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Role of extracellular vesicles (EVs) from cancer stem cells and differentiated cancer cells in the maintenance of tumor malignancy

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Local recurrence, metastasis and therapy resistance in cancer can be attributed to the presence of cancer stem cells (CSC) within the tumors. These cells, as well as differentiated cancer cells (DCC) secrete extracellular vesicles (EVs) that are powerful intracellular signaling platforms. Our lab is interested on studying how CSC are maintained and how EVs from CSC or DCC contribute to the tumor malignancy. Using triple negative breast cancers cell lines and animal models, we have shown that EVs form CSC and DCC have distinct bioactive cargos and therefore elicit a differential effect on cancer cells and in stromal cells in the tumor. EVs from DCC induced tumor cell transition towards CSC-like states and activated secretory cancer associated fibroblasts (CAFs), while EVs from CSC triggered myofibroblastic CAFs subpopulation, facilitating local invasion and growth. Thus, studying the destiny, cargo and effect of distinct EVs within the tumor become essential to better unveil the tumor malignancy.

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