

## Fertilization Processes in Porcine Oocytes Following Intracytoplasmic Injection of Porcine and Mouse Spermatozoa

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To get insight into the nature of foreign mitochondria and syngamy during mammalian fertilization we compared fertilization processes in porcine oocytes following microinjection of porcine or mouse spermatozoa. Pronuclear movement, sperm mitochondria, and DNA synthesis were imaged with propidium iodide, mitotracker, and BrdU under confocal laser scanning microscope. Intracytoplasmic injection of either porcine or mouse spermatozoon activated porcine oocytes without additional parthenogenetic stimulation. Foreign mitochondria in either mouse or porcine sperm midpiece were introduced into porcine oocytes following sperm injection, but rapidly disappeared from the actively developing porcine oocytes. BrdU experiment showed new DNA synthesis in porcine oocytes following injection of mouse spermatozoon or sperm head. At 24 h after injection of mouse isolated sperm head or a spermatozoon, mitotic metaphase was seen in oocyte, but they did not go to normal cell division (Table). These results suggest that pronuclear formation, foreign mitochondria disruption, DNA synthesis and syngamy formation during fertilization are not species specific processes.

**Table.** Male pronuclear apposition and metaphase formation in porcine oocytes at 20h and 26h following injection of mouse spermatozoon or sperm head.

Source of Sperm cell	No. of Oocytes(%)		
	Injected ( r) <sup>a</sup>	Apposed 2PN <sup>b</sup>	Metaphase chromosome <sup>c</sup>
Pig sperm head	129(15)	87(68)	3/5
Mouse sperm	85(13)	57(67)	8/22
Mouse sperm head	86(11)	45(52)	3/14

A, replication, P < 0.05 ; b, examined at 20h ; c, examined at 26h.

(Key words) *Fertilization, Sperm Injection, Mitochondria, DNA Synthesis.*