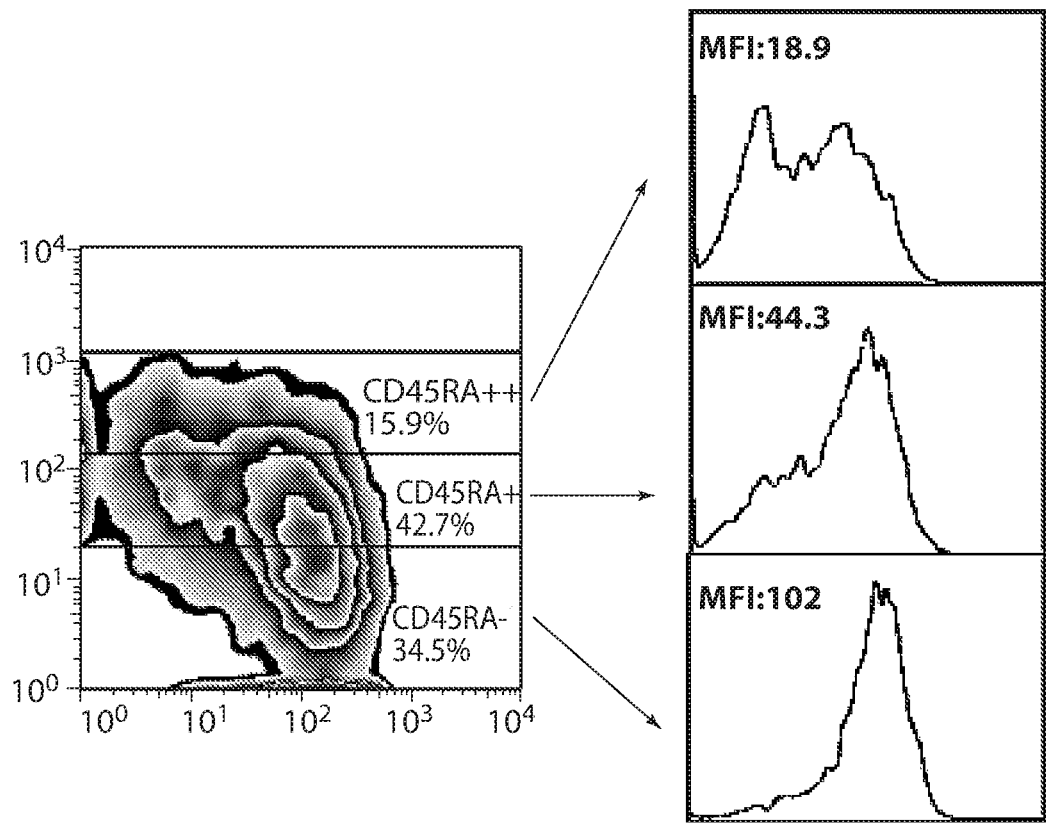


Fig. 3A

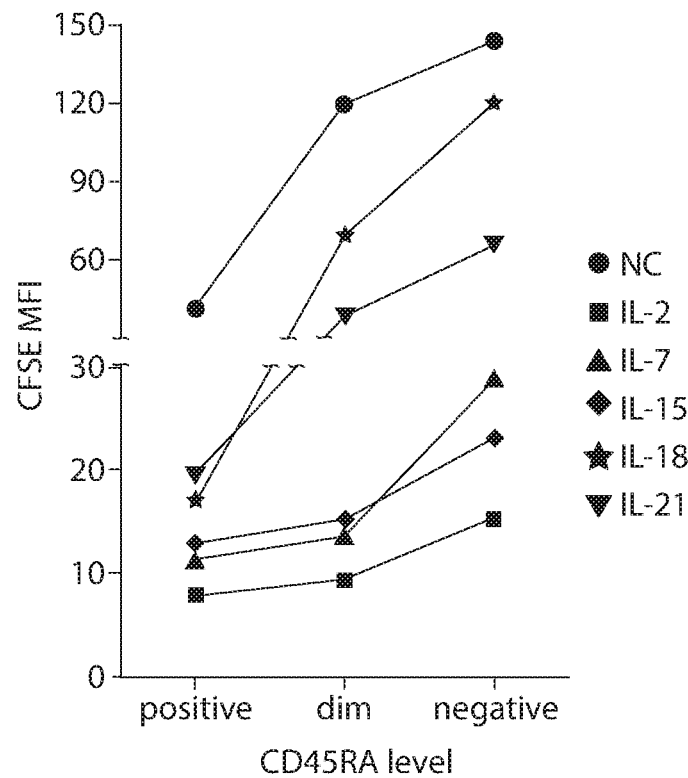


Fig. 3B

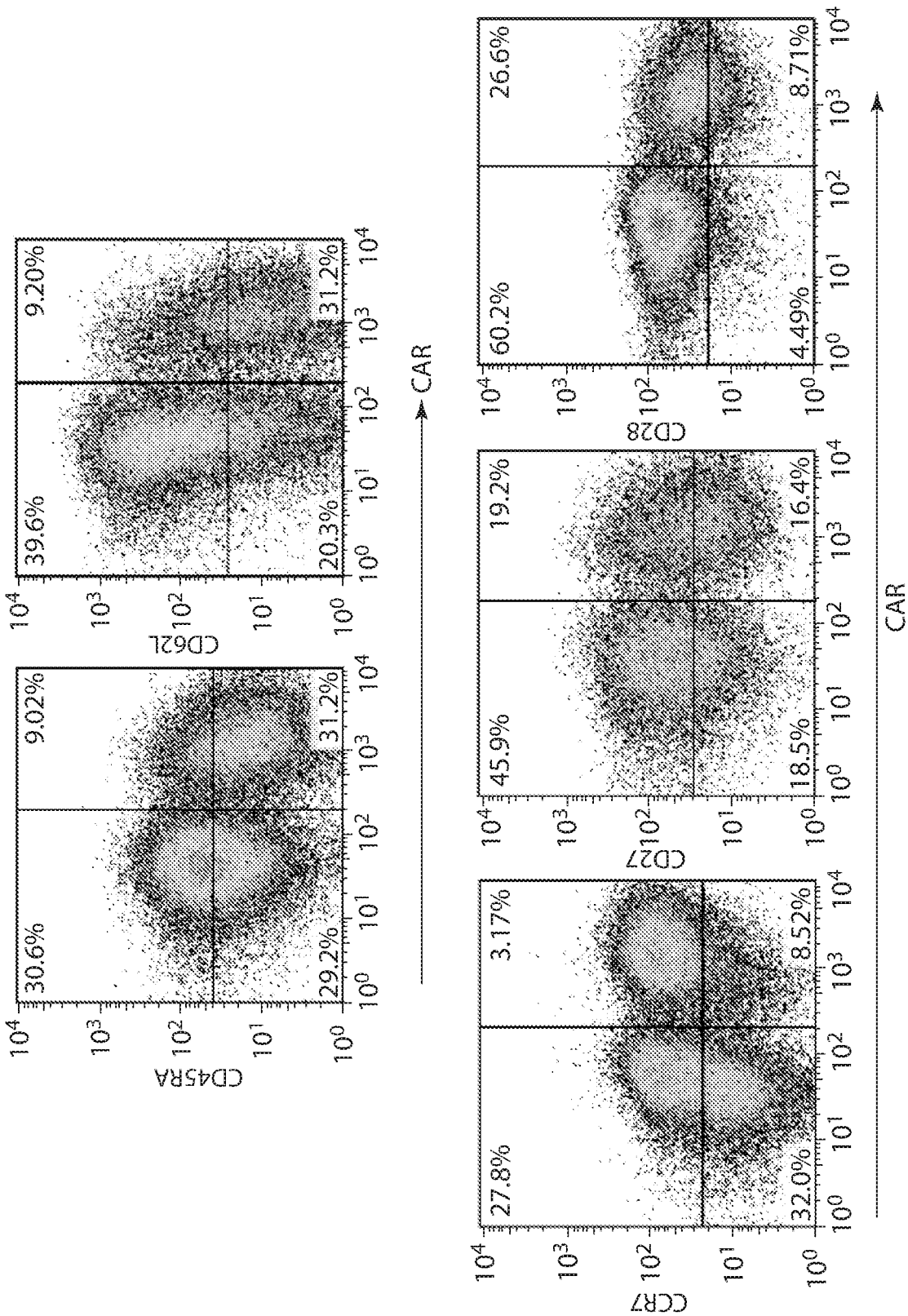


Fig. 4A

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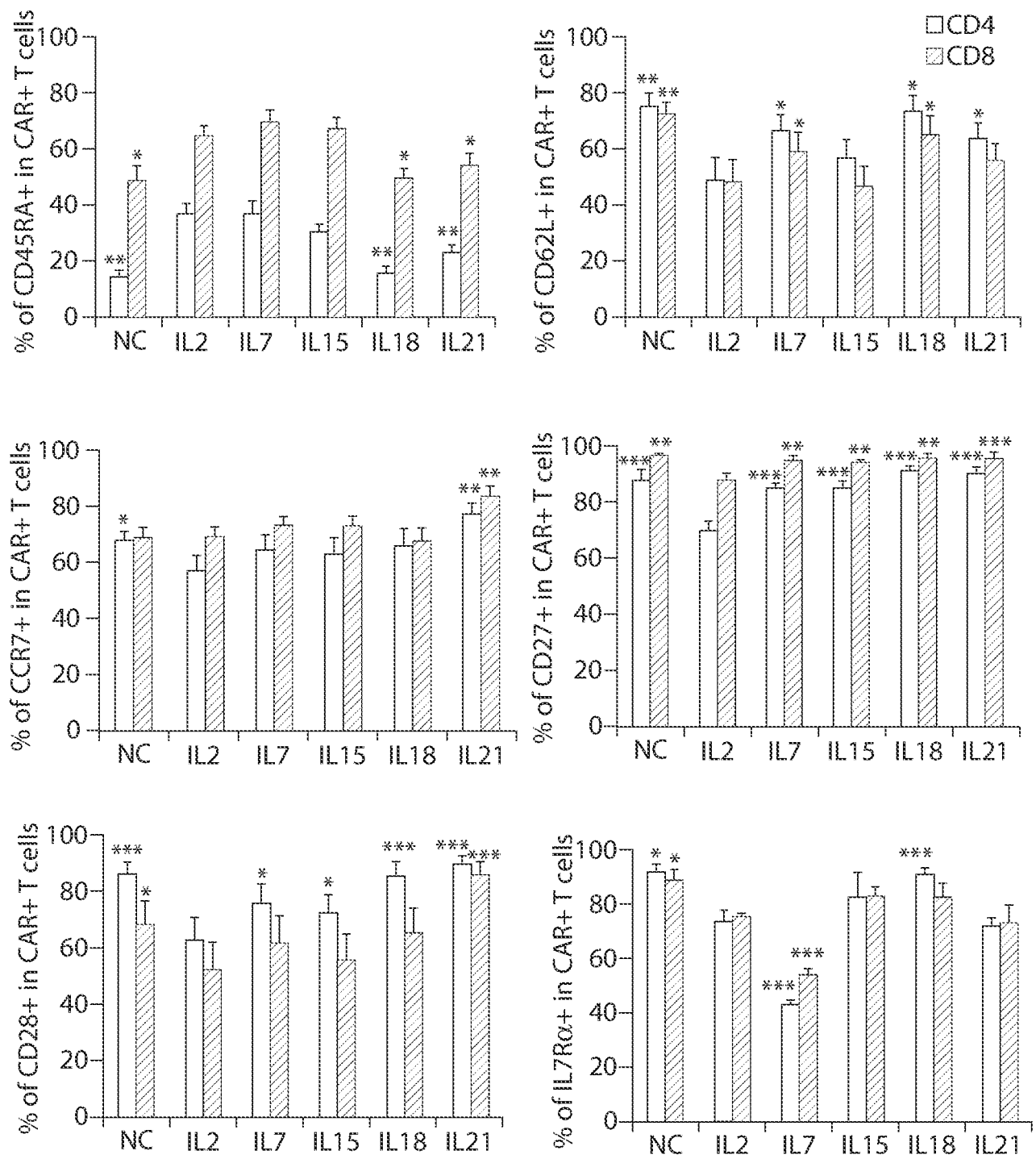


Fig. 4B

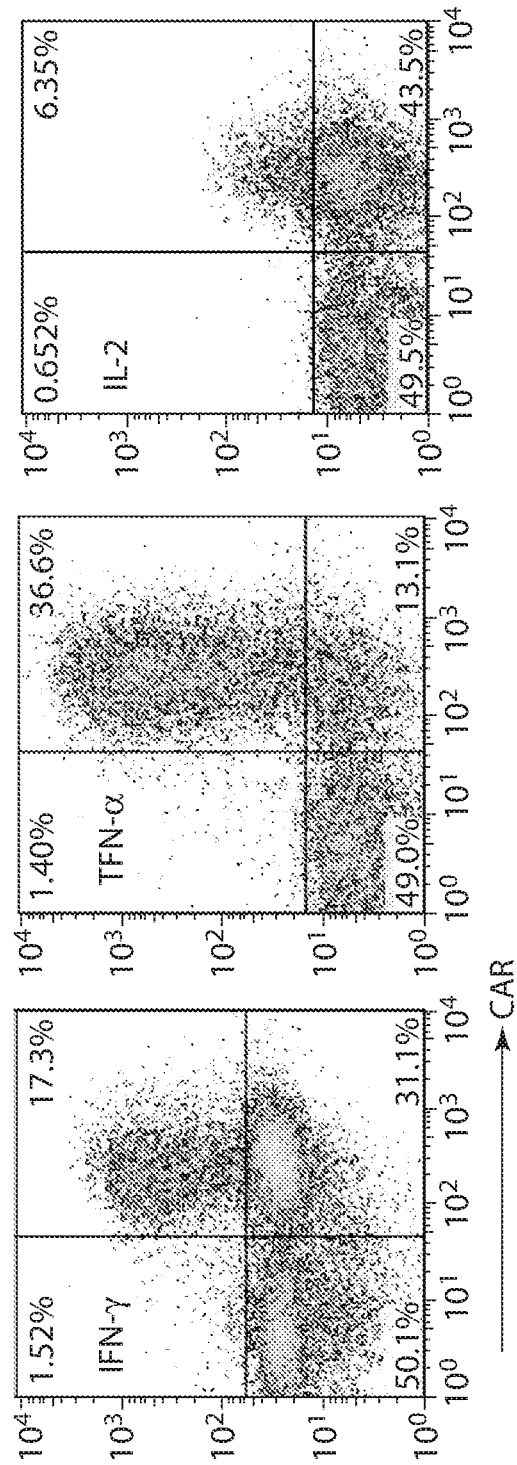


Fig. 5A

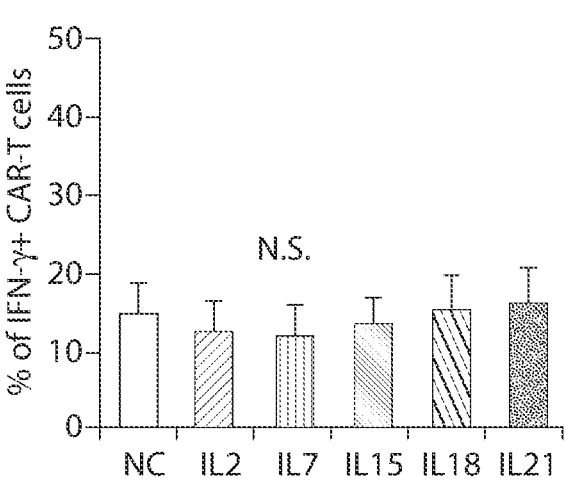


Fig. 5B

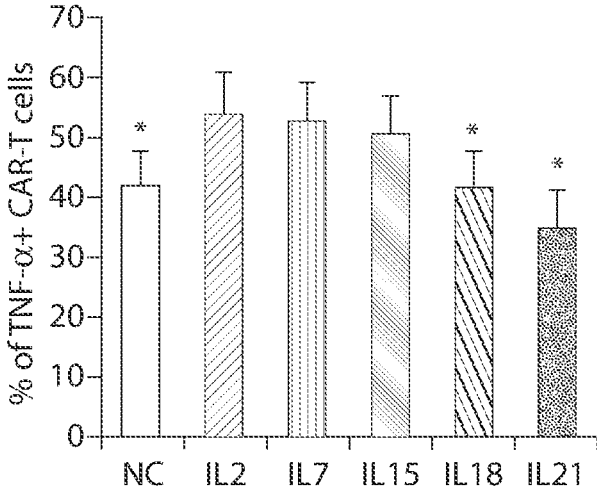


Fig. 5C

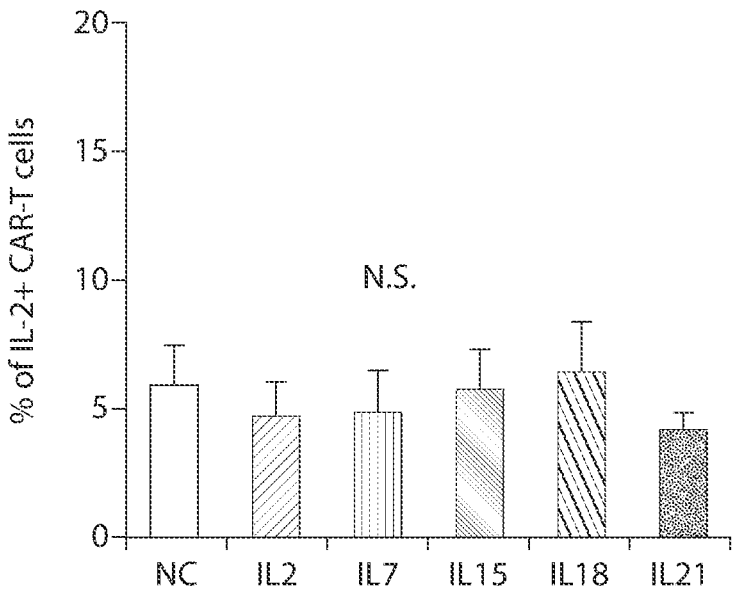


Fig. 5D

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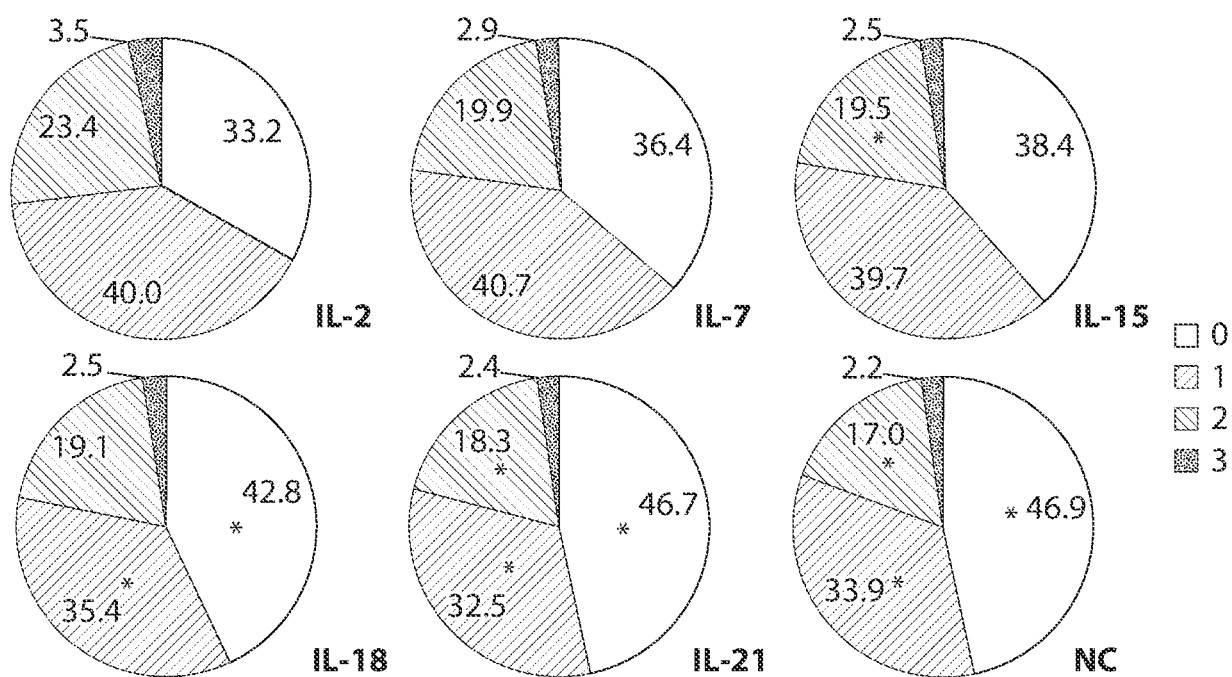


