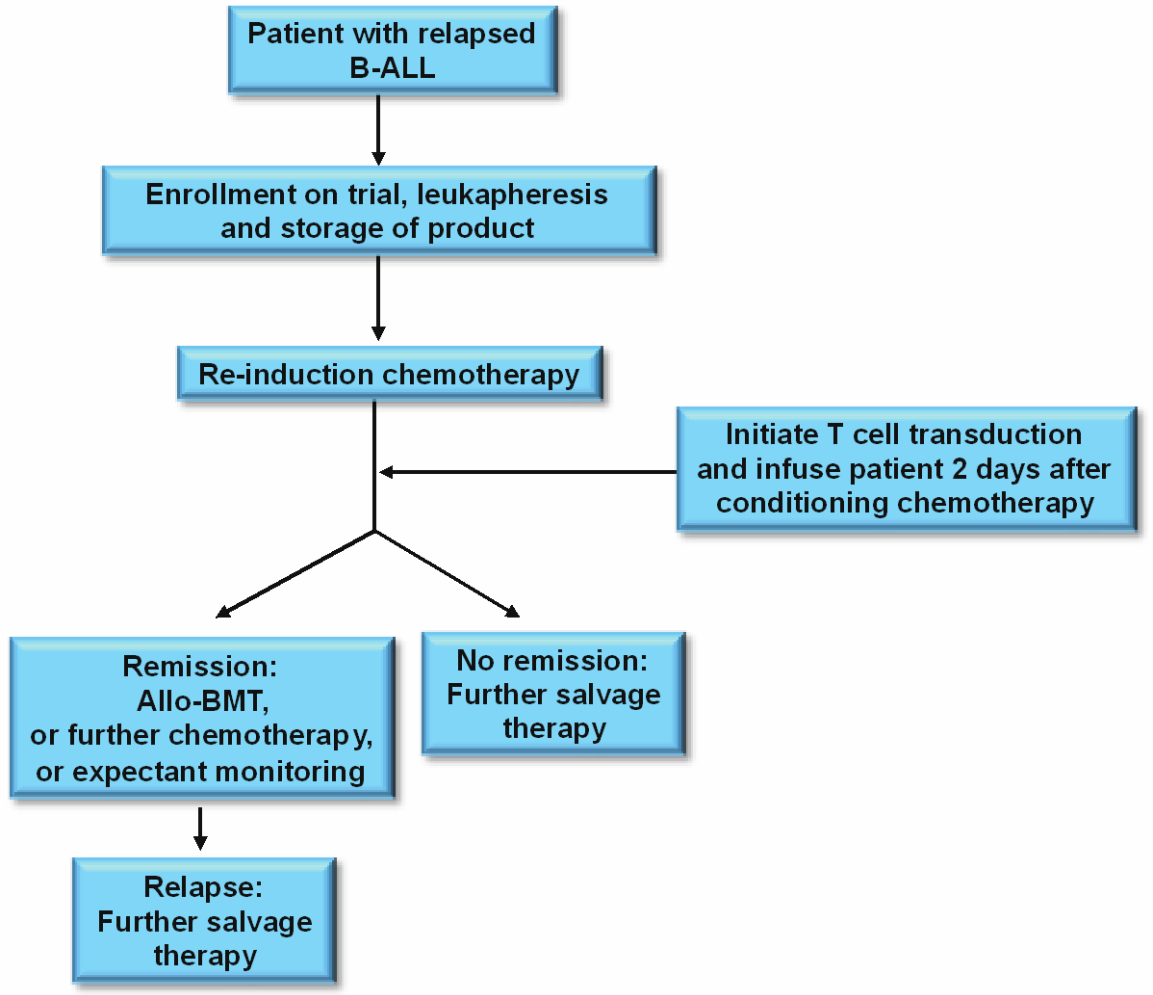

Figure S1. Trial schema for adult patients with relapsed B-ALL.

