Supplemental figure legends

Supplemental table 1: Characteristics of primary BCP-ALL cells. Name, genetic subtype and additional remarks of all primary BCP-ALL samples used in this study.

Supplemental figure 1: *In vivo* ibrutinib efficacy in xenografts RCH-ACV mCherry-Luc cell lines. (**A**) Bioluminescence imaging of mice engrafted with RCH-ACV mCherry-Luc for Days 7 till 21, treated with placebo (left column) or ibrutinib (right column) (**B**) Viability of host mCD45 positive cells in bone marrow (BM, p=0.99), peripheral blood (PB, p=0.63) and spleen (S, p=0.63) for placebo (black circles, n=3) and ibrutinib (grey squares, n=4)

Supplemental figure 2: *In vivo* ibrutinib efficacy in xenografts of primary BCP-ALL samples. (**A**) Percentage of viable $hCD19^{+}$ cells in the harvested organs of mice engrafted with TCF3-PBX1 positive cells. Cells were negative for AnnexinV-FITC (AnV-) and propidium iodine (PI-) for placebo treated mice (black circles, n=6) and ibrutinib treated mice (grey squares, n=7) for bone marrow (BM, p=0.29), peripheral blood (PB, p=0.53) and spleen (S, p=0.06). (**B**) Idem for mice engrafted with TCF3-PBX1 negative cells for placebo (black circles, n=6) and ibrutinib (grey squares, n=5) for BM (p=0.93), PB (p=0.79) and S (p=0.93) (**C**) Viability of host mCD45 positive cells in bone marrow (BM, p=0.98), peripheral blood (PB, p=0.40) and spleen (S, p=0.62) for placebo (black circles, n=12) and ibrutinib (grey squares, n=12)

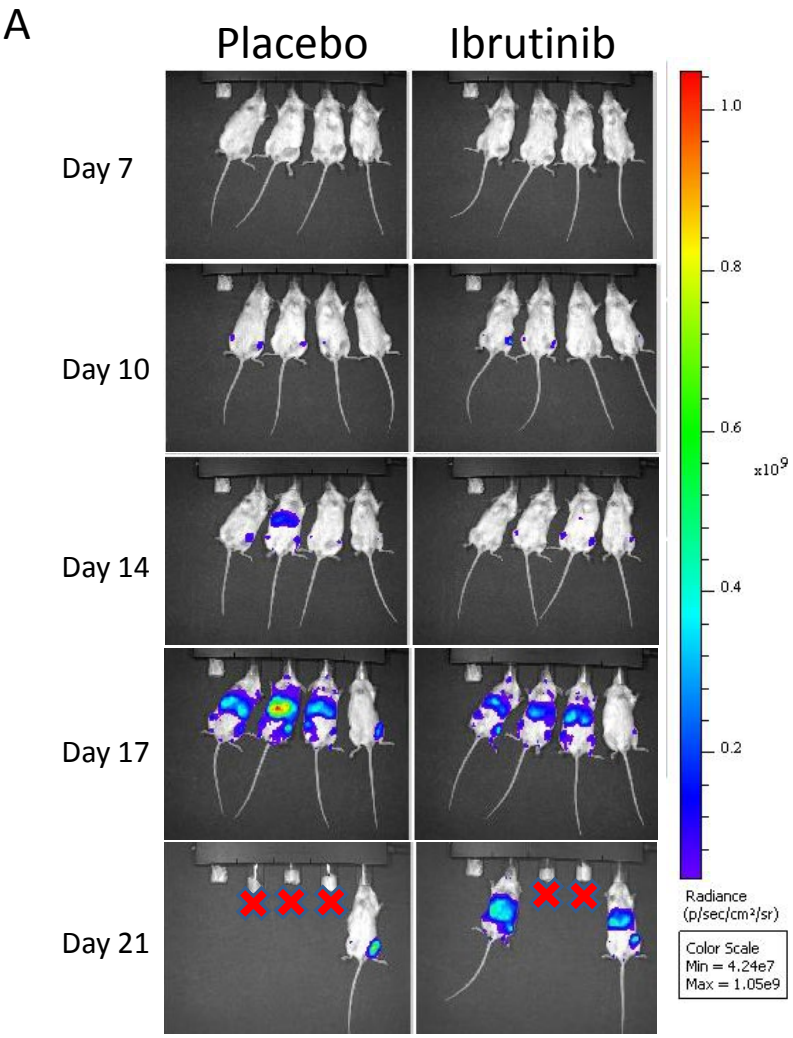
Name	Subtype	Remarks	Age at diagnosis (in yrs)	WBC (in 10^6/mL)	IKZF1 mutations
BCP-ALL #1	TCF3-PBX1	-	14	4.1	WT
BCP-ALL #2	TCF3-PBX1	-	11	34	WT
BCP-ALL #3	TCF3-PBX1	-	15	14.6	nd
BCP-ALL #4	TCF3-PBX1	-	5	17.7	WT
BCP-ALL #5	BCR-ABL1-like*	Dic(9;20)	2	18	DEL EX4-7
BCP-ALL #6	BCR-ABL1	-	1	75	WT
BCP-ALL #7	TCF3-PBX1	-	1	50	WT
BCP-ALL #8	TCF3-PBX1	-	13	25.6	nd
BCP-ALL #9	B-Other**	-	15	19.9	nd
BCP-ALL #10	BCR-ABL1-like*	-	14	75	DEL EX4-7
BCP-ALL #11	BCR-ABL1-like*	-	2	97.4	DEL EX4-7

