

Supporting Information

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Table S1. Statistical analysis of the *Arabidopsis* phenotypes

Parameter	Plant line	No. of plants analyzed	Scheffe group	Mean	SD	Median
Height, cm	Columbia-0	64	A	19.4	3.0	19.7
	<i>xi-k2</i>	53	B	16.8	4.5	18.0
	<i>xi-2/b</i>	62	B	16.5	4.0	17.2
	<i>xi-k1</i>	65	C	14.0	2.8	14.5
Rosette width, cm	<i>xi-k2</i>	53	A	5.7	1.0	5.7
	Columbia-0	64	B	5.2	0.8	5.2
	<i>xi-2/b</i>	62	B	5.2	0.7	5.2
	<i>xi-k1</i>	65	C	3.9	0.5	3.8
Weight, g	<i>xi-k2</i>	53	A	1.0	0.4	1.1
	Columbia-0	64	B	0.8	0.2	0.8
	<i>xi-2/b</i>	62	B	0.8	0.2	0.7
	<i>xi-k1</i>	65	C	0.5	0.1	0.5
Number of seeds per siliques	Columbia-0	25	A	51.0	3.2	51.0
	<i>xi-2/b</i>	25	A	50.7	7.3	53.0
	<i>xi-k2</i>	25	A	48.9	4.5	49.0
	<i>xi-k1</i>	25	B	40.6	6.0	40.0

Table S2. Statistical analysis of the organelle velocity ($\mu\text{m/sec}$)

Organelle	Plant line	No. of organelles analyzed	Scheffe group	Mean	SD	Median
Golgi stacks	Columbia-0	431	A	1.260888507	0.694071762	1.20473
	<i>xi-b</i>	689	A	1.214747123	0.941689085	1.02397
	<i>xi-1</i>	511	B	0.965823329	0.781300733	0.76917
	<i>xi-k/1</i>	507	C	0.21097209	0.148054274	0.160425
	<i>xi-k/2</i>	556	C	0.122917907	0.102214885	0.09335125
Peroxisomes	Columbia-0	357	A	1.83769725	1.314355627	1.61015
	<i>xi-b</i>	408	B	1.611726497	1.109431729	1.50686
	<i>xi-k/2</i>	504	C	0.427946532	0.418490453	0.305503
	<i>xi-k/1</i>	329	D	0.196699675	0.158492423	0.145988
Mitochondria	Columbia-0	541	A	1.951806153	1.272951579	1.77167
	<i>xi-2/b</i>	336	B	1.594142101	0.958675734	1.53388
	<i>xi-k/2</i>	470	C	0.581154577	0.495743161	0.438515
	<i>xi-k/1</i>	513	D	0.359317128	0.400836639	0.233247