

Receptors in Spermatozoa – Their expressions and Functions

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It is known that various types of receptors that are thought to function during fertilization are expressed in spermatozoa. These receptors possibly crosstalk with ligands secreted from the female reproductive organs, but the mechanism remains unclear. Neurotensin (NTS), 13 amino acids of peptide hormone, is localized in uterine and oviduct epithelium. Interestingly, *Nts* mRNA expression is increased in ovulation, suggesting it possesses a specific role for fertilization. Further expressions of NTS receptors are confirmed in spermatozoa, suggesting it functions for fertilization. *In vitro* culture of spermatozoa with NTS facilitates acrosome exocytosis and protein tyrosine phosphorylation, both are involved in sperm capacitation. Receptors for NTS are also expressed in early embryos, and the addition of NTS results in an increase in blastocyst rate. These results indicate that NTS and its receptors contribute to fertilization and embryonic development.



Research Biography

Yuki Hiradate received his PhD degree on animal reproductive biology from Tohoku University Graduate School of Agricultural Science in 2012. After working as a post-doctoral fellow at the National Institute of Infectious Diseases from 2016, he has served Tohoku University Graduate School of Agricultural Science as an assistant professor since 2017. His research interest is mechanism for male gametogenesis and crosstalk between male and female gametes mediated by secretory factors during fertilization.