

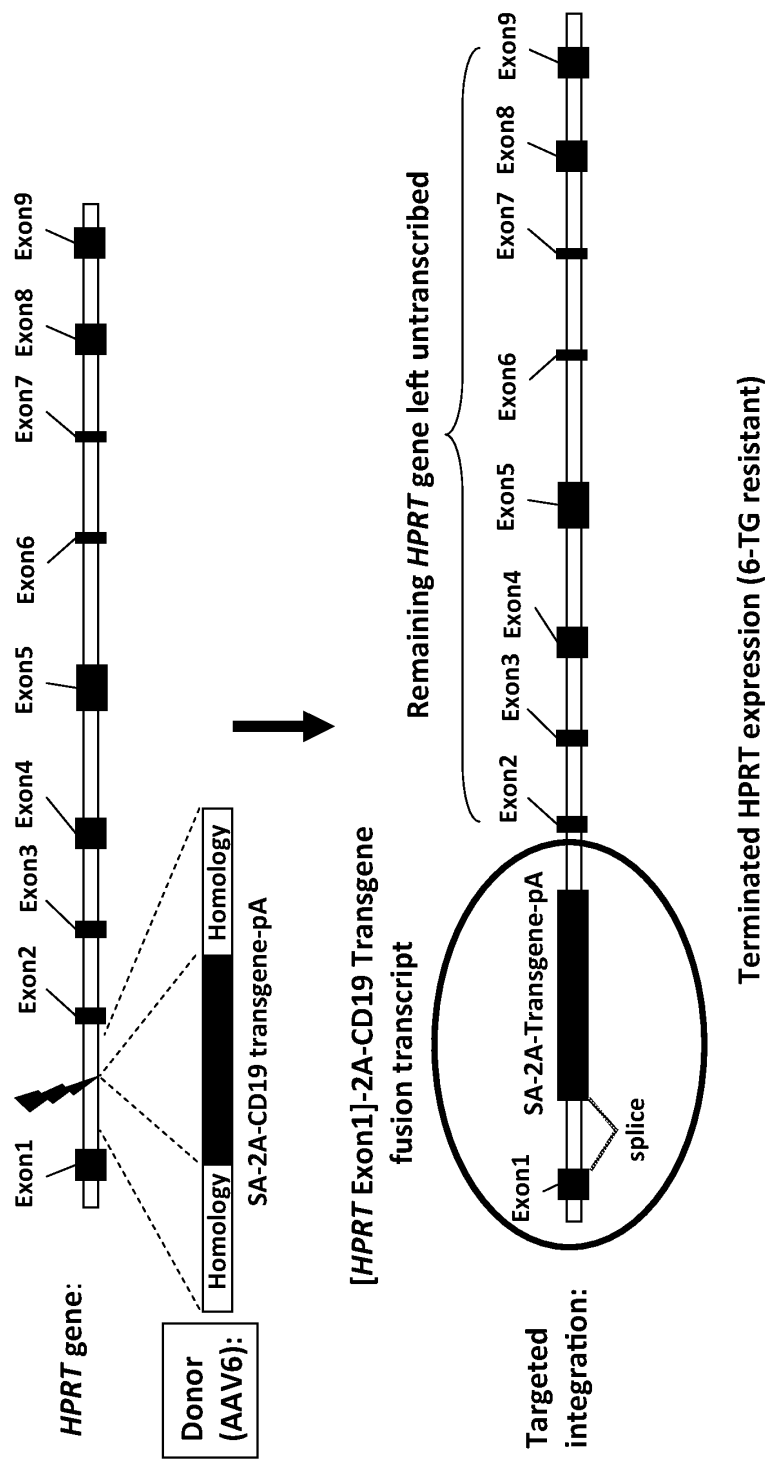


FIG. 1

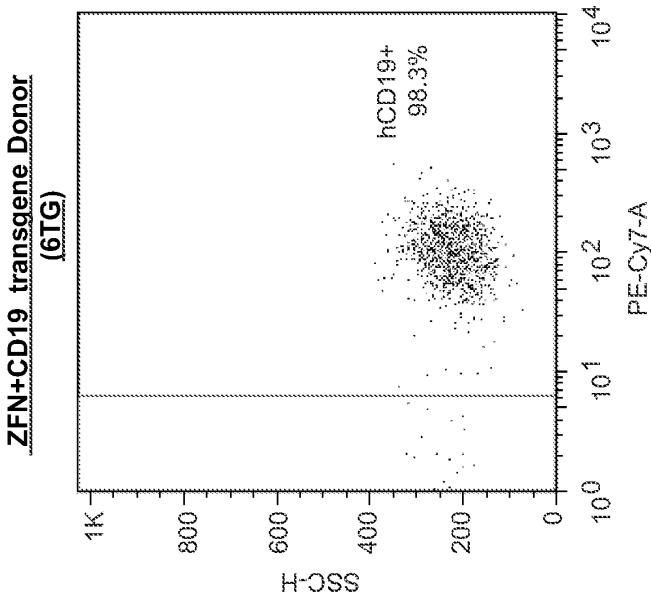


FIG. 2B

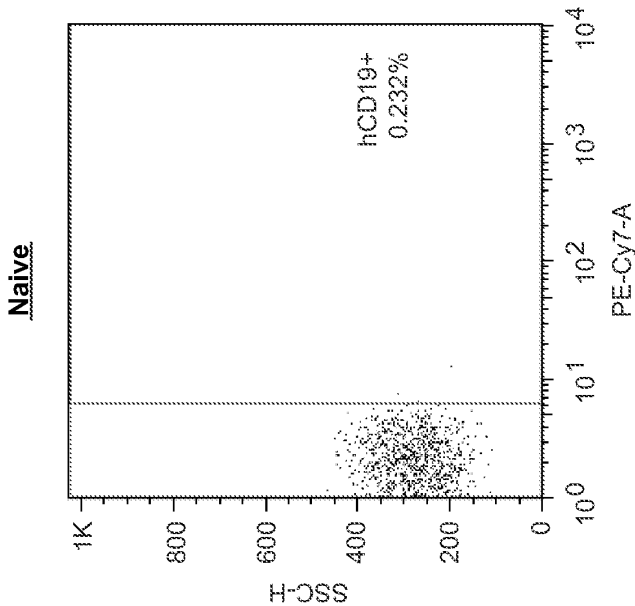


FIG. 2A

Target cells only

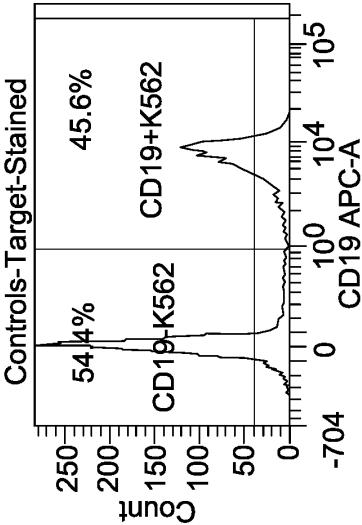


FIG. 3A

Target cells + CAR neg T-cells

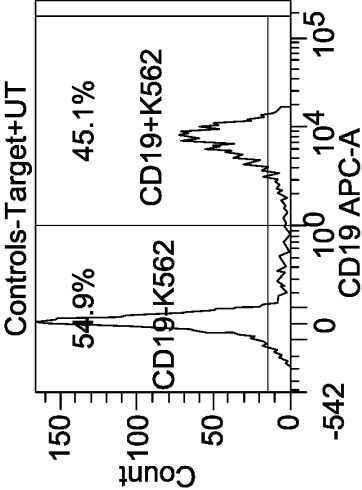


FIG. 3B

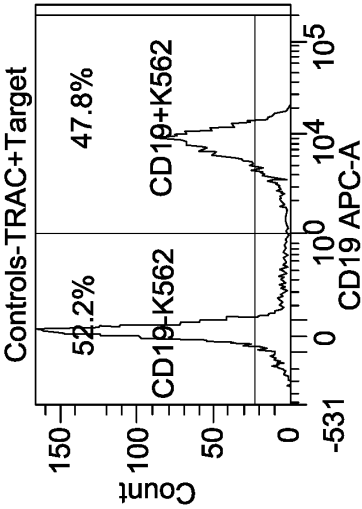


FIG. 3C

CD19-CAR integrated into B2M

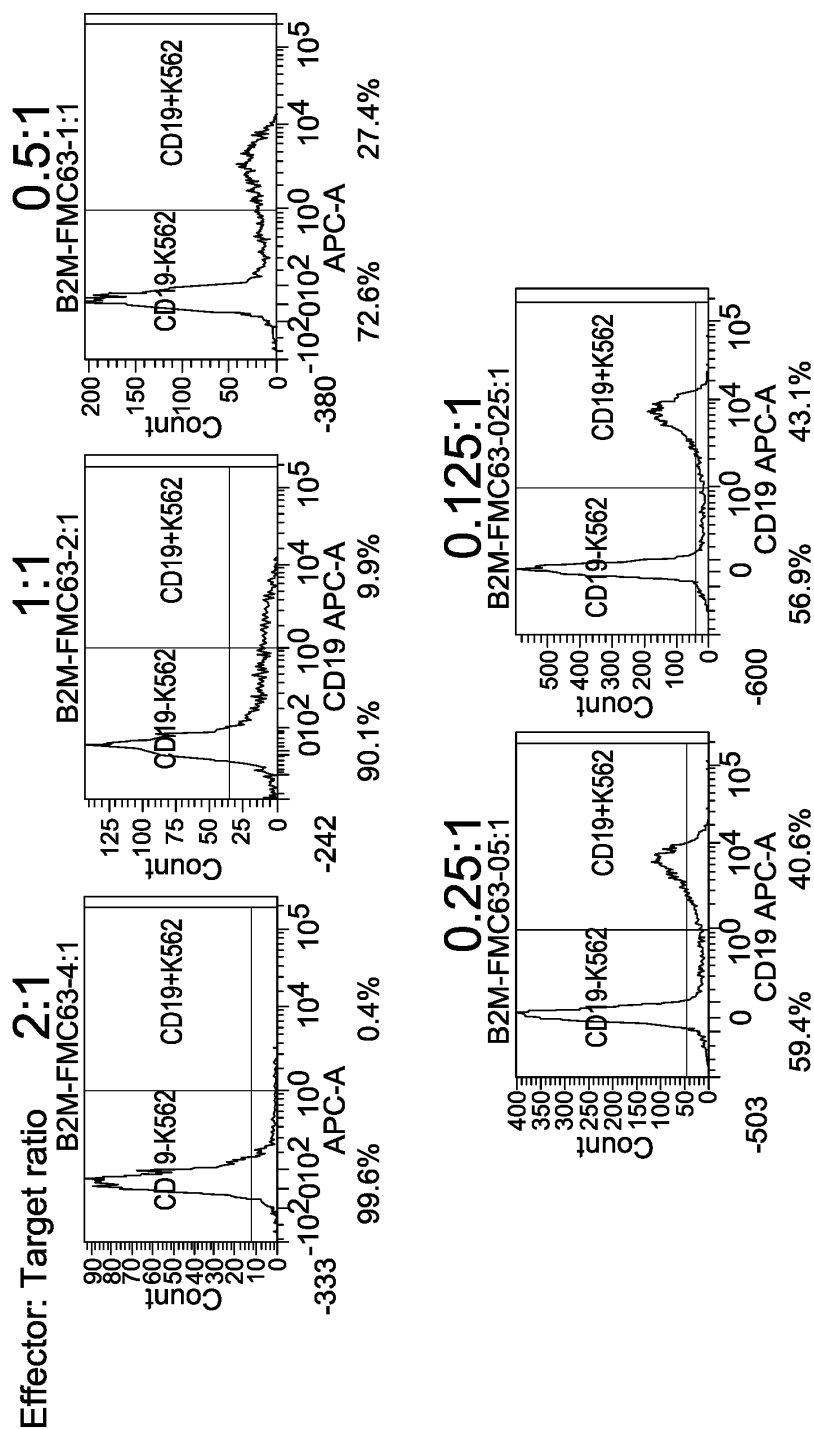


