

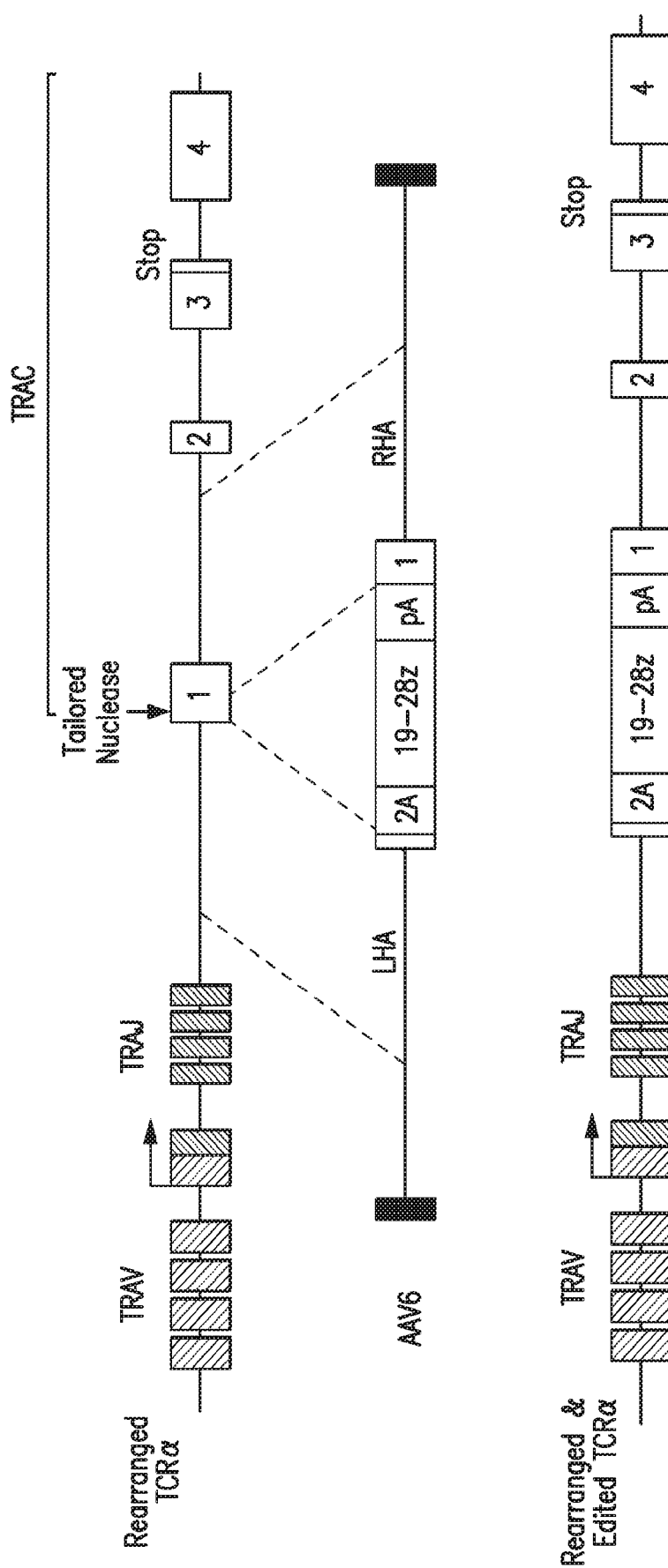


FIG. 1A

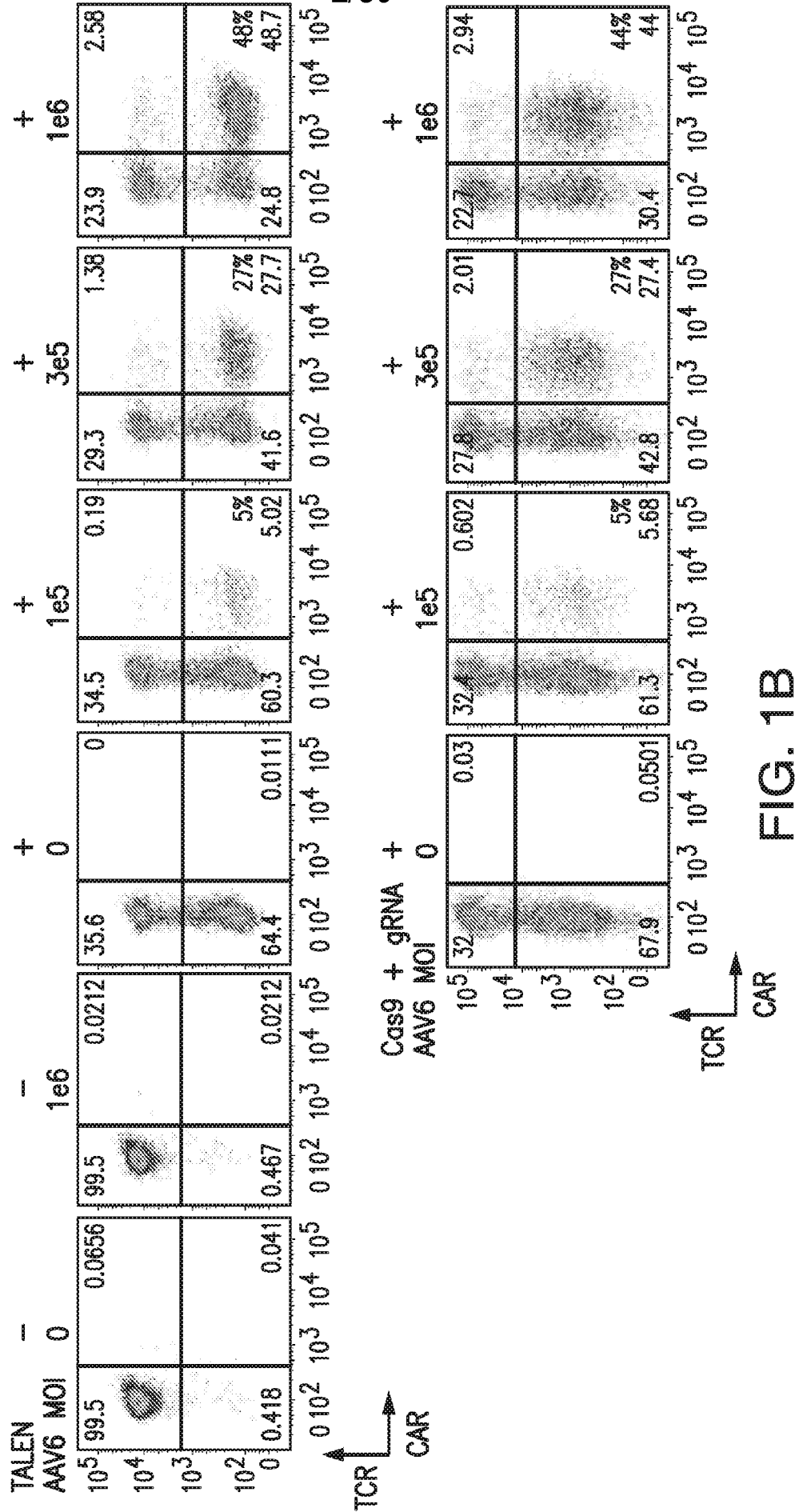


FIG. 1B

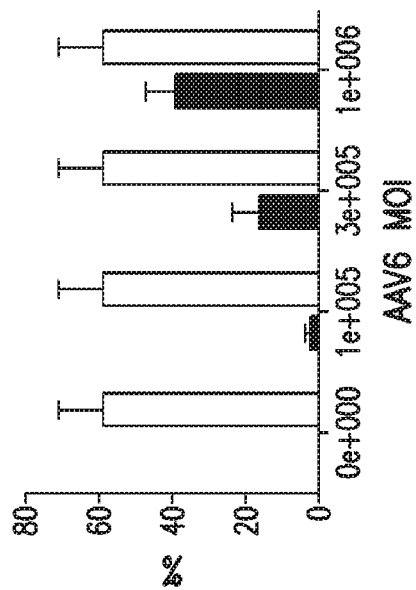


FIG. 1C

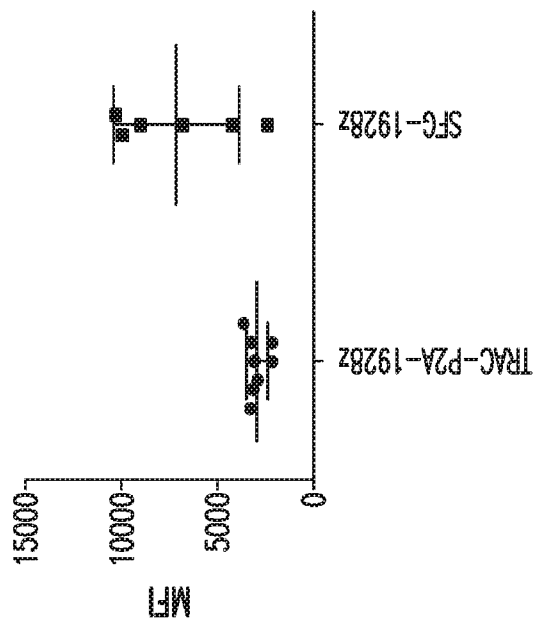


FIG. 1D

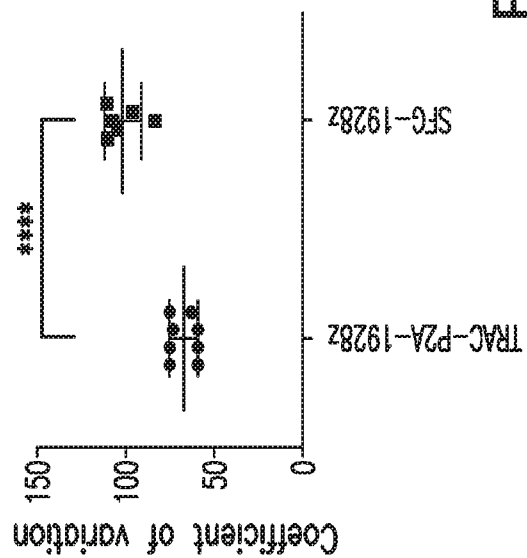


FIG. 1E

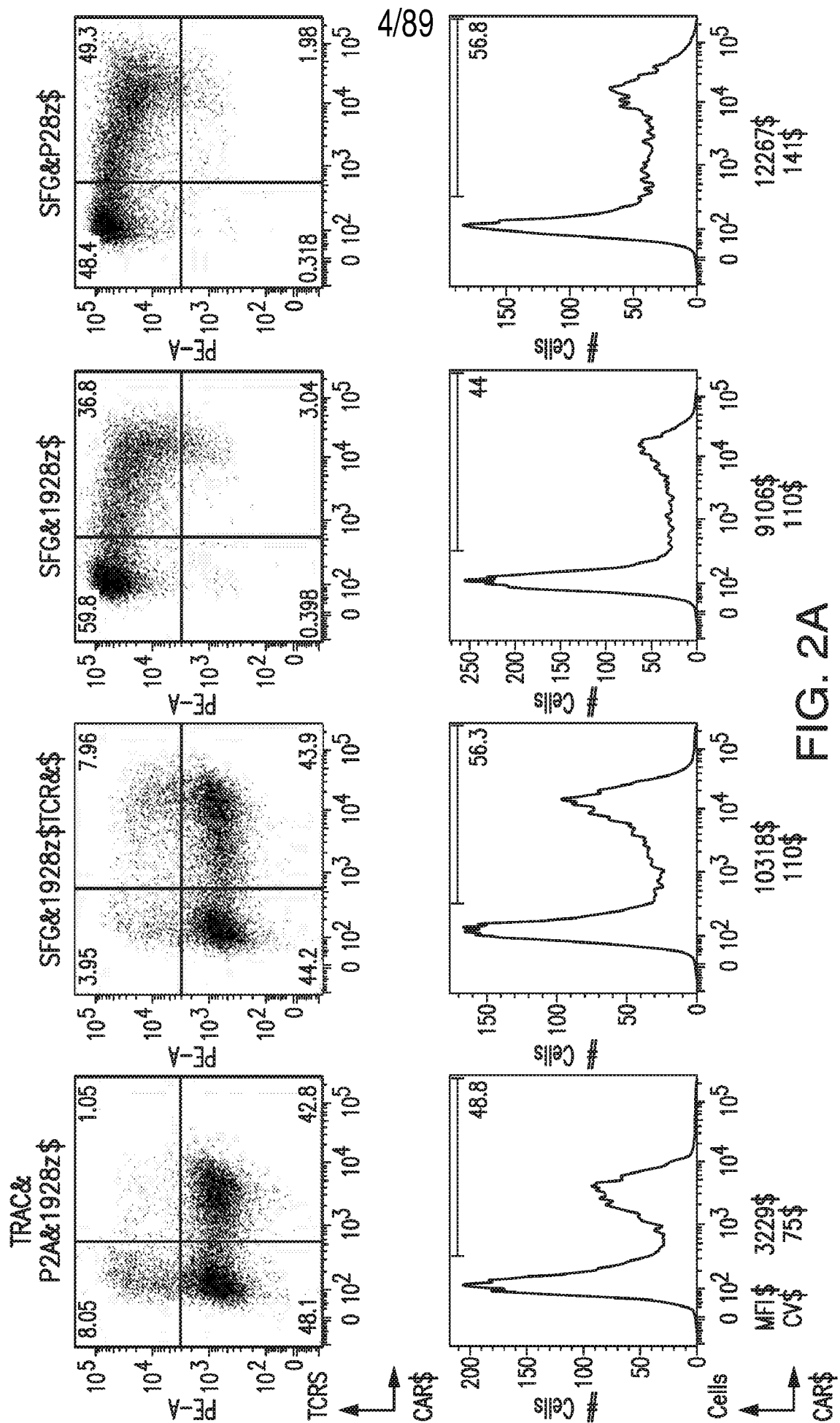


FIG. 2A

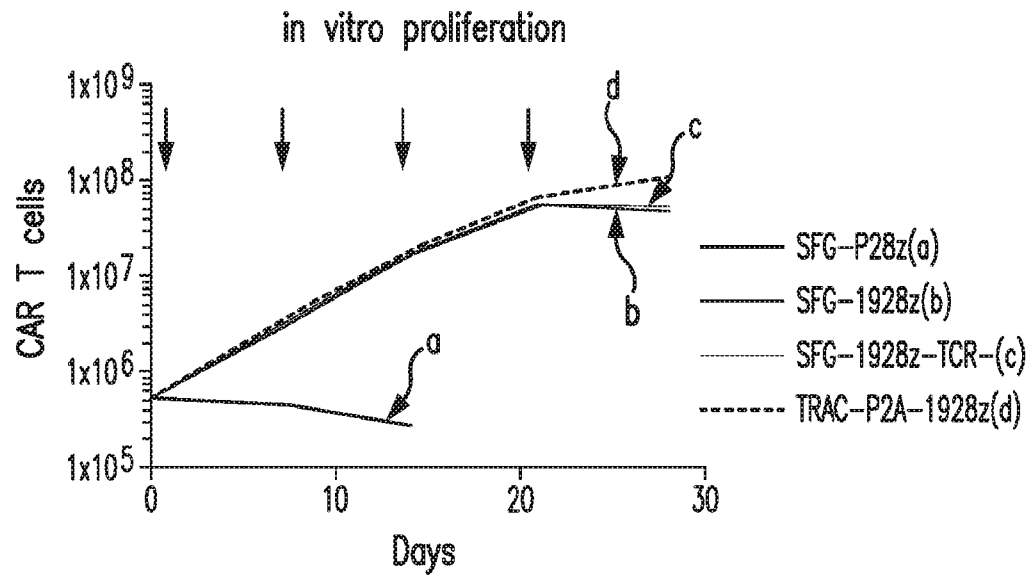


FIG. 2B

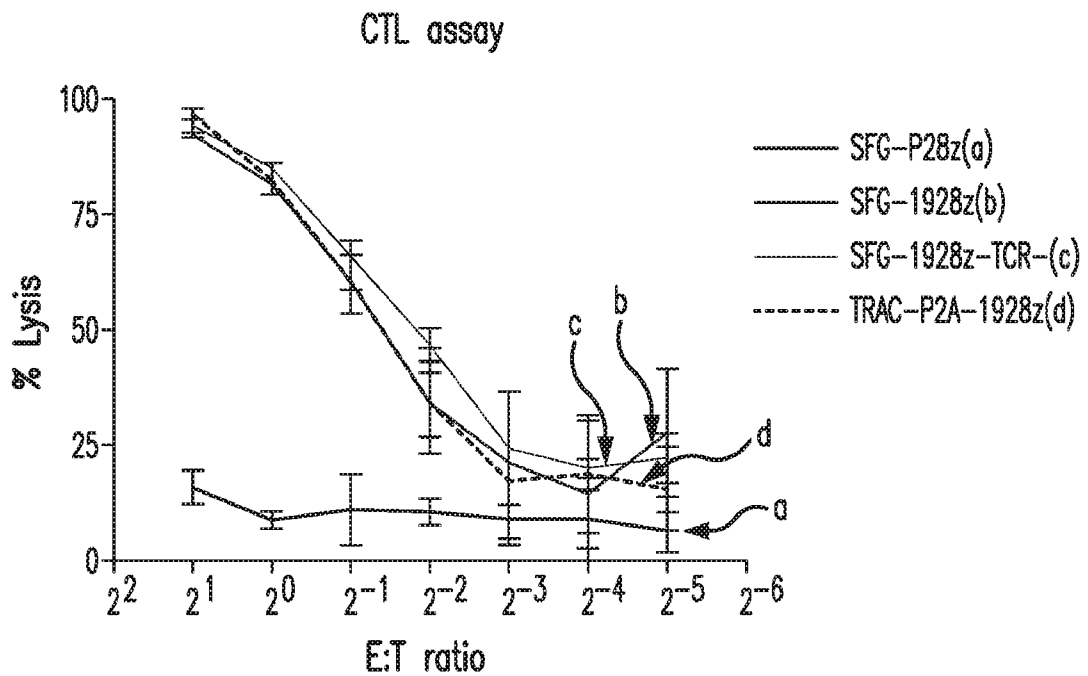


FIG. 2C

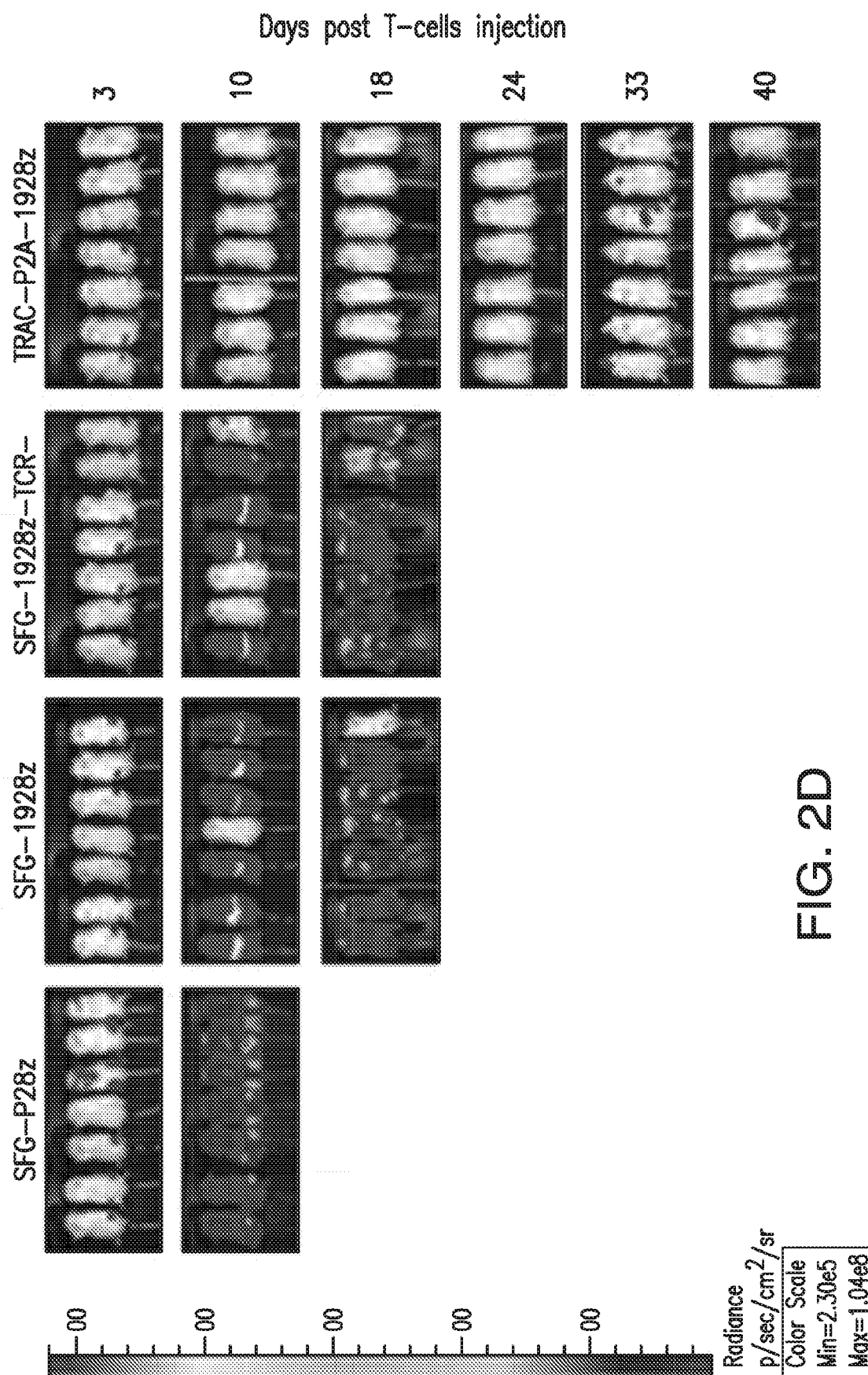


FIG. 2D

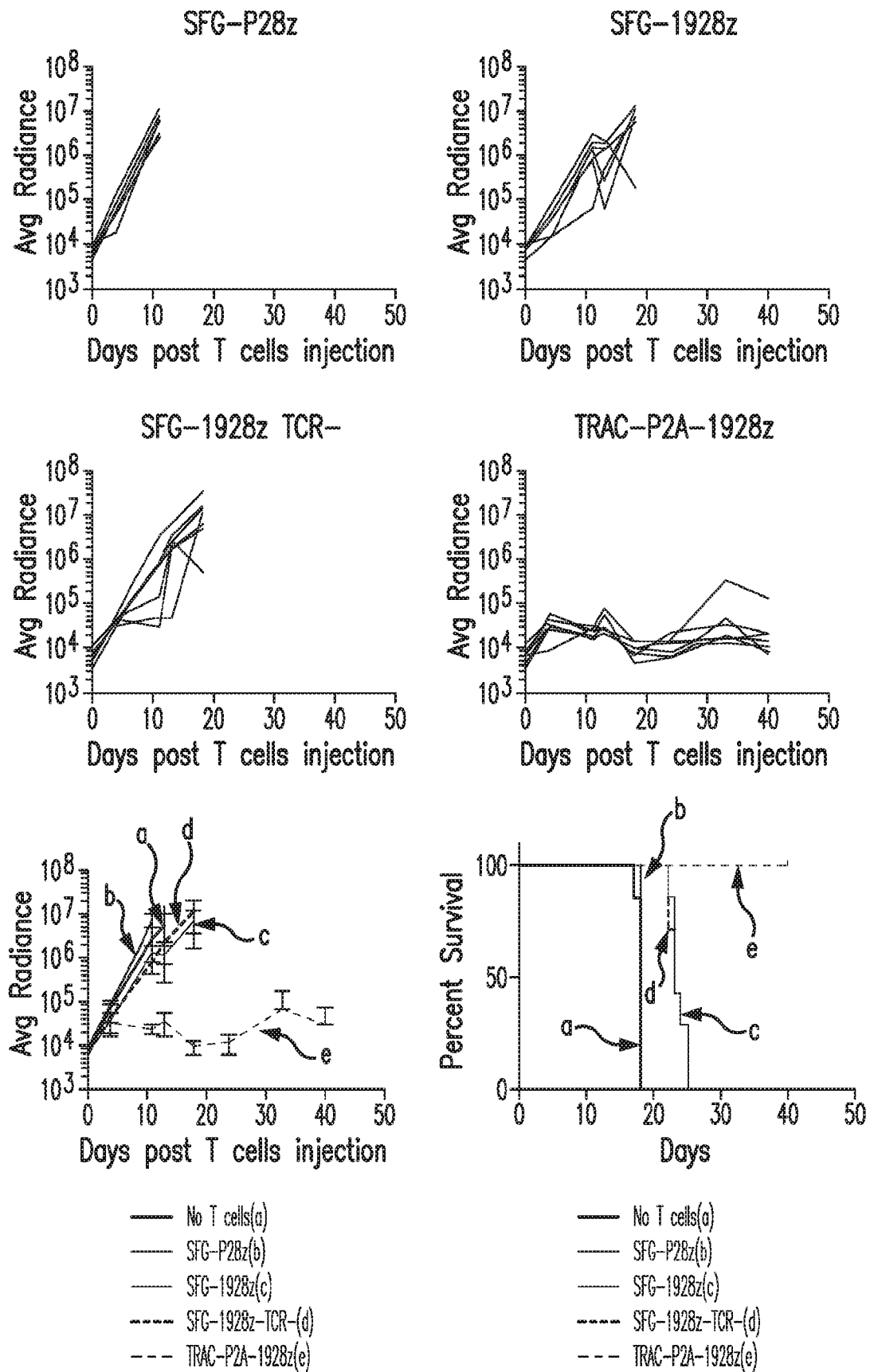


FIG. 2E

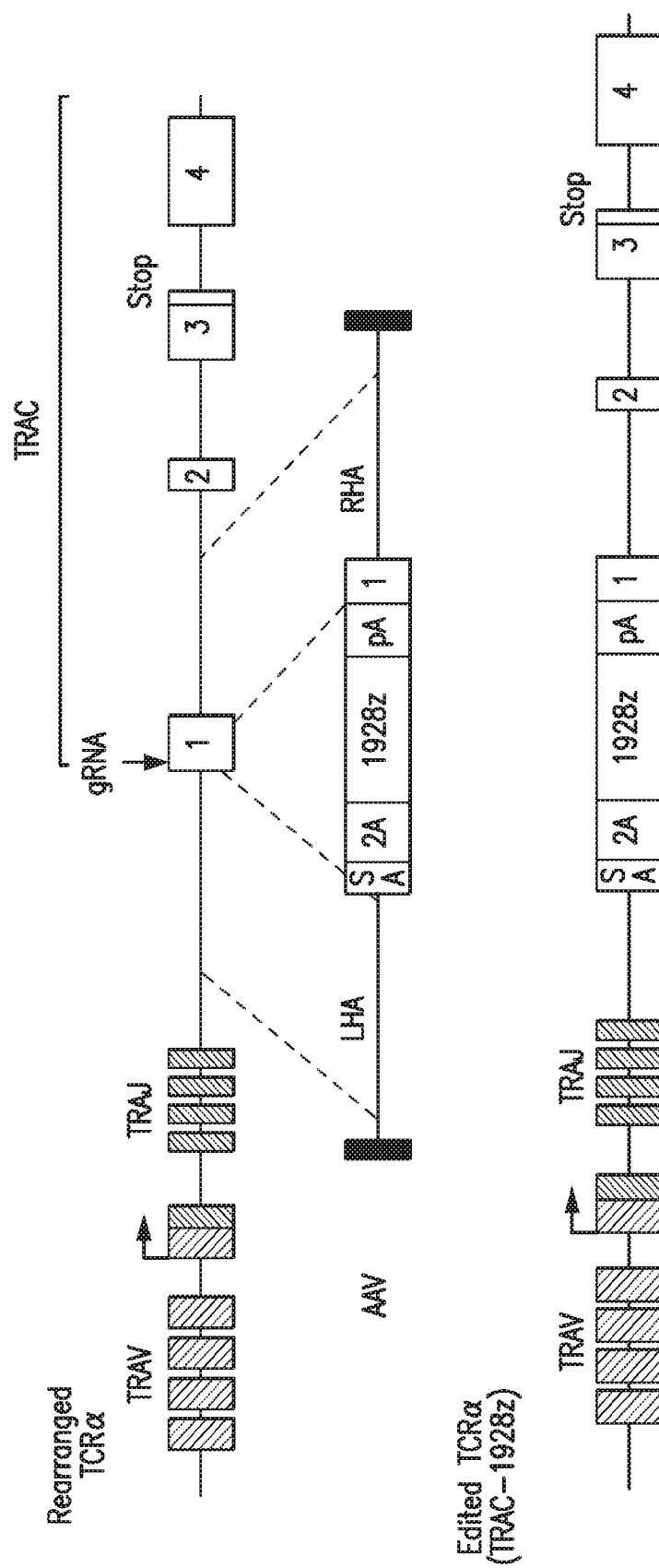


FIG. 3A

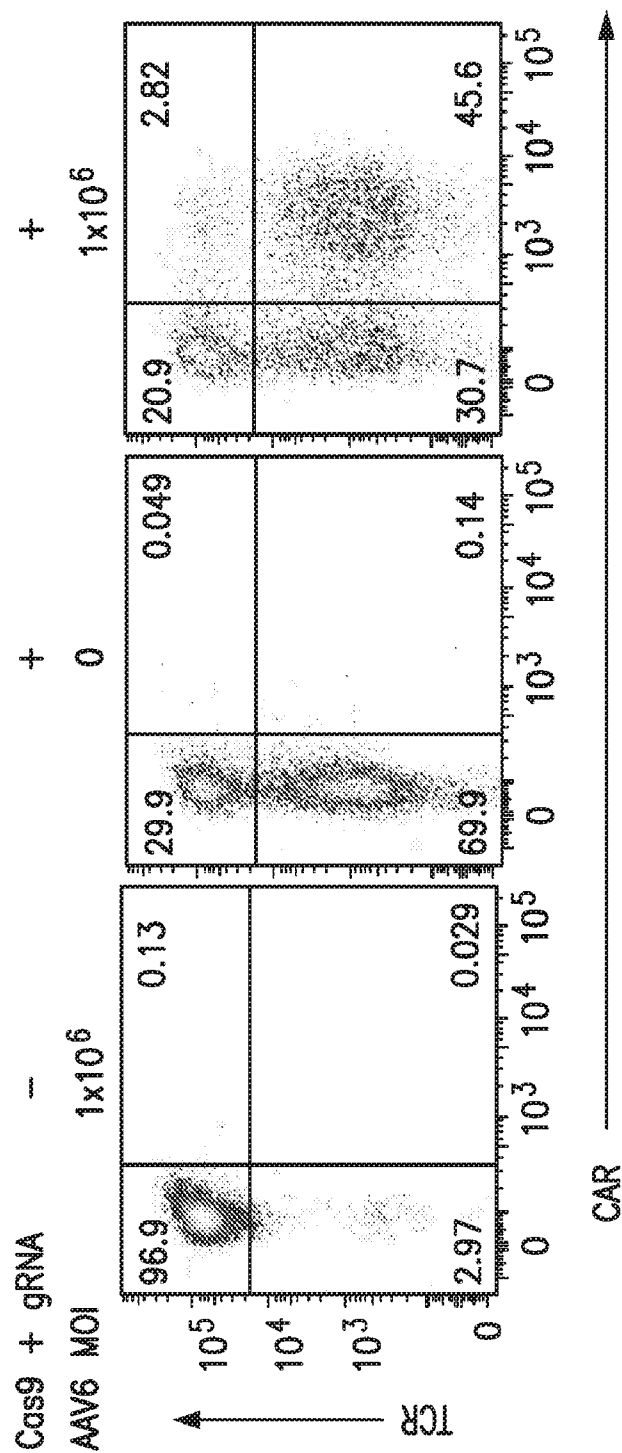


FIG. 3B

