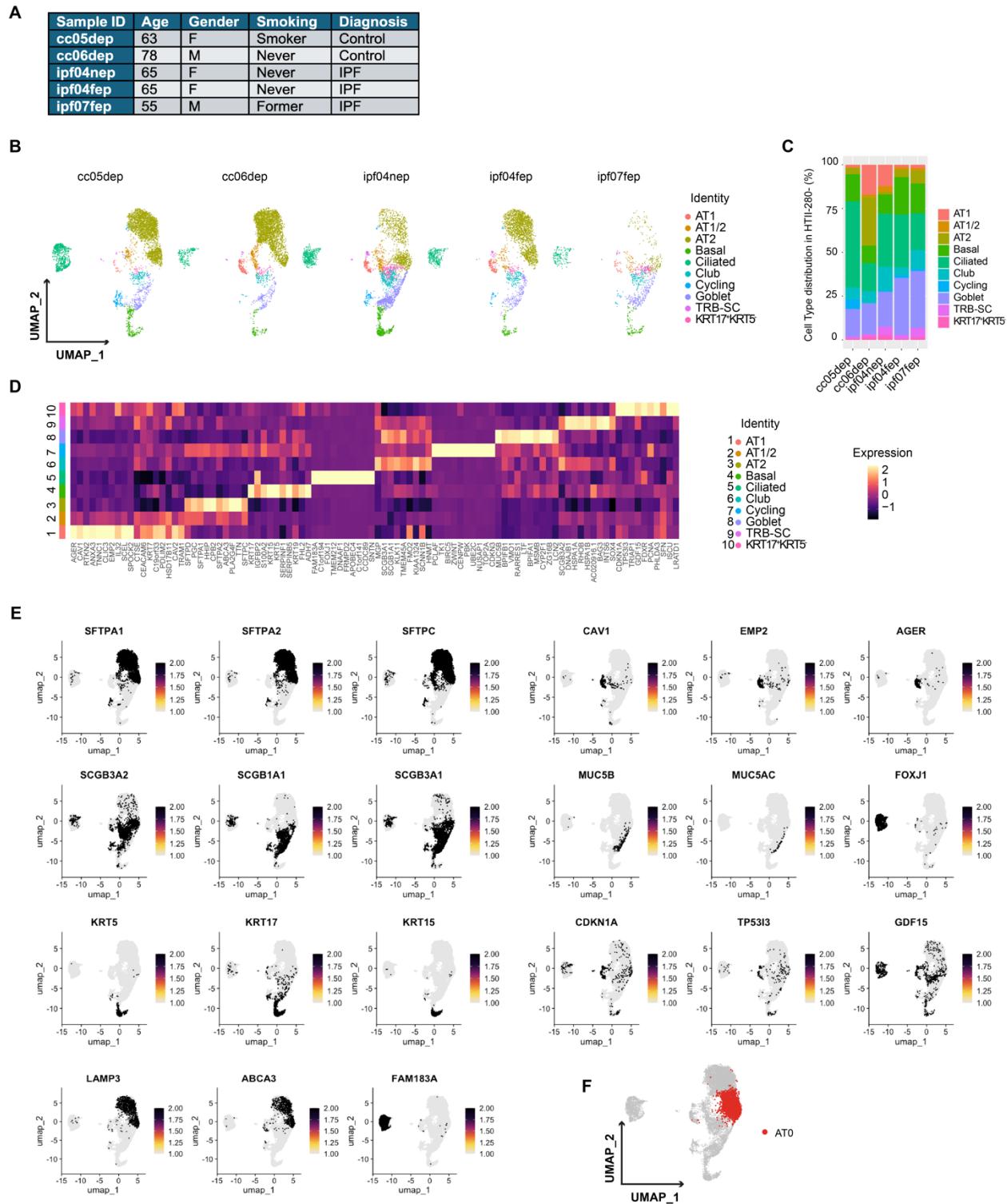


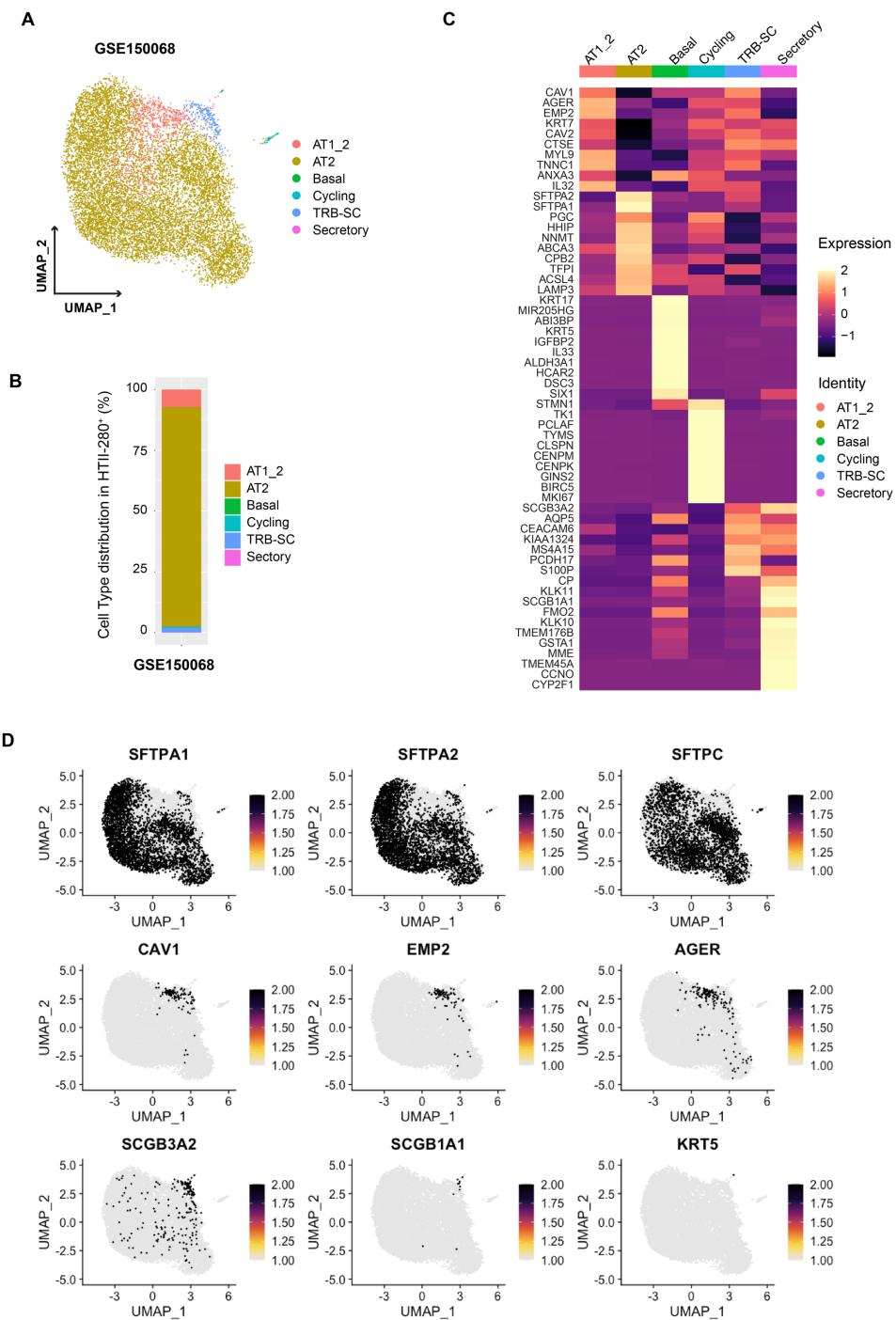
## Supplemental Figure 1.



**Supplemental Figure 1. Cellular Heterogeneity of HTII-280-Labeled Epithelial Cells in Healthy and Fibrotic Human Lungs.**

A). Demographic table of donors. B). Cell type distribution of each sample on UMAP. C). Cell type distribution of HTII-280<sup>-</sup> population of each sample. D). Heatmap of top10 cell type specific marker genes. E). Feature Plot of cell type markers. F). Projection of potential AT0 cells on the UMAP based on expression of SCGB3A2 and SFTPC as illustrated in Supplemental Figure 1E.