FIG. 4A

CD19-CAR integrated into TCRA

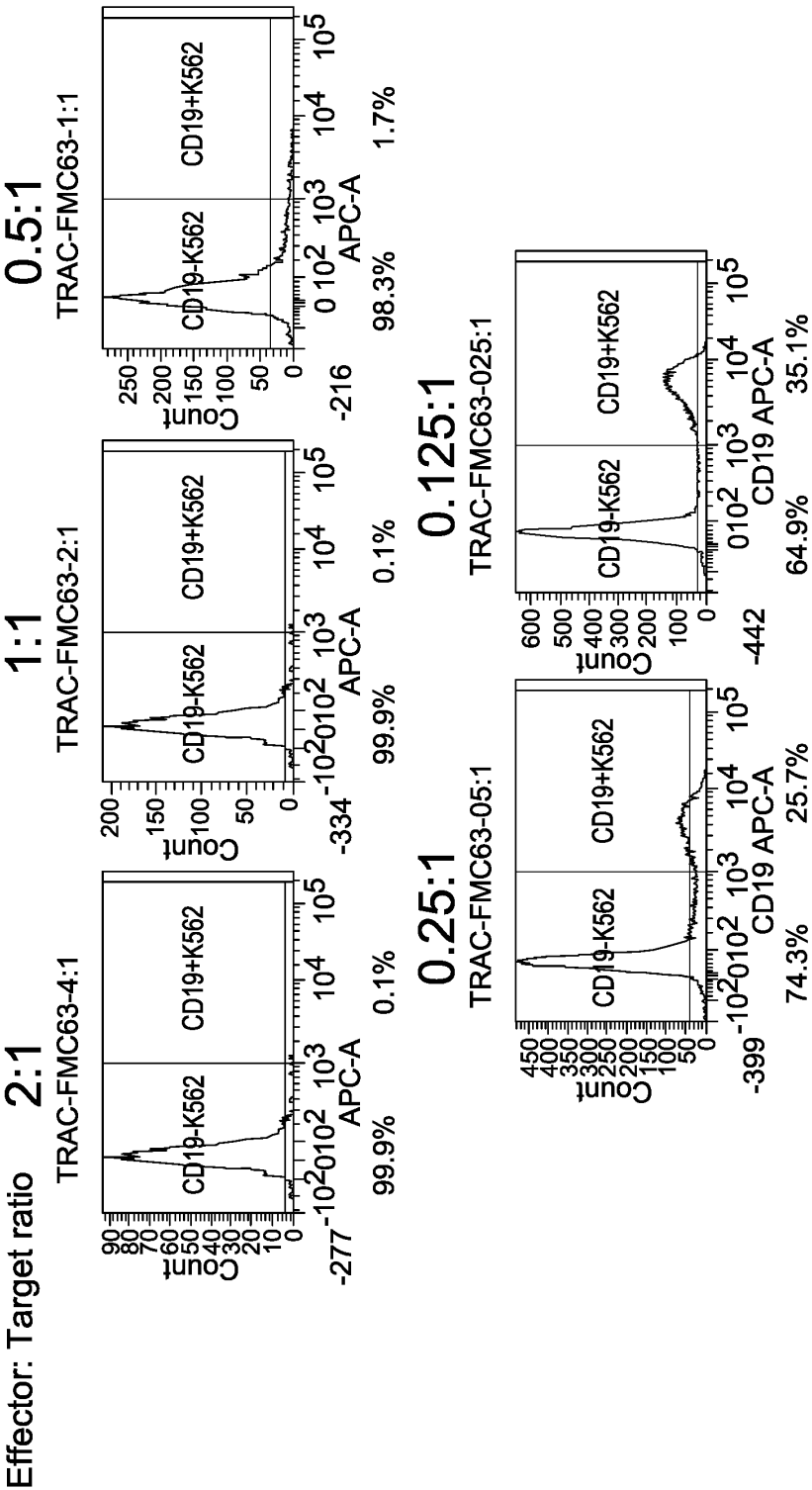


FIG. 4B

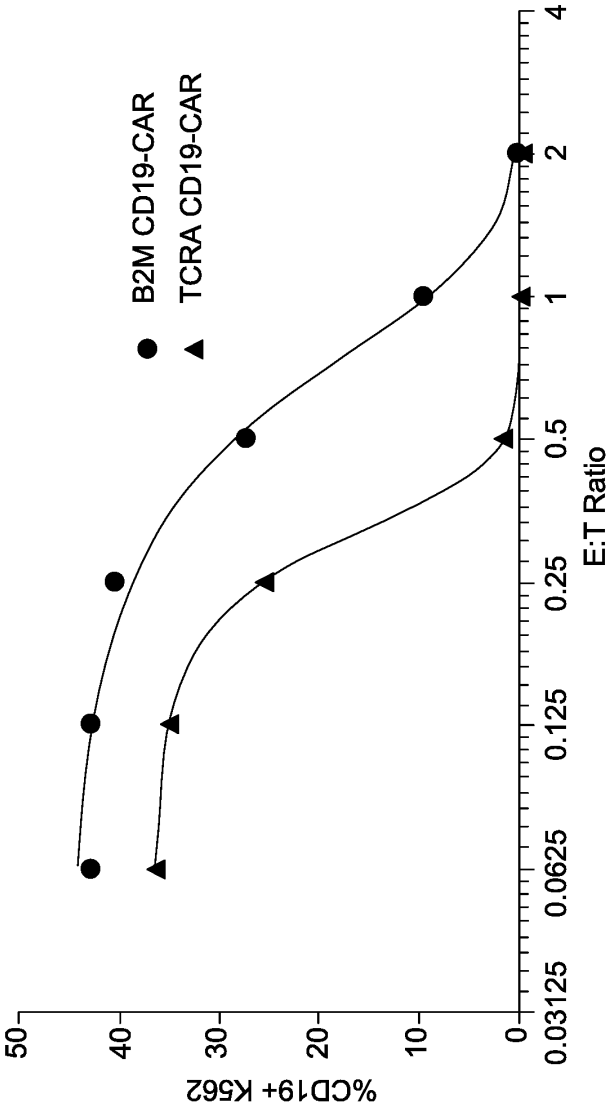
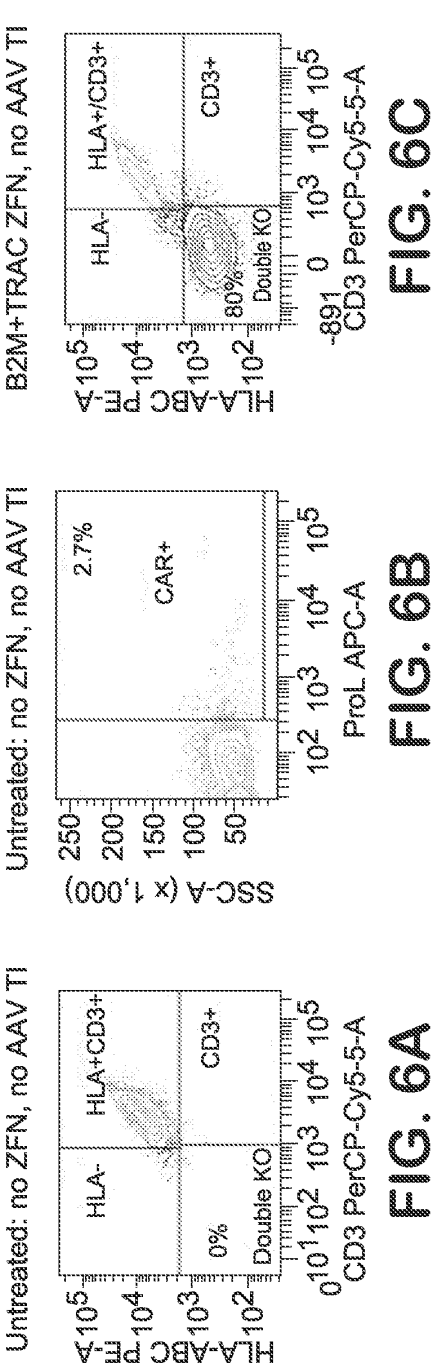
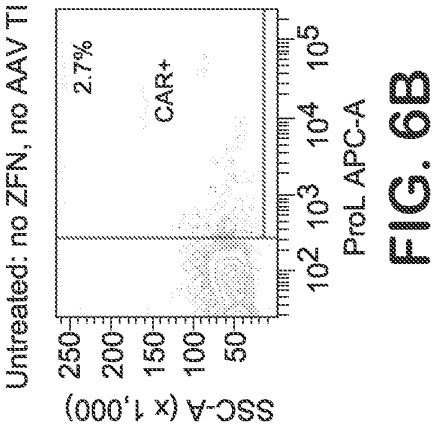
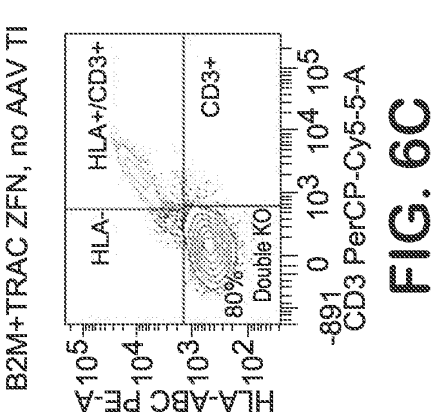
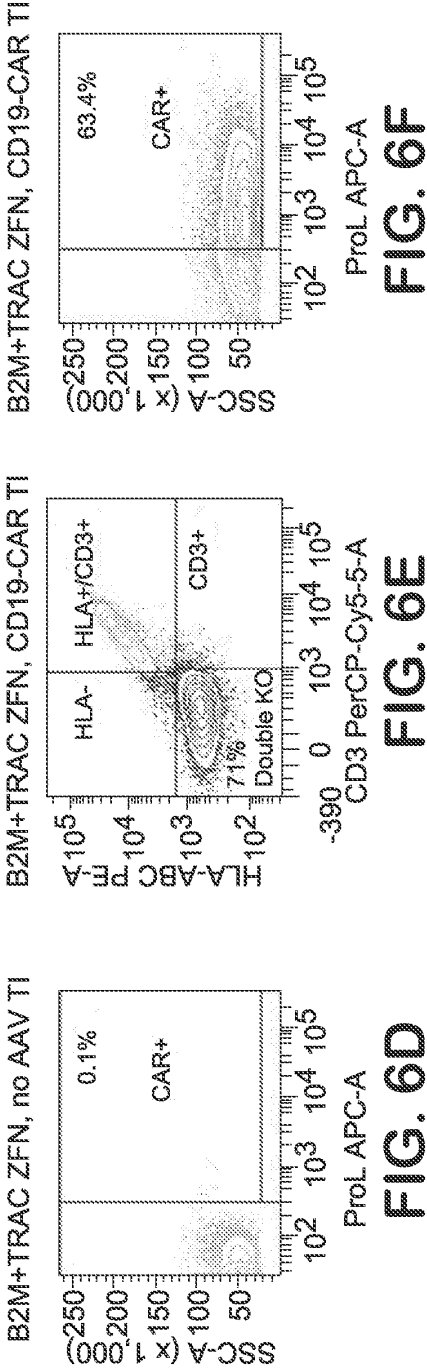
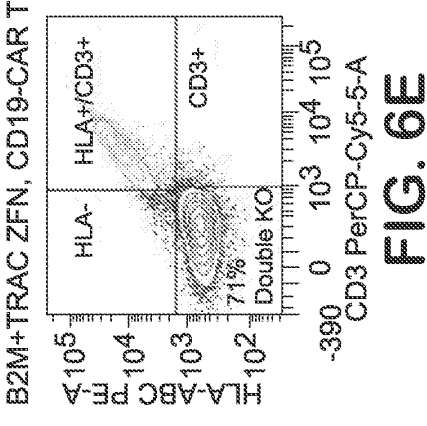
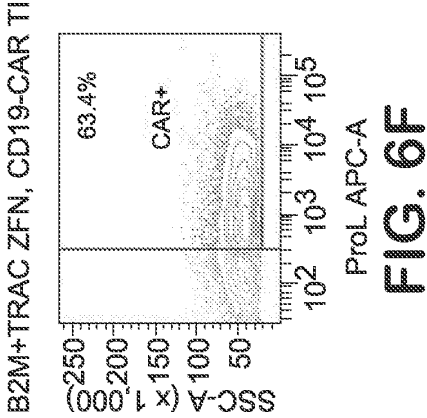
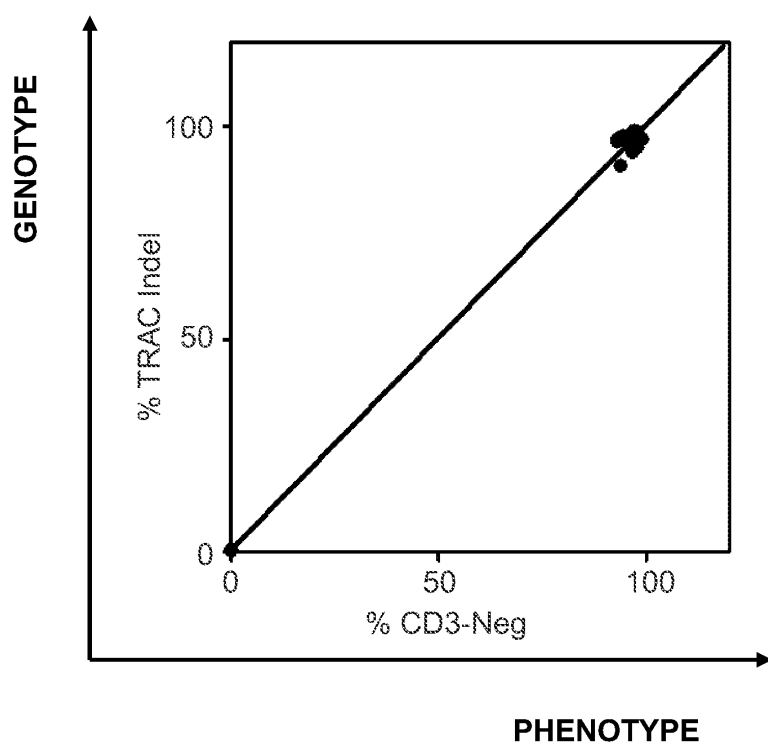


