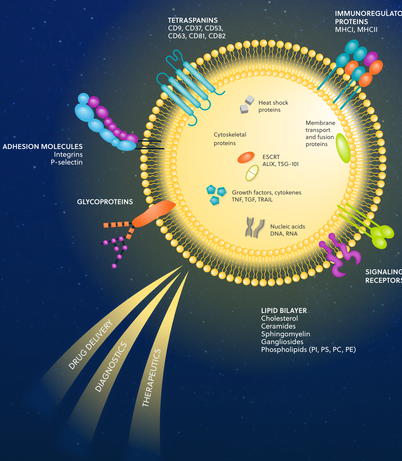
# EXOSOMES

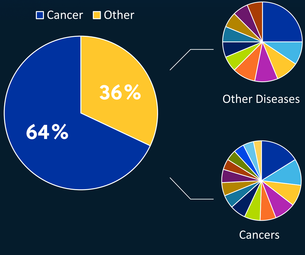
## The rising star in therapeutics and diagnostics

Generated by every cell type that's been studied, exosomes, a nanosized set of extracellular vesicles (EVs), can affect normal and disease physiology by conveying protein, nucleic acid, and metabolite cargo from one cell to another.

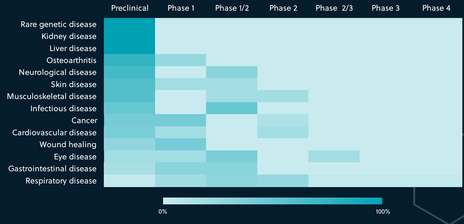
Get the full details and see all the references at
**cas.org/exosome-report**




## IN CANCER AND BEYOND

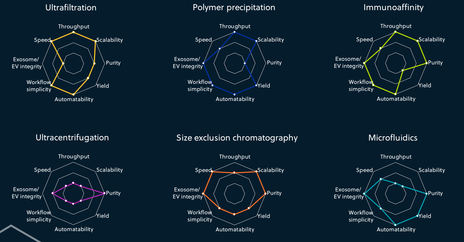



## EXOSOME THERAPEUTICS ARE STARTING TO MOVE THROUGH CLINICAL DEVELOPMENT

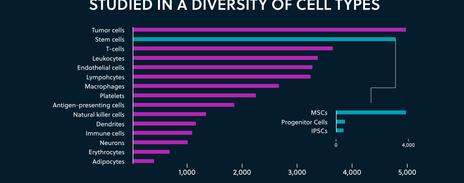



## THE ISOLATION BOTTLENECK

Scalable, standardizable, and robust cell culture and isolation methods are needed for widespread clinical use.




## STUDIED IN A DIVERSITY OF CELL TYPES




## THE DIFFERENCE BETWEEN EXOSOMES AND LIPID NANOPARTICLES (LNPs)

### Exosomes

Cellular origin is difficult to standardize and quality control but leads to low immunogenicity and good biodistribution.

Heterogenous size distribution

Asymmetric, varied lipid composition

Stable in circulation

Good biodistribution

### Lipid nanoparticles (LNPs)

Defined composition is easy to standardize and control but can be immunogenic with poor biodistribution.

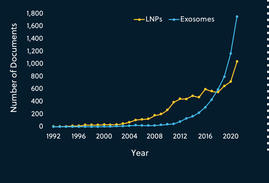
Uniform size distribution

Determined, uniform lipid composition

Less stable in circulation

Challenges with biodistribution

### OVERTAKING LNPs




**1,754** Exosome publications in 2021

**VS**

**1,037** LNP publications in 2021

**Learn more at cas.org/insights**



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