S.No	Strain number	Genotype	Reference
1	N2	Bristol wild type	(Brenner, 1974)
2	NM2689	jsIs821 [mec-7p::gfp::rab-3]	(Bounoutas et al., 2009)
3	TT1555	tbEx254 [mec-7p::aman-II::mCherry]; jsIs821	(Choudhary et al., 2017)
4	TT2884	tbIs388 [mec-4p::sng-1::egfp]	This study
5	TT2903	tbIs381 [mec-4p::ctns-1::mCherry]	This study
6	TT3029	<i>pwSi113</i> [ <i>mec-7</i> p:: <i>mScarlet</i> :: <i>rab-7</i> :: <i>let</i> 858] G418R	Barth Grant, this study
7	TT3007	<i>tbIs414</i> [ <i>mec-7</i> p:: <i>snb-1</i> :: <i>egfp</i> ]	This study
8	TT1884	tbIs227 [mec-4p::mCherry::rab-3]	(Choudhary et al., 2017)
9	NM664	jsIs37 [mec-7p::snb-1::gfp]	(Nonet, 1999)
10	TT2710	<i>tbEx364</i> [ <i>mec-4</i> p:: <i>sng-1</i> : <i>:egfp</i> ]	This study
11	TT1519	tbEx272	This study
12	TT2918	tbEx384	This study
13	TT3286	rab-7::mNeonGreen; tbIs381	Barth Grant, this study
14	TT3035	pwSi225 [mec-7p::lmp-1::mNeonGreen::let858]; hygR	Barth Grant, this study
15	NM2156	kyIs105 (str-3p::SNB-1::GFP)	This study
16	TT2636	tbEx316 [str-3p::ctns-1::mCherry]	This study
17	TT1893	oqEx [unc-101p::unc-101::gfp+pRF4]	(Kaplan <i>et al.</i> , 2010)
18	TT2052	kyEx3233 [des2p::ebp-2::gfp]	(Maniar et al., 2012)
19	TT1612	kyIs156 [str-1p::odr-10::gfp]	(Dwyer et al., 2001)
20	TT3371	<i>tbEx486</i> [ <i>rab-3</i> p:: <i>apb-3</i> :: <i>gfp</i> ]	This study
21	TT1218	lrk-1(km17)	(Sakaguchi-Nakashima et
22	TT1225	<i>lrk-1(km41)</i>	al., 2007)
23	TT2060	apb-3(ok429)	(Consortium, 2012)
24	TT1134	syd-2(ok217)	(Consortium, 2012)
25	TT148	syd-2(ju37)	(Zhen and Jin, 1999)
26	TT385	unc-104(e1265tb120)	(Kumar et al., 2010)
27	TT1211	unc-101(m1)	(Lee, Jongeward and Sternberg, 1994)

# Supplementary Table 1: List of strains

	Strain name	Details	Plasmid	Plasmid details	Source
1	tbEx272	Generated by injecting TTp1509 (5 ng/ $\mu$ L) with <i>myo</i> -2p:: <i>gfp</i> (50 ng/ $\mu$ L) as coinjection marker.	TTp1509	<i>mec-4</i> p:: <i>ctns-1</i> :: <i>mCherry</i> . <i>unc-129</i> p in KG#371 was replaced with <i>mec-4</i> p using HindIII and BamHI restriction sites.	This study. (Edwards <i>et</i> <i>al.</i> , 2013) KG#371 was a gift from K G Miller.
2	tbEx369	Generated by injecting TTp1509 (20 ng/ $\mu$ L) with <i>myo-2p::gfp::h2b</i> (TTp1592) (40 ng/ $\mu$ L) as coinjection marker.			
3	tbEx364	Generated by injecting TTpl696 (5 ng/µL) with <i>myo-2p::mCherry</i> (TTpl580) (10 ng/µL) as coinjection marker.	TTpl696	<i>mec-4</i> p:: <i>sng-1</i> :: <i>gfp</i> . SNG- 1::GFP was amplified from NM491 and cloned into a <i>mec-4</i> p containing vector using NheI and EcoRV restriction sites.	This study. NM491 [pSY3 (SNG-1::GFP construct)]. (Zhao and Nonet, 2001) NM491 was a gift from Michael Nonet.
4	tbEx316	Generated by injecting TTpl653 (20 ng/ $\mu$ L) with <i>unc-122</i> p:: <i>gfp</i> (TTpl572) (30 ng/ $\mu$ L) as coinjection marker.	TTpl635	str-3p::ctns-1::mCherry. mec-4p from TTpl509 was switched out for str- 3p using BamHI and ApaI restriction sites.	This study. TTpl572 was a gift from Kavita Babu.
5	tbEx486	Generated by injecting TTp1796 (Isolate 2) (30 ng/µL) with <i>myo</i> - 2p:: <i>mCherry</i> (TTp1580) (10 ng/µL) as coinjection marker.	TTpl796	<i>rab-3</i> p:: <i>apb-3</i> :: <i>gfp</i> . APB-3 was amplified from genomic DNA using Phusion Polymerase and cloned into a <i>rab-3</i> p containing vector (TTpl698) using NheI and AgeI restriction sites.	This study.
6	tbEx384	Generated by injecting TTpl684 (10 ng/µL) with <i>myo-</i> 2p:: <i>mCherry</i> (TTpl580) (10 ng/µL) as coinjection marker.	TTpl684	mec-4p::snb-1::gfp	This study. Plasmid was a gift from Michael Nonet.