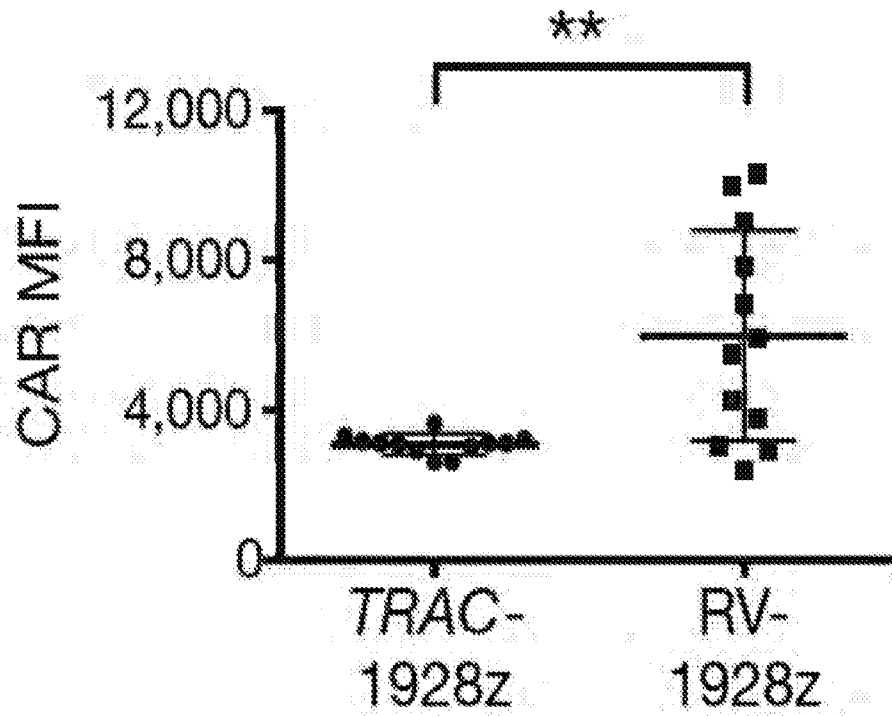


FIG. 3C

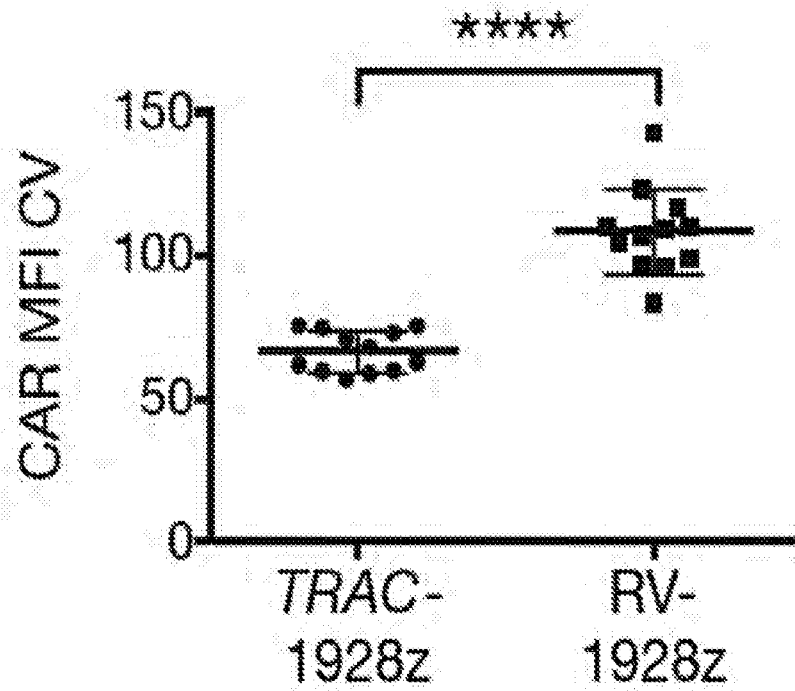


FIG. 3D

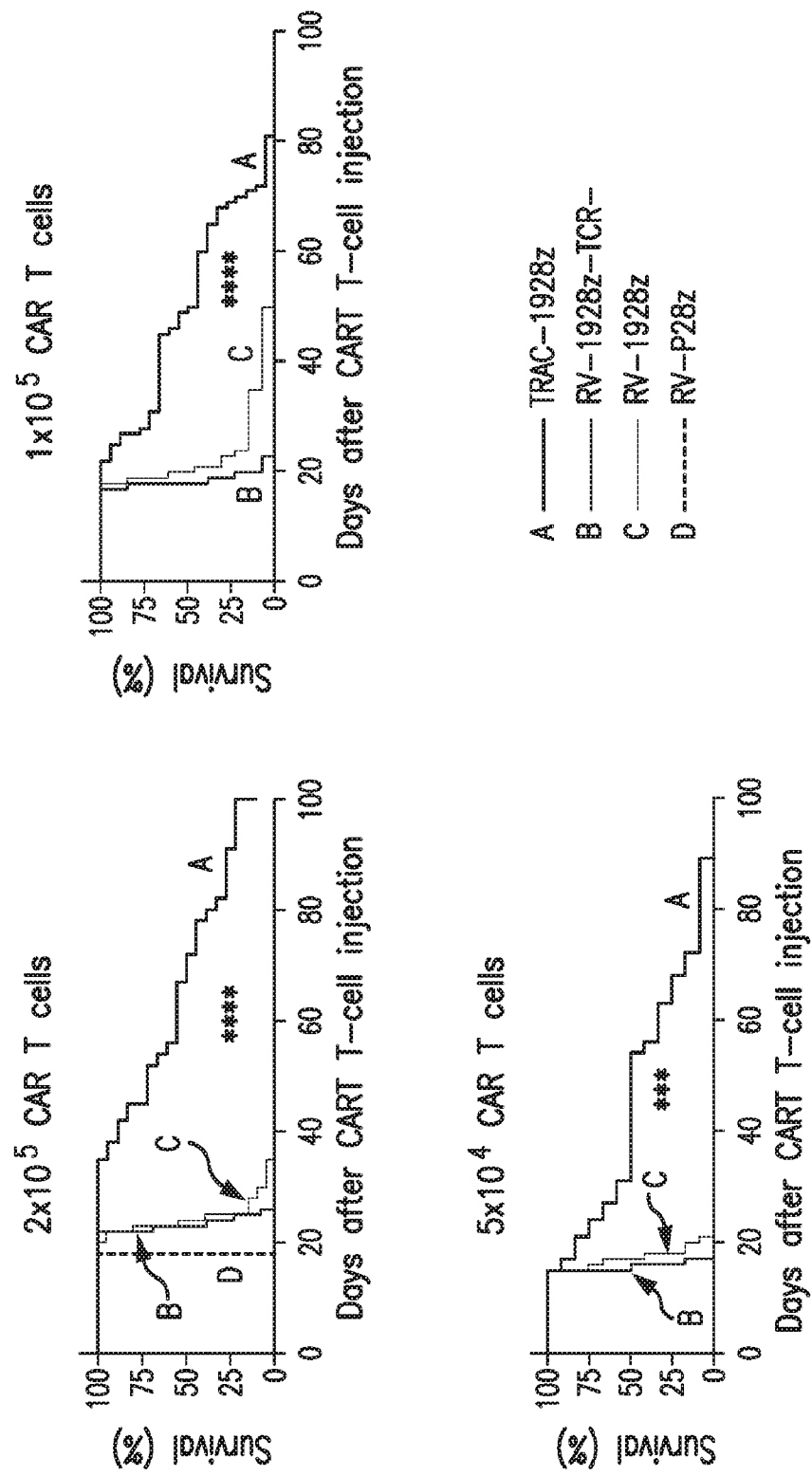


FIG. 3E

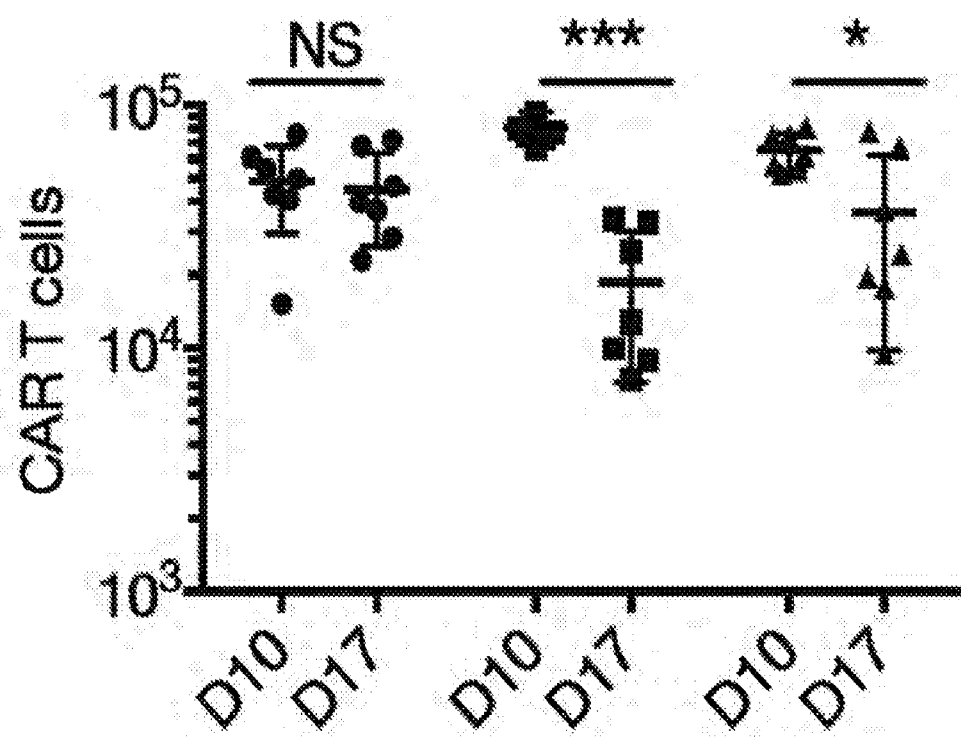


FIG. 3F

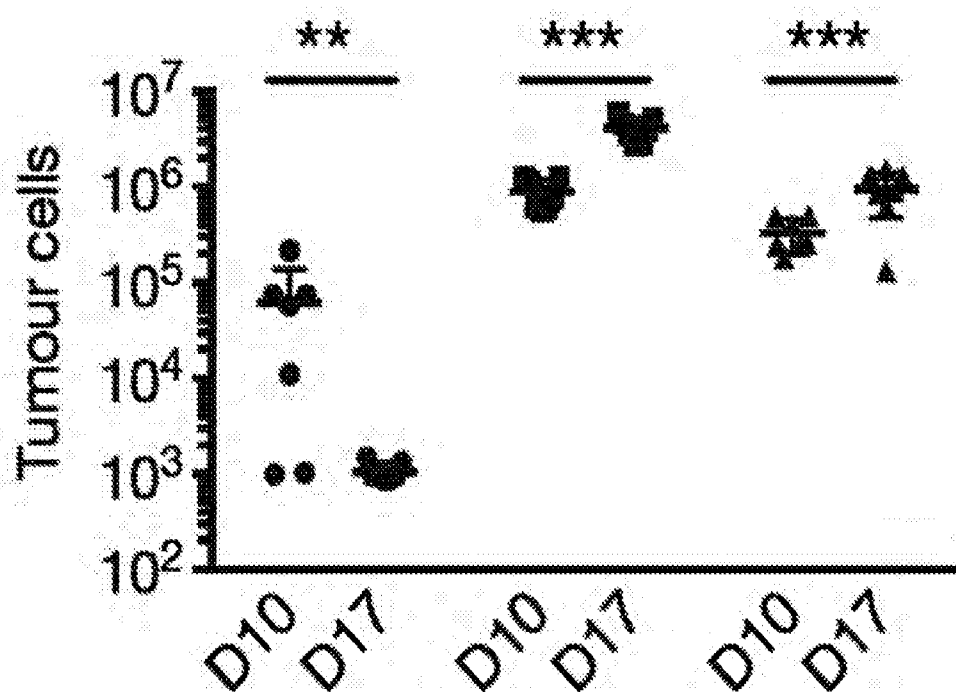


FIG. 3G

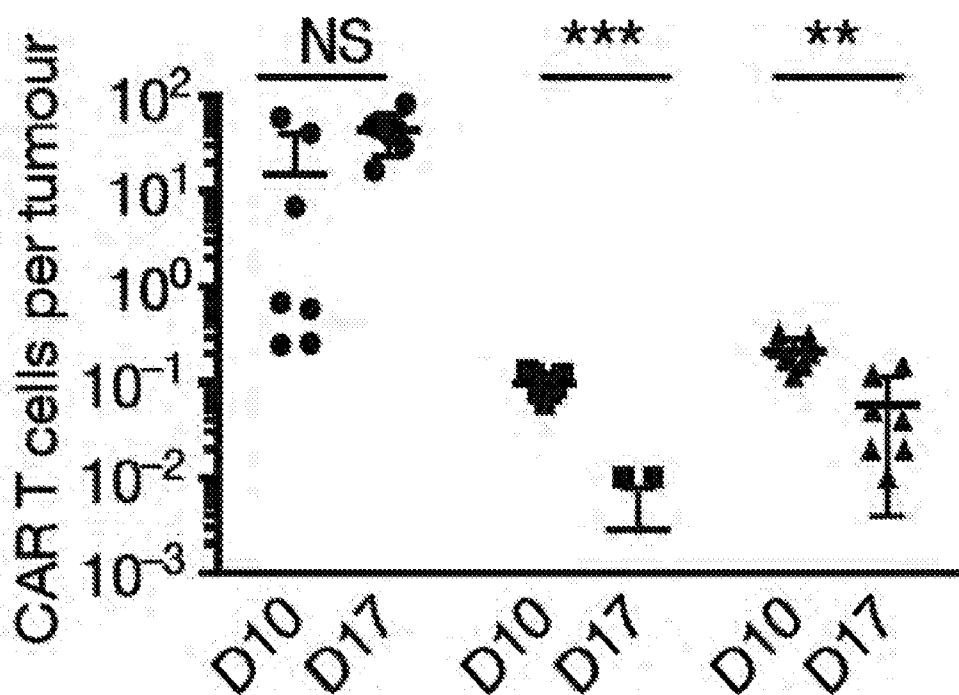


FIG. 3H

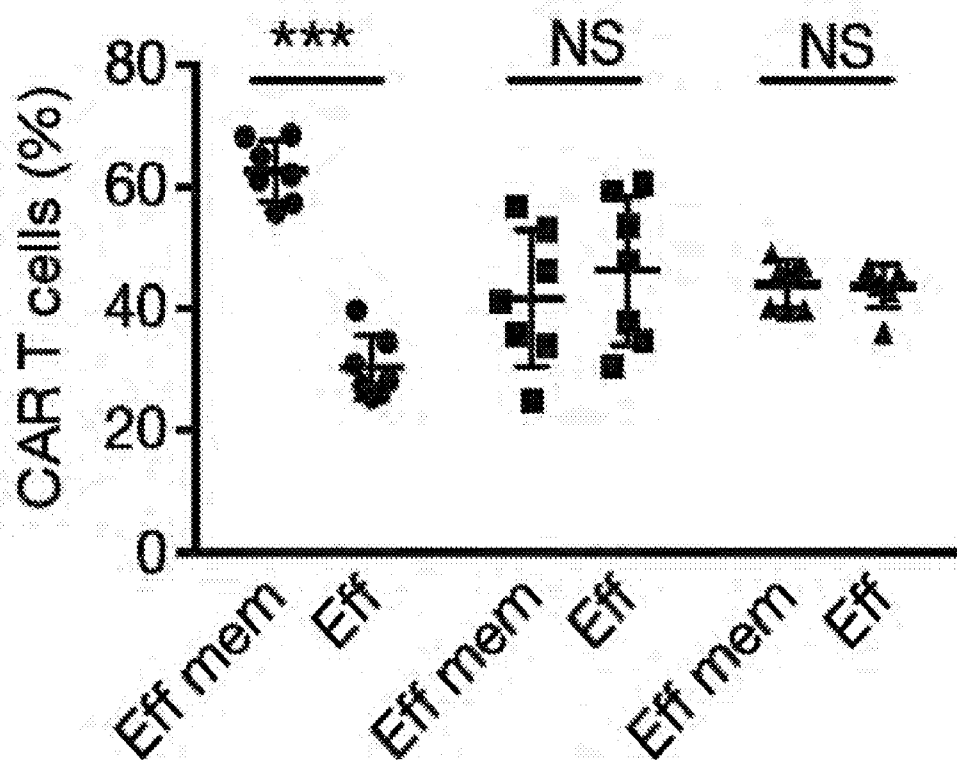
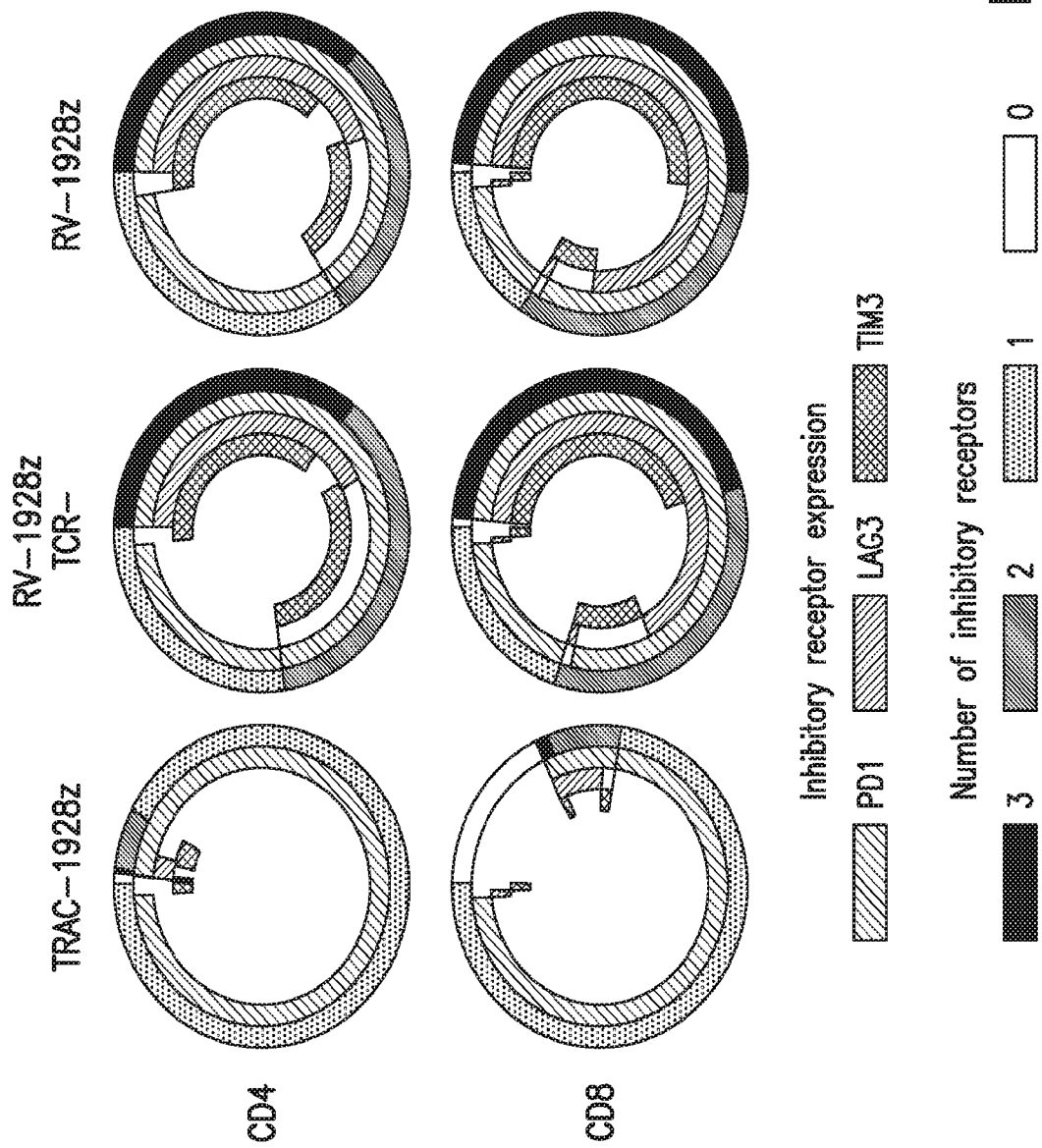


FIG. 3I



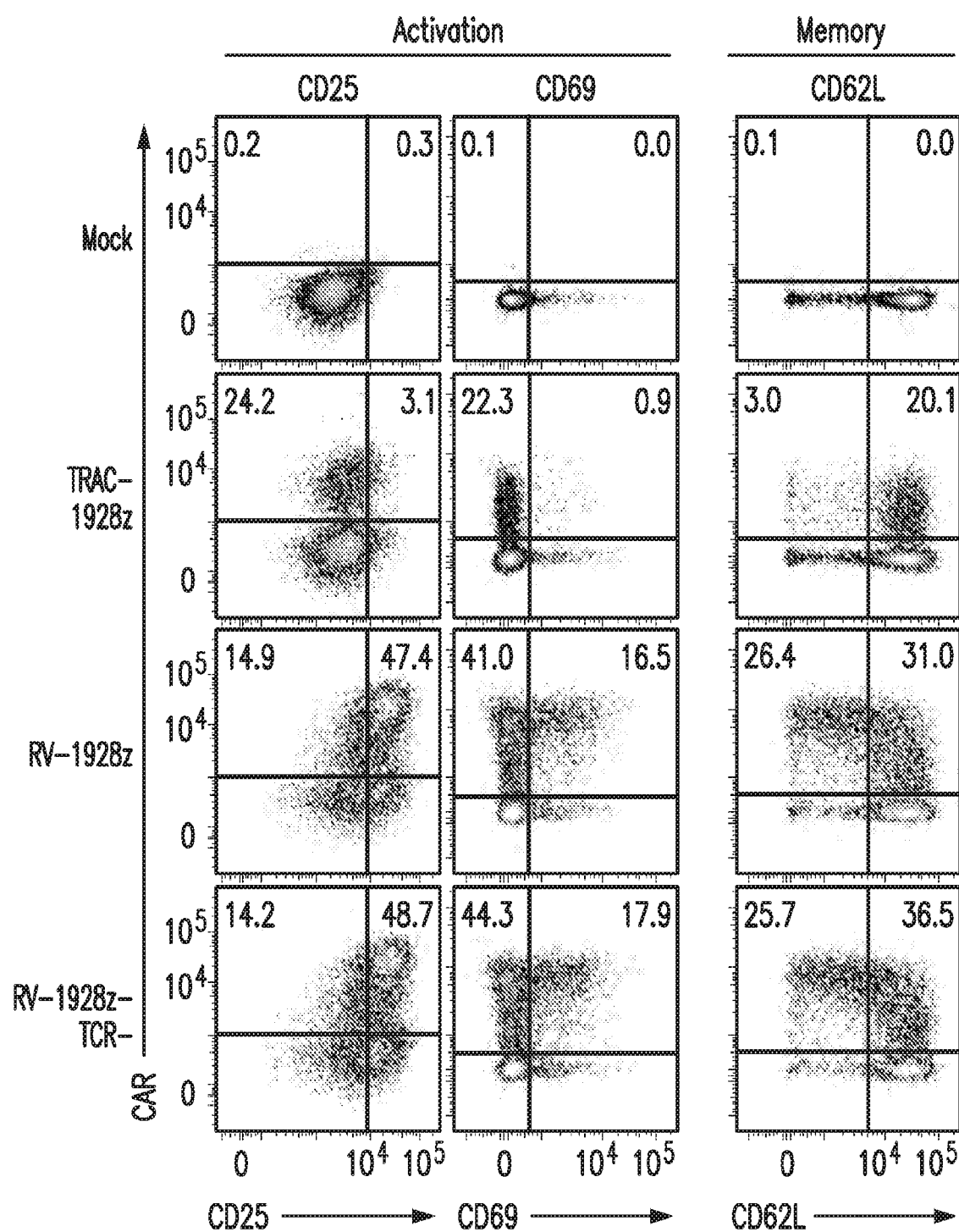


FIG. 4A

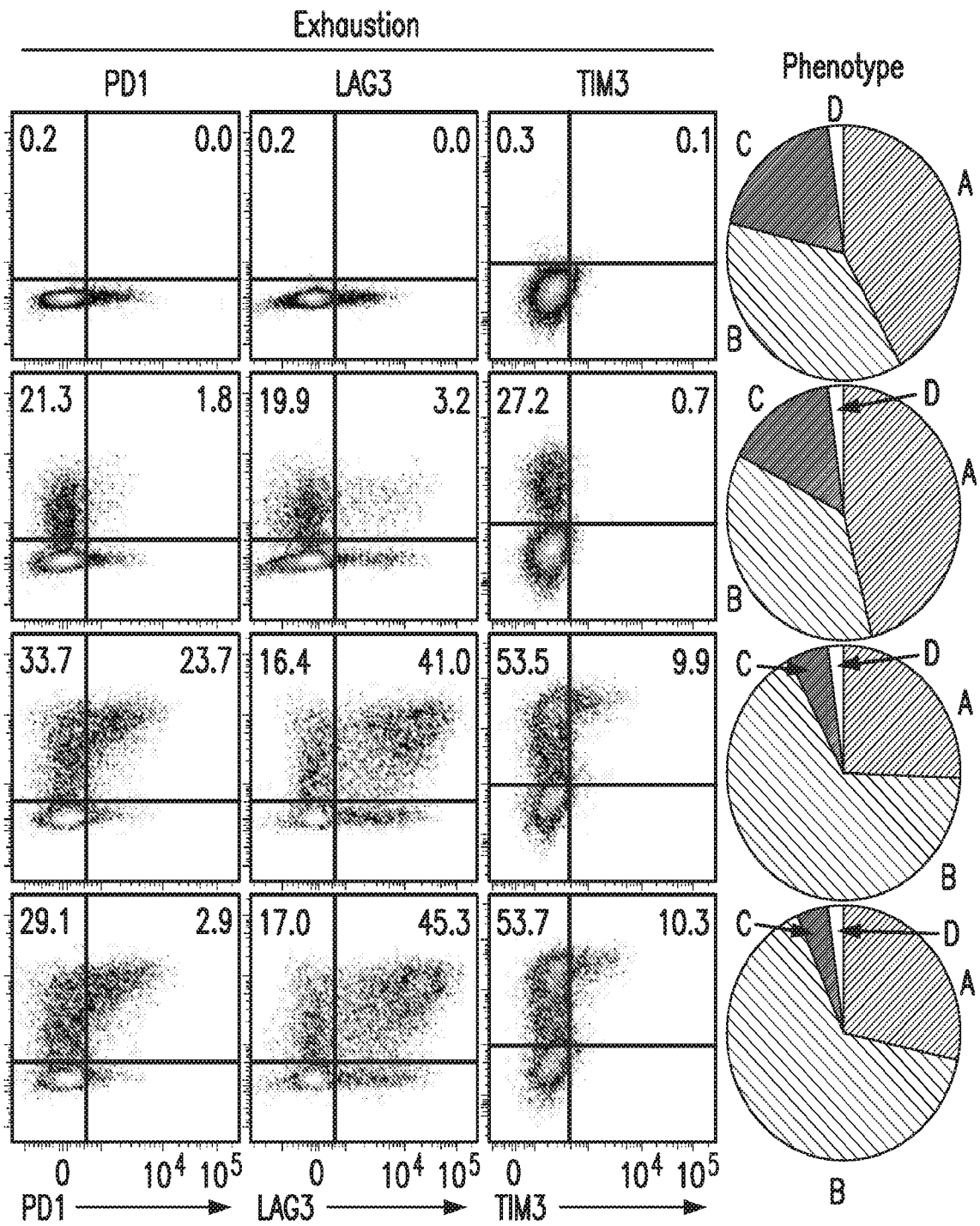


FIG. 4A Continued

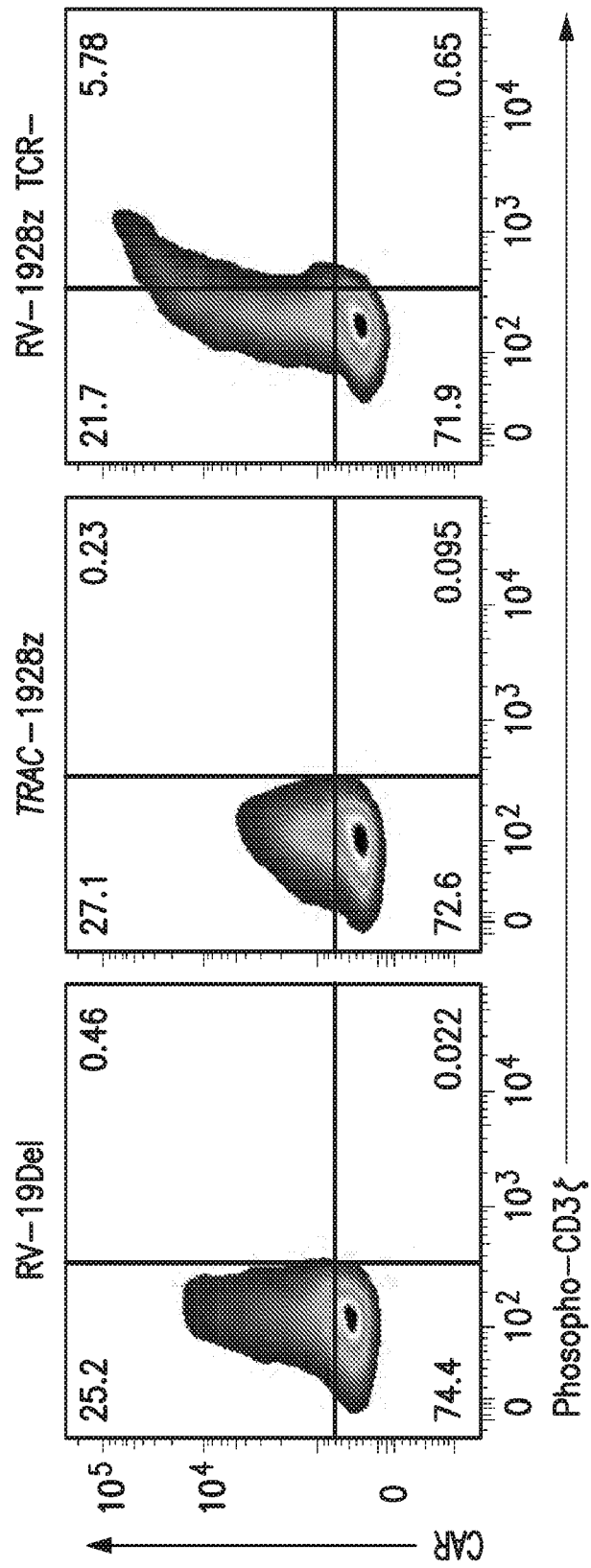


FIG. 4B

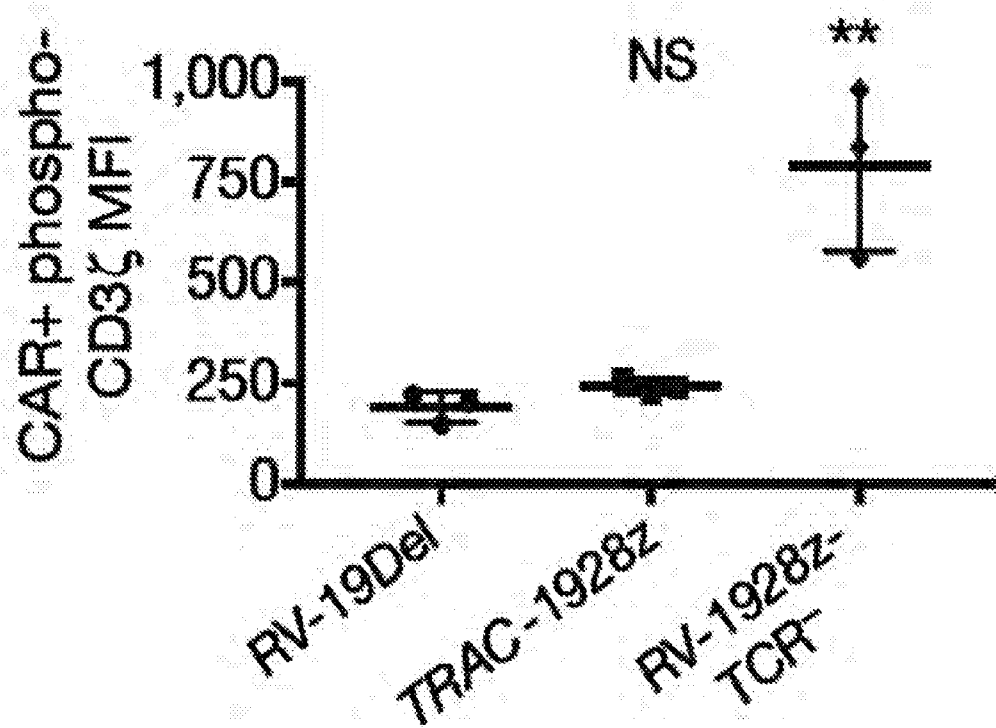
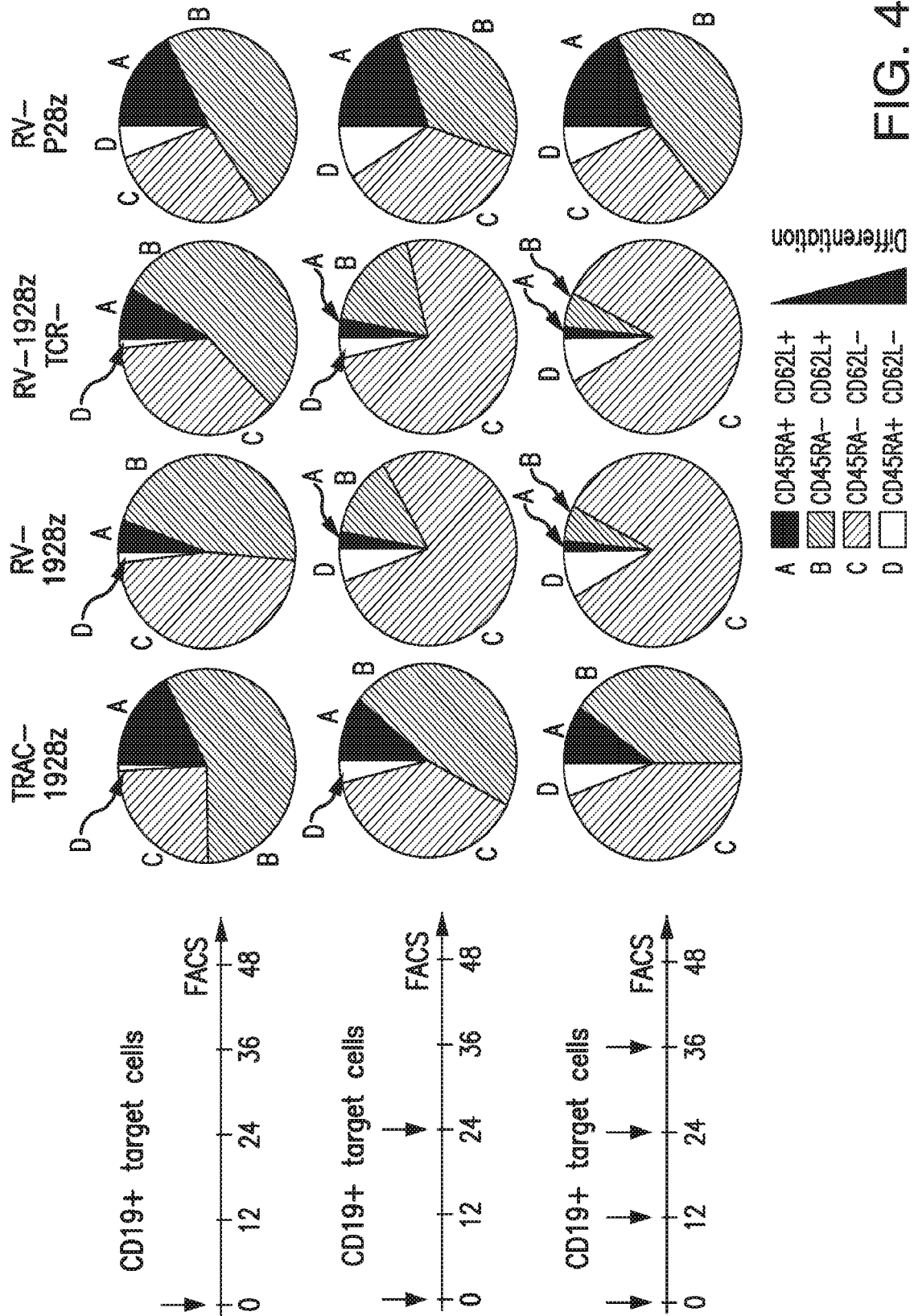


