

# Factors Affecting Implantation & Conception

D.Mansoori M.D

M.E.Parsanezhad M.D

H.Moghavemi M.D

SH. HOSAINI PhD

B.Gharesi PhD

R.Pajoomand PhD

A.Zarei M.D

# CONCEPTION

Spermatogenesis

Oogenesis

Sperm & Egg Transport

Fertilization

**M.E.PARSANEZHAD M.D**

Distinguished Professor & Member of Division

Infertility & Reproductive Medicine

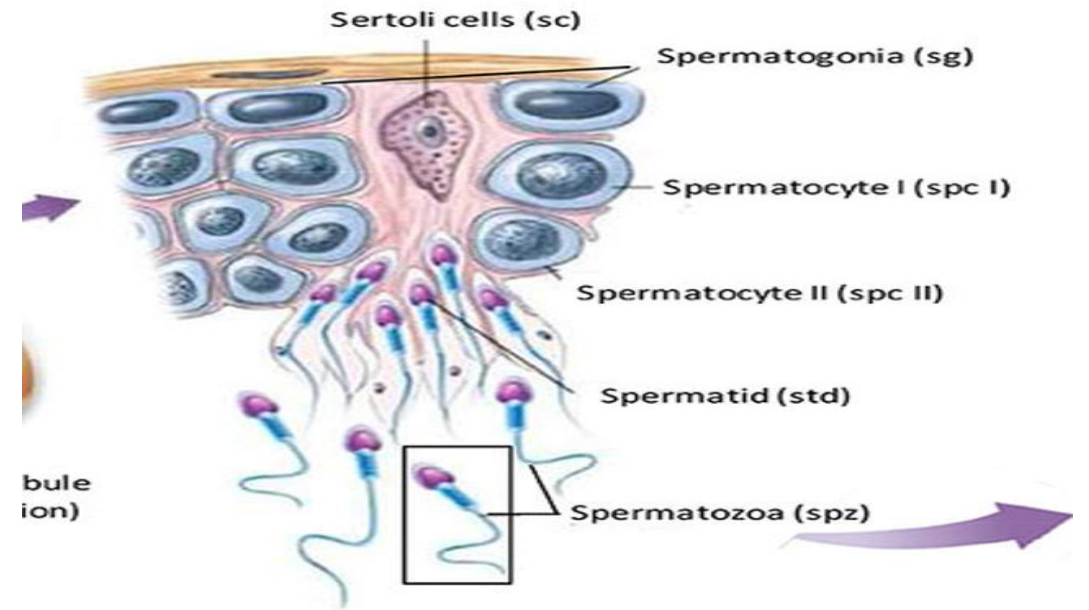
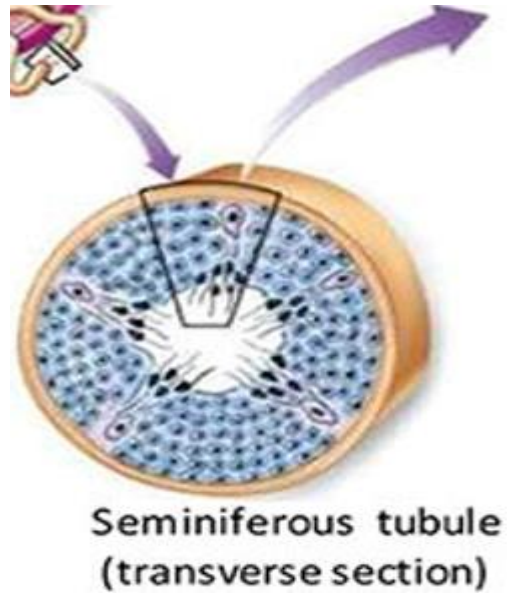
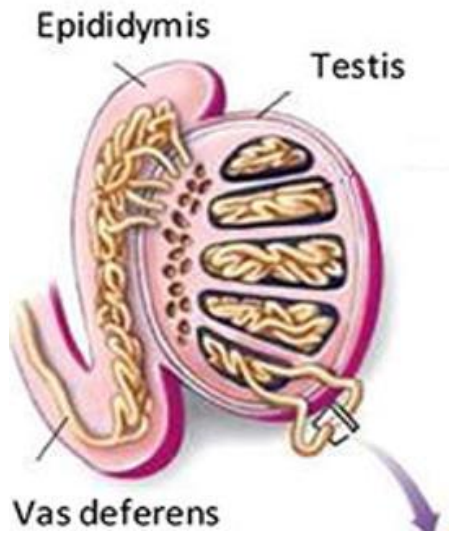
GYN Endoscopy Division

