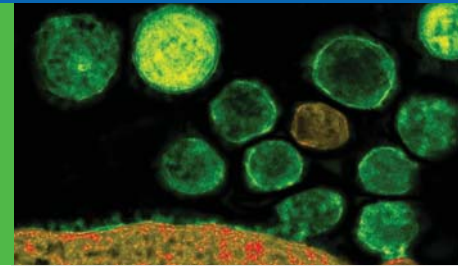


# Purified Human & Mouse Exosomes

Exosome standards for biomarker discovery and engineering



Exosomes are 60 - 180 nm membrane vesicles secreted by most cell types in vivo and in vitro and contain distinct subsets of RNAs and proteins depending upon the cell type from which they are secreted, making them useful for biomarker discovery and functional characterization. Exosomes are nano-sized shuttles that transport signaling RNAs, lipids and proteins to other cells. Studying exosome contents are thus a “liquid biopsy” for biomarkers to gain insights into their roles in disease initiation and progression.

## Exosomes and Cancer

Tumor-secreted exosomes have intact and functional mRNAs, small RNAs, and proteins that can alter the cellular environment to favor tumor growth. Tumor metastasis involves manipulation of the tumor’s microenvironment to optimize conditions for survival and growth both locally and to begin seeding for expansion into distant sites. Potential locations for remote tumor implantation are thus prepared in advance of actual metastasis through exosomal intercellular communications. SBI has purified exosomes from numerous model human cancer cell lines in culture to accelerate the studies of their signaling contents and how these tumor exosomes function.

## Stem Cell and Dendritic Cell Exosomes

Mesenchymal stem cells (MSCs) are the stem cell of choice for regenerative medicine and their exosomes are known to promote tissue injury repair and reduce inflammatory responses. There is great interest in exploring the cargo of MSC exosomes and engineering them for potential therapeutic applications. SBI offers highly purified exosomes from human bone marrow and pre-adipocyte MSCs for advancing the research of MSC-derived exosomes. For use in animal models, murine bone marrow-derived immature dendritic cell line exosomes are also available. These exosomes can be engineered as delivery shuttles in vivo after transfecting them with exogenous RNAs, and can even be used for shuttling some drugs to target cells.

## Highlights

- Highly purified exosomes for standards
- Use for protein and RNA cargo studies
- Human cancer exosomes from numerous model cell lines
- Human Mesenchymal stem cell exosomes from bone marrow and pre-adipocyte cells
- Murine dendritic cell exosomes for engineering delivery vehicles

[www.systembio.com/exosomes](http://www.systembio.com/exosomes)

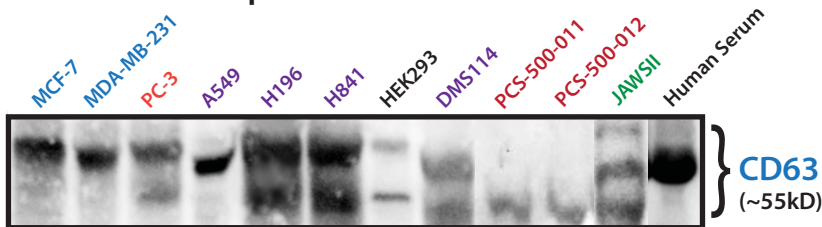
- Cell lines grown in exosome-depleted FBS (Exo-FBS)
- Exosomes purified using ExoQuick-TC
- Characterized by NanoSight for size and intactness
- CD63 Western blot analysis verified
- Exosomes provided: >1x10<sup>6</sup> exosomes (50 ug protein)

Catalog#	Description	Size
EXOP-100A-1	MCF-7 Human breast cancer, noninvasive cell line: >1x10 <sup>6</sup> frozen exosomes	50 ug
EXOP-105A-1	MDA-MB-231 Human breast cancer, aggressive/invasive/metastatic cell line: >1x10 <sup>6</sup> frozen	50 ug
EXOP-110A-1	HEK293 Human embryonic kidney cell line: >1x10 <sup>6</sup> frozen exosomes	50 ug
EXOP-115A-1	PC-3 Human prostate cancer cells derived from metastatic cancer cell line: >1x10 <sup>6</sup> frozen exosomes	50 ug
EXOP-120A-1	A549 Human non-small cell lung cancer cell line: >1x10 <sup>6</sup> frozen exosomes	50 ug
EXOP-125A-1	H841 Human small cell lung cancer cell line: >1x10 <sup>6</sup> frozen exosomes	50 ug
EXOP-130A-1	H196 Human small cell lung cancer cell line: >1x10 <sup>6</sup> frozen exosomes	50 ug
EXOP-135A-1	DMS114 Human small cell lung cancer cell line: >1x10 <sup>6</sup> frozen exosomes	50 ug
EXOP-140A-1	PCS-500-011 Human pre-adipose derived mesenchymal stem cell: >1x10 <sup>6</sup> frozen exosomes	50 ug
EXOP-145A-1	PCS-500-012 Human bone marrow-derived mesenchymal stem cell line: >1x10 <sup>6</sup> frozen exosomes	50 ug
EXOP-200A-1	JAWSII Mouse bone marrow immature dendritic cell line: >1x10 <sup>6</sup> frozen exosomes	50 ug
EXOP-300A-1	Human pooled serum: >1x10 <sup>6</sup> frozen exosomes	50 ug

