OMTM, Volume *22*

Supplemental information

Depletion of high-content CD14^{+} cells from apheresis products is critical for successful transduction and expansion of CAR T cells during large-scale cGMP manufacturing

Xiuyan Wang, Oriana Borquez-Ojeda, Jolanta Stefanski, Fang Du, Jinrong Qu, Jagrutiben Chaudhari, Keyur Thummar, Mingzhu Zhu, Ling-bo Shen, Melanie Hall, Paridhi Gautam, Yongzeng Wang, Brigitte Sénéchal, Devanjan Sikder, Prasad S. Adusumilli, Renier J. Brentjens, Kevin Curran, Mark B. Geyer, Sham Mailankhody, Roisin O'Cearbhaill, Jae H. Park, Craig Sauter, Susan Slovin, Eric L. Smith, and Isabelle Rivière

Supplemental Information

Table S1 P values for the CD14+ cell contents of the apheresis products collected from different disease indications

	Average (n=214)	CLL (n=49)	ALL (n=32)	pALL (n=34)	Prostate (n=2)	NHL (n=6)	Meso (n=37)	OVA (n=24)	TNB (n=11)
Average (n=214)									
CLL (n=49)	0.54								
ALL (n=32)	0.0004	0.0018							
pALL (n=34)	0.0016	0.0041	0.63						
Prostate (n=2)	0.80	0.73	0.46	0.51					
NHL (n=6)	0.0001	0.0028	<0.0001	<0.0001	0.011				
Meso (n=37)	0.06	0.29	<0.0001	<0.0001	0.47	0.0003			
OVA (n=24)	0.64	1.00	0.0008	0.0015	0.55	<0.0001	0.22		
TNB (n=11)	0.56	0.82	0.009	0.0113	0.56	0.003	0.57	0.75	
MM (n=19)	0.02	0.10	<0.0001	<0.0001	0.20	0.008	0.27	0.04	0.21

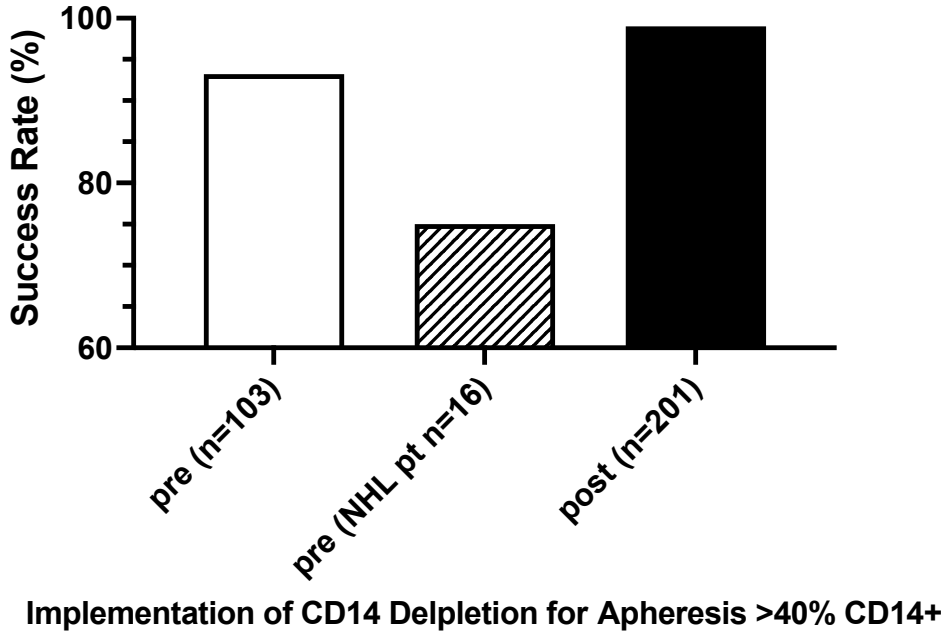

Fig S1. Manufacturing Success Rate Pre- and Post- Implementation of CD14 Depletion Procedure. ☐ Initial success rate (n=96/103) for CAR T cell products manufactured without monitoring CD14 and without CD14 depletion, using apheresis products from patients with ALL or CLL ▨ Initial success rate (n=12/16) in the first 16 CAR T cell products manufactured with apheresis products derived from patients with NHL disease. ■ Manufacturing success rate (n= 199/201 of CAR T cell products in patients enrolled after the implementation of CD14 depletion procedure for apheresis products with >40% CD14+.