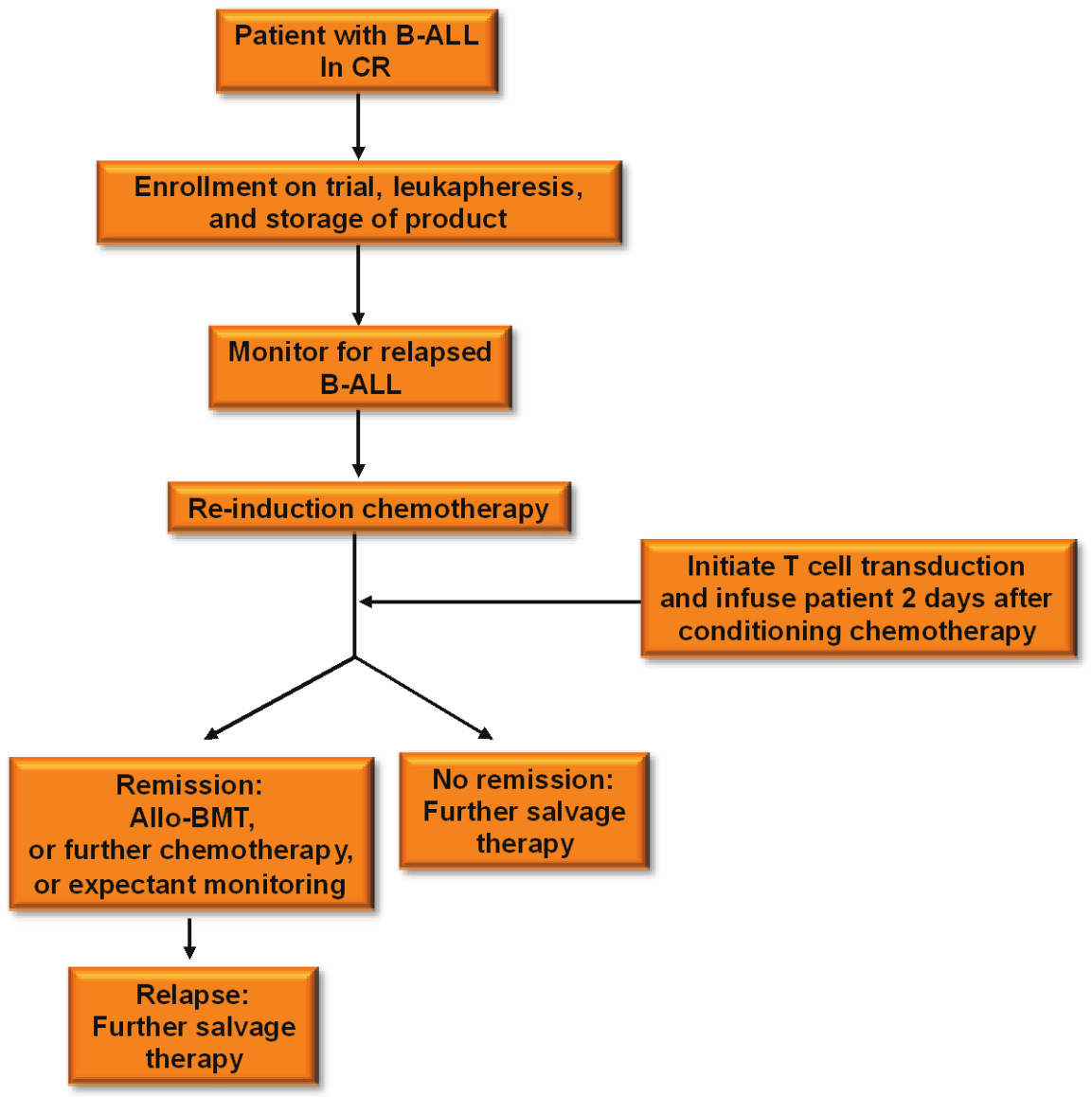

Figure S2. Trial schema for adult patients with B-ALL in CR.