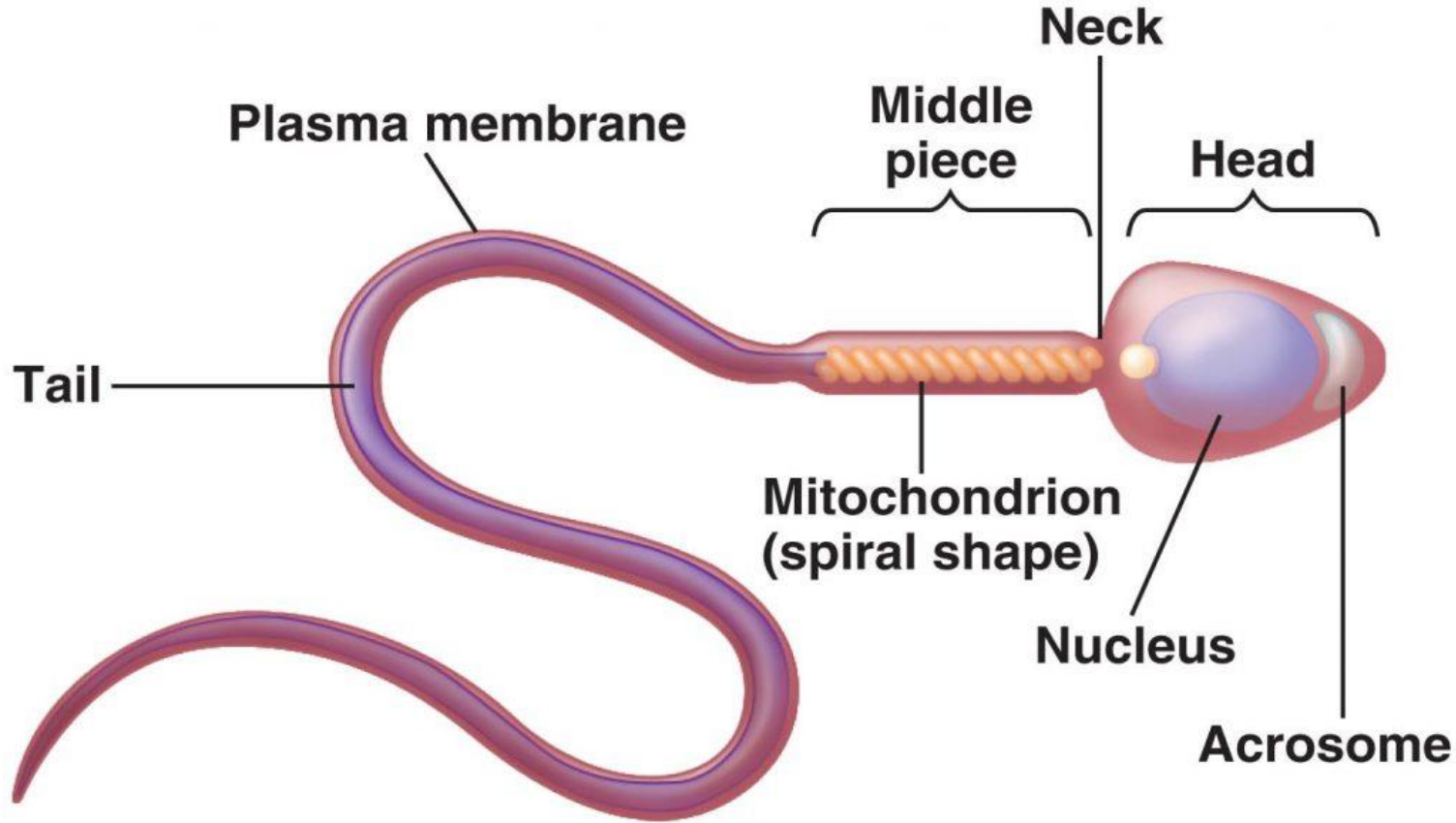
Department of GYN & OB

Shiraz University of Medical Sciences

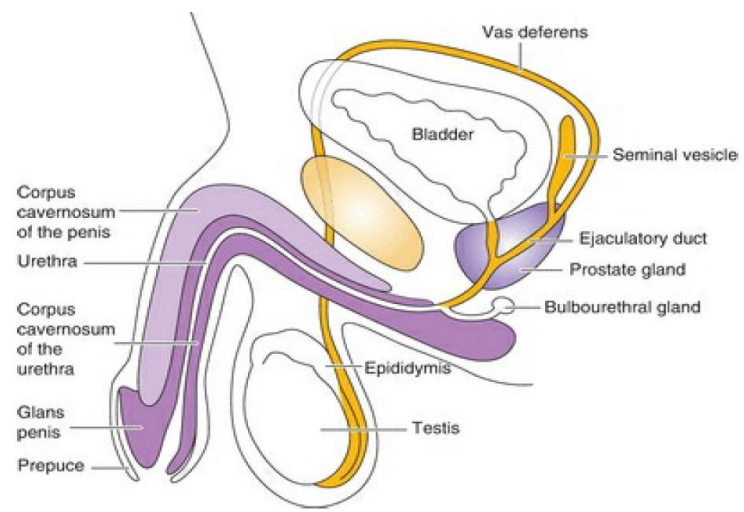
SHIRAZ FEB 2024

E.Mail: [parsameb@gmail.com](mailto:parsameb@gmail.com)





Copyright © 2009 Pearson Education, Inc.



The sperm reach the caudal epididymis approximately 72 days after the initiation of spermatogenesis.

Motility and the ability to fertilize are acquired gradually as the sperm pass into the epididymis.

The inner acrosomal membrane is closely apposed to the nuclear membrane.

The outer acrosomal membrane is next to the surface plasma membrane.



## **PHASES OF SPERMATOGENESIS**

**Spermatogonia.....Spermatocyte 1.....Spermatocyte 2.....Spermatid....Spermatozoa**

## **SPERM MATURATION**

**Maturation process occurring in the epididymis involves modification of the sperm surface by epididymal proteins that are synthesized and secreted under the control of androgens.**

## **VAGINAL environment**

## **SPERM ABNORMALITY**

**Men with severe oligospermia or azoospermia should receive appropriate genetic counseling and should be offered testing for Y chromosome microdeletions before their sperm are used for ICSI.**

**Sperm obtained from men with Y chromosome microdeletions involving the AZFc region of Yq11 can transmit the deletion to male children, who then will also likely be infertile.**



## Structure of the Cervical Mucus

*The cervical mucus is a complex structure that is not homogeneous.  
Not all areas of the cervical mucus are equally penetrable by the sperm.  
It is proposed, that the outward flow of the cervical mucus establishes  
a linear alignment of parallel strands that direct the sperm upward.*