FIG. 4C



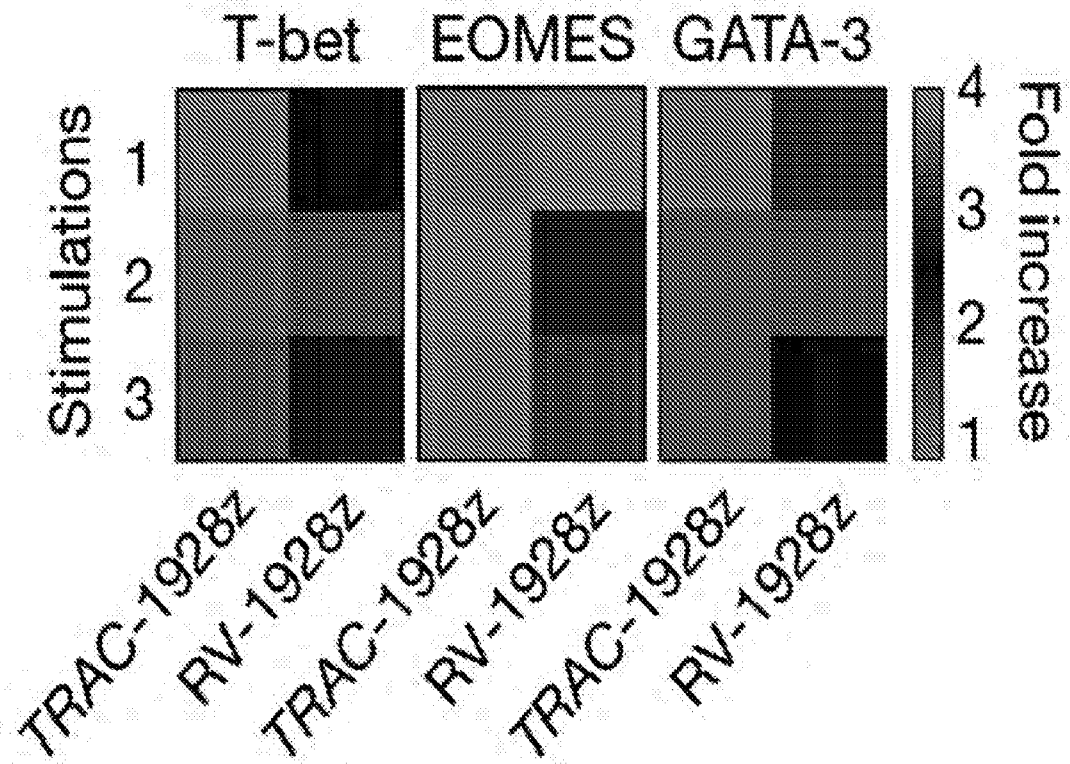


FIG. 4E

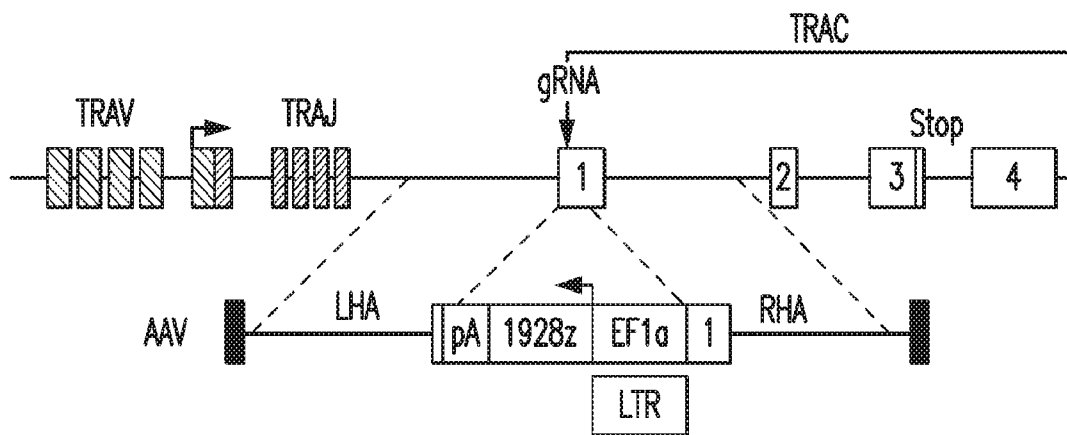


FIG. 5A

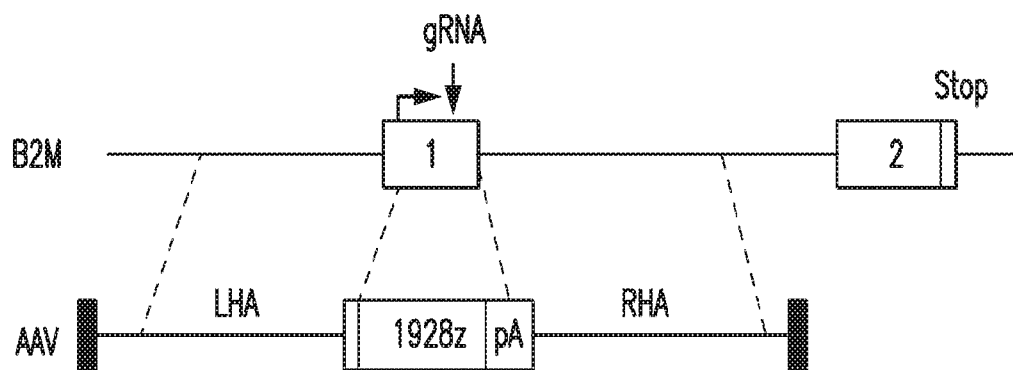


FIG. 5B

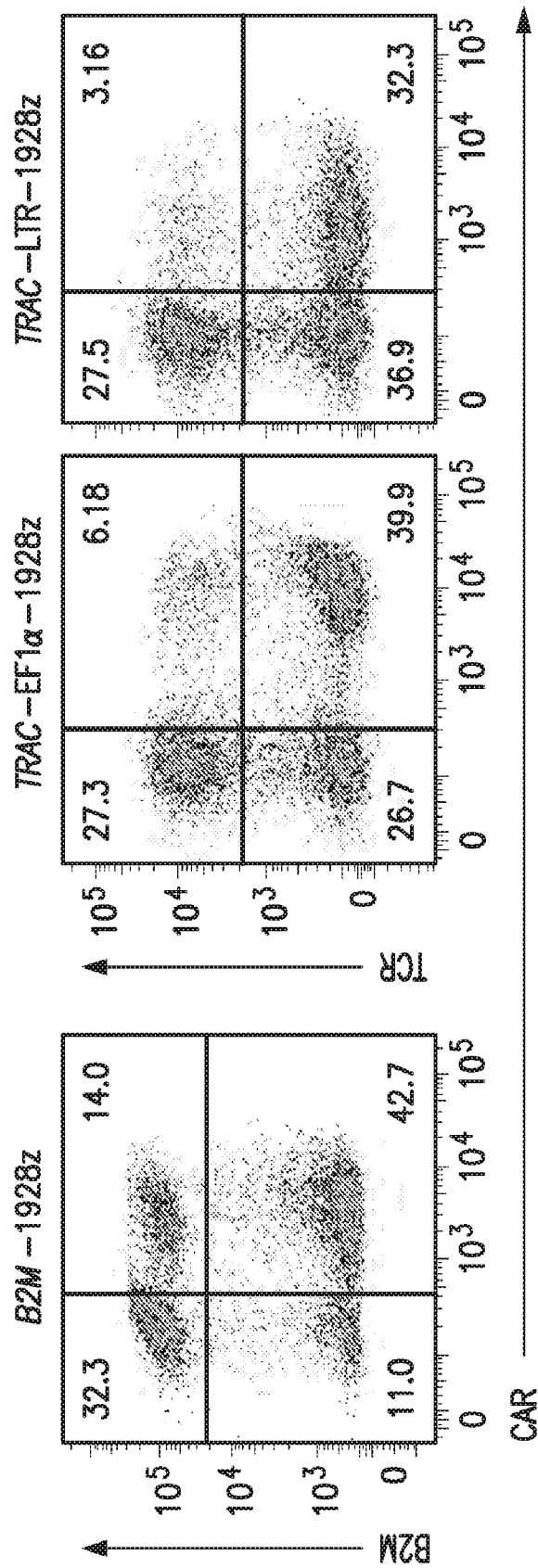


FIG. 5C

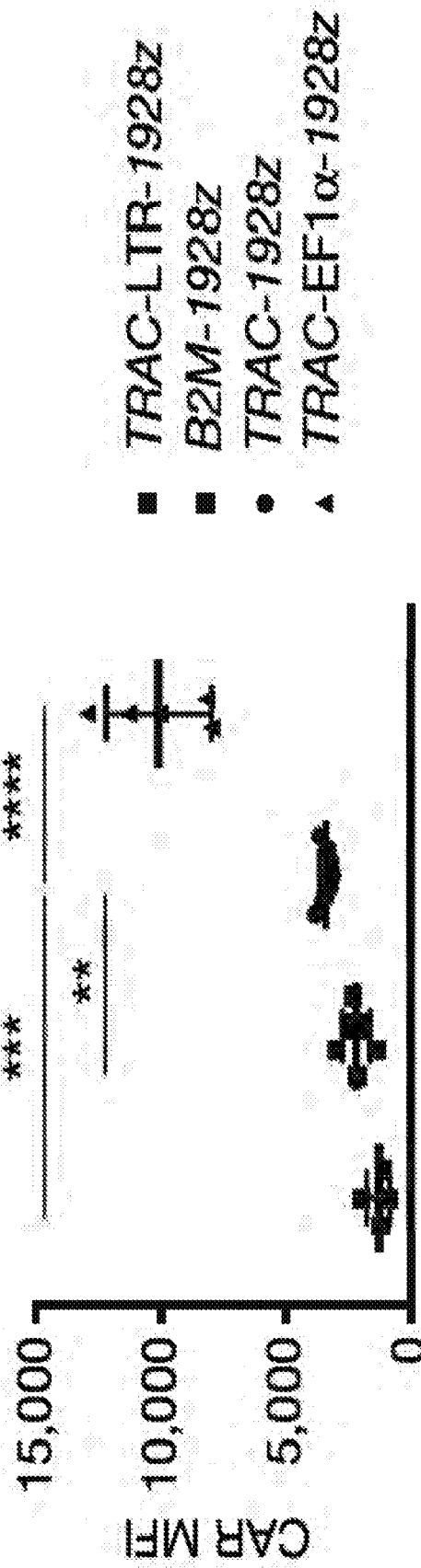


FIG. 5D

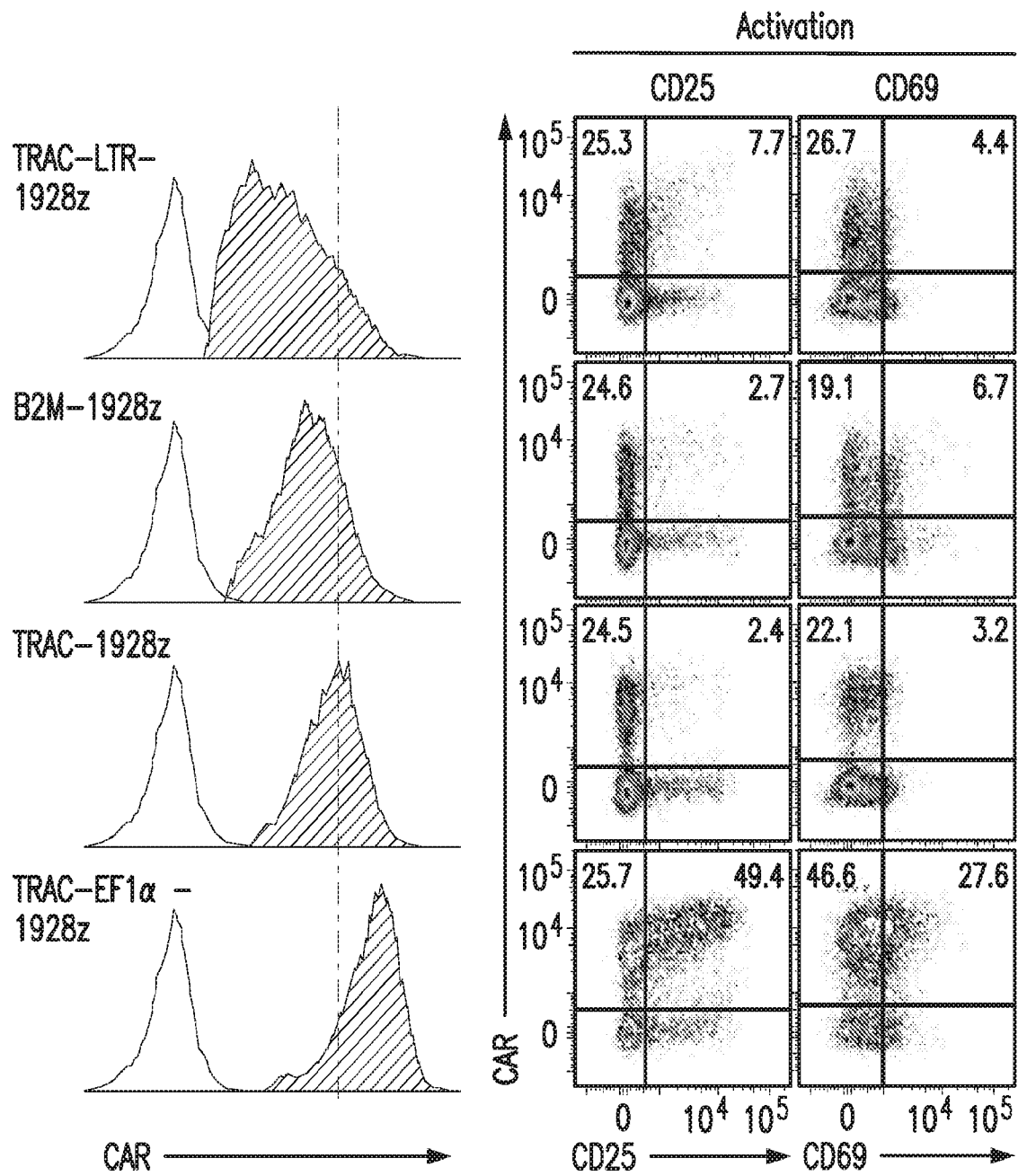


FIG. 5E

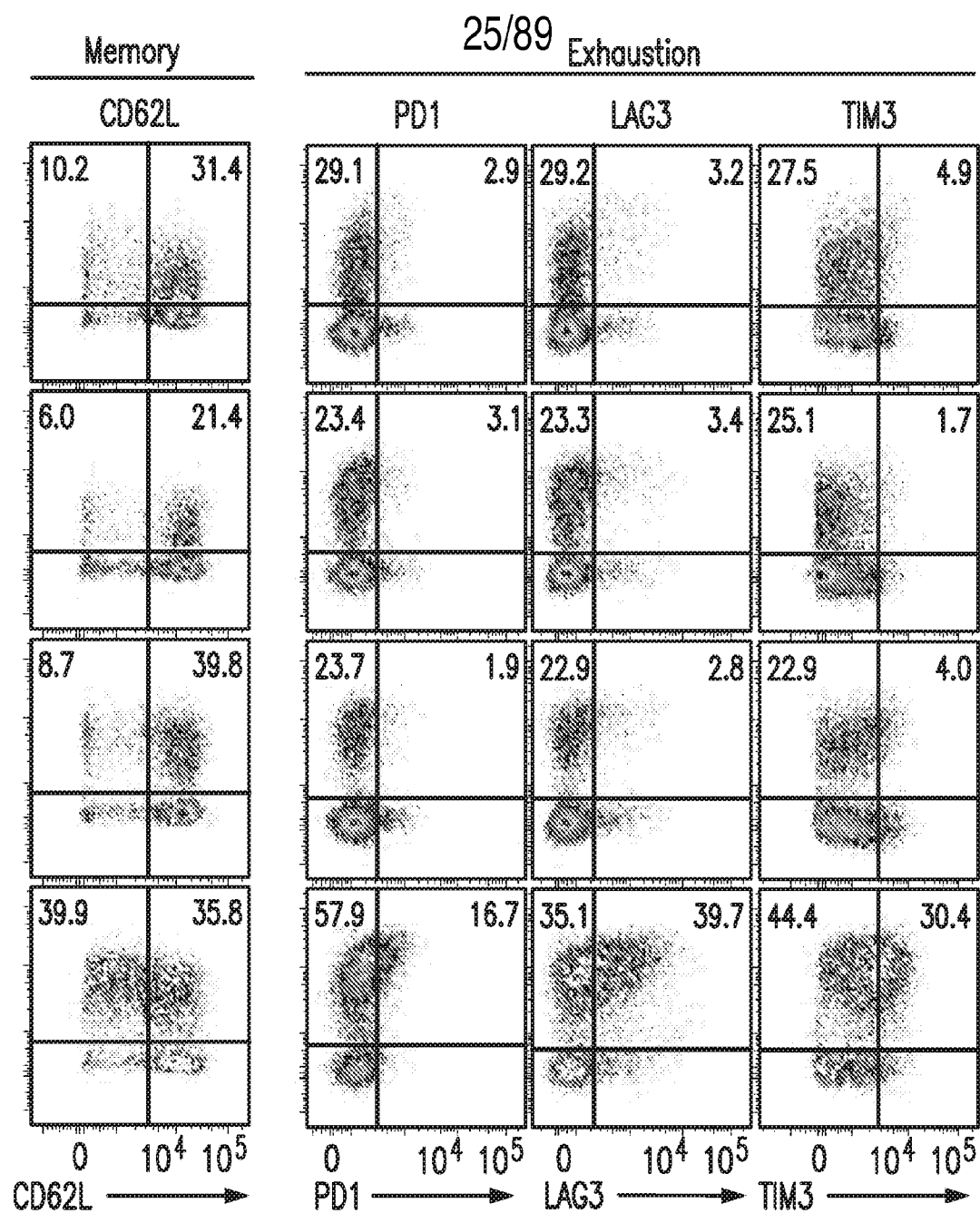


FIG. 5E Continued

Stimulations

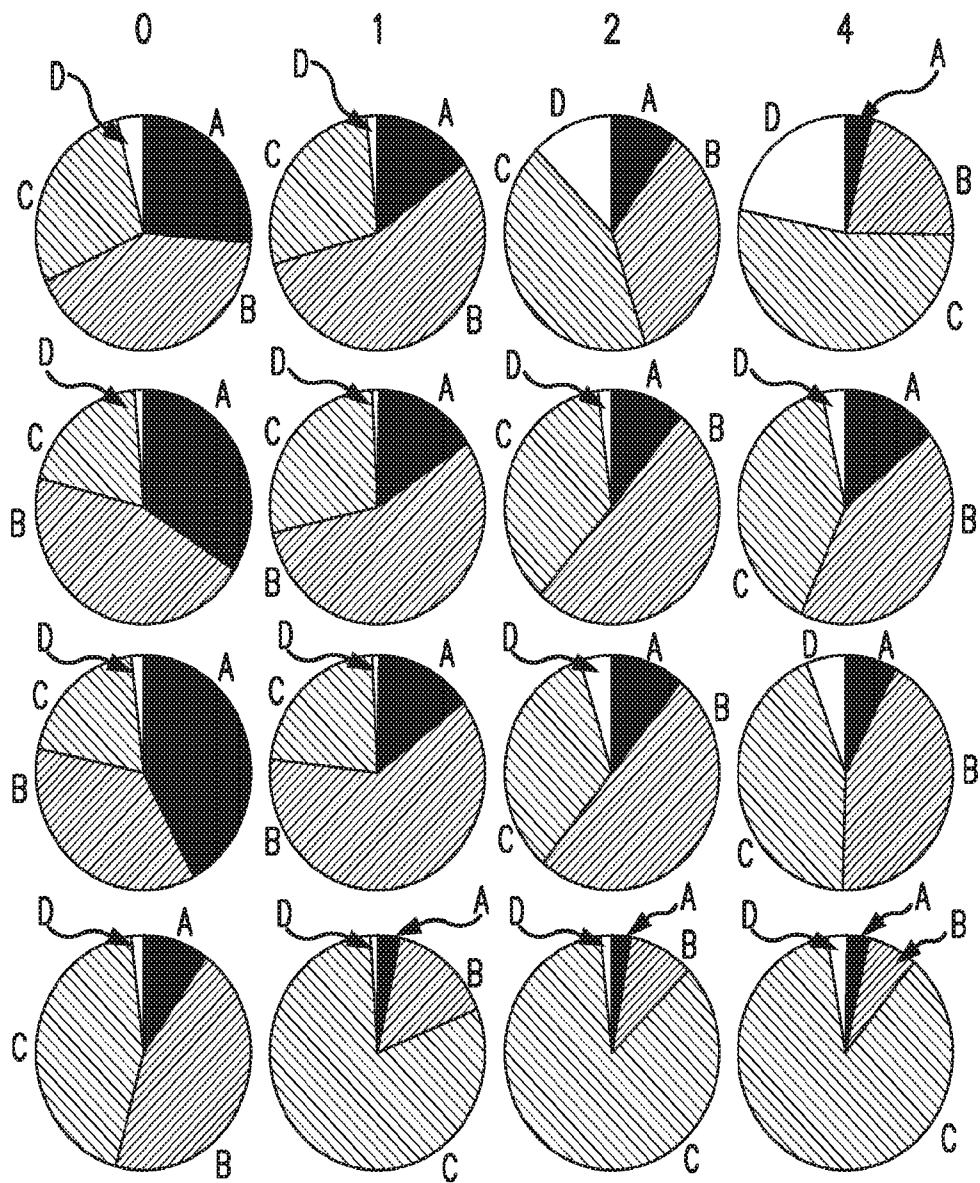


FIG. 5F

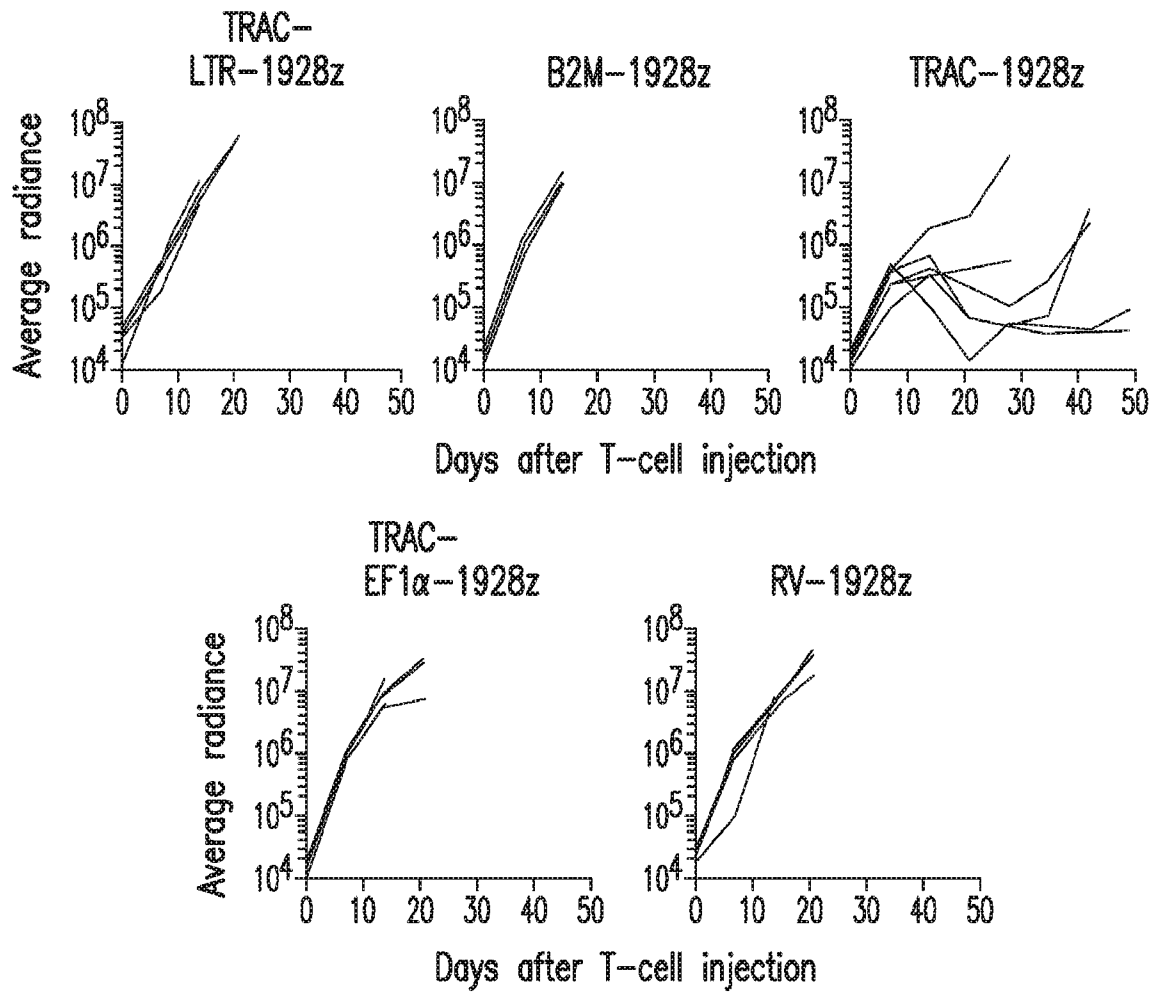


FIG. 5G

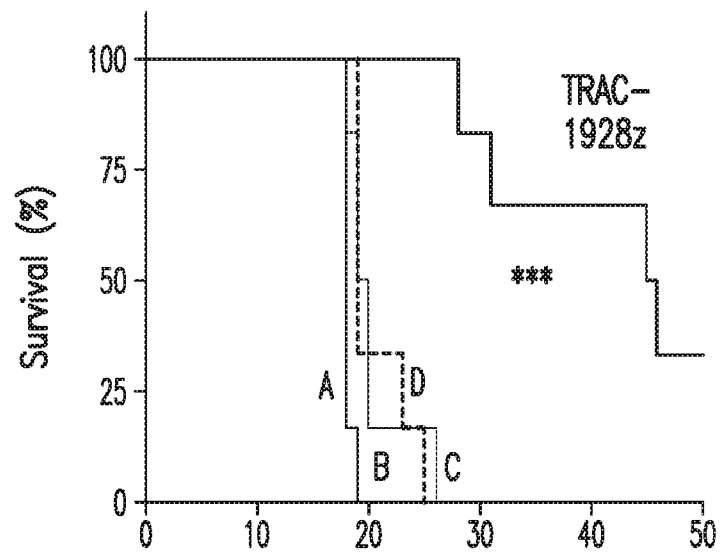


FIG. 5H

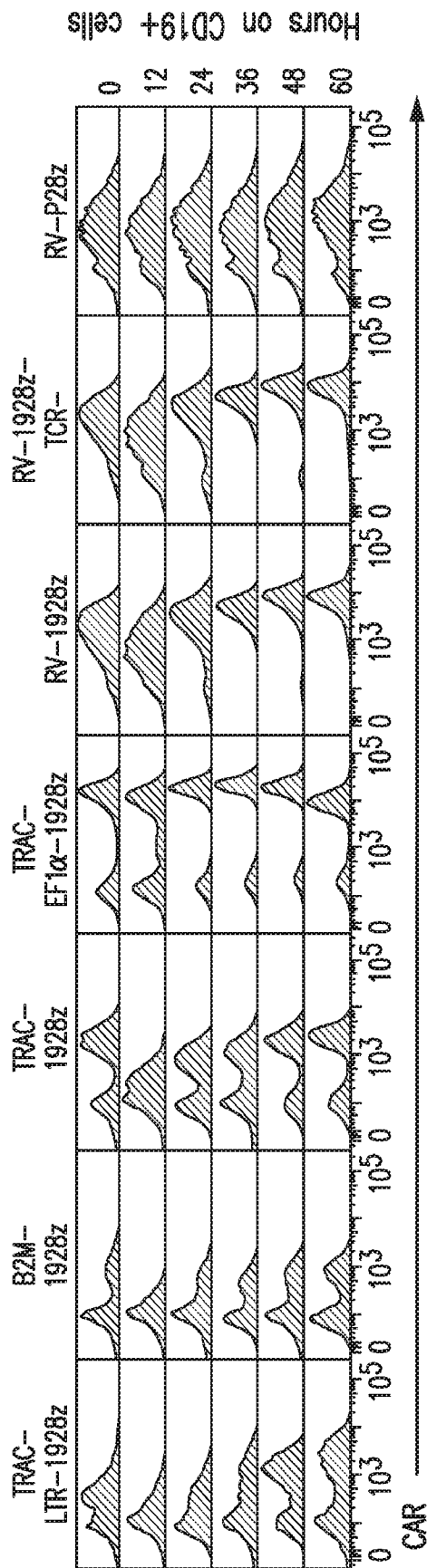


FIG. 6A

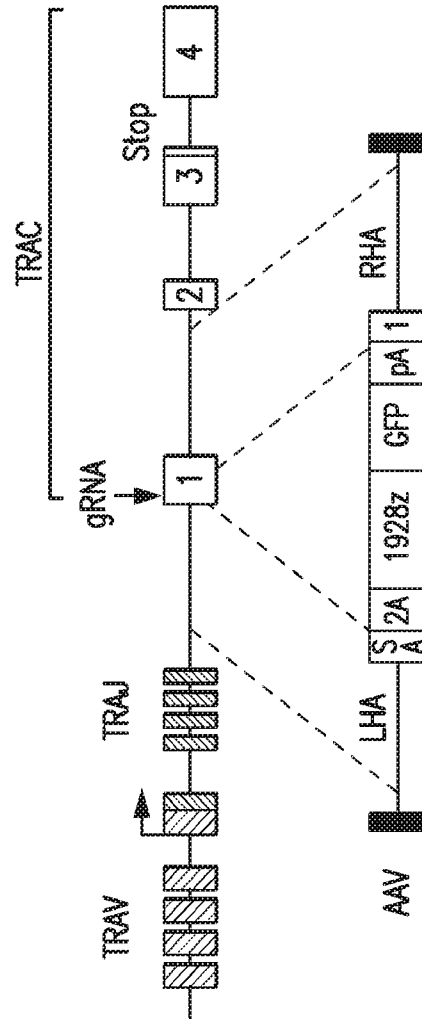


FIG. 6B

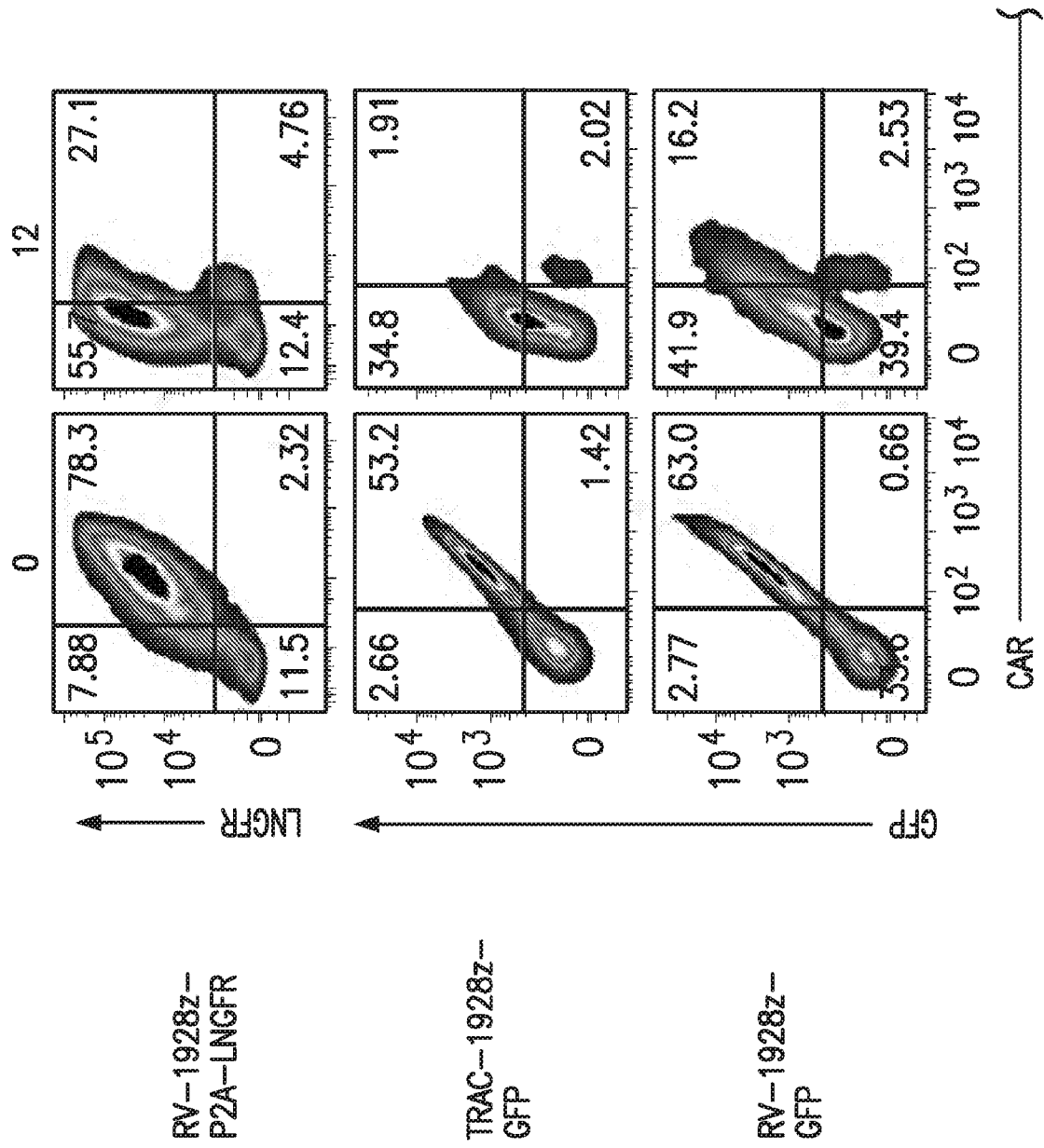


FIG. 6C

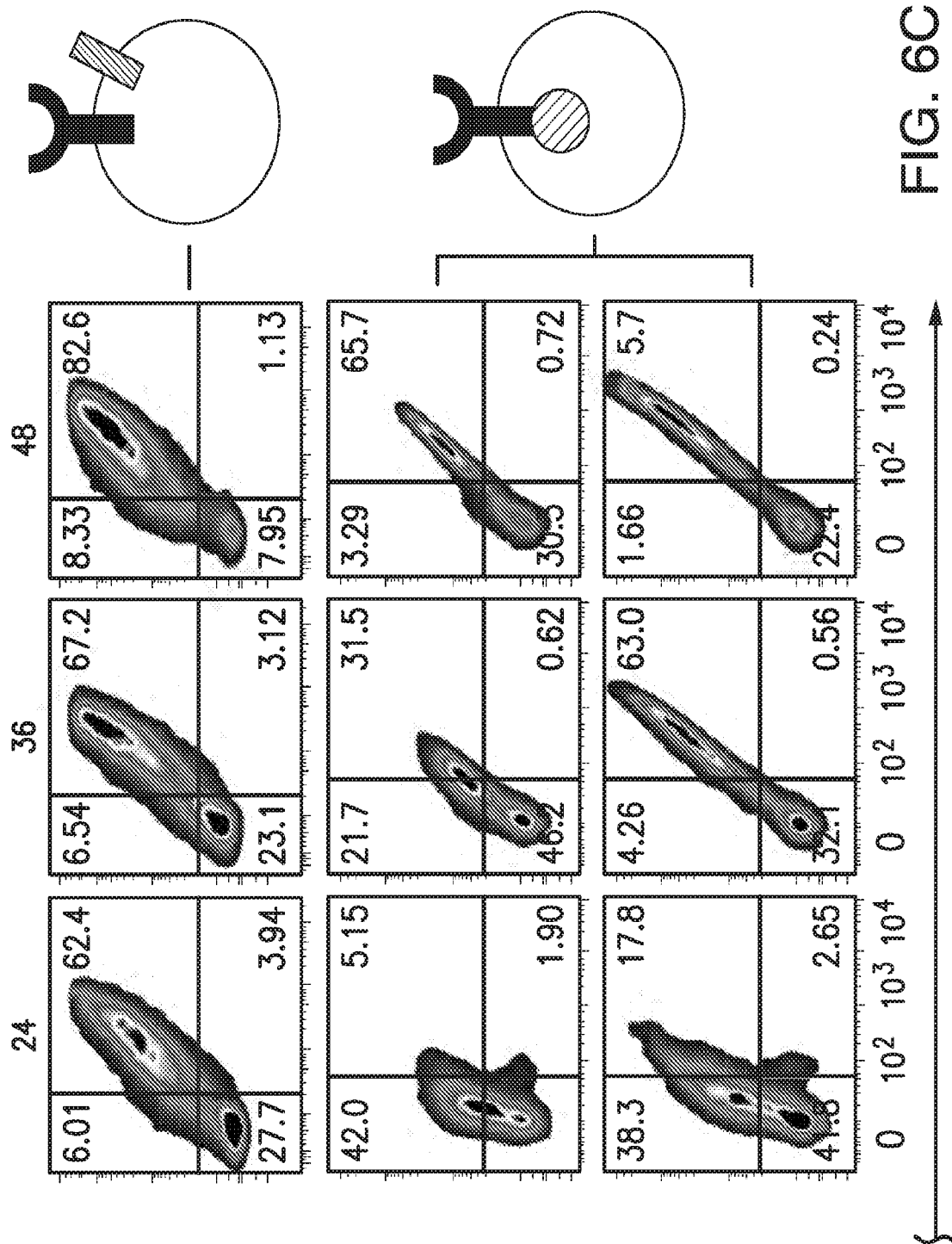
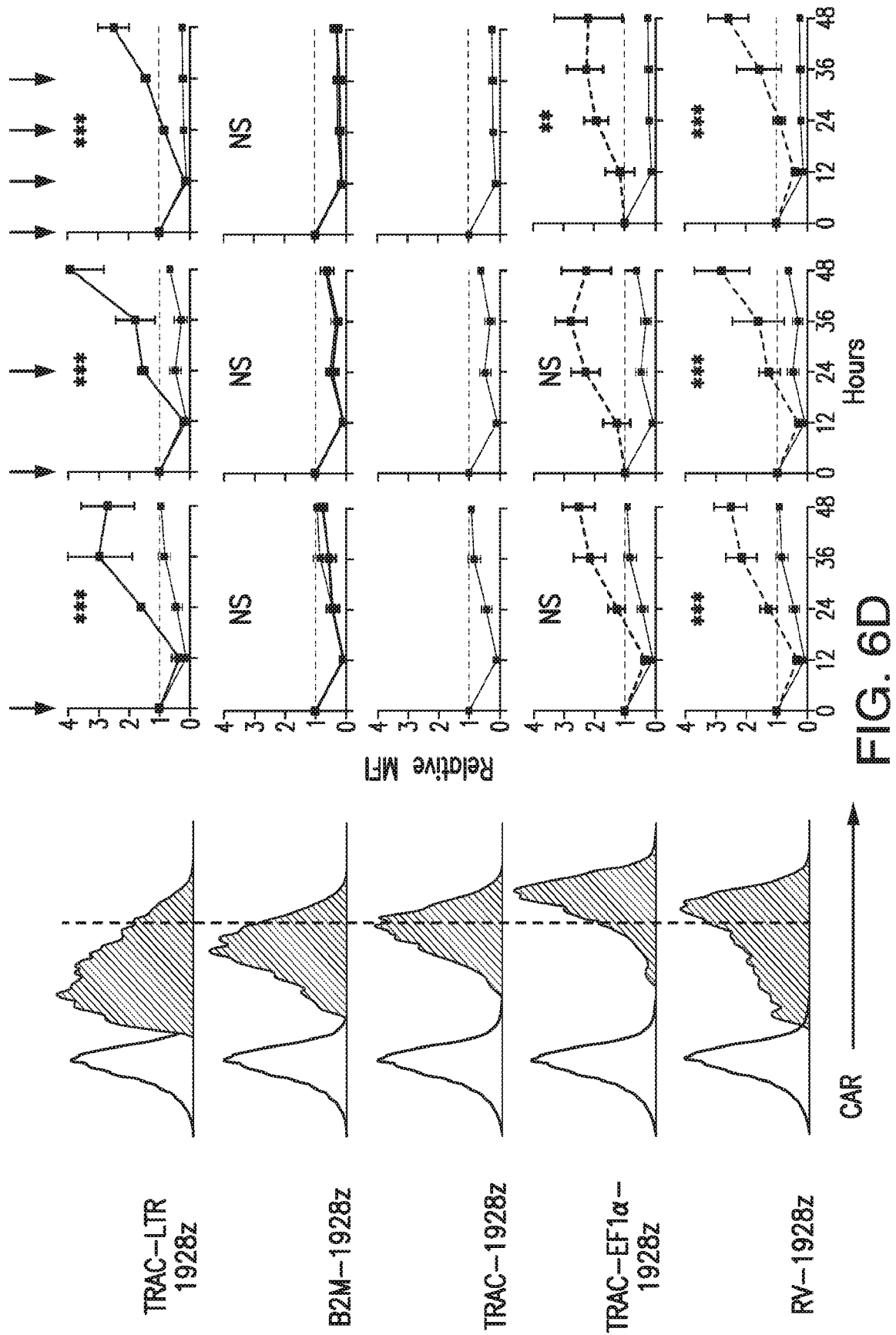


