



## Immune Landscape in Patients with IBD

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### Abstract:

Myeloid cells, especially mononuclear phagocytes, which include monocytes, macrophages and dendritic cells (DC), play vital roles in innate immunity, and in the initiation and maintenance of adaptive immunity. While T cell-associated activation pathways and cytokines have been identified and evaluated in inflammatory bowel disease (IBD) patients, the role of mononuclear phagocytes are less understood.

We performed *in silico* analysis and evaluated the enrichment of immune cells, with a focus on mononuclear phagocytes in IBD patient colonic biopsies. Samples were from different gut locations, with different levels of disease severity, and with treatment response to current therapies. We observe enrichment of monocytes, M1 macrophages, activated DCs and plasmacytoid DCs in inflamed tissues from various gut locations. This enrichment correlates with disease severity. Additionally, the same mononuclear phagocytes subsets are among the top enriched cell types in both infliximab and vedolizumab treatment non-responder samples. We further investigated the enrichment of selected DC and monocyte subsets based on gene signatures derived from a DC- and monocyte-focused scRNA-seq study; and verified enrichment in both inflamed tissues and those with treatment resistance. Moreover, we validated an increased mononuclear phagocyte subset abundance in a Dextran Sulphate Sodium induced colitis model in C57Bl/6 mice representative of chronic inflammation.



We conducted an extensive analysis of immune cell populations in IBD patient colonic samples and identified enriched subsets of monocytes, macrophages and dendritic cells in inflamed tissues. Understanding how they interact with other immune cells and other cells in the colonic microenvironment such as epithelial and stromal cells will help us to delineate disease pathogenesis.

### Biography:

Hong Liu is currently associated with Takeda Pharmaceuticals, USA

### Recent Publications:

1. Liu H, Dasgupta S, Fu Y, Bailey B, Roy C, Lightcap E, Faustin B (2019) Subsets of mononuclear phagocytes are enriched in the inflamed colons of patients with IBD. *BMC Immunol.* 20:42.