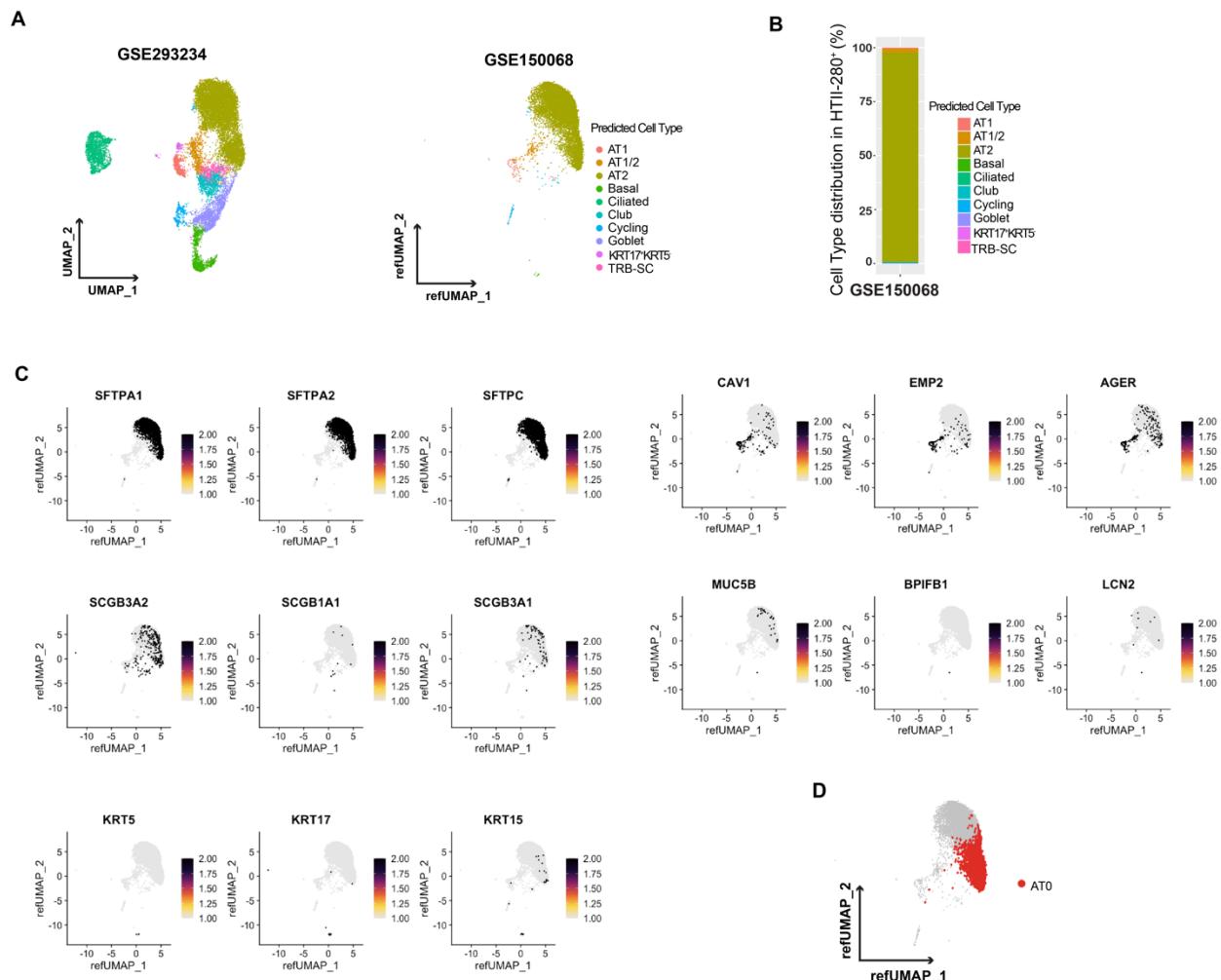
## Supplemental Figure 2



### Supplemental Figure 2. Unbiased clustering of HTII-280<sup>+</sup> cells in GSE150068.

A). Cell type distribution of GSE150068 on UMAP using unbiased clustering. B). Cell type distribution of HTII-280<sup>+</sup> population in percentage. C). Heatmap of top10 cell type specific marker genes. D). Feature Plot of cell type markers.

