**SUPPLEMENTARY FIGURES**

Supplementary Fig. 1. Transplantation of HSPCs edited in presence of Ad9-E4orf1 in NSG mice. **a-b**, Percentage of circulating hCD45⁺ (a) and GFP⁺ cells within human graft (b) in mice transplanted with the outgrown progeny of starting-matched limiting doses of CB HSPCs edited in AAVS1 with indicated treatments (n = 4). When we evaluated in vivo the potential benefit of adding Ad9-E4orf1 to the HSPC editing treatment we found no improvement in human cell engraftment and only a minor increase in the percentage of HDR-edited cells in the graft, thus prompting no further investigation. Mean ± SEM. n indicates independent animals.
Supplementary Fig. 2. Gating strategies for flow cytometry analyses. Gating strategies for the analysis of: a, HSPC phenotype 96 h after treatments; b, Cell cycle phases 12-24 or 96 h after treatments; c, Apoptotic/necrotic cells 24 h after treatments; d, Human PBMCs in transplanted mice; e, Human cells within BM of transplanted mice; f, Human cells within SPL of transplanted mice.