

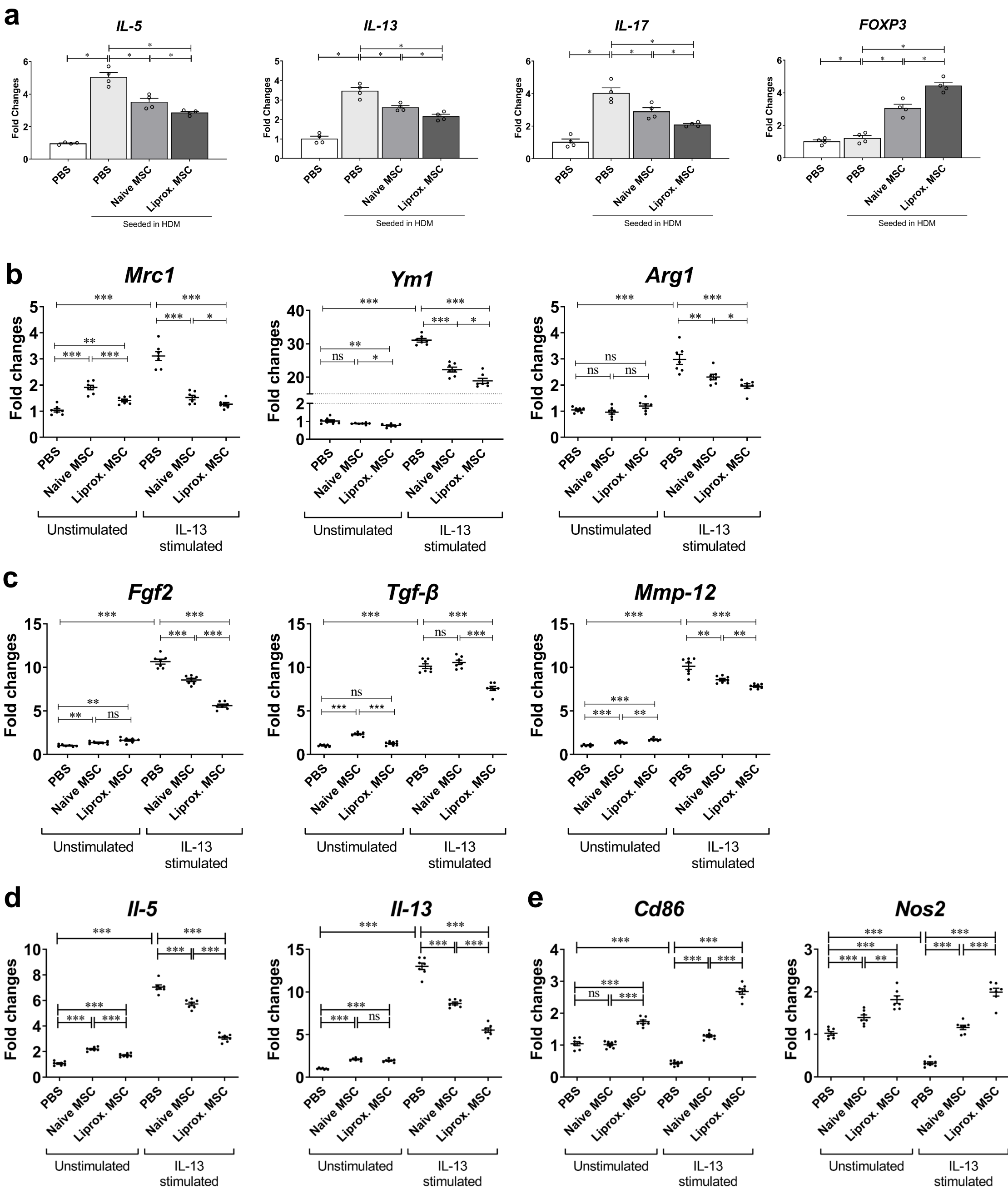
# **Mesenchymal Stem Cells Exert their Anti-Asthmatic Effects Through Macrophage Modulation in a Murine Chronic Asthma Model**

**Anti-Asthmatic Effects of Mesenchymal Stem Cells**

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# Supplemental Figure I.

