The induced HSC challenge: strategies to induce hematopoietic stem cells from other cell sources. (A) Strategies for the induction of hematopoietic stem cells (HSCs) and hemogenic endothelial cells (HE) from fibroblasts (Szabo et al, 2010; Pereira et al, 2013; Pulecio et al, 2014), embryonic/induced pluripotent stem cells (ESC/iPSC) (Doulatov et al, 2013), committed blood progenitors (Riddell et al, 2014) or endothelial cells (Sandler et al, 2014). The transcription factors used for each induction are highlighted. (B) Advantages and disadvantages of fibroblasts, ESC/iPSCs, and blood cell types as a cell source for inducing HSCs. The disadvantages of starting with blood cells are highlighted. Adapted from Pereira et al, EMBO J 2014.