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# Recent advances in conventional and unconventional vesicular secretion pathways in the tumor microenvironment

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Abstract: All cells in the changing tumor microenvironment (TME) need a class of checkpoints to regulate the balance among exocytosis, endocytosis, recycling and degradation. The vesicular trafficking and secretion pathways regulated by the small Rab GTPases and their effectors convey cell growth and migration signals and function as meditators of intercellular communication and molecular transfer. Recent advances suggest that Rab proteins govern conventional and unconventional vesicular secretion pathways by trafficking widely diverse cargoes and substrates in remodeling TME. The mechanisms underlying the regulation of conventional and unconventional vesicular secretion pathways, their action modes and impacts on the cancer and stromal cells have been the focus of much attention for the past two decades. In this review, we discuss the current understanding of vesicular secretion pathways in TME. Complex and dynamic communication is established between tumor cells and stromal cells in the tumor microenvironment (TME) which is characterized by morphological and functional changes in cancer cells and surrounding stromal cells. These alterations include uncontrolled cancer cell division, proliferation, invasiveness and metastatic ability, as well as the dysregulation of fibroblasts, endothelial cells and infiltrated immune cells [1]. In aggressive TME, malignant cells evade the immune response and establish a very complex balance associated with different immune subtypes. Intracellular membrane trafficking is defined as a network of pathways that require transport and exchange of specific cargoes to connect many membrane-bound organelles communicating within the cells as well as between the cells and their environments. In conventional protein secretion (CPS), most secreted proteins require a signal peptide which mediates the co-translational process in endoplasmic reticulum (ER), and then are transported in vesicles to Golgi apparatus (Golgi) followed by constitutive or regulated secretion out of the cell.

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