Supplementary Information

Myeloid-derived Suppressor Cells In Psoriasis Are an Expanded Population Exhibiting Diverse T cell-Suppressor Mechanisms

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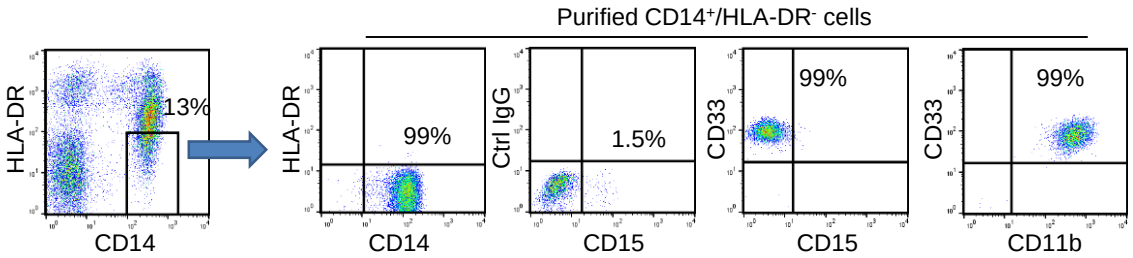
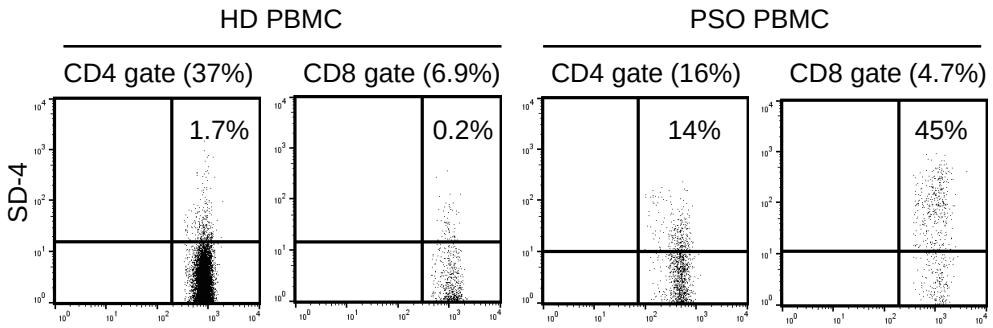
Supplementary Figure S1



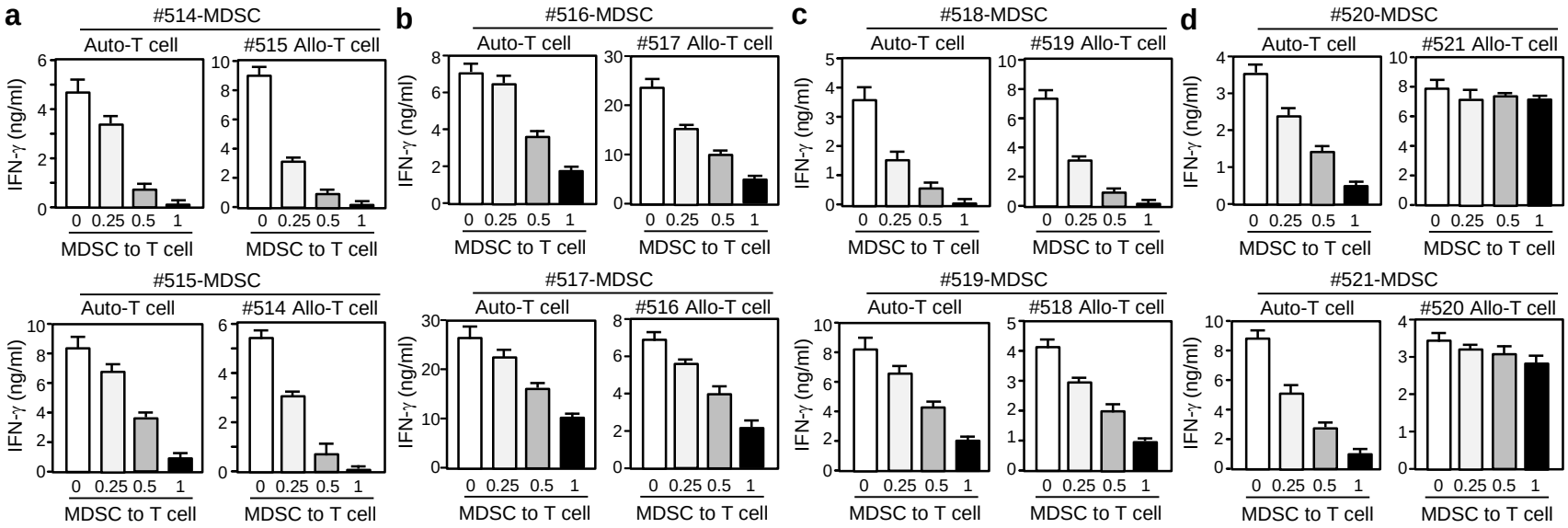
Supplementary Fig. S1. Expression of varying markers by MDSC purified from blood samples of psoriatic patients. PBMC isolated from blood of a patient were fluorescently stained for expression of HLA-DR and CD14, in which the window shows $CD14^{+}HLA\text{-}DR^{no/low}$ (which we identified as MDSC). To examine expression of other markers by the cells, the same PBMC were then purified of $CD14^{+}HLA\text{-}DR^{no/low}$ cells, using Ab-magnetic beads, and stained again with anti-CD14 and anti-HLA-DR Ab, and also with other MDSC markers (CD15, CD33, and CD11b). Dot-plots are shown, with % of positive or negative cells. Almost all of purified cells were $CD14^{+}$, $HLA\text{-}DR^{neg}$, $CD15^{neg}$, $CD33^{+}$, and $CD11b^{+}$, showing that our $CD14^{+}HLA\text{-}DR^{no/low}$ cells are monocytic MDSC. These data also show high purity (>95%) of our purified MDSC preparation.