FIG. 5



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**FIG. 7**

TRAC ZFN-KO: CD3-Negative Phenotype

CD3-neg 99.5%

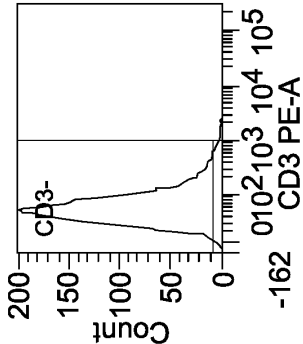


FIG. 8B

Untreated CD3+T cells

CD3-neg 0.2%

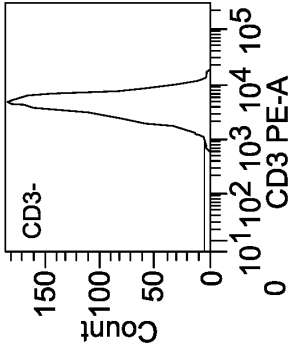


FIG. 8A

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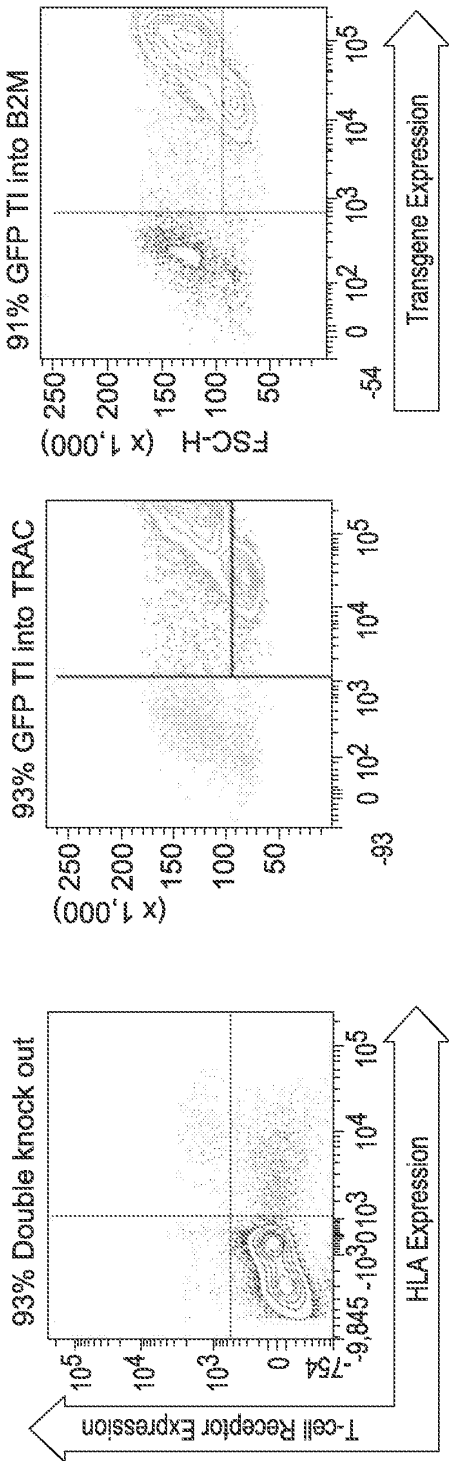
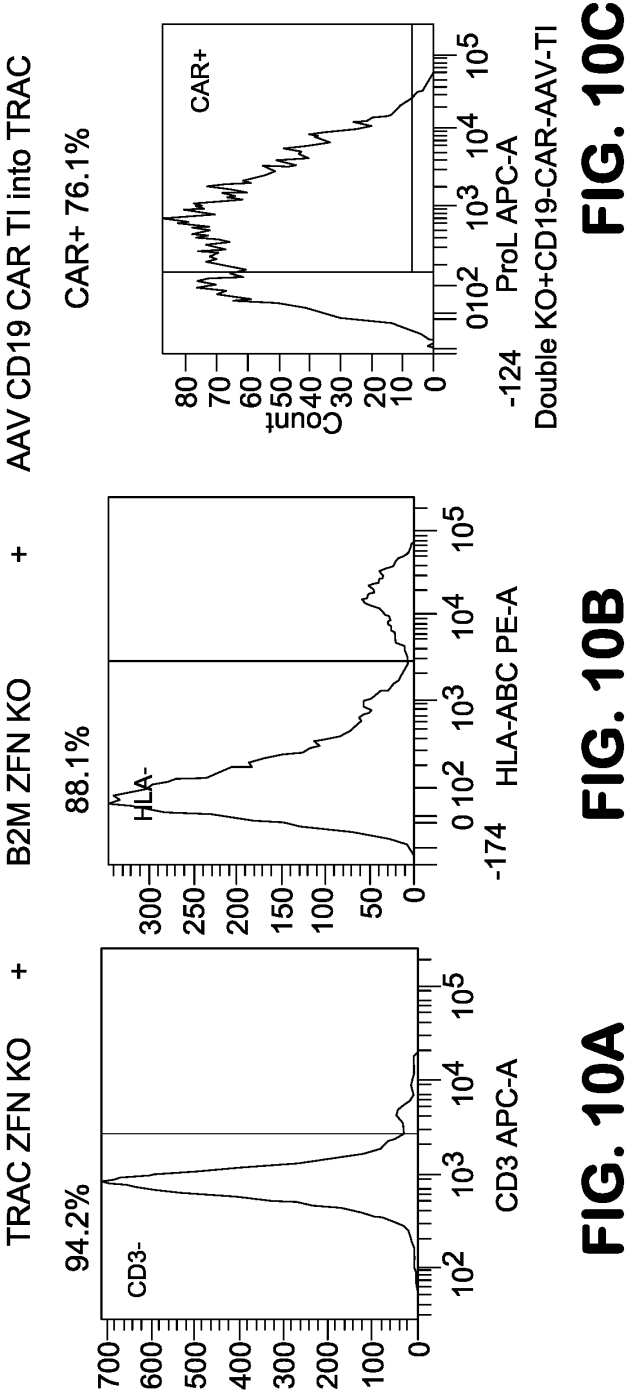