FIG. 6C Continued



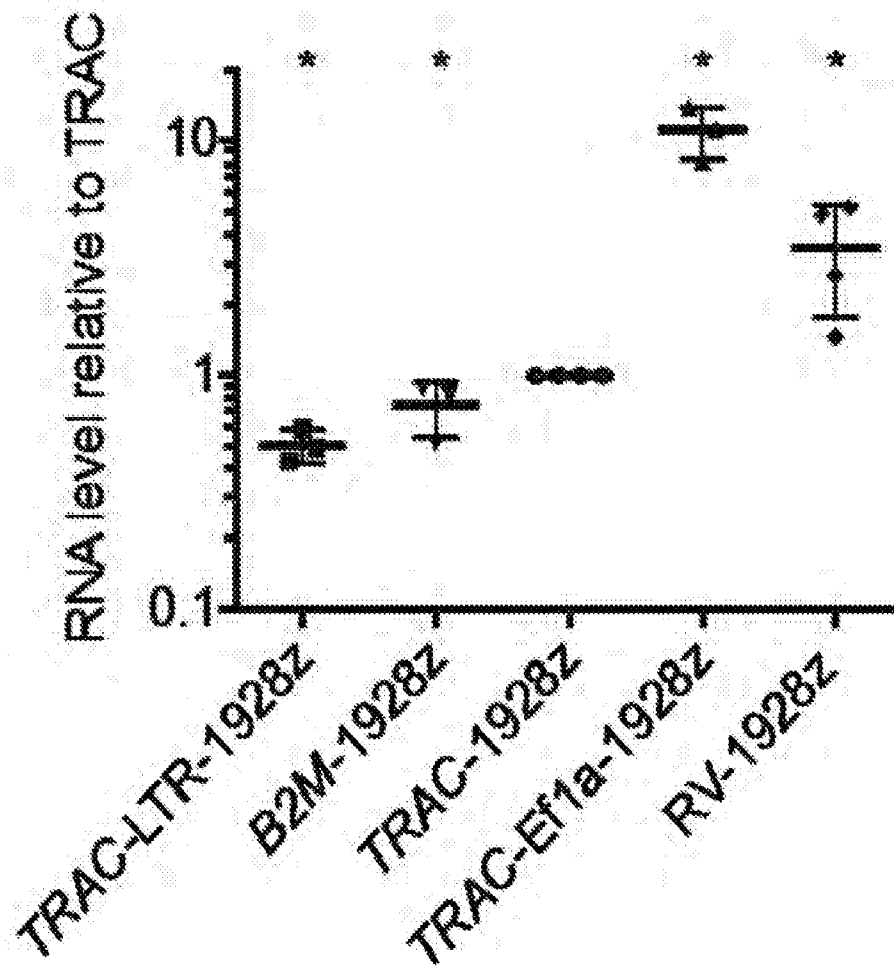


FIG. 6E

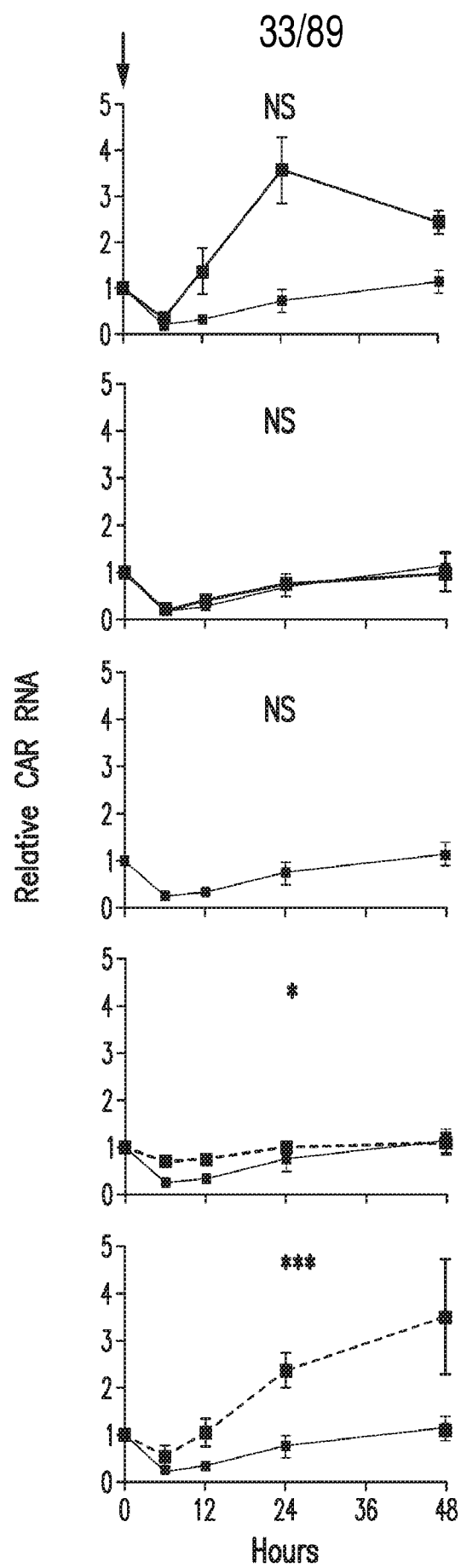


FIG. 6F

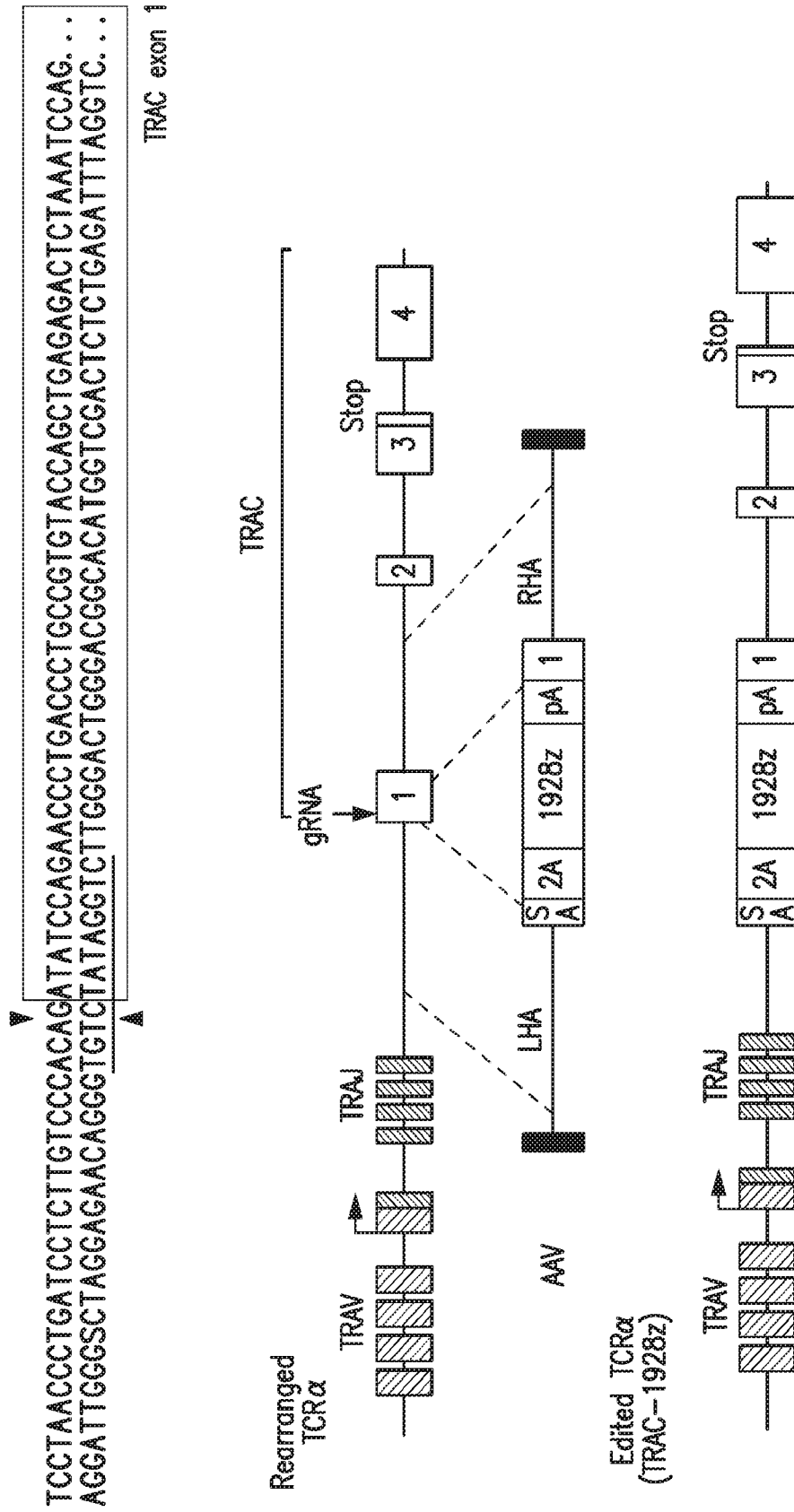


FIG. 7A

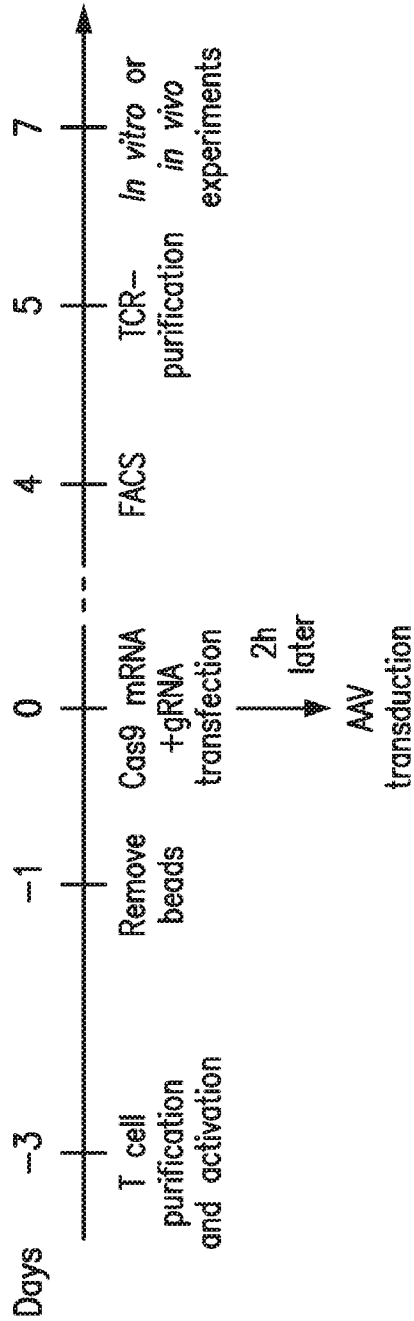


FIG. 7B

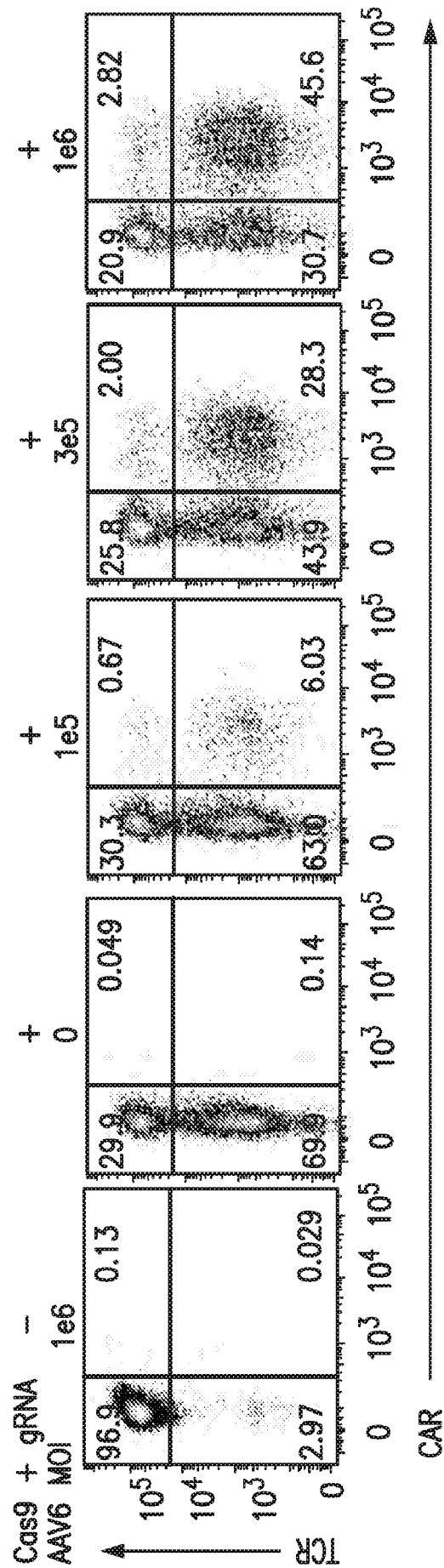


FIG. 7C

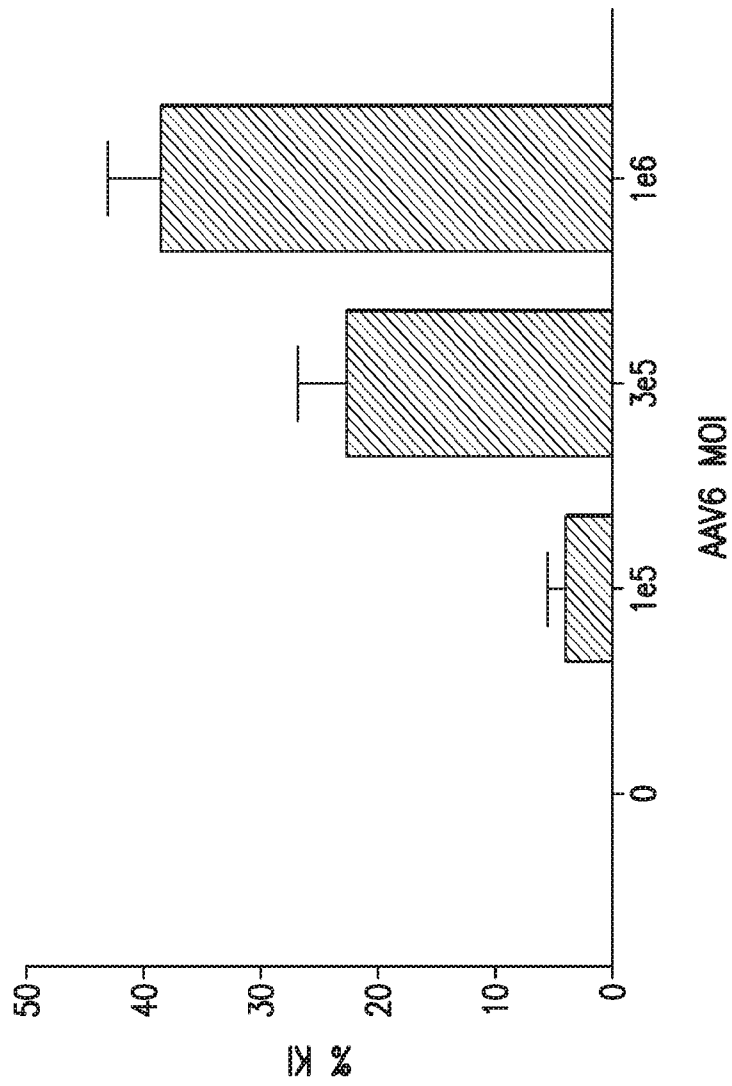


FIG. 7E

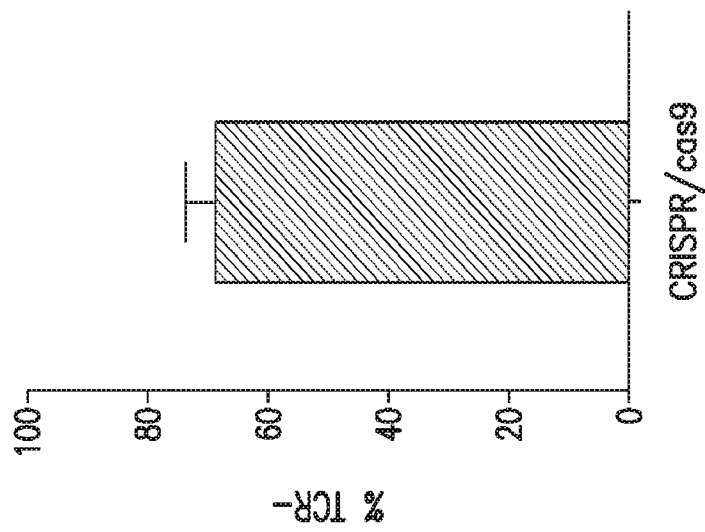


FIG. 7D

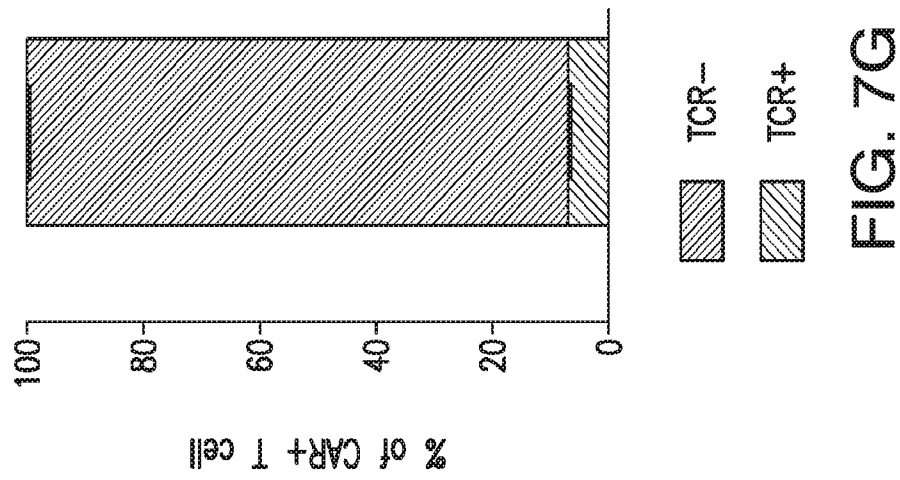


FIG. 7G

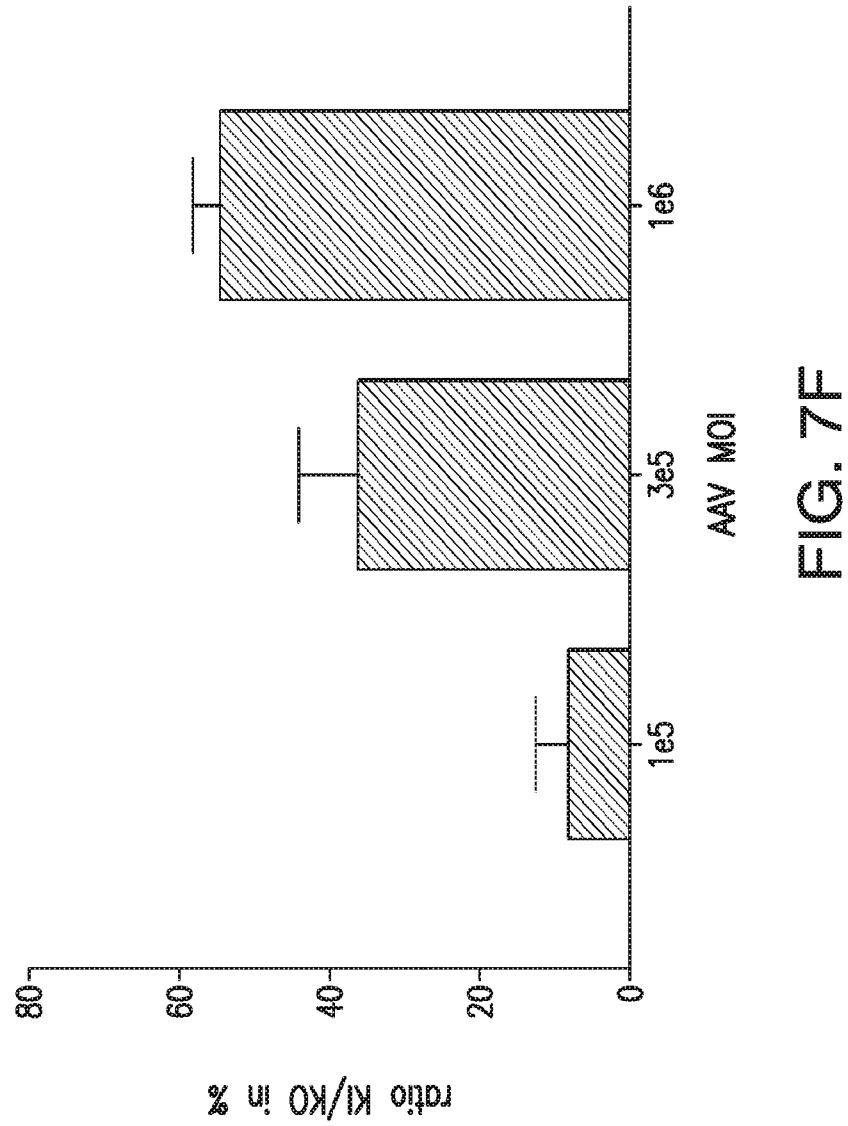


FIG. 7F

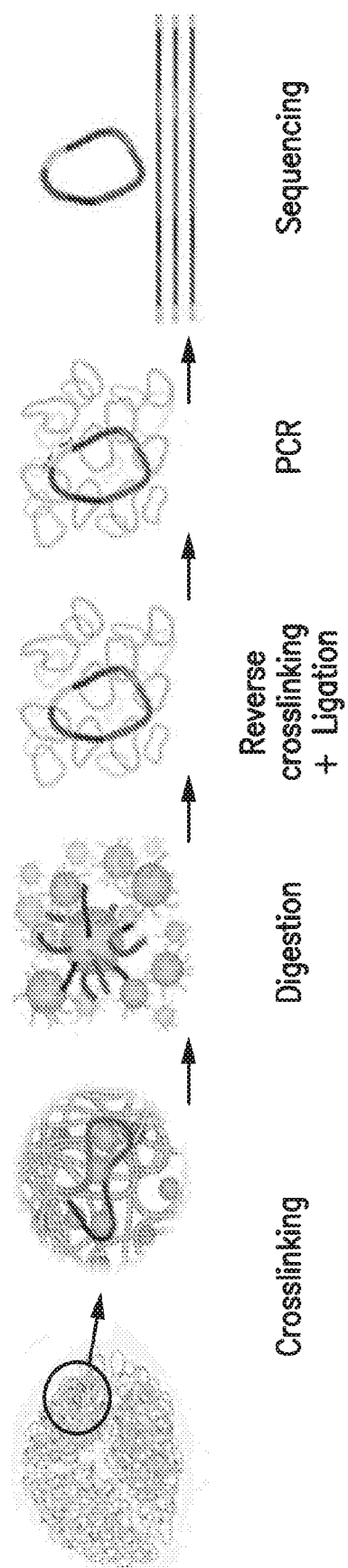


FIG. 8A

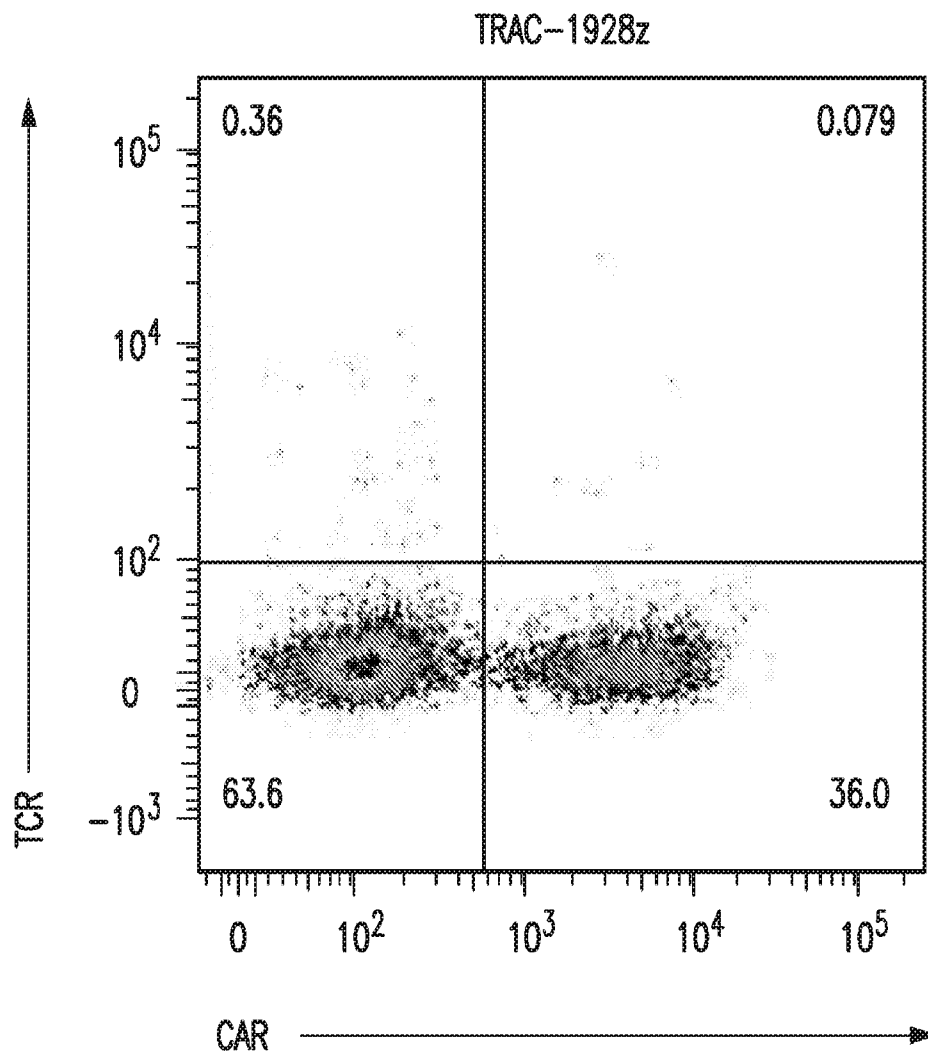


FIG. 8B

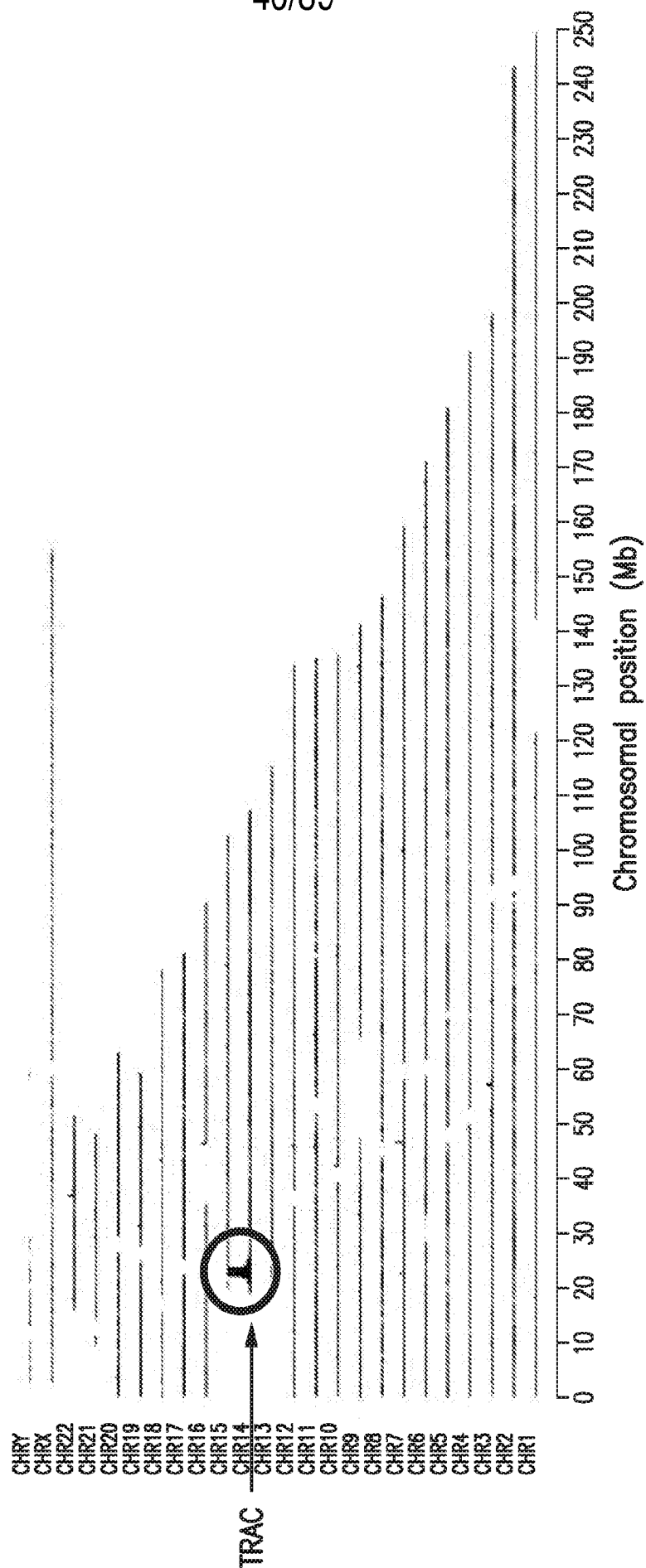
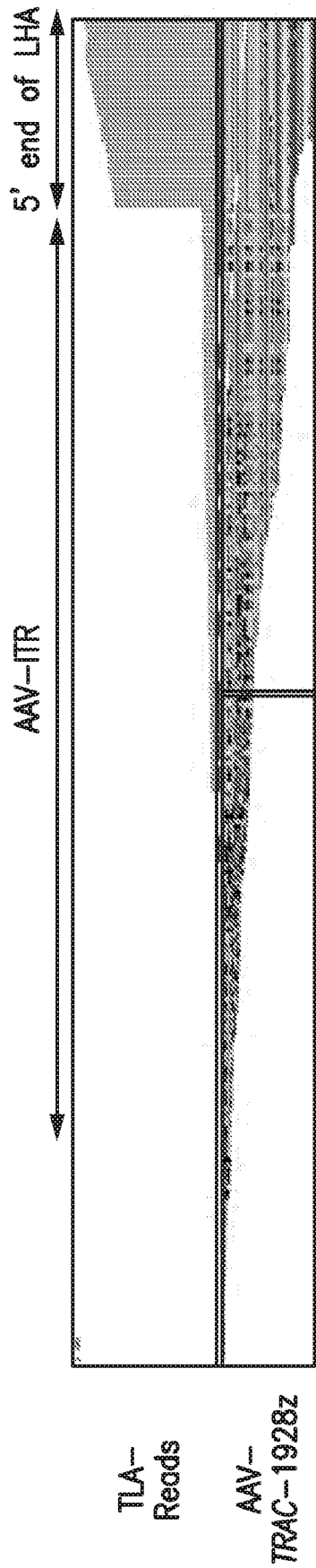


FIG. 8C



% TRAC alleles with perfect HR	15
% TRAC alleles with imperfect HR	5
Random integration detected (sensitivity of TLA-5%)	0