Supplementary Figure S2



Supplementary Fig. S2. Expression of syndecan-4 by T cells in healthy donors vs. psoriasis patients. PBMC isolated from psoriasis patients (PSO) or healthy donors (HD) were analyzed by FACS for expression of sydecan-4 (SD-4) on T cells gated from fluorescent staining with anti-CD4 or ani-CD8 Ab. % CD4 or CD8 gate indicates the frequency in total PBMC. SD-4-positivity is shown by % in total gated T cells. These FACS data are representative of 3 pairs.

Supplementary Figure S3



Supplementary Fig. S3. The suppressor function of psoriatic MDSC to auto- vs. allo-T cells in crisscross of two patients. Tow individual psoriasis patients, who were untreated, were recruited for one crisscross experiment on the same day. MDSC and T cells were purified from blood samples of 2 patients and set up cocultures: MDSC from one patient were cocultured with T cells isolated from the same patient (Auto) or those from the other (Allo) at varying cell ratios. After 5 days in culture, T cell activation was measured by IFN-γ secretion. Data shown were obtained from 4 different pairs.

Supplementary Table S1

Patient #	Skin	Among total $CD14^+$ cells		
		MDSC	$DC\text{-}HIL^+$	$DC\text{-}HIL^+$ MDSC
PSO 113-1	Nonlesional	3%	55%	0%
PSO 113-1	Lesional	82%	73%	73%
PSO 114	Lesional	85%	67%	68%

Supplementary Table S1. Summary of confocal analysis of skin explant cultures. Explant culture of lesional and nonlesional skin biopsies yielded 2-4 x 10^4 cells and 5 x 10^3 emigrated cells, respectively. After immunofluorescent staining of harvested cells, $CD14^+$ cells (70-80% of total cells) were counted in 15 different microscope views, among of which MDSCs ($HLA\text{-}DR^{neg}$ cells), $DC\text{-}HIL^+$, or $DC\text{-}HIL^+$ MDSCs were counted and shown with % of total $CD14^+$ cells. Note: DC-HIL expression in nonlesional skin was very low (See Figure 5); and both patients were treated with topical corticosteroids.

Supplementary Table S2

Frequency	PASI	Serum IL-17A	Serum IFN-γ
% DC-HIL^{+}MDSC/PBMC	0.130	0.08	- 0.108
% MDSC/PBMC	0.106	0.08	- 0.168

Supplementary Table S2. Correlation of DC-HIL^{+} MDSC or MDSC expansion (%DC-HIL^{+} MDSC/PBMC or % MDSC/PBMC) with different parameters among total psoriasis patients examined was analyzed using Spearman's coefficient, and r values are shown in this table. Note that sorting into two groups (untreated and treated patients) did not make a significant difference in the r values.