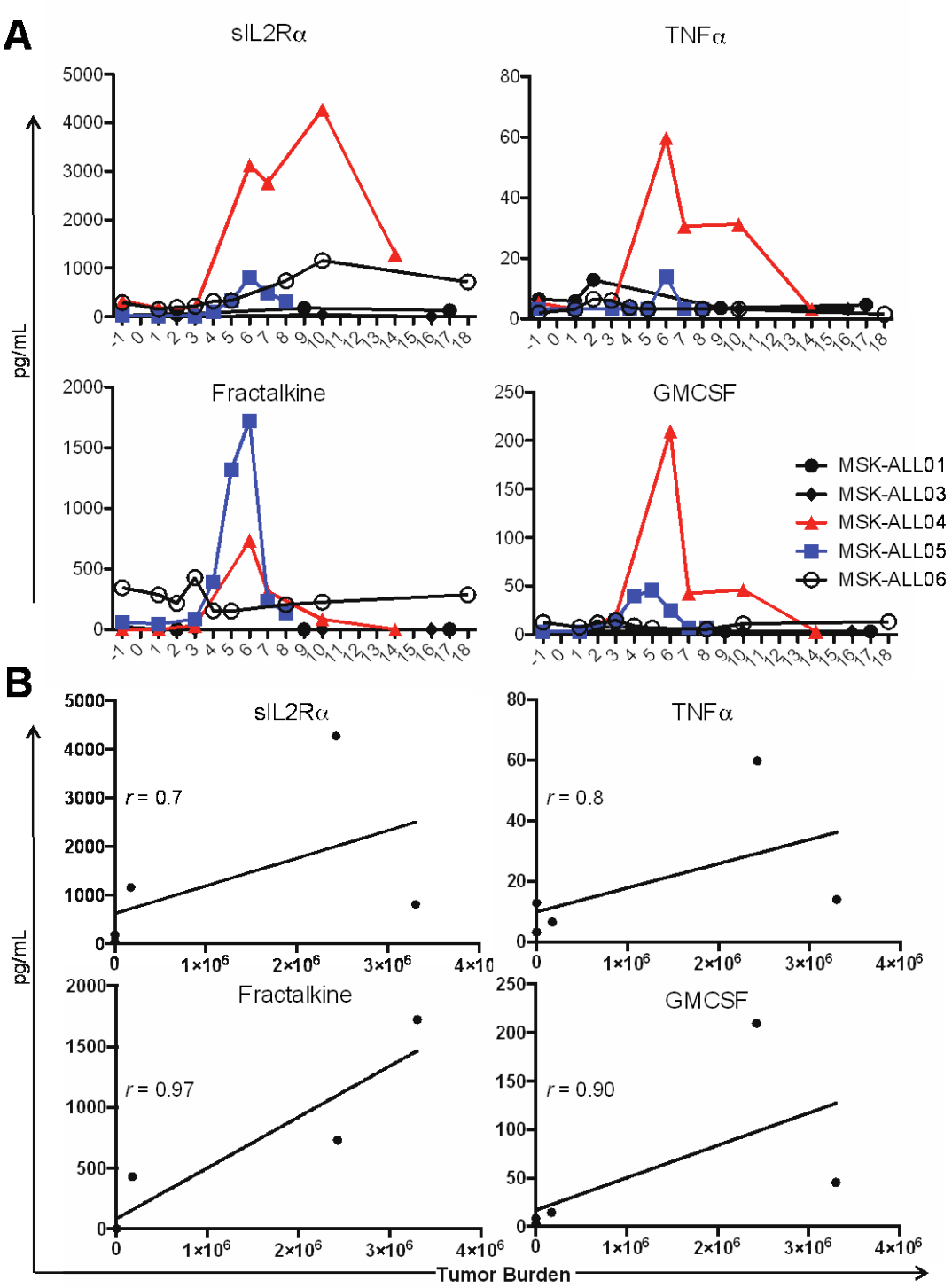

Figure S3. Serum cytokine detection and correlation with tumor burden. A. Pre- and post-treatment serum samples from all patients were evaluated for another four cytokines (pg/mL). Samples range from pre-cyclophosphamide (listed as Day -1) to Day 18, with Days 1 and 2 being time points for infusion with the 19-28z CAR+ T cells. B. In addition, Spearman rank correlation coefficients (*r*) for the cytokines and tumor burden, calculated as in Figure 2, are noted on the plots.