FIG. 8E

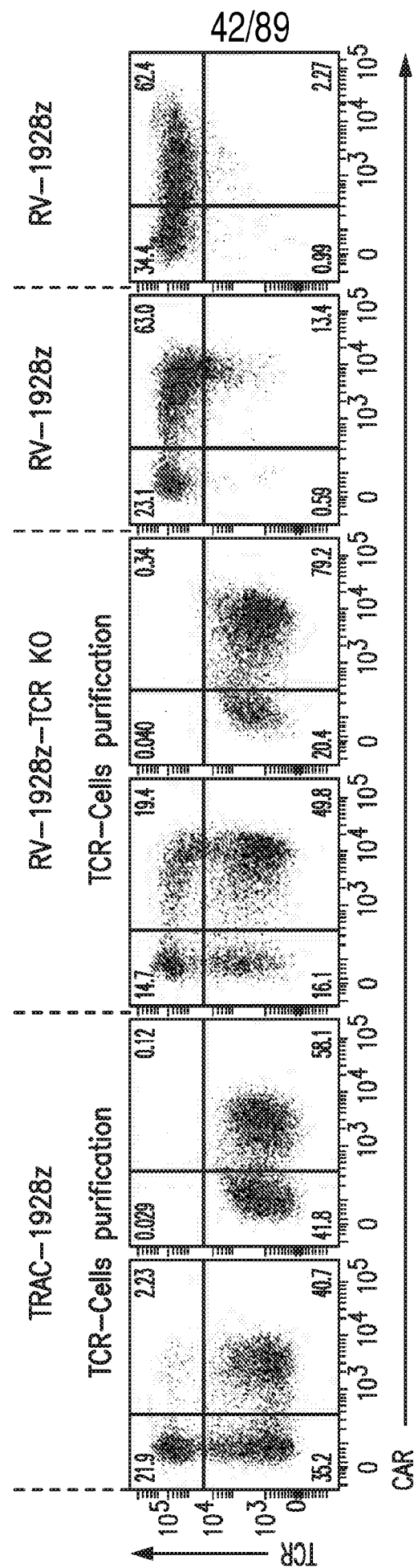


FIG. 9A

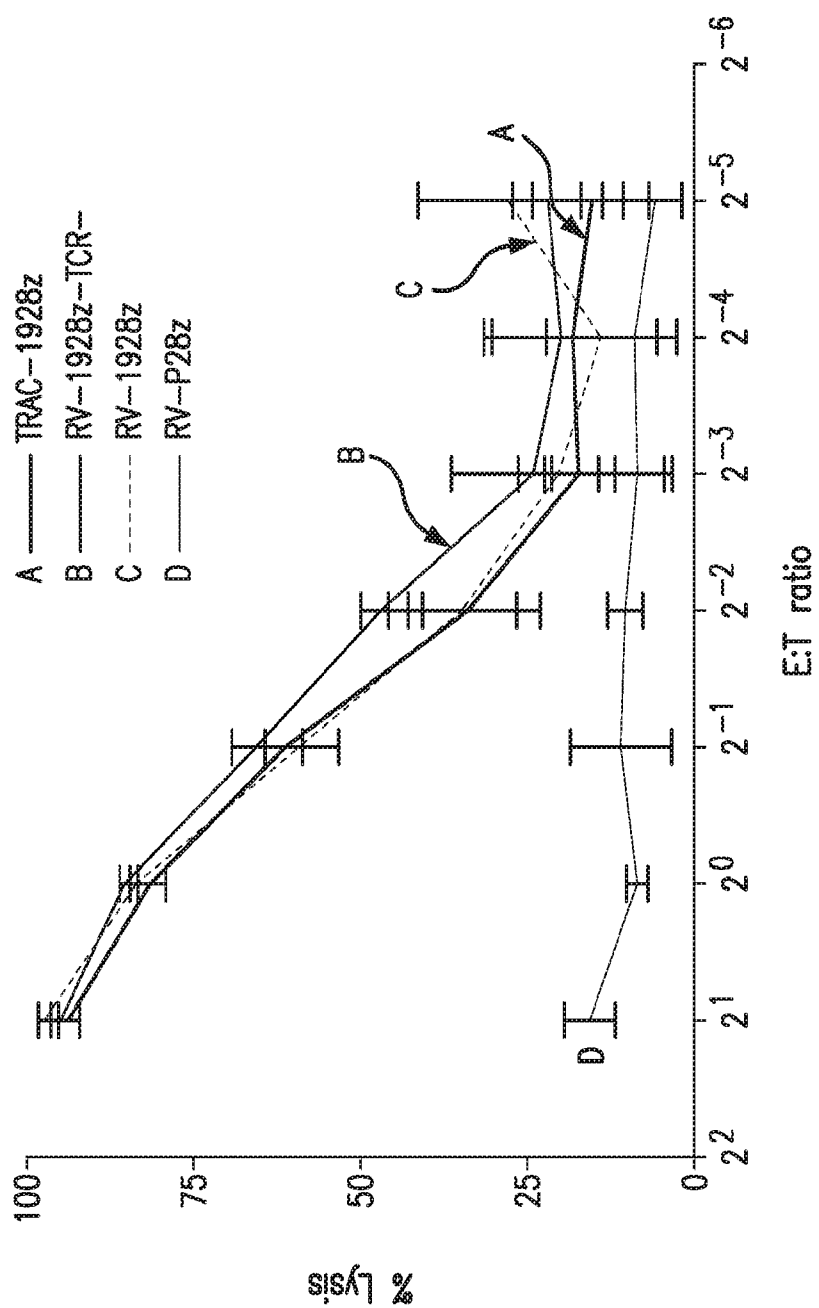


FIG. 9B

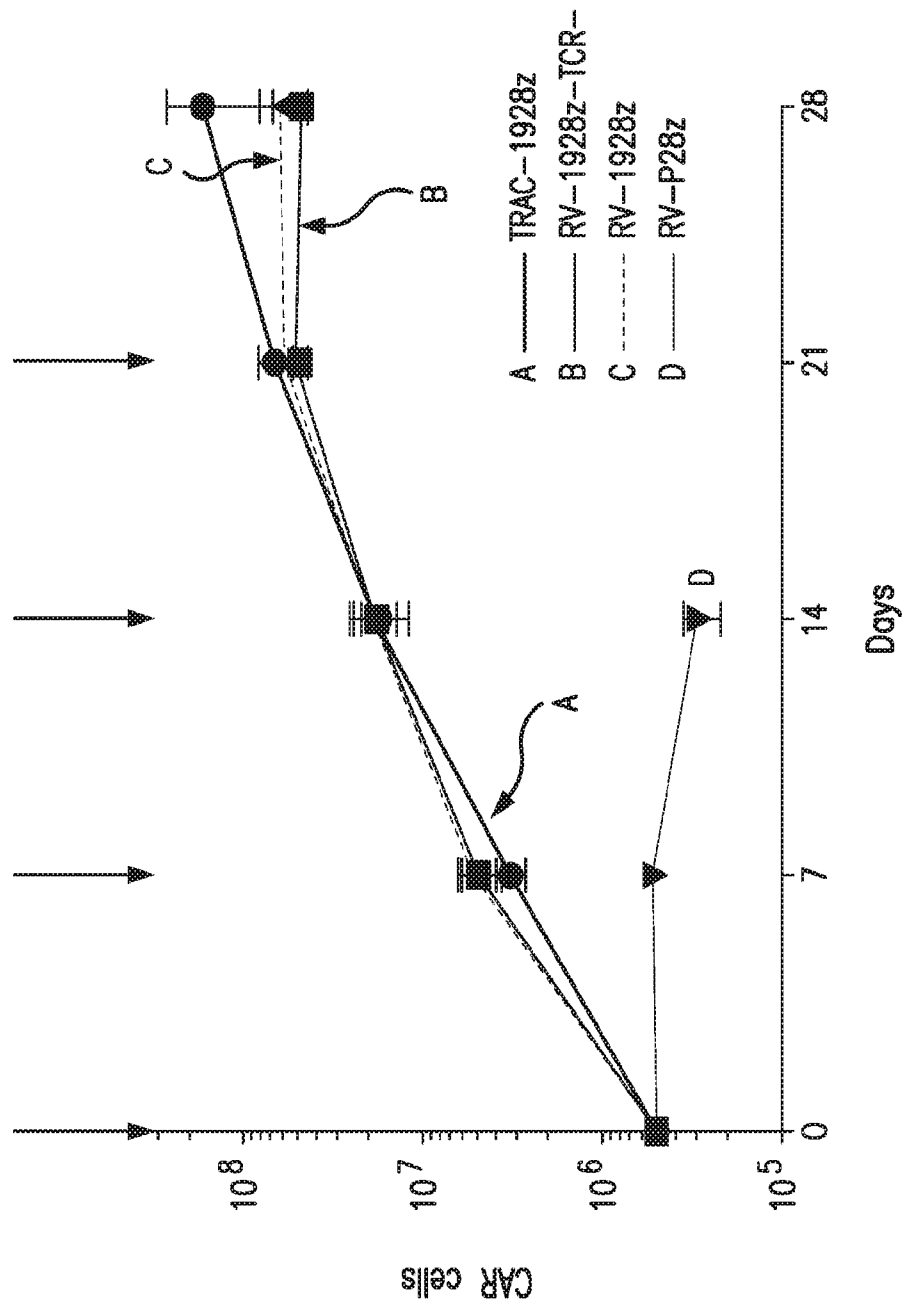


FIG. 9C

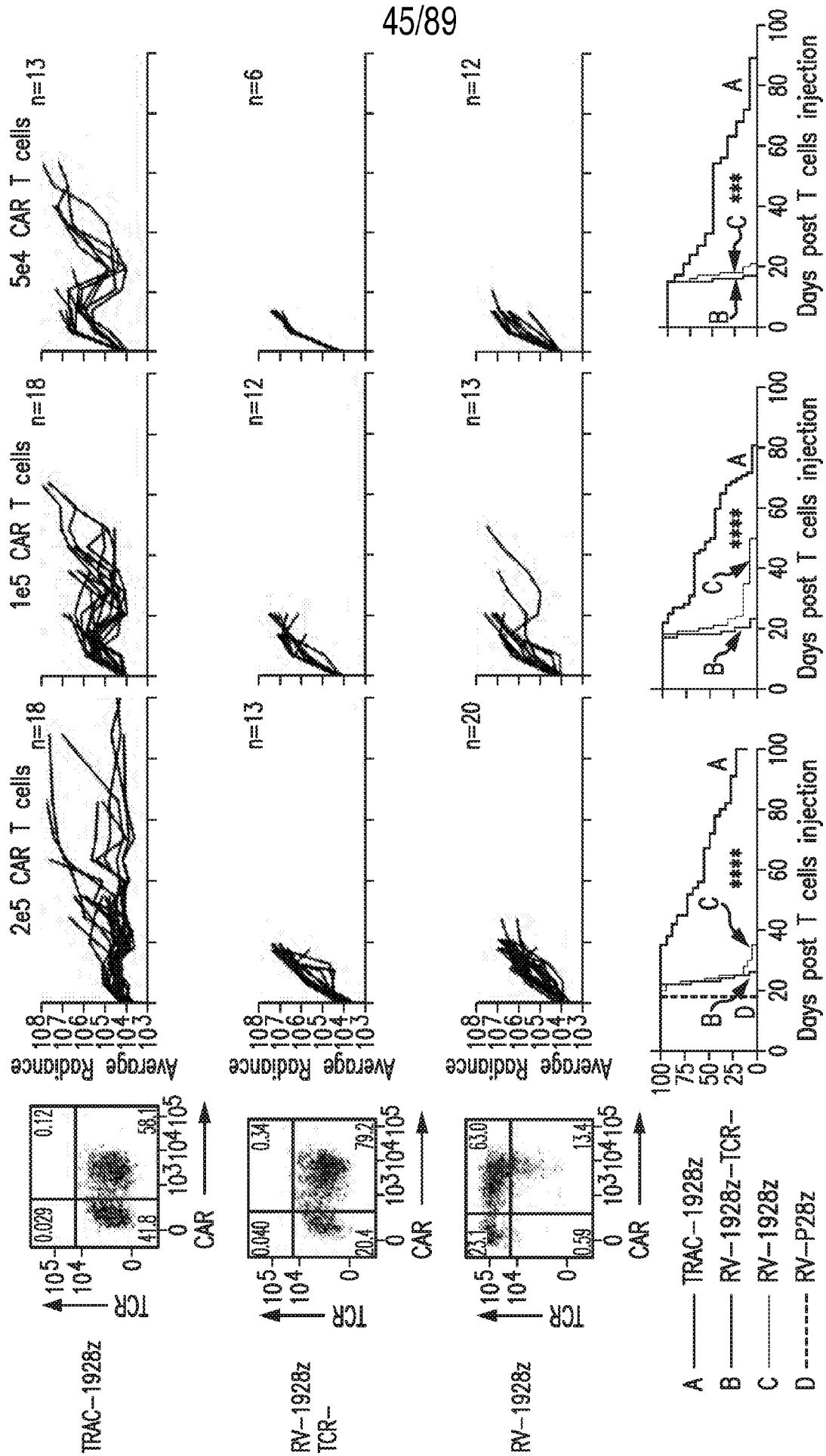


FIG. 10A

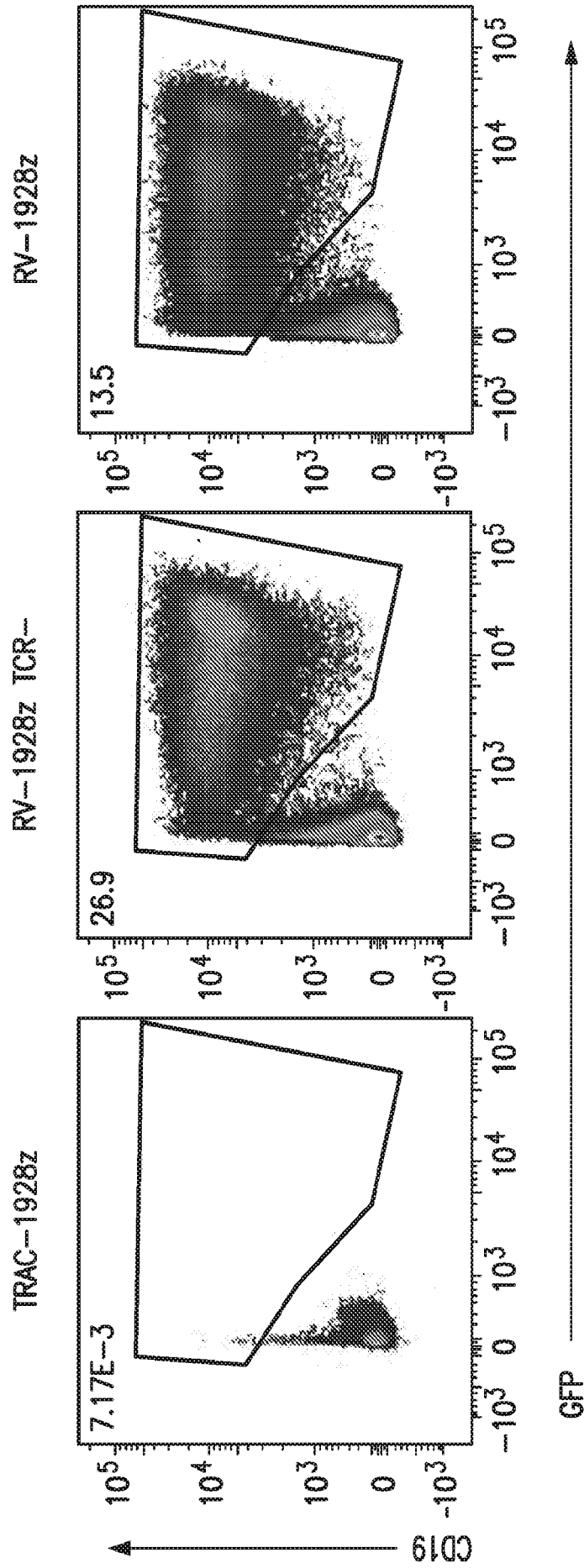


FIG. 10B

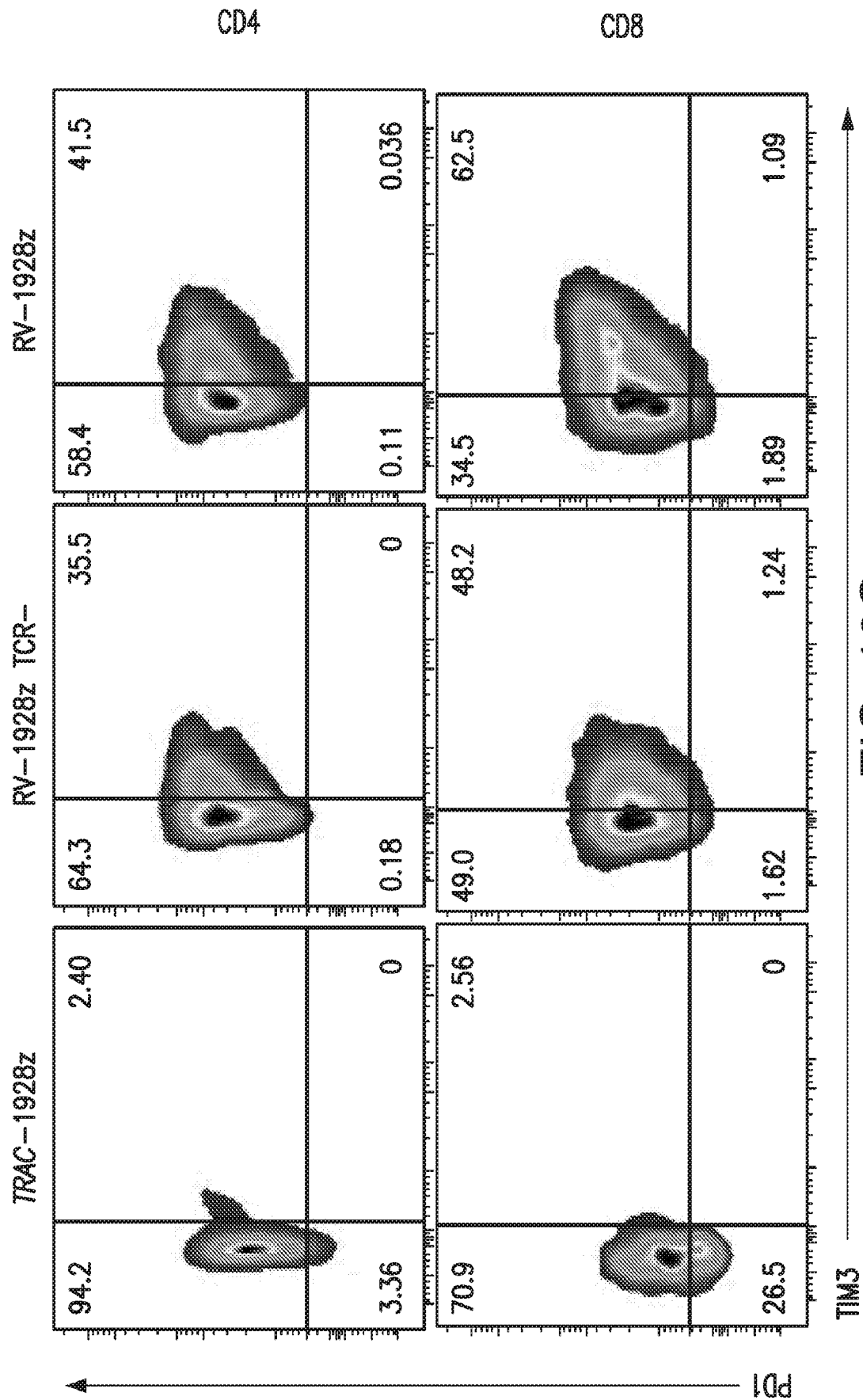


FIG. 10C

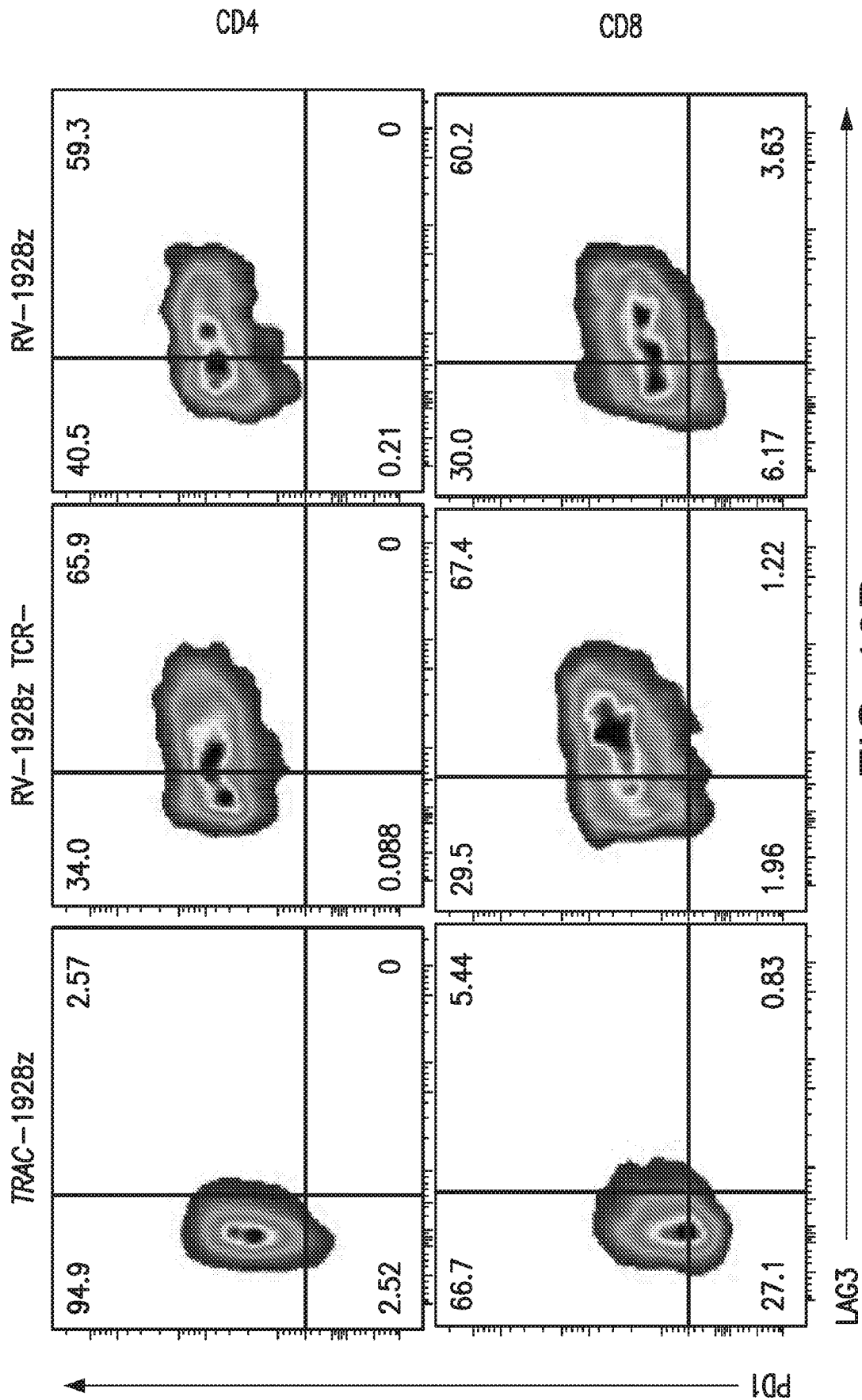


FIG. 10D

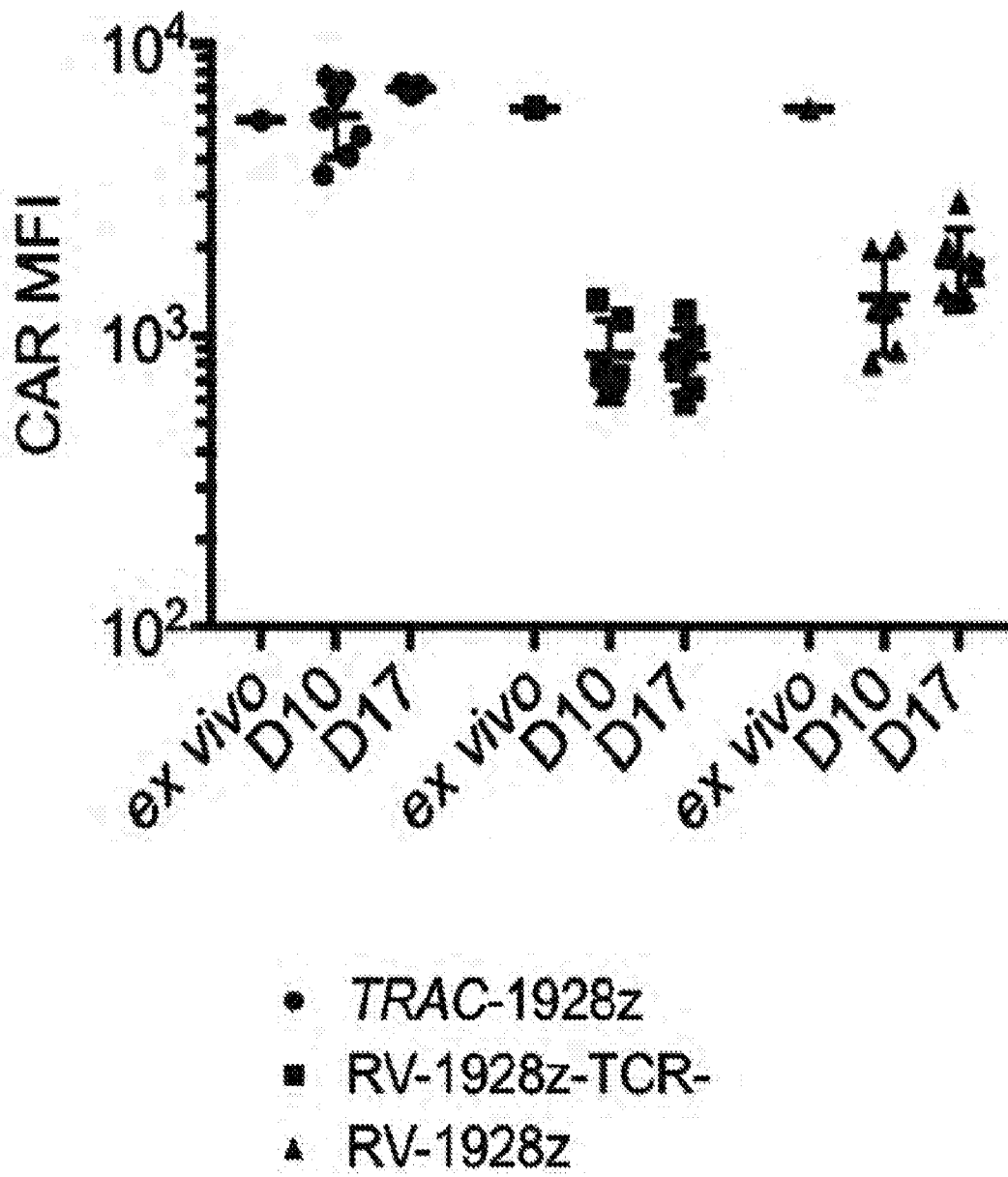


FIG. 10E

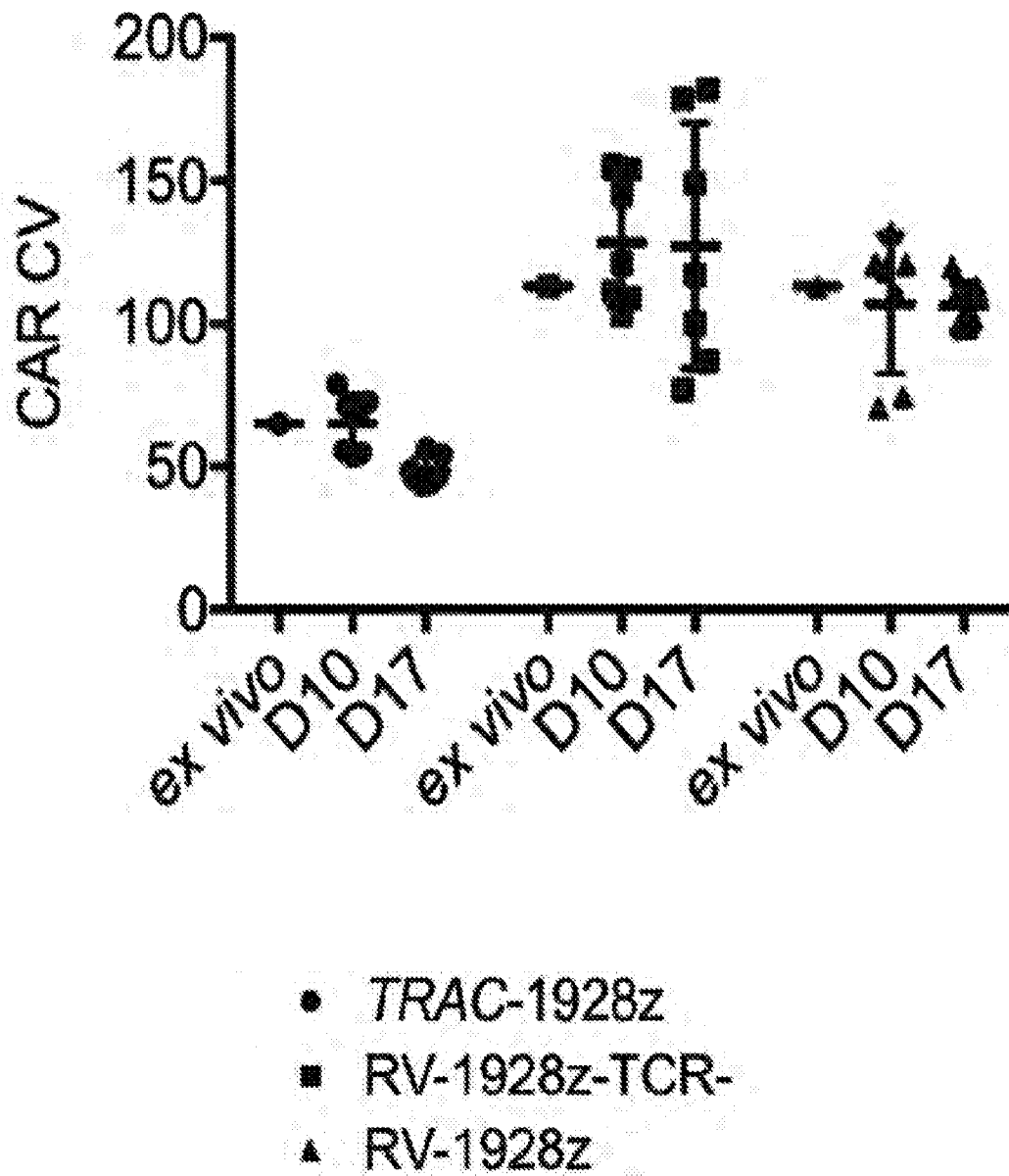


FIG. 10F

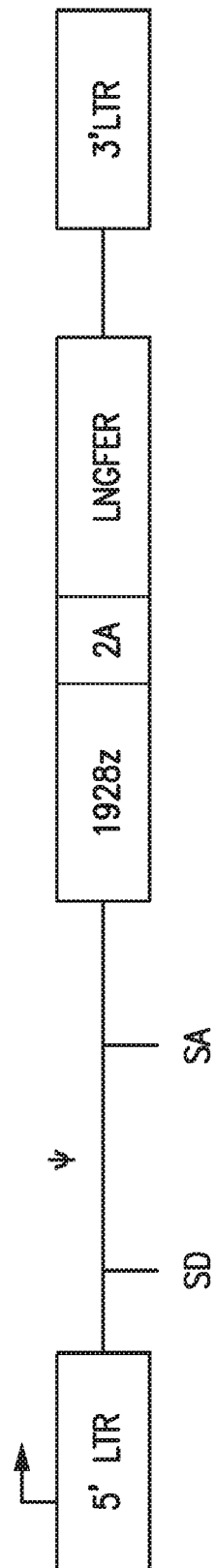


FIG. 10G

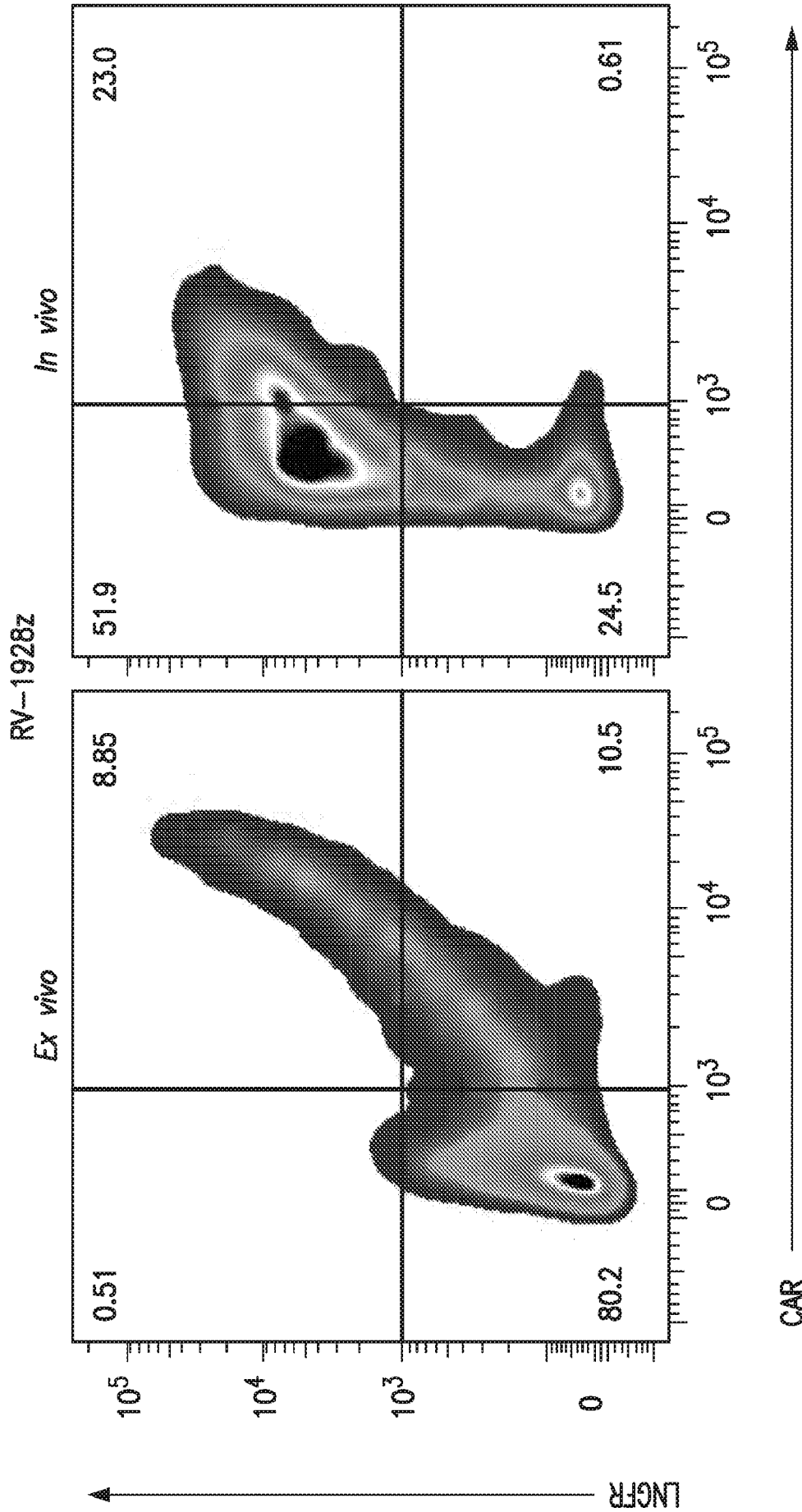


FIG. 10H

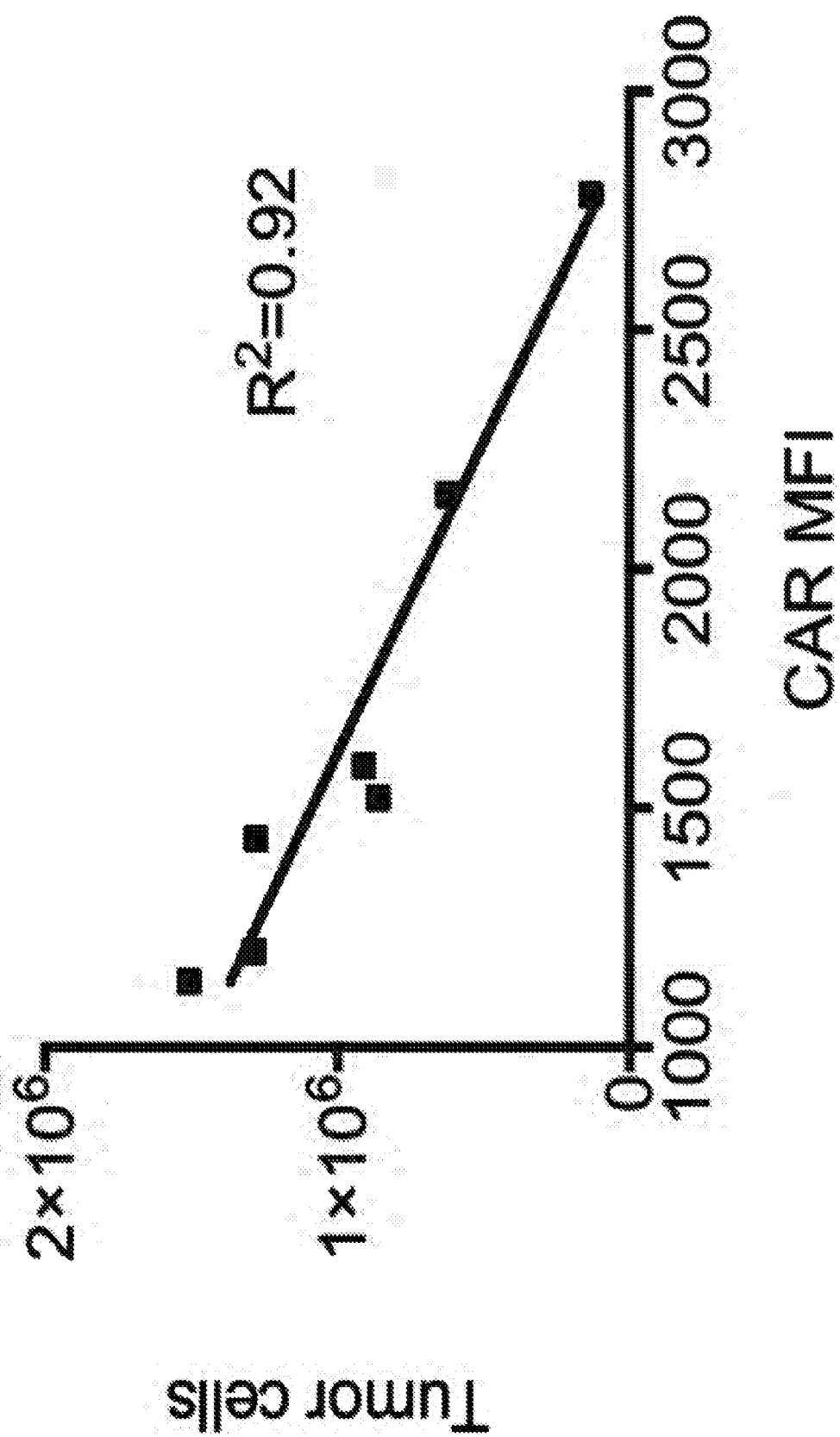


FIG. 10I