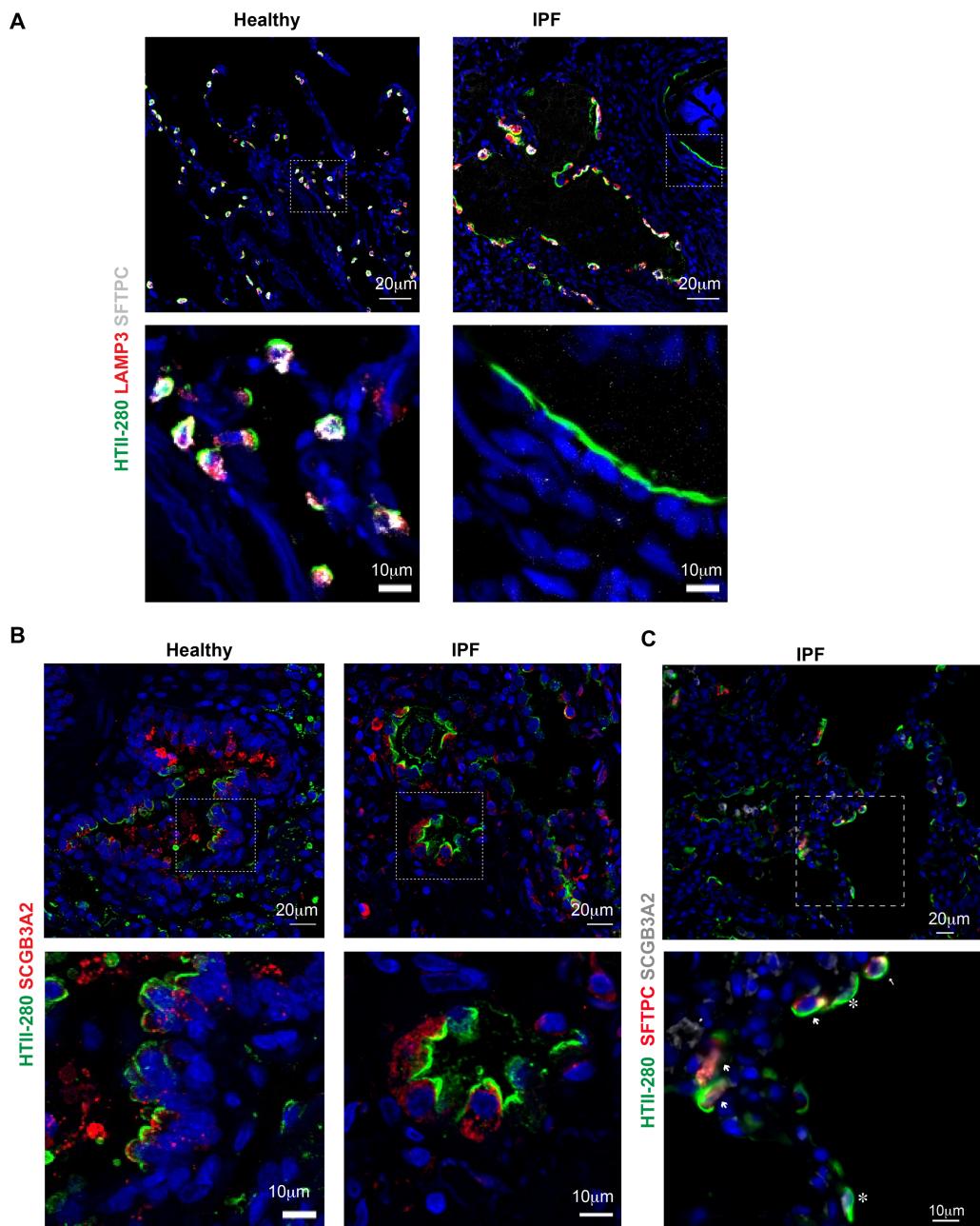
### Supplemental Figure 3.



**Supplemental Figure 3. Reference-based projection of HTII-280<sup>+</sup> cells in GSE150068.**

A). Predicted cell type distribution of GSE150068 on UMAP using reference-based projection with our data from GSE293234. B). Predicted cell type distribution of HTII-280<sup>+</sup> population in percentage. C). FeaturePlot of cell type markers reference-based projection of GSE150068. D). Projection of potential AT0 cells on the refUMAP based on expression of SCGB3A2 and SFTPC.