Fig. 5E

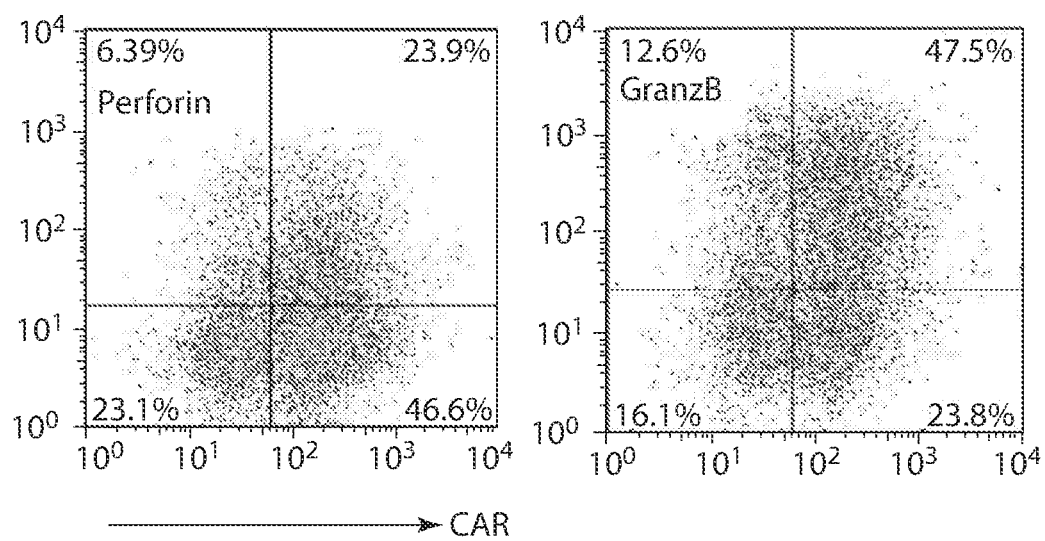


Fig. 5F

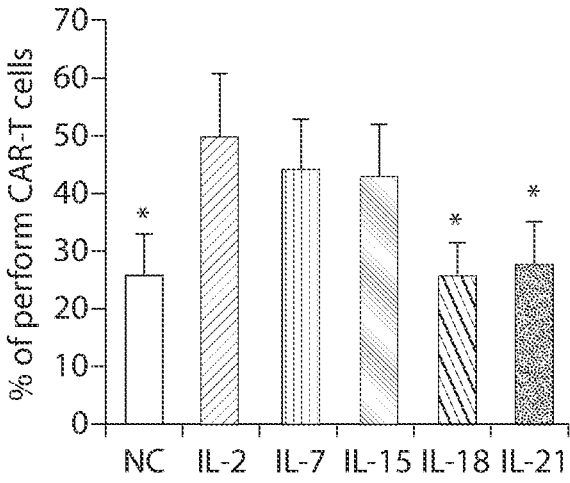


Fig. 5G

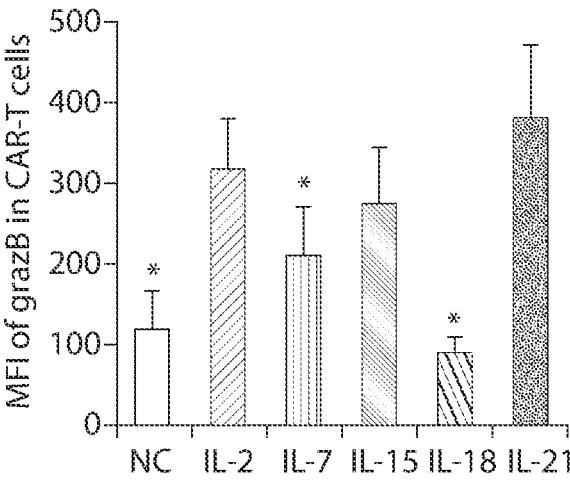


Fig. 5H

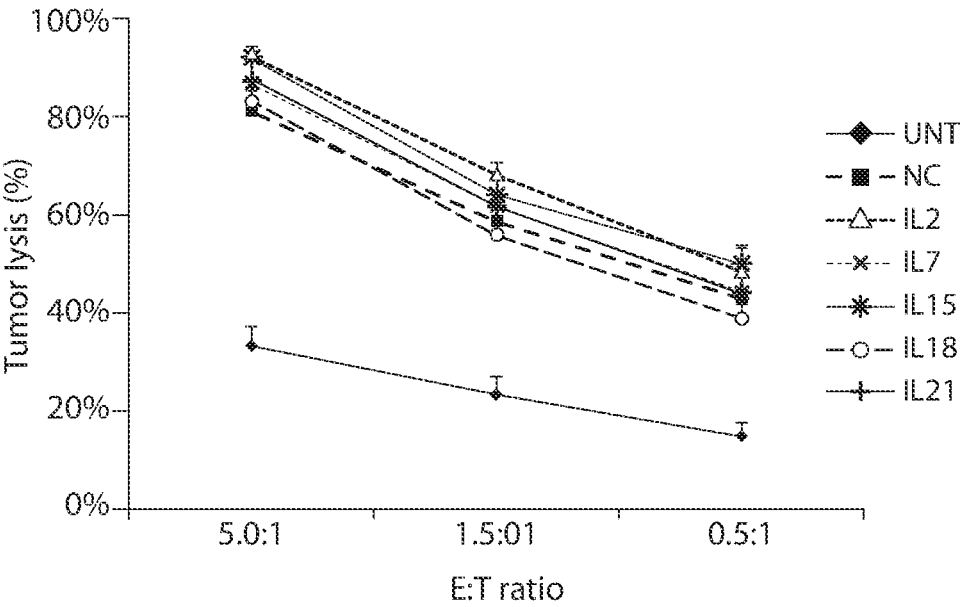


Fig. 5I

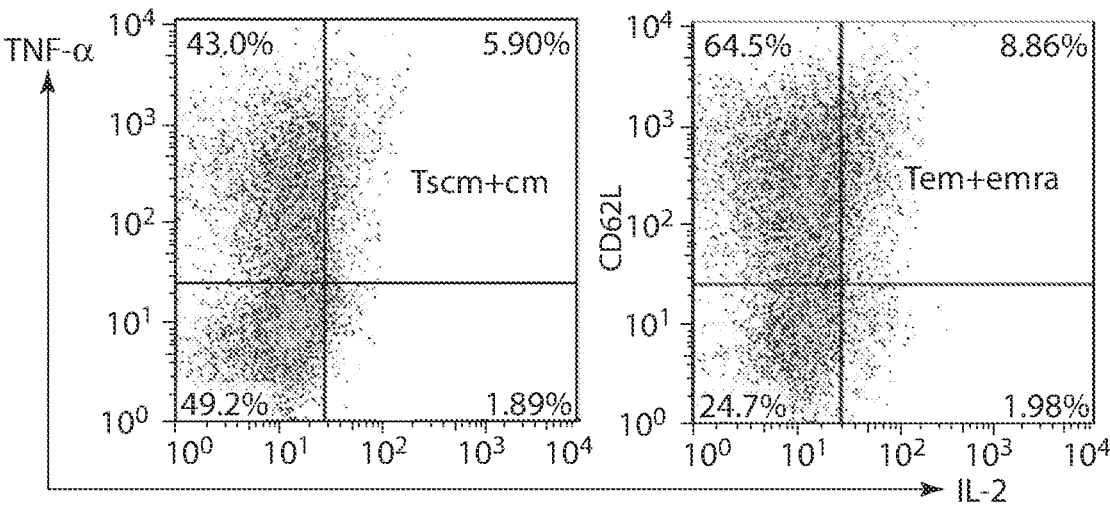


Fig. 6A

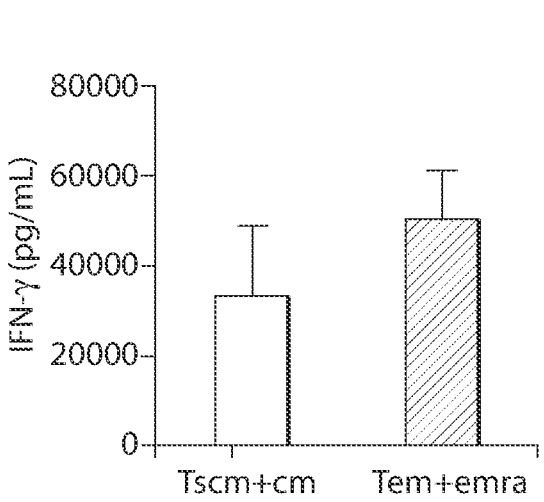


Fig. 6B

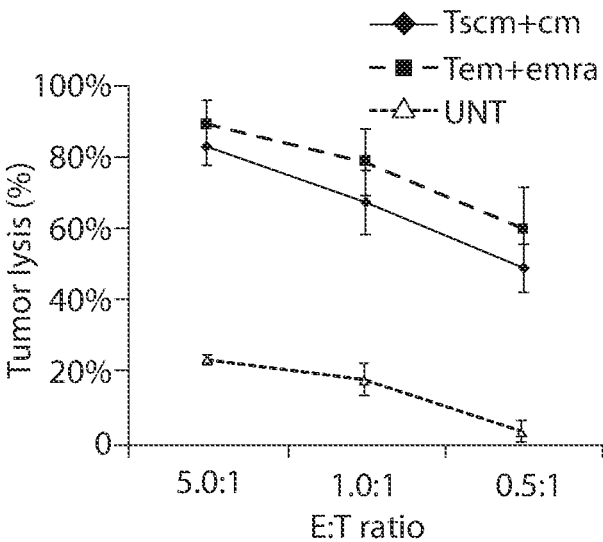


Fig. 6C

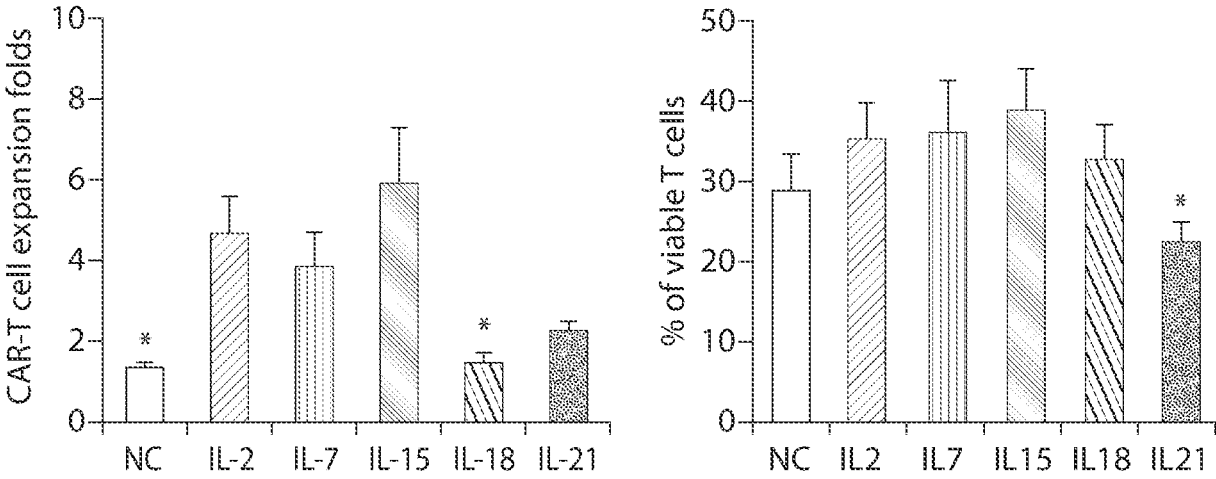


Fig. 7A

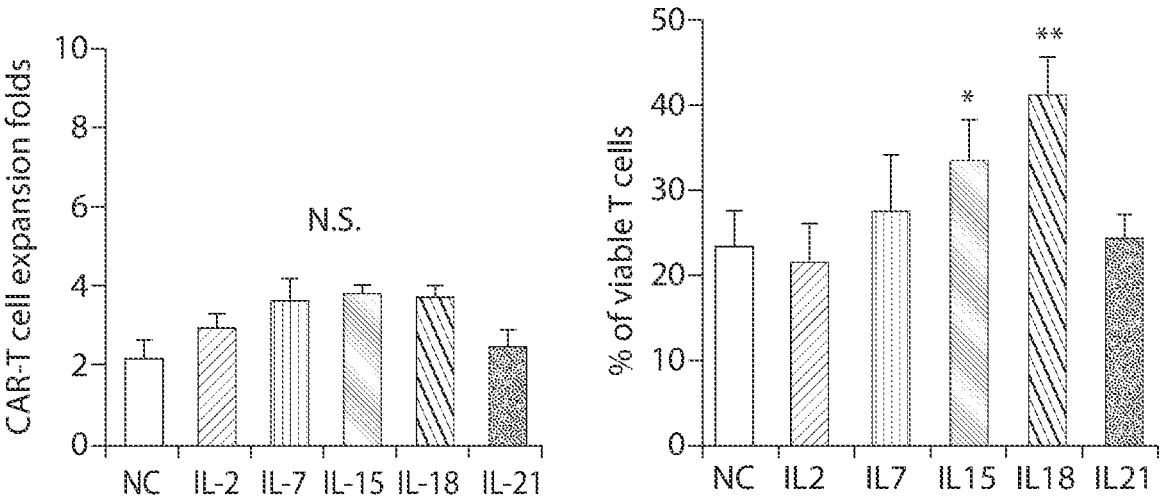


Fig. 7B

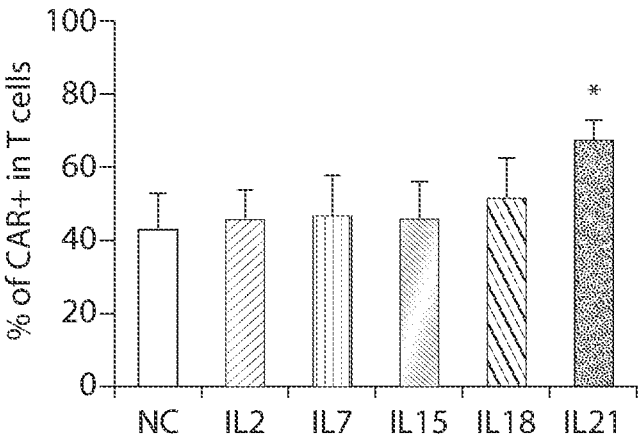


Fig. 7C

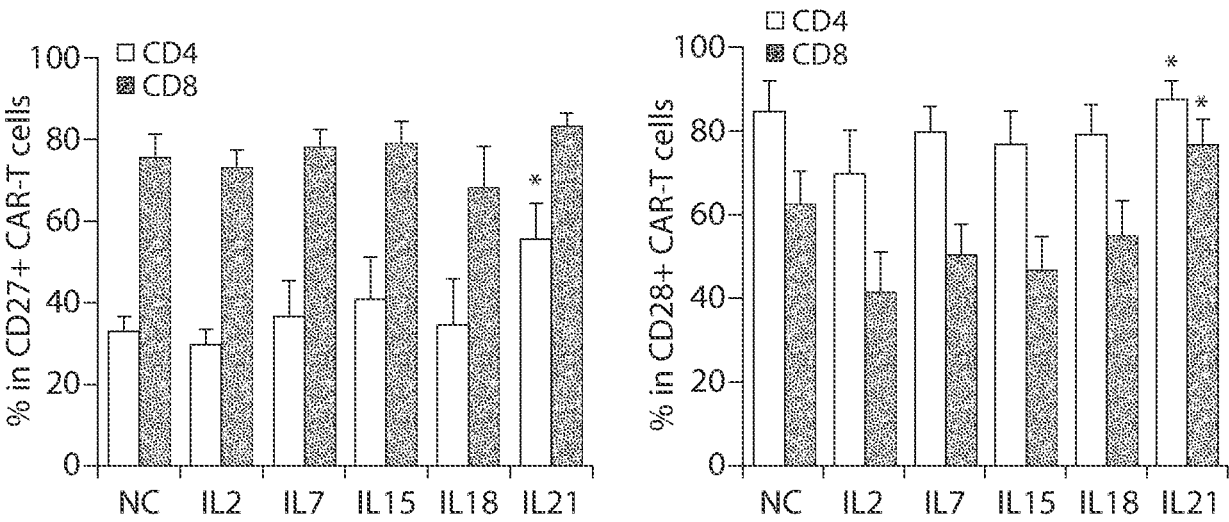


Fig. 7D

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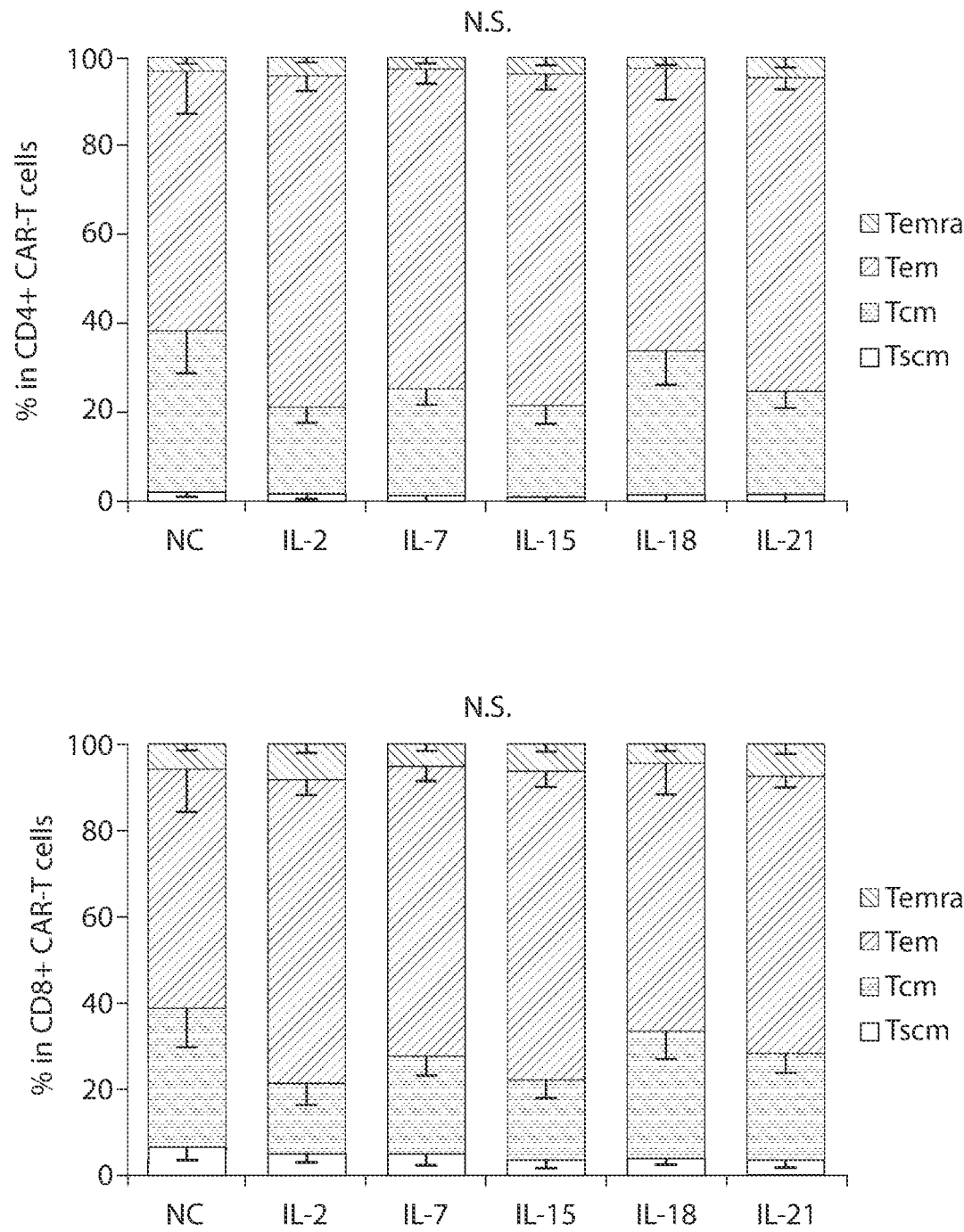