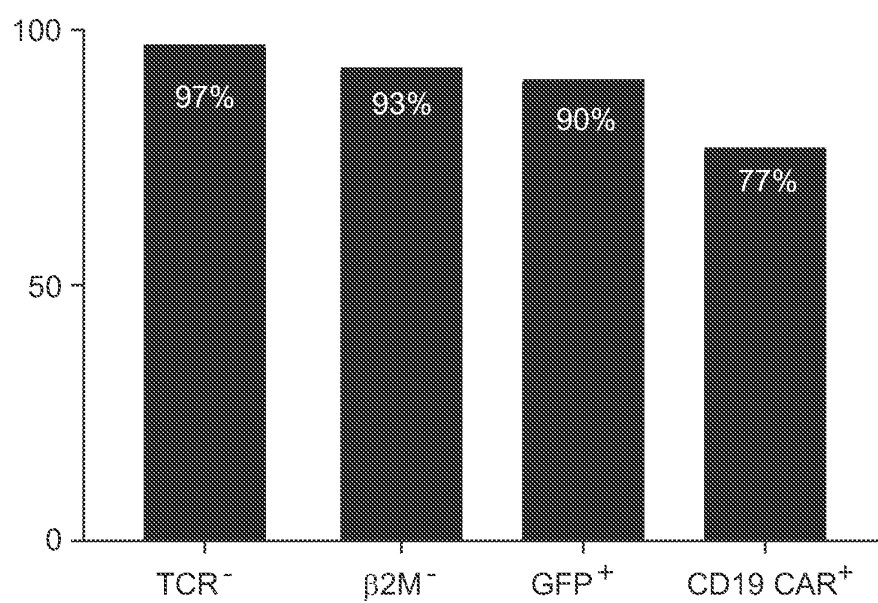
FIG. 9A

FIG. 9B

FIG. 9C



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**FIG. 11**

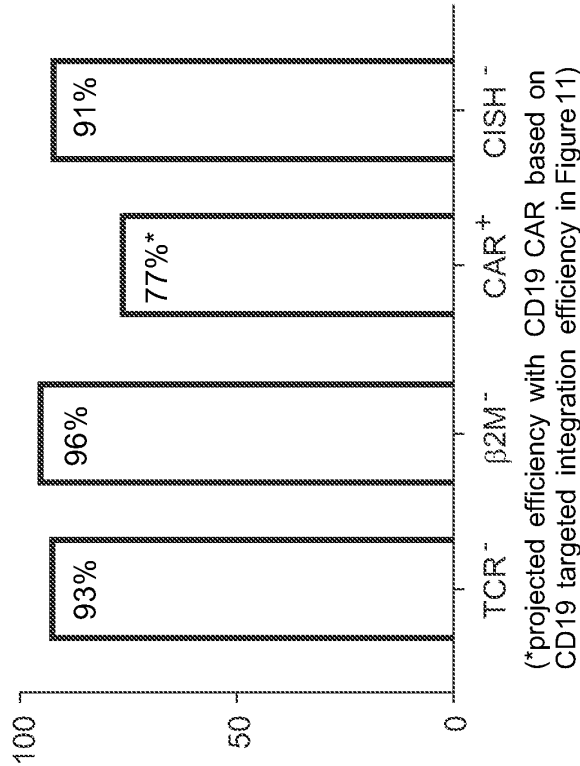


FIG. 12B

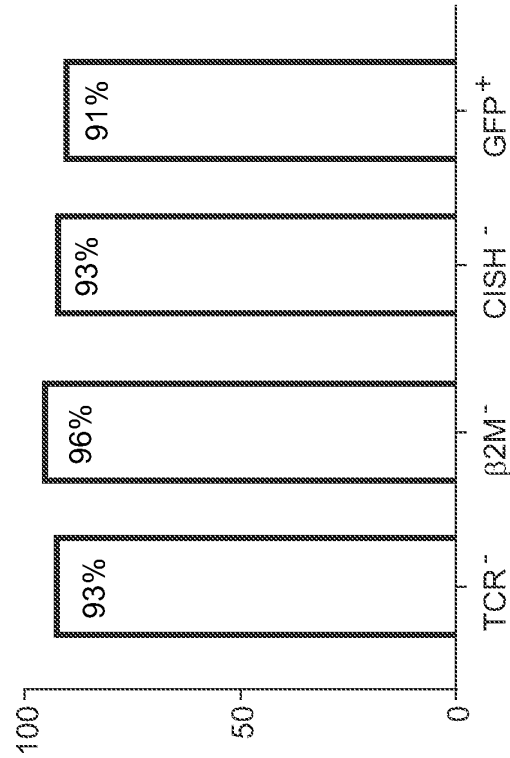


FIG. 12A

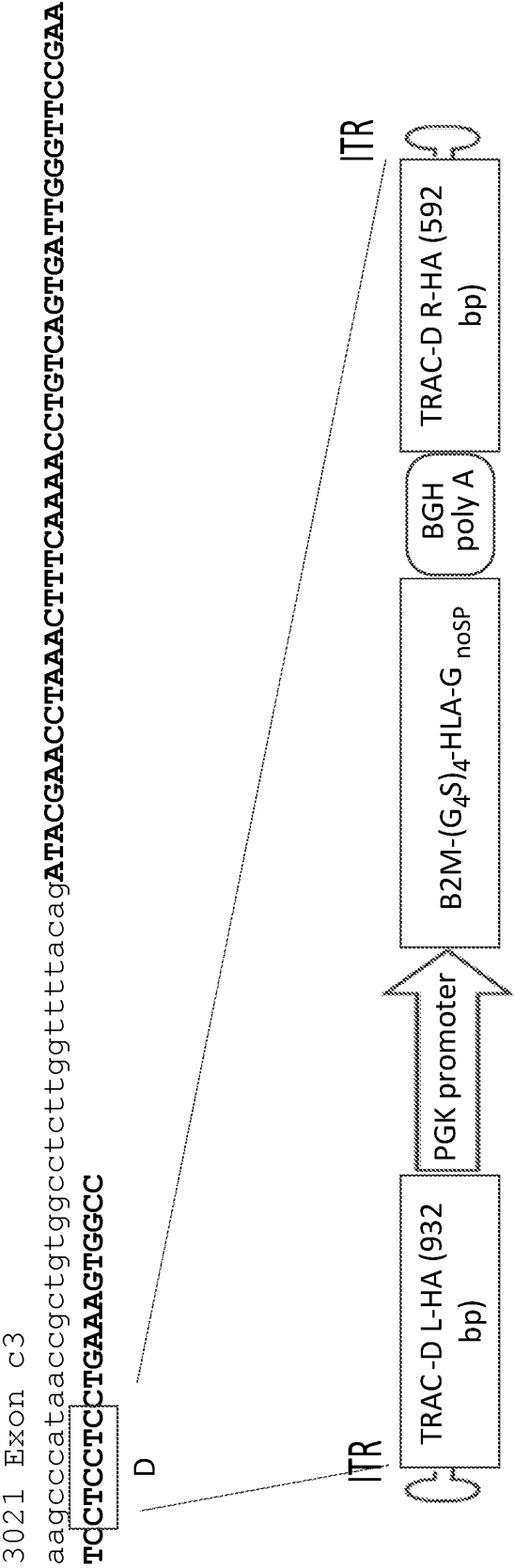


FIG. 13

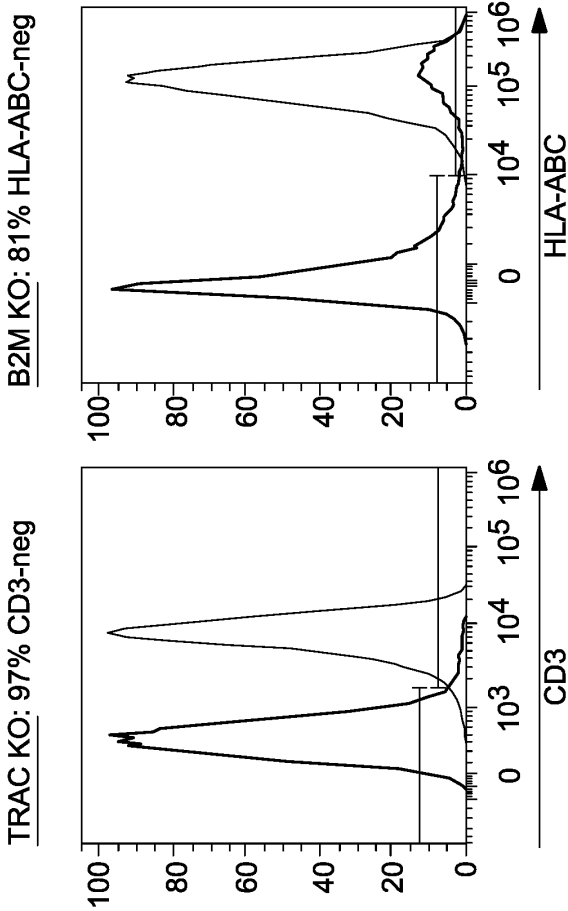


FIG. 14A

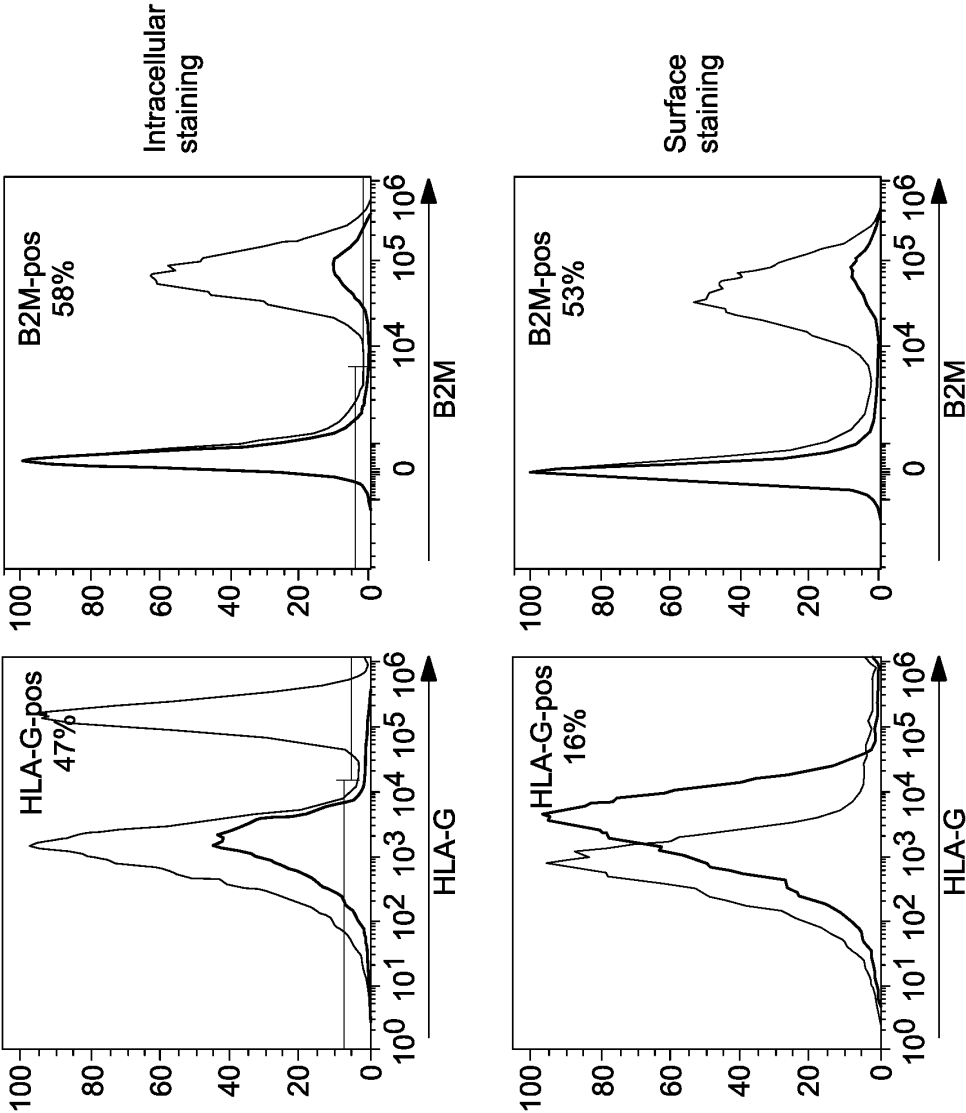


FIG. 14B

FIG. 14C

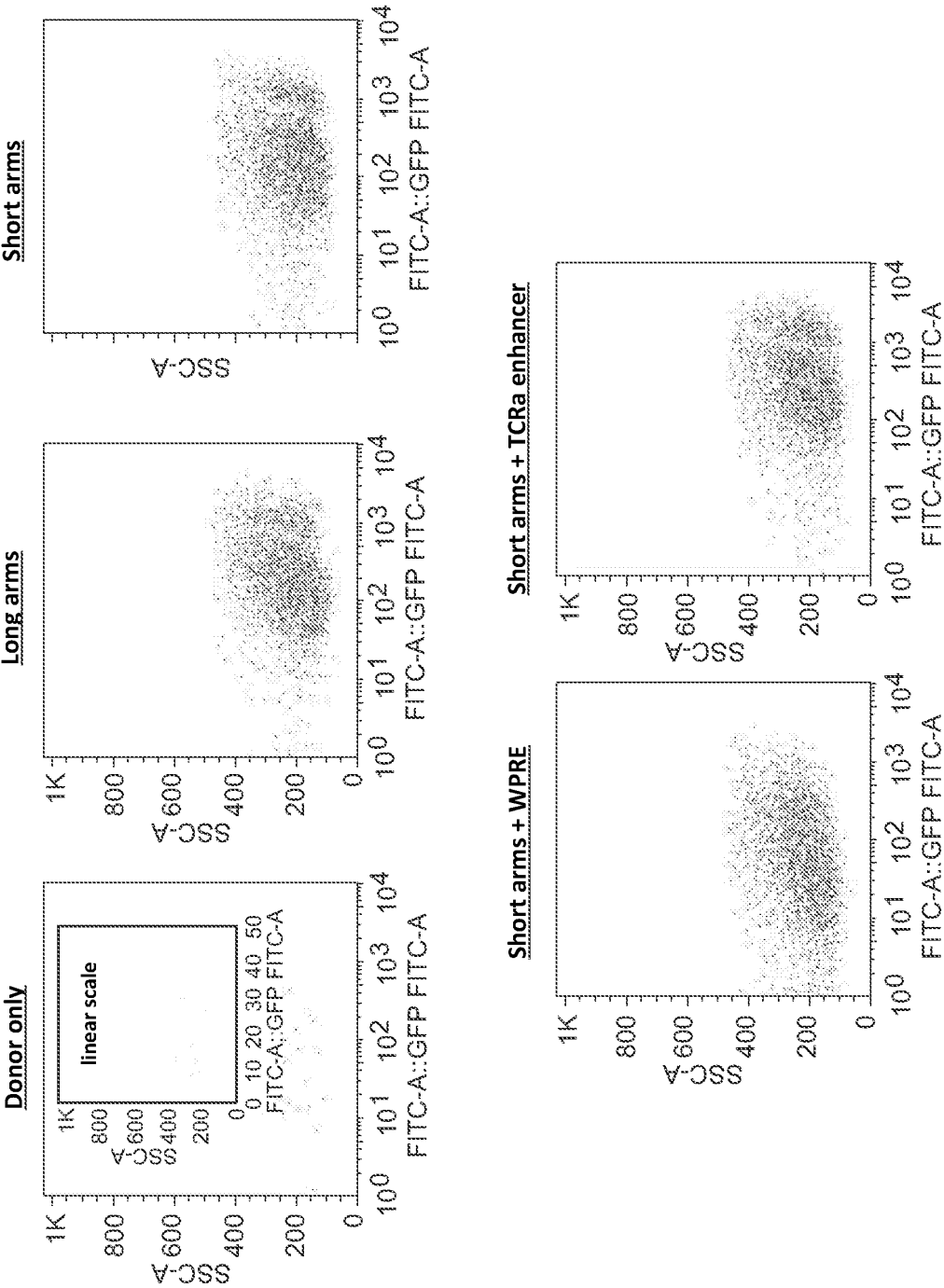


FIG. 15A

Sample	HLA-(%)	Total Gene Modification (%)	GFP+(%)	TI(%)	MFI
Untransfected	6.6	0.0	0.0	0.0	1
Mock	5.6	0.1	0.0	0.0	1
B2M short arms donor only	6.7	0.0	0.3	0.0	1.29
B2M-WPRE short arms donor only	6.2	0.0	0.0	0.0	1.09
ZFNs only	85.1	96.6	0.0	0.0	1
ZFNs + B2M site A hPGK GFP (long arms) AAV6 donor (no Misoq TI insert)	85.2	91.9	70.7	0.0	253
ZFNs + B2M site A-Short Arms-hPGK GFP with Misoq insert AAV6 donor	83.0	90.3	62.8	72.0	220
ZFNs + B2M site A-Short Arms-hPGK-5'UTR GFP with Misoq insert AAV6 donor	84.9	93.1	64.4	52.6	197
