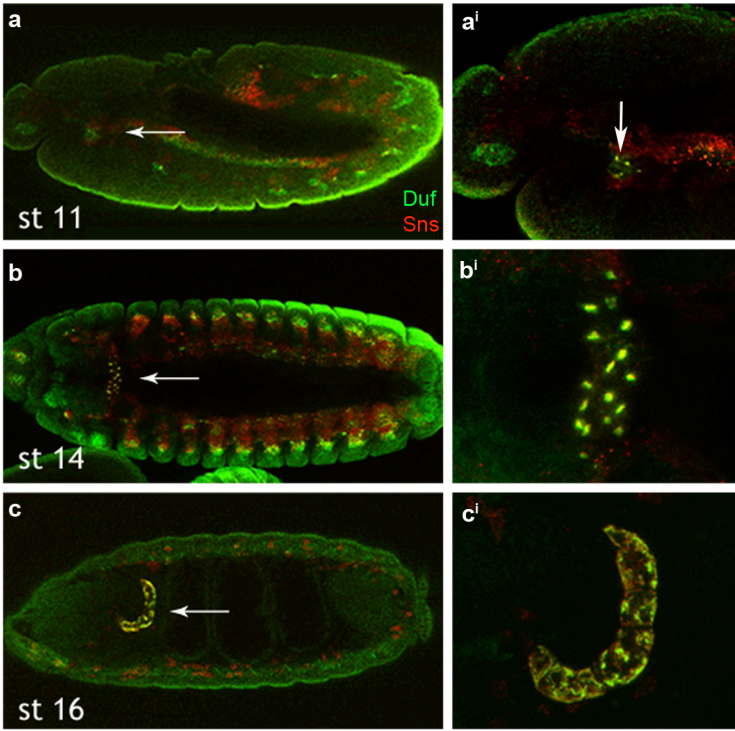


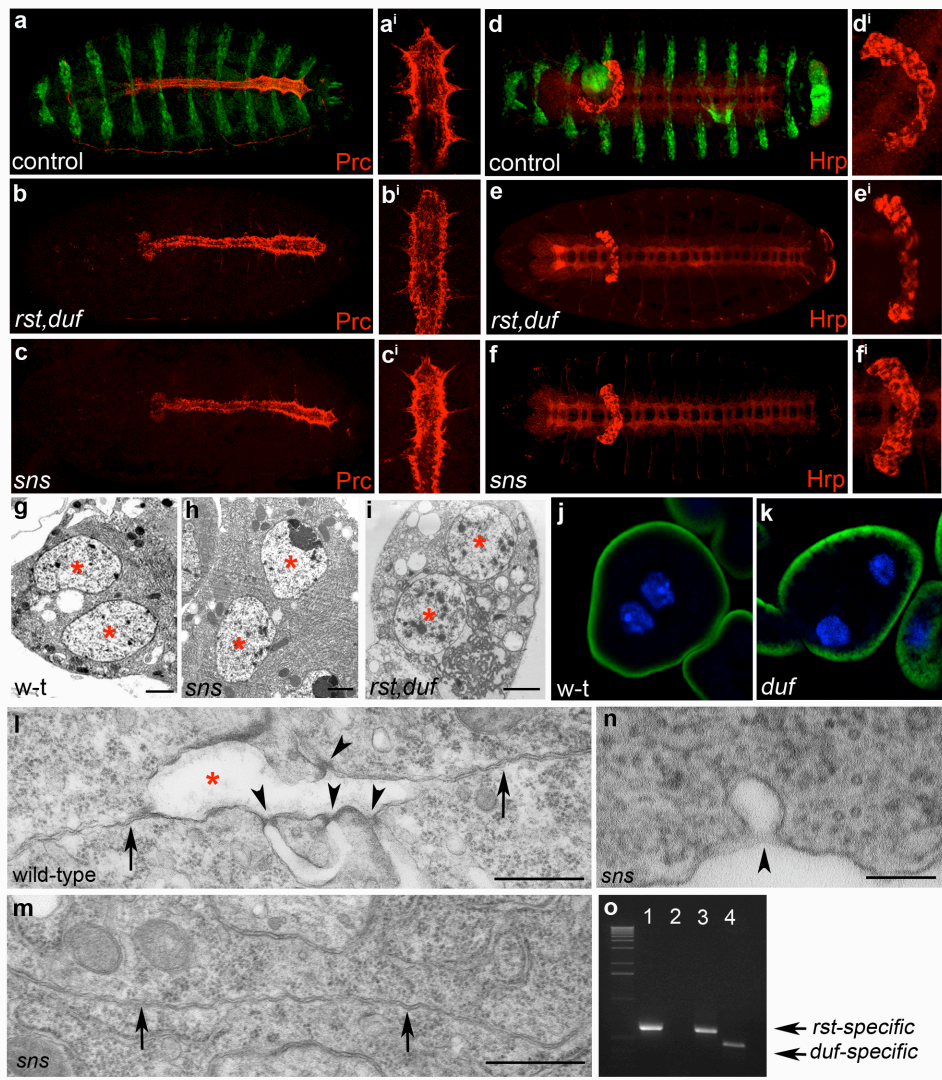
Supplementary Table 1 | Components of the slit diaphragm and their fly orthologues