Fig. 7E

21/57

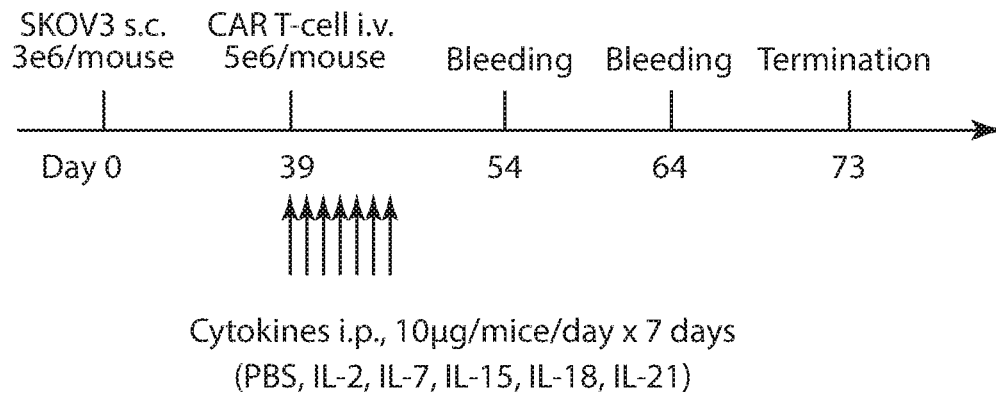


Fig. 8A

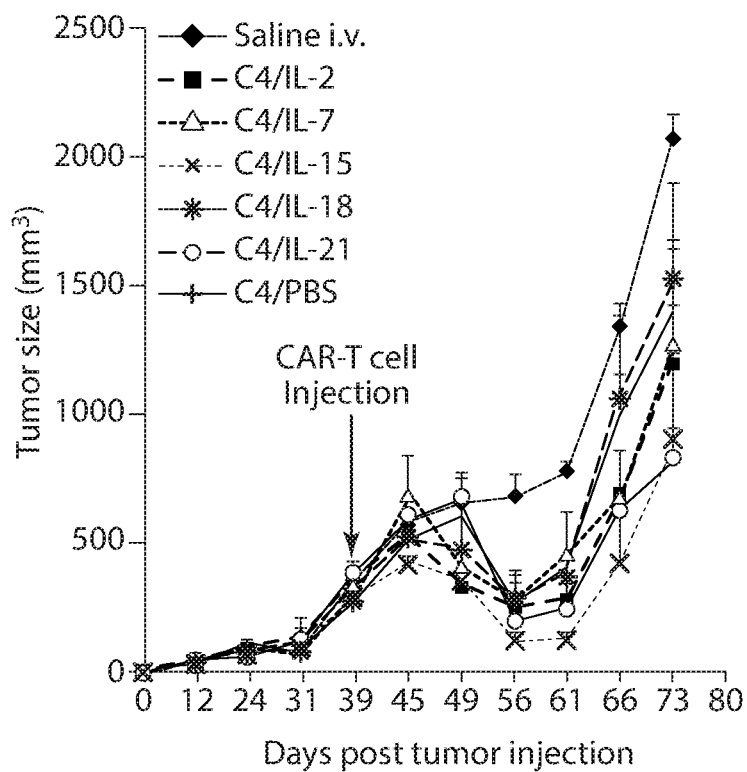


Fig. 8B

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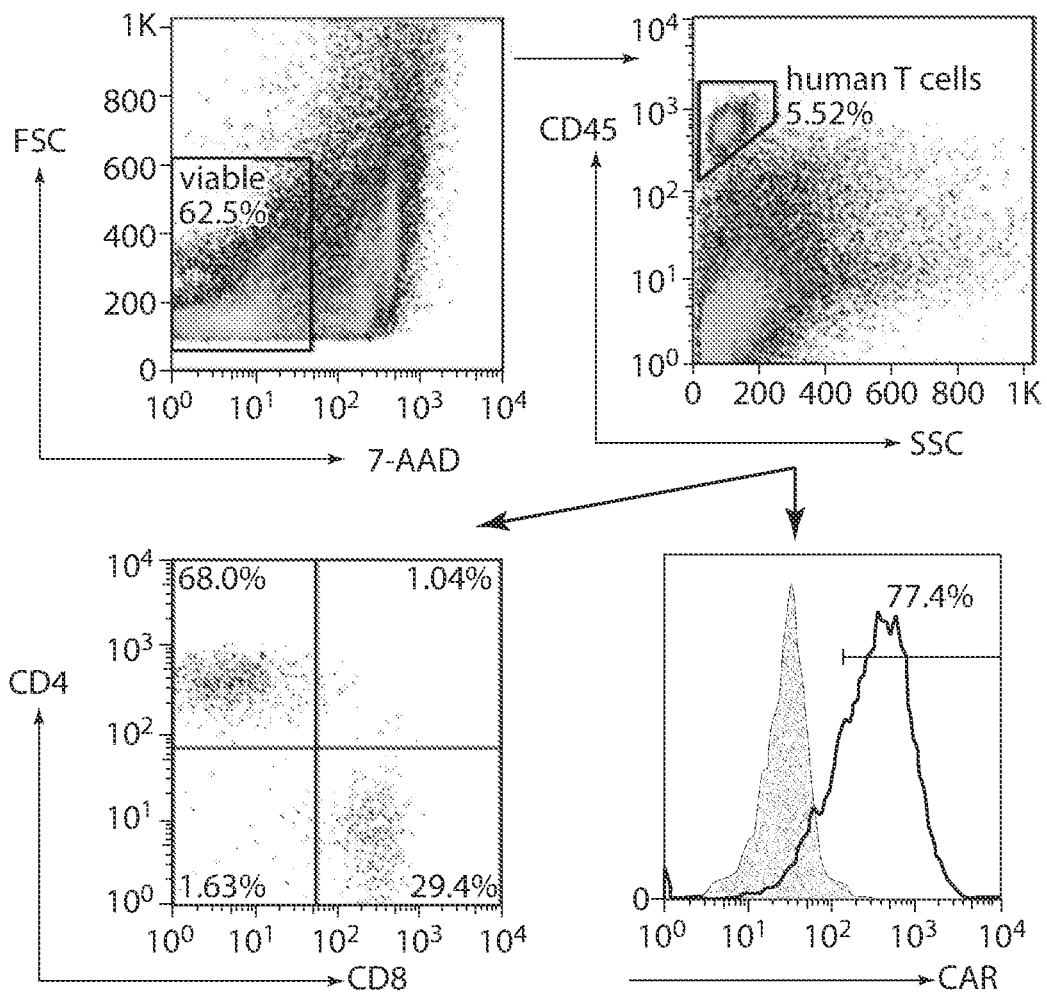


Fig. 8C

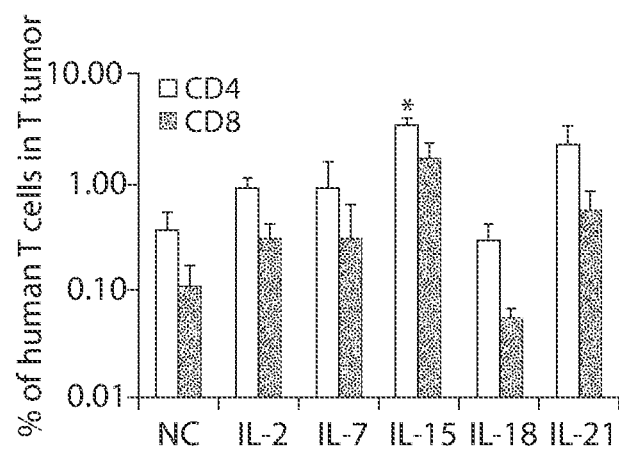


Fig. 8D

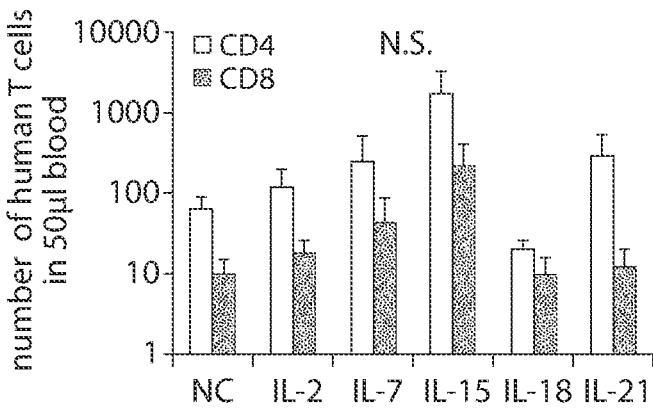


Fig. 8E

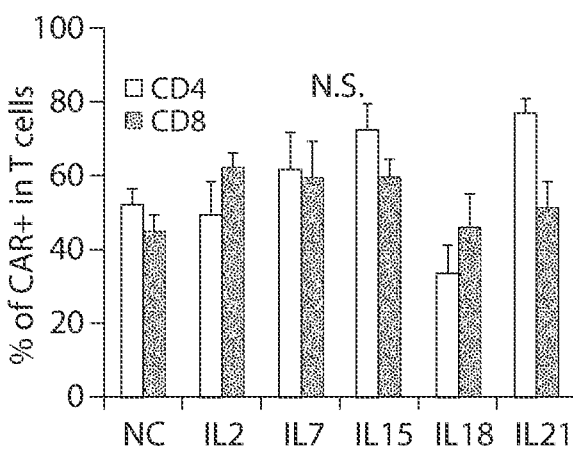


Fig. 8F

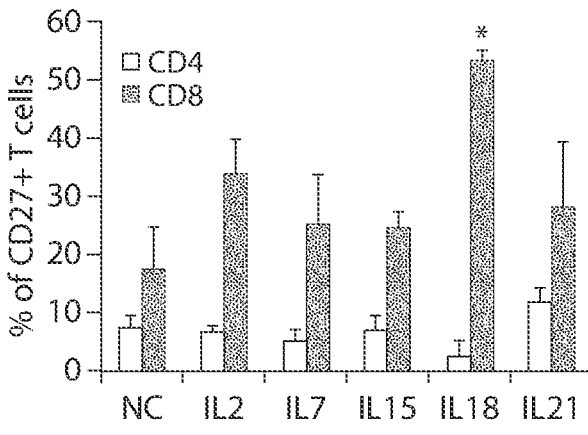
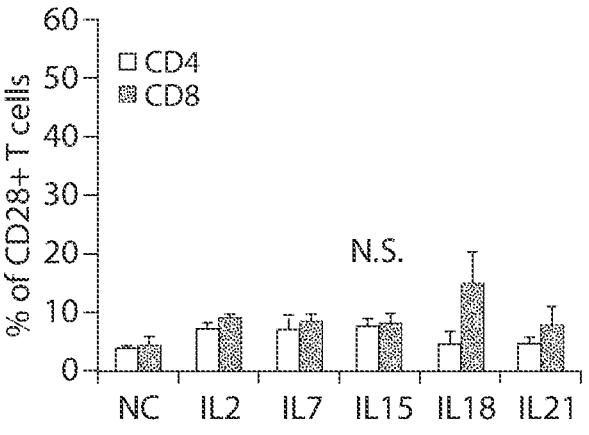