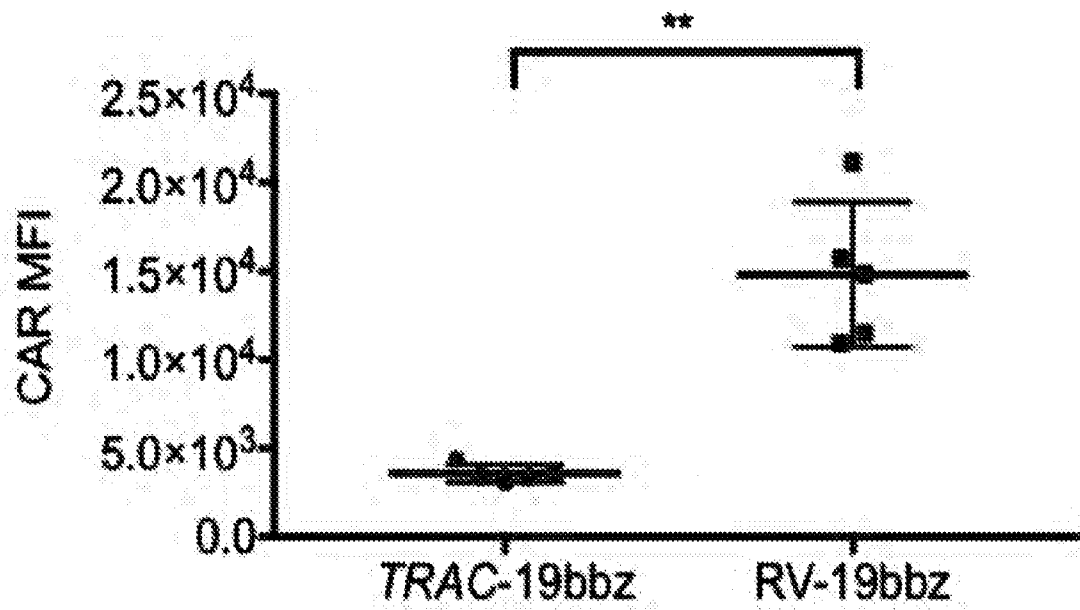


FIG. 11A

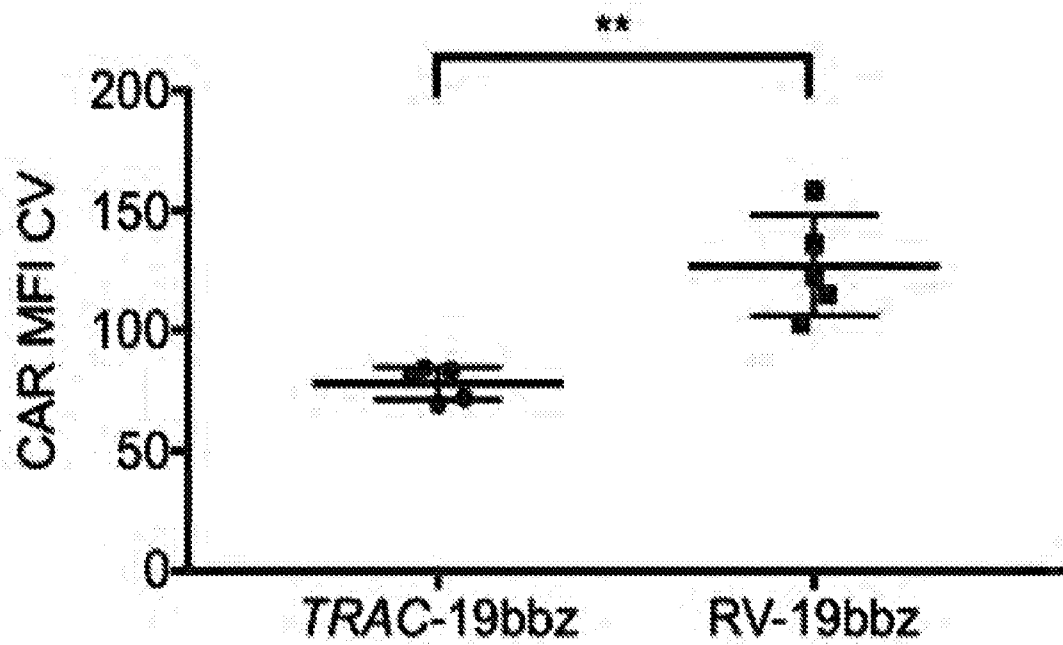


FIG. 11B

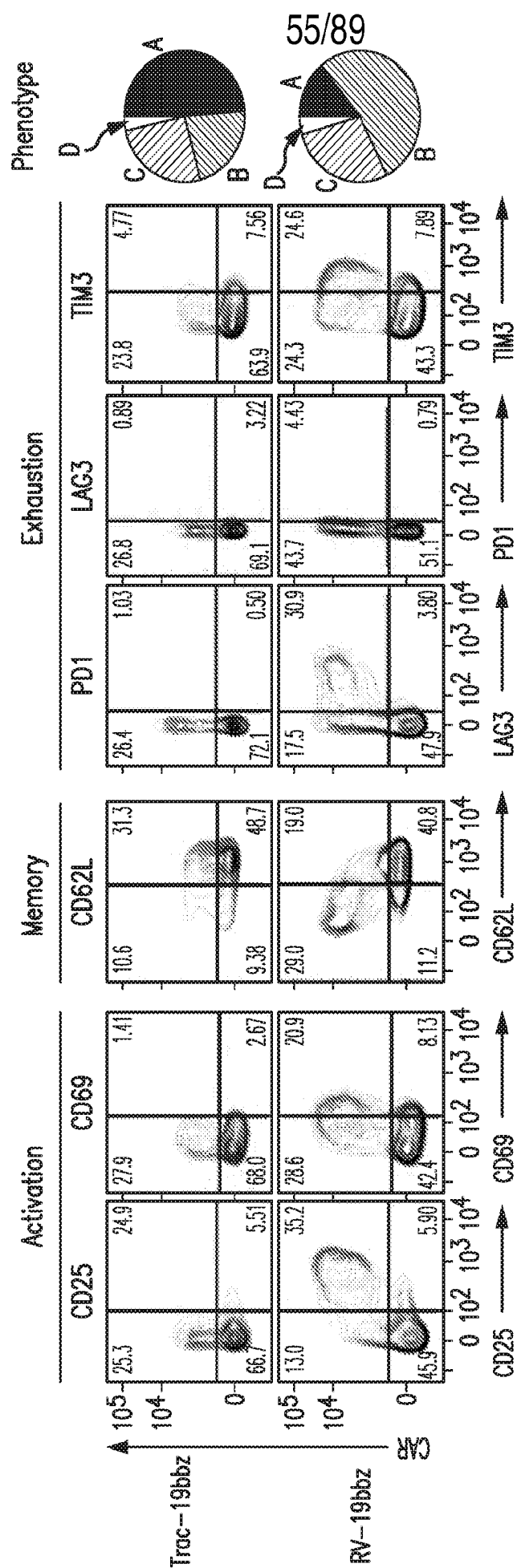


FIG. 11C

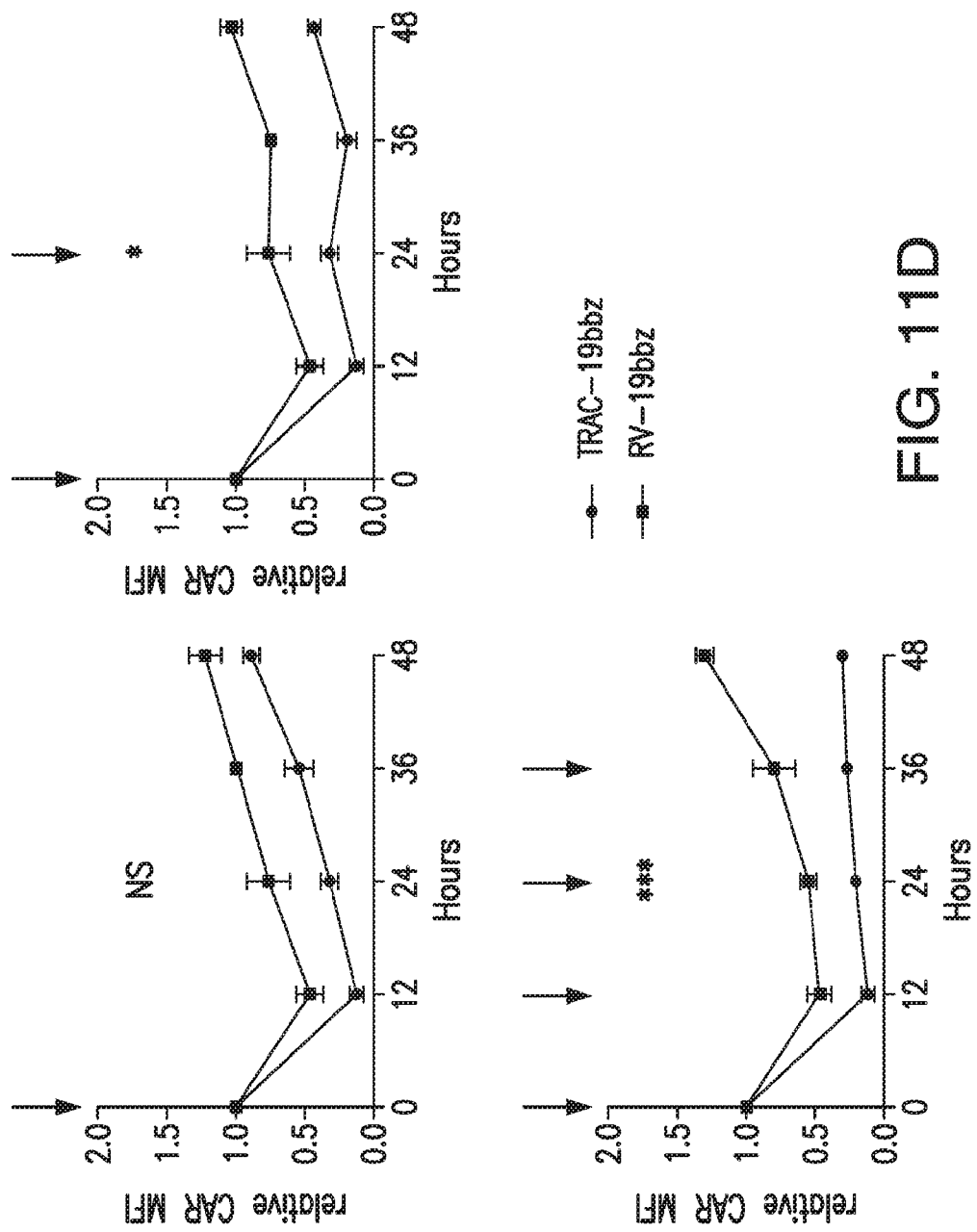


FIG. 11D

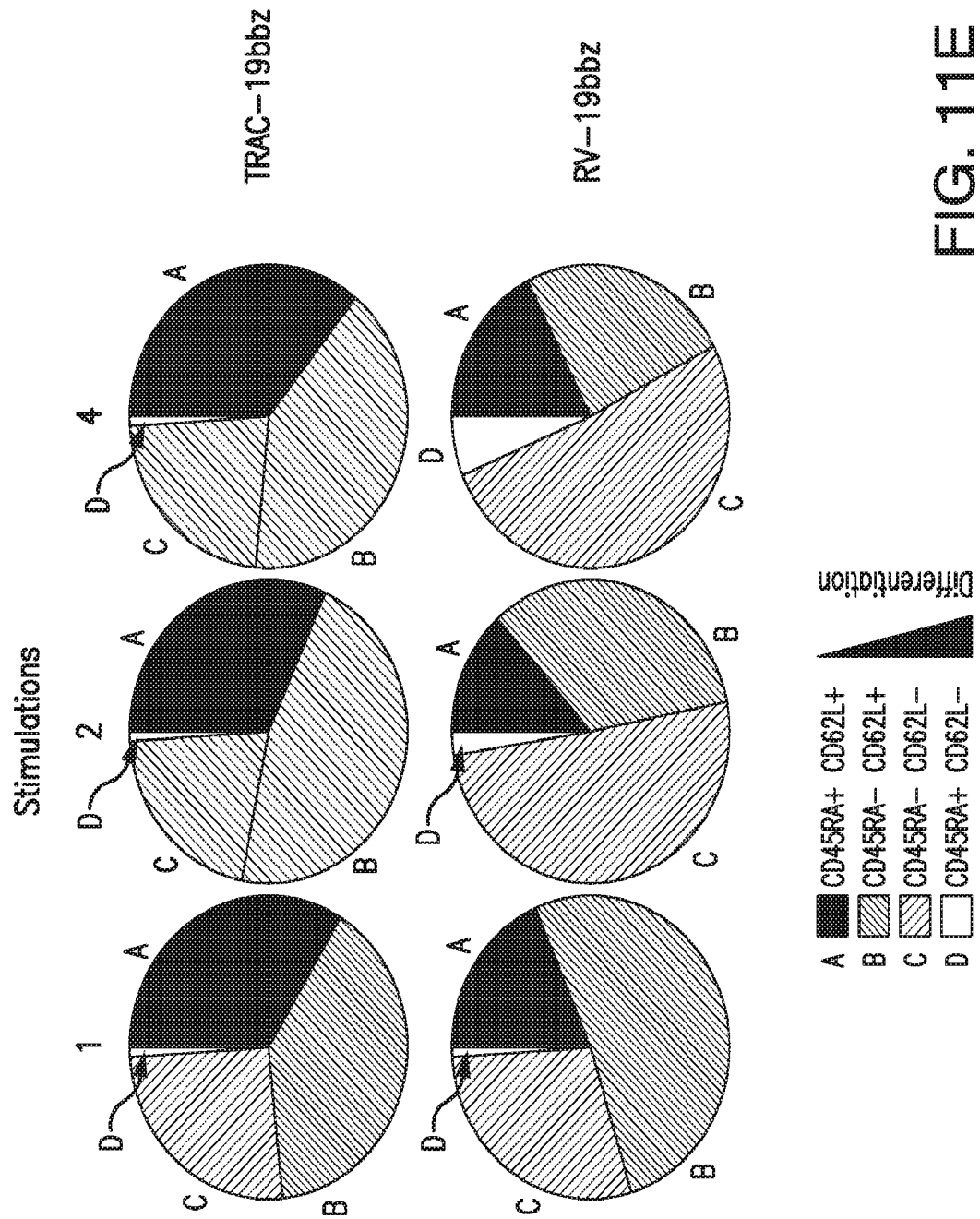


FIG. 11E

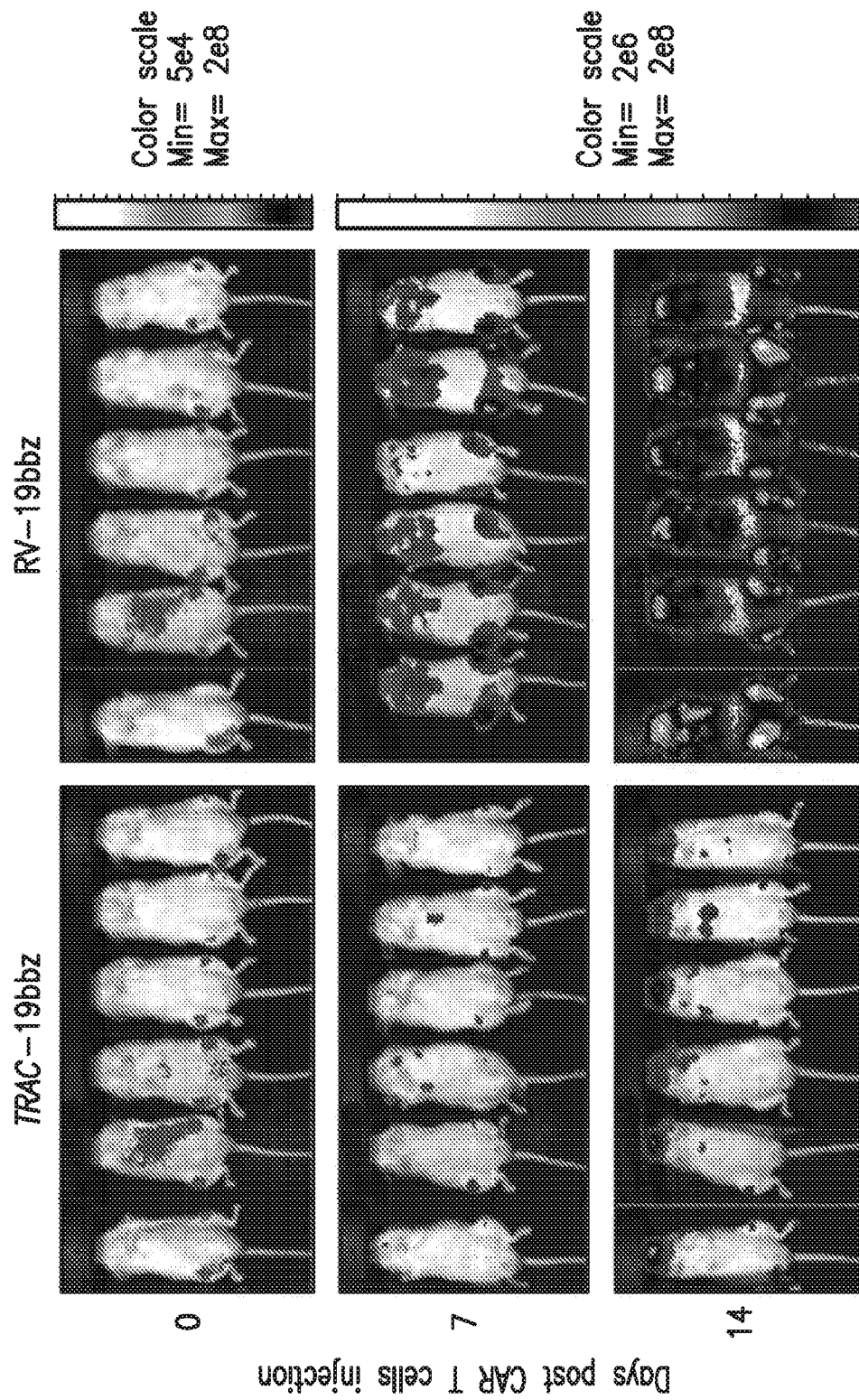


FIG. 11F

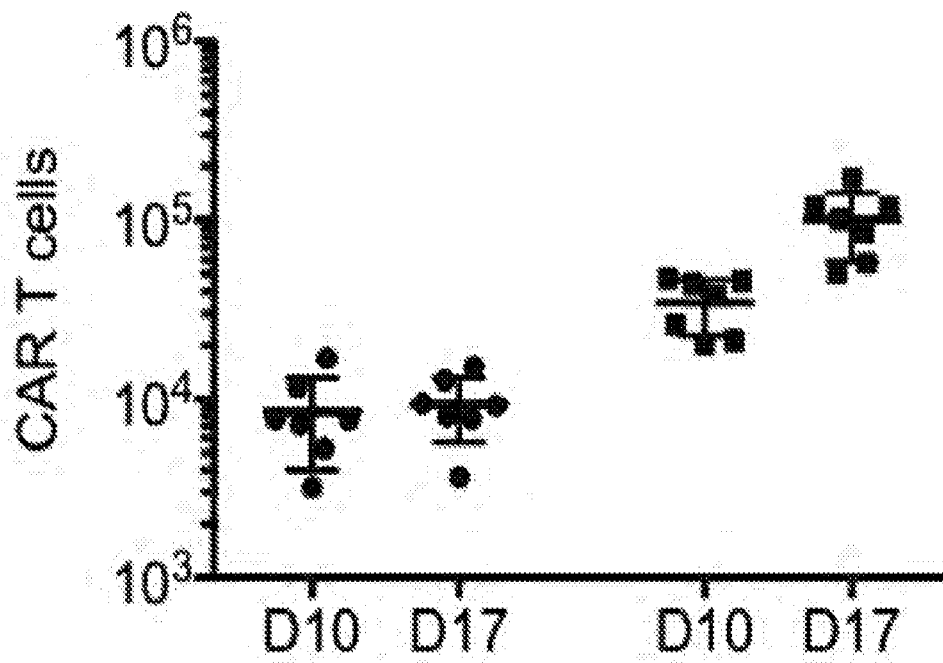


FIG. 11G

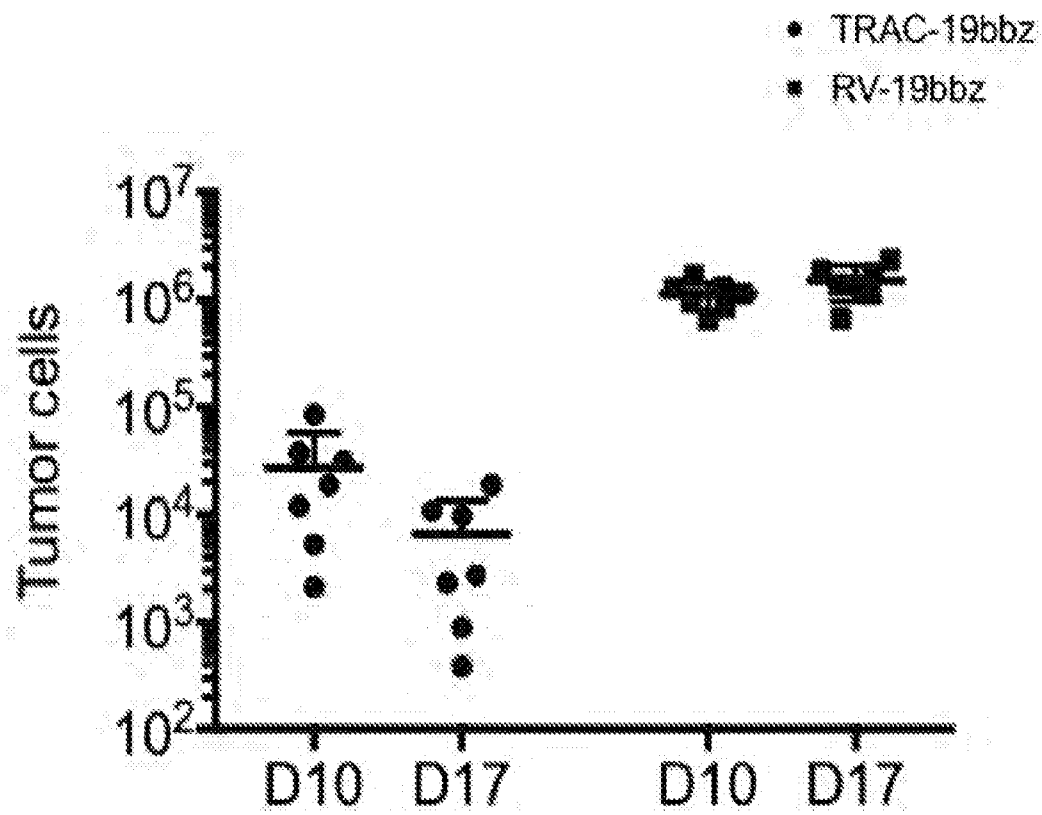


FIG. 11H

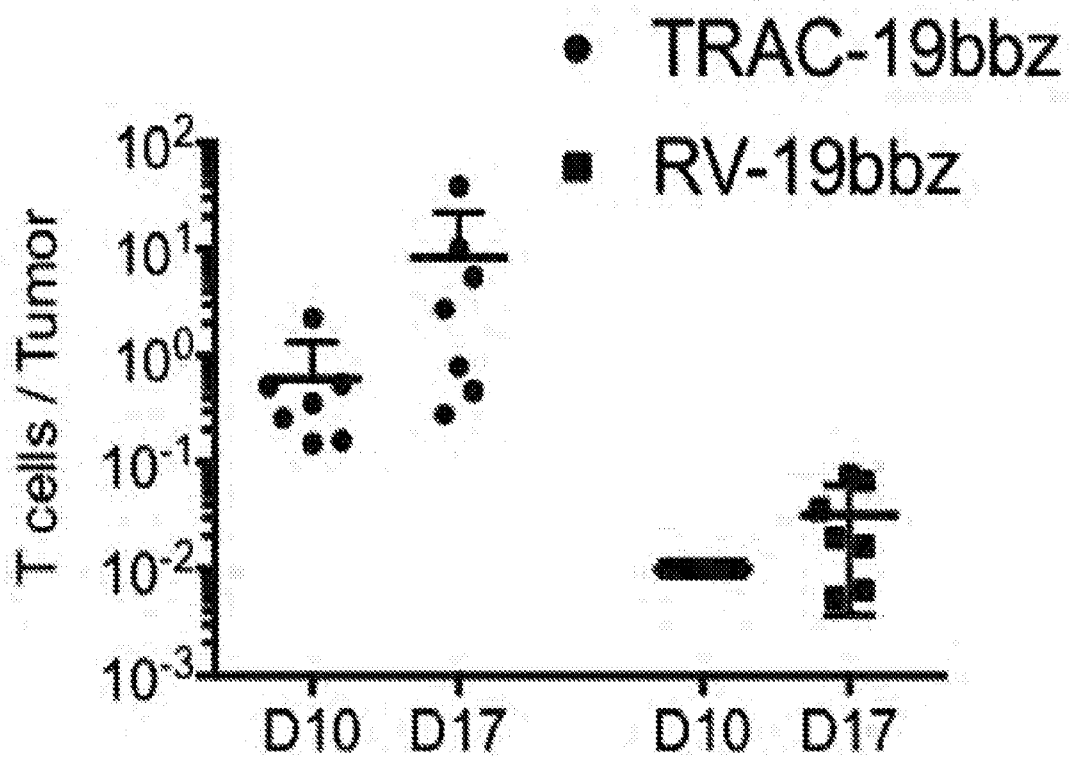
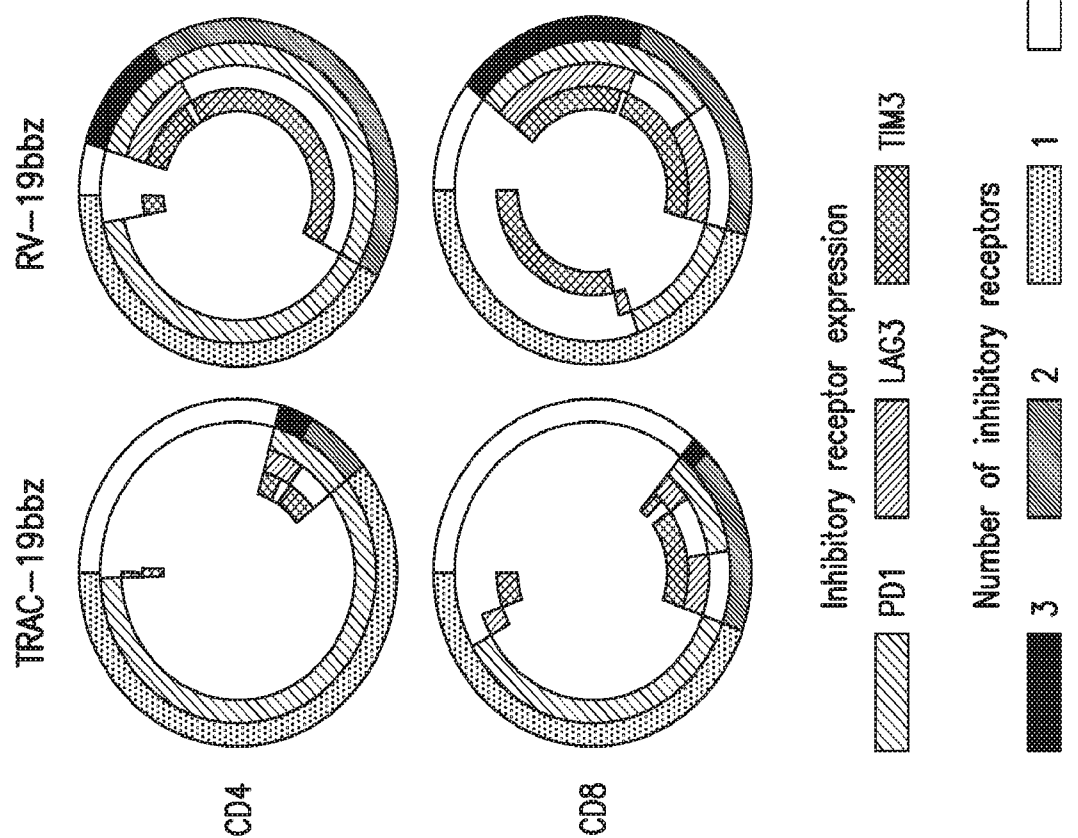


FIG. 11I



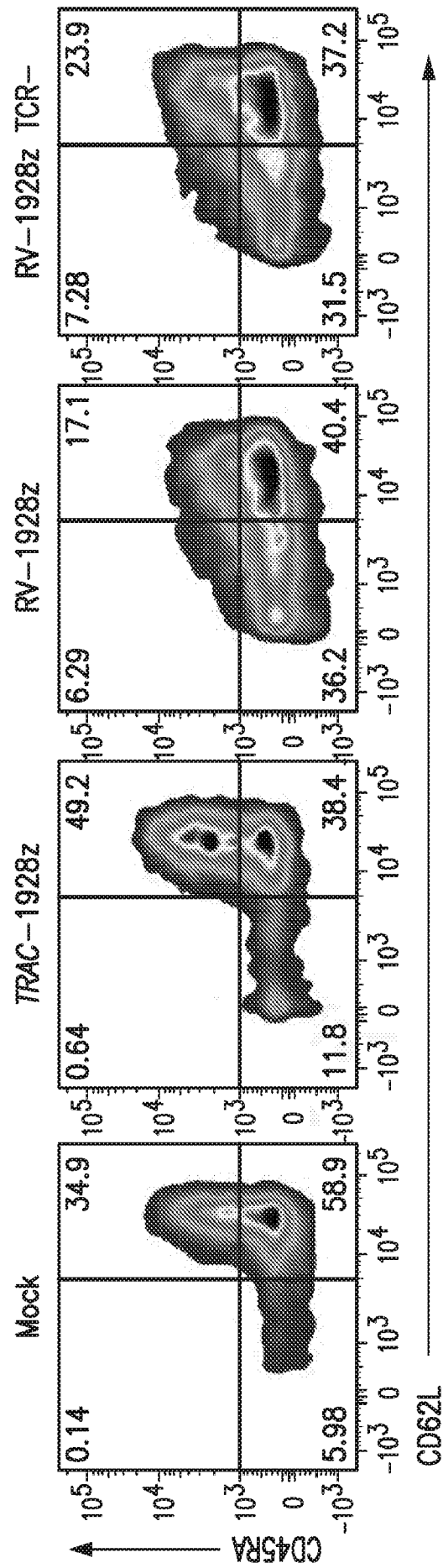


FIG. 12A

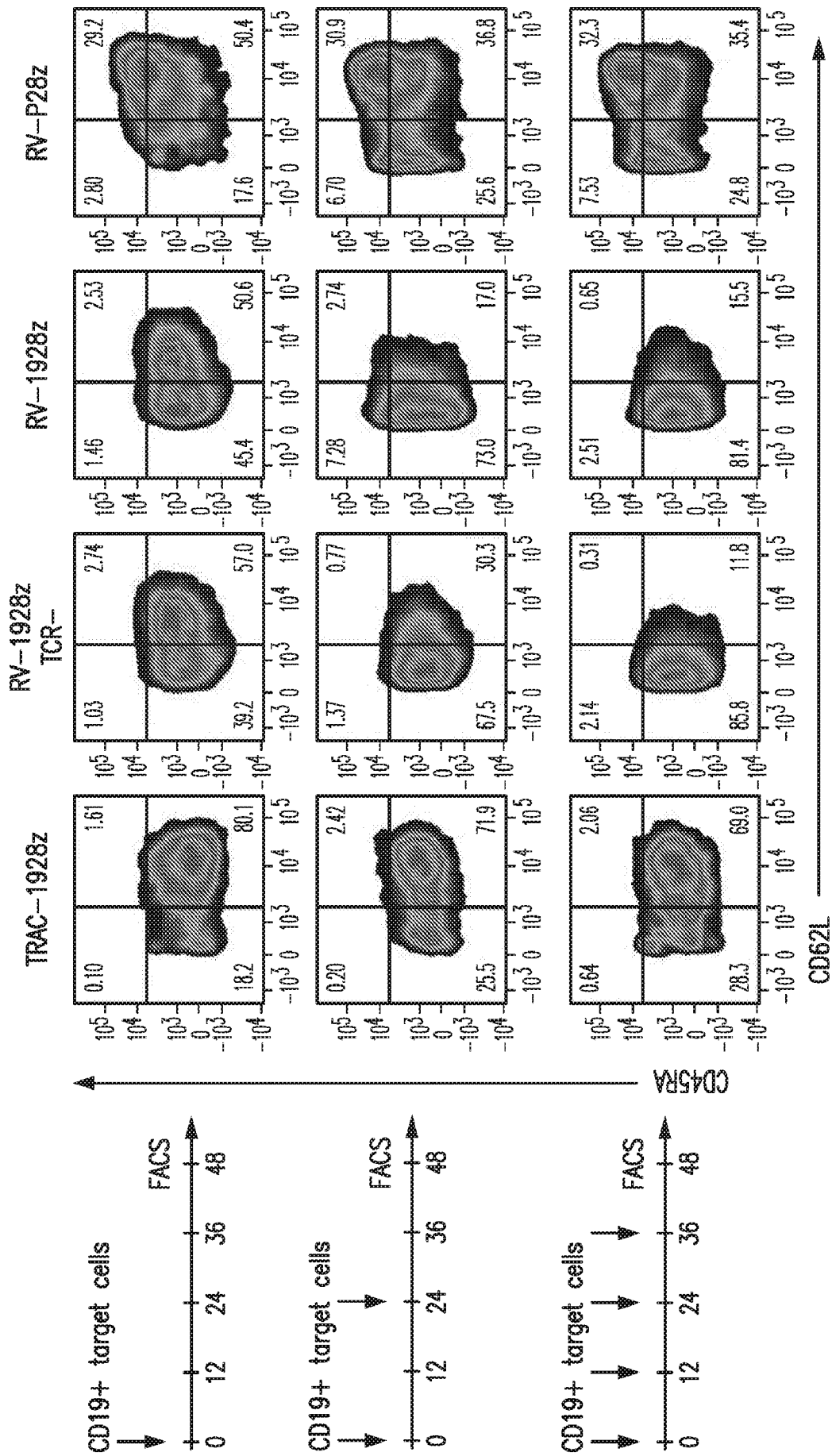
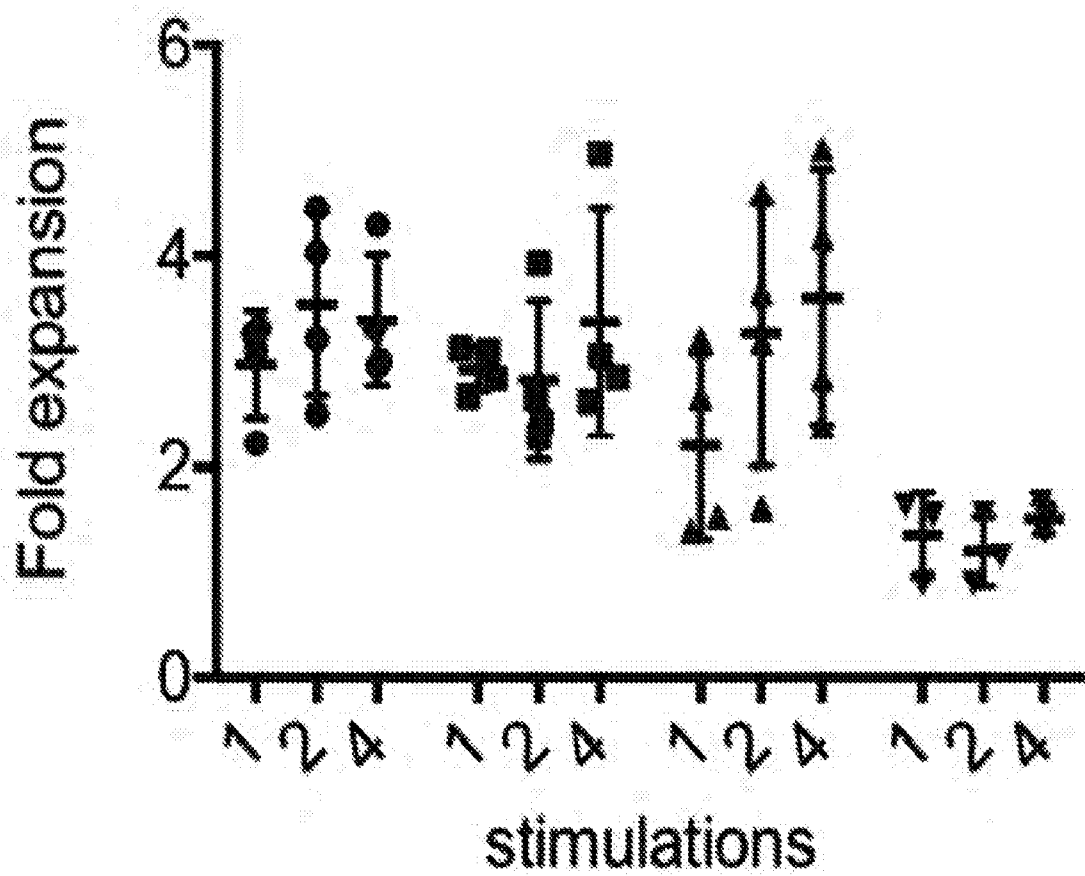