## Capacitation

**The cellular and molecular changes that ejaculated spermatozoa must undergo in order to fertilize.**

*The ability to bind to the zona pellucida.*

*The ability to undergo the acrosome reaction.*

*The acquisition of hypermobility.*

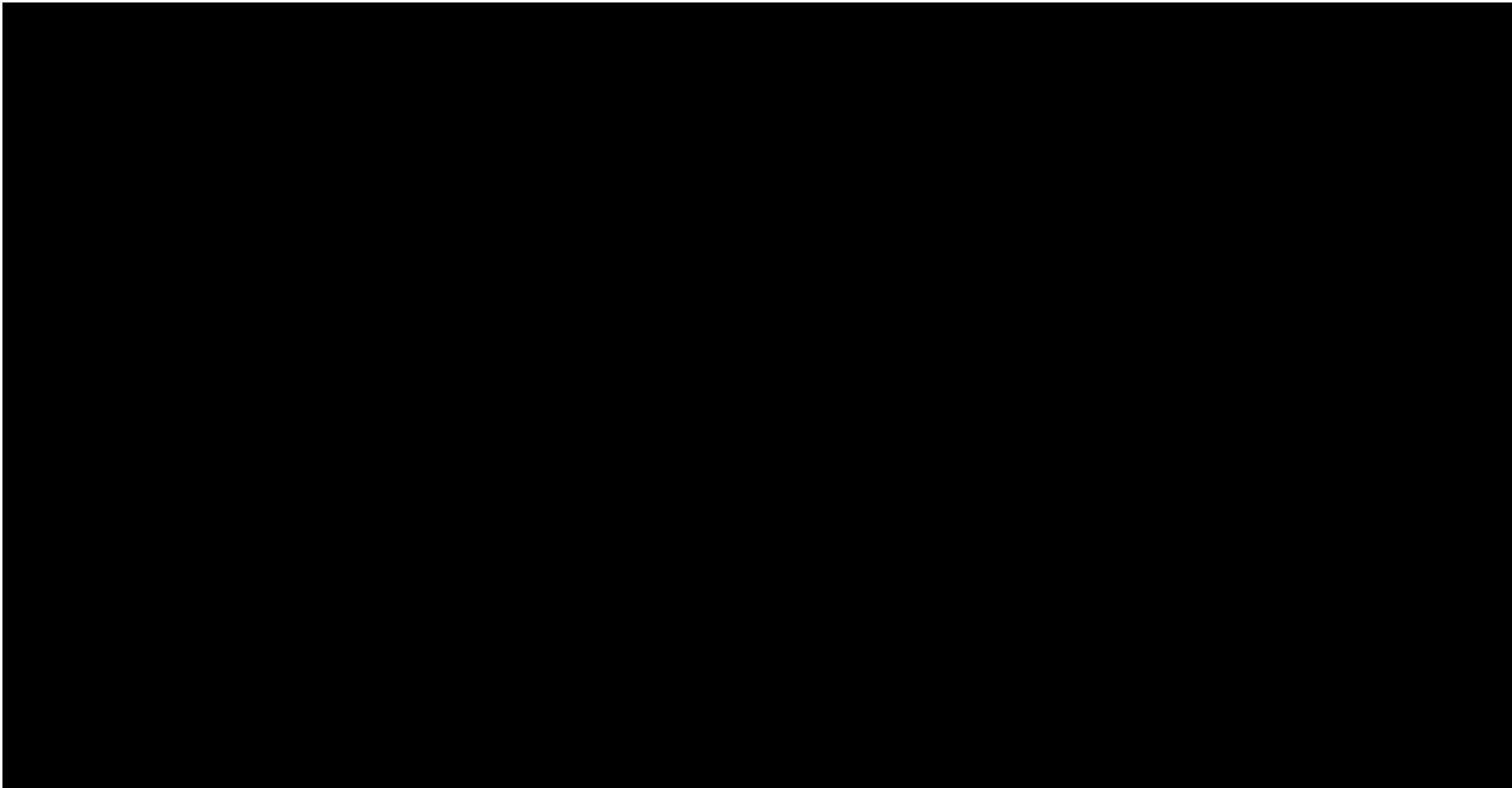
*The time required for in vitro capacitation is approximately 2 Hours.*

## Sperm Transport

**Forces of Sperm Transport (Tubal Forces)...**







## **MATURATION & OVULATION**

*In response to the midcycle LH surge.....*

*maturation of the oocyte proceeds.....*

*with the resumption of meiosis as the oocyte completes the first meiotic division,  
.....enters into the second meiotic division, and arrests in the second metaphase.*

## **EGG TRANSPORT**

*The fimbriated end of the tube sweeps over the ovary in order to pick up the egg. Entry into the tube is facilitated by muscular movements that bring the fimbriae into contact with the surface of the ovary.*

*Neg.. tubal pressure*

*Endosalpinx Structure*

## **The role of calcium**

In order to successfully achieve a pregnancy, not only anatomically patent tubes but also a complex system of tubal transport must be operational to allow a timely favorable interaction between gametes and subsequently provide a supporting conduit for the developing conceptus to reach the uterus. Three different components,

- \*ciliary motion,
- \*muscular contractility,
- \* tubal fluid,
- all contribute to varying degrees to effective tubal transport.





