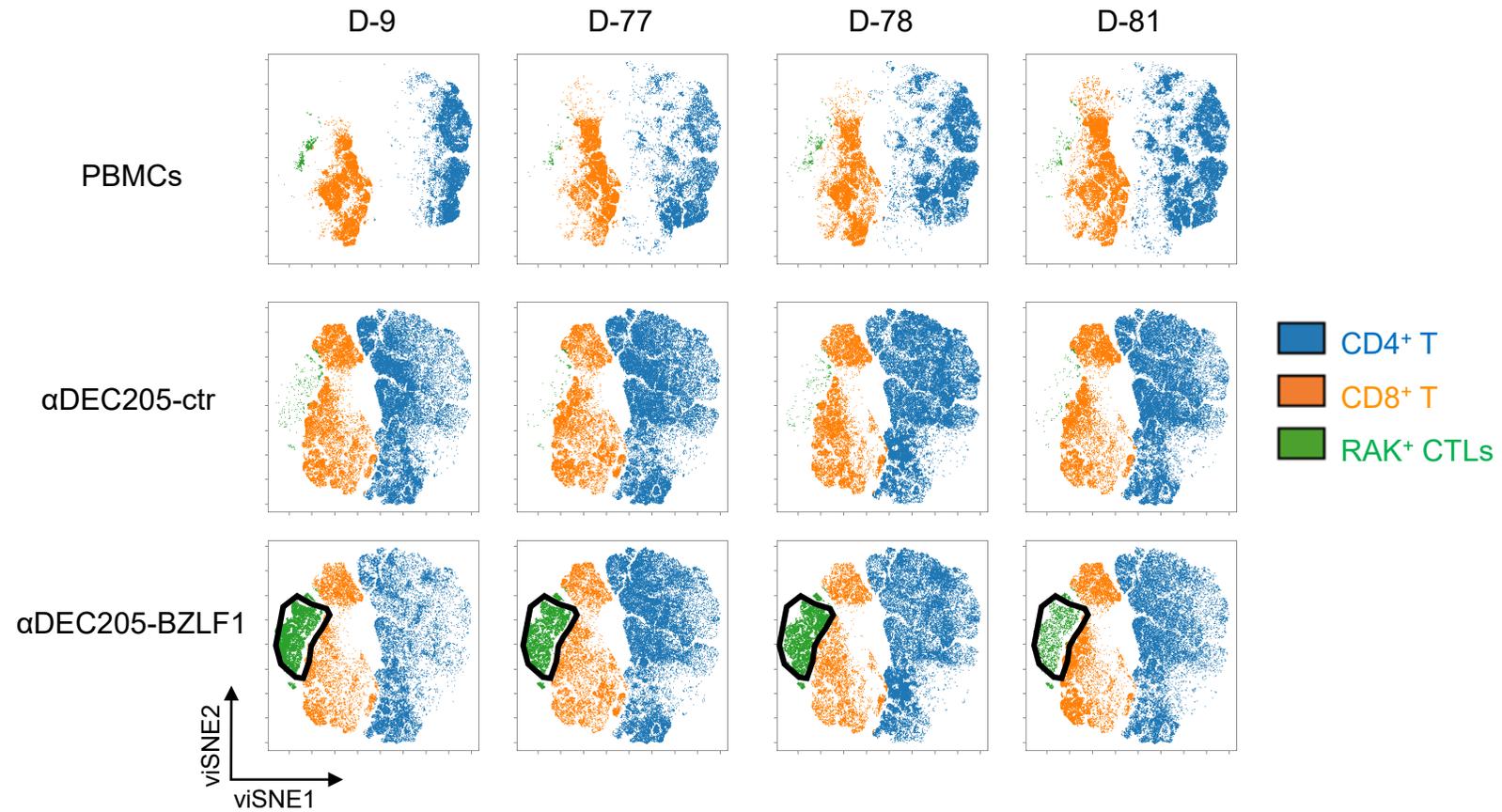


# **Targeted Delivery of BZLF1 to DEC205 Drives EBV-Protective Immunity in a Spontaneous Model of EBV-Driven Lymphoproliferative Disease**