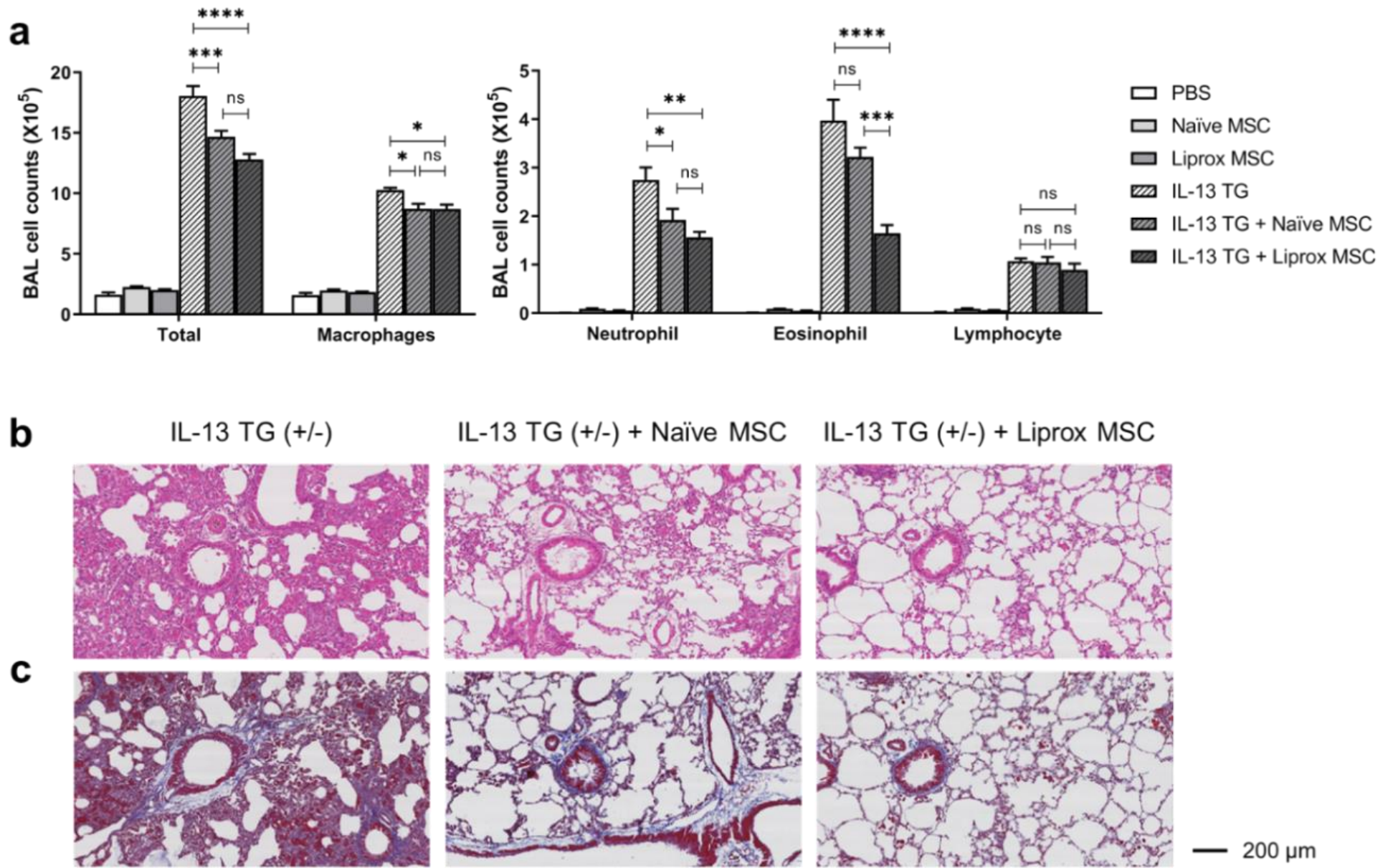


**FIGURE S1. Effects of naïve and Liproxstatin-1-primed hUC-MSCs on human PBMCs or murine alveolar macrophages.**

(a) Human PBMCs obtained from HDM-sensitized patients were subjected to RT-qPCR to evaluate the expression of IL-5, IL-13, IL-17, and FOXP3, the representative markers of Th2, Th17, and regulatory T cells. (b-e) Evaluation of mRNA expression of macrophages associated genes of M2 activation (b), airway remodeling (c), type 2 cytokines (d), and M1 activation (e). Each value in these panels is from a different individual and the mean  $\pm$  SEM is illustrated. All results are representative of at least three independent experiments. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\*  $p < 0.001$ , ns, not significant. (by Kruskal-Wallis test using GraphPad Prism 7, <https://www.graphpad.com>)

PBMC, Peripheral blood mononuclear cell; Fgf2, fibrosis growth factor 2; Tgf- $\beta$ , transforming growth factor-beta; Mmp-12, matrix metalloproteinase-12; IL, Interleukin.

