Supplementary Information

Dendritic cell immune potency on 2D and in 3D collagen matrices.

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Table S1: Primer list

Gene	Forward primer	Reverse primer
ATCB	CATCCGCAAAGACCTGTACG	CCTGCTTGCTGATCCACATC
MMR (CD206)	AACGGACTGGGTTGCTATCA	CCCGATCCCTTGTAGAGCAT

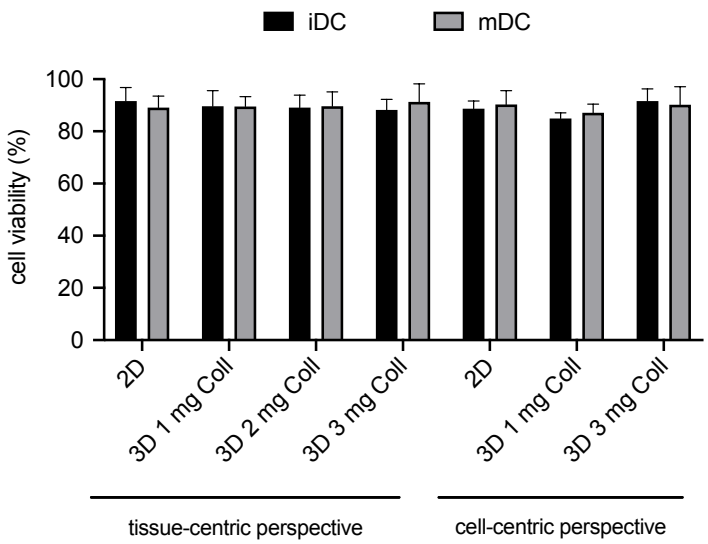

Figure S1: Cell viability of mDC and iDC. Cell viability was elucidated by staining with eBioscience™ fixable viability dye eFluor™ 506 and analyzed using flow cytometry. Data are shown as mean +/-SD. At least 4 samples per condition were analyzed.

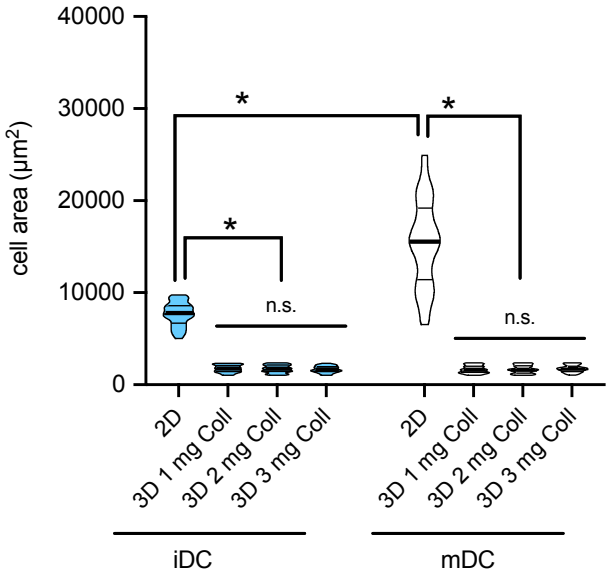

Figure S2: Comparing DC morphology in 2D and 3D cell culture in the tissue-centric perspective. Quantitative analysis of cell area for tissue-centric perspective for iDC and mDC. Data are shown as a violin plot; * significance level of $p < 0.05$. At least 50 cells were analyzed per sample. The experiment was performed in 4 replicates.