Fig. 8G

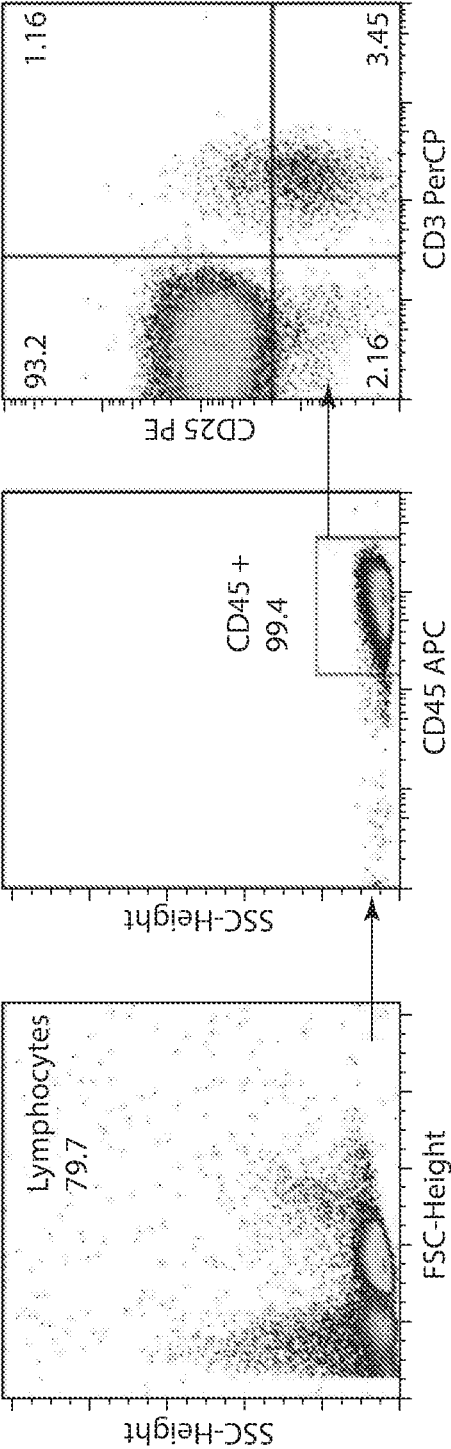


Fig. 9A

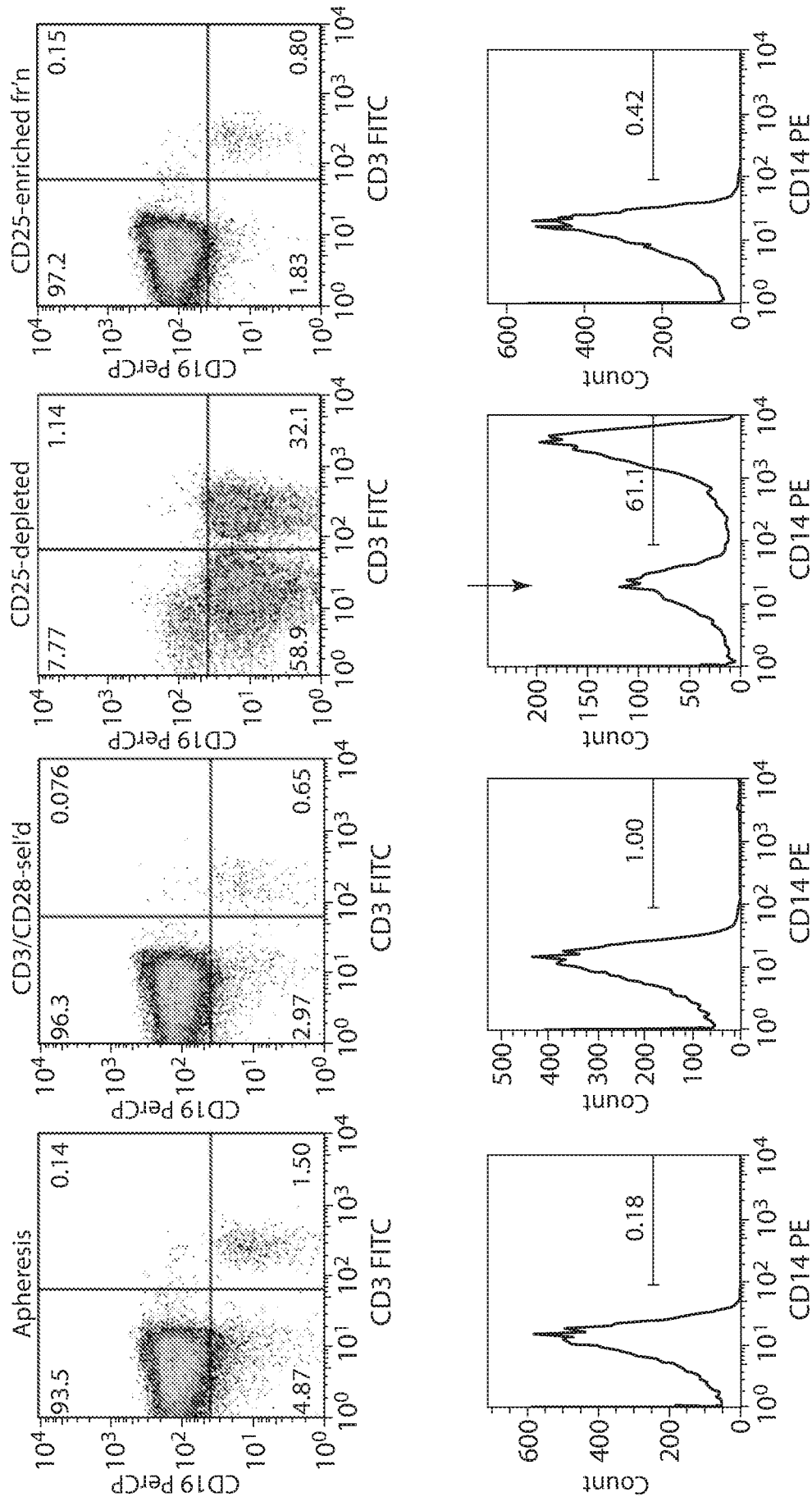


Fig. 9B

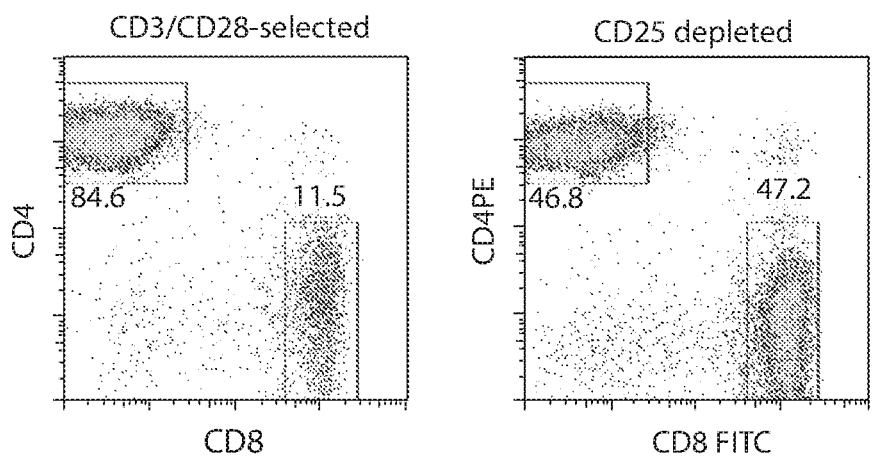


Fig. 10

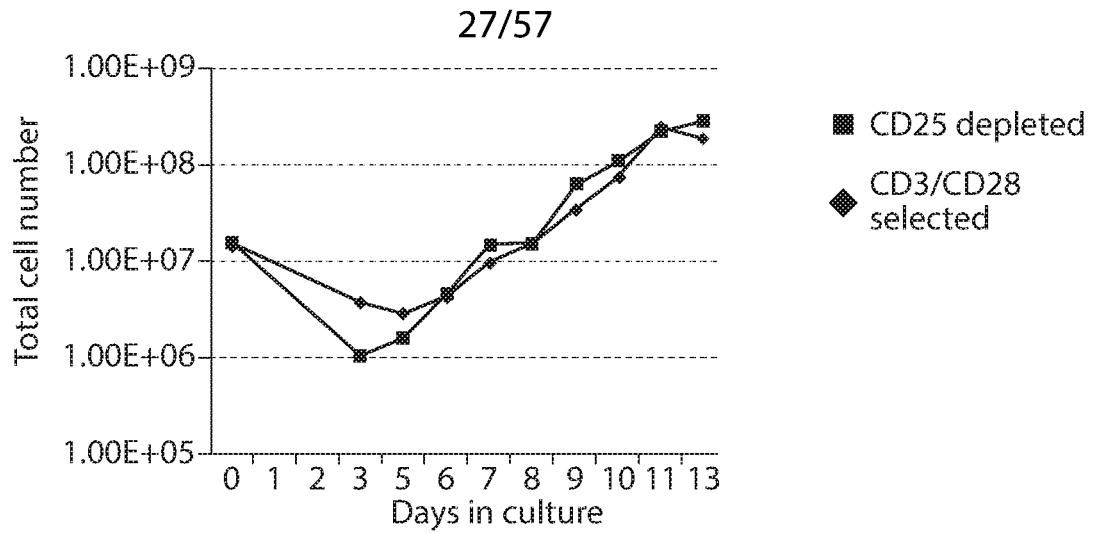


Fig. 11A

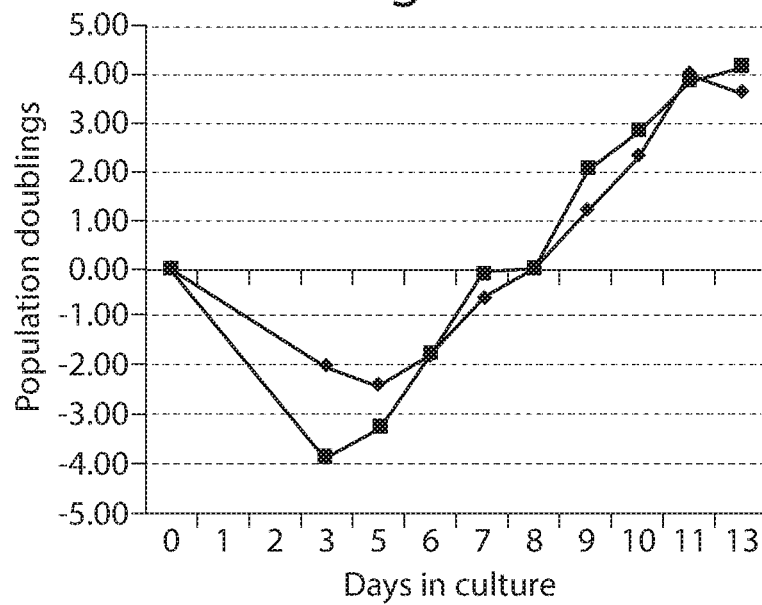


Fig. 11B

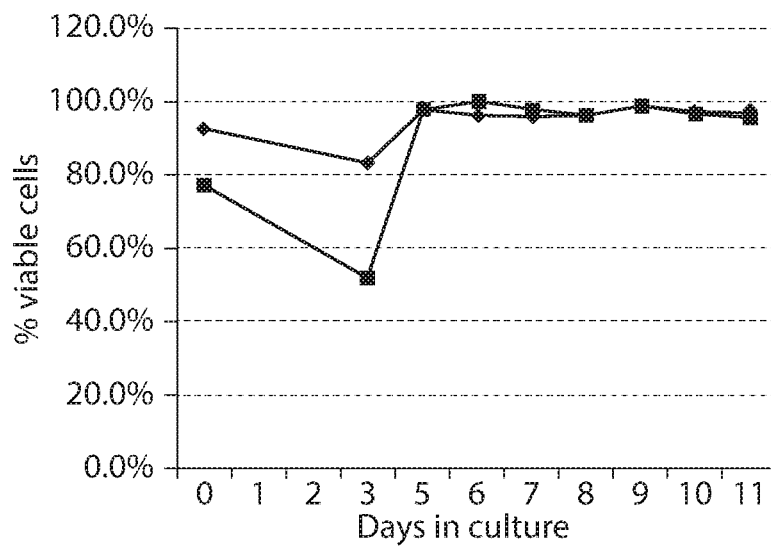


Fig. 11C

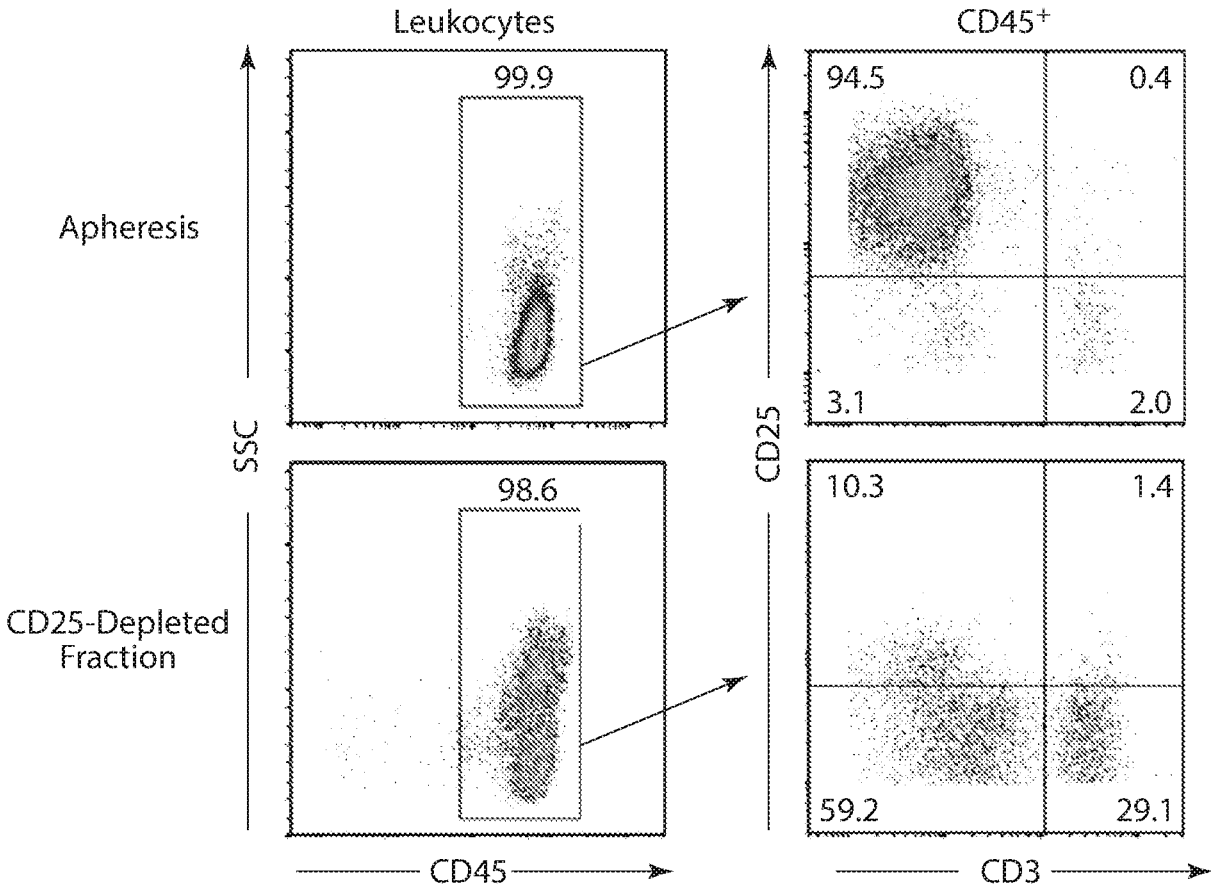


Fig. 12A

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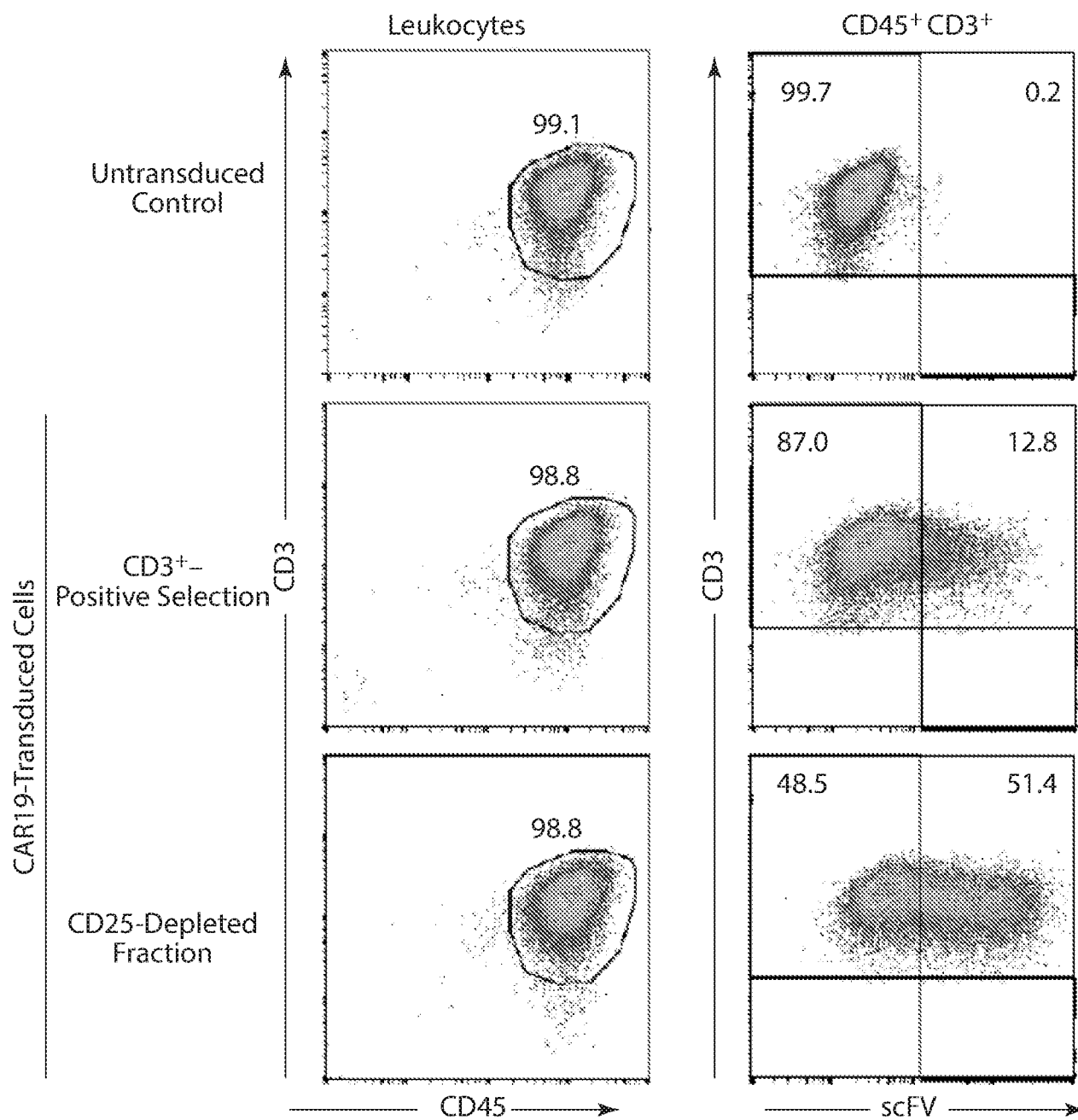


Fig. 12B

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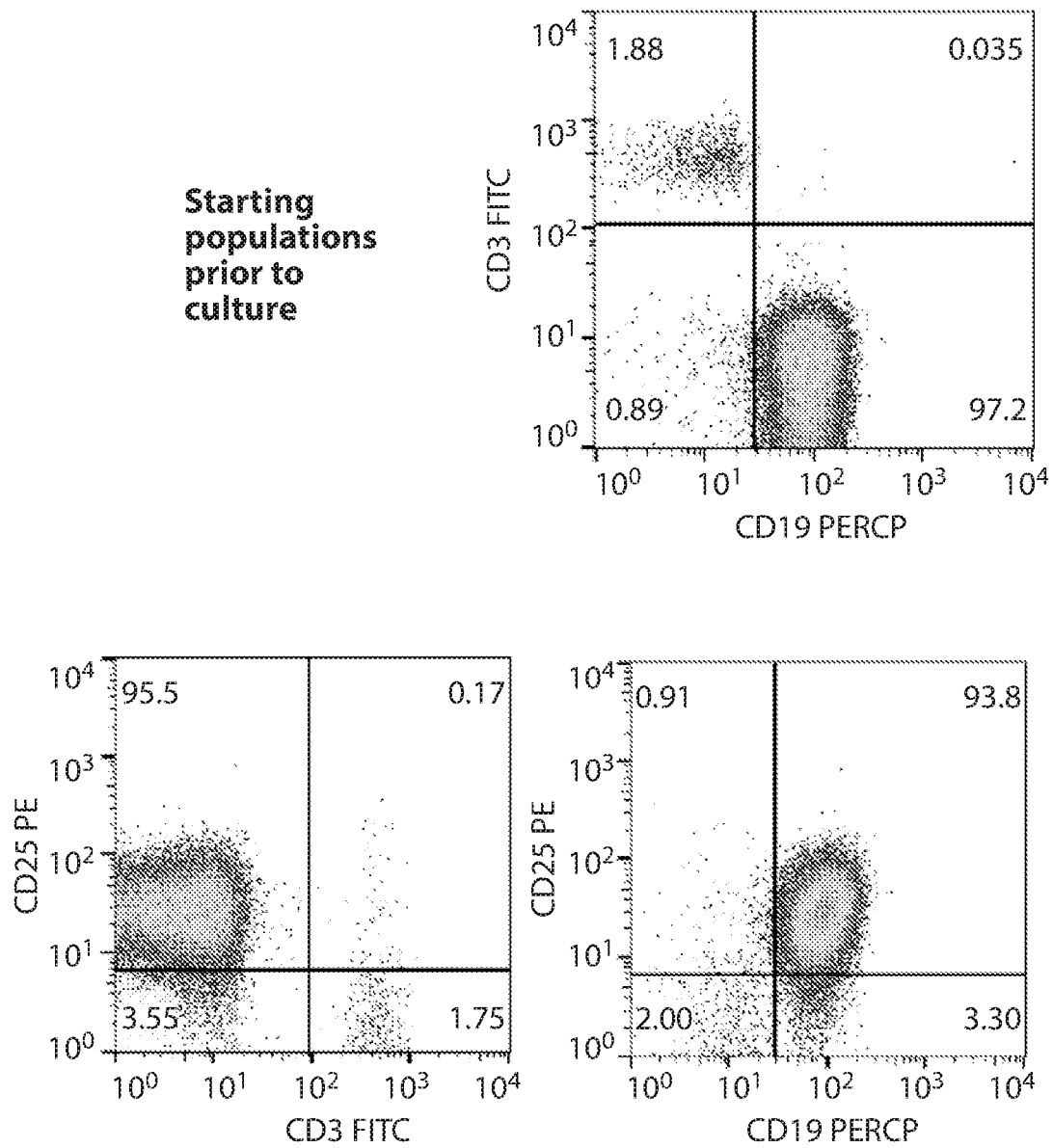


Fig. 13

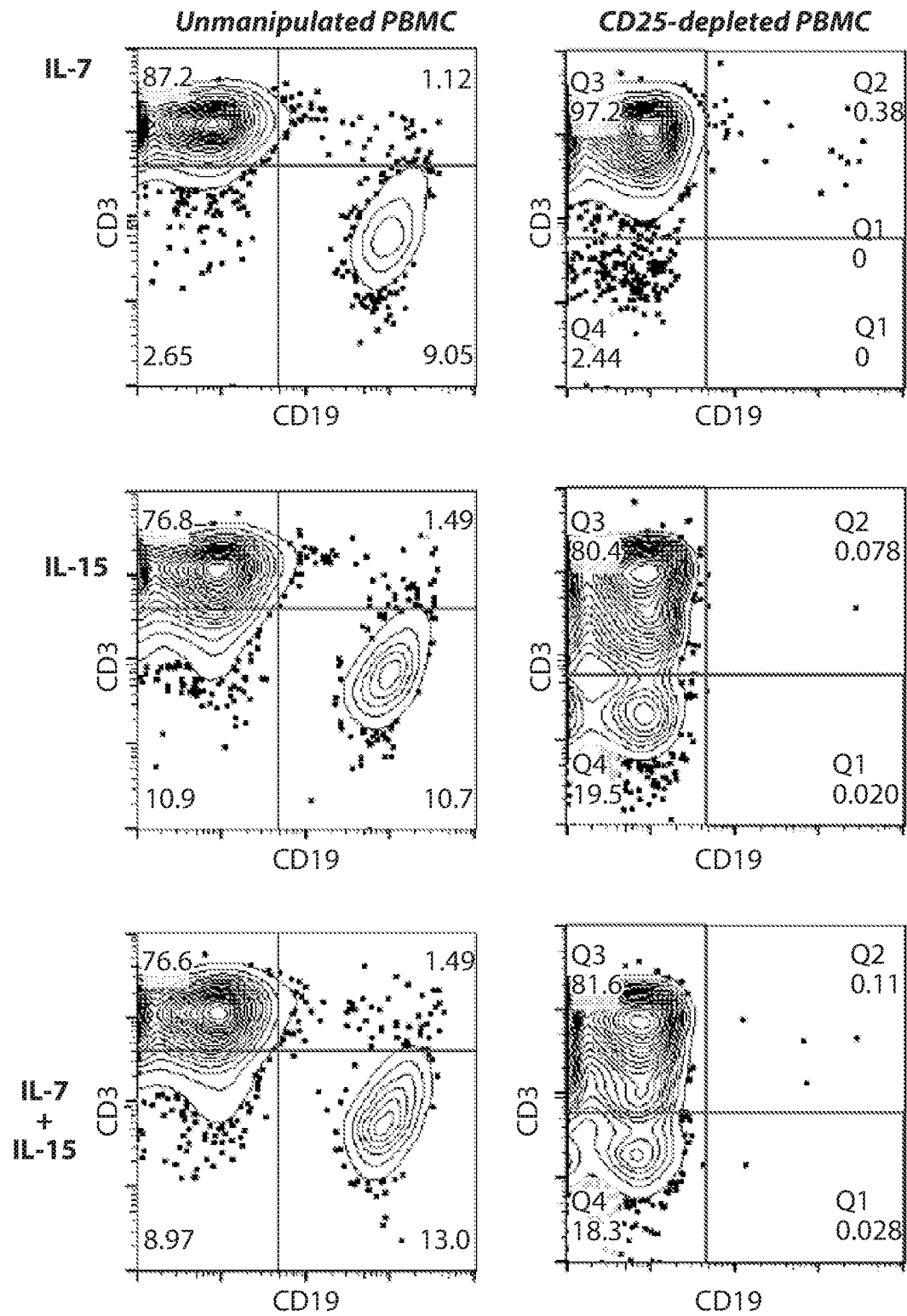


Fig. 14

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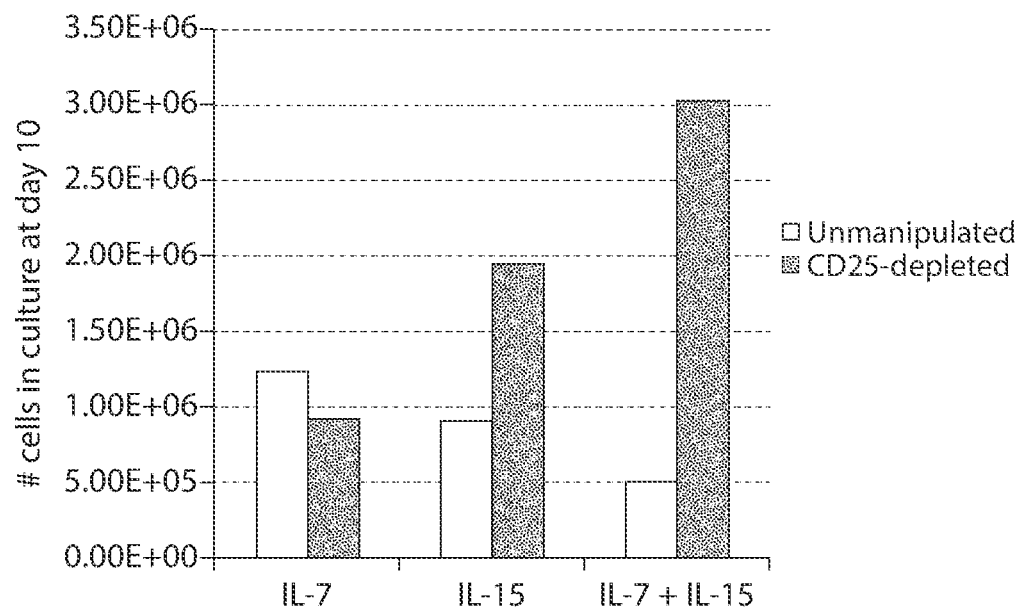