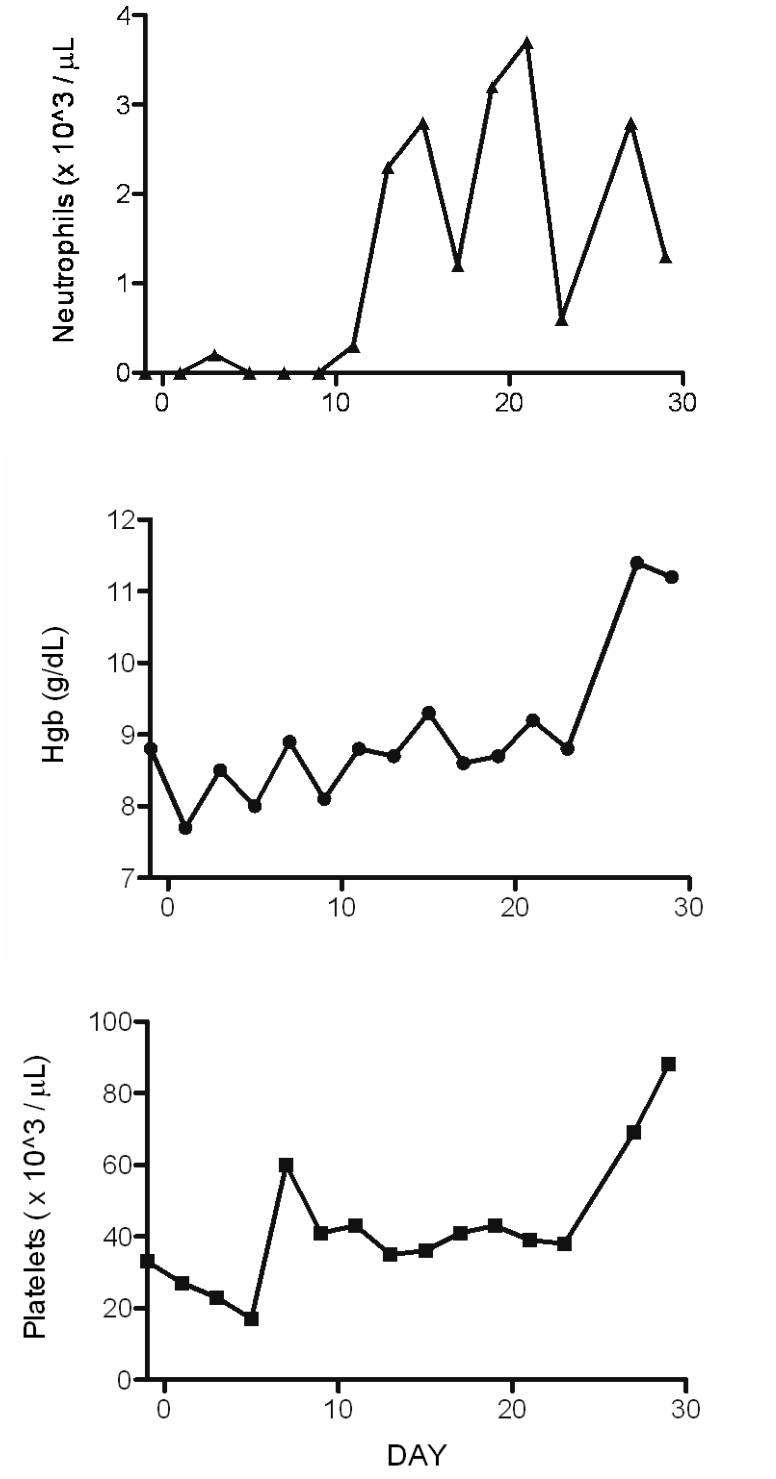

Figure S4. Rapid hematopoeitic recovery in MSK-ALL05 after infusion with 19-28z T cells. The absolute neutrophil count (top panel), hemoglobin (Hgb, middle panel), and platelets (bottom panel) calculated from daily complete blood counts are noted from the Day of cyclophosphamide treatment (-1) to 30 days after 19-28z T cell infusion.