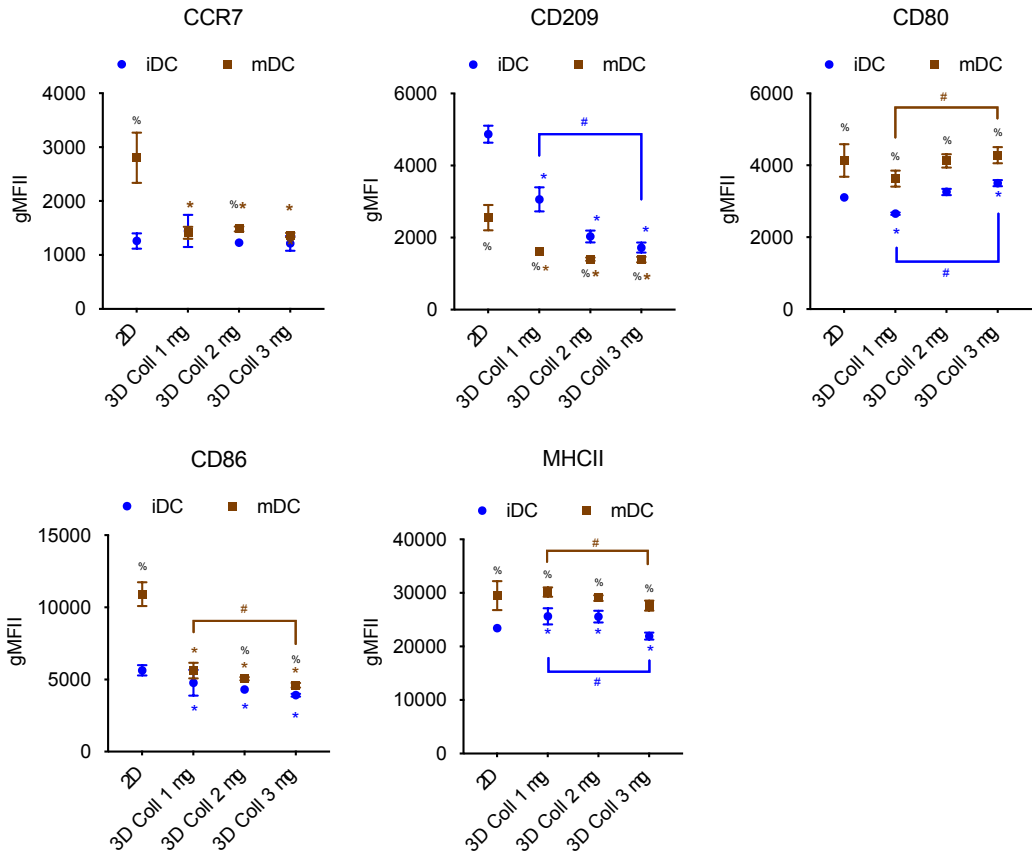

Figure S3: Comparing cell surface markers between iDC and mDC in tissue-centric perspective. CCR7, CD209, CD80, CD86 and MHCII protein expressions on the cell surface of both iDC and mDC in tissue-centric perspectives were qualitatively analyzed using flow cytometry. Data are shown as mean +/-SD; §, *, # indicates significance level of $p < 0.05$ when comparing iDC and mDC, 3D and 2D, and between low and high matrix density, respectively. At least 4 samples per condition were analyzed.