## FERTILIZATION

*The fertilizable life of the human oocyte is unknown, but estimates range between 12 and 24 hours.*

*Equally uncertain is knowledge of the fertilizable lifespan of human sperm. The most common estimate is 4–72 hours.*

*Contact of sperm with the egg, which occurs in the ampulla of the tube, may not be random; there is some evidence for sperm-egg communication that attracts sperm to the oocyte. This chemotactic responsiveness of sperm requires the changes that take place in the capacitation process. Thus, this may be a system to select a sperm that is fully capable of fertilization.*









**The acellular zona pellucida that surrounds the egg at ovulation and remains in place until implantation has two major functions in the fertilization process:**

- 1. The zona pellucida contains ligands for sperm, which are, with some exceptions, relatively species specific.*
- 2. The zona pellucida undergoes the **zona reaction** in which the zona becomes impervious to other sperm once the fertilizing sperm penetrates, and thus, it provides a bar to polyploidy.*

**The cortical reaction leads to the**

*Enzyme-induced zona reaction,*

*The hardening of the zona,*

*.....and the inactivation of ligands for sperm receptors, producing an obstacle to polyspermy.*



Cell division begins promptly after fertilization; human embryonic gene expression begins between the 4- and 8-cell stages.

***THANK YOU***

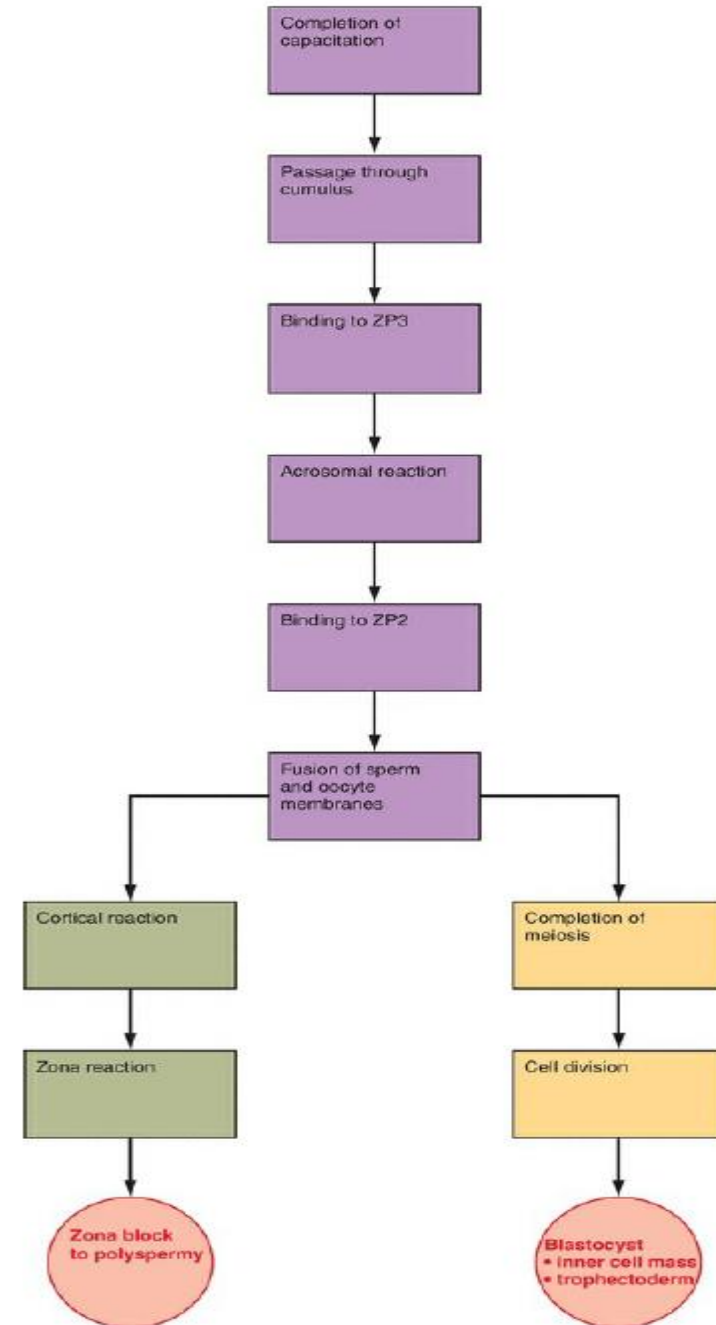
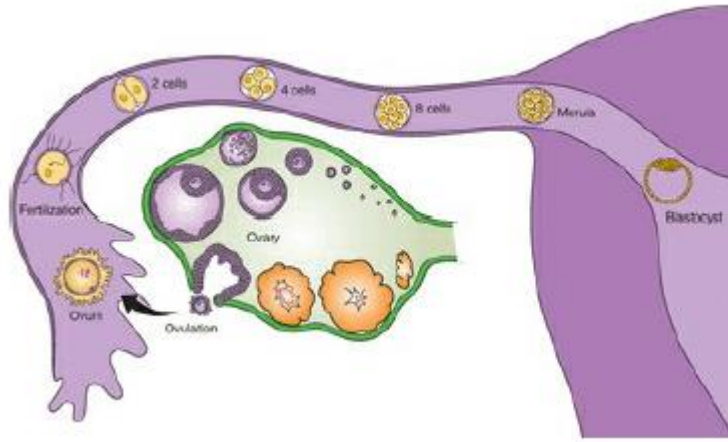


