Cargo Loading

Cargo loading is the process of introducing functional molecules into extracellular vesicles (EVs) to enable targeted delivery and therapeutic action.

Types of Cargo

- Proteins (e.g., Cas9, Cre recombinase)
- Nucleic acids (e.g., mRNA, siRNA)
- Small molecules and drugs
- Fluorescent tags (e.g., EGFP, mCherry)

Loading Strategies

- 'Passive loading': relies on natural EV sorting (low efficiency)
- 'Engineered loading': uses molecular tags to actively recruit cargo during EV biogenesis
- 'Post-isolation loading': includes electroporation, sonication, or incubation methods

Example: Engineered Loading

In Obuchi et al. (2025), CD63 was modified to recruit nanobody-tagged cargo via mCherry interaction, enabling selective and efficient loading into EVs.

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