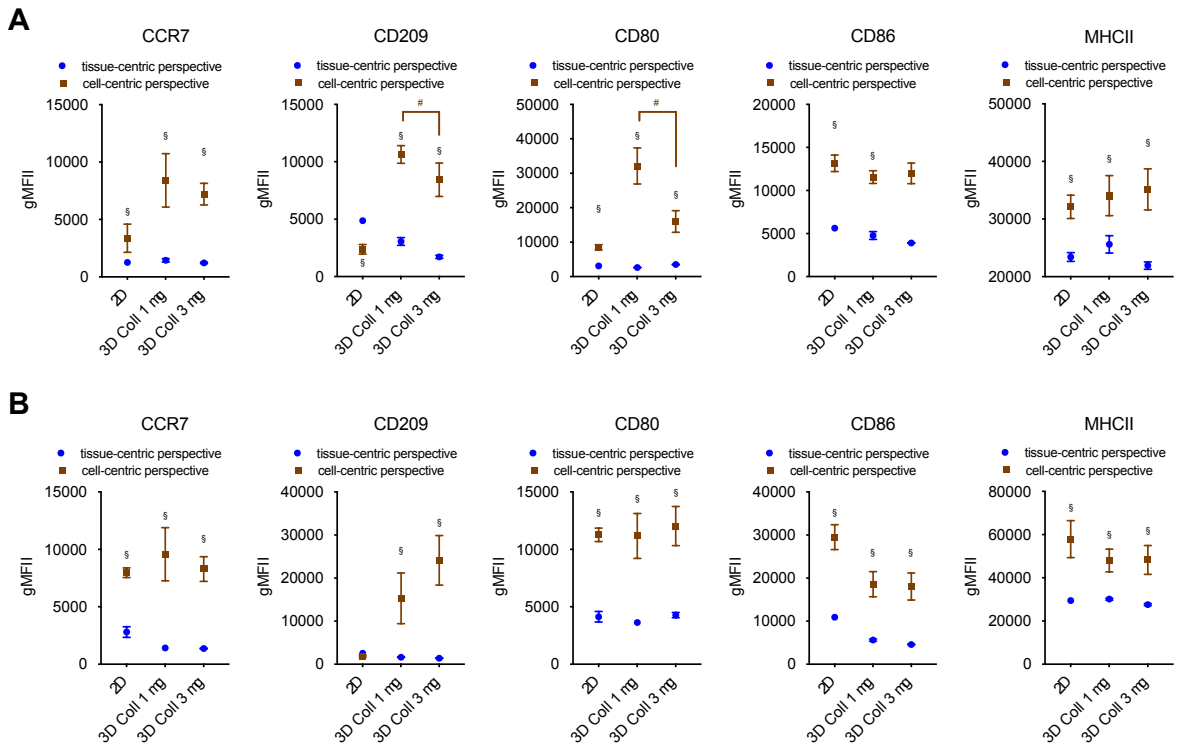

Figure S4: Comparing cell surface markers of iDC and mDC between tissue- and cell-centric perspectives. CCR7, CD209, CD80, CD86 and MHCII protein expressions on the cell surface of both (A) iDC and (B) mDC in both tissue-centric and cell-centric perspectives were qualitatively analyzed using flow cytometry. Data are shown as mean +/-SD; §, # indicates significance level of $p < 0.05$ when comparing tissue centric and cell-centric conditions, and between low and high matrix density, respectively. At least 4 samples per condition were analyzed.