FIG. 12B



- TRAC-1928z
- RV-1928z
- ▲ RV-1928z-TCR-
- ▼ RV-P28z

FIG. 12C

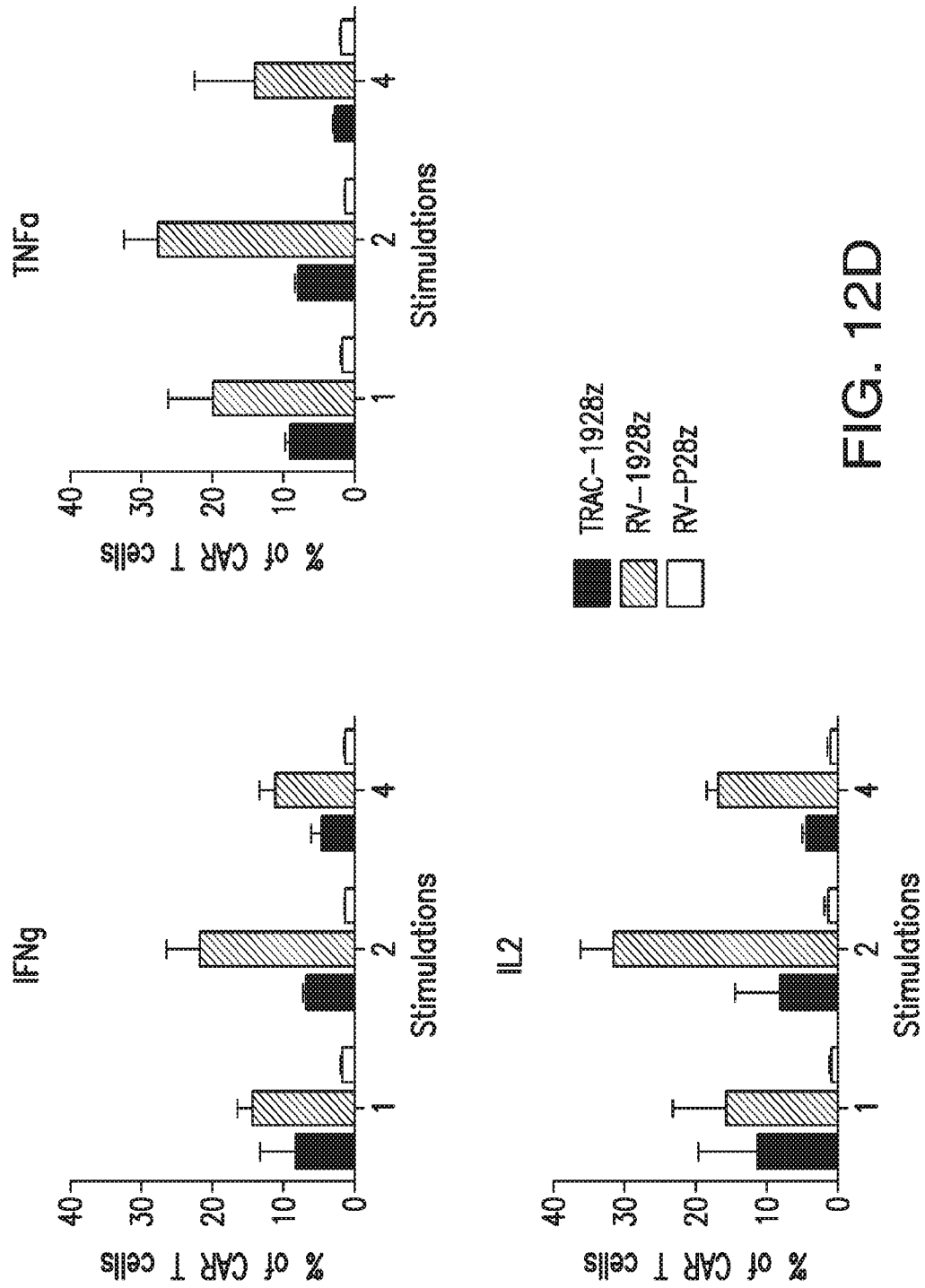


FIG. 12D

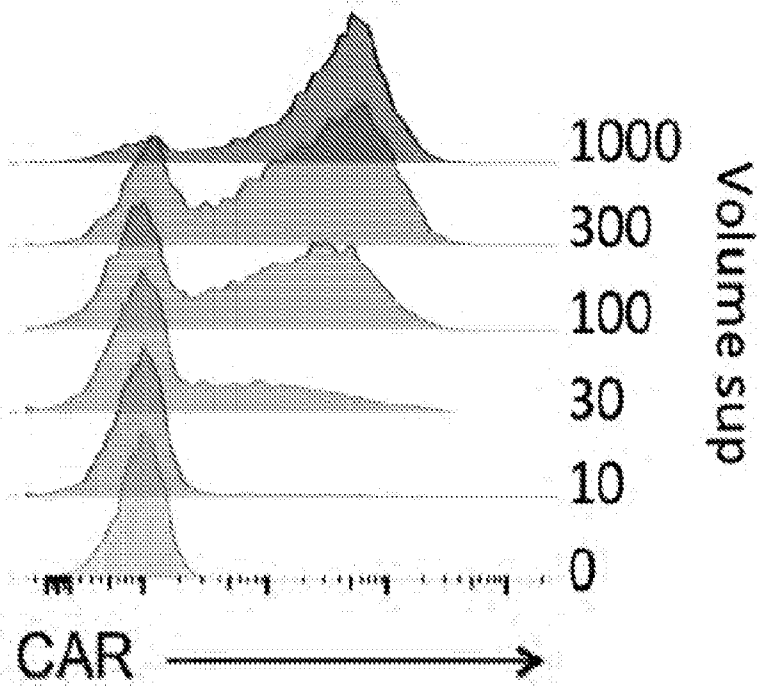


FIG. 13A

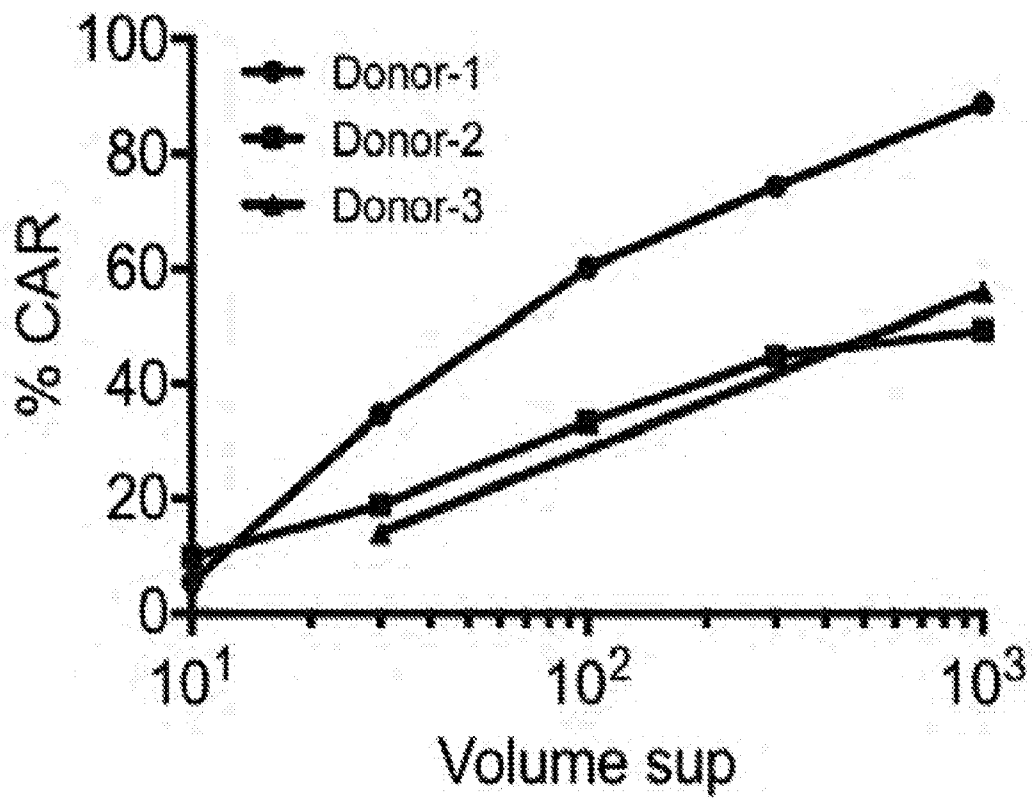


FIG. 13B

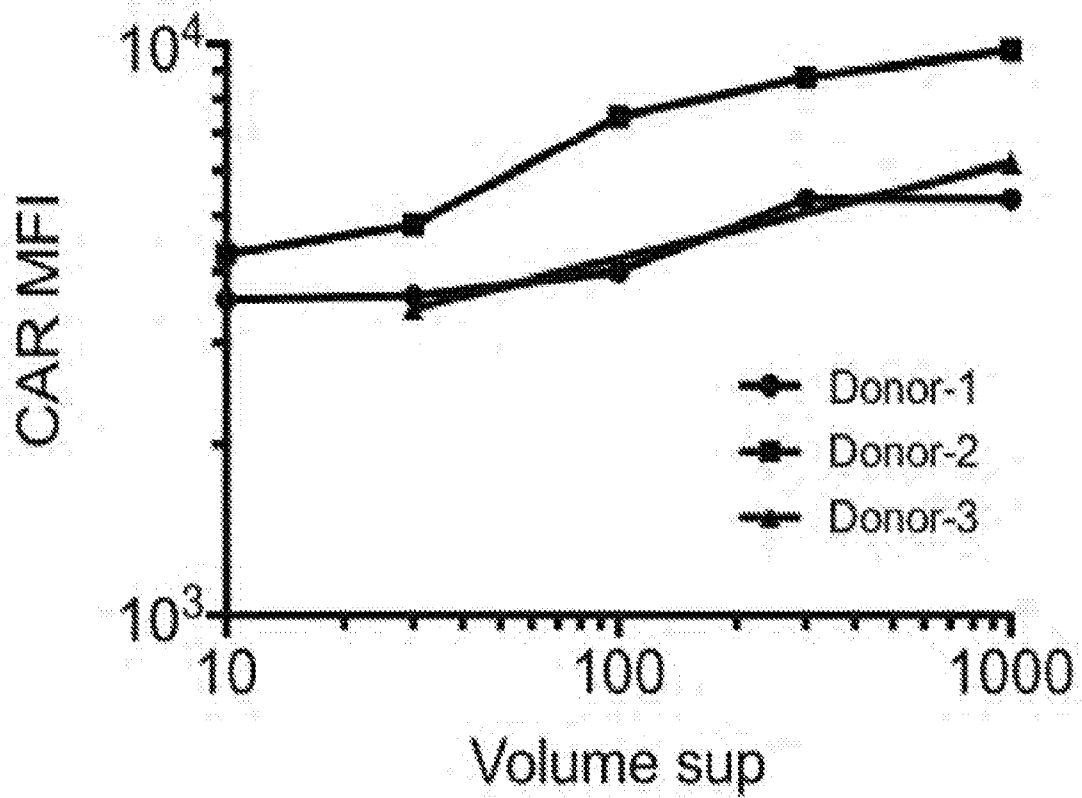


FIG. 13C

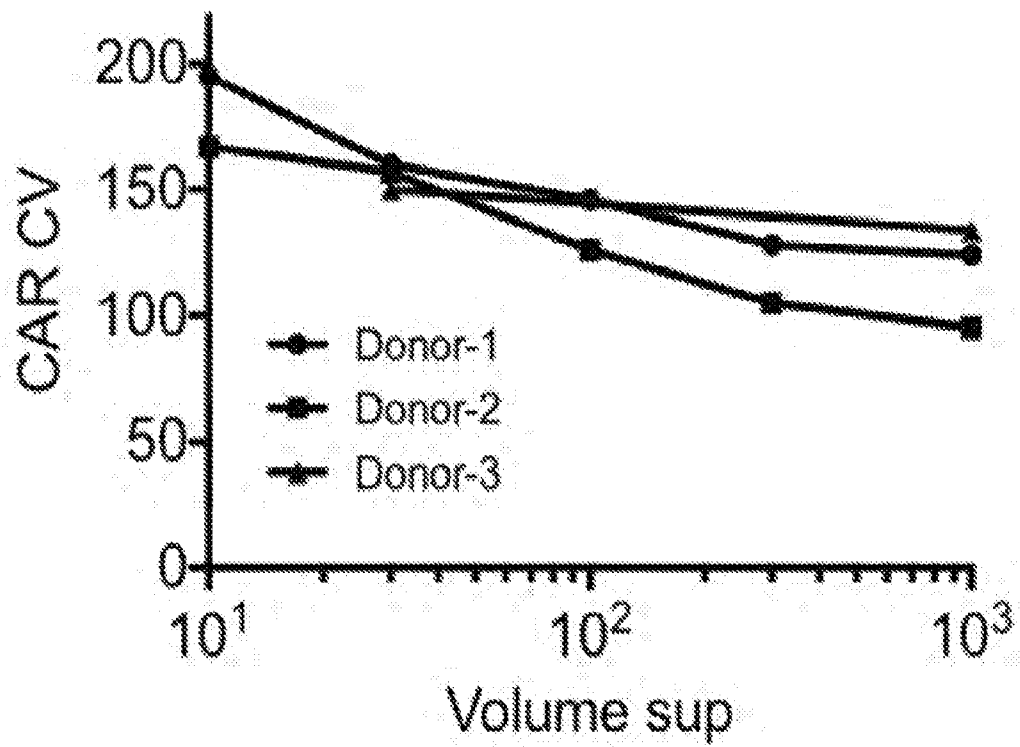


FIG. 13D

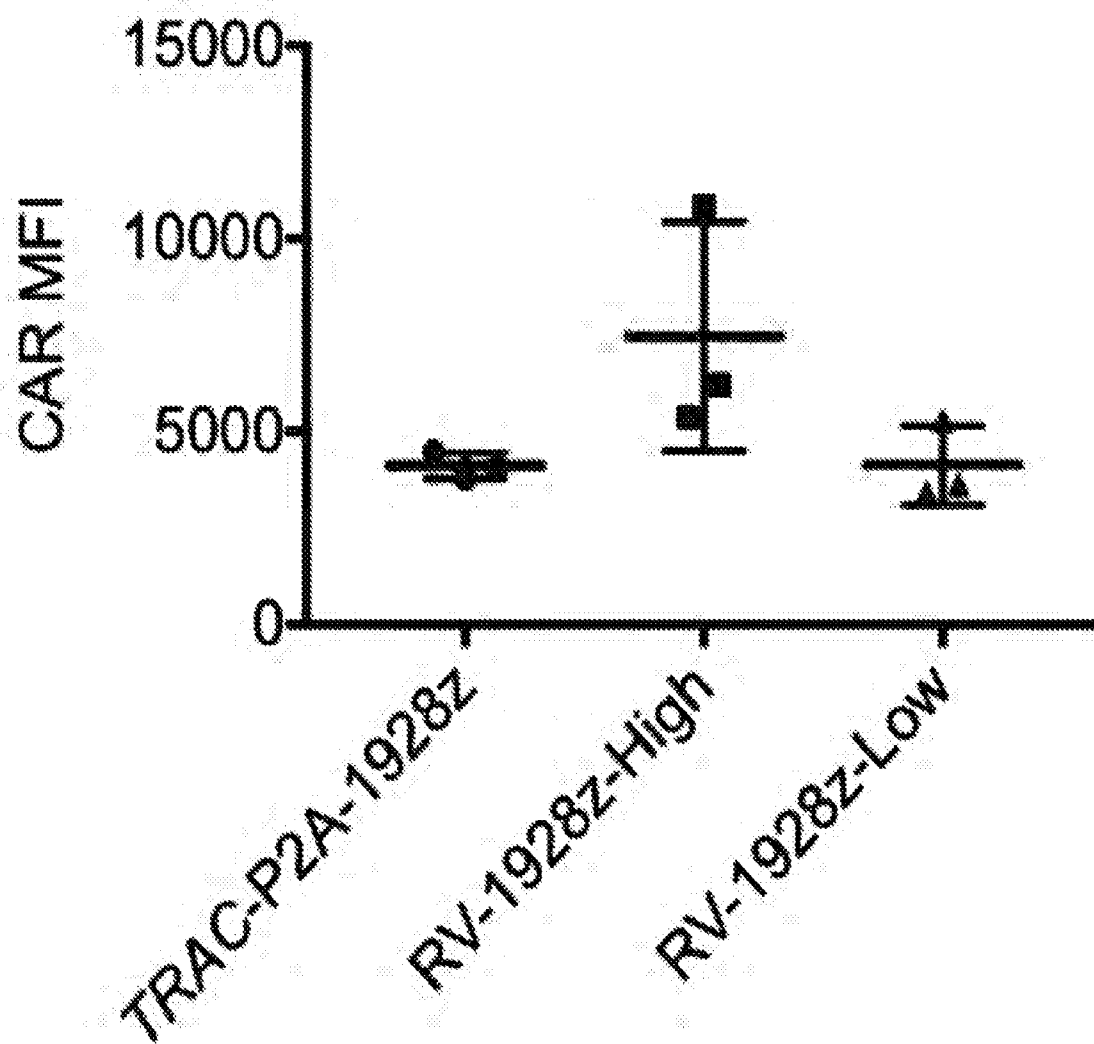


FIG. 13E

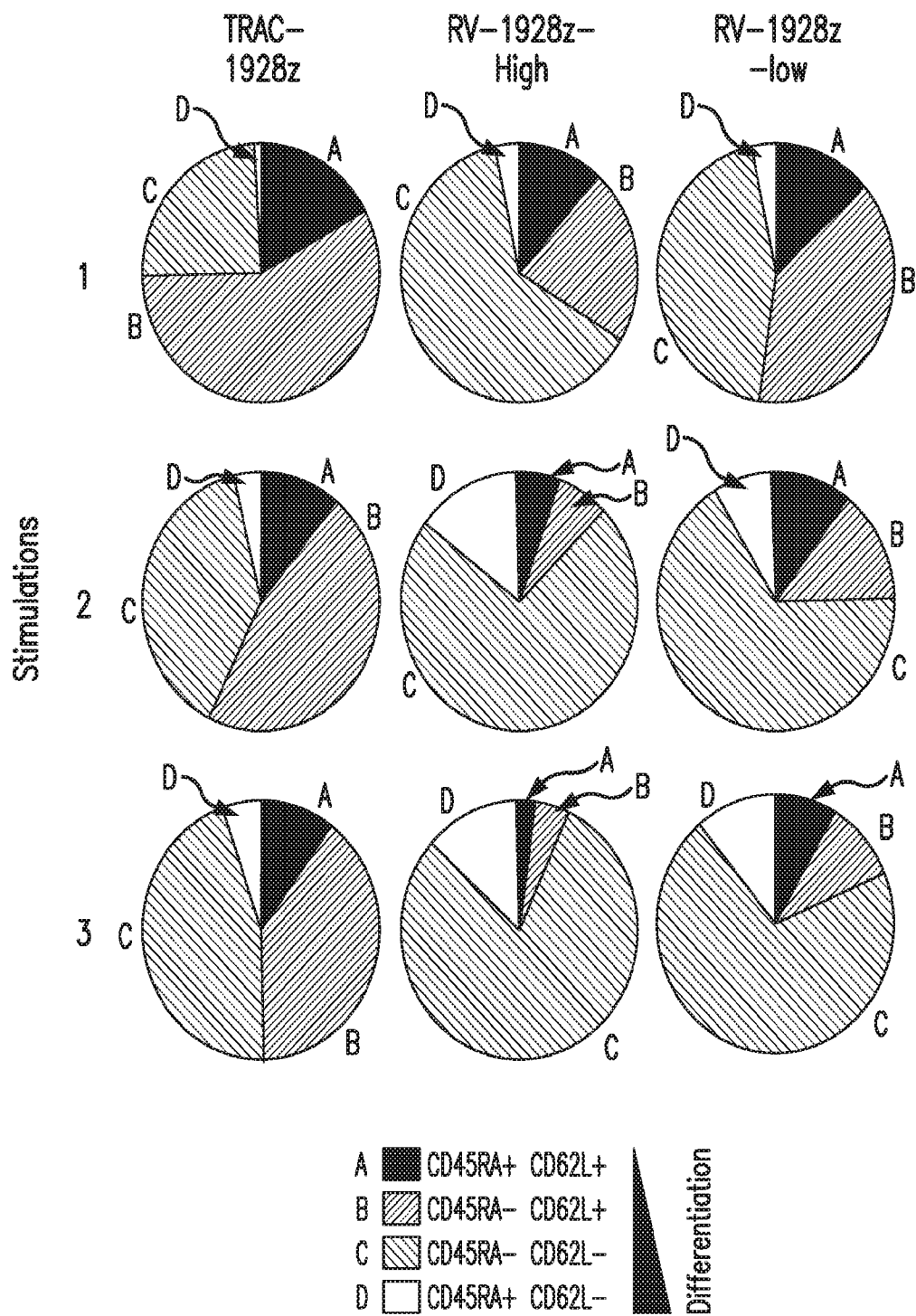


FIG. 13F

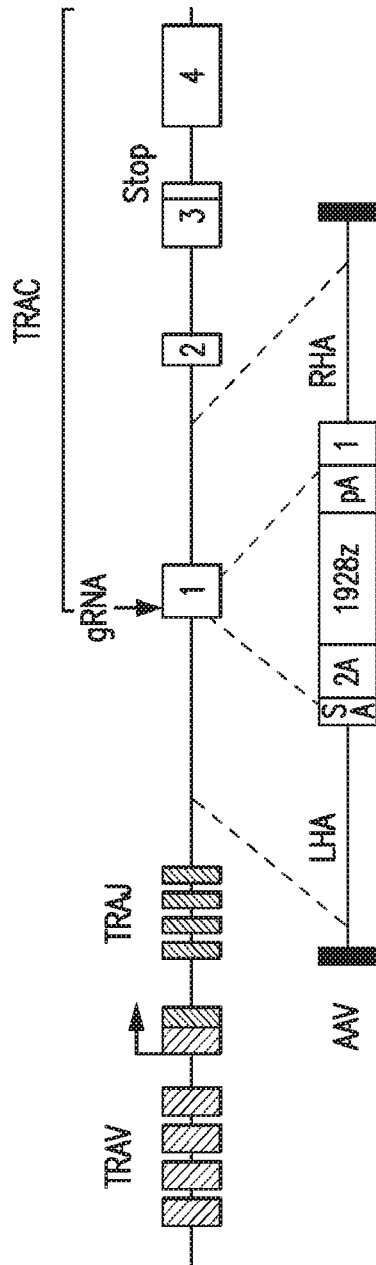


FIG. 14A

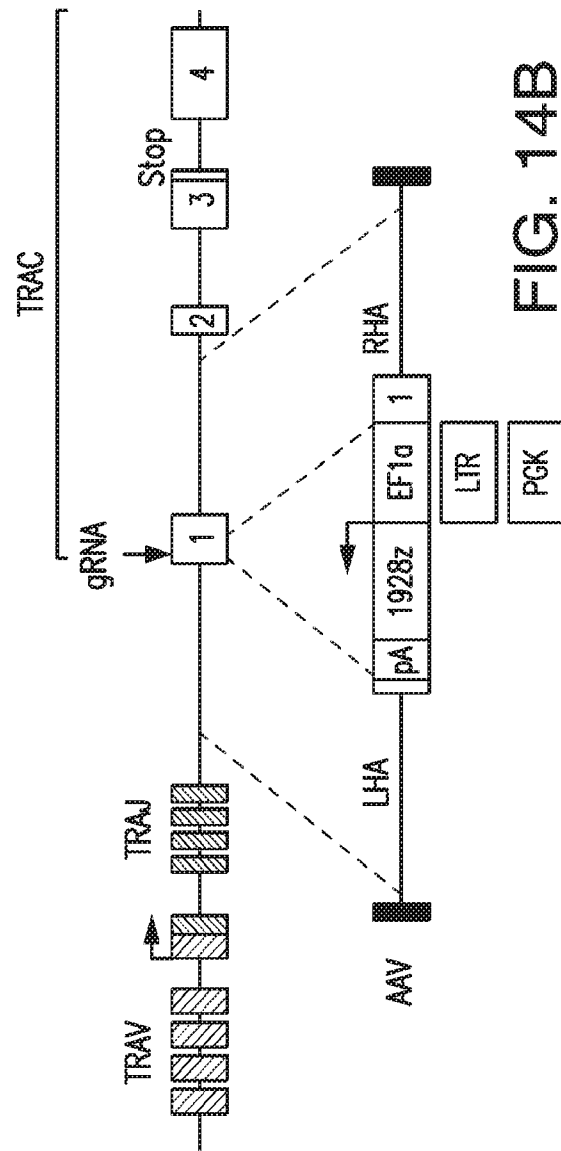


FIG. 14B

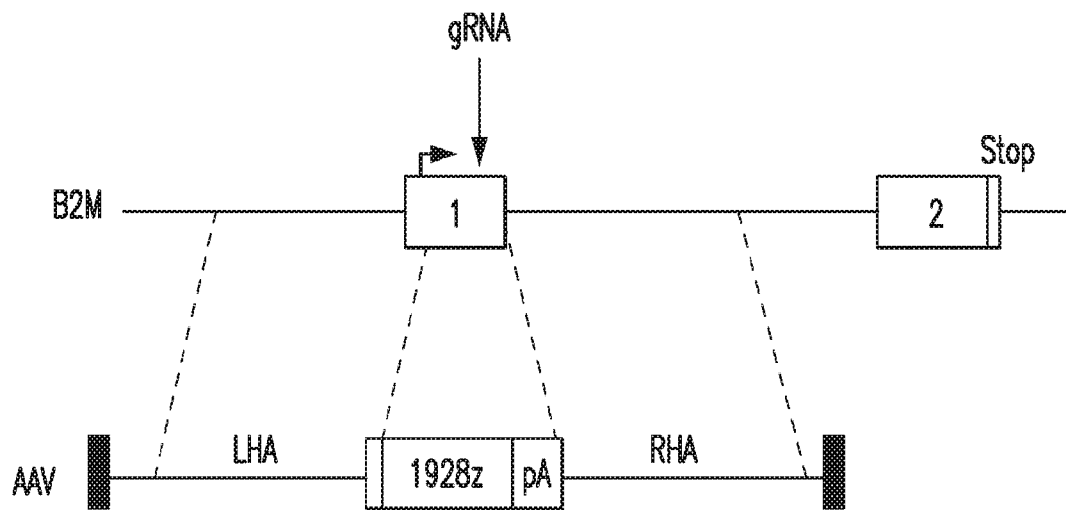


FIG. 14C

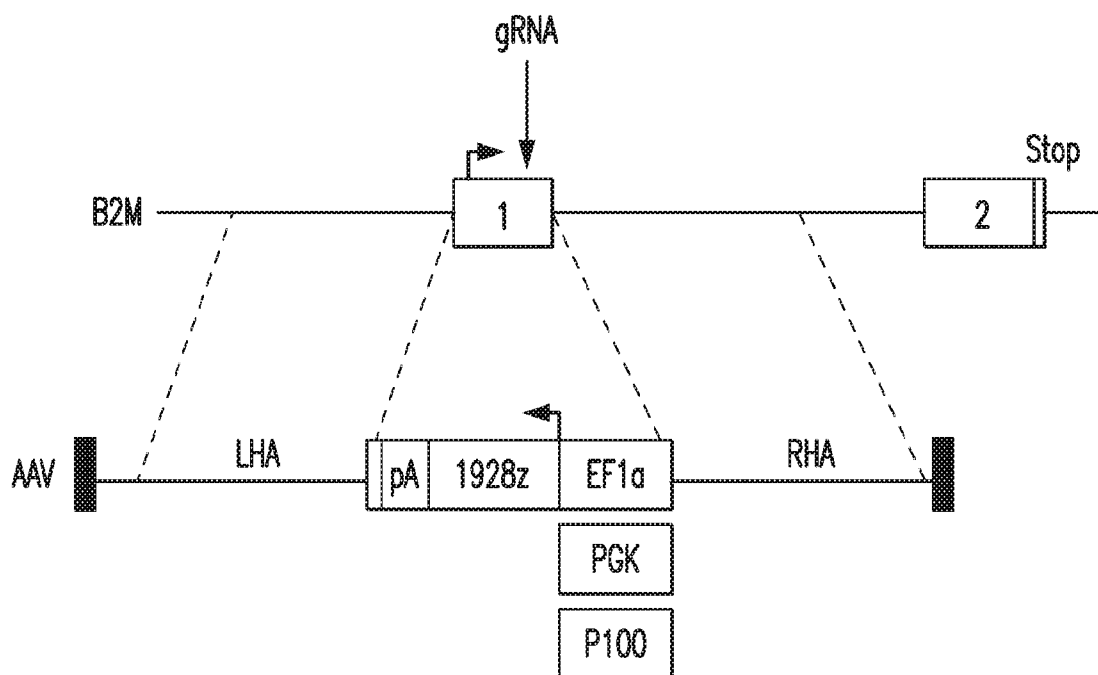


FIG. 14D

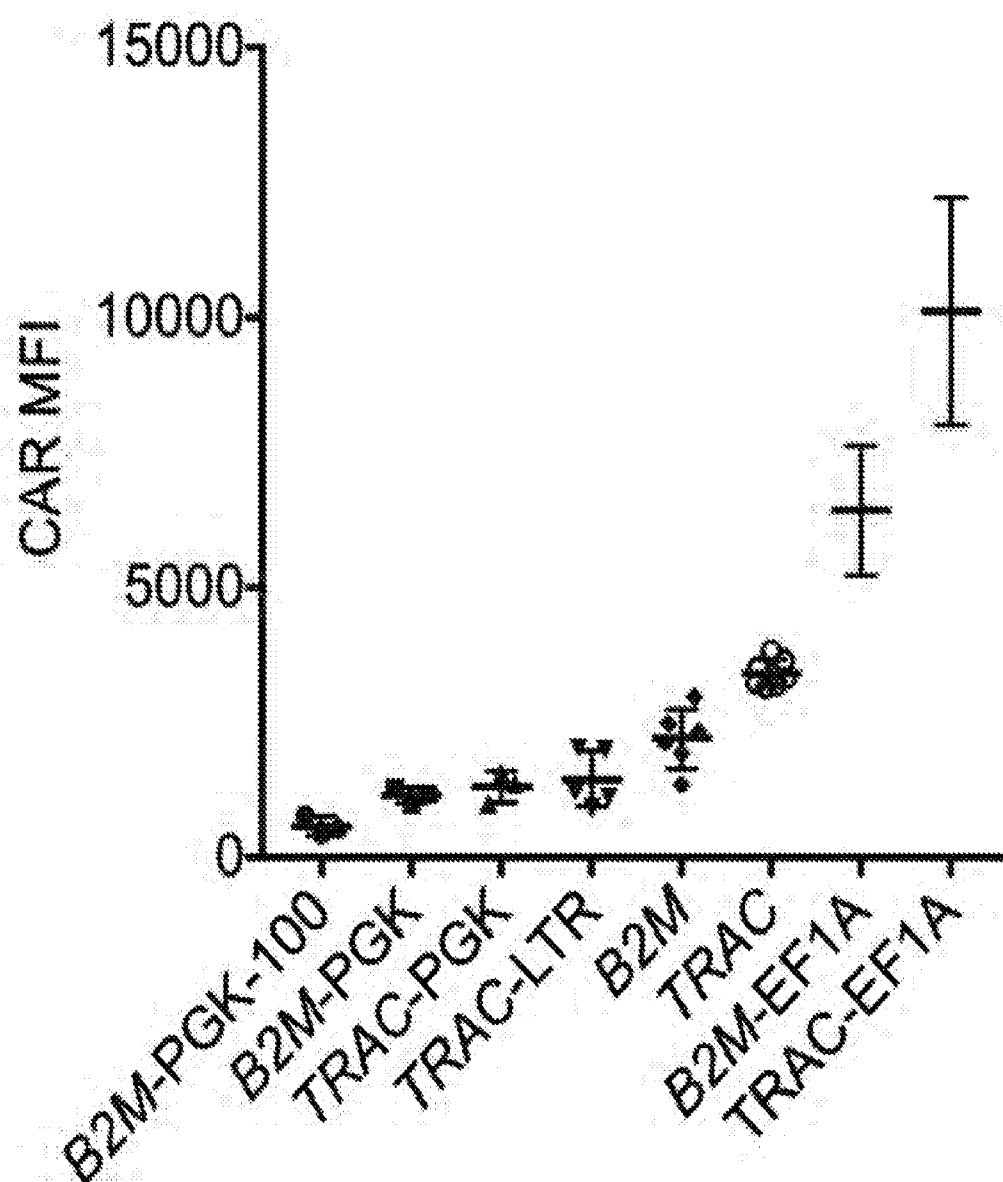
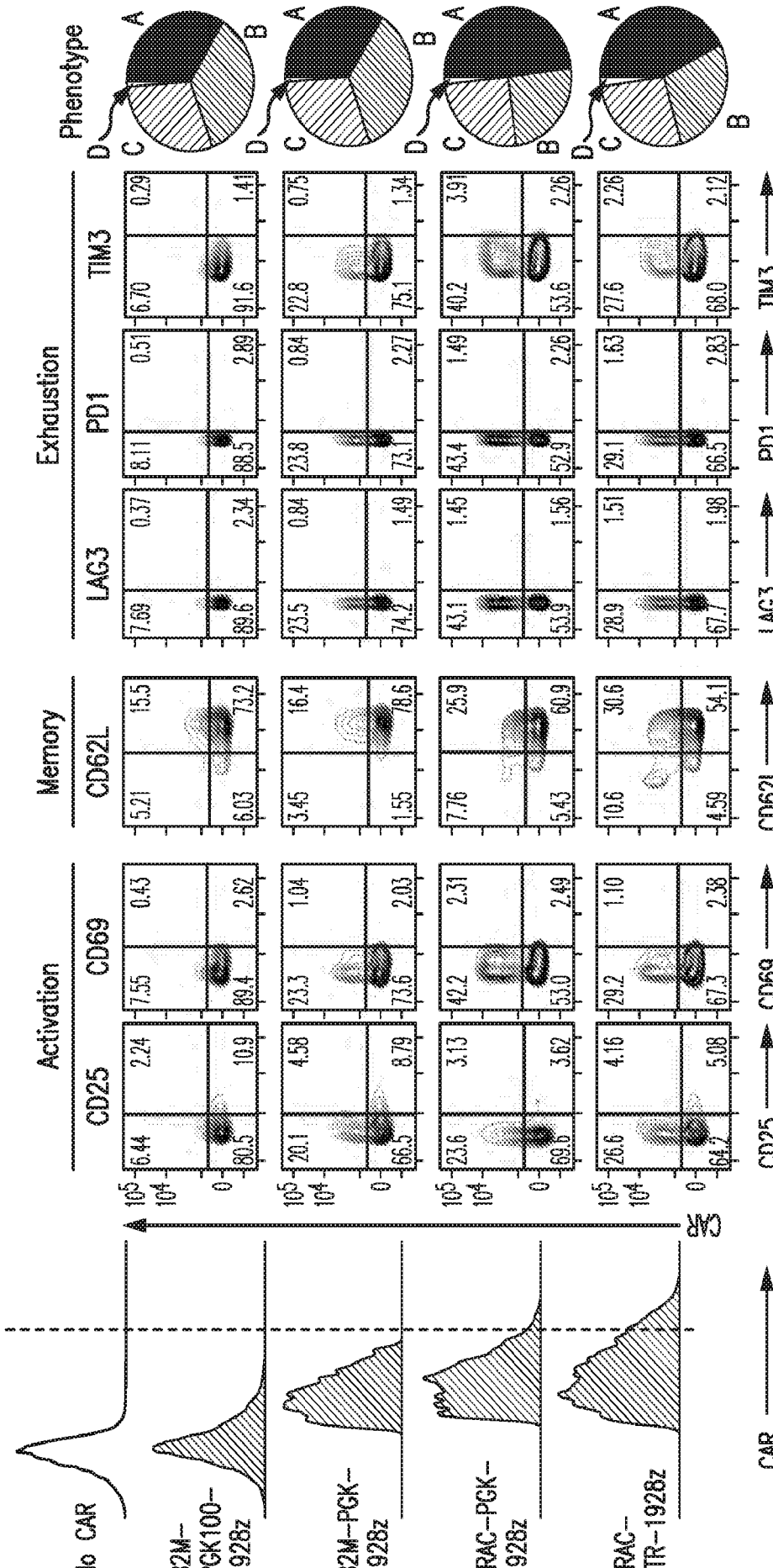


FIG. 14E



14.5

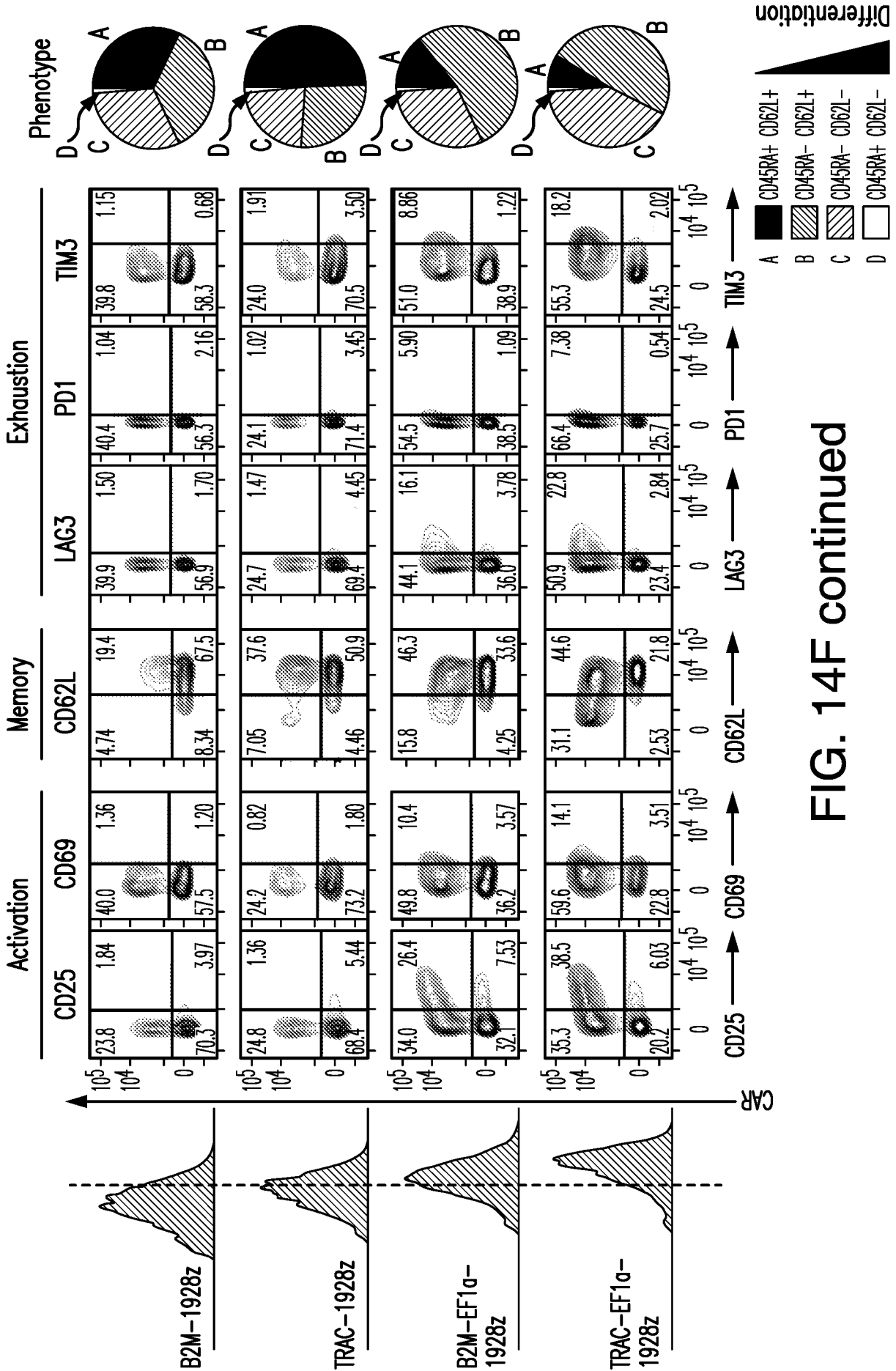


FIG. 14F continued

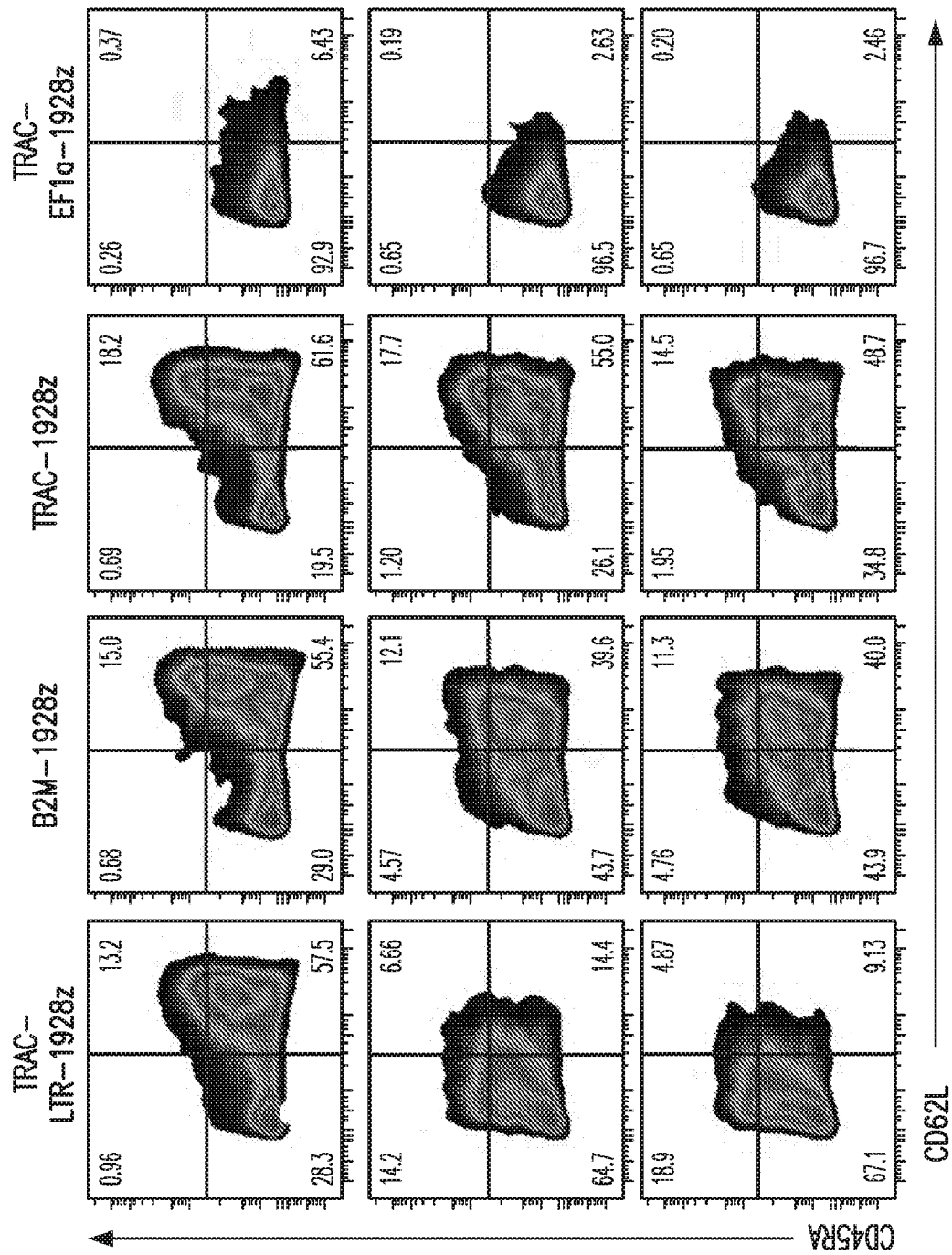
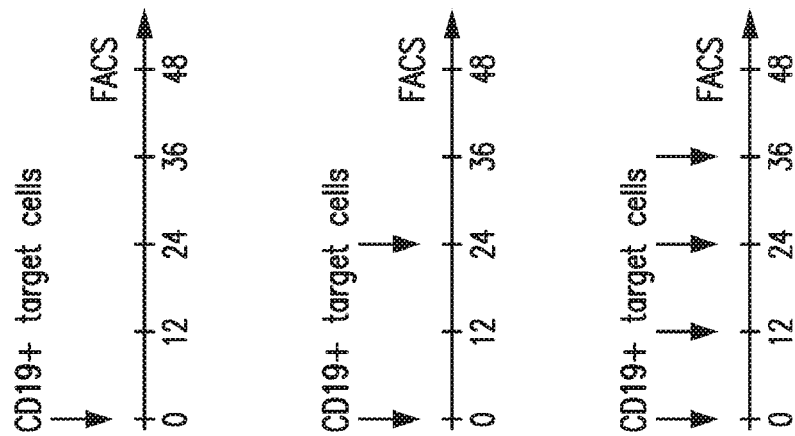


