killer cell engager (TriKE); or wherein the engage comprises (a) a first binding domain recognizing an extracellular portion of CD3, CD28, CD5, CD16, CD64, CD32, CD33, CD89, NKG2C, NKG2D, or any functional variants thereof of the cell or a by-stander immune effector cell; and (b) a second binding domain specific to an antigen comprising any one of: B7H3, CD10, CD19, CD20, CD22, CD24, CD30, CD33, CD34, CD38, CD44, CD52, CD79a, CD79b, CD123, CD138, CD179b, CEA, CLEC12A, CS-1, DLL3, EGFR, EGFRvIII, EpCAM, FLT-3, FOLR1, FOLR3, GD2, gpA33, HER2, HM1.24, LGR5, MSLN, MCSP, MICA/B, Muc1, Muc16, PDL1, PSMA, PAMA, P-cadherin, ROR1, or VEGF-R2.

[0021a] In one aspect, the present disclosure provides a composition comprising (i) the cell or population thereof as described herein; and (ii) one or more therapeutic agents.

[00022] In one aspect, the present disclosure provides a master cell bank (MCB) comprising the iPSC according to any of the various aspects or embodiments herein.

[00023] In one aspect, the present disclosure provides a therapeutic use of a composition disclosure herein. In some embodiments, the therapeutic use comprises introducing the composition to a subject in need of an adoptive cell therapy, wherein the subject has an autoimmune disorder, a hematological malignancy, a solid tumor, cancer, or a virus infection.

[0023a] In one aspect, the present disclosure provides use of the composition as described herein in the manufacture of a medicament for treating an autoimmune disorder, a hematological malignancy, a solid tumor, cancer, or a virus infection in a subject in need of an adoptive cell therapy.

[0023b] In one aspect, the present disclosure provides the composition as described herein for use in therapy.

[00024] In one aspect, the present disclosure provides a method of improving T cell differentiation. In some embodiments, the method comprises regulating ADR expression under an endogenous promoter that is temporally regulated during T cell differentiation. In some embodiments, the endogenous promoter is activated upon commitment to lymphoid lineage, and wherein the endogenous promoter activity is further heightened upon commitment to T cell lineage. In some embodiments, the endogenous promoter comprises a promoter of at least one of TRAC, TIM-3, ASB2, and TIGIT. In some embodiments, the ADR is co-expressed with a cytokine comprising IL2, IL18, or IL7RF.

[00025] In one aspect, the present disclosure provides a method of manufacturing a derivative effector cell according to any of the various aspects or embodiments herein. In some embodiments, the derivative effector cell is an immune effector cell, and the method comprises: (a) obtaining a genetically engineered iPSC, wherein the iPSC comprises edits comprising: (i) a polynucleotide encoding a TCR promoter-driven ADR and/or a cytokine, (ii) a polynucleotide

encoding a TCE, (iii) a polynucleotide encoding a CAR, (iv) a polynucleotide encoding a TGFβ-SRR, (v) a polynucleotide encoding a C-X-C-motif chemokine receptor or a variant thereof, (vi) a polynucleotide encoding an exogenous CD16 or variant thereof, and (vii) a CD38 knockout; (b) differentiating the genetically engineered iPSC to a derivative $CD34^+$ cell; and (c) differentiating the derivative $CD34^+$ cell to an immune effector cell, wherein the immune effector cell retains the edits. In some embodiments, obtaining the genetically engineered iPSC comprises: (i) generating a first pre-MCB (master cell bank) iPSC by introducing to an iPSC a construct comprising polynucleotides encoding a TGFβ-SRR, a C-X-C-motif chemokine