

Extracellular Vesicles for Cancer Diagnosis and Therapy

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Abstract

Keywords:

Introduction

Extracellular vesicles (EVs) are membrane-bound particles released by cells into the extracellular space. They play a crucial role in cell-to-cell communication and are increasingly recognized as potential biomarkers for cancer diagnosis and therapeutic targets. This review discusses the biogenesis, composition, and clinical applications of EVs in cancer. Key findings include the presence of tumor-associated antigens, miRNAs, and proteins within EVs, which can be detected in body fluids. The review also explores the potential of EVs in drug delivery and immunomodulation for cancer therapy.

Discussion

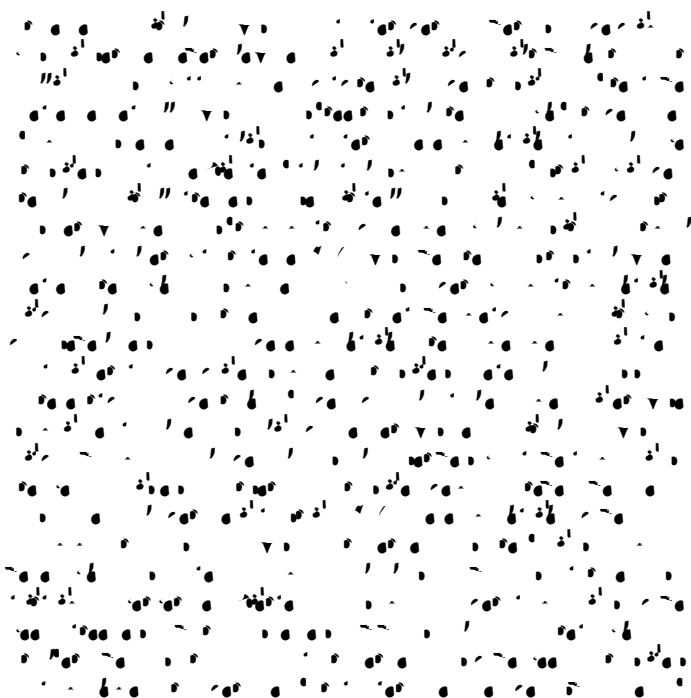
The study of EVs in cancer has gained significant momentum in recent years. The ability of EVs to carry and deliver various biomolecules makes them ideal candidates for diagnostic and therapeutic applications. However, several challenges remain, such as the heterogeneity of EV populations and the need for standardized isolation and characterization methods. Future research should focus on developing more precise techniques to identify and utilize EVs in clinical settings.

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Abstract

Extracellular vesicles (EVs) are membrane-enclosed particles released by cells, containing various biomolecules such as proteins, lipids, and nucleic acids. They play a crucial role in cell-to-cell communication and have emerged as promising tools for cancer diagnosis and therapy. This review discusses the biogenesis, composition, and applications of EVs in cancer research.

Introduction

Cancer is a leading cause of death worldwide, and early detection and effective treatment are essential for improving patient outcomes. Extracellular vesicles (EVs) have gained significant attention as potential diagnostic and therapeutic targets. These vesicles, which include exosomes and microvesicles, are released by cells and contain various biomolecules that can be detected in body fluids. The study of EVs provides insights into cancer progression and offers novel strategies for cancer diagnosis and treatment.

Biogenesis and Composition

EVs are formed through different pathways, including endosomal trafficking and direct budding from the plasma membrane. The composition of EVs varies depending on the cell of origin and the specific biological processes involved. They typically contain proteins, lipids, and nucleic acids, which can serve as biomarkers for cancer diagnosis and prognosis.

Applications in Cancer Research

EVs have several potential applications in cancer research. They can be used as diagnostic tools to detect cancer biomarkers in blood, urine, and other body fluids. Additionally, EVs can be engineered to deliver therapeutic agents, such as drugs and siRNAs, to target cancer cells. This approach offers a non-invasive and efficient method for cancer treatment.

Conclusions

References

Conclusions

Extracellular vesicles (EVs) are membrane-enclosed particles released by cells, containing various biomolecules such as proteins, lipids, and nucleic acids. They play a crucial role in cell-to-cell communication and have emerged as promising tools for cancer diagnosis and therapy. This review discusses the biogenesis, composition, and applications of EVs in cancer research.

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