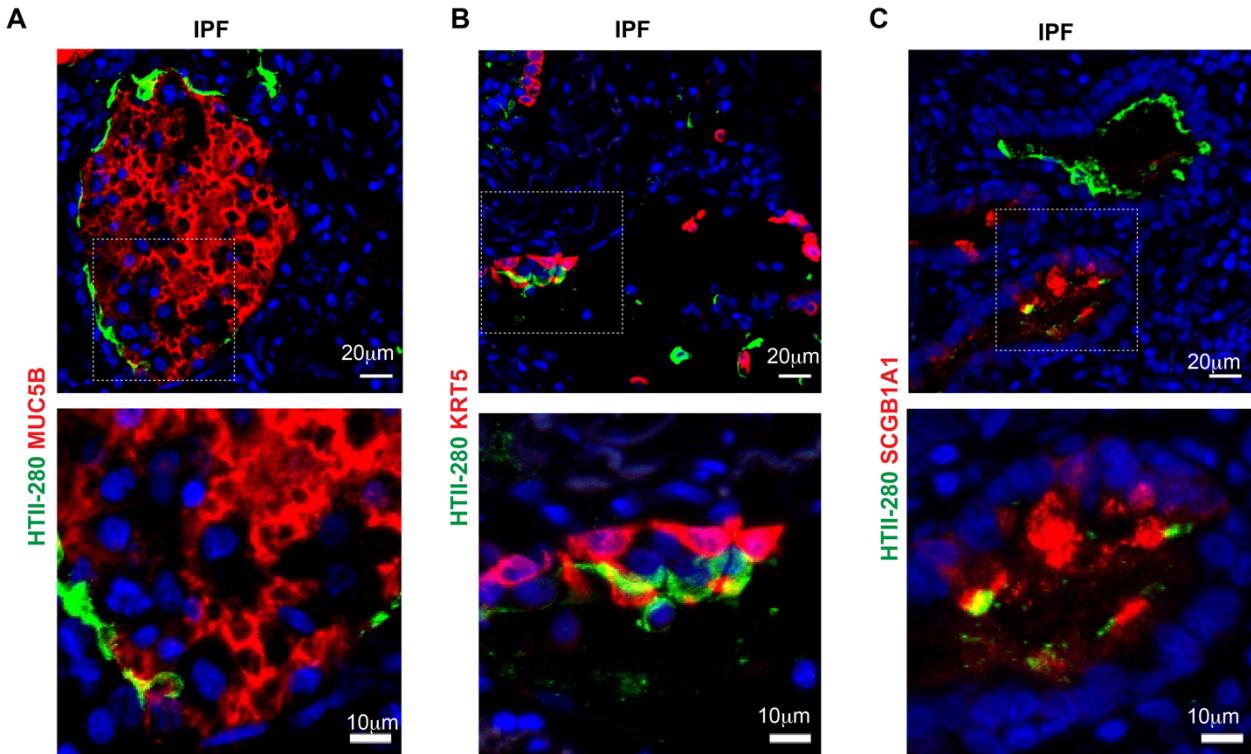
### Supplemental Figure 4



### Supplemental Figure 4. Validation by IF staining.

A). Representative IF staining of HTII-280 with AT2 cell markers SFTPC and LAMP3 in Healthy and IPF explant tissue sections. B). Representative IF staining of HTII-280 with TRB-SC or AT0 cell marker SCGB3A2 in Healthy and IPF explant tissue sections. C). Representative IF staining of HTII-280 with AT2 cell marker SFTPC and TRB-SC or AT0 cell marker SCGB3A2 in IPF explant tissue sections. Arrows indicate HTII-280<sup>+</sup>SFTPC<sup>+</sup>SCGB3A2<sup>+</sup> cells, \* indicates HTII-280<sup>+</sup>SFTPC<sup>-</sup>SCGB3A2<sup>+</sup> cells.

**Supplemental Figure 5**



**Supplemental Figure 5. Validation of HTII-280 co-staining with airway cell type markers in IPF explant tissue.**

A). Representative IF staining of HTII-280 with goblet cell marker MUC5B. B). Representative IF staining of HTII-280 with basal cell marker KRT5. C). Representative IF staining of HTII-280 with secretory cells (club and goblet) marker SCGB1A1.