















	Exosomes	Microvesicles	Migrasomes	Exophers
Diameter	30 nm--100 nm ⁴⁷	100 nm--1,000 nm ⁴⁷	500 nm--3,000 nm ⁵⁰	1,000 nm--7,800 nm
Timing of release	Tens of minutes ⁴⁸	Seconds ⁴⁸	40-200 minutes ⁵⁰	15-60 minutes
Mechanism of Release	Multi-vesicular bodies fuse to the cell membrane ⁴⁹	Outward budding and scission ⁴⁹	Expands at tip of retraction fibers ⁵⁰	Jettisoned from cell body
ESCRT Machinery involved	Yes ⁴⁸	ESCRT3; <i>tsg-101</i> ⁴⁸	Unknown	No
Attachment to releasing cell	No	No	Yes (via retraction fibers) ⁵⁰	Sometimes (via thin fiber)
Actin required	No	No	Yes ⁵⁰	Yes
Vesicular Contents	DNA, RNA, Proteins, Lipids ⁴⁹	DNA, RNA, Proteins, Lipids ⁴⁹	Cytosol, Proteins ⁵⁰	Mitochondria, Lysosomes, Protein Aggregates
Phosphatidyl-serine Distribution	Membrane outer leaflet ⁴⁹	Membrane outer leaflet ⁵¹	Unknown	Not displayed on membrane outer leaflet

a. Exosome Biogenesis

Process Targeted	Gene Name	P-value
ESCRT-0	<i>hgrs-1</i>	0.48
	<i>stam-1</i>	0.21
ESCRT-1	<i>tsg-101</i>	0.55
	<i>vps-28</i>	0.67
	<i>vps-37</i>	0.22
ESCRT-2	<i>vps-22</i>	0.50
	<i>vps-25</i>	0.96
	<i>vps-36</i>	0.54
ESCRT-3	<i>vps-20</i>	0.49
	<i>vps-24</i>	0.89

b. Cell Cycle-related

Gene Name	P-value	Gene Name	P-value
<i>cki-1</i>	0.03*	<i>cit-1.2</i>	0.75
<i>ccnk-1</i>	0.46	<i>cki-2</i>	0.83
<i>cdk-4</i>	0.84	<i>cya-1</i>	0.52
<i>cdk-9</i>	0.68	<i>cya-2</i>	0.45
<i>cdk-1</i>	0.40	<i>cyb-2.1</i>	0.52
<i>cdk-12</i>	0.23	<i>cyd-1</i>	0.95
<i>cdk-5</i>	0.72	<i>cye-1</i>	0.95
<i>cdk-8</i>	0.79	<i>cyl-1</i>	0.32
<i>cic-1</i>	0.95	<i>dpl-1</i>	0.94

1 **Extended Data Video 1:**

2 An exopher is generated with a striking concentration of fluorescence segregated to the
3 extrusion. Strain is $Is[p_{mec-4}mCh2]$. ALM neuron with mCherry-visualized cytoplasm and
4 aggregates.

5

6 **Extended Data Video 2:**

7 An exopher is generated with evident filling and growth. S indicates the soma of an ALM
8 neuron on adult day 2 with mCherry visualized; E indicates the significant extrusion of a
9 balloon-like exopher, which grows with time. We noted that the size of this exopher
10 increased for more than an hour, with fluorescence intensity increasing specifically in
11 the exopher compartment, possibly via continual delivery of materials to the exopher
12 after the initial formation. Strain is $Is[p_{mec-4}mCh1]$.

13

14 **Extended Data Video 3:**

15 The soma calcium wave induced by laser axotomy is followed by a calcium wave to
16 connected exophers. We laser-cut an ALMR neuron that had a connected exopher in a
17 day 2 adult that expressed both mCherry(bottom) and the calcium sensitive fluorophore,
18 GCaMP3(top). Video shows the calcium wave that travels from soma to exopher.