



FIBROBLASTS AND THEIR ROLE IN HEALTH AND DISEASE

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Summary

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Fibroblasts are the principal cell type that produces, maintains, and reabsorbs the extracellular matrix (ECM). These cells can differentiate into cells responsible for producing several different kinds of connective tissue, including chondroblasts, which are responsible for making collagen, and osteoblasts, which make bone. The macromolecules that constitute the ECM are mainly secreted locally by cells in the matrix. In most connective tissues these macromolecules are secreted by fibroblasts. Fibroblasts produce and secrete all components of the ECM, including structural proteins (elastin and collagen), adhesive proteins (fibronectin and laminin), and ground substance (glycosaminoglycans, glycoproteins). Fibroblasts also produce both matrix degrading enzymes (such as metalloproteinases) as well as their inhibitors (the tissue inhibitors of metalloproteinases). The main function of fibroblasts is the maintenance of structural integrity within the connective tissue. They achieve this by secreting ECM precursors required for formation of the connective tissue and various fibres. Fibroblasts also play various additional roles. For example, fibroblasts serve central roles in wound healing, angiogenesis, inflammation, cancer progression, and in physiological as well as pathological tissue fibrosis. Fibroblasts have an important role in cancer beyond sarcomas and cancers originating from fibroblastic cells. Non-cancerous fibroblasts interact with cancer cells, affecting tumor biology and pathogenesis. Fibroblasts in and around tumours are persistently activated by tumour cells. In response, fibroblasts secrete cytokines and ECM that modulate tumour progression and regulate stroma-cancer interactions. Significance and the role of fibroblasts in health and disease will be discussed under the light of current literature.

Key words: disease, extracellular matrix, fibroblast