Supplemental Table S3. ***In vivo*** **comparison of αCD19-BB-ζ and αCD19-ζ persistence in spleens from day 35 to day 198 post injection.**

Days following T cell injection[1]	T cell Dose ($x10^6$)	Animal ID	αCD19-ζ copies/500 ng	αCD19-BB-ζ copies/500 ng
21	20	229	24.7	38.7
21	20	362	75.5	209.4
21	20	384	1948.1	2795.6
22	20	340	25.4	35.2
22	20	360	161.1	499
21	5	217	<2.5	<2.5
21	5	364	6.7	15.2
22	5	334	<2.5	<2.5
22	5	361	<2.5	<2.5
21	1	219	<2.5	<2.5
21	1	225	<2.5	6.1
22	1	339	<2.5	<2.5
22	1	366	<2.5	<2.5
33	20	385	Dead before analysis	
35	20	221	50.2	41.2
35	20	236	49.9	64.5
35	20	359	326.9	760.7
36	20	337	20.9	13.5
35	5	224	<2.5	<2.5
35	5	313	<2.5	<2.5
35	5	350	<2.5	3
36	5	238	<2.5	<2.5

Days following T cell injection[1]	T cell Dose ($x10^6$)	Animal ID	αCD19-ζ copies/500 ng	αCD19-BB-ζ copies/500 ng
35	1	235	<2.5	6.4
35	1	352	3.1	7.1
36	1	237	<2.5	<2.5
36	1	338	<2.5	<2.5
44	20	193	979.9	2408.9
44	20	324	927.5	14167.9
44	20	343	4008.2	9957.9
44	20	382	5325	11049.8
44	20	383	1441	3818.1
57	20	356	1356.5	240.7
115	1	341	Dead before analysis	
125	20	393	27.2	61.8
134	5	6497	9.8	<2.5
135	5	373	<2.5	<2.5
134	1	242	<2.5	<2.5
134	1	323	<2.5	<2.5
134	1	330	<2.5	<2.5
134	1	377	<2.5	<2.5
135	1	354	3.4	13
134	1	6469	<2.5	7.3
169	1	192	Dead before analysis	
182	5	344	14.2	<2.5
196	20	244	<2.5	<2.5
196	20	374	PCR failed	
196	20	372	<2.5	<2.5
196	5	321	<2.5	5.6

Days following T cell injection[1]	T cell Dose ($x10^6$)	Animal ID	αCD19-ζ copies/500 ng	αCD19-BB-ζ copies/500 ng
196	5	328	<2.5	<2.5
198	5	208	<2.5	<2.5
198	5	245	156.5	1624.9

[1]Animals were given CAR+ T cell injections consisting of a 50:50 mixture of αCD19-TCR-ζ and αCD19-TCR-ζ:4-1BB T cells that were dosed at $1x10^6$, $5x10^6$, or $20x10^6$ T cells per mouse; the mice in the low dose group had progressive leukemia, while the animals in the medium and high dose treatment groups controlled tumor (not shown). See Supplementary Methods for description of experimental design.