# Supplementary Table 2: List of plasmids

Fraction of SNG-1 co-migrating with RAB-3				
Genotype	P-value	Significant		
One Way AN	OVA with Tukey's post Hoc test			
WT vs lrk-1	0.04	Yes		
WT vs <i>apb-3</i>	0.13	No		
<i>lrk-1</i> vs <i>apb-3</i>	1.4E-05	Yes		

# Supplementary Table 3: (Associated with Fig. 2A)

Fraction of SNG-1 co-migrating with CTNS-1					
Genotype	P-value	Significant			
Mar	nn-Whitney Test				
WT vs <i>lrk-1(km17)</i>	3.2E-08	Yes			
WT vs <i>apb-3(ok429)</i>	9.2E-09	Yes			
WT vs <i>lrk-1(km17) apb-3</i>	1.4E-07	Yes			
<i>lrk-1(km17)</i> vs <i>lrk-1 apb-3</i>	0.26	No			
WT vs <i>lrk-1(km41</i> )	2.9E-07	Yes			
<i>lrk-1(km17</i> ) vs <i>lrk-1(km41</i> )	0.008	Yes			
One Way ANOVA with Tukey's post Hoc test					
apb-3 vs lrk-1(km17) apb-3	0.062	No			
<i>lrk-1(km41)</i> vs <i>apb-3</i>	0.58	No			

Supplementary Table 4: (Associated with Fig. 2B)

Fraction of CTNS-1 co-migrating with SNG-1				
Genotype	<b>P-value</b>	Significant		
Mann-Whitney Test				
WT vs <i>lrk-1(km17)</i>	0.33	No		
WT vs <i>lrk-1(km41)</i>	0.06	No		
WT vs <i>apb-3(ok429)</i>	0.60	No		
WT vs <i>lrk-1 apb-3</i>	0.07	No		
<i>lrk-1(km17)</i> vs <i>lrk-1 apb-3</i>	0.15	No		
<i>lrk-1(km17)</i> vs <i>lrk-1 apb-3; syd-2</i>	0.03	Yes		
<i>apb-3</i> vs <i>apb-3; syd-2(ok217)</i>	0.86	No		
WT vs <i>syd-2(ju37)</i>	0.063	No		
WT vs <i>apb-3; syd-2(ju37)</i>	0.0056	Yes		
WT vs <i>lrk-1; syd-2(ju37)</i>	0.0016	Yes		
<i>syd-2(ju37)</i> vs <i>apb-3; syd-2(ju37)</i>	0.23	No		
<i>syd-2(ju37)</i> vs <i>lrk-1; syd-2(ju37)</i>	0.09	No		
WT vs unc-104(e1265tb120)	0.23	No		
WT vs lrk-1; unc-104(e1265tb120)	0.09	No		
WT vs apb-3; unc-104(e1265tb120)	0.03	Yes		
WT vs unc-104(e1265tb120); syd-2(ok217)	0.03	Yes		
lrk-1(km17) vs lrk-1; unc-104(e1265tb120)	0.3	No		
apb-3(ok429) vs apb-3; unc-104(e1265tb120)	0.006	Yes		
syd-2(ok217) vs unc-104(e1265tb120); syd-2	0.006	Yes		
unc-104(e1265tb120) vs unc-104; syd-2(ok217)	0.46	No		
unc-104(e1265tb120) vs lrk-1; unc-104	0.96	No		
unc-104(e1265tb120) vs apb-3; unc-104	0.42	No		
lrk-1(km17) vs lrk-1; syd-2(ju37)	0.0002	Yes		
<i>apb-3; syd-2(ok217)</i> vs <i>apb-3; syd-2(ju37)</i>	0.02	Yes		
<i>syd-2(ju37)</i> vs <i>unc-104(e1265tb120)</i>	0.78	No		
<i>syd-2(ok217)</i> vs <i>syd-2(ju37)</i>	0.013	Yes		
<i>apb-3</i> vs <i>lrk-1 apb-3</i>	0.04	Yes		
<i>apb-3</i> vs <i>lrk-1 apb-3; syd-2</i>	0.01	Yes		
apb-3 vs apb-3; syd-2(ju37)	0.00068	Yes		