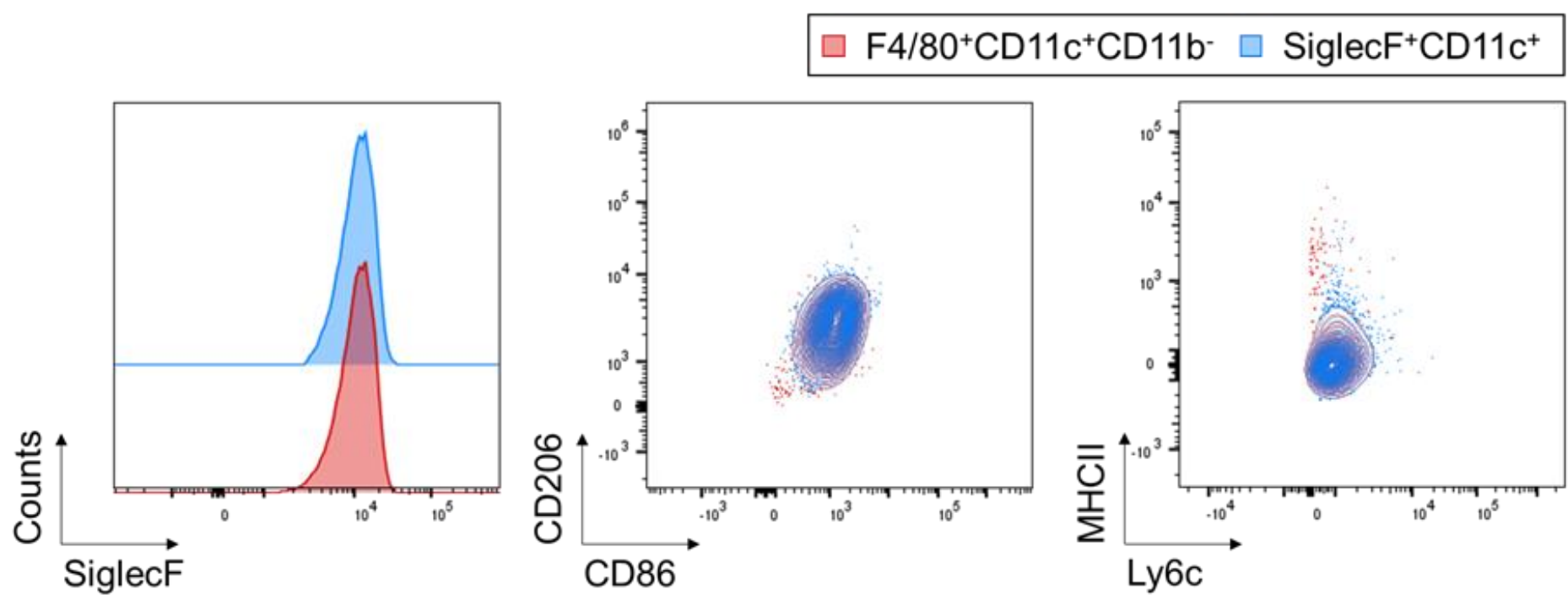
## Supplemental Figure II.



**FIGURE S2 Different effects of Naïve MSC and Liproxstatin-1-primed MSC on IL-13 TG mice.**

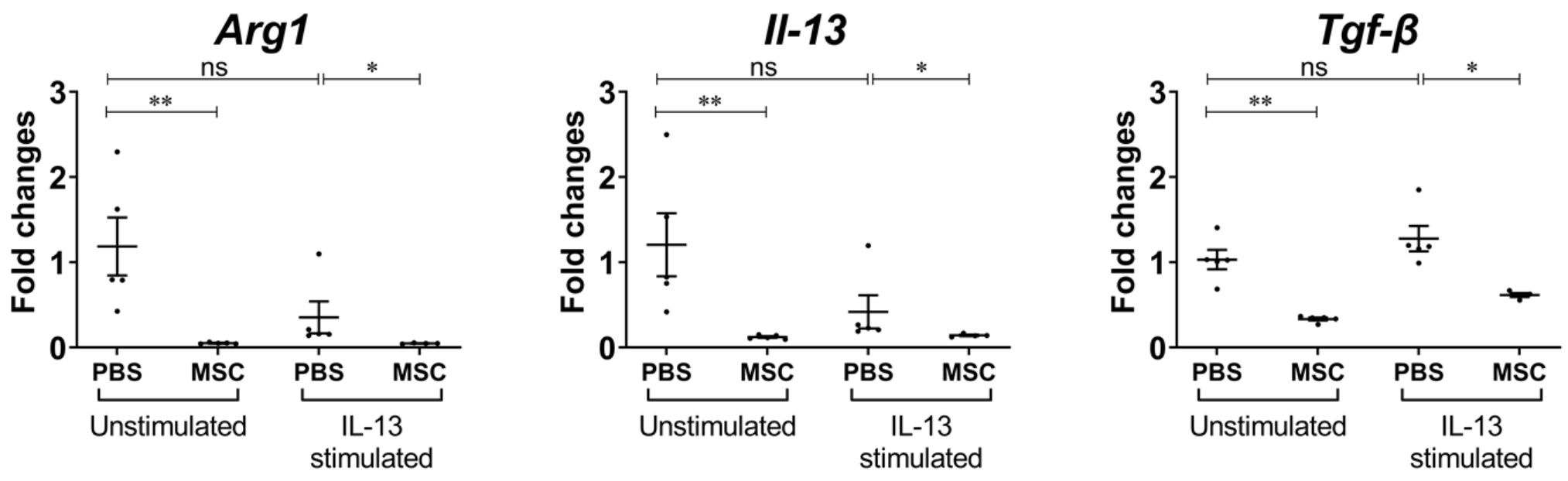
(a) shows the result of total cell counts and differential counts of macrophages, neutrophils, eosinophils, and lymphocytes in BAL fluid. (b-c) shows a histological comparison between the groups. H&E (b) and PAS (c) stains were used. One-way ANOVA and Tukey's analysis were used and error bars represent SEM. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ , \*\*\*\* $p < 0.0001$ , ns stands for not significantly different.