ZFNs + B2M site A-Short Arms-hPGK-5'UTR GFP-WPRE Donor with insert AAV6 donor	90.8	88.9	62.0	70.7	96.8
ZFNs + B2M site A-Short Arms-T cell Enhancer-hPGK-GFP with Misoq insert AAV6	78.5	89.4	77.6	71.9	363
ZFNs + B2M site A-Short Arms-TCRa Enhancer-hPGK-GFP with Misoq insert AAV6 donor	75.7	87.9	71.2	67.0	360

FIG. 15B

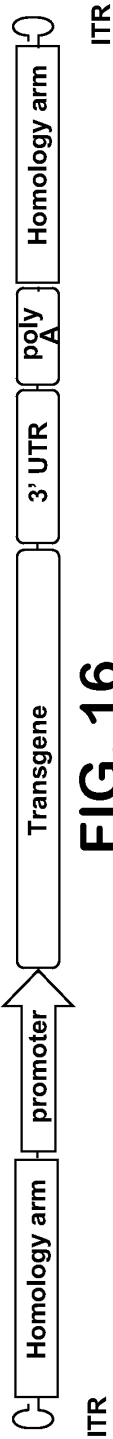


FIG. 16

sample_id	%		
	B2M	TRAC	TI
01_Mock.fq	0.07	0.01	0.04
02_TRAC+B2M.fq	83.45	87.73	0.00
03_site_E_423_393_hpGK_GFP-Miseq	0.21	0.01	0.00
04_TRAC+B2M_site_E_423_393_hpGK_GFP-Miseq	88.56	90.72	0.01
05_TRAC+B2M_TRAC_site_E_AAV_pGK_GFP	91.19	89.11	0.00
06_TRAC+B2M_pAAV_TRAC_E_350-393-hpGK-GFP-WPREm-Miseq	89.59	87.73	65.14
07_TRAC+B2M_pAAV_TRAC_E_423-393-hpGK-FMC63-CD8BBZ-Miseq	91.01	87.48	59.31
08_TRAC+B2M_pAAV_TRAC_E_423-393-hpGK-FMC63-CD8BBZ-WPREm-Miseq	91.55	87.57	64.49
09_TRAC+B2M_pAAV_TRAC_E_350-393-hpGK-FMC63-CD828Z-P2A-B2M-HLA-E-WPREm-Miseq	89.23	88.39	40.93
10_TRAC+B2M_pAAV_TRAC_E_350-393-hpGK-FMC63-CD828Z-P2A-B2M-HLA-G-WPREm-Miseq	89.99	89.37	41.37