Supplementary	Table 5	(Associated	with Fig. S2B)
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Yes

Fraction of SNG-1 co-migrating with RAB-7				
Genotype	P-value	Significant		
Mann-Whitney Test				
WT vs <i>lrk-1 apb-3</i>	5.3E-08	Yes		
<i>lrk-1</i> vs <i>lrk-1 apb-3</i>	0.0016	Yes		
apb-3 vs lrk-1 apb-3	1.8E-06	Yes		
One Way ANOVA with Tukey's p	ost Hoc test			
WT vs <i>lrk-1(km17)</i>	0	Yes		
WT vs <i>apb-3(ok429)</i>	1.5E-06	Yes		
<i>apb-3</i> vs <i>lrk-1</i>	0.019	Yes		

Supplementary Table 6: (Associated with Fig. 2C)

Fraction of RAB-7 co-migrating with SNG-1				
Genotype	P-value	Significant		
Mann-Whitney T	`est			
WT vs lrk-1	0.11	No		
WT vs <i>apb-3</i>	0.02	Yes		
WT vs <i>lrk-1 apb-3</i>	0.14	No		
WT vs syd-2	0.83	No		
WT vs lrk-1; syd-2	0.02	Yes		
WT vs apb-3; syd-2	0.05	Yes		
<i>lrk-1</i> vs <i>lrk-1; syd-2</i>	0.31	No		
<i>lrk-1</i> vs <i>lrk-1 apb-3</i>	0.57	No		
<i>apb-3</i> vs <i>apb-3; syd-2</i>	0.98	No		
apb-3 vs lrk-1 apb-3	0.19	No		
<i>syd-2</i> vs <i>lrk-1; syd-2</i>	0.07	No		
<i>syd-2</i> vs <i>apb-3; syd-2</i>	0.13	No		
<i>lrk-1</i> vs <i>apb-3</i>	0.56	No		
lrk-1 vs syd-2	0.26	No		
apb-3 vs syd-2	0.08	No		

# Supplementary Table 7: (Associated with Fig. S2D)

Fraction of SNB-1 co-migrating with CTNS-1				
Genotype	P-value	Significant		
Mann	-Whitney Test			
WT vs lrk-1	0.25	No		
WT vs <i>apb-3</i>	0.053	No		
<i>lrk-1</i> vs <i>apb-3</i>	0.9	No		

# Supplementary Table 8: (Associated with Fig. S2E)

Fraction of RAB-3 co-migrating with CTNS-1			
Genotype	P-value	Significant	
Mar	nn-Whitney Test		
WT vs lrk-1	0.28	No	
WT vs <i>apb-3</i>	0.036	Yes	
<i>lrk-1</i> vs <i>apb-3</i>	0.11	No	

# Supplementary Table 9: (Associated with Fig. S2F)

Analyses of APB-3::GFP puncta - number per cell body, size and intensity					
Analysis	Genotype	P-value	Significant		
	Mann-Whitney Tes	t			
Number of puncta per cell body	WT vs lrk-1	0.00008	Yes		
	WT vs syd-2	0.00001	Yes		
	lrk-1 vs syd-2	0.00001	Yes		