Human gene/protein	Disease/phenotype	Fly orthologues
NPHS1/nephrin	Congenital nephrotic syndrome of the Finnish type	<i>sticks and stones</i> ¹ <i>hibris</i> ²
neph1	Experimental congenital nephrotic syndrome	<i>dumbfounded (kirre)</i> ³ <i>roughest (irregular chiasm-C)</i> ⁴
NPHS2/podocin	Experimental congenital nephrotic syndrome	<i>Mec2</i> [*]
CD2AP	Sporadic and inherited nephrotic syndromes	<i>CG31012</i> ⁵
ZO-1	Not known	<i>polychaetoid</i> ⁶

* There are seven stomatin domain-containing proteins in *Drosophila* with similarity to podocin. *Mec2* is the only one expressed in nephrocytes (data not shown).

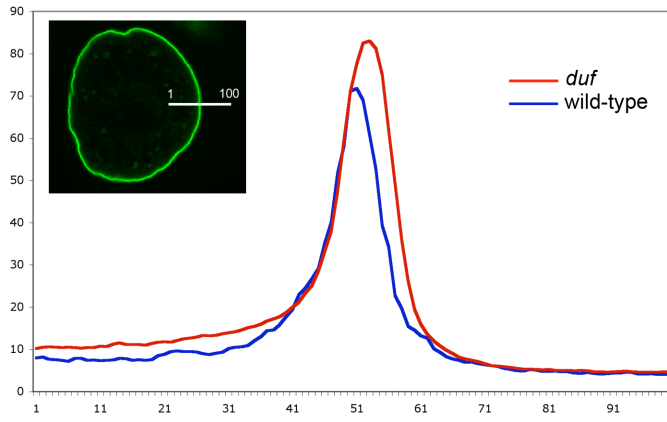
1. Bour, B. A., Chakravarti, M., West, J. M. & Abmayr, S. M. *Drosophila* SNS, a member of the immunoglobulin superfamily that is essential for myoblast fusion. *Genes Dev* **14**, 1498-511 (2000).
2. Artero, R. D., Castanon, I. & Baylies, M. K. The immunoglobulin-like protein *Hibris* functions as a dose-dependent regulator of myoblast fusion and is differentially controlled by Ras and Notch signaling. *Development* **128**, 4251-64 (2001).
3. Ruiz-Gomez, M., Coutts, N., Price, A., Taylor, M. V. & Bate, M. *Drosophila* *dumbfounded*: a myoblast attractant essential for fusion. *Cell* **102**, 189-98 (2000).
4. Strunkelberg, M. et al. *rst* and its paralogue *kirre* act redundantly during embryonic muscle development in *Drosophila*. *Development* **128**, 4229-39 (2001).
5. Johnson, R. I., Seppa, M. J. & Cagan, R. L. The *Drosophila* CD2AP/CIN85 orthologue *Cindr* regulates junctions and cytoskeleton dynamics during tissue patterning. *J Cell Biol* **180**, 1191-204 (2008).
6. Takahisa, M. et al. The *Drosophila* *tamou* gene, a component of the activating pathway of extramacrochaetae expression, encodes a protein homologous to mammalian cell-cell junction-associated protein ZO-1. *Genes Dev* **10**, 1783-95 (1996).