Test/Patient ID	MSK-ALL01	MSK-ALL03	MSK-ALL04	MSK-ALL05	MSK-ALL06
CD3+ T cells (%) Apheresis product EOP cells	 45 99	 71.1 100	 3.7 100	 47.9 100	 50 100
CD8+ T cells (%) Apheresis product EOP cells	 21.6 26	 24.5 30	 1.4 63	 27.2 48.5	 16.1 16.3
Tumor cells (%) Bone Marrow Apheresis product EOP cells	 N.D. 3.1 0	 N.D. 0.4 0.01	 63 91.8 0.01	 70 0.88 0.04	 0.14 0.08 0.02
CD3+/19-28z CAR+ (%)	8.6	14.2	5	14	11.6
Average VCN per cell	0.14	0.2	0.02	0.28	0.16
Cytotoxicity (25:1*) Raji tumor cells	 29.2	 16.9	 7	 20.6	 1.8
Fold expansion post-transduction (days in culture)	49 (d11)	254 (d11)	75 (d14)	143 (d12)	15.6 (d7)
Total 1928z+/CD3+ cells infused	1.8×10^8	3.2×10^8	3.2×10^8	2.9×10^8	1.4×10^8
Total CD3+ cells infused	2.1×10^9	2.3×10^9	6.2×10^9	2.1×10^9	1.2×10^9

Table S1: Characteristics of infused 19-28z transduced T cells; tumor burden in apheresis and bone marrow. EOP: end of production cells; N.D.: not detectable in bone marrow aspirate; VCN: vector copy number. *not corrected for CAR+ T cells; EOP: end of production; the average 19-28z vector copy number per cell was 0.14, 0.2 and 0.02 for MSK-ALL1, MSK-ALL3 and MSK-ALL4 respectively.

Patient ID	Adverse Events	Grade	Related
MSK-ALL01	Neutropenia	4	Possible
	Diarrhea	2	Possible
	Hypotension	3	Possible
MSK-ALL03	Febrile neutropenia	3	Unlikely
	Hypotension	2	Unlikely
MSK-ALL04	Sinus tachycardia	2	Possible
	Fatigue (asthenia, lethargy, malaise)	3	Possible
	Febrile neutropenia	3	Possible
	Hypotension	3	Possible
	Seizure	2	Possible
	Urinary Tract Infection	2	Unlikely
	Fever (in the absence of neutropenia)	1	Unlikely
MSK-ALL05	Febrile neutropenia	3	Possible
	Hypotension	3	Possible
	Hypoxia	4	Possible
	Altered mental status	4	Possible
	Seizure	2	Possible
MSK-ALL06	Fever (in the absence of neutropenia)	1	Possible

Table S2: Adverse events

	MSK-ALL01	MSK-ALL03	MSK-ALL04	MSK-ALL05	MSK-ALL06
1hour post	0.21	1.47			0.84
1day post	1.1	0.62			0.28
2-3d post	0.3			8.4	0.28
4-5d post				52.7	0.75
6-8d post	4	2.2	0.8	40.1 (14.1)	
9-12d post		0.12	(1.6)	1.4	
13-16d post	0.03		0.04	0.65	0.05
19-20d post			0.06	0.19	
21-23d post	0.03	0.07 (0.07)	0.07 (0.01)		0.41
26d post			0.01		
28-30d post		0.23 (0.45)			0.17
33-34d post			0.05	0.04	
35-36d post	0.12		0.25		
40-41d post			0.06	0.08	
42-43d post			0.11		0.16
47d-49 post			0.1	0.21 (0.12)	0.21
55d-57 post			(0.05)		0.09

Table S3. Percentage of 19-28z CAR+ T cells detected in the CD3+ T cells of the peripheral blood and of the bone marrow (in parenthesis) of patients up to 57 days post-CAR modified T cell therapy.