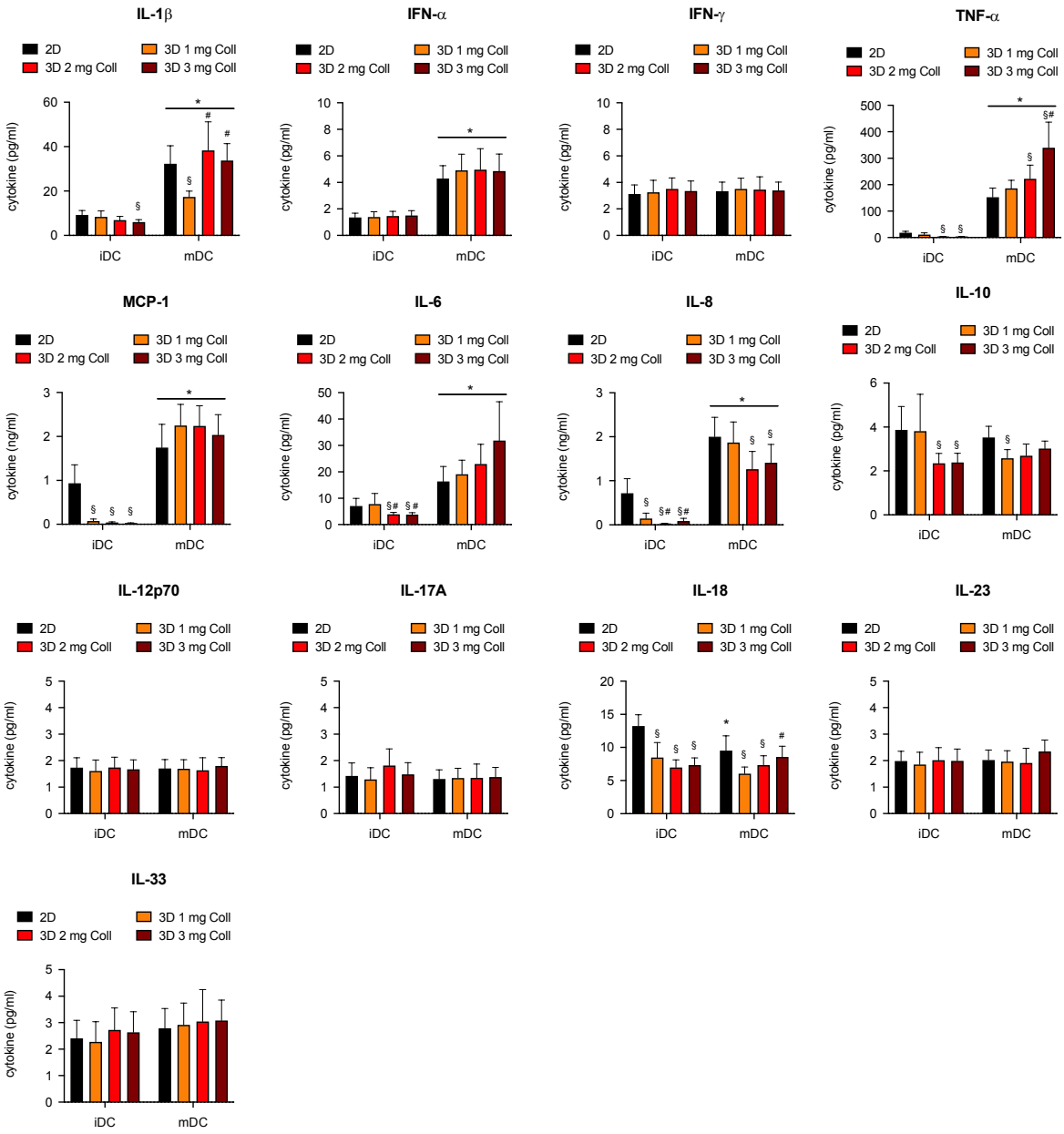

Figure S5: Cytokine secretion profile between iDC and mDC in tissue-centric perspective. Quantitative analysis of cytokine secretion profile using multiplex bead-based ELISA assay of iDC and mDC in tissue-centric perspectives. Data are shown as mean +/-SD. *, §, # indicates significance level of $p < 0.05$ when comparing iDC and mDC, 2D and 3D culture of the same cell phenotype, and between low and high matrix density of the same cell phenotype, respectively. At least 8 samples per condition were analyzed.