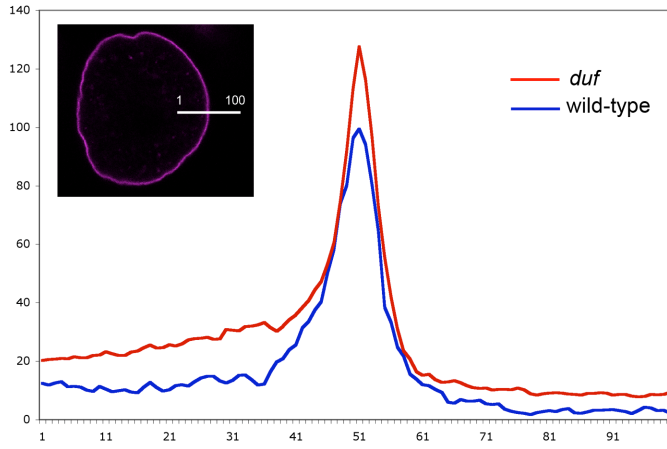
a

Viking-GFP (Collagen IV)



b

F-Actin



	(1)	1	10	20	30	46
Mec2	(1)	-----ME PHQDSPVYANYEDMRNS G-----				
podocin	(1)	MERRARSSSRESRGRGGRT PHKENKRAKAERSGGGR GRQEAGPEPS				
	(47)	47	60	70	80	92
Mec2	(21)	-----FASSTAYMVNMGAAGMAPPALRVPGTTQQYRGFKT				
podocin	(47)	GSGRAGTPGE PRAPAA TVDVDEVRGSGEEGTEVVALLESE RPEEG				
	(93)	93	100	110	120	138
Mec2	(57)	SENEPKGCM EWVVTLFSVLI FIIITSPIAIFICFKVVAEYERAIIFR				
podocin	(93)	TKSSGLGAC EWLVLISLFIIMTFPFSIWF CVKVVQ EYERVIIIFR				
		tm				
	(139)	139	150	160	170	184
Mec2	(103)	LGR LSGGAR-GPGMFFI LPCI DEYRKVDLR TVTFNV PQQ EMLTKDS				
podocin	(139)	LGHLLPGR AKG PGLFF L PCLD TYHKVDLR LQ TLEI PFHEIVTKDM				
	(185)	185	190	200	210	230
Mec2	(148)	VTVTVD AVVYRISDPLYAVIQVEDYSMSTRLLAATTLRNIVGTRN				
podocin	(185)	FIMEIDAICYRMENASLLLSSLAHVSKAVQFLVQTTMKRLLAHR S				
	(231)	231	240	250	260	276
Mec2	(194)	LSELLTERETLAHNMQATLDEATEPWGVMVERVEIKDVS LPVSMQR				
podocin	(231)	LTEILLERKSI AQDAKVALDSVTCIWGIKVERIEIKDVR LPAGLQH				
		stomatin				
	(277)	277	290	300	310	322
Mec2	(240)	AMAAEAEAARDARAKVIAAEGEKKSATLKEASDVISASPSALQLR				
podocin	(277)	SLAVEAEAQRQA KVRMIAA EA EKAASESLRMAAEILSGT PAAVQLR				
	(323)	323	330	340	350	368
Mec2	(286)	YLQTLSSISA EKNSTIIFPLPME LLTPYLA KYAHLMGPP FELKQSP				
podocin	(323)	YLH TLQSLSTEK PSTVVLPLPFDLLNCLSSPSNR TQGS LFPF--SP				
	(369)	369	389			
Mec2	(332)	EKSDNIVLDAIDAWPKTNL--				
podocin	(367)	SK----PVEPLNPKKKDSPML				
Consensus	(369)	K	LDL	K		