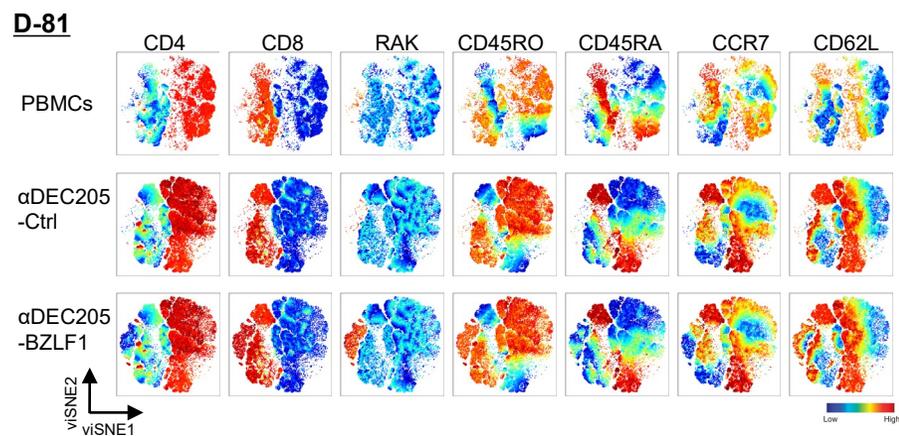
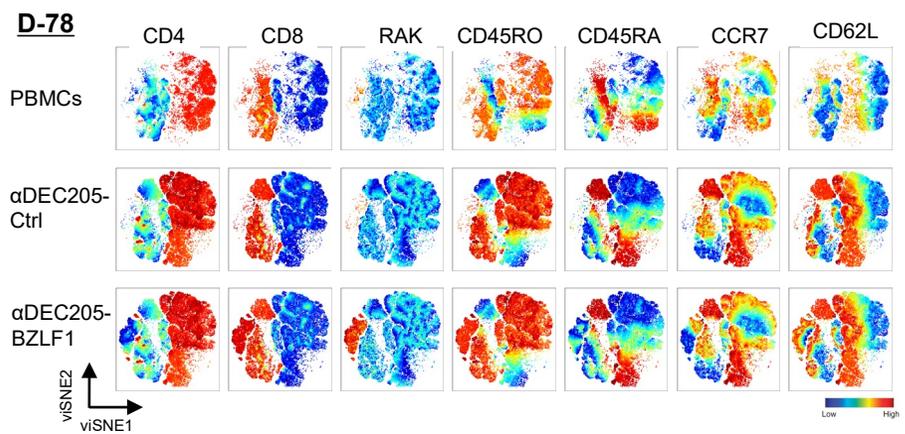
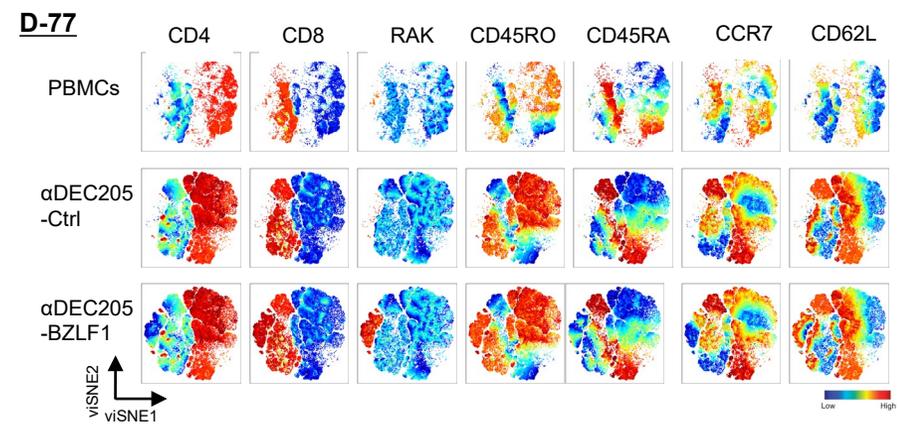
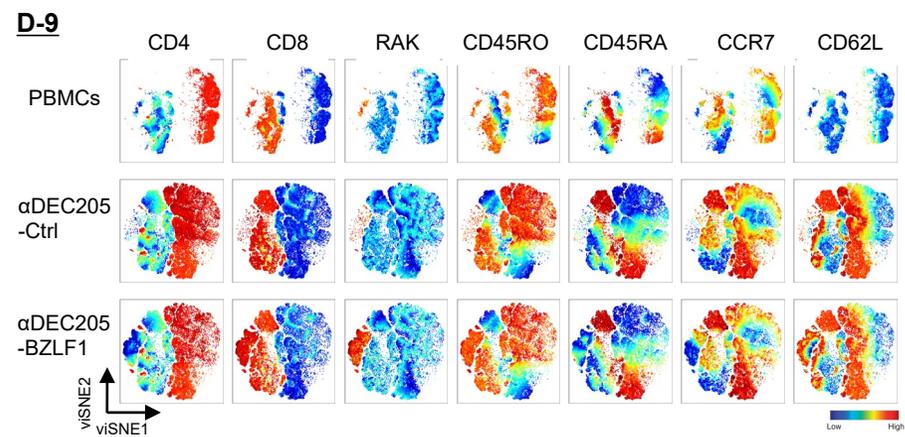
Elshafa H. Ahmed<sup>1, 2</sup>, Eric Brooks<sup>2</sup>, Shelby Sloan<sup>1, 2</sup>, Sarah Schlotter<sup>2</sup>, Frankie Jeney<sup>2</sup>, Claire Hale<sup>3</sup>, Charlene Mao<sup>2</sup>, Xiaoli Zhang<sup>4</sup>, Eric McLaughlin<sup>4</sup>, Polina Shindiapina<sup>2, 5</sup>, Salma Shire<sup>6</sup>, Manjusri Das<sup>2</sup>, Alexander Prouty<sup>2</sup>, Gerard Lozanski<sup>7</sup>, Admasu T. Mamuye<sup>8</sup>, Tamrat Abebe<sup>9</sup>, Lapo Alinari<sup>2,5</sup>, Michael A. Caligiuri<sup>10</sup>, and Robert A. Baiocchi<sup>2, 5</sup>

