

Sexual Reproduction

TWO PARENTS

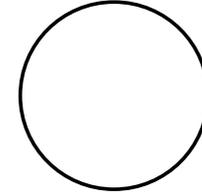
Sexual reproduction requires two parents, and produces offspring that are genetically different from each other, and from either parent.

Variation in the genetic information of a species is called genetic diversity and can increase the chances of survival.

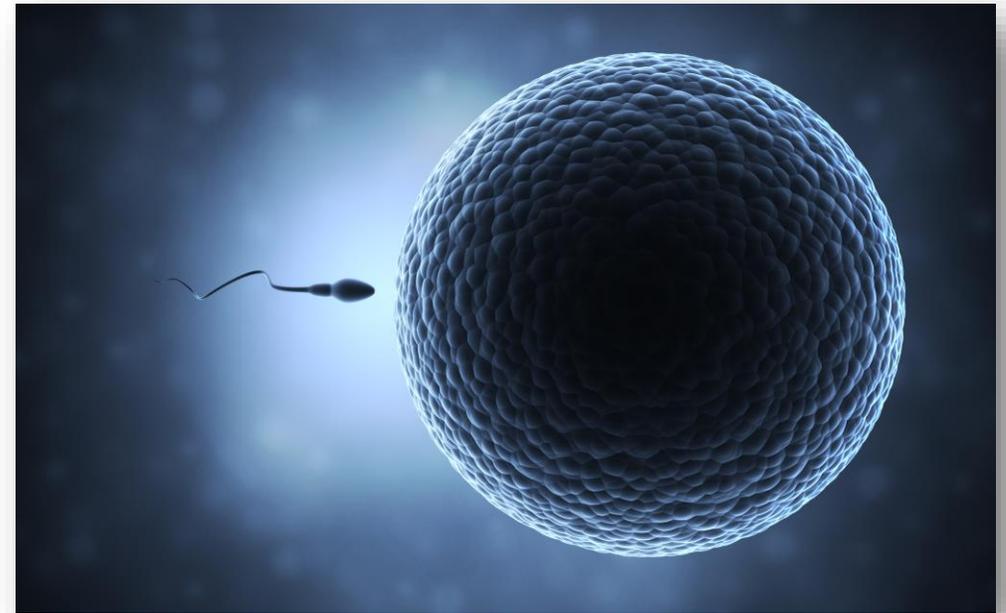


Each parent donates a gamete or sex cell. Gametes are sperm and egg.

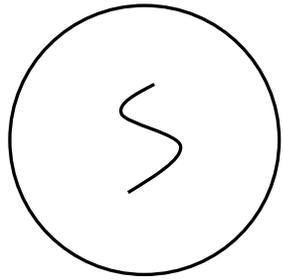
Female provides the egg (ovum)



Male provides the sperm



Fertilization occurs when the egg and sperm fuse and forms a zygote.



Egg

N

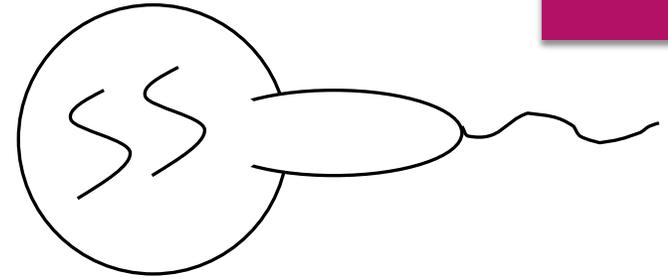


sperm

N



fertilization

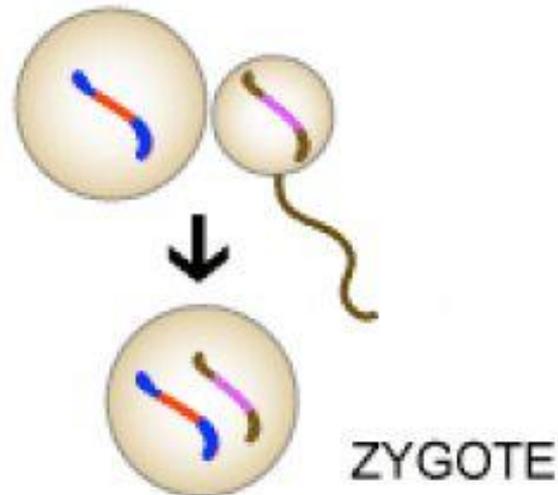


zygote

2N

Haploid

Diploid



Sperm and eggs have half the number of chromosomes of the parents.