FIG. 17

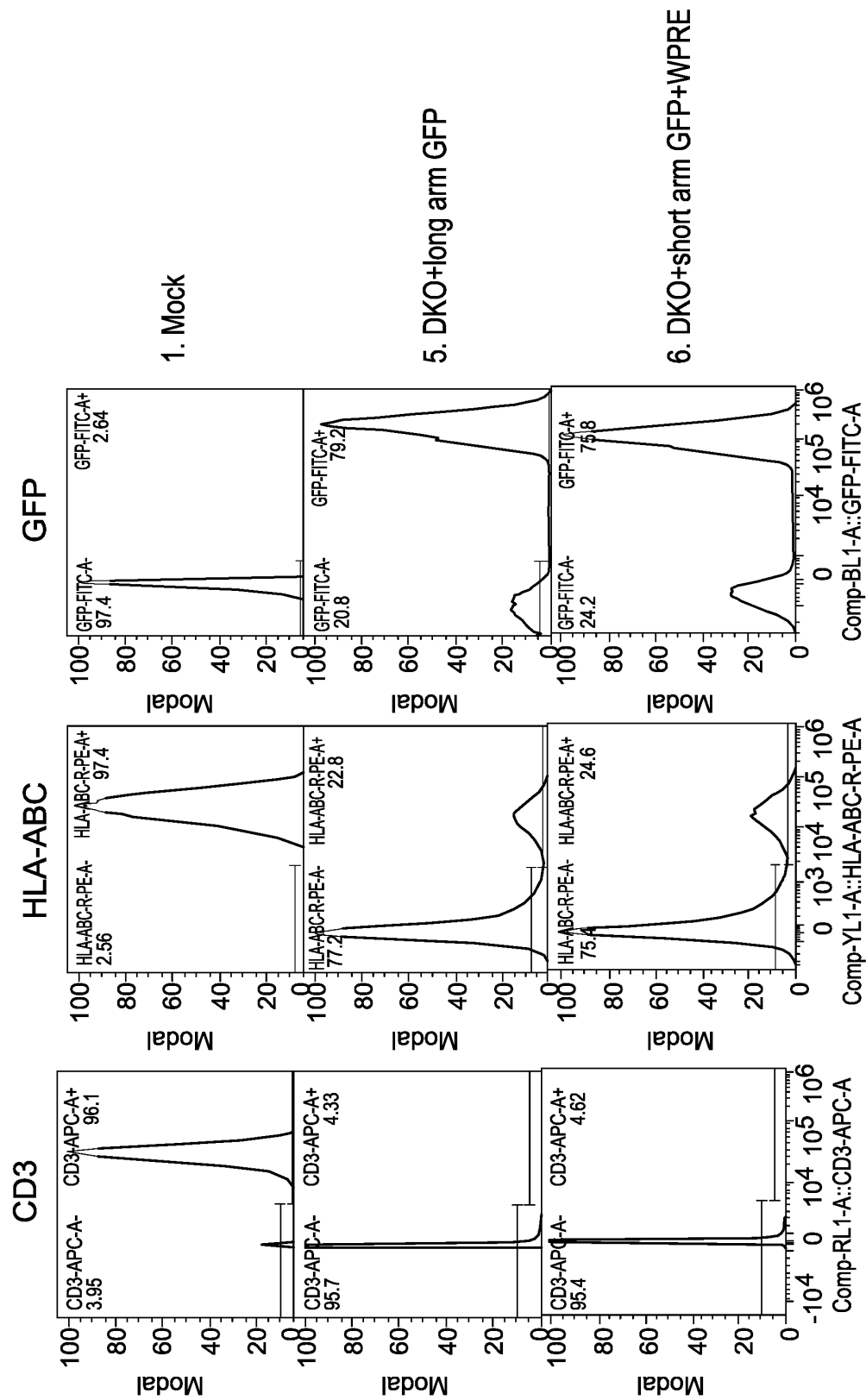


FIG. 18A

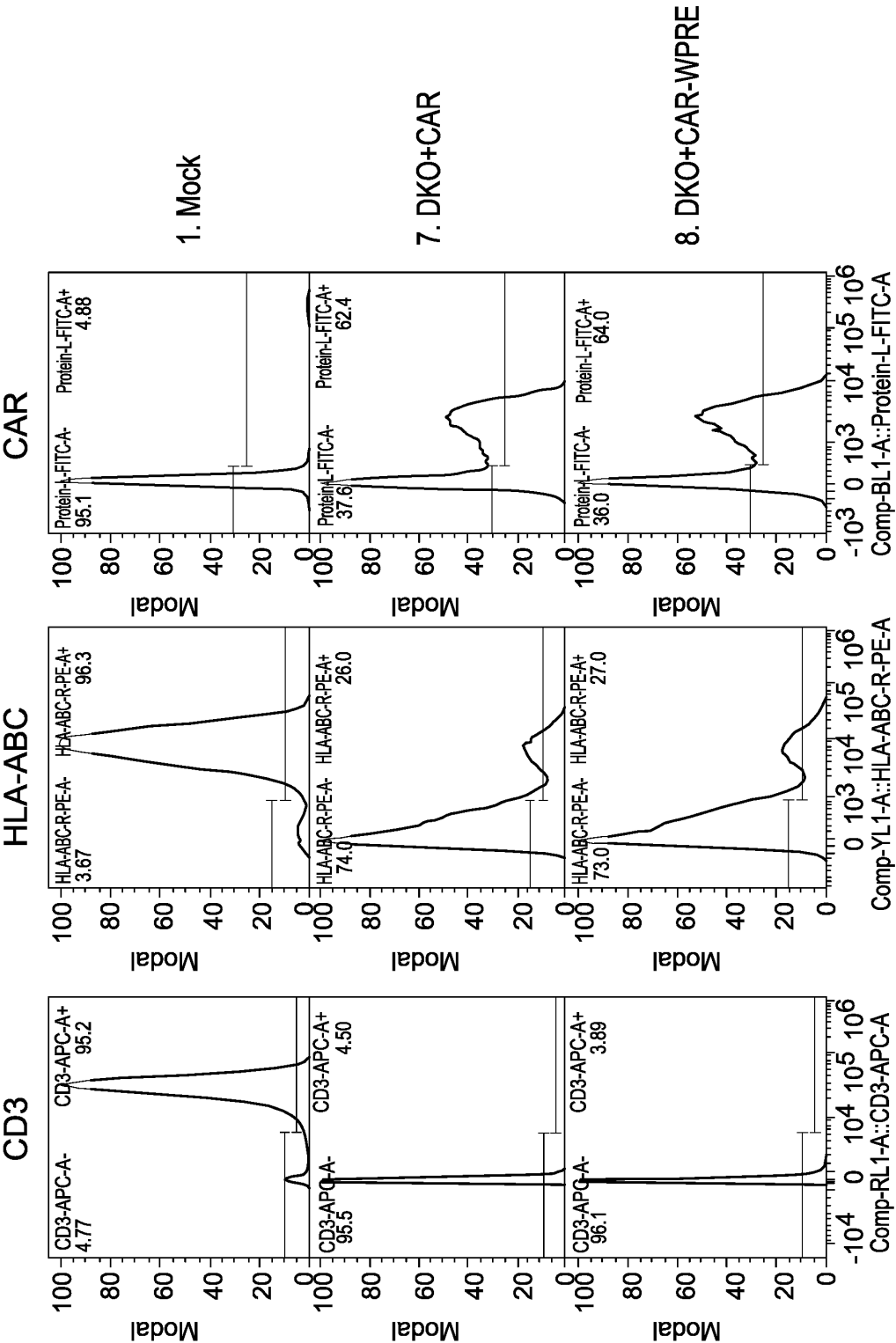


FIG. 18B

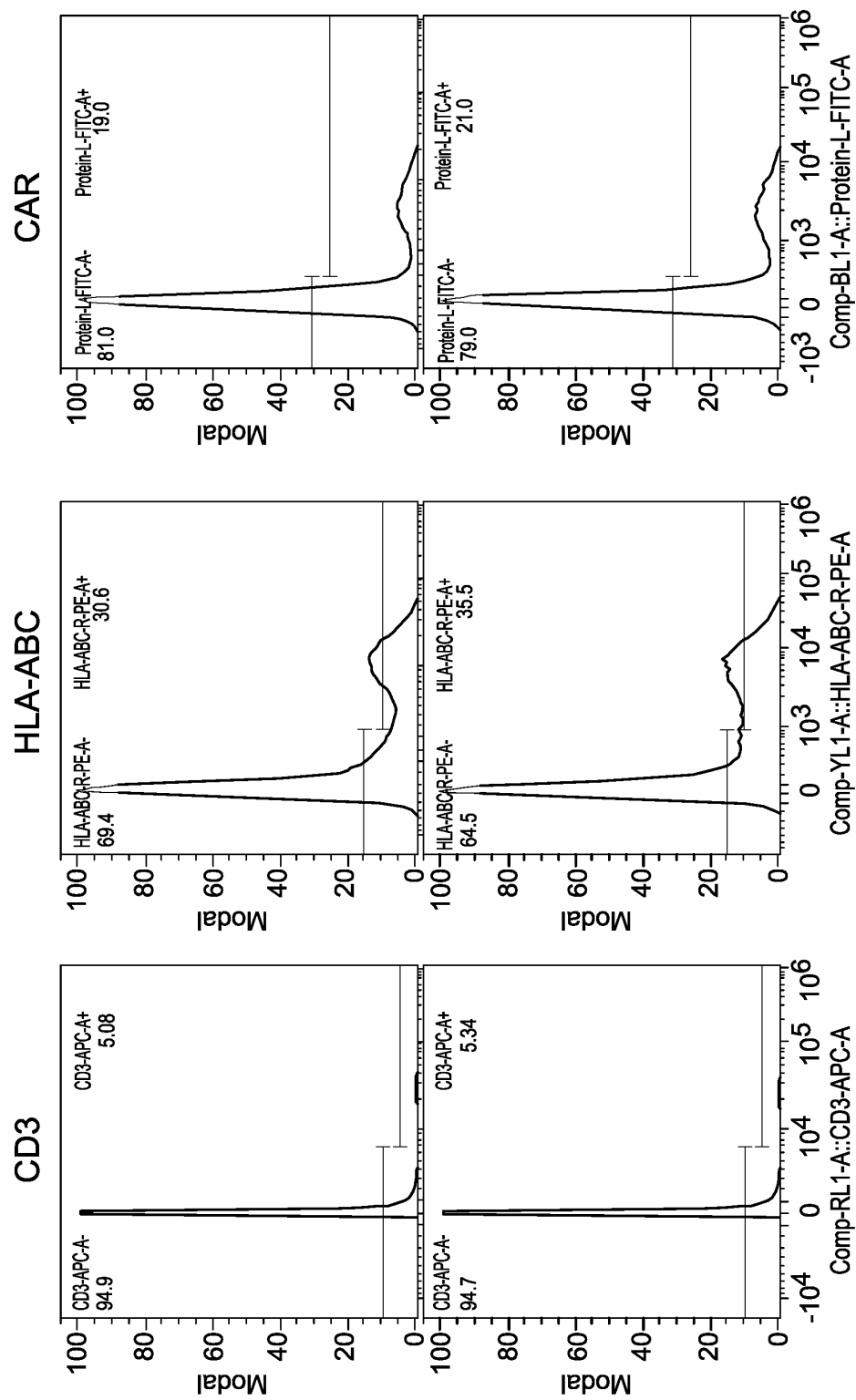


FIG. 18C

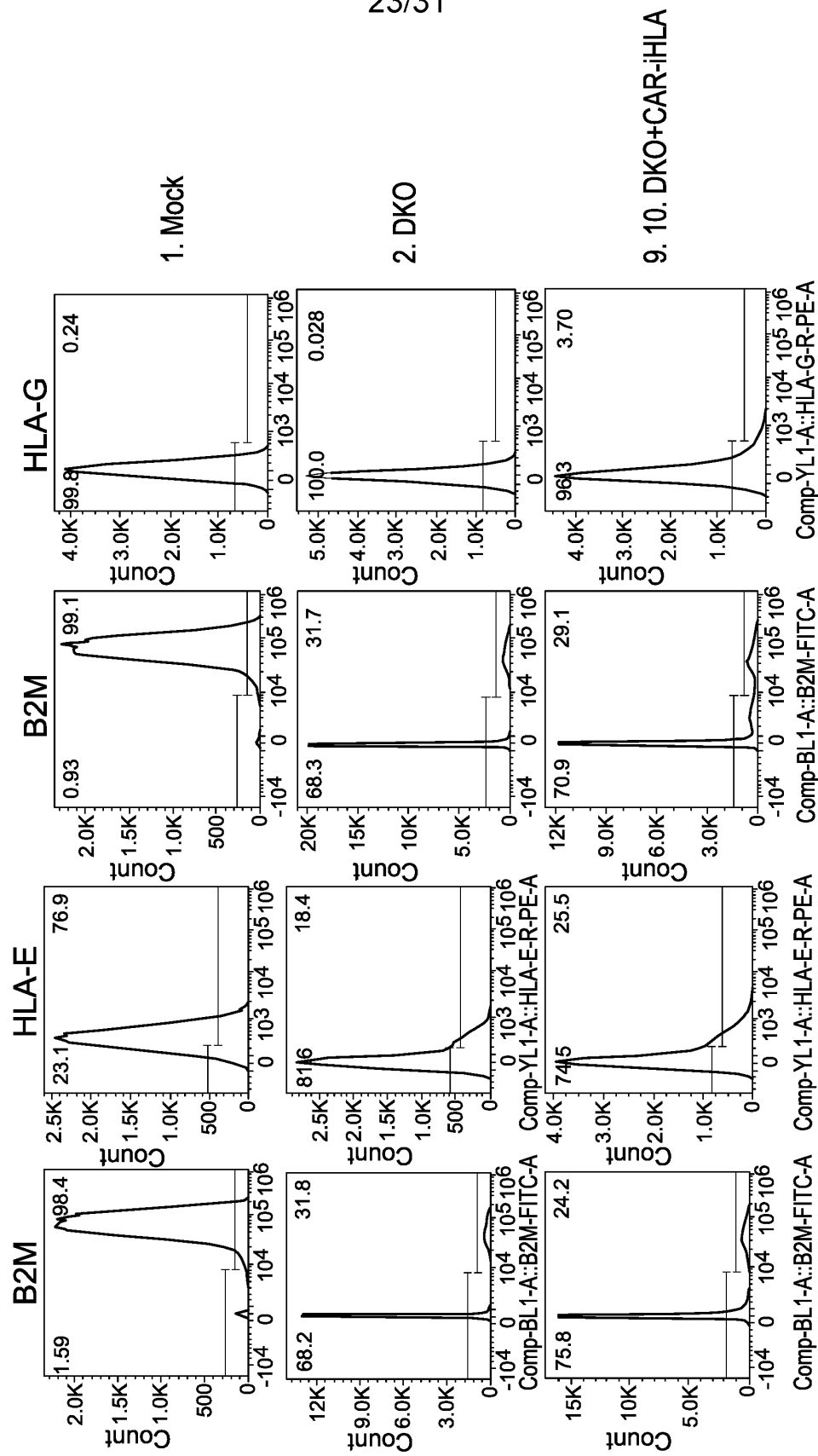


FIG. 18D

Sample	Total Indels (%)				
	B2M		TRAC		
	TF-TD 4	TF-TD 5	TF-TD 4	TF-TD 5	TF-TD 5
01_Mock	0.07	0.02	0.02	0.02	0.00
02_TRAC+B2M	84.94	80.94	84.02	80.06	80.06
03_pAAV_TRAC_E_1000_992_hPGK_HLA_G only	0.09		0.99		
04_pAAV_TRAC_E_1000_992_hPGK_HLA_E0101 only	0.08		0.06		
05_pAAV_TRAC_E_1000_992_hPGK_HLA_E0103 only	1.79		0.41		
06_pAAV_TRAC_E_1000_992_hPGK_HLA_G	87.78		71.92		
07_pAAV_TRAC_E_1000_992_hPGK_B2M_G4S_2_noSP_HLA_G	86.61		71.73		
08_pAAV_TRAC_E_1000_992_hPGK_B2M_noSP_HLA_G	91.67	88.59	82.48	78.62	78.62
09_pAAV_TRAC_E_1000_992_hPGK_B2M_G4S_6_noSP_HLA_G	91.80	89.44	80.52	77.23	77.23
10_pAAV_TRAC_E_1000_992_hPGK_HLA_E0101	90.70		78.74		
11_pAAV_TRAC_E_1000_992_hPGK_HLA_E0103	91.34		78.01		
12_pAAV_TRAC_E_1000_992_hPGK_B2M_noSP_HLA_E0101	88.46	86.18	77.94	78.74	78.74
13_pAAV_TRAC_E_1000_992_hPGK_B2M_noSP_HLA_E0103	88.61	86.06	71.43	78.21	78.21
14_pAAV_TRAC_E_1000_992_pgk_gfp	85.67		64.34		
15_pAAV_TRAC_E_350_393_hPGK_CAR_B2M_HLA_G_WPREm_Miseq	83.89		73.75		