**Figure S1**



**Figure S1.** viSNE immunome maps of CD3<sup>+</sup> T-cells showed remarkable expansion within the viSNE space populated of the CD3<sup>+</sup>CD8<sup>+</sup>RAK<sup>+</sup> from DEC205-BZLF1 co-culture across 4 HLA-B8 donors.

**Figure S2**



**Figure S2.** The viSNE maps, colored by the intensities of individual immune marker expression (CD4, CD8, RAK, CD45RO, CD45RA, CCR7 and CD62) for 4 HLA-B8 donors.

Figure S3

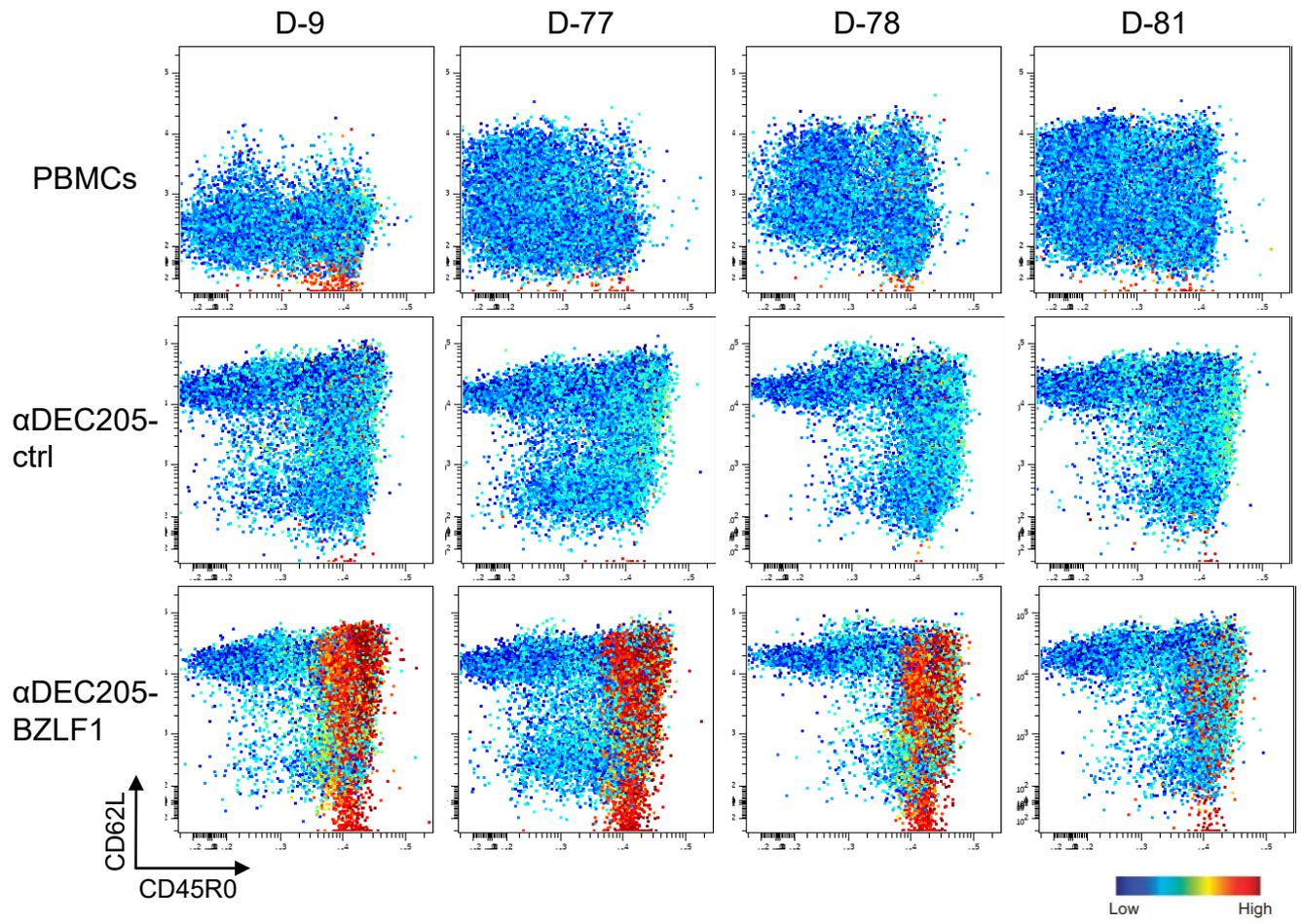
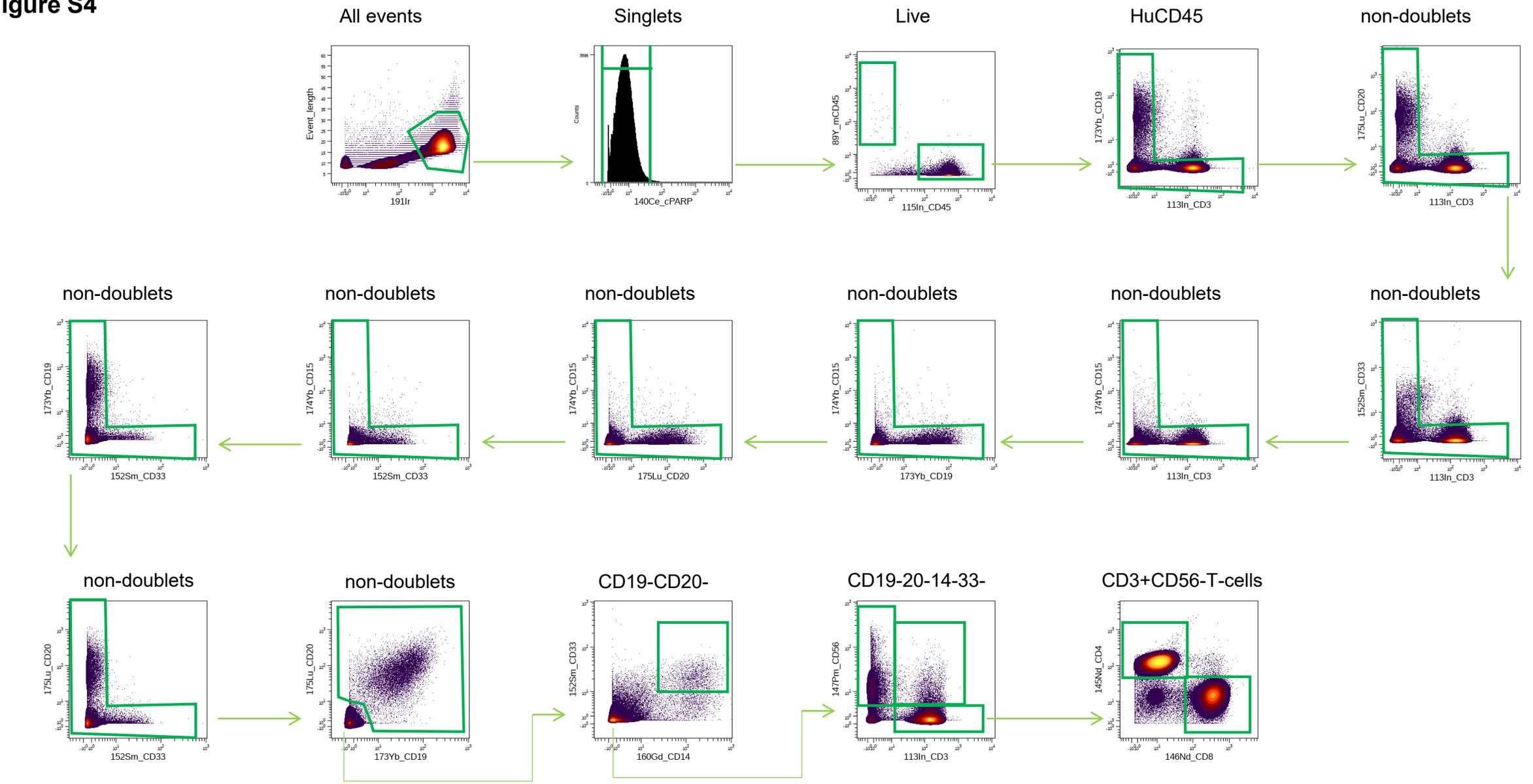


