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**Question**

Discuss the factors facilitating the movement of sperm in the female reproductive tract

**Answer**

**Rapid Sperm Transport**

Sperm may begin to undergo the process of rapid sperm transport within seconds after ejaculation. This type of sperm movement is thought to be predominantly passive, resulting from coordinated vaginal, cervical, and uterine contractions. Although these contractions are of short duration, they are believed to be the primary force responsible for the rapid progression of sperm to the upper female reproductive tract the oviduct. Settlage and coworkers in 1973 reported results of a study in which fertile ovulatory females were intravaginally inseminated with donor sperm at the time of bilateral salpingectomy for sterilization. Within 5 minutes after insemination, sperm were present within the Fallopian tubes, and the number of sperm found there was proportional to the number inseminated. Similar results demonstrating this rapid transport process have also been documented in numerous animal studies.

**In the Female Reproductive tract**

Oestrogen and oxytocin cause myometrial contraction

Oestrogen facilitate the production of watery mucus in the cervix

**Capacitation of sperm**

Sperm must undergo capacitation in the female reproductive tract prior to fertilizing the egg.

* Occurs after the sperm membrane becomes more fluid via the removal of cholesterol and removal of proteins and carbohydrates from the membrane that may otherwise block sites that bind to zona pellucida.
* A change in membrane potential that permits Ca2+ to enter the sperm via a voltage-gated mechanism to facilitate vesicle release for the acrosome reaction.
* Phosphorylation of numerous proteins needed in fertilization.

Very little is known about human sperm capacitation in the female reproductive tract. We do know that human sperm that are recovered from the cervical mucus and placed into a non-capacitating medium are able to penetrate the zona pellucida of the human oocyte and also fuse with zona-free hamster oocytes. Thus, it appears that human sperm capacitation can occur in the cervical mucus. Because of the inherent difficulty in manipulating and subsequently evaluating the in vivo environment of the female reproductive tract, much of what we now know about human sperm capacitation is the result of in vitro studies.