FIG. 19

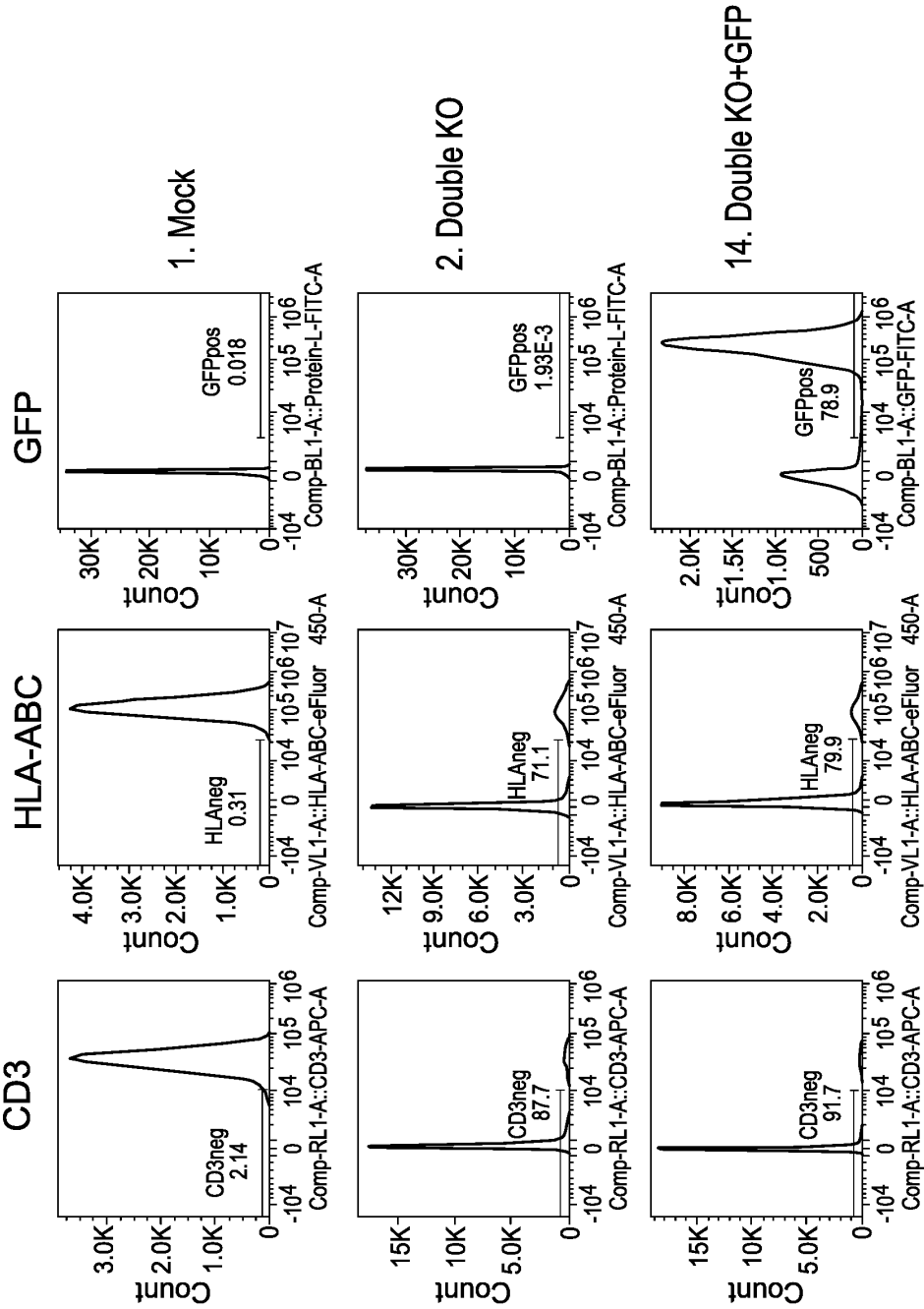


FIG. 20

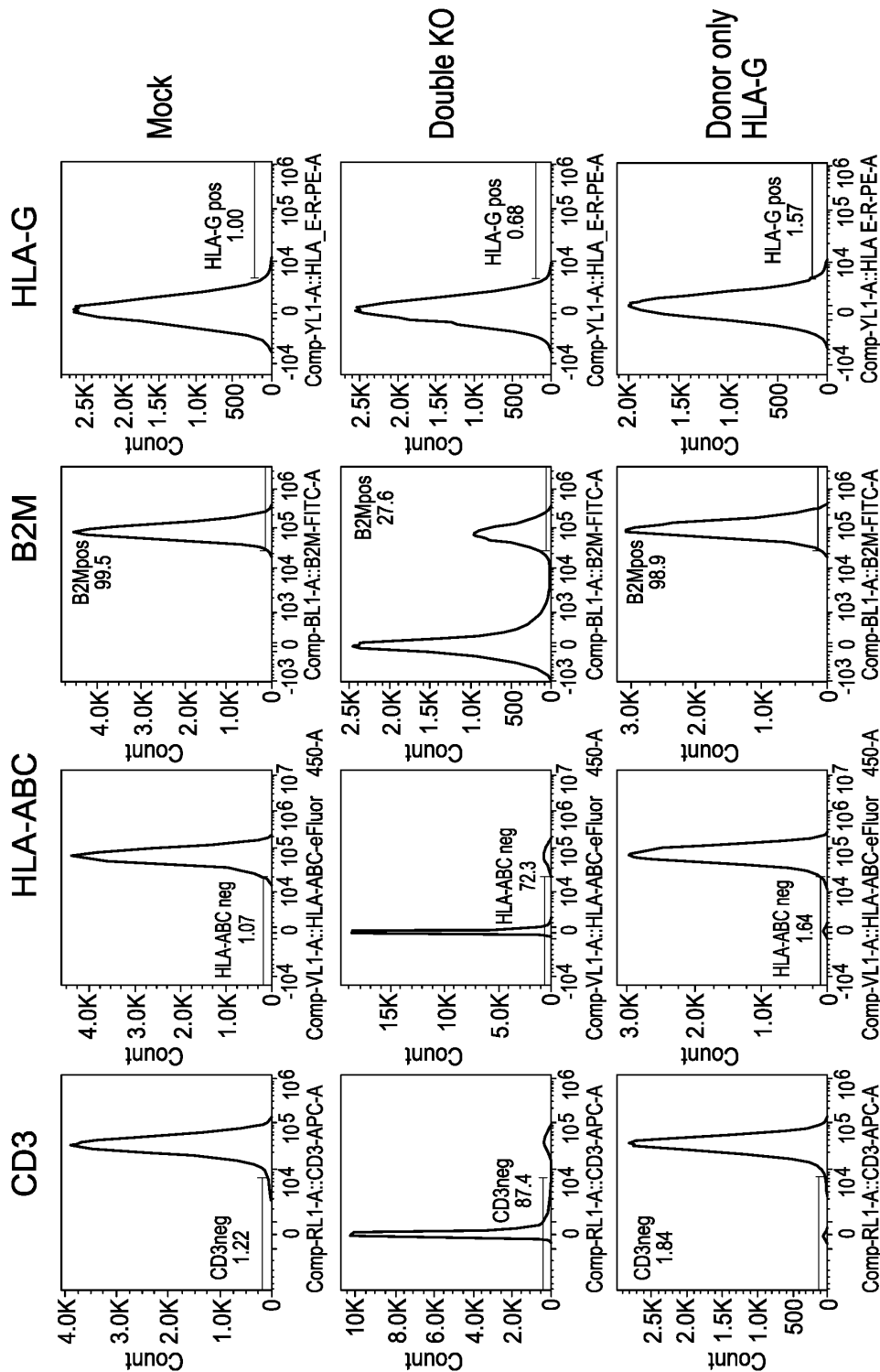


FIG. 21

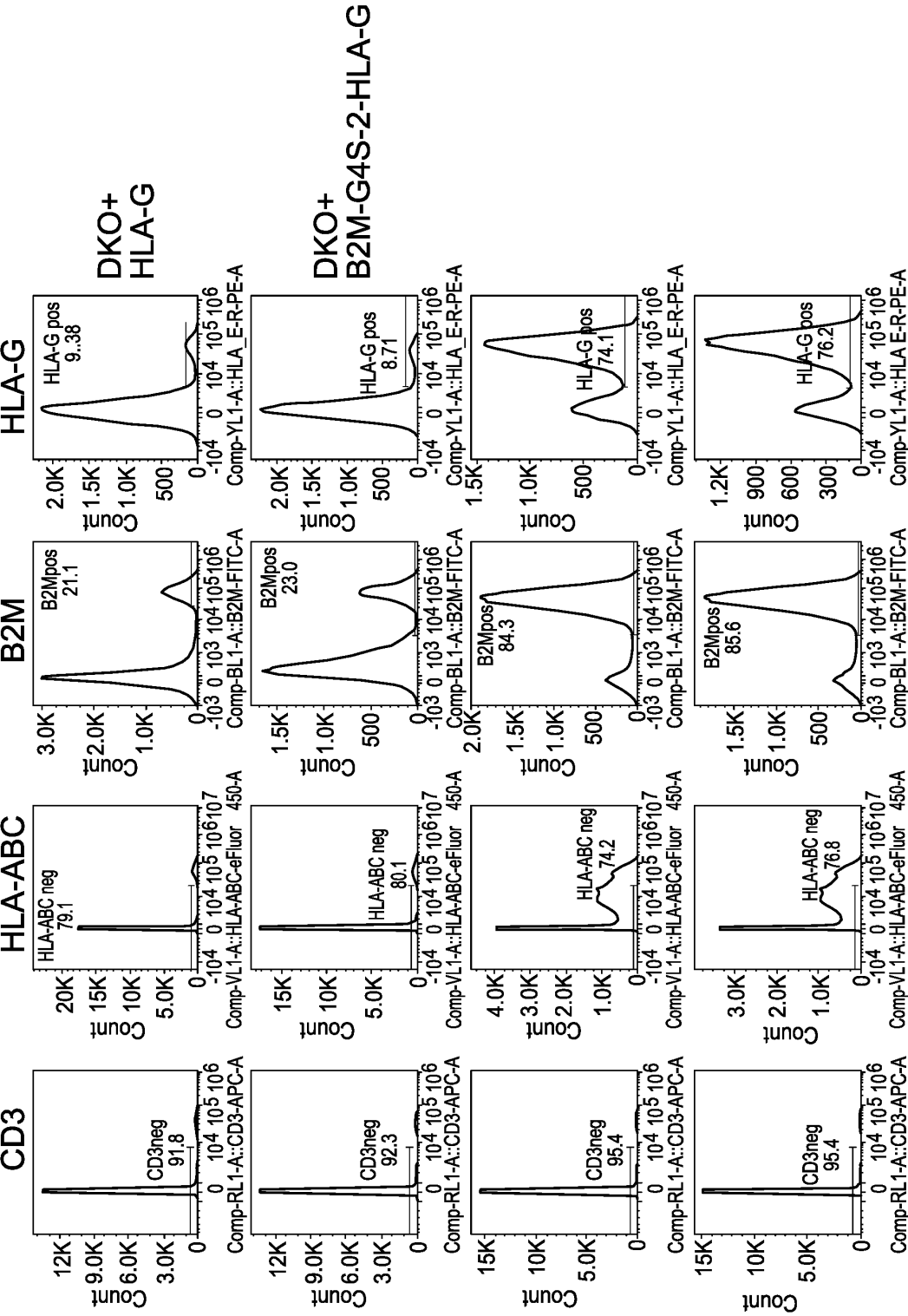


FIG. 22