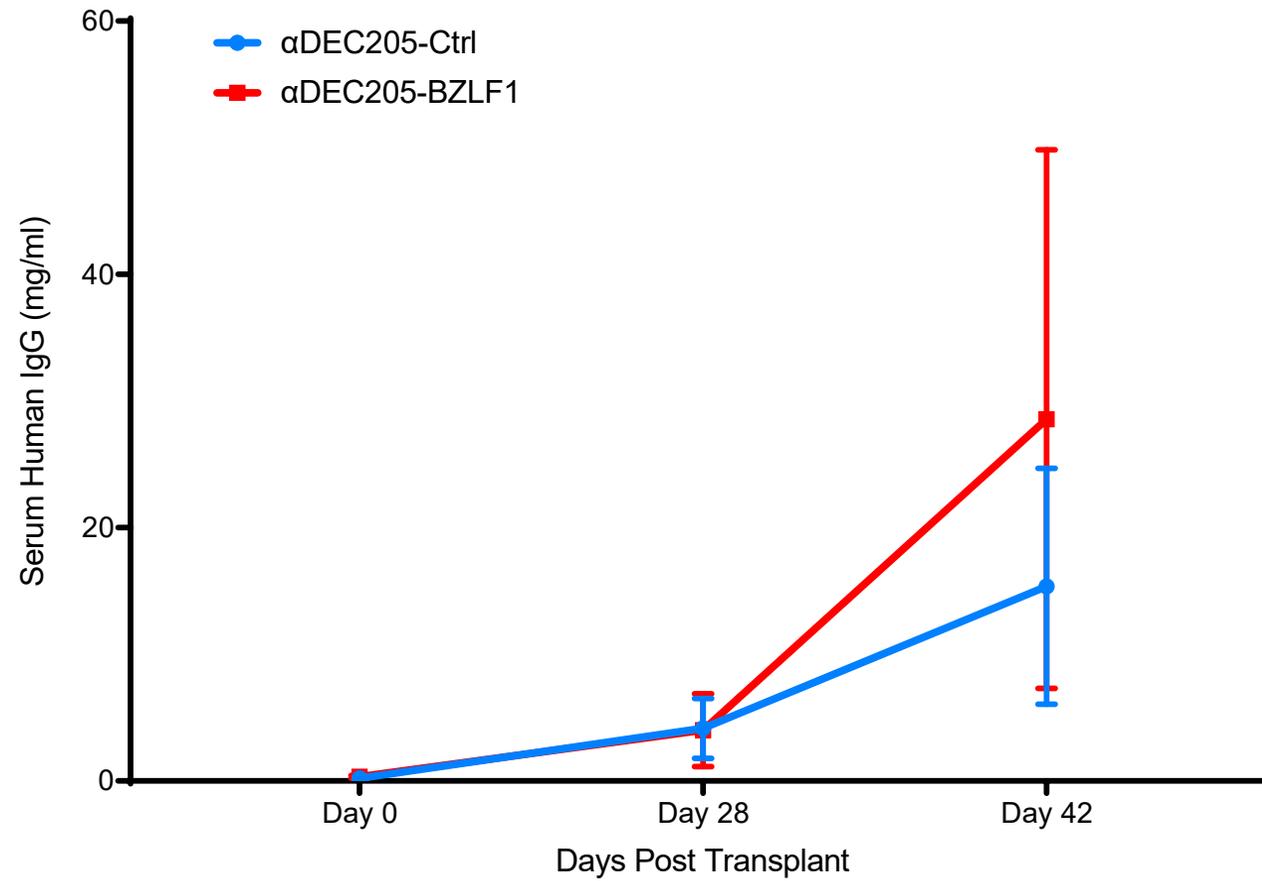
Figure S3. Biaxial plots colored according to the intensity of the RAK marker from 4 HLA-B8 donors.