FIG. 15A



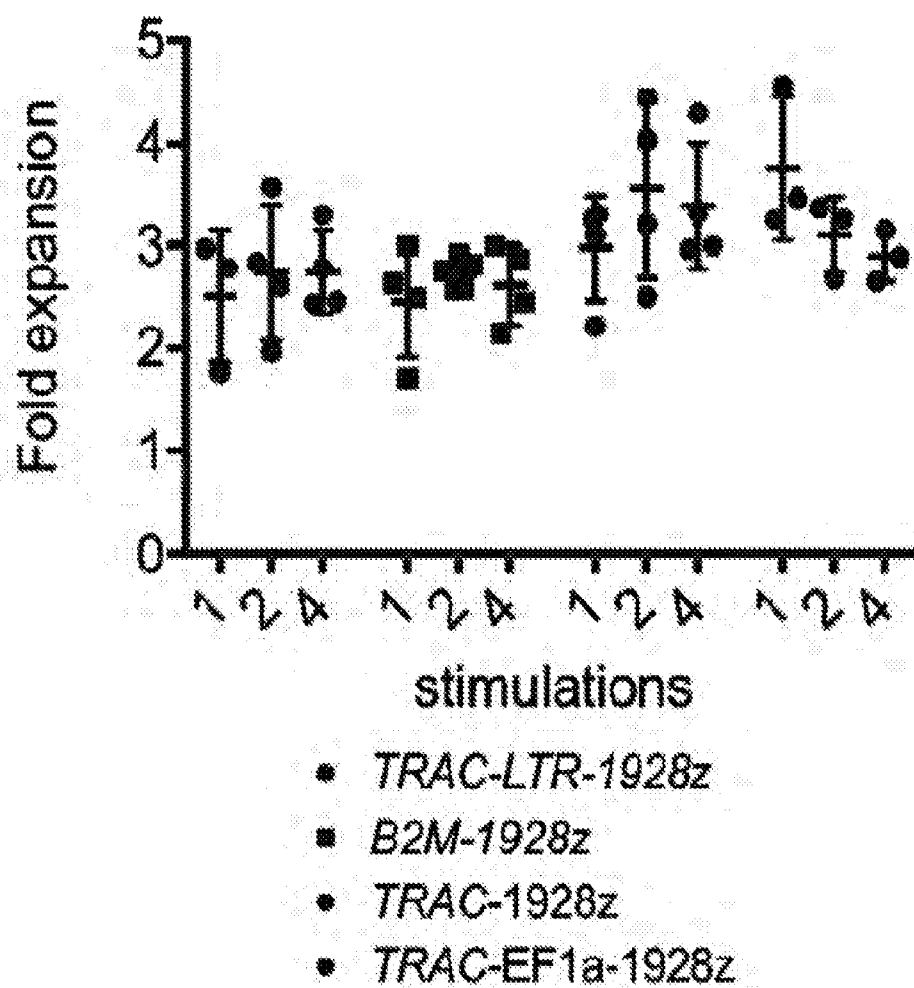


FIG.15B

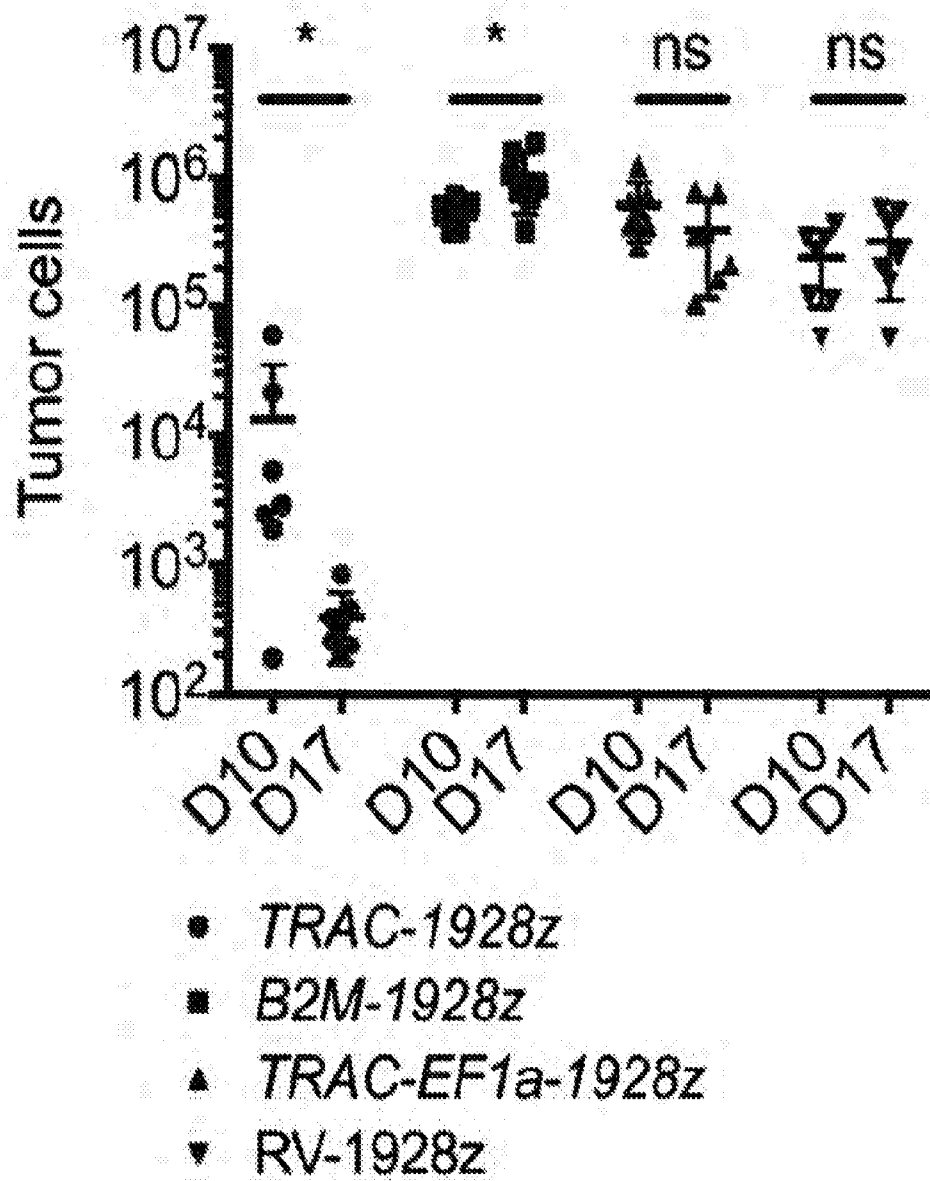


FIG. 15C

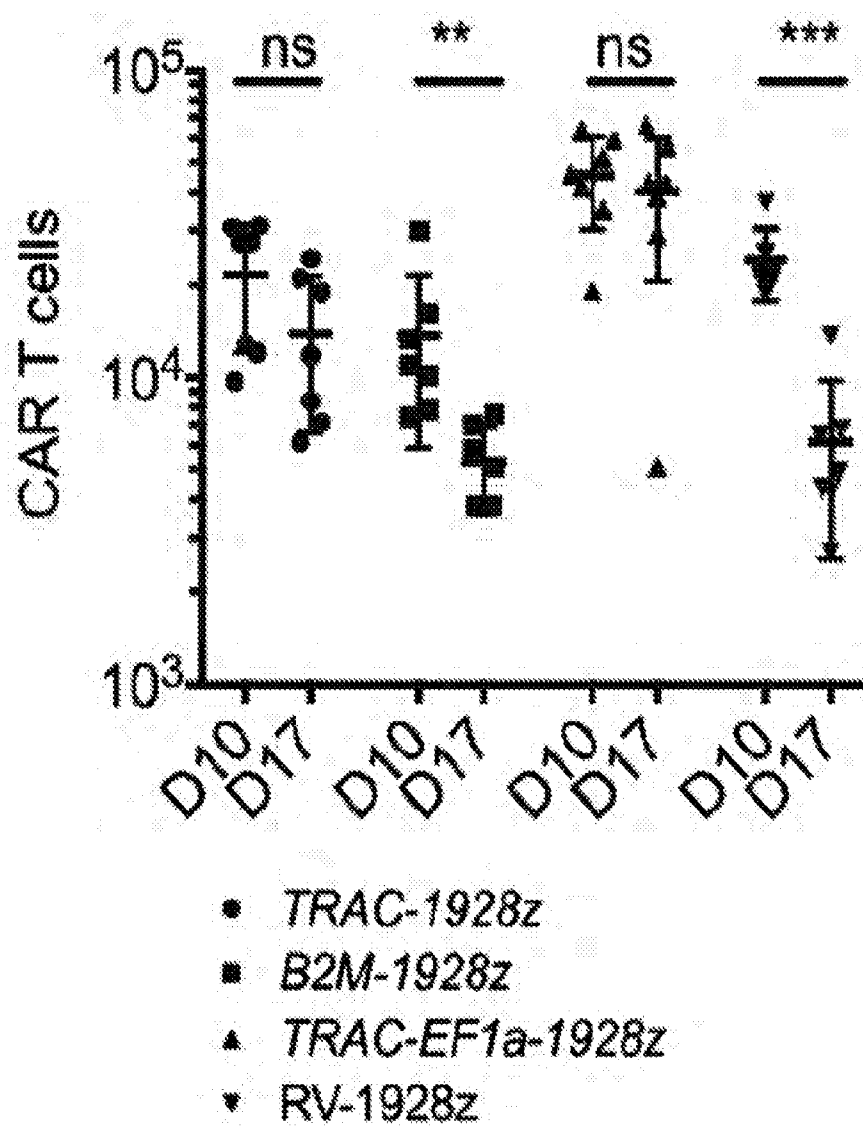


FIG. 15D

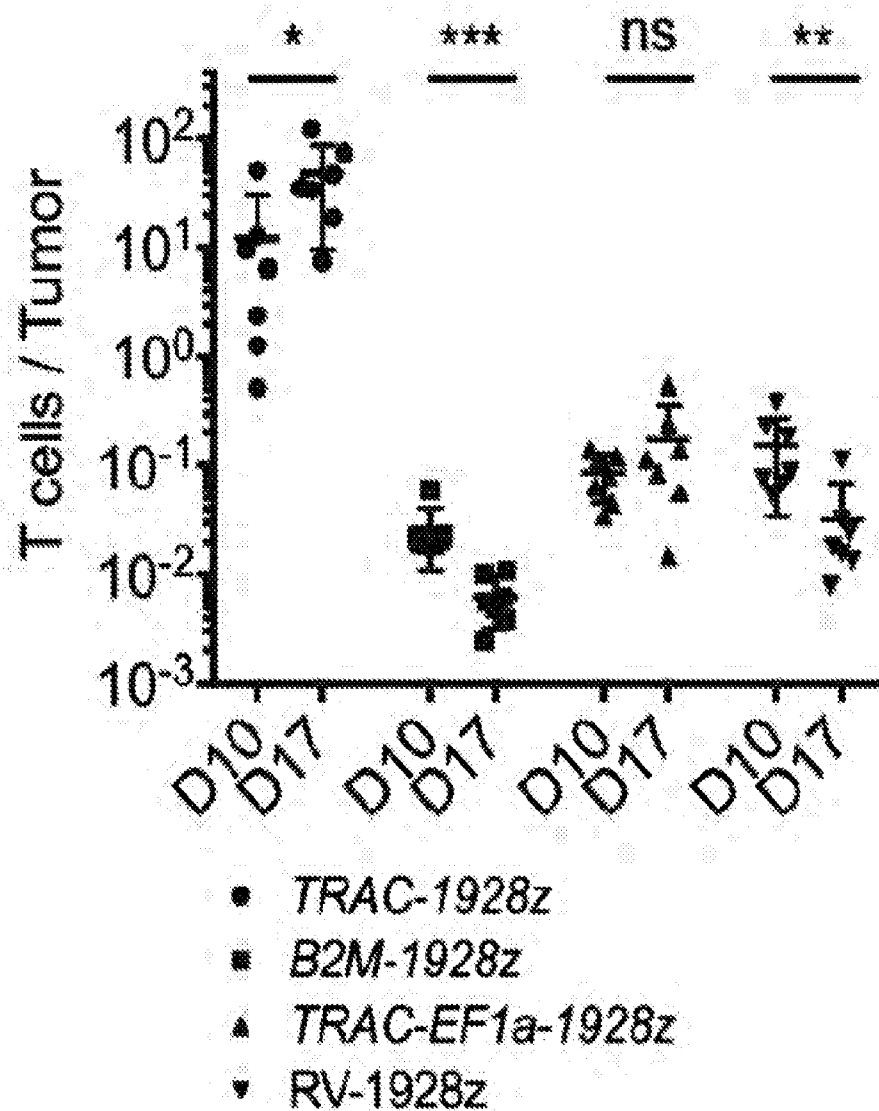


FIG. 15E

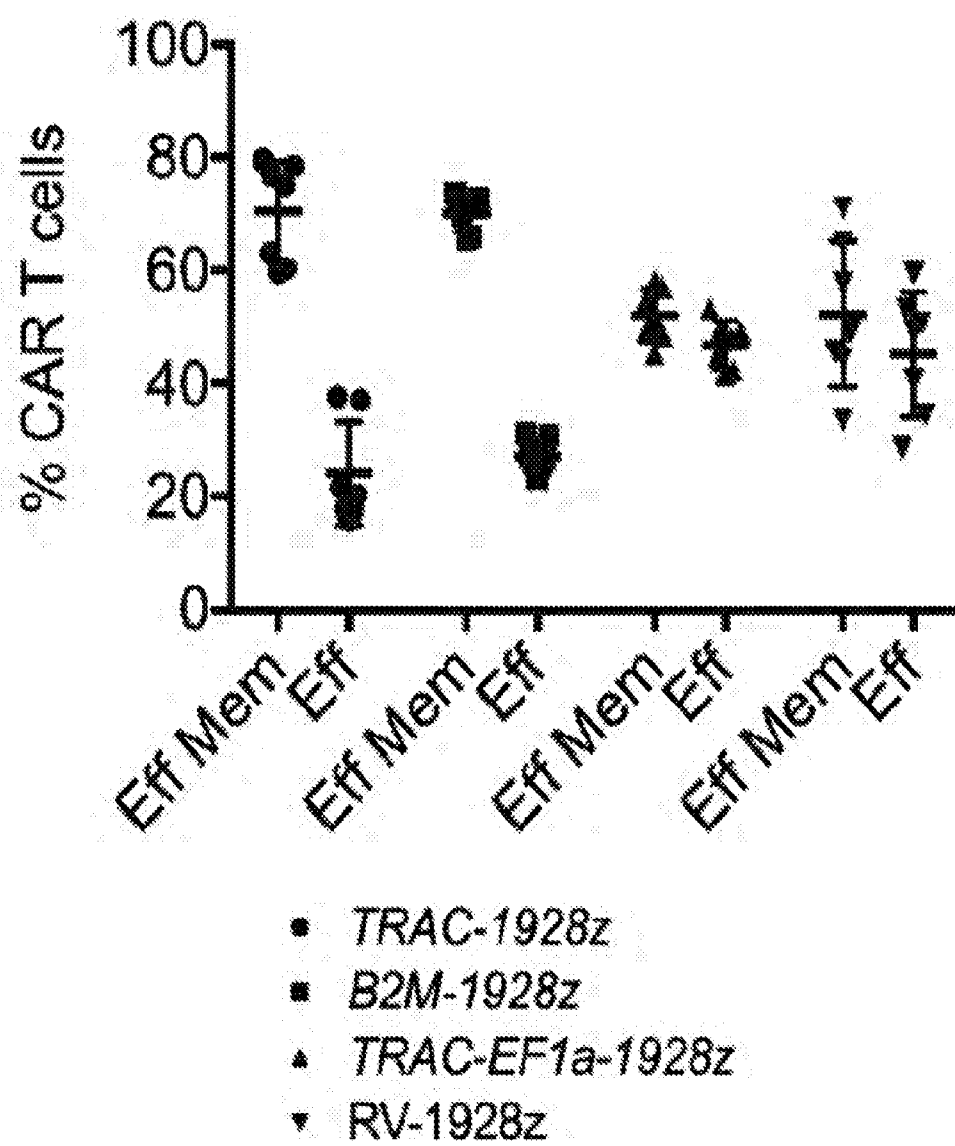


FIG. 15F

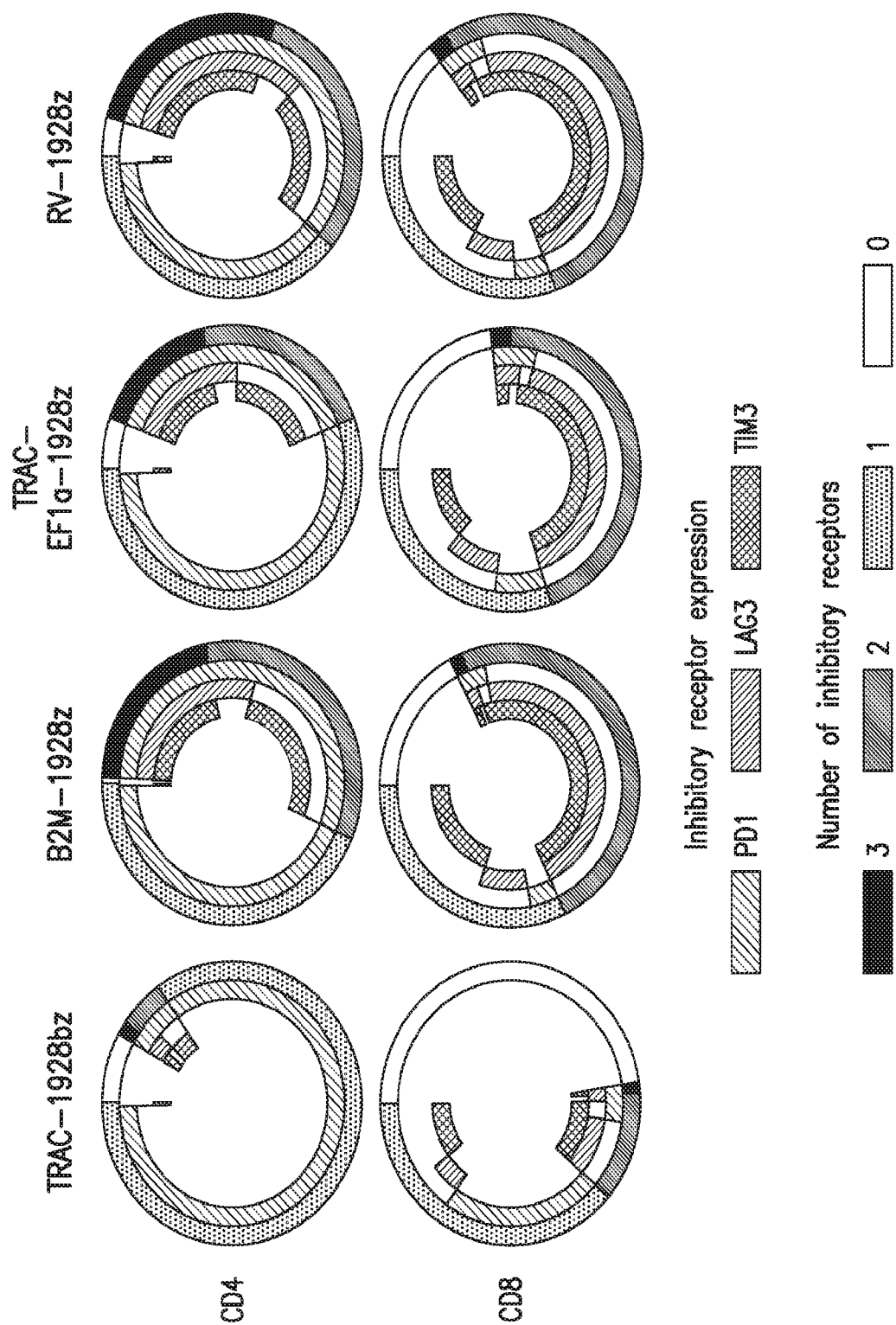


FIG. 15G

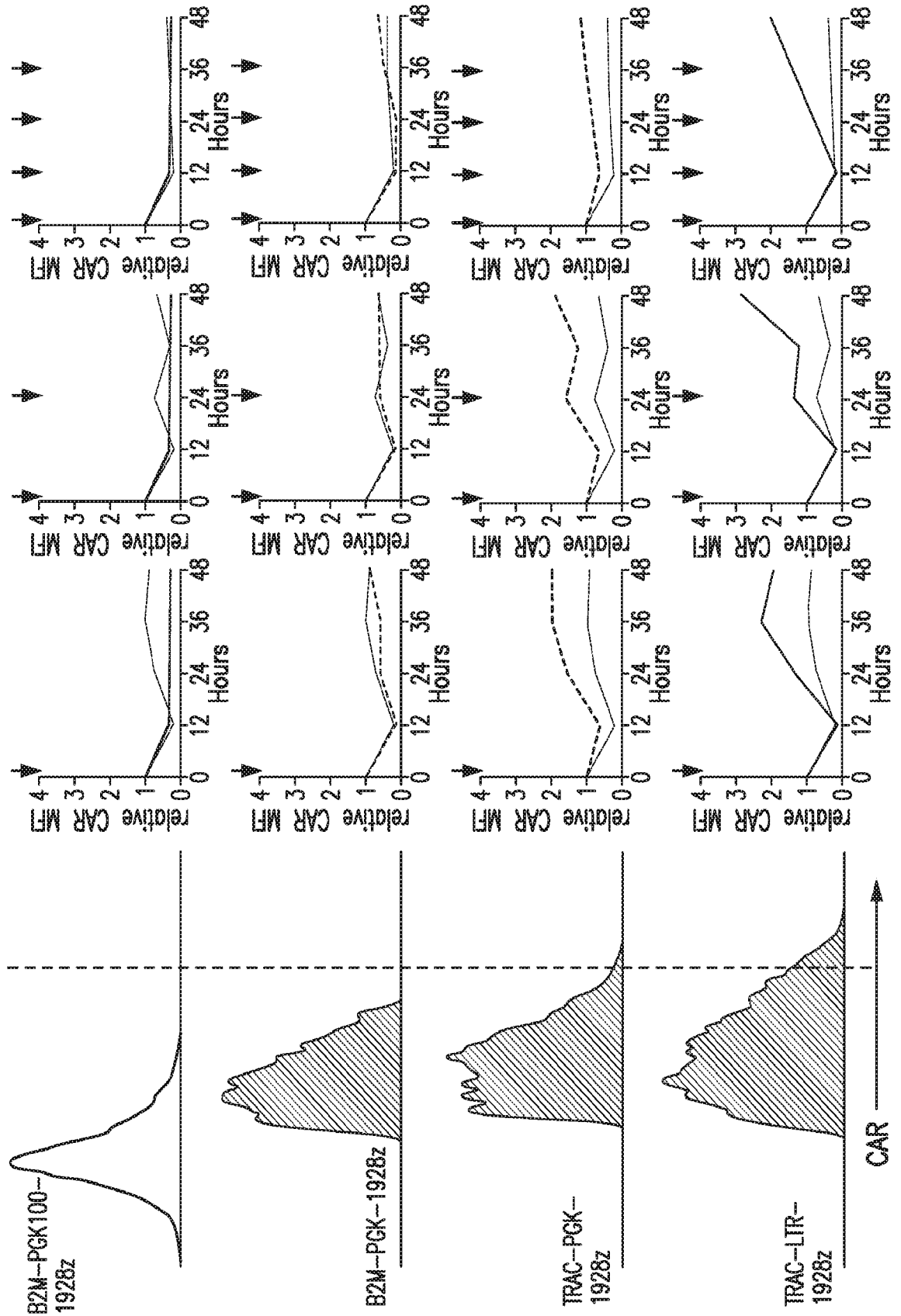


FIG. 16A

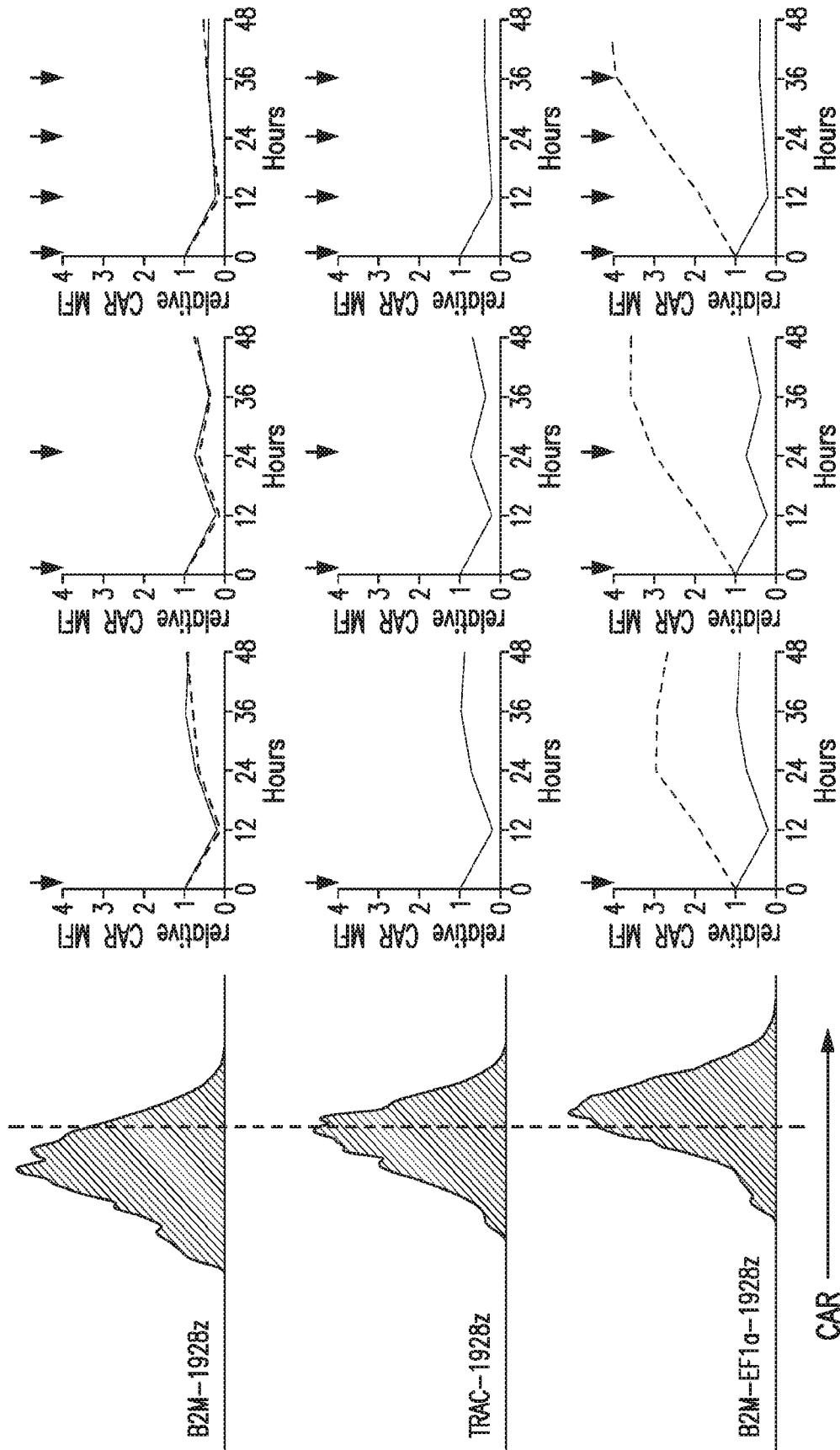


FIG. 16A continued

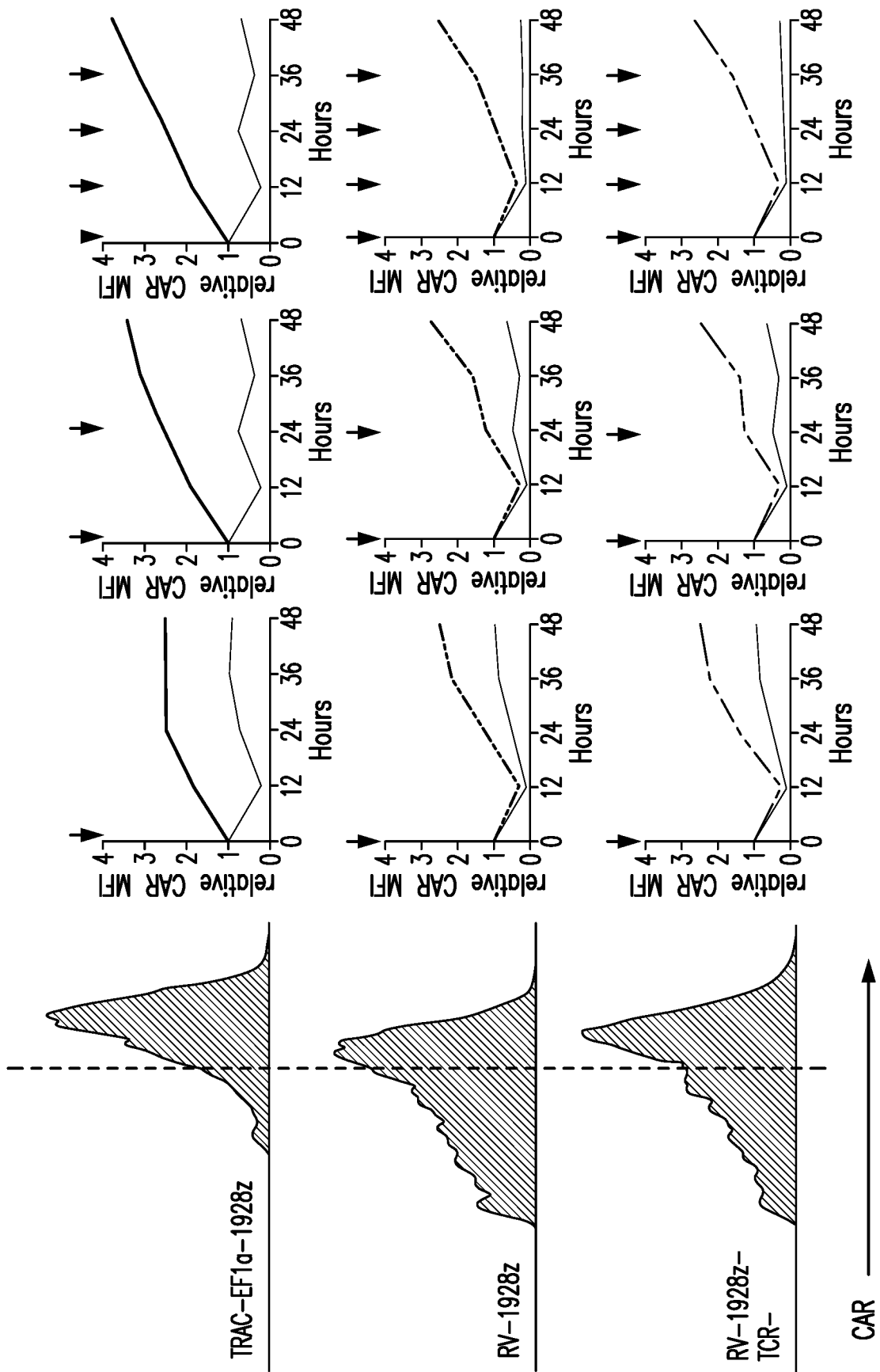


FIG. 16A continued

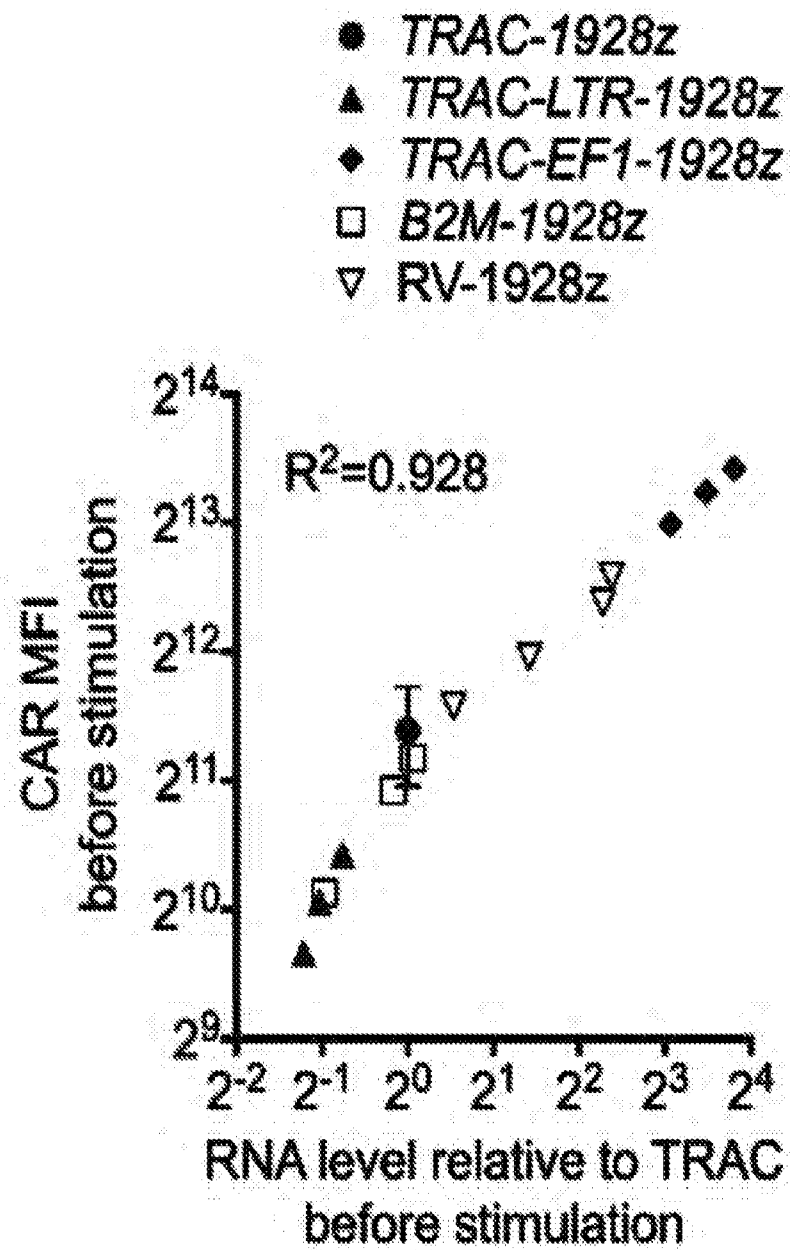


FIG. 16B

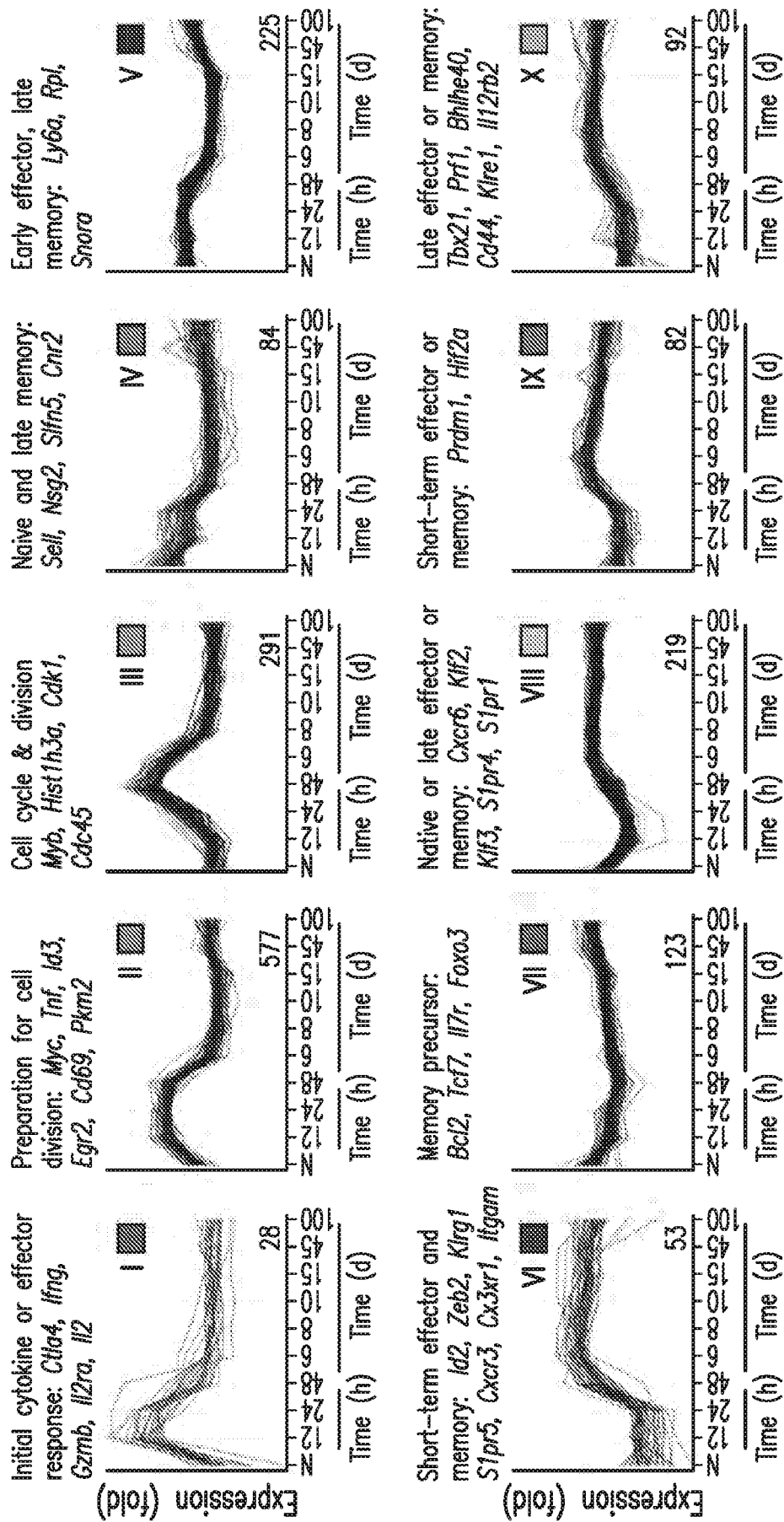


FIG. 17

>wild type MLV IN sequence

```

1  ensspytseh fhytvdikd ltklgaiydk tkkywvyqgk pvmpdqftfe lldflhqlth
61  lsfskmlall ershsppym l nrdrflknit etckacaqvn asksavkqgt rvrghrpgth
121 weidfteikp glygykyllv fidtfsgwie afptkktak vvtkklleei fprfgmpqvl
181 gtdngpafvs kvsqtvadll gidwklhcay rpqssgqver mnrtiketlt kltlatgsrd
241 wllllplaly rarntpgphg ltpyeilyga ppplvnfpdp dmtrvtnsps laahlaqaly
301 vqhevwrpla aayqeqlrdp vvphpyrvgd tvwvrrhqt nleprwkgy tvllttptal
361 kvdgiaawih aahvkaadpg ggpssrltwr vqrsqnpiki rltreap

```

>D124A IN

```

1  ensspytseh fhytvdikd ltklgaiydk tkkywvyqgk pvmpdqftfe lldflhqlth
61  lsfskmlall ershsppym l nrdrflknit etckacaqvn asksavkqgt rvrghrpgth
121 weiAfteikp glygykyllv fidtfsgwie afptkktak vvtkklleei fprfgmpqvl
181 gtdngpafvs kvsqtvadll gidwklhcay rpqssgqver mnrtiketlt kltlatgsrd
241 wllllplaly rarntpgphg ltpyeilyga ppplvnfpdp dmtrvtnsps laahlaqaly
301 vqhevwrpla aayqeqlrdp vvphpyrvgd tvwvrrhqt nleprwkgy tvllttptal
361 kvdgiaawih aahvkaadpg ggpssrltwr vqrsqnpiki rltreap

```

>D124E IN

```

1  ensspytseh fhytvdikd ltklgaiydk tkkywvyqgk pvmpdqftfe lldflhqlth
61  lsfskmlall ershsppym l nrdrflknit etckacaqvn asksavkqgt rvrghrpgth
121 weiEfteikp glygykyllv fidtfsgwie afptkktak vvtkklleei fprfgmpqvl
181 gtdngpafvs kvsqtvadll gidwklhcay rpqssgqver mnrtiketlt kltlatgsrd
241 wllllplaly rarntpgphg ltpyeilyga ppplvnfpdp dmtrvtnsps laahlaqaly
301 vqhevwrpla aayqeqlrdp vvphpyrvgd tvwvrrhqt nleprwkgy tvllttptal
361 kvdgiaawih aahvkaadpg ggpssrltwr vqrsqnpiki rltreap

```

>D124N IN

```

1  ensspytseh fhytvdikd ltklgaiydk tkkywvyqgk pvmpdqftfe lldflhqlth
61  lsfskmlall ershsppym l nrdrflknit etckacaqvn asksavkqgt rvrghrpgth
121 weiNfteikp glygykyllv fidtfsgwie afptkktak vvtkklleei fprfgmpqvl
181 gtdngpafvs kvsqtvadll gidwklhcay rpqssgqver mnrtiketlt kltlatgsrd
241 wllllplaly rarntpgphg ltpyeilyga ppplvnfpdp dmtrvtnsps laahlaqaly
301 vqhevwrpla aayqeqlrdp vvphpyrvgd tvwvrrhqt nleprwkgy tvllttptal
361 kvdgiaawih aahvkaadpg ggpssrltwr vqrsqnpiki rltreap

```

>D124V IN

```

1  ensspytseh fhytvdikd ltklgaiydk tkkywvyqgk pvmpdqftfe lldflhqlth
61  lsfskmlall ershsppym l nrdrflknit etckacaqvn asksavkqgt rvrghrpgth
121 weiVfteikp glygykyllv fidtfsgwie afptkktak vvtkklleei fprfgmpqvl
181 gtdngpafvs kvsqtvadll gidwklhcay rpqssgqver mnrtiketlt kltlatgsrd
241 wllllplaly rarntpgphg ltpyeilyga ppplvnfpdp dmtrvtnsps laahlaqaly
301 vqhevwrpla aayqeqlrdp vvphpyrvgd tvwvrrhqt nleprwkgy tvllttptal
361 kvdgiaawih aahvkaadpg ggpssrltwr vqrsqnpiki rltreap

```

>D183A IN

```

1  ensspytseh fhytvdikd ltklgaiydk tkkywvyqgk pvmpdqftfe lldflhqlth
61  lsfskmlall ershsppym l nrdrflknit etckacaqvn asksavkqgt rvrghrpgth
121 weidfteikp glygykyllv fidtfsgwie afptkktak vvtkklleei fprfgmpqvl
181 gtAngpafvs kvsqtvadll gidwklhcay rpqssgqver mnrtiketlt kltlatgsrd
241 wllllplaly rarntpgphg ltpyeilyga ppplvnfpdp dmtrvtnsps laahlaqaly
301 vqhevwrpla aayqeqlrdp vvphpyrvgd tvwvrrhqt nleprwkgy tvllttptal
361 kvdgiaawih aahvkaadpg ggpssrltwr vqrsqnpiki rltreap

```

FIG. 18

>D183N IN

```

1  ensspytseh fhytvtidik ltklgaiydk tkkywvyqgk pvmpdqftfe lldflhqlth
61 lsfskmlall ershsppym l nrdrflknit etckacaqvn asksavkqgt rvrqhrpgth
121 weidfteikp glygykyllv fidtfsgwie afptkktak vvtkklleei fprfgmpqvl
181 gtNngpafvs kvsqtvadll gidwklhcay rpqssgqver mnrtiketlt kltlatgsrd
241 wllllplaly rarntpgphg ltpyeilyga ppplvnfpdp dmtrvtnsps lqahlqalyi
301 vqhevwrpla aayqeqldrp vvphpyrvgd tvwvrrhqt nleprwkgy tvllttptal
361 kvdgiaawih aahvkaadpg ggpssrltwr vqrsqnlki rltreap

```

>D124A + D183A IN

```

1  ensspytseh fhytvtidik ltklgaiydk tkkywvyqgk pvmpdqftfe lldflhqlth
61 lsfskmlall ershsppym l nrdrflknit etckacaqvn asksavkqgt rvrqhrpgth
121 weiAfteikp glygykyllv fidtfsgwie afptkktak vvtkklleei fprfgmpqvl
181 gtAngpafvs kvsqtvadll gidwklhcay rpqssgqver mnrtiketlt kltlatgsrd
241 wllllplaly rarntpgphg ltpyeilyga ppplvnfpdp dmtrvtnsps lqahlqalyi
301 vqhevwrpla aayqeqldrp vvphpyrvgd tvwvrrhqt nleprwkgy tvllttptal
361 kvdgiaawih aahvkaadpg ggpssrltwr vqrsqnlki rltreap

```

>D124A + D183N IN

```

1  ensspytseh fhytvtidik ltklgaiydk tkkywvyqgk pvmpdqftfe lldflhqlth
61 lsfskmlall ershsppym l nrdrflknit etckacaqvn asksavkqgt rvrqhrpgth
121 weiAfteikp glygykyllv fidtfsgwie afptkktak vvtkklleei fprfgmpqvl
181 gtNngpafvs kvsqtvadll gidwklhcay rpqssgqver mnrtiketlt kltlatgsrd
241 wllllplaly rarntpgphg ltpyeilyga ppplvnfpdp dmtrvtnsps lqahlqalyi
301 vqhevwrpla aayqeqldrp vvphpyrvgd tvwvrrhqt nleprwkgy tvllttptal
361 kvdgiaawih aahvkaadpg ggpssrltwr vqrsqnlki rltreap

```

>D124E + D183A IN

```

1  ensspytseh fhytvtidik ltklgaiydk tkkywvyqgk pvmpdqftfe lldflhqlth
61 lsfskmlall ershsppym l nrdrflknit etckacaqvn asksavkqgt rvrqhrpgth
121 weiEfteikp glygykyllv fidtfsgwie afptkktak vvtkklleei fprfgmpqvl
181 gtAngpafvs kvsqtvadll gidwklhcay rpqssgqver mnrtiketlt kltlatgsrd
241 wllllplaly rarntpgphg ltpyeilyga ppplvnfpdp dmtrvtnsps lqahlqalyi
301 vqhevwrpla aayqeqldrp vvphpyrvgd tvwvrrhqt nleprwkgy tvllttptal
361 kvdgiaawih aahvkaadpg ggpssrltwr vqrsqnlki rltreap

```

>D124E + D183N IN

```

1  ensspytseh fhytvtidik ltklgaiydk tkkywvyqgk pvmpdqftfe lldflhqlth
61 lsfskmlall ershsppym l nrdrflknit etckacaqvn asksavkqgt rvrqhrpgth
121 weiEfteikp glygykyllv fidtfsgwie afptkktak vvtkklleei fprfgmpqvl
181 gtNngpafvs kvsqtvadll gidwklhcay rpqssgqver mnrtiketlt kltlatgsrd
241 wllllplaly rarntpgphg ltpyeilyga ppplvnfpdp dmtrvtnsps lqahlqalyi
301 vqhevwrpla aayqeqldrp vvphpyrvgd tvwvrrhqt nleprwkgy tvllttptal
361 kvdgiaawih aahvkaadpg ggpssrltwr vqrsqnlki rltreap

```

>D124N + D183A IN

```

1  ensspytseh fhytvtidik ltklgaiydk tkkywvyqgk pvmpdqftfe lldflhqlth
61 lsfskmlall ershsppym l nrdrflknit etckacaqvn asksavkqgt rvrqhrpgth
121 weiNfteikp glygykyllv fidtfsgwie afptkktak vvtkklleei fprfgmpqvl
181 gtAngpafvs kvsqtvadll gidwklhcay rpqssgqver mnrtiketlt kltlatgsrd
241 wllllplaly rarntpgphg ltpyeilyga ppplvnfpdp dmtrvtnsps lqahlqalyi
301 vqhevwrpla aayqeqldrp vvphpyrvgd tvwvrrhqt nleprwkgy tvllttptal
361 kvdgiaawih aahvkaadpg ggpssrltwr vqrsqnlki rltreap

```

FIG. 18 continued

>D124N + D183N IN

```

1  ensspytseh fhytvtdikd ltklgaiydk tkkywvyqgk pvmpdqftfe lldflhqlth
61 lsfskmlall ershsppym l nrdrflknit etckacaqvn asksavkagt rvrghrpgth
121 weiNfteikp glygykyllv fidtfsgwie afptkktak vvtkklleei fprfgmpqvl
181 gtNngpafvs kvsqtvadll gidwklhcay rpqssgqver mnrtiketlt kltlatgsrd
241 wvlllplaly rarntpgphg ltpyeilyga ppplvnfpdp dmtrvtnsps lqahlqalyl
301 vqhevwrpla aayqeqldrp vvphpyrvgd tvwvrrhqt nleprwkgy tvllttptal
361 kvdgiaawih aahvkaadpg ggpssrltwr vqrsqnplki rltreap

```

>D124V + D183A IN

```

1  ensspytseh fhytvtdikd ltklgaiydk tkkywvyqgk pvmpdqftfe lldflhqlth
61 lsfskmlall ershsppym l nrdrflknit etckacaqvn asksavkagt rvrghrpgth
121 weiVfteikp glygykyllv fidtfsgwie afptkktak vvtkklleei fprfgmpqvl
181 gtAngpafvs kvsqtvadll gidwklhcay rpqssgqver mnrtiketlt kltlatgsrd
241 wvlllplaly rarntpgphg ltpyeilyga ppplvnfpdp dmtrvtnsps lqahlqalyl
301 vqhevwrpla aayqeqldrp vvphpyrvgd tvwvrrhqt nleprwkgy tvllttptal
361 kvdgiaawih aahvkaadpg ggpssrltwr vqrsqnplki rltreap

```

>D124V + D183N IN

```

1  ensspytseh fhytvtdikd ltklgaiydk tkkywvyqgk pvmpdqftfe lldflhqlth
61 lsfskmlall ershsppym l nrdrflknit etckacaqvn asksavkagt rvrghrpgth
121 weiVfteikp glygykyllv fidtfsgwie afptkktak vvtkklleei fprfgmpqvl
181 gtNngpafvs kvsqtvadll gidwklhcay rpqssgqver mnrtiketlt kltlatgsrd
241 wvlllplaly rarntpgphg ltpyeilyga ppplvnfpdp dmtrvtnsps lqahlqalyl
301 vqhevwrpla aayqeqldrp vvphpyrvgd tvwvrrhqt nleprwkgy tvllttptal
361 kvdgiaawih aahvkaadpg ggpssrltwr vqrsqnplki rltreap

```

FIG. 18 continued