

1.3 C1 Gametes and Fertilization

January 17, 2023 8:46 AM

Science 9 –Topic 1.3 – Concept 1: Male and female reproductive cells combine to produce a zygote.

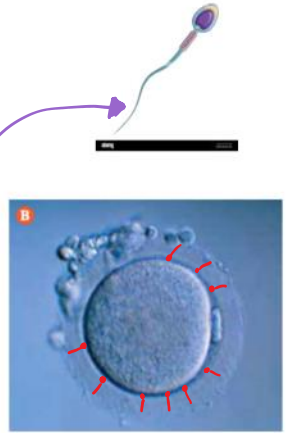
Animals and many other living things reproduce sexually

- Half of an offspring's DNA is from the female parent
- Other half is from the male parent

Sex Cells: Gametes

Male or female reproductive cells; the cells that combine during sexual reproduction

- **Male gamete:** sperm cell produced in testes
 - Sperm cells have a unique look, with their long "tails" or flagella.
- **Female gamete:** egg cell (ovum) produced in ovaries
 - Egg cells are much bigger than sperm cells and lack flagella.
 - What does the presence or absence of flagella on sex cells tell you about their mobility? Sperm cells needs to "swim"!!
egg cell doesn't need to move a lot.

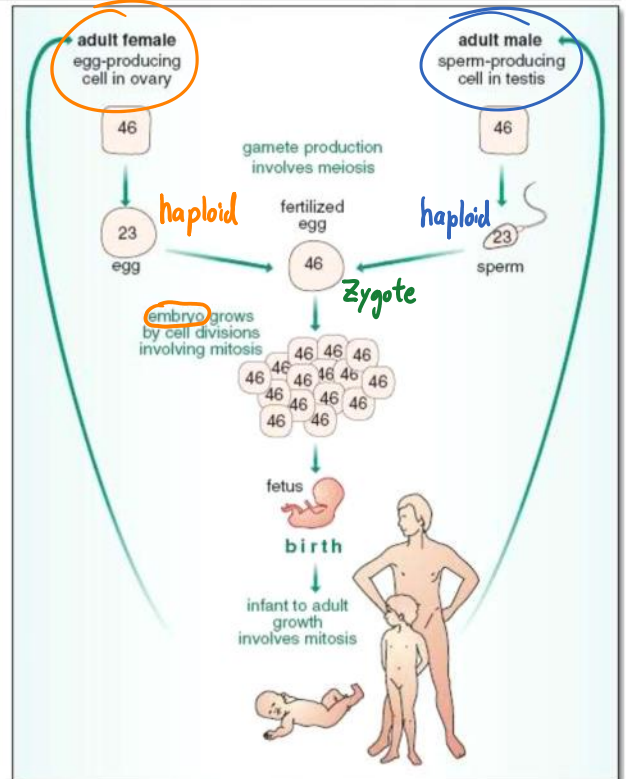
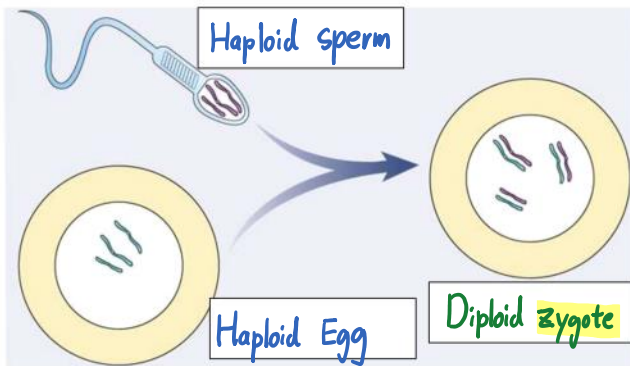


Haploid vs. Diploid

Haploid (n) – Cells with half the chromosomes than their parent.

Diploid (2n) – Cells with a complete set of chromosomes

- Gametes are haploid cells (have half the number of normal chromosomes)
- When they combine in sexual reproduction, they form a zygote which is a diploid cell (have the full number of chromosomes)
 - Body cells are diploid cells (example: Skin cells)



Central event of sexual reproduction:

1. Contact between the gametes (sperm and egg)
2. Sperm and egg (and their genetic information) combine to produce a new single cell that develops into an offspring

Fertilization is when an egg cell is penetrated by a sperm cell, and the haploid genetic information of both male and female gametes combines.

- The Zygote (1st Cell) then undergoes mitosis and cell division and develops into an embryo (many cells).

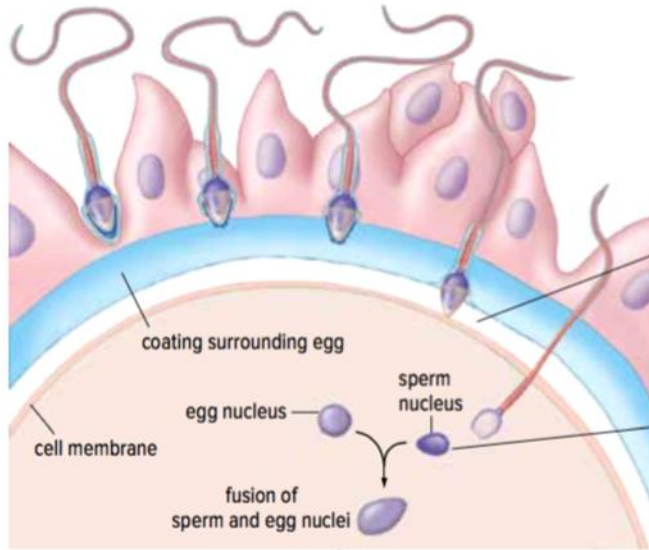


Figure 1.17: When a sperm cell fertilizes an egg cell, the two nuclei fuse and a Zygote forms.

Sperm cells reach a jelly-like coating surrounding the egg cell and release substances that digest a path through the coating. This helps sperm cells get closer to the cell membrane of the egg.

The head of one sperm cell eventually enters the egg cell, where the sperm nucleus fuses with the egg nucleus.

HW

WB P.25