# Purified Human & Mouse Exosomes

## Purified exosomes are positive for CD63

### Western blot on purified exosomes



#	Line	Type
1	MCF-7	Human breast cancer, noninvasive cell line exosomes
2	MDA-MB-231	Human breast cancer, aggressive/invasive/metastatic cell line exosomes
3	PC-3	Human prostate cancer cells derived from metastatic cancer cell line exosomes
4	A549	Human non-small cell lung cancer cell line exosomes
5	H196	Human small cell lung cancer cell line exosomes
6	H841	Human small cell lung cancer cell line exosomes
7	HEK293	Human embryonic kidney cell line exosomes
8	DMS114	Human small cell lung cancer cell line exosomes
9	PCS-500-011	Human pre-adipose derived mesenchymal stem cell exosomes
10	PCS-500-012	Human bone marrow-derived mesenchymal stem cell line exosomes
11	JAWSII	Mouse bone marrow immature dendritic cell line exosomes
12	Human Serum	Human pooled serum healthy exosomes

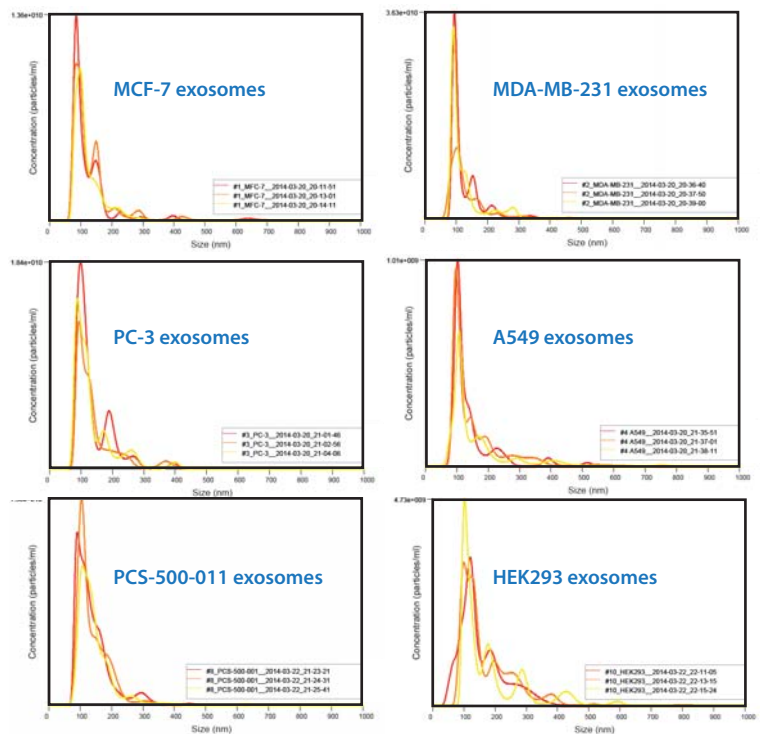
Aliquots of purified exosomes from the cell lines and from human serum were lysed with RIPA buffer to make exosome protein lysates. Approximately 20 ug of protein for each sample was separated on a gradient SDS-PAGE and then transferred to nitrocellulose membranes. The membranes were probed for CD63 profiles using SBI's anti-CD63 antibody (cat# EXOAB-CD63A-1) at a 1:1,000 dilution. Bands were detected using the secondary HRP-conjugated antibody at 1:10,000 and blots imaged. All purified exosome preparations were positive for CD63 with the expected variable banding patterns common to published exosome CD63 profiles.

*Purified exosomes are concentrated, intact and retain their bioactivity.*

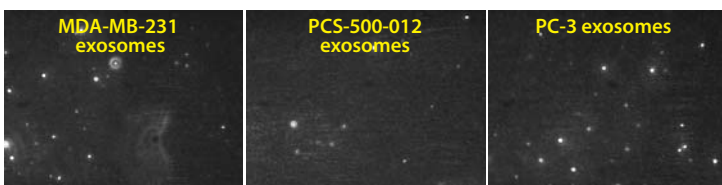
## Purified exosomes are intact

Approximately 5 ul of the purified exosomes sample was added to 995 ul of 0.2 um filtered 1X PBS (1:200 dilution). The diluted samples were incubated in a VWR 500 model ultrasonicator water bath set at 33°C for 10 minutes to ensure adequate exosome particle dispersion. The samples were diluted 1:10 then vortexed at 2.5k for 10 seconds. This eventual 1:2,000 dilution was used to gather between 1,000 to 3,000 particle tracks per sample analysis. The samples were then loaded into a NanoSight LM10HSB with a syringe pump and the sensitivity of the camera was set to auto 16 (the most sensitive auto-setting). All data were collected in triplicate. The purified exosomes displayed the expected size distribution profiles, with peak diameters between 90-110 nm and concentrations in the range expected for media exosomes at about  $1 \times 10^{10}$  exosomes/ml.

## NanoSight NTA sample data on purified exosomes



## Example NanoSight video snapshot data



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