# Supplementary Table 10: (Associated with Fig. 2H)

Analyses of APB-3::GFP puncta - number per cell body, size and intensity					
Analysis	Genotype	<b>P-value</b>	Significant	-	
	Mann-Whitney Test	t		-	
Average size of puncta	WT vs <i>lrk-1</i>	0.00252	Yes		
	WT vs syd-2	0.00386	Yes		
	lrk-1 vs syd-2	0.00001	Yes		

# Supplementary Table 11: (Associated with Fig. 2I)

Analyses of APB-3::	Analyses of APB-3::GFP puncta - number per cell body, size and intensity			
Analysis	Genotype	P-value	Significant	
	Mann-Whitney Tes	t		
Average mean puncta intensity to	WT vs lrk-1	0.03486	Yes	
cytosolic intensity per cell body	WT vs syd-2	0.00001	Yes	
	lrk-1 vs syd-2	0.00001	Yes	

# Supplementary Table 12: (Associated with Fig. 2J)

Fraction of SNG-1 co-migrating with CTNS-1			
Genotype	P-value	Significant	
Mann-Whitney	y Test		
WT vs unc-104(e1265tb120)	0.85	No	
WT vs lrk-1; unc-104(e1265tb120)	0.015	Yes	
WT vs apb-3; unc-104(e1265tb120)	0.015	Yes	
lrk-1(km17) vs lrk-1; unc-104(e1265tb120)	1.1E-06	Yes	
apb-3(ok429) vs apb-3; unc-104(e1265tb120)	7.6E-09	Yes	
unc-104 vs lrk-1; unc-104(e1265tb120)	0.005	Yes	
unc-104 vs apb-3; unc-104(e1265tb120)	0.008	Yes	

# Supplementary Table 13: (Associated with Fig. 3D)

Fraction of SNG-1 co-migrating with CTNS-1			
Genotype	P-value	Significant	
Mann-Whit	tney Test		
WT vs <i>syd-2(ok217)</i>	0.29	No	
WT vs <i>lrk-1; syd-2(ok217)</i>	7.4E-08	Yes	
WT vs <i>apb-3; syd-2(ok217)</i>	3.6E-01	Yes	
WT vs lrk-1 apb-3; syd-2	7.2E-08	Yes	
<i>lrk-1(km17)</i> vs <i>lrk-1; syd-2(ok217)</i>	0.047	Yes	
<i>lrk-1(km17)</i> vs <i>lrk-1 apb-3; syd-2</i>	0.11	No	
<i>apb-3</i> vs <i>apb-3; syd-2(ok217)</i>	4.4E-09	Yes	
WT vs <i>syd-2(ju37)</i>	0.39	No	
WT vs <i>apb-3; syd-2(ju37)</i>	0.007	Yes	
WT vs <i>lrk-1; syd-2(ju37)</i>	5.6E-06	Yes	
<i>syd-2(ju37)</i> vs <i>apb-3; syd-2(ju37)</i>	0.03	Yes	
<i>syd-2(ju37)</i> vs <i>lrk-1; syd-2(ju37)</i>	2.5E-05	Yes	
<i>lrk-1(km17)</i> vs <i>lrk-1; syd-2(ju37)</i>	0.98	No	
apb-3; syd-2(ok217) vs apb-3; syd-2(ju37)	0.04	Yes	
<i>syd-2(ok217)</i> vs <i>syd-2(ju37)</i>	0.01	Yes	
One Way ANOVA with	Tukey's post Hoc test		
apb-3 vs lrk-1 apb-3	0.062	No	
apb-3 vs lrk-1 apb-3; syd-2	0.25	No	
<i>apb-3</i> vs <i>apb-3; syd-2(ju37)</i>	7.9E-07	Yes	
lrk-1; syd-2(ok217) vs lrk-1; syd-2(ju37)	0.025	Yes	
<i>lrk-1 apb-3</i> vs <i>lrk-1 apb-3; syd-2(ok217)</i>	0.4734	No	

Supplementary Table 14: (Associated with Fig. 4A)

Fraction of SNG-1 co-migrating with RAB-7			
Genotype	P-value	Significant	
Mann-Whitney Test			
WT vs apb-3; syd-2	0.56	No	
<i>apb-3</i> vs <i>apb-3; syd-2</i>	0.006	Yes	
syd-2 vs apb-3; syd-2	0.11	No	
One Way ANOVA with Tukey's pos	st Hoc test		
WT vs <i>syd-2(ok217)</i>	0.88	No	
syd-2 vs lrk-1	0	Yes	
syd-2 vs apb-3	9.1E-08	Yes	
WT vs <i>lrk-1; syd-2</i>	6.9E-09	Yes	
<i>lrk-1; syd-2</i> vs <i>lrk-1</i>	7.3E-01	Yes	
lrk-1; syd-2 vs syd-2	3.8E-07	Yes	