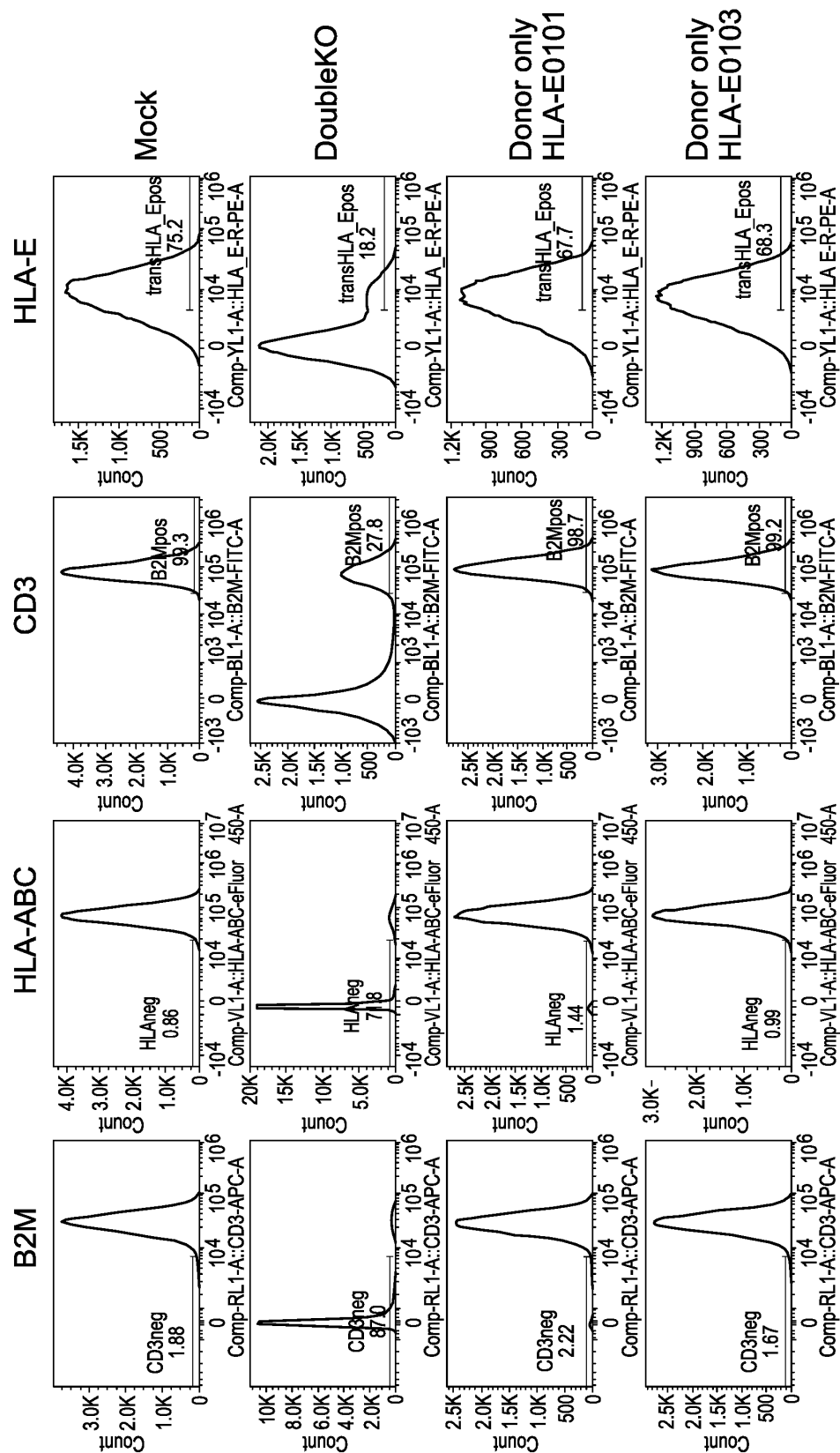


FIG. 23

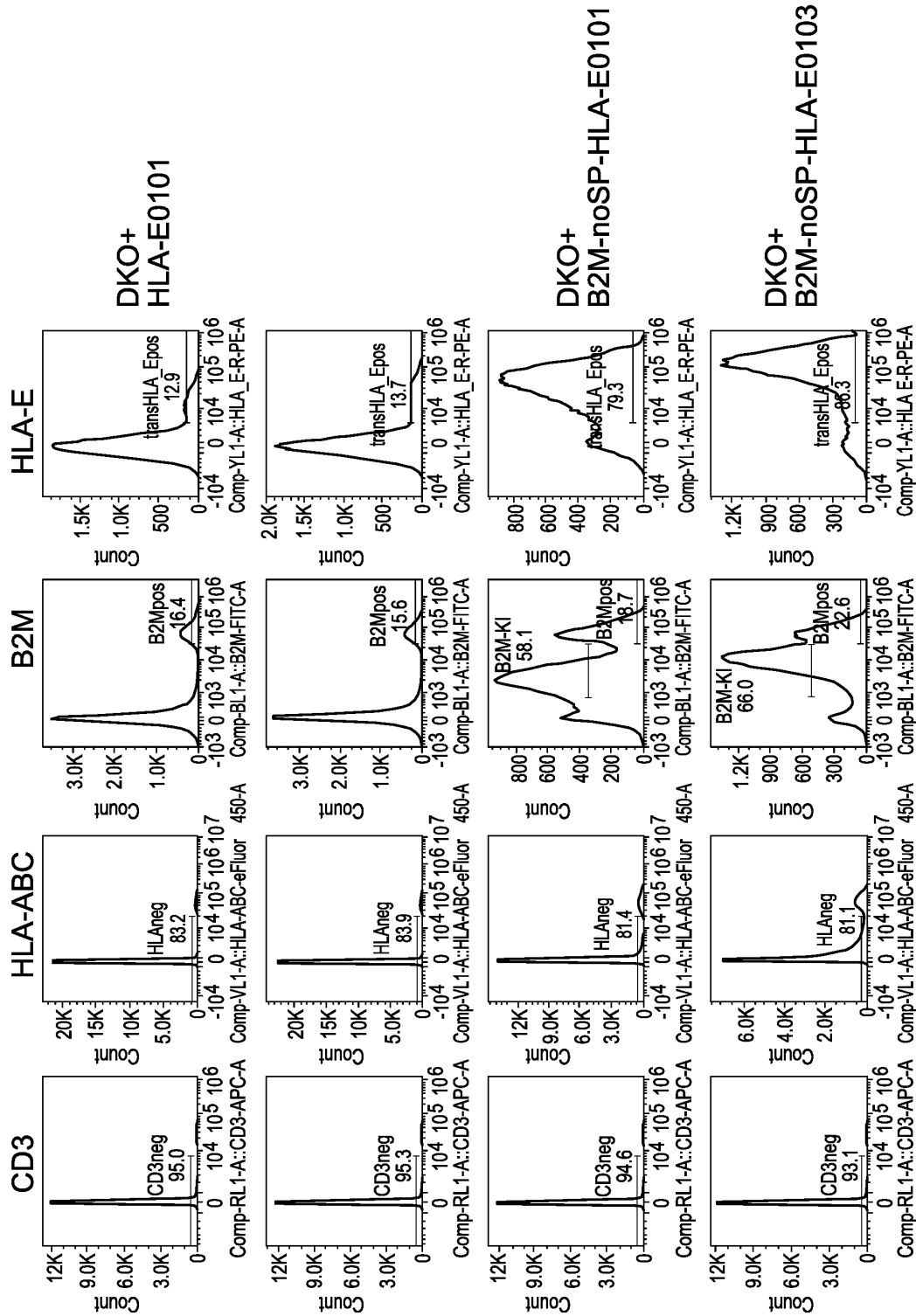


FIG. 24

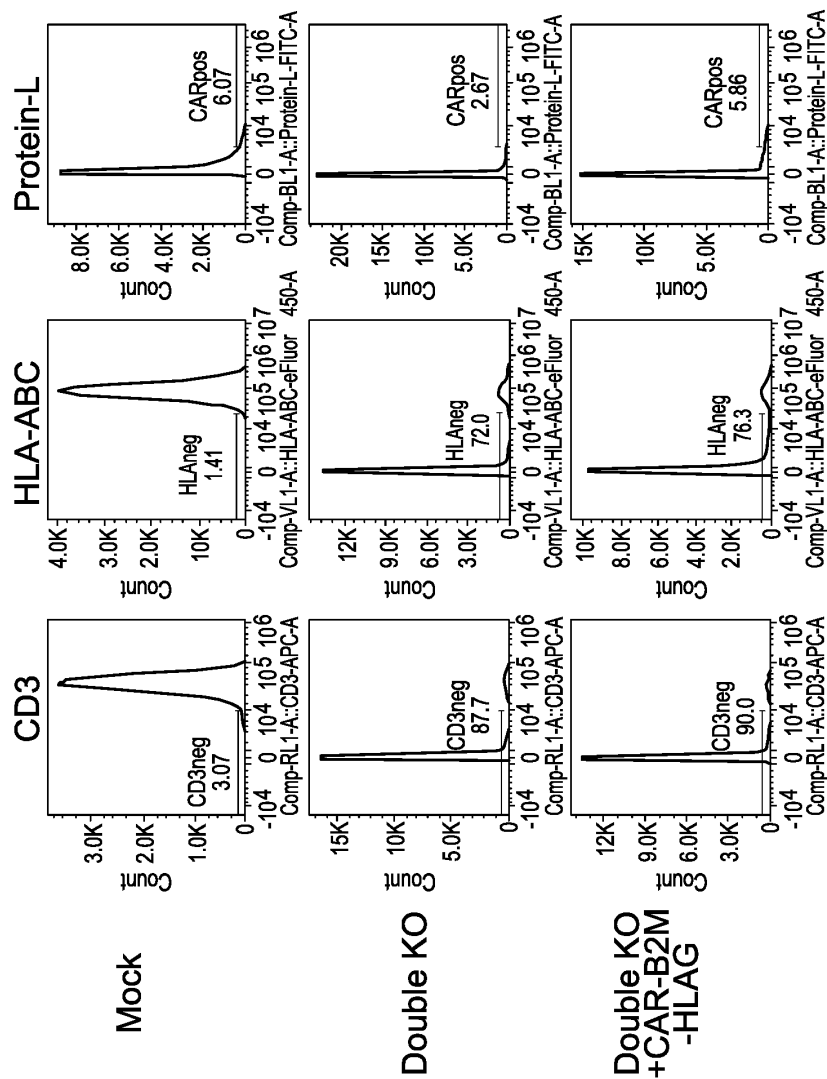


FIG. 25

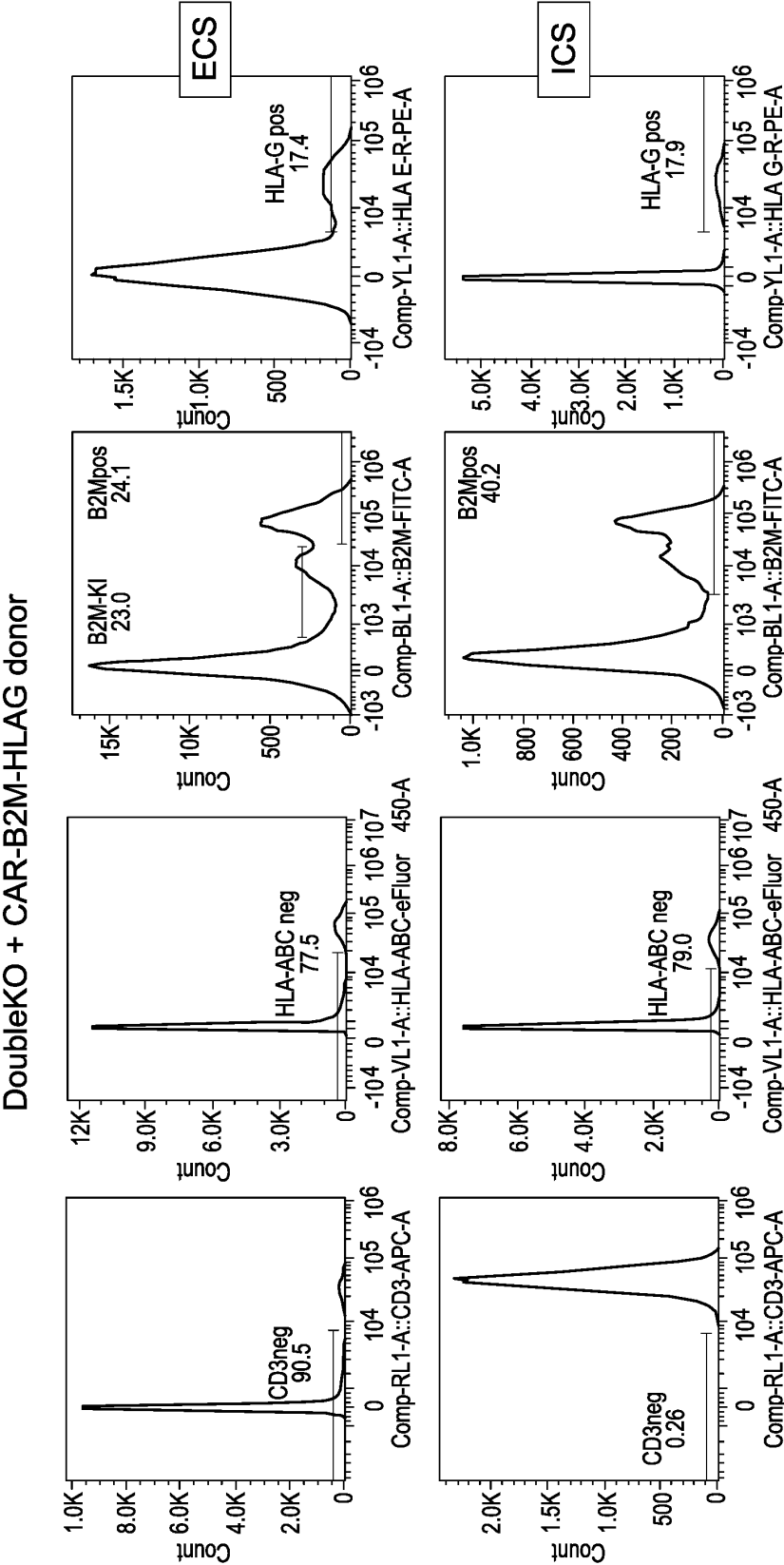


FIG. 26