Fig. 15

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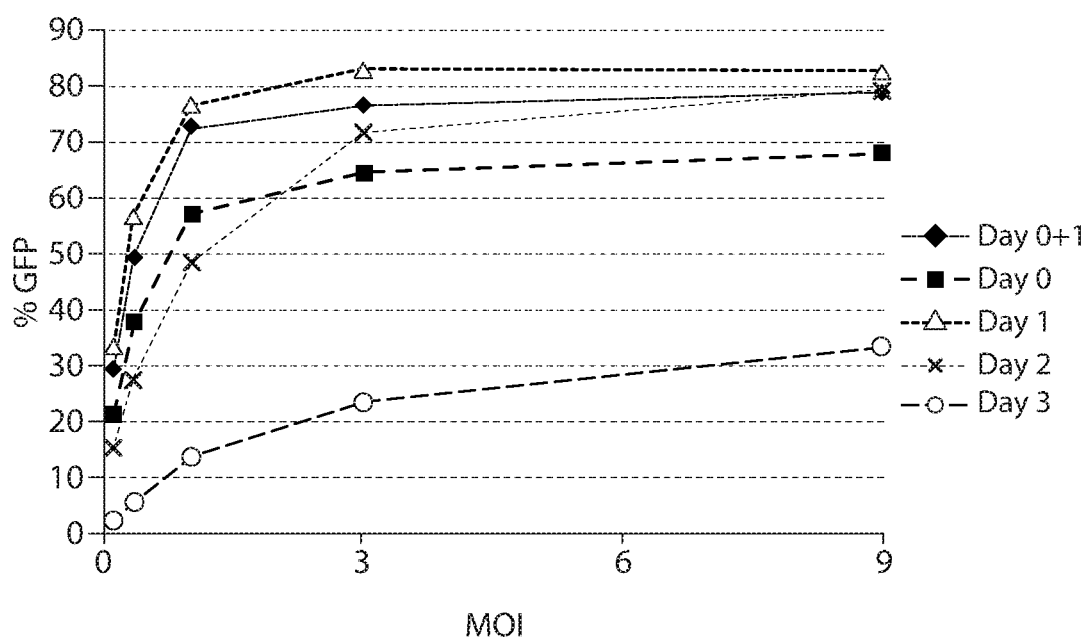


Fig. 16

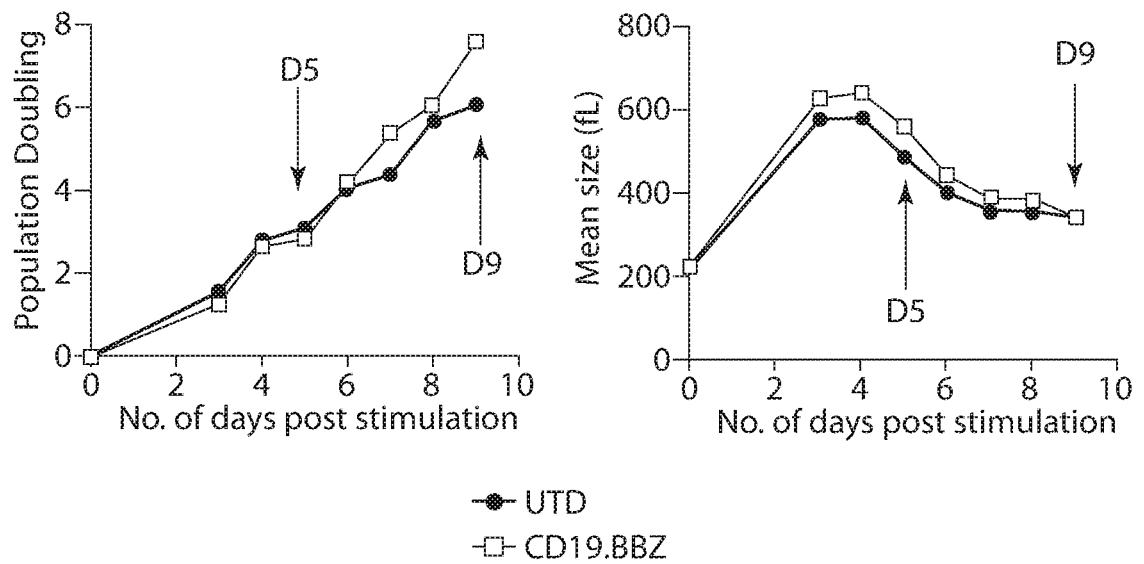
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ND447 PBMCs activated, transduced, de-beaded, and harvested at Day 5 and D9 for comparative performance in vitro and in vivo

Initial expansion profile with 3x28 beads

Harvest time points indicated by arrows

Normal donor cells



Procedures replicated CVPF protocol

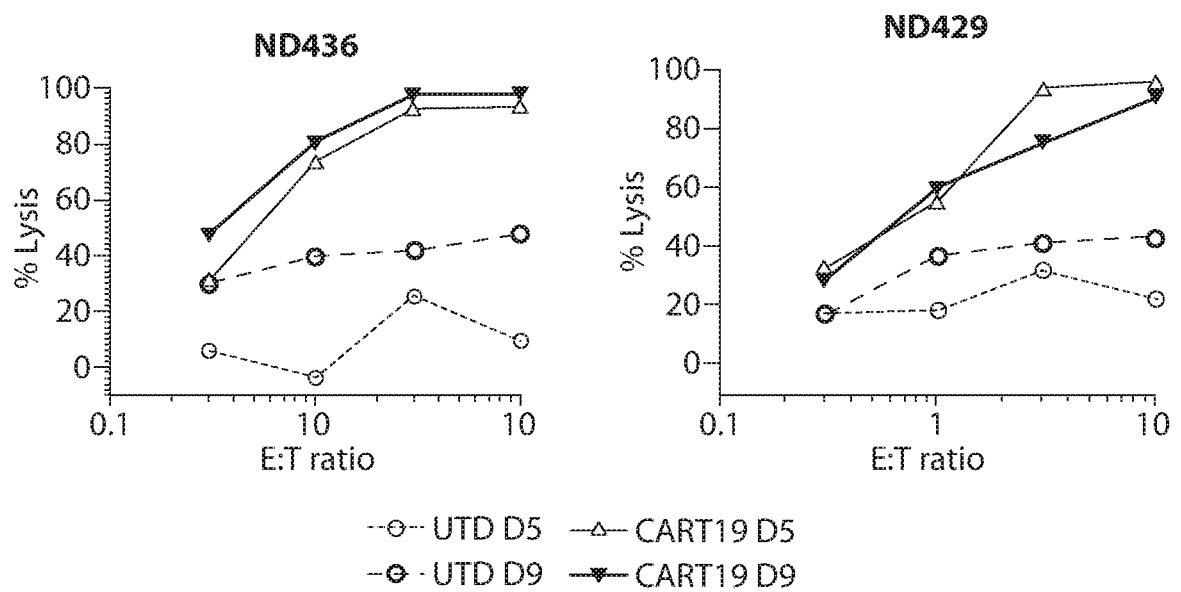
Fig. 17

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There is no difference in CART19 cell killing from cells isolated at day 5 and day 9 from expansion

Cytotoxicity assay (18hr)

Target: K562-CD19

**Fig. 18**

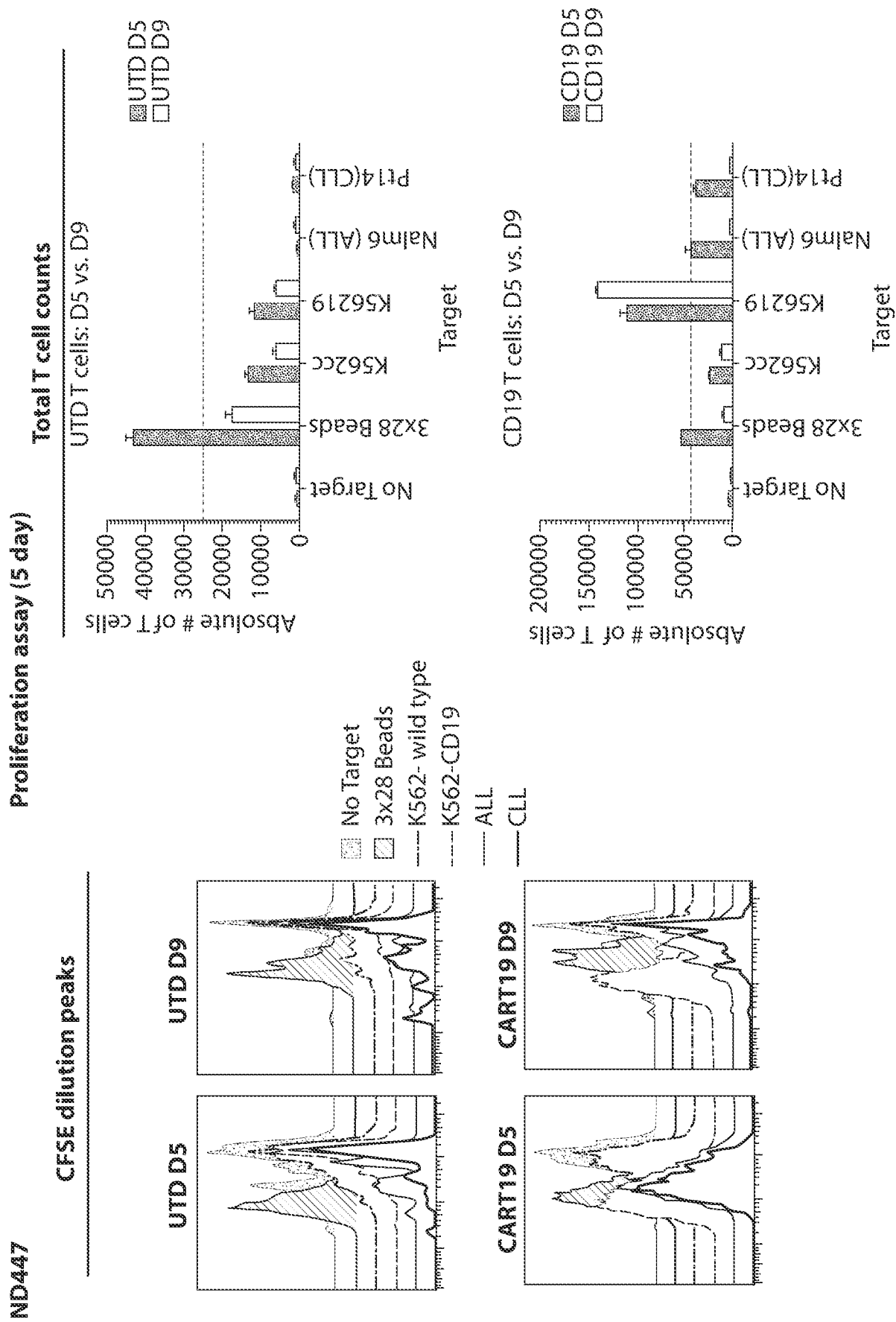


Fig. 19

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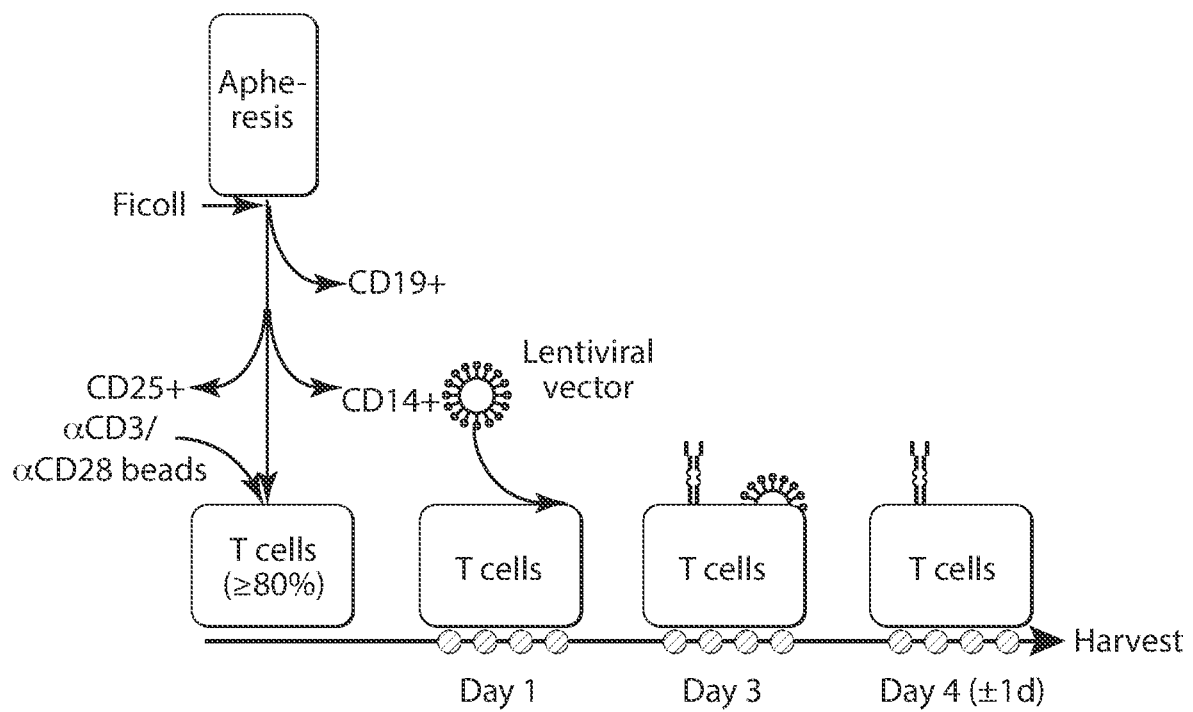


Fig. 20

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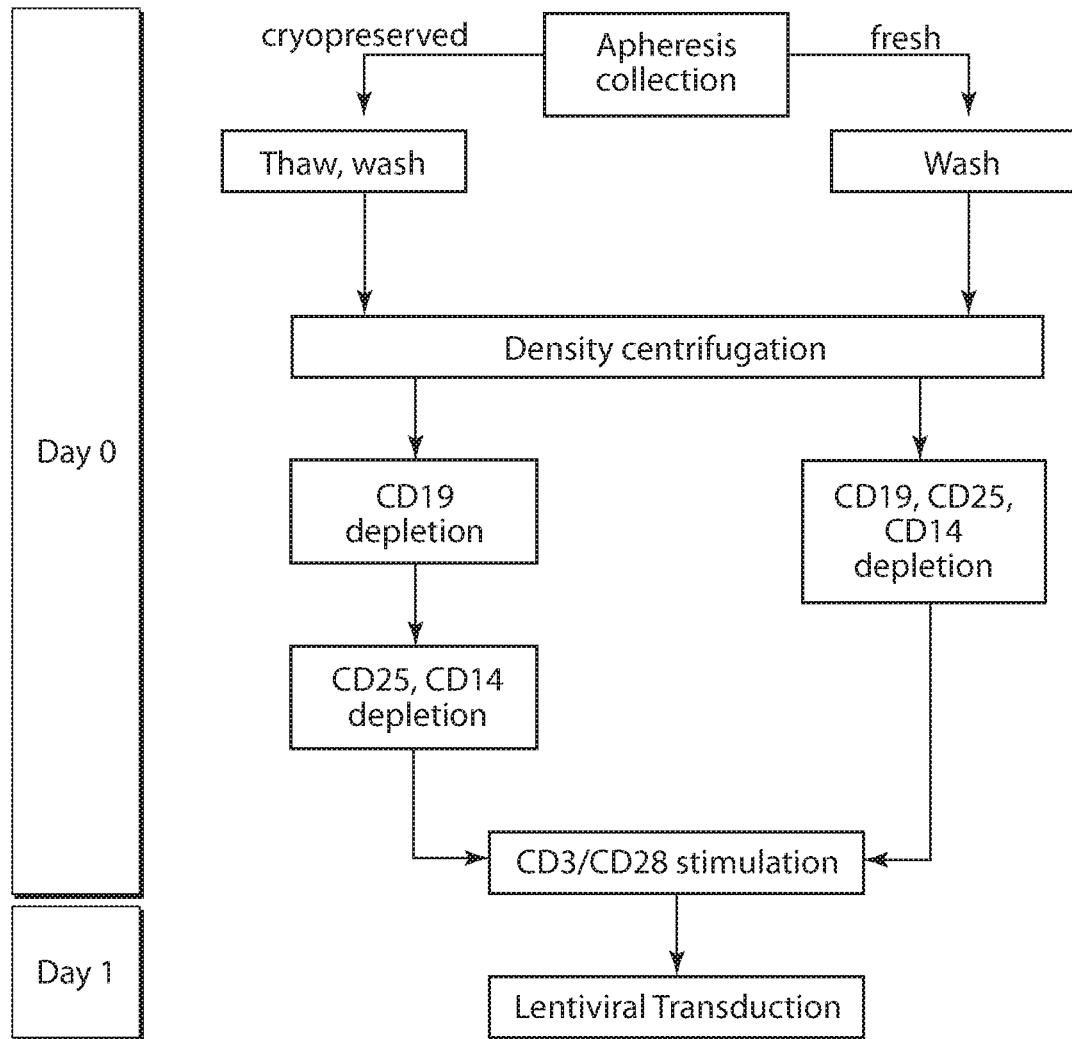


Fig. 21

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Cells harvested on D5 proliferated better than cells harvested on D9 over 7 days of stimulation with K562s expressing CD19.

