

# The Role of Exosomes in Intercellular Communication

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**Abstract.** Exosomes are small extracellular vesicles that play a crucial role in intercellular communication. They have been implicated in various physiological and pathological processes, including immune response modulation and cancer progression. This paper reviews the latest findings on exosome biogenesis, their molecular cargo, and the mechanisms by which they influence cellular behavior. Understanding the role of exosomes could lead to innovative therapeutic approaches in oncology and regenerative medicine.

**Keywords:** Exosomes, Intercellular Communication, Biomarkers, Oncology, Regenerative Medicine

## Introduction

Exosomes are nano-sized vesicles secreted by cells into the extracellular space, facilitating communication between cells. They carry a diverse array of biomolecules, including proteins, lipids, and nucleic acids, which reflect the physiological state of their cell of origin. Recent research has uncovered their pivotal role in modulating immune responses, promoting tumor growth, and aiding in tissue regeneration. The biogenesis of exosomes involves complex intracellular processes, and their release is regulated by various signaling pathways. This paper aims to provide a comprehensive overview of exosome biology, highlighting their potential as diagnostic biomarkers and therapeutic vehicles. We discuss cutting-edge techniques for isolating and characterizing exosomes, which are essential for advancing their clinical application.

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