**Figure S4**



**Figure S4.** Gating Hierarchy for cell events on samples analyzed by mass cytometry (health donor PBMCs, cells produces on the co-culture and splenocytes from SCID mice vaccinated with  $\alpha$ DEC205-BZLF1 and  $\alpha$ DEC205-Ctrl). Cell events for normal sample #D9 are shown. For *in vivo* samples, murine CD45 population was excluded first. Then non-doublings cells were sub-gates and the lineage populations were defined as shown.

**Figure S5**



**Figure S5.** ELISA assay measuring human IgG in mouse serum from αDEC205-BZLF1 and αDEC205-Ctrl vaccine groups.

Table S1. List of antibodies for CyTOF analysis

Ab	Metal	Clone	Company
mCD45	Y89	30F11	Fluidigm
CD3	113In	HIR2	Biolegend
CD45	115In	HI30	Biolegend
IFN $\gamma$	139La	B27	Biolegend
cPARP	140Ce	F21-852	BD Pharmingen
CCR6	141Pr	G034E3	Biolegend
CD107a	142Nd	H4A3	Biolegend
T-bet	143Nd	eBio4B10	eBioscience
CD94	144Nd	HP-3D9	BD Biosciences
CD4	145Nd	RPA-T4	Biolegend
CD8	146Nd	RPA-T8	Biolegend
CD56	147Sm	NCAM16.2	BD Biosciences
CD154 (CD40L)	148Nd	24-31	Biolegend
CD127	149Sm	A019D5	Biolegend
CCR4	150Nd	205410	R&D systems
ICOS	151Eu	DX29	BD Biosciences
CD33	152Sm	P67.6	Biolegend
HLA-DR	153Eu	L243	Biolegend
CD69	154Sm	FN50	Biolegend
PD-1	155Gd	EH12.2H7	Biolegend
CXCR3	156Gd	G025H7	Fluidigm
CD62L	157Gd	DREG-56	Biolegend
CD27	158Gd	L128	Fluidigm
CXCR5	159Tb	J252D4	Biolegend
CD14	160Gd	M5E2	Biolegend
CD16	161Dy	3G8	Biolegend
Foxp3	162Dy	PCH101	Fluidigm
GATA3	163Dy	16E14A23	Biolegend
GITR	164Dy	108-17	Biolegend
CD45RO	165Ho	UCHL1	Biolegend
NKG2D	166Er	1D11	Biolegend
CCR7	167Er	G043H7	Fluidigm
ROR $\gamma$ t	168Er	600214	Fluidigm
CD25	169Tm	2A3	BD Biosciences
CTLA-4	170Er	14D3	eBioscience
GRZB	171Yb	QA16A02	Biolegend
PD-L1	172Yb	24F.10C12	Fluidigm
CD19	173Yb	H1B19	BD Biosciences
CD15	174Yb	W6D3	Biolegend
CD20	175Lu	2H7	Biolegend
Bcl6	176Yb	IG191E/A8	Biolegend
CD11b	209Bi	ICRF44	Biolegend