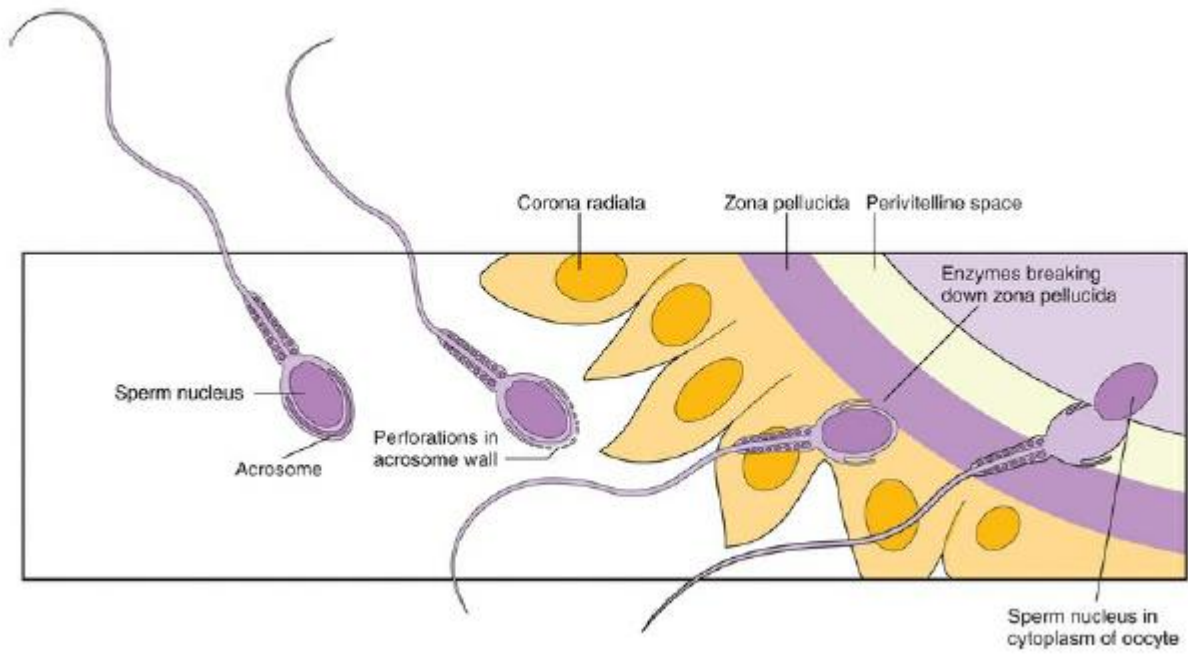




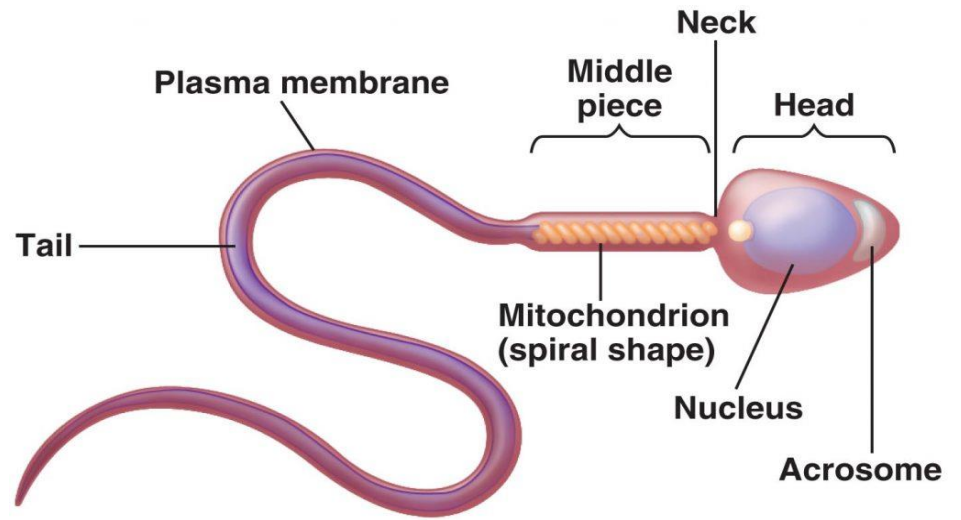
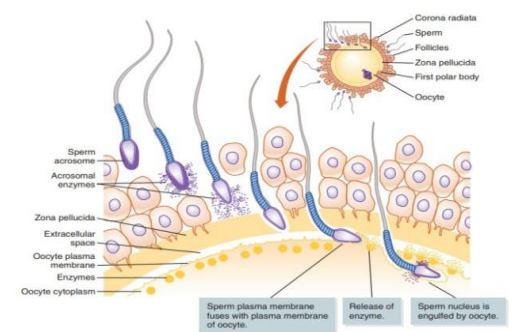
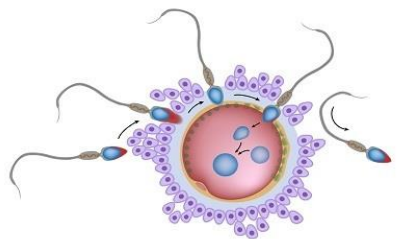
