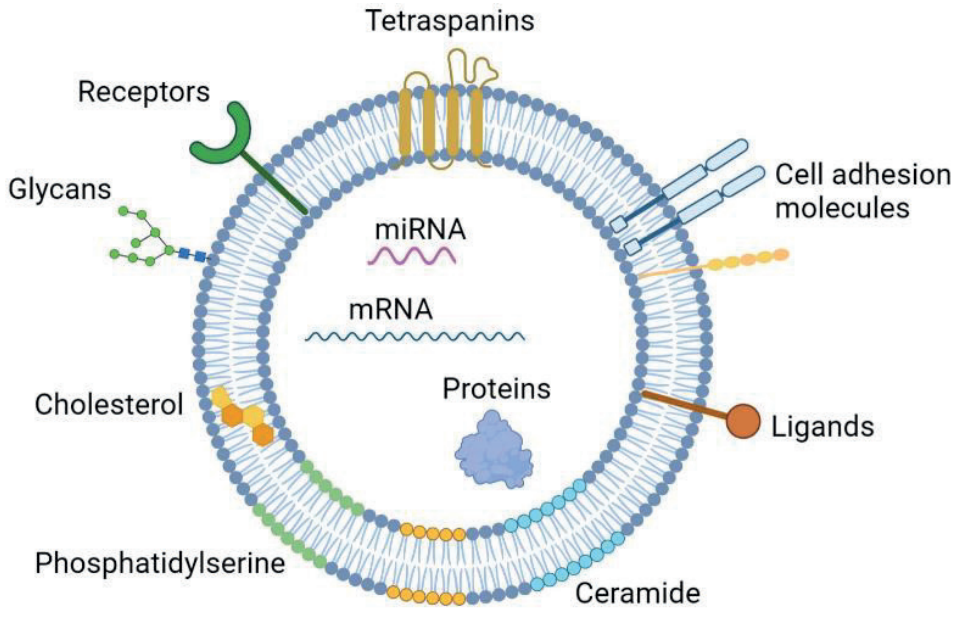
Extracellular vesicles (EVs)

for research, diagnostics, and therapy

What are EVs?

They are heterogeneous lipid bilayer-enclosed particles that are naturally released by all living cells.

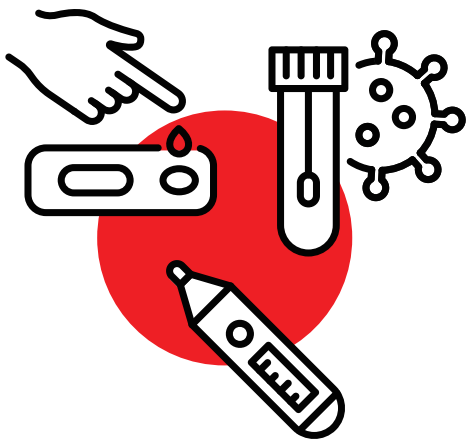
Ranging from 30 to 500 nm in diameter, EVs carry a variety of cargos and play critical roles in intercellular communication and physiological processes including angiogenesis, cell differentiation, and tumor growth. They are usually composed of lipids, proteins, and nucleic acids, but other biomolecules can also be present. EVs are tremendously promising from a clinical perspective due to their origin cell-specific markers and capacity to elicit functional changes.



de Almeida Fuzeta, et al. Bioengineering. DOI: 10.3390/bioengineering9110675, © 2022, https://creativecommons.org/licenses/by/4.0/

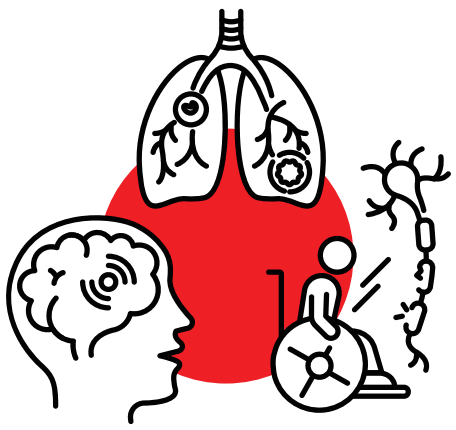
What are EVs used for?

Basic EV research usually focuses on understanding EV biogenesis, phenotype, interactions, and functionality. These efforts are critical for advancing clinical application of EVs. EV research is not without its challenges, however, as their immense heterogeneity makes both purification and characterization difficult.



Diagnostics

- Since EVs usually carry molecular markers of their origin cells they can be used as biomarkers to diagnose diseases or assess disease and treatment progression.
- EVs are present in all biological fluids and represent an opportunity for minimally or non-invasive liquid biopsy approaches.



Therapeutics

- EVs often possess similar functional properties of their origin cells. For example, EVs from stem cells can regenerate tissues.
- EVs can be modified, loaded, and reprogrammed to engender specific functions.
- Since EVs are naturally occurring they are highly biocompatible.
- EVs exhibit tissue tropism and an ability to cross the blood-brain barrier (BBB).

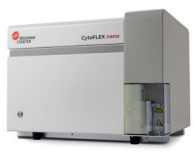
Fast-tracking EV research

When it comes to purifying EVs, ultracentrifugation is considered the gold standard. Differential pelleting is a simple ultracentrifuge-based method for EV isolation, while various density gradient ultracentrifugation methods provide even higher purity of the EV subpopulation that you care about. Flow cytometry is a powerful technique for characterizing EVs. Flow cytometry allows for determination of EV concentration, phenotype/composition, refractive index, and size.

Optima AUC Analytical Ultracentrifuge

Optima XPN Series Ultracentrifuge

Optima MAX Series Ultracentrifuge



CytoFLEX nano Flow Cytometer

Get in touch to find out how Beckman Coulter's products can help you standardize your EV purification and characterization.

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For Beckman Coulter's worldwide office locations and phone numbers, please visit Contact Us at **beckman.com**

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