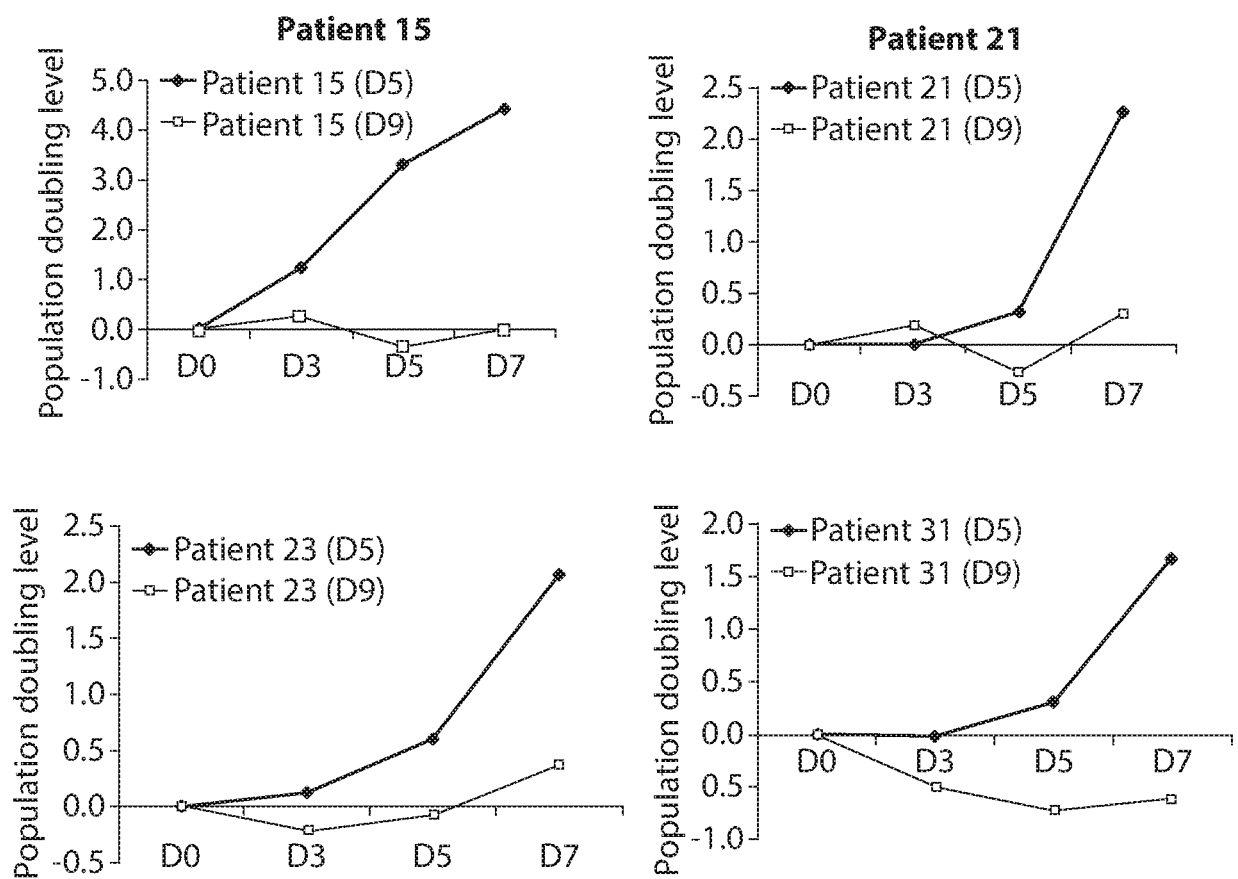


Fig. 22

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Higher or comparable cytokine production from CART19 cells harvested at D5 upon recognition of targets

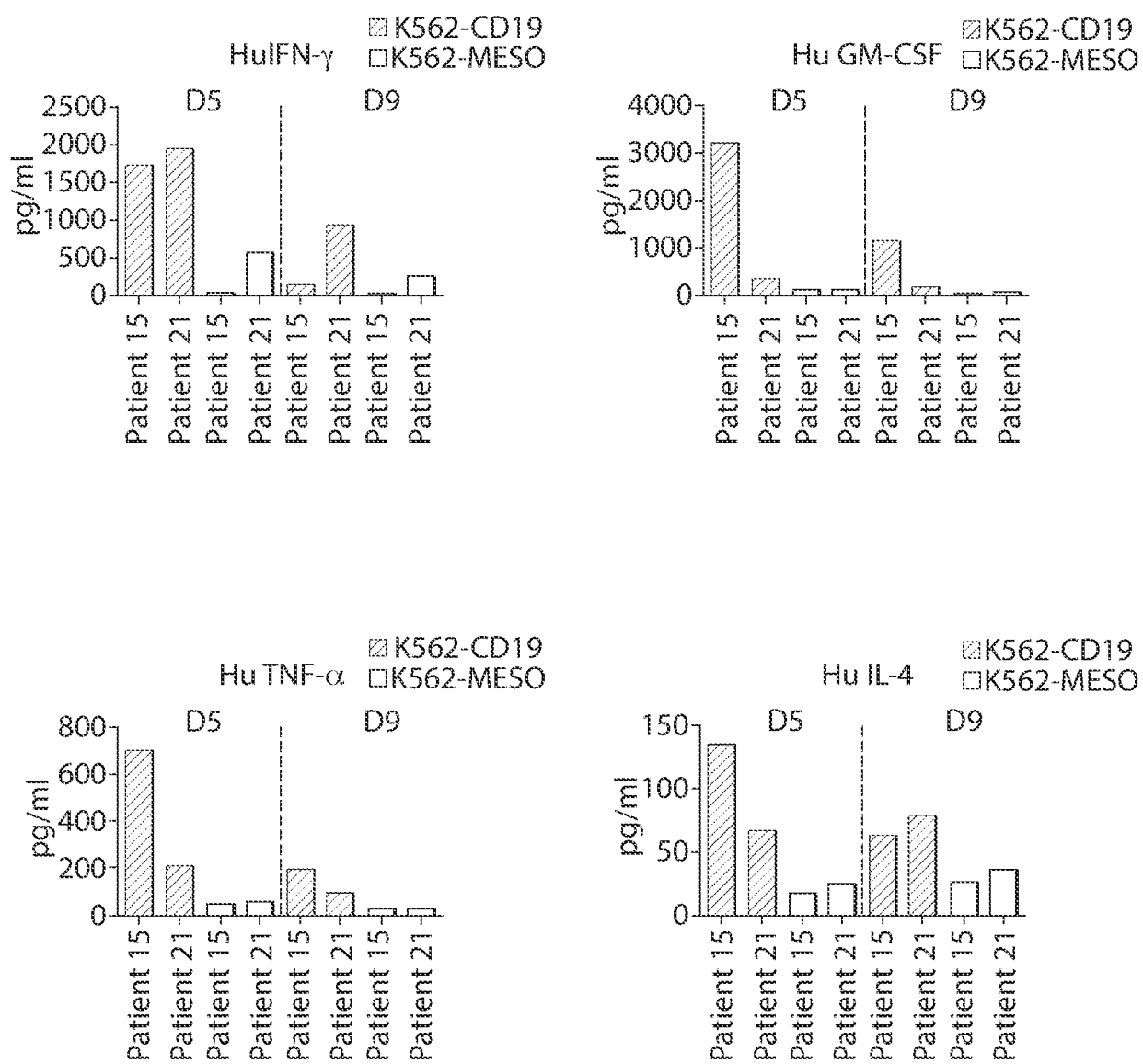
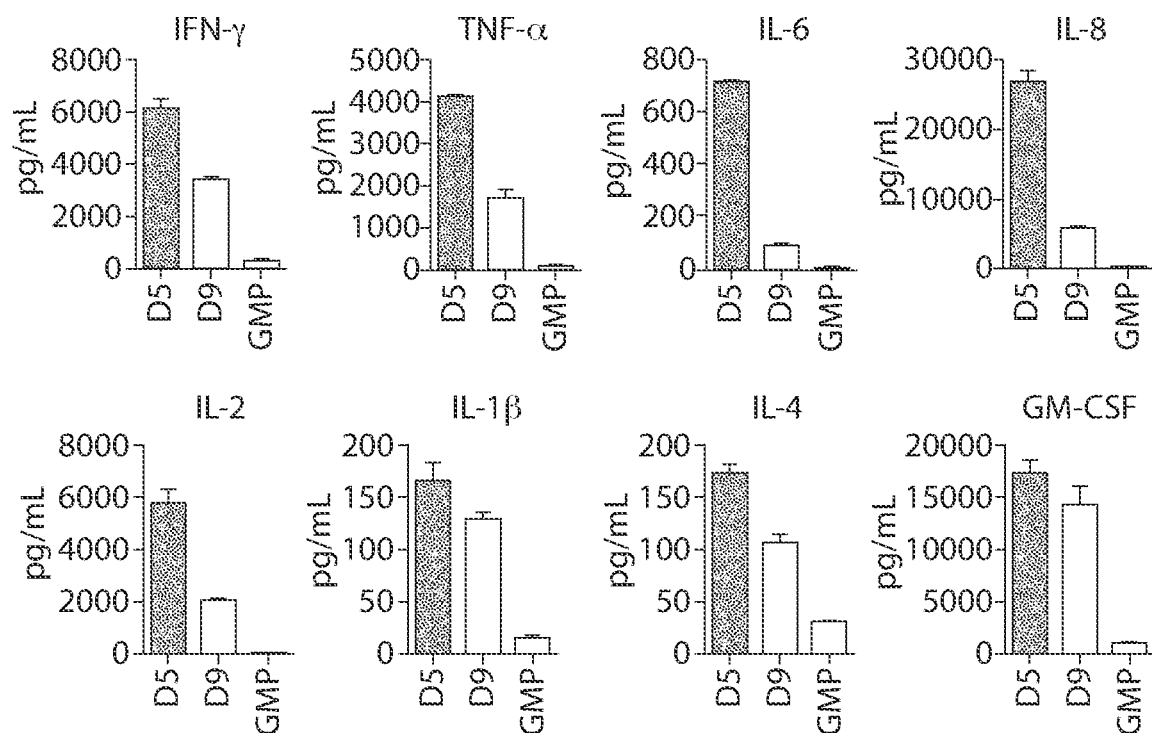


Fig. 23

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**Increased levels of multiple cytokines are produced in CART19 cells
harvested at day 5 upon recognition of targets**

ALL pt. ID 04



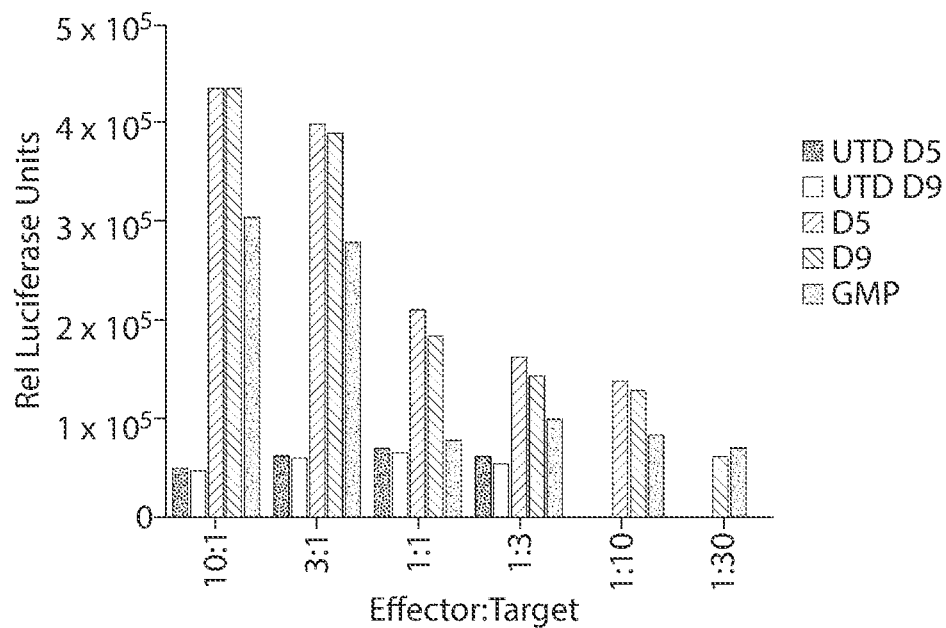
- CART19 cells were stimulated with anti-CAR19-idiotype-Ab-coated or control beads for 24h.
- No cytokine or low levels (<200 pg/ml) of cytokine were detected with control beads.

Fig. 24

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CART19 cells harvested at day 5 possess a better cell-killing capacity

**Cell Killing Assay CART19 cells
(ALL pt. ID 04)**



- CART19 cells were co-cultured with NALM6-Luc cells at increasing E:T ratios for 16h.
- Total cell lysates were examined by luciferase assay.

Fig. 25

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CART19 cells harvested at day 5 possess a better **in vivo** long-term cell-killing capacity

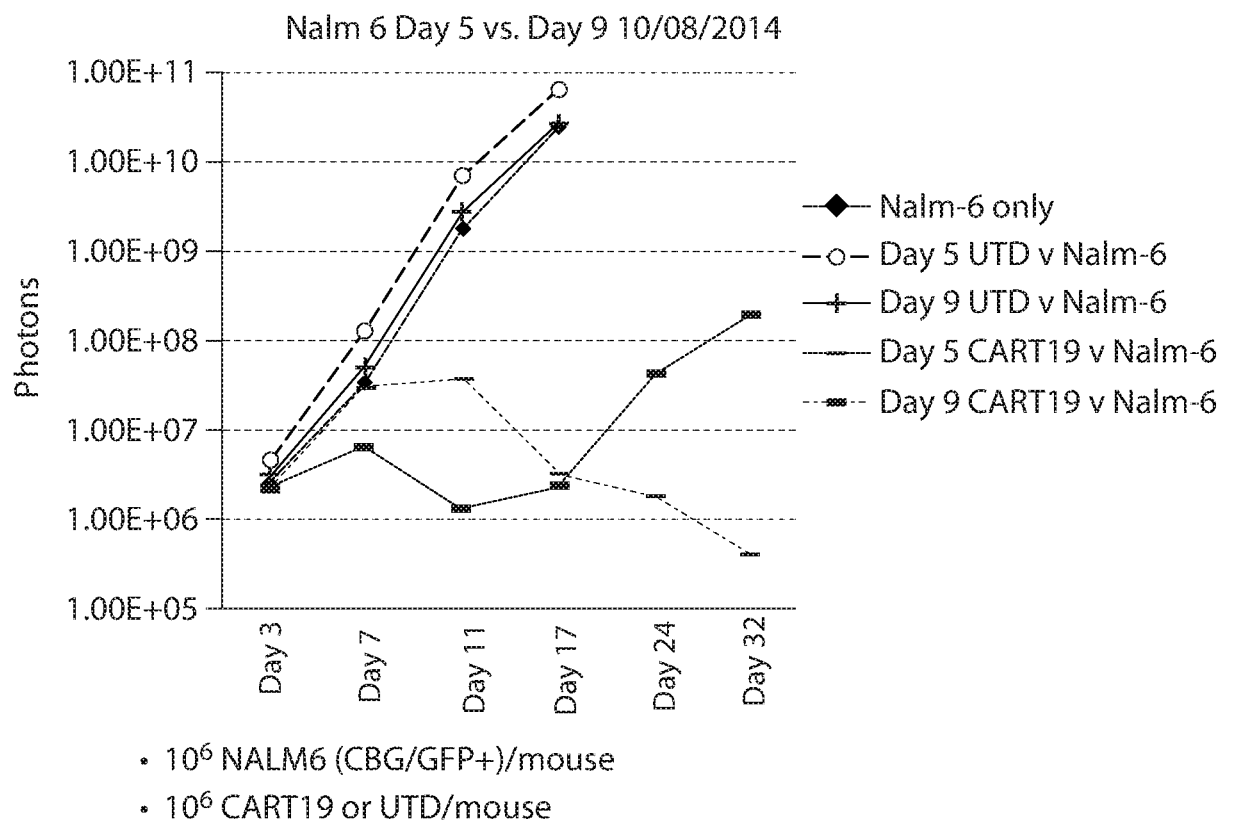


Fig. 26

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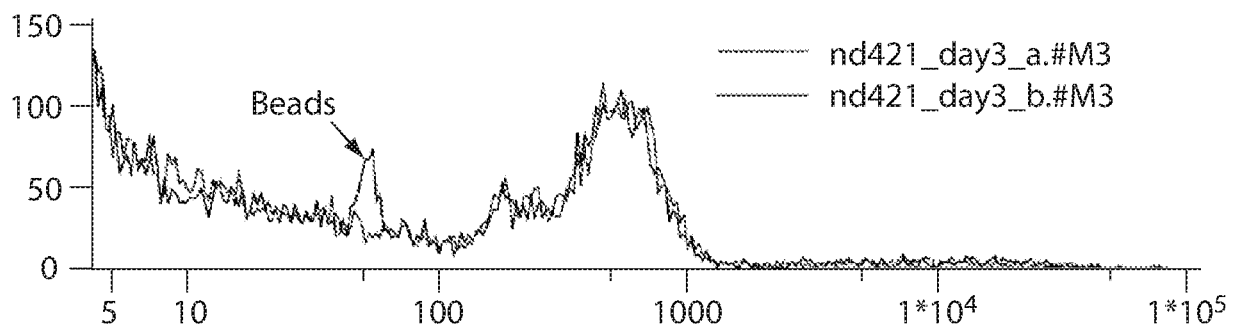


Fig. 27A

bead removal	Day 2 e6	Day 3 e6	Day 4 e6	Day 5 e6	Day 6 e6
Before	1.5	3	1.1	1.78	0.72
After	1.45	3	1.2	1.8	0.84

Fig. 27B

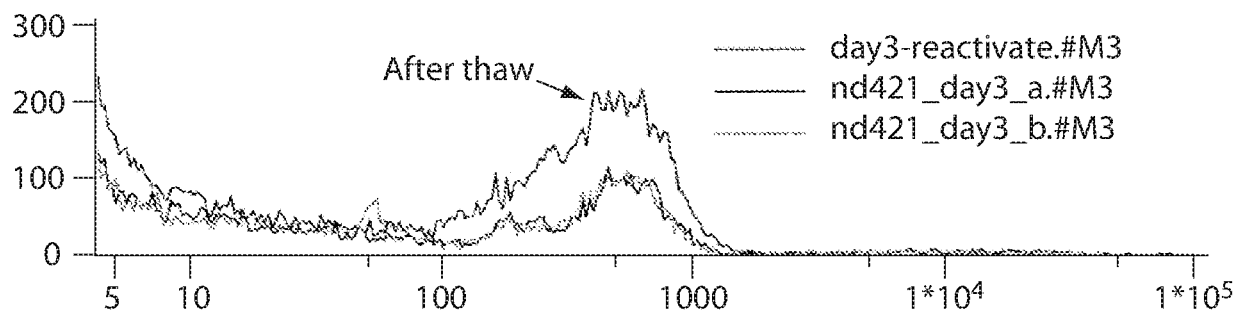


Fig. 27C

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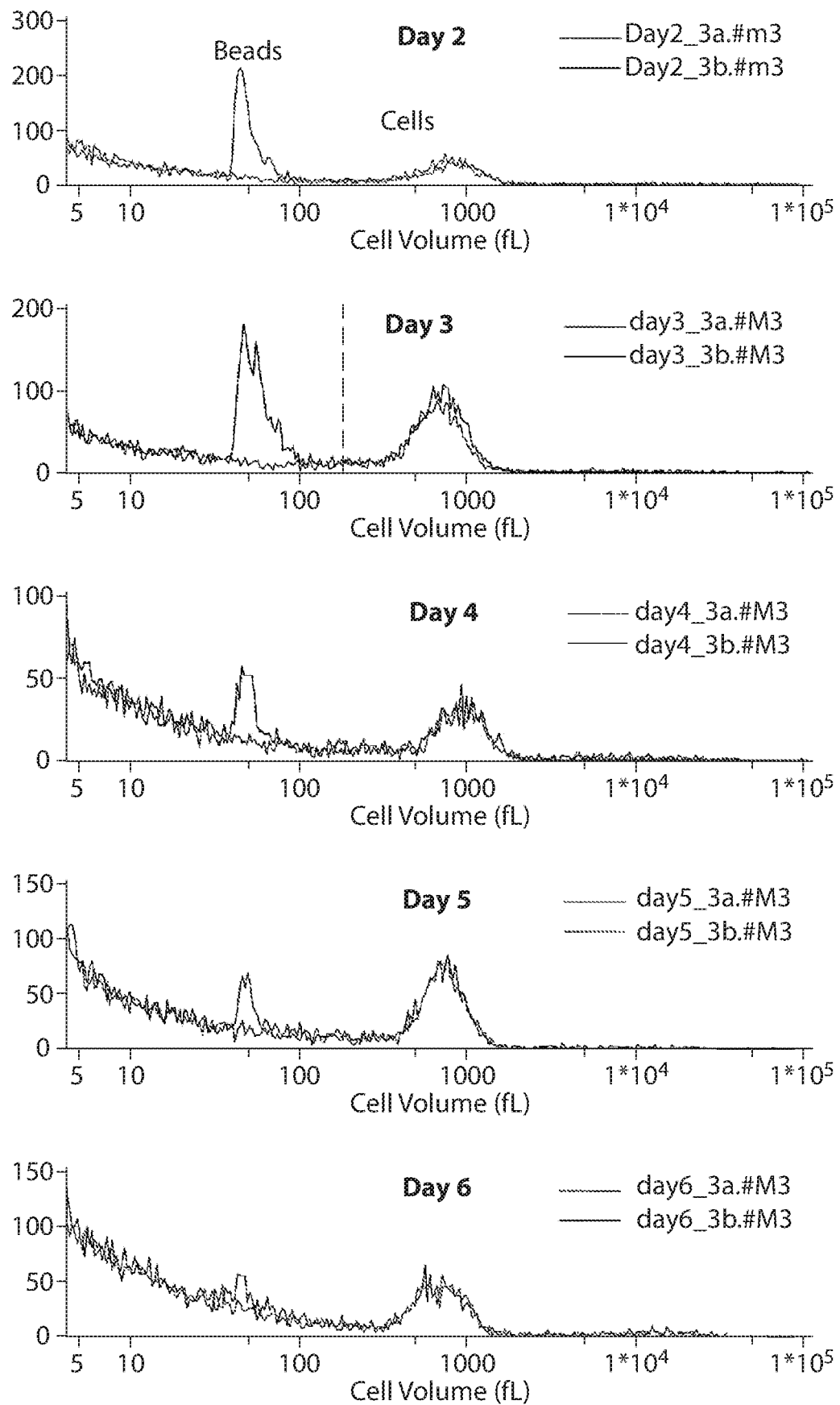