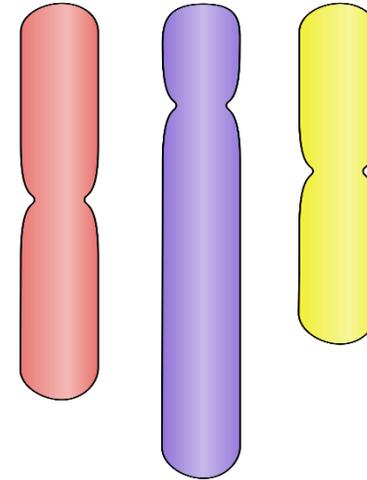
Haploid equals half. Half of 46 is 23.

Humans have 46 chromosomes, 23 PAIRS of chromosomes.

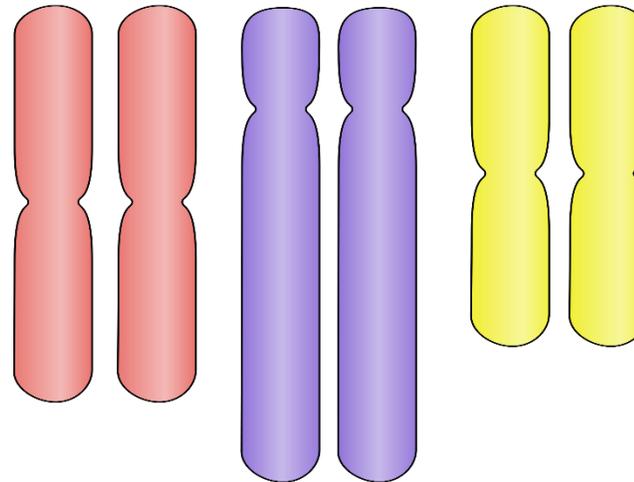
The human diploid number ($2n$) is 46.
All cells in your body are diploid.

The human haploid number (n) is 23.
Only sperm and egg are haploid.

Haploid (N)

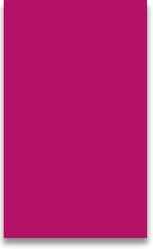


Diploid (2N)



Hermaphrodites have both male and female reproductive parts but cannot mate with themselves. This is seen in worms, slugs, and planaria.





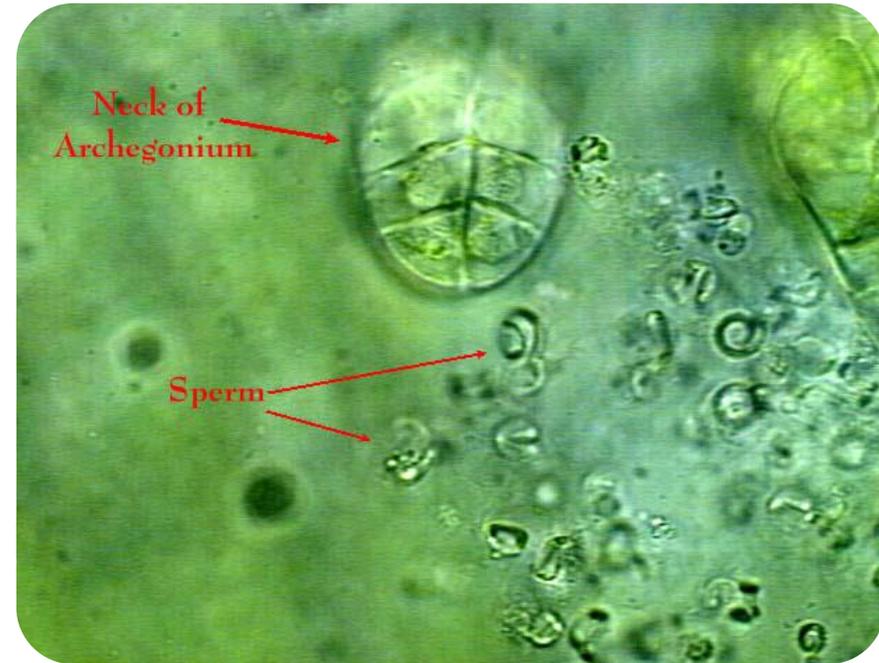
Sexual Reproduction

Sexual reproduction is the process that brings male and female gametes together to form a new organism.

