ASSEMBLY AND FUNCTION OF FIBROBLAST-DERIVED EXTRACELLULAR MATRICES

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For a tumor to develop and spread, the growth-repressive environment of the host tissue must undergo significant changes. These changes include dramatic modifications in the molecular composition and architecture of the extracellular matrix (ECM). Importantly, different tumors have distinct ECM components, depending on their anatomical site. Accordingly, differences can exist between the ECM of primary tumors and metastatic lesions. The ECM can impact treatment, including the efficacy of resection and accessibility of solid tumors to therapeutic antibodies and small molecules. Conversely, treatment can impact the ECM (e.g. radiotherapy, platinium-based drugs) by promoting the deposition of a dense fibrotic stroma.

My laboratory seeks to unravel the cell-dependent mechanisms that drive matrix assembly, and to improve our understanding of the functional interplay between tumor cells and their matrix microenvironment. The tumor ECM is largely synthesized and remodeled by stromal fibroblasts. I will discuss our characterization of matrices produced by head and neck tumor-associated fibroblasts and discuss how these fibrillar networks enriched in so called “oncofetal” matrix proteins convey specific biological signals to the cells they encounter.