Fig. 27D

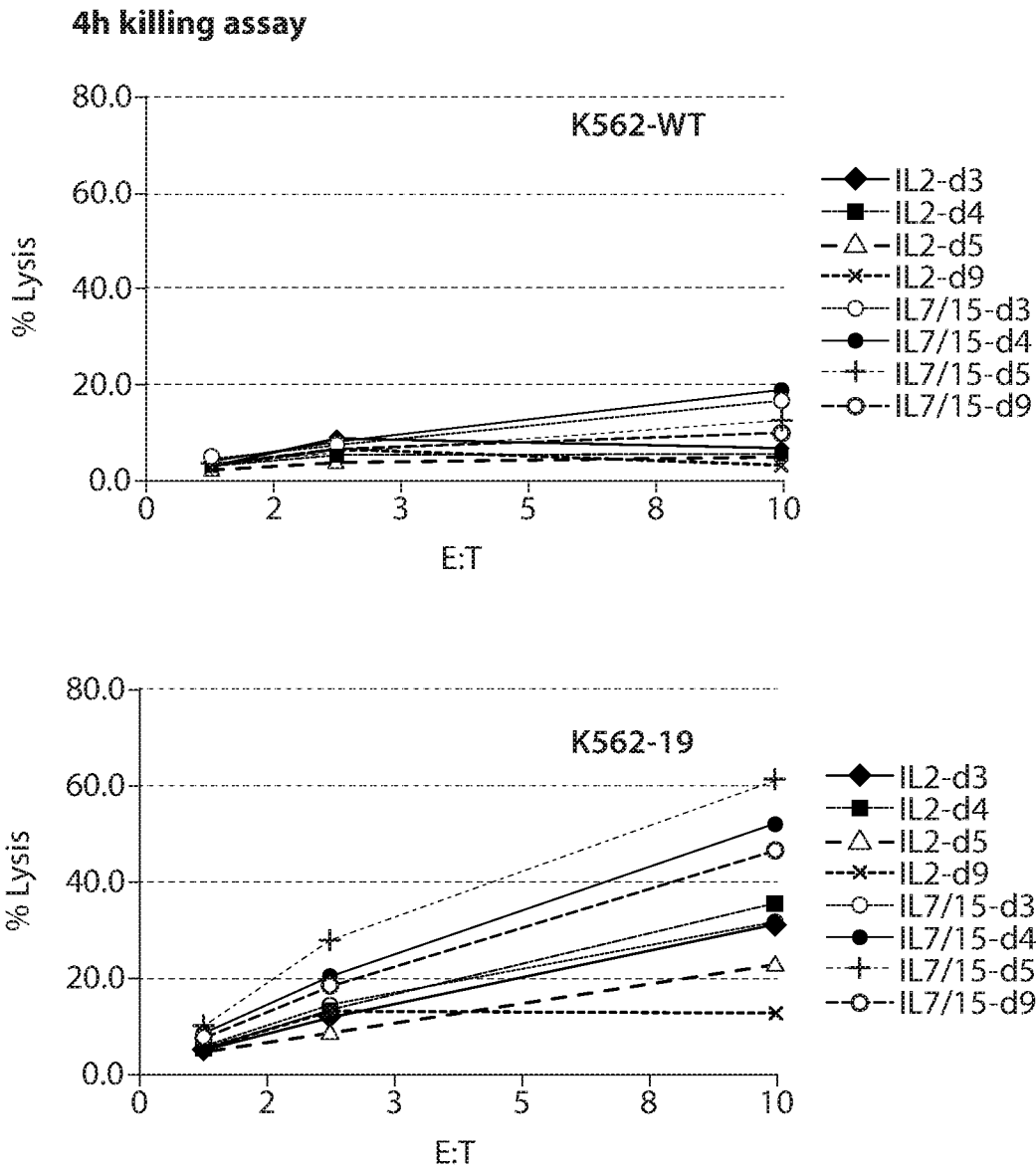


Fig. 28A

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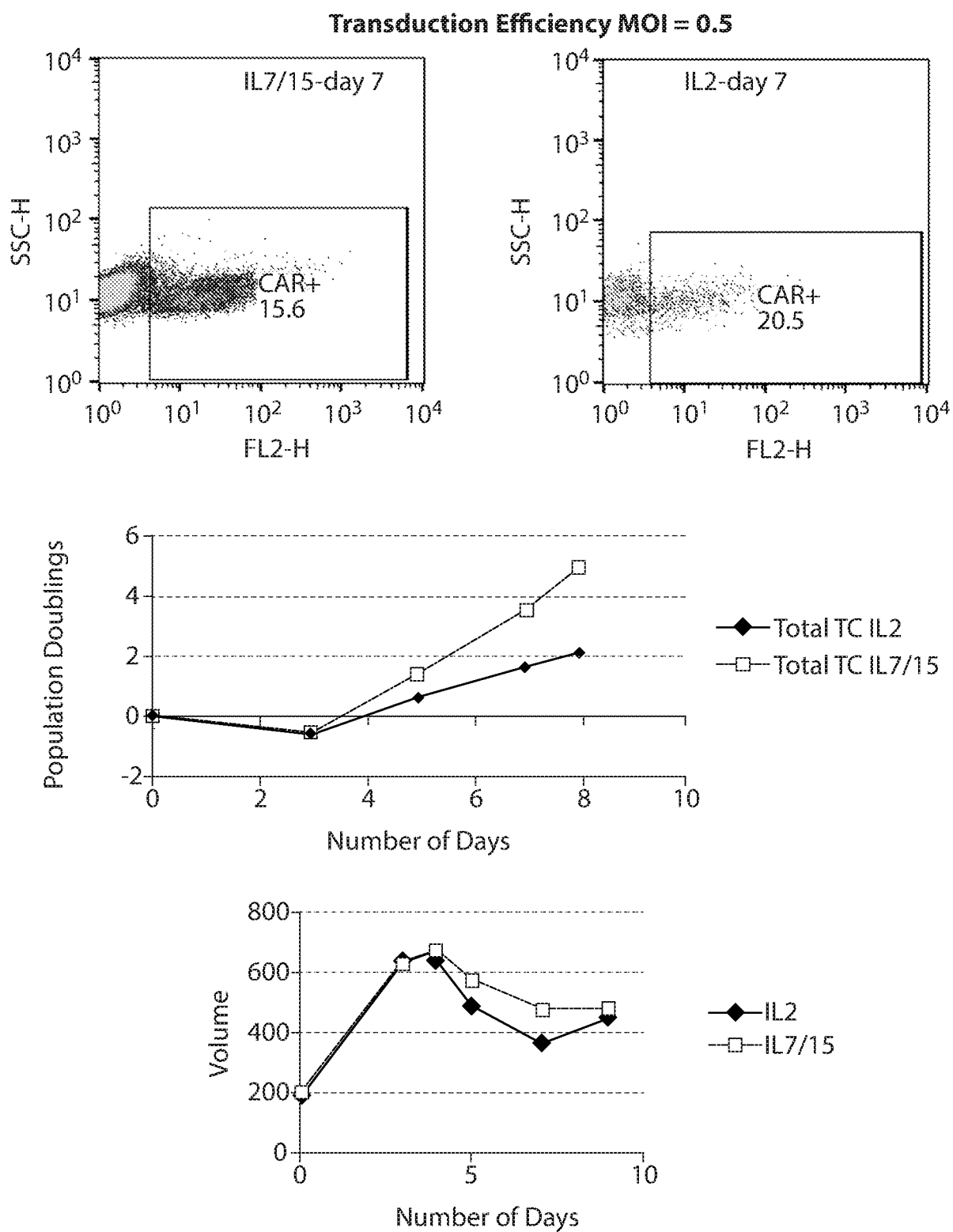


Fig. 28B

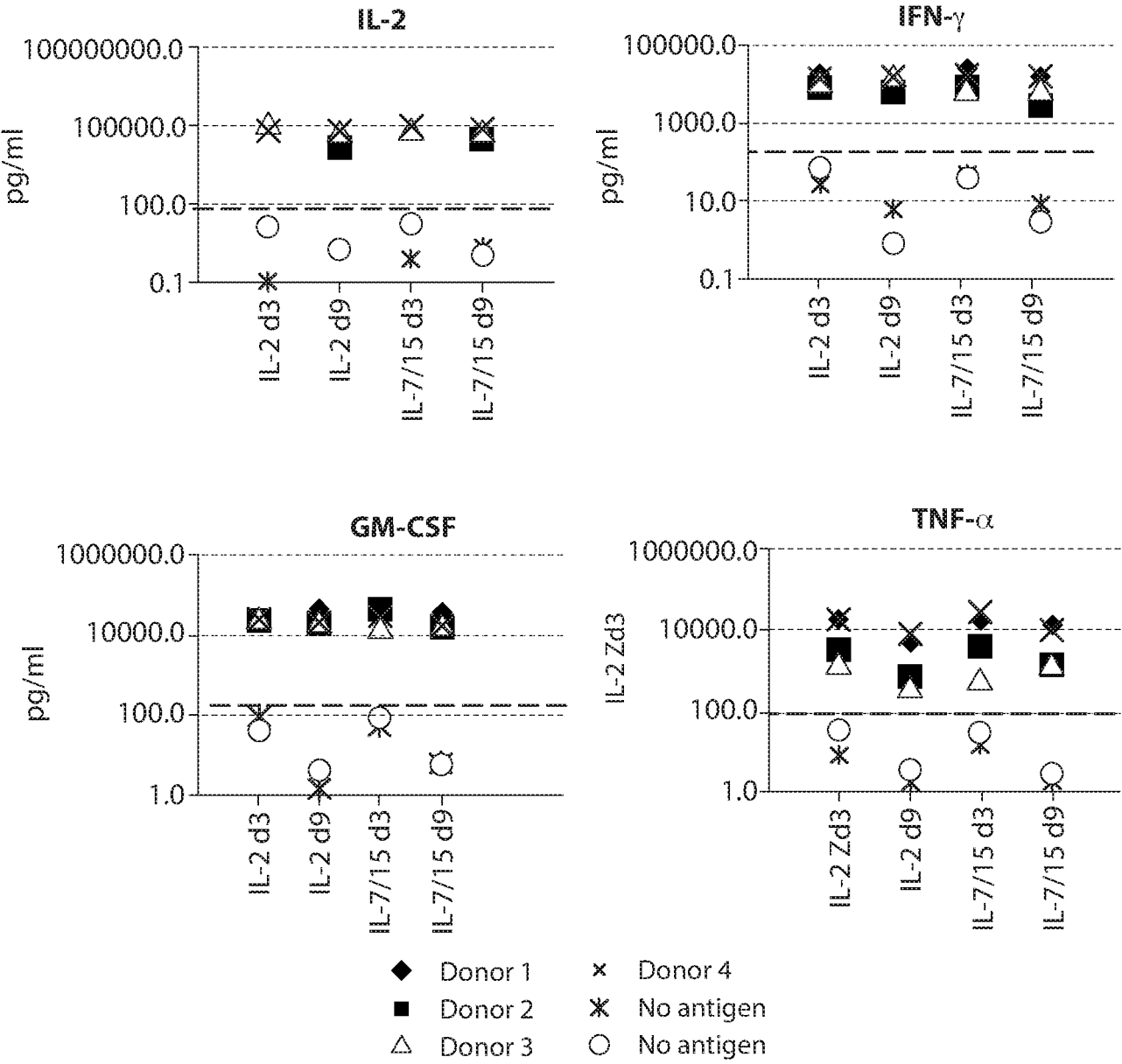


Fig. 29A

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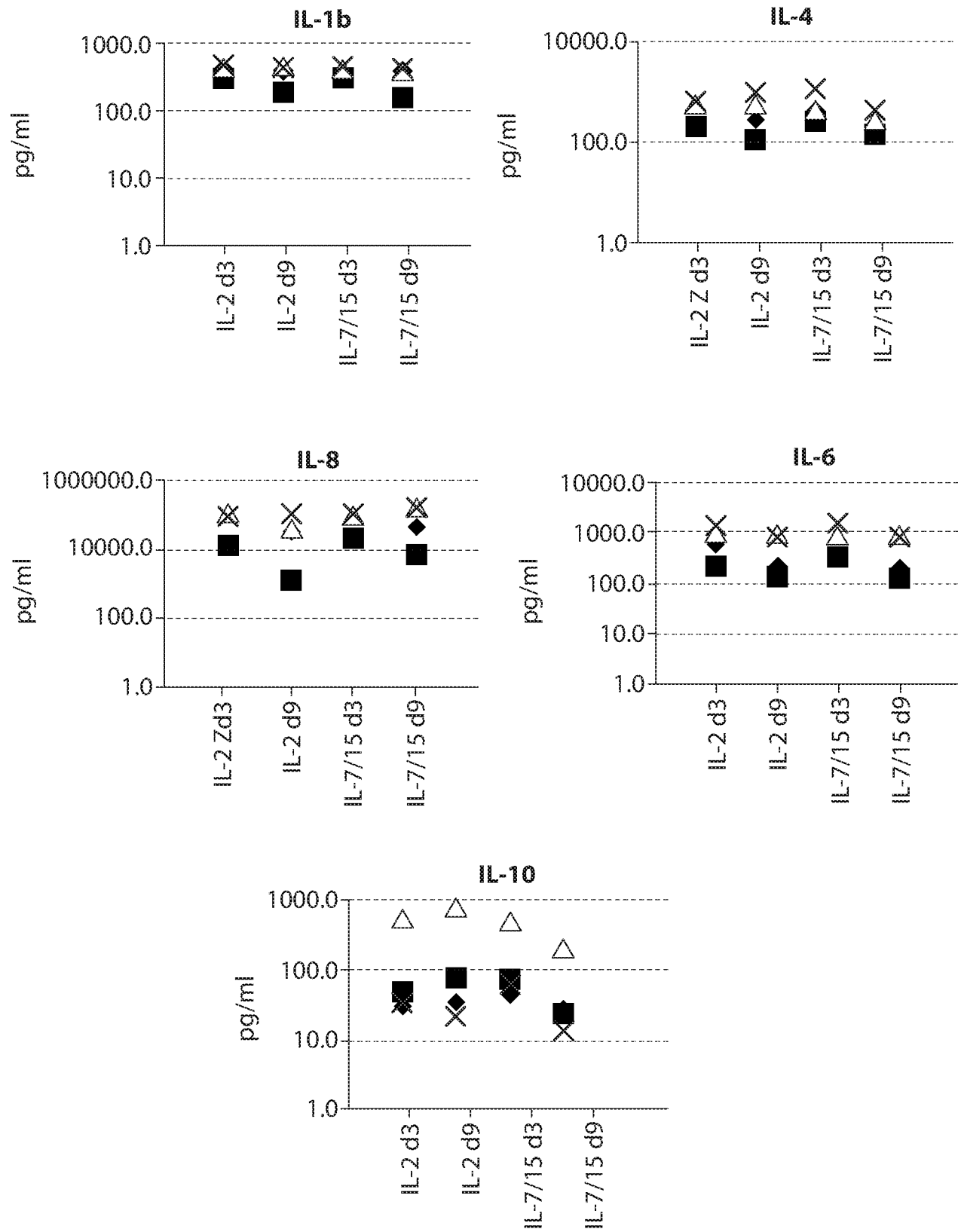


