

**Table S1.** Statistical data of IZUMO1 distribution in NCS, CS1, MS1 and IS1. Data are expressed as mean  $\pm$  SD (standard deviation).

Pattern	NCS	CS1	MS1	IS1
P1	69.51 $\pm$ 9.12	66.96 $\pm$ 7.19	73.47 $\pm$ 8.74	24.99 $\pm$ 21.98
P2	1.79 $\pm$ 1.28	1.81 $\pm$ 2.58	14.65 $\pm$ 5.79	0.55 $\pm$ 1.23
P3	2.90 $\pm$ 2.64	2.64 $\pm$ 2.08	8.87 $\pm$ 6.40	16.91 $\pm$ 5.57
P4	25.79 $\pm$ 7.82	28.59 $\pm$ 5.60	3.02 $\pm$ 5.22	57.55 $\pm$ 17.18

P1, showed dotted fluorescence in the acrosomal region; P2, displayed dotted fluorescence in the acrosomal region with a labelled equatorial region; P3, equatorial region labelled; P4, not labelled; NCS, noncapacitated sperm; CS1, one-hour capacitated sperm, MS1 and IS1, mature and immature sperm selected by hyaluronic acid after one-hour capacitation.

**Table S2.** Statistical differences of IZUMO1 staining patterns between different sperm physiological conditions (NCS, CS1, MS1 and IS1).

Significance between Physiological Conditions				Patterns	Physiological Condition
NCS	CS1	MS1	IS1		
-	n.s.	n.s.	***	P1	NCS
-	n.s.	***	n.s.	P2	
-	n.s.	n.s.	***	P3	
-	n.s.	*	***	P4	
	-	n.s.	***	P1	CS1
	-	***	n.s.	P2	
	-	n.s.	***	P3	
	-	**	**	P4	
		-	***	P1	MS1
		-	***	P2	
		-	n.s.	P3	
		-	***	P4	
			-	P1	IS1
			-	P2	
			-	P3	
			-	P4	

P1, showed dotted fluorescence in the acrosomal region; P2, displayed dotted fluorescence in the acrosomal region with a labelled equatorial region; P3, equatorial region labelled; P4, not labelled; NCS, noncapacitated sperm; CS1, one-hour capacitated sperm, MS1 and IS1, mature and immature sperm selected by hyaluronic acid after one-hour capacitation.

\*\*\* Bonferroni post hoc test  $p$ -value  $\leq 0.001$ ; \*\* Bonferroni post hoc test  $p$ -value  $\leq 0.01$ ; \* Bonferroni post hoc test  $p$ -value  $\leq 0.05$ ; n.s. not significant.