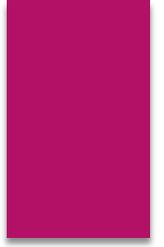
There are two general methods of fertilization:

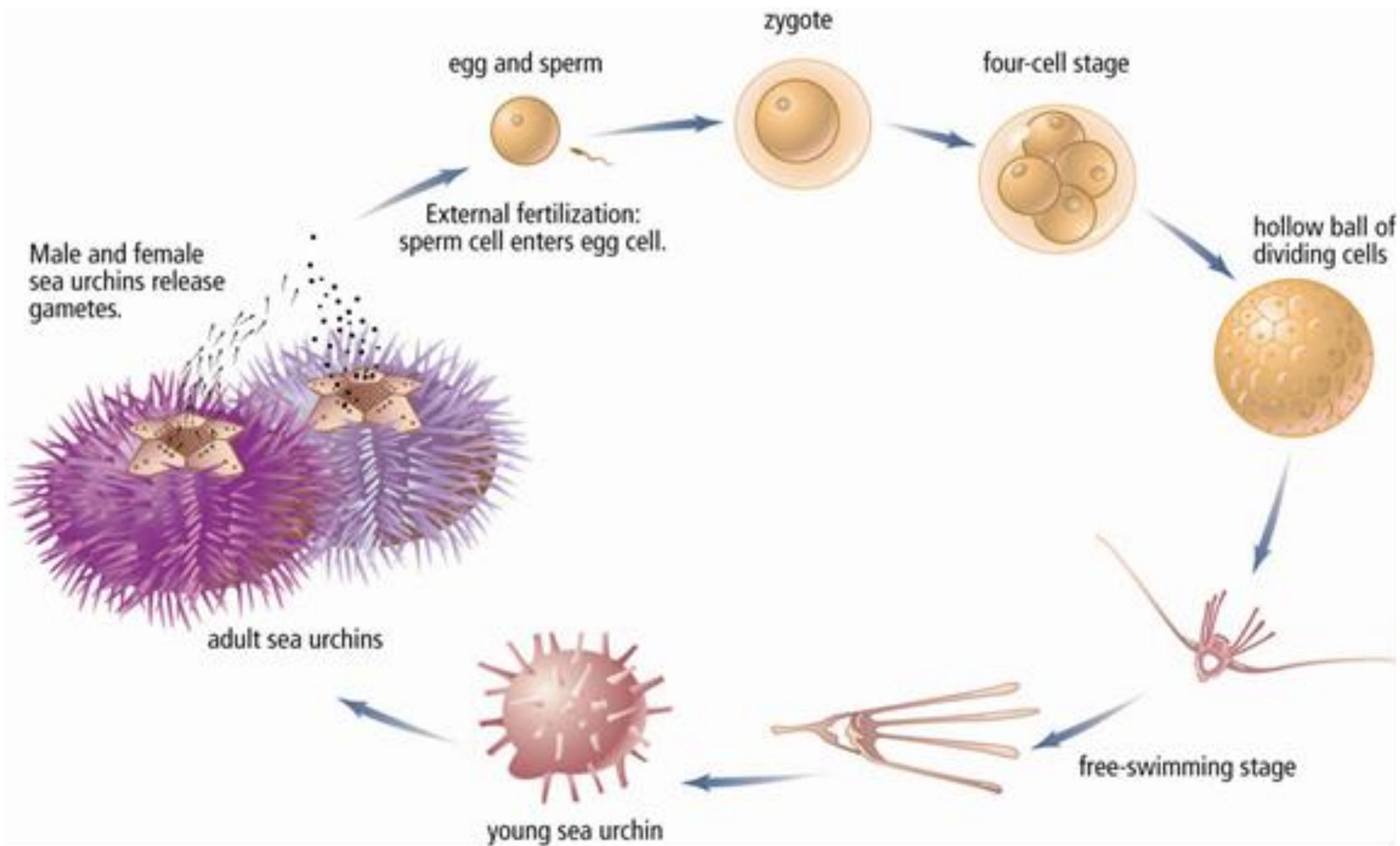
External Fertilization

- Sperm and egg cells unite outside the bodies of the parents.
- Common among animals that live in the water.
- Also occurs in plants such as mosses and ferns.



- Advantages
 - very little energy is required to find a mate.
 - large number of offspring are produced at one time.
 - Disadvantages
 - many gametes do not survive to be fertilized.
- embryos and zygotes are unprotected.





Internal Fertilization

- Sperm cells are deposited inside the female to meet an egg cell.
- Common among land animals and whales.
- Advantages
 - more offspring survive (protected by parent).
- Disadvantages
 - Some mating behaviours are complex and require a lot of energy.
 - Fewer zygotes are formed.



In plants, internal fertilization is called pollination.

- Pollination is the transfer of male gametes in structures called pollen.
- Pollen is transferred by creatures called pollinators.
(Eg. Bees, bats, other insects, etc...)
- Plants without flowers, or without petals, release pollen into the air to be carried by the wind.

