

Table S1. Mouse models of associated anomalies of the acrosome morphogenesis and nuclear shaping in spermatids

KO mouse for	Corresponding protein	Function	Localization	Acrosome	Nuclear shape	Nuclear membrane and lamina	Reference(s)
<i>Pick1</i> *	Protein interacting with C kinase 1	Golgi vesicle fusion; Protein trafficking	Trans-Golgi Gopc partner Ck2 α ' partner	Fragmented	Poorly elongated, not hook shape	Normal	(Xiao et al., 2009)
<i>Gopc</i>	Golgi-associated PDZ- and coiled-coil motif-containing protein)	Golgi vesicle fusion; Vesicle trafficking	Trans-Golgi Pick1 partner	Fragmented	Round or ovoid not hook shape	Normal	(Ito et al., 2004; Yao et al., 2002)
<i>Vps54</i> [‡]	Vacuolar-vesicular protein sorting 54 homolog	Vesicular sorting protein Retrograde traffic	Acrosome	Absent Failure of vesicle fusion	Poorly elongated and irregular outline	Normal	(Paiardi et al., 2011)
<i>Hrb Agfg1</i> (official)	HIV-1 Rev binding protein ArfGAP with FG repeats 1 (official symbol)	Golgi vesicle fusion	Cytoplasmic surface of acrosome	Absent Failure of vesicle fusion	Globular	Apparently normal	(Kang-Decker et al., 2001; Kierszenbaum et al., 2004)
<i>Zpbp1</i>	Zona pellucida binding protein 1	Binding and penetration into the zona pellucida	Acrosomal matrix	Bulged	Shortened hook	Normal	(Yatsenko et al., 2011)
<i>Csnk2a2</i>	Casein kinase II alpha' catalytic subunit	Kinase/ phosphorylation	Ubiquitous Acrosomal matrix Pick1 partner	Partially separated from the nucleus	Poorly elongated	Swelling of nuclear membranes	(Mannowetz et al., 2010; Xu et al., 1999)
<i>Hsp90b1</i>	Heat shock protein 90b1 heat shock protein 90, beta (Grp94), member 1 (official symbol)	Endoplasmic chaperone	Endoplasmic reticulum	Partially present	Globular or deformed	?	(Audouard and Christians, 2011)
<i>Gba2</i>	Glucosidase beta 2	Hydrolyzes glucosylceramide	Endoplasmic reticulum and/or plasma membrane	Partially present, disordered	Not elongated and irregular outline	?	(Walden et al., 2007; Yildiz et al., 2006)
<i>Dpy19l2</i>	Dpy-19-like 2 (<i>C. elegans</i>)	Linker of Nucleoskeleton and Cytoskeleton (LINC) partner	Inner Nuclear membrane	Absent	Round	Destabilization of nuclear lamina. Nuclear membrane splitting off	This work

*Spinocerebellar ataxia (neurodegeneration)

[‡]Wobbler mice with spinal muscular atrophy (motoneurons degeneration)