|  |  |
| --- | --- |
| G-BM+ G-PBSC Graft | Mean and range(10^8/kg) |
| leukocyte | 11.24(7.14-21.42) |
| CD34+ | 2.89(0.62-6.85) |
| Lymphocyte | 3.73(0.40-8.47) |
| CD14+ Monocyte | 1.83(0.67-4.19) |
| CD3+ T cells | 2.60(0.61-5.79) |
| CD4+ T cells | 1.41(0.32-3.42) |
| CD8+ T cells | 0.84(0.15-2.29) |
| eMDSC | 1.98(0.52-7.01) |

**Table S1** **Cell components in Graft**

Abbreviations: G-BM, G-CSF primed bone marrow; G-PBSC, G-CSF peripheral blood stem cells harvest;



**Figure S1 HLA-DR-/lowCD33+CD16- eMDSCs demonstrated superior immune-suppressive activity compared with CD33- and HLA-DR-/lowCD33+CD16+ fraction**

PC, positive control; \* Statistical Significance



**Figure S2 Comparison of immune-suppressive activity of HLA-DR-/lowCD33+CD16- eMDSCs with M-MDSCs and G-MDSCs**

\* Statistical Significance P<0.05; \*\* Statistical Significance P<0.01

PC, positive control; NC, negative control

**Figure S3 Selective inhibitors of arginase(nor-NOHA), iNOS (L-NMMA), IDO (NLG8189) on T cell proliferation**

PC, positive control; MDSC, HLA-DR-/lowCD33+CD16- eMDSCs



**Figure S4 Human white blood cell engraftment at 7 days, 14 days and 21 days after co-transplantation.** A. the percentage of human leukocytes in whole blood cells collected from transplanted mice. B. No significant difference of human cells engraftment intragroup



**Figure S5 eMDSC engraftment in NSG mice at 14 and 21 days after** **co-transplantation.**

1. Gating strategies of human HLA-DR-/lowCD33+CD16-MDSC. B. MDSC engraftment in peripheral blood(PB), spleen(SP) and bone marrow (BM) in NSG mice at 14 days after transplantation and 21 days after transplantation.

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**Figure S6 Treg, Th1, Th2 and Th17 cells detected in peripheral blood in NSG mice at days 21.**

A. percentage of Treg(CD4+CD25+Foxp3+) in peripheral blood.

B. percentage of Th1(CD4+T-bet+), Th2(CD4+GATA3+) and Th17(CD4+RORγt+) in peripheral blood.

. 

**Figure S7 Cytokines detected in peripheral blood of NSG mice at 7, 14 and 21 days after** **co-transplantation.**

1. INF-γ; B. IL-4; C IL-17A; D TNF-α; E IL-6

\* Statistical Significance P<0.05; \*\* Statistical Significance P<0.01