# Chapter 8
# Zygotes and Development

## Survival and Development of Organisms

**For a species to survive, it's offsprings must survive. Organisms use different survival strategies to ensure the survival of their offsprings.**

### *Key Strategies for the Survival of Offsprings*

**Some organism**

- Produce a zygote that does not produce until environmental conditions become favorable.

- Some embryos development within an adult organism

- Some organisms protect and nourish their offspring after birth

## Spore

- encased within a protective shell
- can be dormant for years
- in the right conditions it can germinate and start growing

ex. bacteria - anthrax

# Seeds

- A seed contains a plant embryo wrapped in a protective package.
- Bring nutrients to their enviroment
- Some seed like pine cones are not protected and others seeds are protected like apple seeds
- dispersed by animals, wind, decomposing fruit, etc.

# Eggs

- An egg includes a zygote, food, and some outer protective layer
- Some organism's eggs are fertilized internally

ie . birds

- Some organism's eggs are fertilized externally

ie. Fish Frogs

- Eggs are like a self contained environment for the embryo

## Marsupials

- Immature young are born and crawl to the pouch and attach to a nipple
- Continue to grow in the pouch until they are to big and leave the pouch

Example: Kangaroo, koala, opossum

## Placental Mammals

- Young develop in uterus, a placenta develops from the blood vessels of the mother and fetus growing side by side.
- Development tends to be slower & require greater long-term care.

Example: Humans, horse

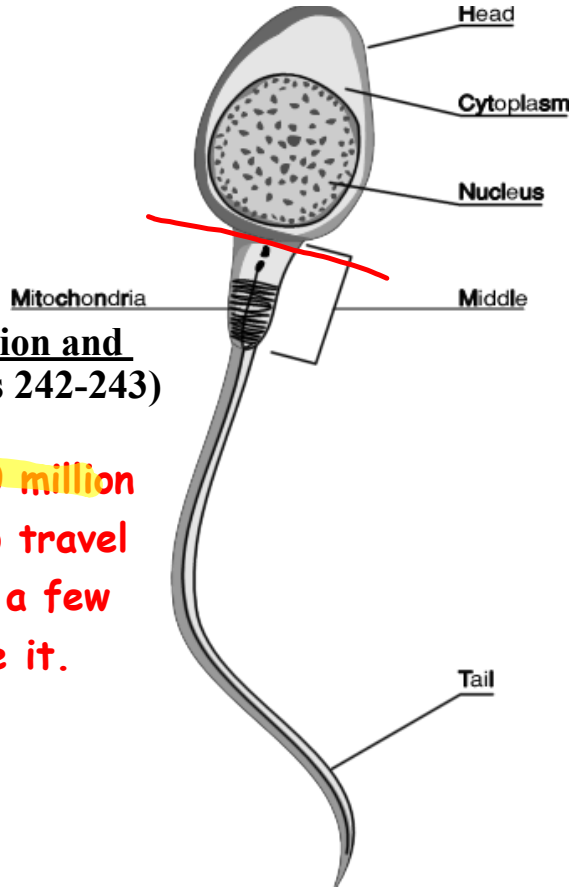
Read page 242-243 and then look at next notes

## Human Conception and Pregnancy (Pages 242-243)

- **Between 150-300 million sperm cells try to travel to the egg. Only a few hundred will make it.**
- **During fertilization (conception) the head of a sperm will penetrate the cell membrane of the egg.**
- **At this point, the nucleus of the sperm and egg combine together. The sperm loses its tail.**
- **Once conception has occurred, the zygote will travel to the uterus and undergo mitosis.**
- **A placenta will soon form which allows nutrients and oxygen to diffuse from blood vessels of the mother to the embryo (zygote becomes an embryo once it has more than 100 cells), while waste diffuses out.**
- **Once a woman is pregnant, she cannot conceive until after birth.**

## The Human Embryo (Pages 250-251)

- **You went from a single cell to a full-grown baby in 280 days.**
- **A fluid filled sac called the amnion develops that insulates the embryo protecting it from infection, dehydration, impact, etc. An umbilical cord also forms. It connects the embryo with the placenta.**
- **Human pregnancy can be divided into three trimesters.**
- **First trimester. *Conception to the third month*. During this stage, the heart has formed, limbs with buds can be seen, part of the brain develops, a tail and gill arches are apparent, and bone will form near the end of the first trimester.**
- **Second trimester. All organs have formed along with hair. Eyelids form.**
- **Third trimester *is from the seventh month until birth*. All organ systems function and the fetus will grow rapidly.**

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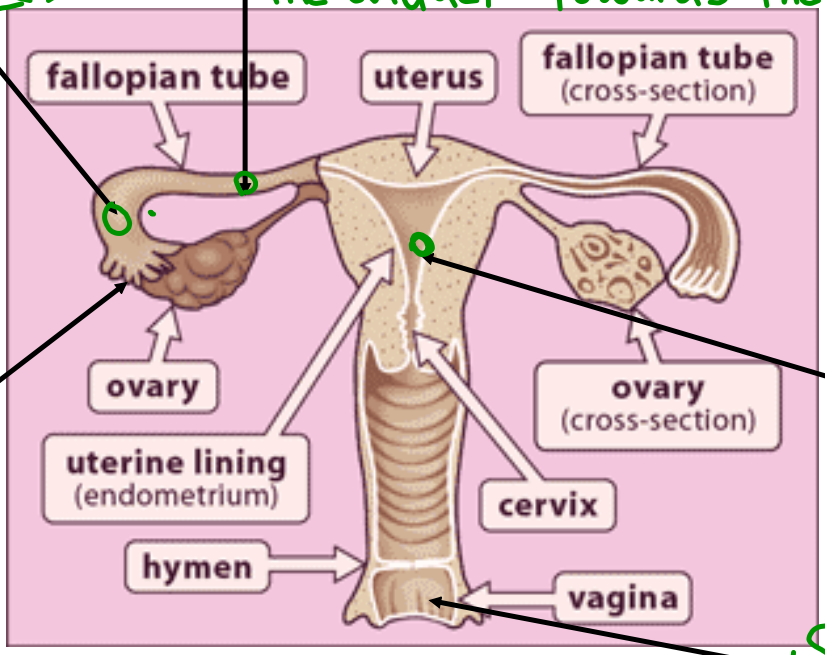


Sperm fertilizes egg

fertilized egg is swept through the oviduct towards the uterus

ovary releases the egg

fertilized egg implants in the wall of endometrium

sperm enter via vagina

- **During fertilization (conception) the head of a sperm will penetrate the cell membrane of the egg.**
- **At this point, the nucleus of the sperm and egg combine together. The sperm loses its tail.**

**Once conception has occurred, the zygote will travel to the uterus and undergo mitosis.**

Classwork/ Homework

***Read page 250 - 251***
***and***
***answer questions 1 to 5***