# Supplementary Table 15: (Associated with Fig. 4B)

Percentage vesicles co-migrating CTNS-1 and SNB-1				
Genotype P-value Significant				
	Mann-Whitney test			
WT vs <i>syd-2</i>	0.39	No		

# Supplementary Table 16: (Associated with Fig. S3C)

Percentage vesicles co-migrating CTNS-1 and RAB-3				
Genotype P-value Significant				
	Mann-Whitney test			
WT vs <i>syd-2</i>	1	No		

# Supplementary Table 17: (Associated with Fig. S3D)

# Supplementary Table 18: (Associated with Fig. 4G)

Percentage vesicles co-migrating SNB-1 and RAB-3				
Genotype	P-value	Significant		
One Way ANOVA with Tukey's post Hoc test				
WT vs <i>syd-2</i>	1.50E-08	Yes		

Fraction of SNG-1 co-migrating with RAB-3				
Genotype	P-value	Significant		
One Way ANOVA with Tukey's post Hoc test				
WT vs <i>syd-2(ok217)</i>	0.49	No		
lrk-1 vs syd-2	1.8E-04	Yes		
apb-3 vs syd-2	0.78	No		

# Supplementary Table 19: (Associated with Fig. 4H)

Fraction of SNG-1 co-migrating with CTNS-1			
Genotype	P-value	Significant	
Mann-Whitney Test			
WT vs unc-104(e1265tb120); syd-2(ok217)	0.95	No	
syd-2(ok217) vs unc-104(e1265tb120); syd-2	0.28	No	
unc-104(e1265tb120) vs unc-104; syd-2(ok217)	0.57	No	

# Supplementary Table 20: (Associated with Fig. 5D)

# Supplementary Table 21: (Associated with Fig. 6G)

Analyses of UNC-101::GFP puncta - intensity, size and number per cell body			
Genotype	<b>P-value</b>	Significant	
ANOVA with Tukey's post l	Hoc test		
WT vs <i>syd-2(ok217)</i>	7.1E-08	Yes	
	FP puncta - intensity, size an Genotype ANOVA with Tukey's post I WT vs syd-2(ok217)	FP puncta - intensity, size and number per ceGenotypeP-valuev ANOVA with Tukey's post Hoc testWT vs syd-2(ok217)7.1E-08	

Supplementary Table 22: (Associated with Fig. 6H)
Analyses of UNC-101::GFP puncta - intensity, size and number per cell body

Analysis Genotype P-value Signif			
	Mann-Whitney Test		_
Puncta size average per cell body	WT vs <i>syd-2(ok217)</i>	1.1E-03	Yes

Analyses of UNC-101::GFP puncta - intensity, size and number per cell body			
Analysis	Genotype	<b>P-value</b>	Significant
	Mann-Whitney Test		
Number of puncta per cell body	WT vs <i>syd-2(ok217)</i>	0.07	No

# Supplementary Table 23: (Associated with Suppl. Fig. S4D)

Analyses of UNC-101::GFP puncta – intensity per cell body				
Analysis	Genotype	P-value	Significant	
	Mann-Whitney Test			
Average mean puncta intensity to cytosolic intensity per cell body	WT vs <i>syd-2(ok217)</i>	0.033	Yes	

# Supplementary Table 24: (Associated with Fig. 6J)

Analyses of average size of UNC-101::GFP puncta per cell body				
Analysis	Genotype	<b>P-value</b>	Significant	
	Mann-Whitney Test			
Number of puncta per cell body	WT vs <i>syd-2(ju37)</i>	0.134	No	

# Supplementary Table 25: (Associated with Suppl. Fig. S4F)

Analyses of intensity of UNC-101::GFP puncta per cell body				
Analysis	Genotype	<b>P-value</b>	Significant	
	Mann-Whitney Test			
Number of puncta per cell body	WT vs <i>syd-2(ju37)</i>	0.97	No	

# Supplementary Table 26: (Associated with Suppl. Fig. S4G)

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