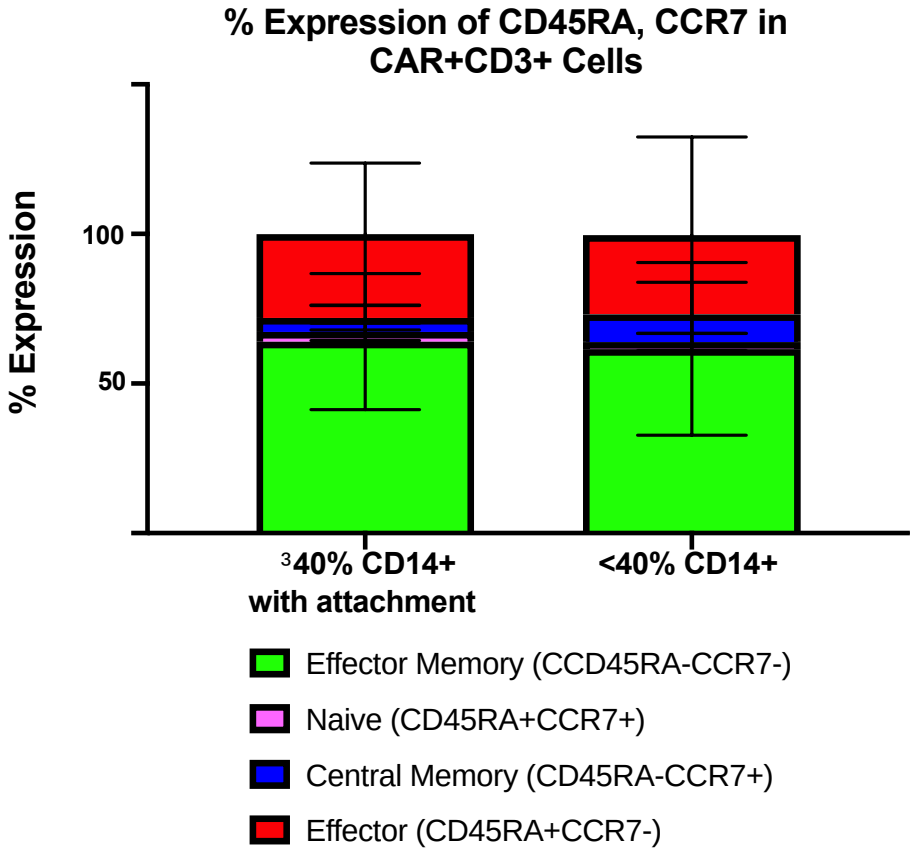

Fig S2. Memory Phenotype of CAR+ T cells for patients with Multiple Myeloma (NCT03070327, n=15). Memory phenotypes of end of process CAR+ T-cells measured by flow cytometry from manufacturing runs started with apheresis products with ≥40% CD14+ monocyte contents and 2h plastic adhesion step (n=7), and from manufacturing runs started with apheresis products with <40% CD14+ monocyte contents (n=8). CD45RACCR7 (Effector Memory cells, T_{EM}), CD45RA+ CCR7+ (Naive T cells, T_N), CD45RA-CCR7+ (Central Memory T cells, T_{CM}), and CD45RA+CCR7- (Effector T cells, T_{eff}). Average % expression levels of T_{EM}, T_N, $T_{CM,}$ and T_{eff} in CAR+CD3+ cells ± SEM were shown and were compared using Student's t-test, for T_{EM}, *p=0.086*; for T_N, *p =0.541*; for T_{CM}, *p=0.541*, and for T_{eff}, *p=0.921*.