Fig. 29B

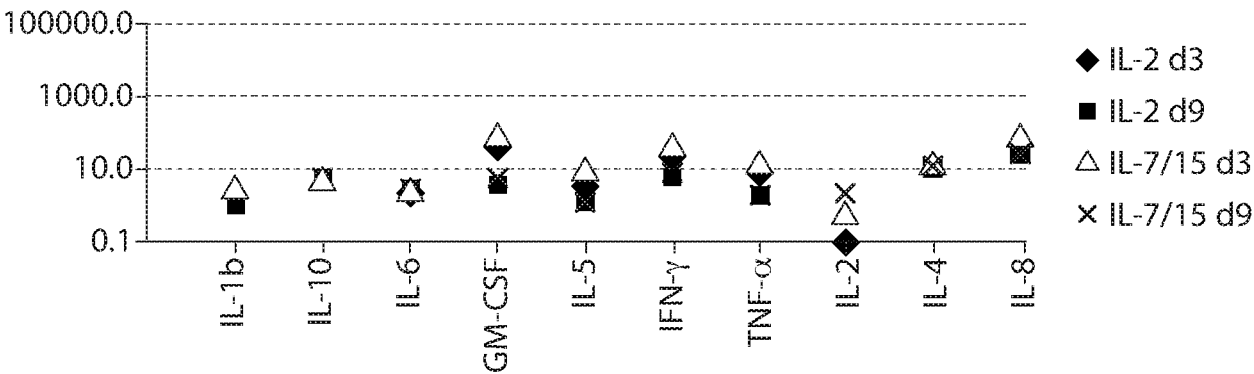


Fig. 29C

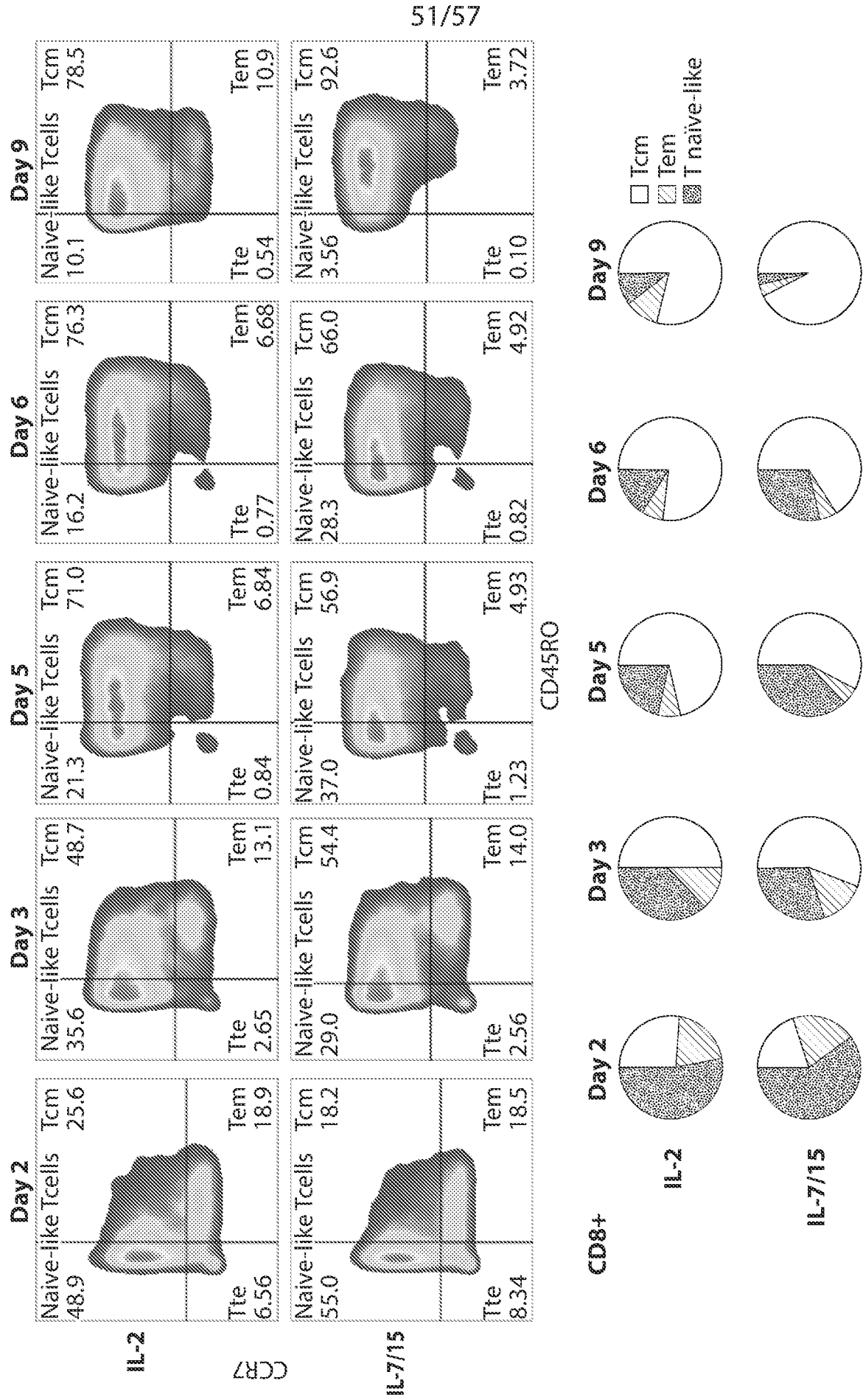


Fig. 30A

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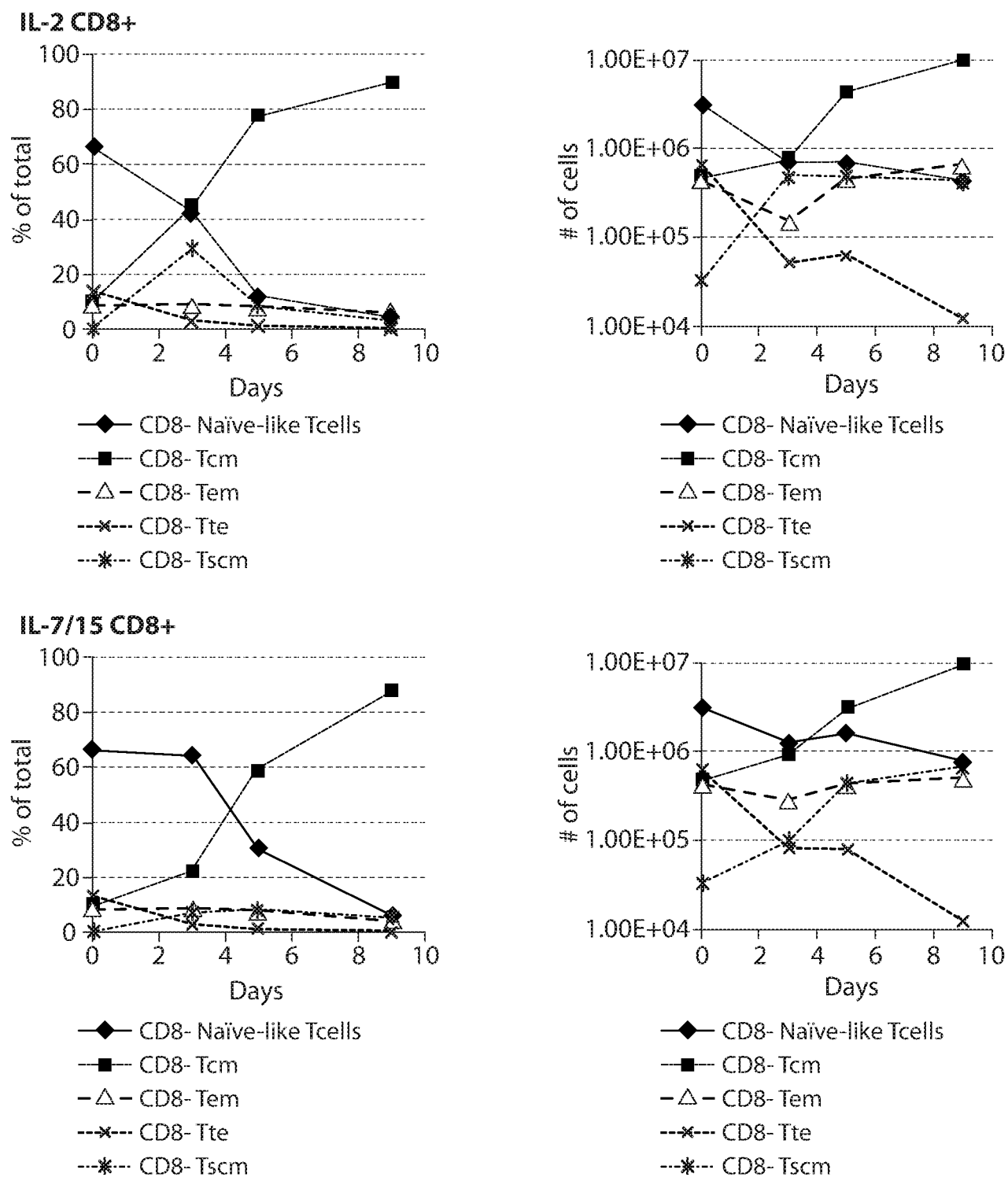


Fig. 30B

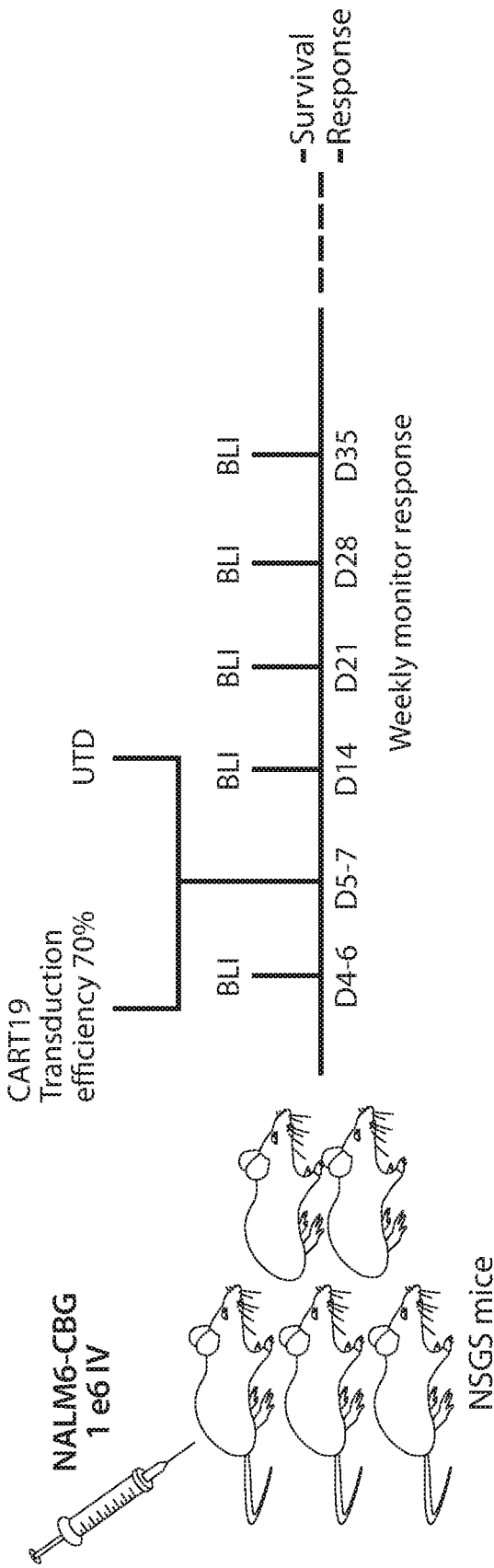


FIG. 31A

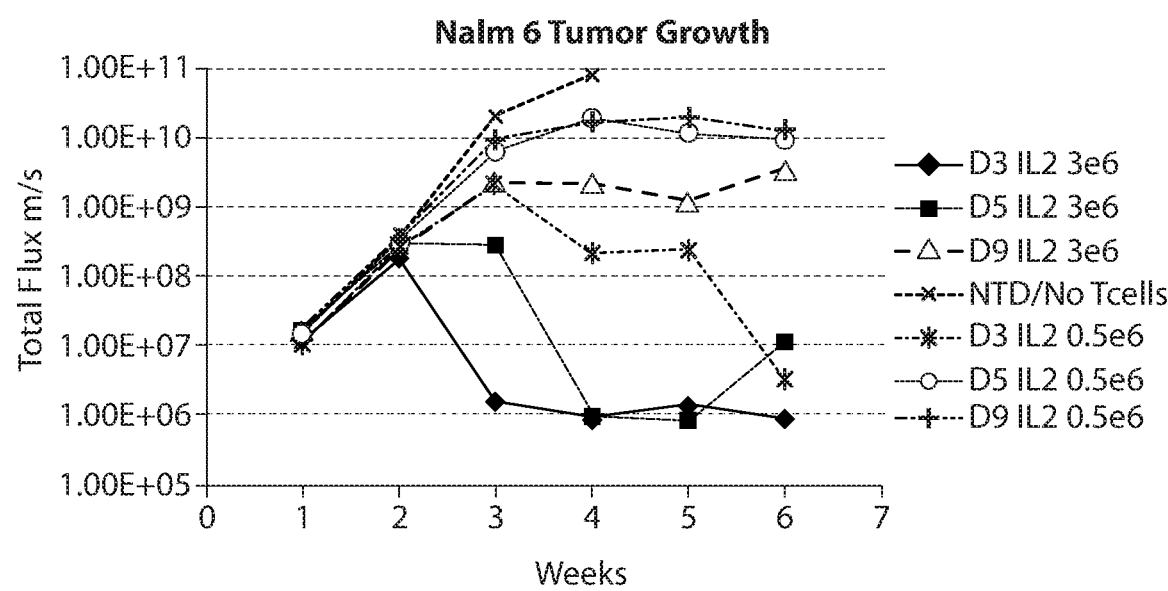


Fig. 31B

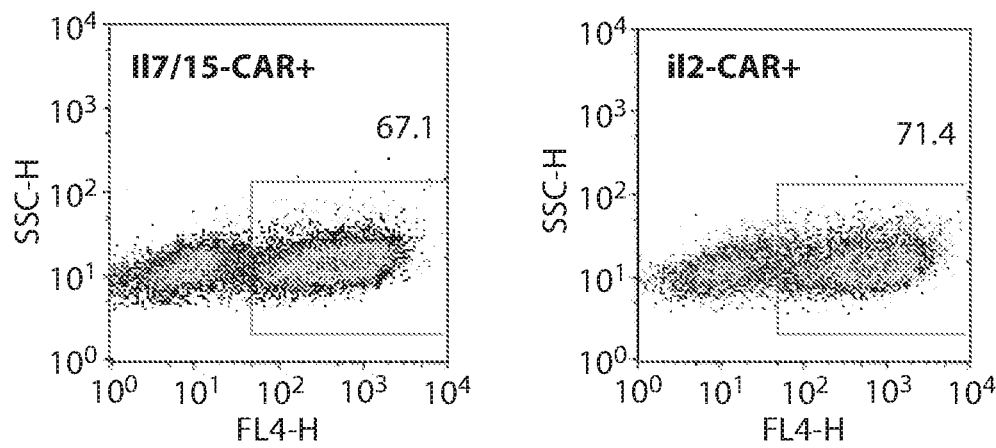


Fig. 31C

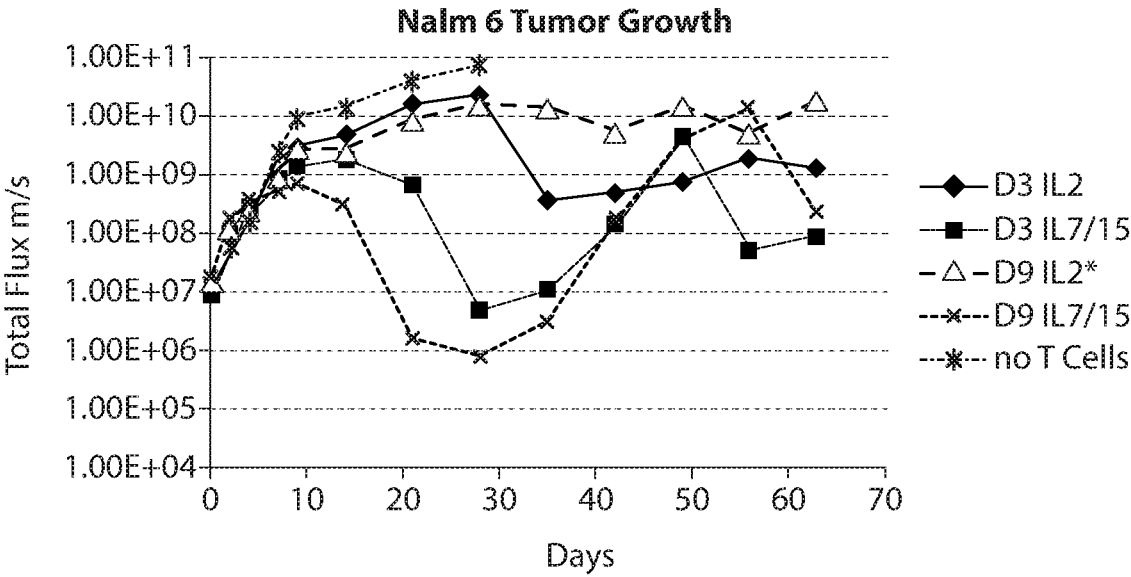


Fig. 31D

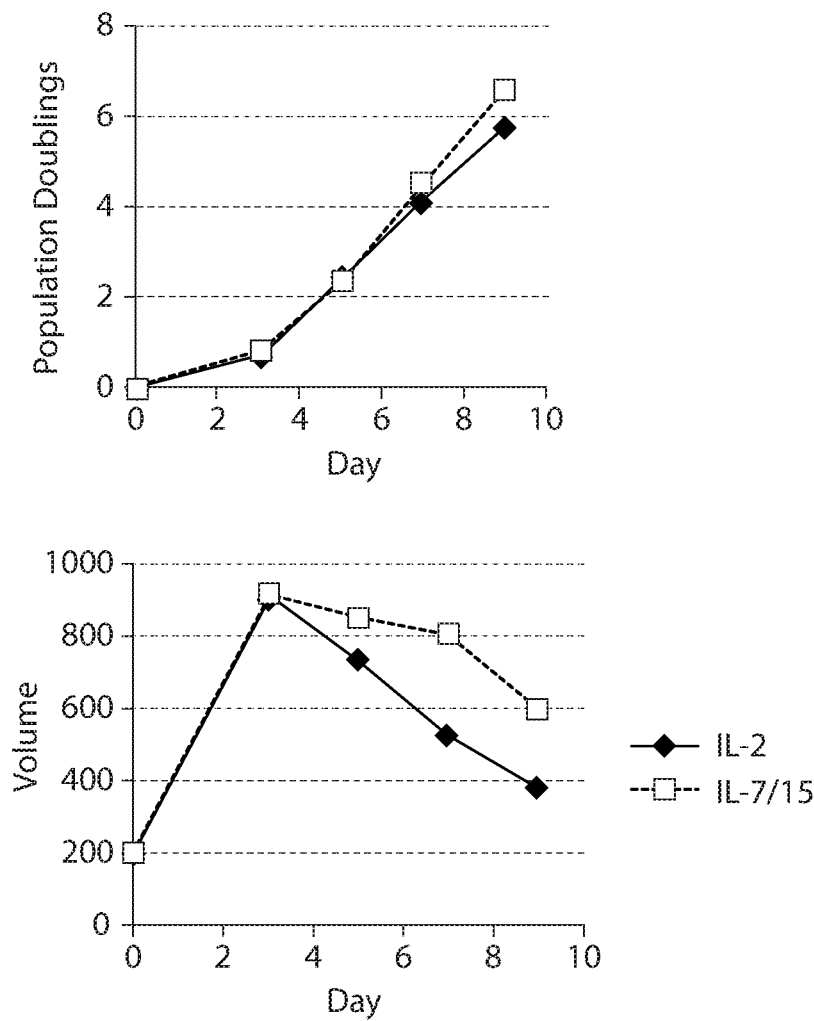


Fig. 32

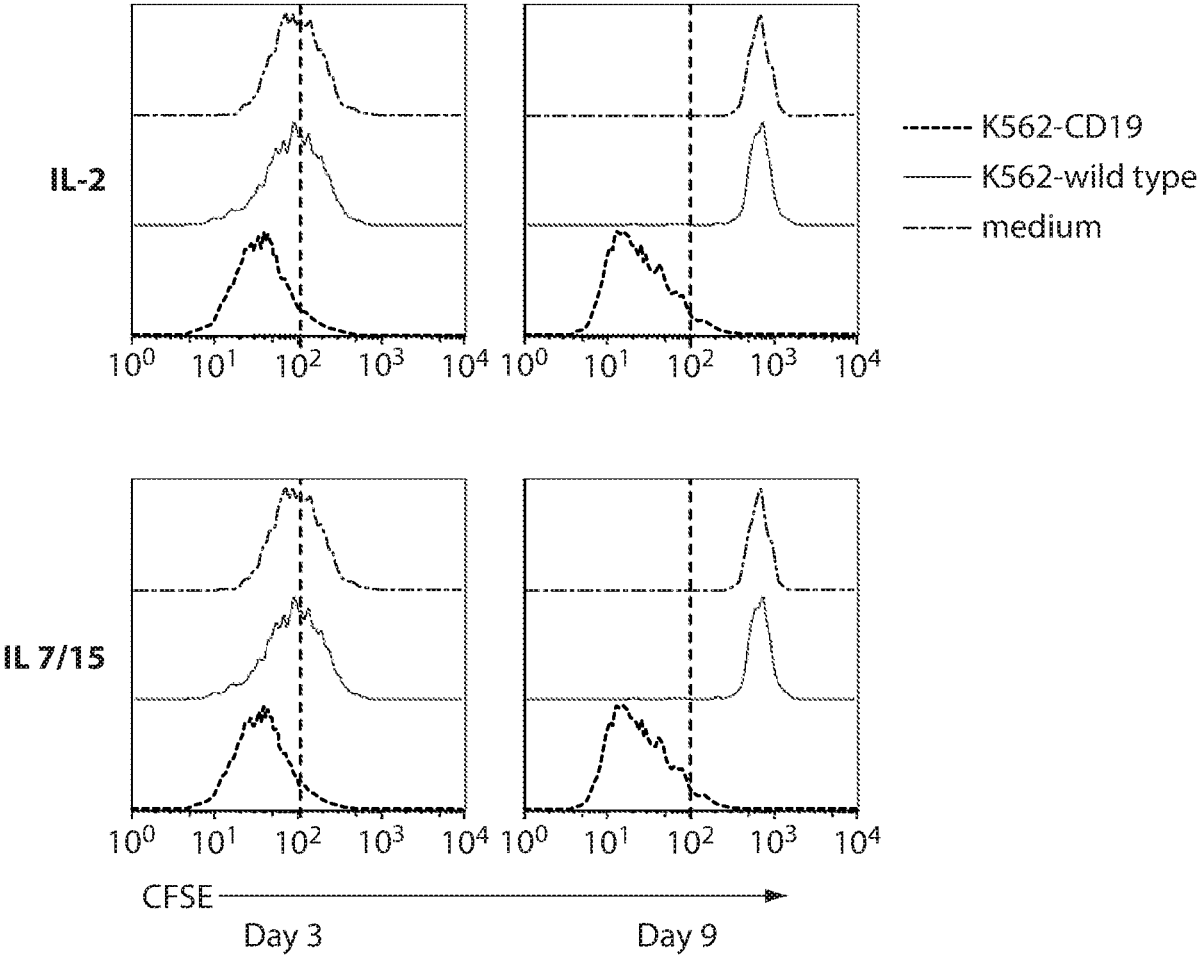


Fig. 33