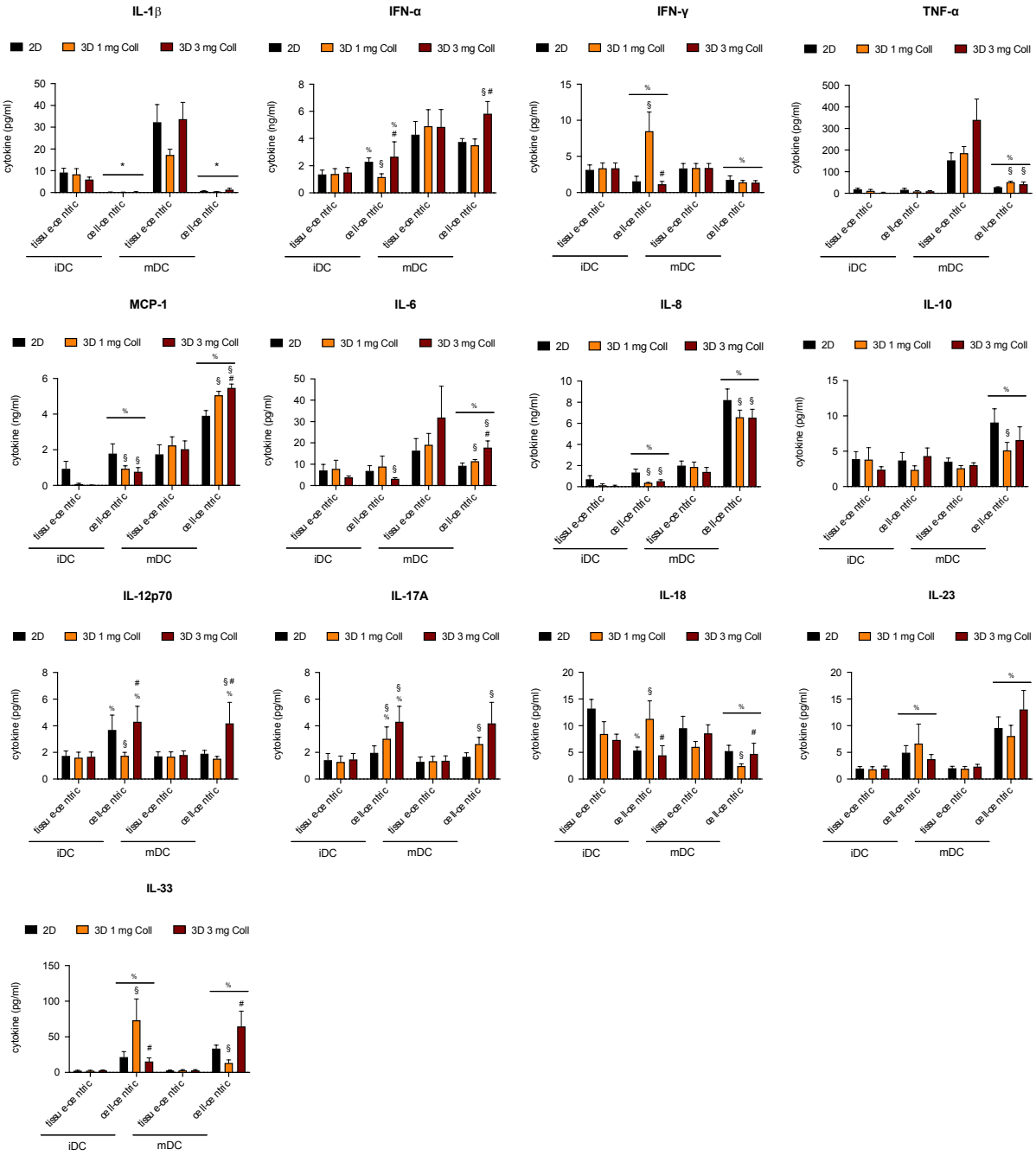

Figure S6: Cytokine secretion profile of iDC and mDC between tissue- and cell-centric perspectives. Quantitative analysis of cytokine secretion profile using multiplex bead-based ELISA assay of iDC and mDC in tissue-centric perspectives. Data are shown as mean +/-SD. *, §, # indicates significance level of $p < 0.05$ when comparing tissue-centric and cell-centric perspective, 2D and 3D culture of the same cell phenotype, and between low and high matrix density oft he same cell phenotype, respectively.At least 8 samples per condition were analyzed.

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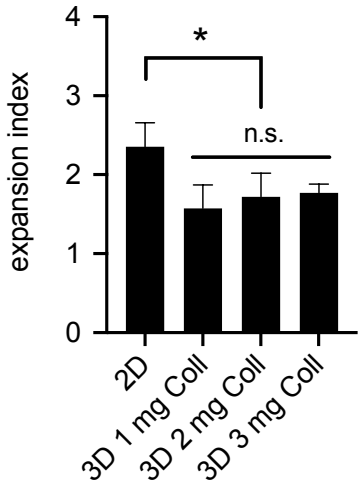

Figure S7: T cell proliferation in a mono-culture in 2D and in 3D collagen matrices. Quantitative analysis of CFSE-based proliferation assay of T cells cultivated in 2D and in 3D collagen matrices at different matrix density using flow cytometry. Quantitative analysis of the expansion index of cells was performed by a computational proliferation modeling module using FlowJo Software. Data are shown as mean +/-SD; * significance level of $p < 0.05$. The experiment was performed in 4 replicates.

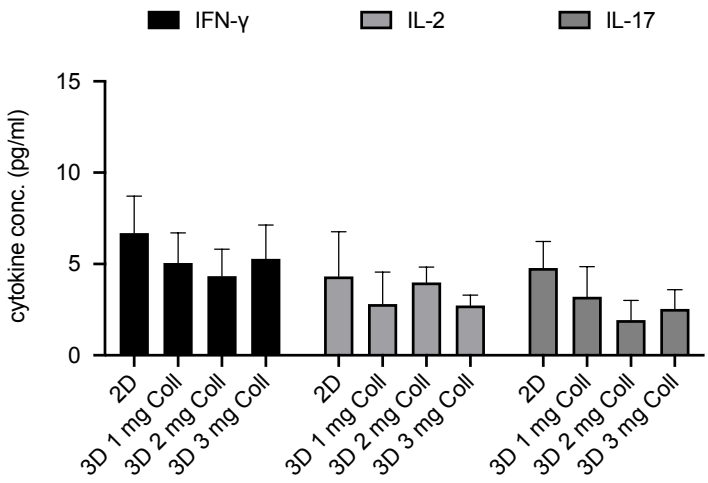

Figure S8: Cytokine secretion of T cell in mono-culture. Quantitative analysis of IFN-γ, IL-2 and IL-17 secretion using custom-built multiplex bead-based ELISA assay from T cell mono-culture. Data are shown as mean +/-SD. At least 8 samples per condition were analyzed.