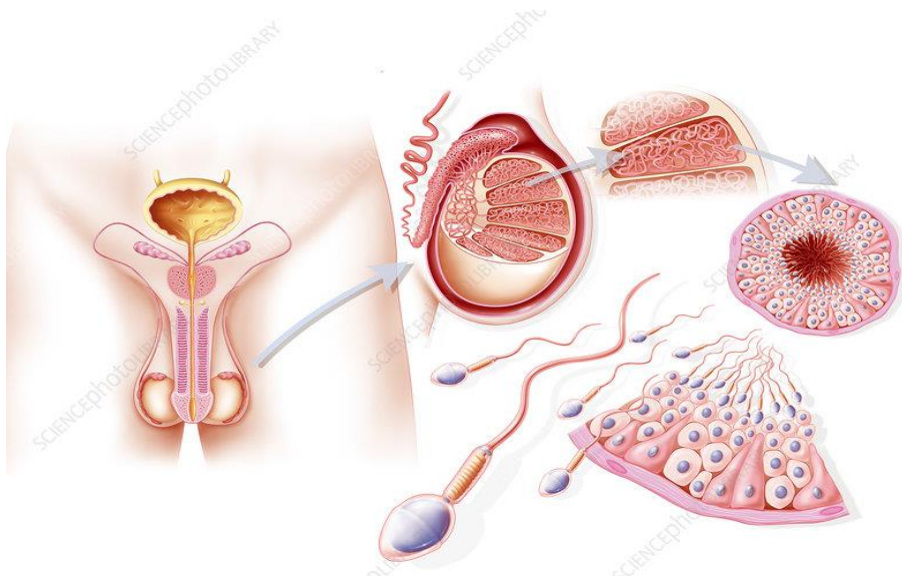
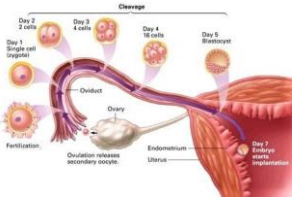












Copyright © 2009 Pearson Education, Inc.