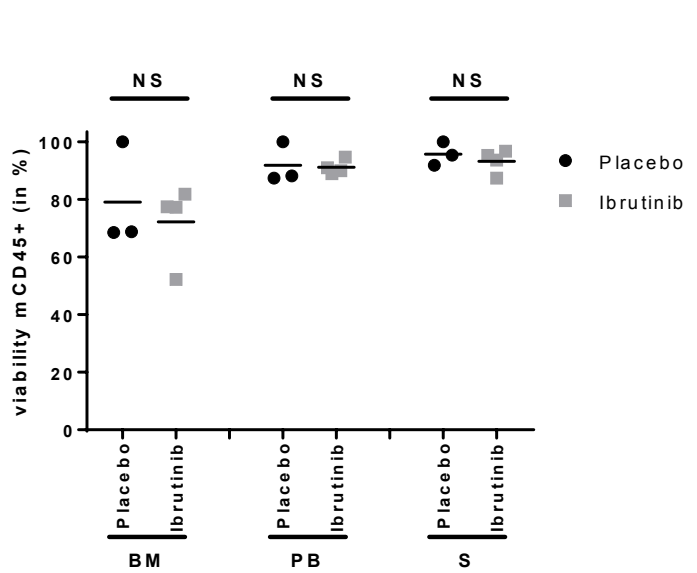
WBC: white blood cell count at diagnosis

*Identification by profile of Den Boer et al., Lancet Oncol. 2009 Feb;10(2):125-34.

**B-other case was negative for all known cytogenetic lesions used in the stratification of childhood ALL and did not express the BCR-ABL1-like gene expression profile.

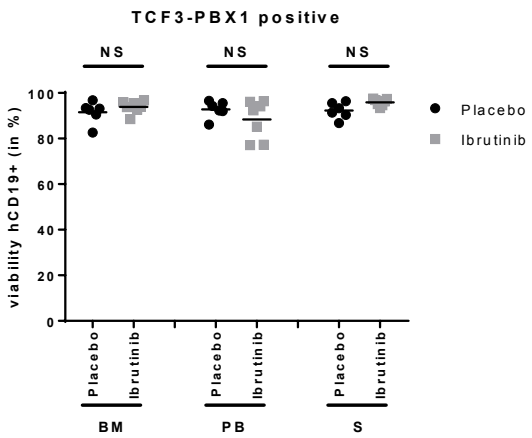
Supplemental figure 1



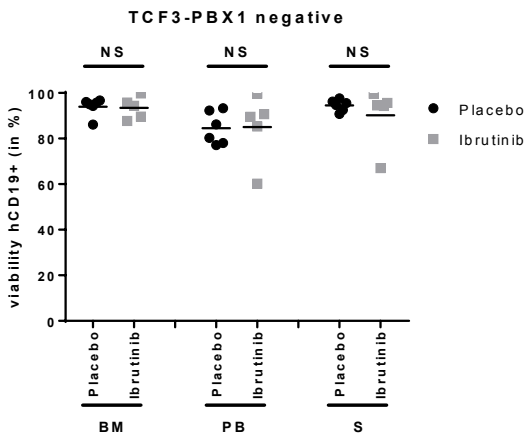


Supplemental figure 2

A



B



C