Exosomes as mediators of intercellular communication in prostate cancer

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Abstract

Prostate cancer remains the second leading cause of cancer death in men, although the mechanisms of its progression are still debated. Extracellular vesicles are critical mediators of communication between prostate cancer cells and their surrounding cells and can influence malignancy. For example, prostasomes released from prostate cancer cells contain factors that promote cell survival and tumor progression, while large oncosomes support target cell reprogramming by delivering molecules related to cell growth, proliferation, and movement or RNA processing. Smaller exosomes can also induce reprogramming by shuttling a wide variety of proteins and nucleic acids. The numbers, cargoes, and structures of exosomes can change depending on prostate health or the cancer stage, which makes these vesicles and their contents good biomarkers, especially since they can be sampled non-invasively from body fluids. Exosomes' ability to deliver materials to target cells can also be exploited to achieve targeted therapies. Although further research is needed, the evidence thus far indicates that extracellular vesicles such as exosomes are key communicators in prostate cancer and provides hope that these delivery systems can someday be used to treat this disease and other cancers.