

Expanded View Figures

Figure EV1. Additional single-cell transcriptional features of patients with myasthenia gravis treated with CAR-BCMA T-cell therapy.

(A) Dot plot showing cell clusters denoted by gene expression of known markers. (B) Bar plots showing the frequency of cell subsets in individual patient at indicated time points.

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			· SELPLG - SELL ·						•	٠						•	
			· MIF - CD74+CXCR4 ·														
			• MIF - CD74+CD44 •														
		•	· ITGB2 - ICAM2 ·													•	
			· ITGB2 - ICAM1 ·														
		•	· IL16 - CD4 ·		٠											•	
•	•		ICAM2 - ITGAL+ITGB2 ·														average expression
	•		FCER2 - ITGAX+ITGB2														20
			· COL9A3 - CD44 ·														15
	•		· CLEC2D - KLRB1 ·														5
			· CLEC2B - KLRB1 ·														0
			· CD99 - PILRA ·														pct.exp
		•	· CD70 - CD27 ·		٠		•										• 25 • 50
•			· CD48 - CD244 ·						•	•				•			• 50 • 75
			· CD22 - PTPRC ·														100
B_naive .	B_mem .	Plasma .	1	_CD4_naive	_CD4_mem -	Treg .	Cycling -	CD8_naive	CD8_mem .	T_CD8_tox .	NKT .	NK .	pDCs -	cDCs .	Mono_CD16 -	Mono_CD14 .	I

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				· SELPLG - SELL ·						٠		•	•			•		
				MIF - CD74+CXCR4														
				MIF - CD74+CD44														
				LGALS9 - PTPRC														
				LGALS9 - CD44														
				ITGB2 - ICAM2			•						0		•			
				IL16 - CD4	•													average expression
				· ICAM2 - ITGAL+ITGB2 ·														20
				FCER2 - ITGAX+ITGB2 ·	•													- 15
	•			CLEC2D - KLRB1			•											- 10 - 5
				CD99 - PILRA														0
	•			CD99 - CD99														pct.exp
				CD86 - CTLA4														• 25
				CD22 - PTPRC														50
				BTLA - TNFRSF14							٠	•						100
	B_naive	B_mem ·	- Plasma		T_CD4_naive	T_CD4_mem ·	Treg -	Cycling -	T_CD8_naive	T_CD8_mem -	T_CD8_tox ·	NKT .	NK	pDCs .	cDCs -	Mono_CD16 -	Mono_CD14 -	

Figure EV2. Additional ligand-receptor interaction analysis between immune cells.

Gene expression dot plot of ligand-receptor expression. Left, expression in B-cell subsets; right, expression in other immune cell types. Shown are the Top15 interactions between B-cell subsets and other immune cell types with communication probabilities in (A) MG-1, (B) MG-2 at baseline.



Figure EV3. Expression of canonical markers identifies behavior of CAR-T cells in patients with myasthenia gravis.

(A) Schematic illustration of cellular indexing of transcriptomes and epitopes by sequencing (CITE-seq) strategy used to detect the CAR on the T-cell surface, and flow cytometry to sort CAR-T cells in vivo at 1 month post infusion (see "Methods" for details). UMAP plots of T cells colored by different cell cluster and clone size. (B) Dot plots showing gene expression of known markers for T-cell and CAR T-cell subclusters. (C) UMAP plots indicating RNA expression of *CD3E, CD4, CD8A, CCR7, SELL, GZMB, GZMK, KLRF1, KLRB1, TOP2A, MKI67*, and *PCNA*. (D) Bar plots showing the frequency of cells in S phase or G2/M phase by cell cycle scoring (see "Methods" for details).



Figure EV4. Expression of indicated genes identifies characteristics of CD8 + Te cells (Baseline) and CD8+ cycling CAR-T cells (IP) in patients with myasthenia gravis.

(A) Violin plots illustrating indicated genes in Fig. 5B, and representing the distribution of expression across each product. CT103A, N = 4044 cells; CAR-BCMA_donor, N = 4739 cells; CAR-BCMA_PCL, N = 2111 cells; Axi-cel, N = 11,392 cells; Tisa-cel, N = 16,348 cells. Boxes show median, Q1 and Q3 quartiles and whiskers up to 1.5× interquartile range. Pairwise comparisons were performed using a two-sided Wilcoxon rank-sum test with a Bonferroni correction. (B) Violin plots illustrating indicated genes in Fig. 5C, and representing the distribution of expression across each cohort. Myasthenia Gravis, N = 2898 cells; Lymphoma_Axi-cel, N = 7123 cells; Lymphoma_Tisa-cel, N = 4857 cells. Boxes show median, Q1 and Q3 quartiles and whiskers up to 1.5× interquartile range. Pairwise comparisons were performed using a two-sided Wilcoxon rank-sum test with a Bonferroni correction.