## Supplemental Figure III.



**FIGURE S3** Comparison of the expression of CD206, CD86, MHCII, Ly6c, and SiglecF on SiglecF<sup>+</sup>CD11c<sup>+</sup> and F4/80<sup>+</sup>CD11c<sup>+</sup>CD11b<sup>-</sup> alveolar macrophages assessed by flow cytometry

# Supplemental Figure IV.



**FIGURE S4** Effects of Liproxstatin-1-primed hUC-MSCs on murine macrophages.

Supplemental Table I. The primer sequences for RT-qPCR

Gene	Forward	Reverse
<b>Human</b>		
<i>IL-5</i>	5'-AGC TGC CTA CGT GTA TGC CA-3'	5'-GCA GTG CCA AGG TCT CTT TCA-3'
<i>IL-13</i>	5'-TGA GGA GCT GGT CAA CAT CA-3'	5'-CAG GTT GAT GCT CCA TAC CAT-3'
<i>IL-17</i>	5'-GGA CTG TGA TGG TCA ACC TGA-3'	5'-TCA TGT GGT AGT CCA CGT TCC-3'
<i>FOXP3</i>	5'-TCA TCC GCT GGG CCA TCC TG-3'	5'-GTG GAA ACC TCA CTT CTT GGT C-3'
<i>GAPDH</i>	5'-TGT AGA CCA TGT AGT TGA GGT CA-3'	5'-AGG TCG GTG TGA ACG GAT TTG-3'
<b>Mouse</b>		
<i>Mrc1</i>	5'-CAA GGA AGG TTG GCA TTT GT-3'	5'-CCT TTC AGT CCT TTG CAA GT-3'
<i>Ym1</i>	5'-GGG CAT ACC TTT ATC CTG AG-3'	5'-CCA CTG AAG TCA TCC ATG TC-3'
<i>Arg1</i>	5'-CTC CAA GCC AAA GTC CTT AGA G-3'	5'-AGG AGC TGT CAT TAG GGA CAT C-3'
<i>Fgf1</i>	5'-GGG AGA TCA CAA CCT TCG CA-3'	5'-CTG TCC CTT GTC CCA TCC AC-3'
<i>Fgf2</i>	5'-GAA ACA CTC TTC TGT AAC ACA CTT-3'	5'-GTC AAA CTA CAA CTC CAA GCA G-3'
<i>Fn1</i>	5'-CAC GGG AGC CTC GAA GAG-3'	5'-ACA ACC GGG CTT GCT TTG-3'
<i>Tgf-β</i>	5'-AGG AGA CGG AAT ACA GGG CT-3'	5'-CCA CGT AGT AGA CGA TGG GC-3'
<i>Mmp-9</i>	5'-AAC CTC CAA CCT CAC GGA CA-3'	5'-TCA TCG ATC ATG TCT CGC GG-3'
<i>Mmp-12</i>	5'-TCA GTC CCT CTA TGG AGC CC-3'	5'-CAC AGA TGC AGA GAA GCC CA-3'
<i>Muc5ac</i>	5'-GGA ACT GTG GGG ACA GCT CTT-3'	5'-GTC ACA TTC CTC AGC GAG GTC-3'
<i>Nos2</i>	5'-ACA TCG ACC CGT CCA CAG TAT-3'	5'-CAG AGG GGT AGG CTT GTC TC-3'
<i>Chil3</i>	5'-AGA AGG GAG TTT CAA ACC TGG T-3'	5'-GTC TTG CTC ATG TGT GTA AGT GA-3'
<i>Hprt1</i>	5'-CTG GTG AAA AGG ACC TCT CGA AG-3'	5'-CCA GTT TCA CTA ATG ACA CAA ACG-3'
<i>Gapdh</i>	5'-GGA GTC AAC GGA TTT GGT CGT A-3'	5'-CAA CAA TAT CCA CTT TAC CAG AGT TA-3'