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Identification of Fibrocytes and Fibroblasts in Lung Samples from Patients with COPD and ILD.**Abstract:**

In fibrotic lesions, peripheral blood monocytes can enter the tissue and differentiate into fibroblast-like cells called fibrocytes (1, 2). Although clearly shown in animal models of pulmonary fibrosis, the extent of fibrocyte involvement in human pulmonary fibrosis remains unclear. Until recently, one major difficulty in analyzing the role of fibrocytes in fibrotic diseases is the inability to discriminate hematopoietic monocyte-derived fibrocytes from monocyte-derived macrophages or resident stromal fibroblasts (3, 4). Fibrocytes are characterized by the expression of three markers: CD45, collagen-I, and either CD34 or CXCR4 (5-7). However, CD45 is a marker expressed by most hematopoietic cells, CD34 is also expressed by stem cells and endothelial cells, and macrophages can express collagen-I and CXCR4 (8-11). Using human peripheral blood-derived cells, we found that we can distinguish human fibrocytes from macrophages and fibroblasts by the expression of multiple surface proteins. Fibroblasts, but not fibrocytes, express CD10, CD90, CD248, TE-7, and FAP, while CD163 discriminates macrophages from fibrocytes. We wish to determine which of the markers listed above can distinguish fibroblasts from fibrocytes and macrophages in pathological samples. We will first screen sections to determine which fibroblast markers are the most suitable for pathological samples. We will then use a combination of CXCR4 and pro-collagen-I to identify fibrocytes, in combination with a fibroblast marker or CD163 to clearly distinguish the fibrocytes from fibroblasts and macrophages. We then will determine if patients with COPD and ILD contain an abnormal number of fibrocytes, and whether fibrocytes numbers correlate with disease parameters. The use of these markers may allow researchers and pathologists to identify precisely macrophages, fibrocytes, and fibroblasts in inflammatory lesions.