Standard: Students will analyze how biological traits are passed on to successive generations.

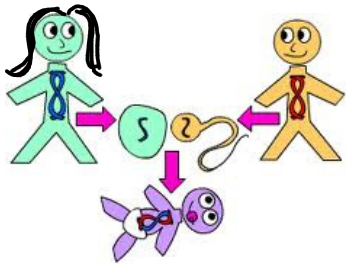
Element: Compare the advantages of sexual reproduction and asexual reproduction in different situations.

EQ: What are the advantages and disadvantages of sexual reproduction?

Most eukaryotic organisms reproduce sexually.

In ***sexual reproduction***, genetic information is combined from two different parents in order to produce offspring.

This is how humans reproduce. We get one set of genes from our mother and another set of genes from our father.

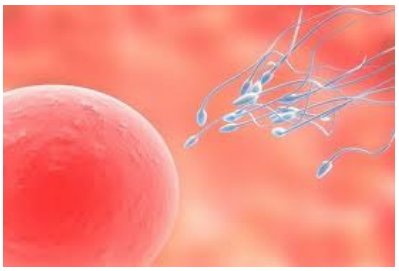


When organisms reproduce sexually, they use special reproductive cells called ***gametes***.

The gamete from one parent is combined with the gamete from the other parent, which forms a ***zygote***.

The combination of gametes to form a zygote is called ***fertilization***.

Fertilization occurs in humans when a sperm cell combines with an egg cell.



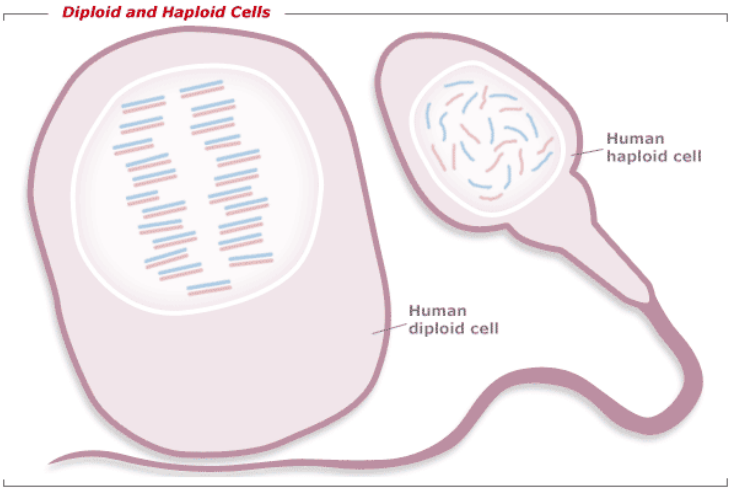
What exactly is a gamete?

A gamete is a special reproductive cell that only contains one set of chromosomes (remember you have two sets of chromosomes in most of your cells).

A cell that only has one set of chromosomes is said to be ***haploid***.

This means that your gametes (sperm and egg cells in humans) are all haploid cells.

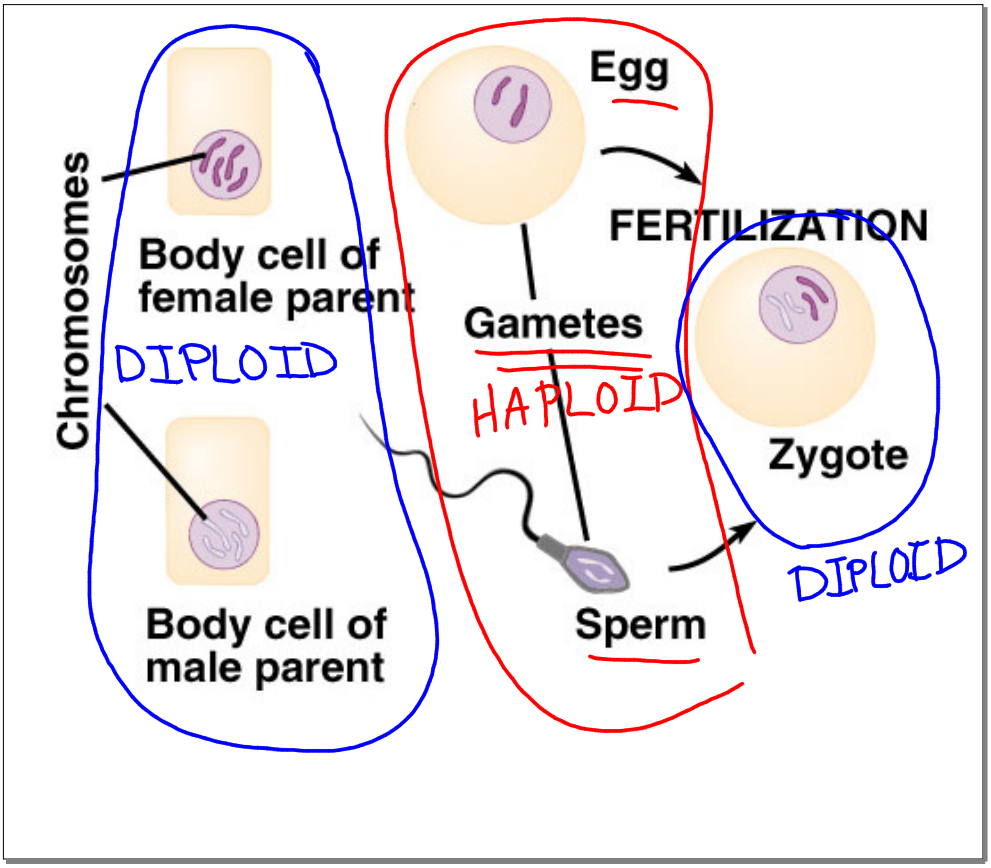
The rest of your body cells have ***two*** sets of chromosomes. These cells are ***diploid***.



Why do your gametes have to be haploid?

Remember that in sexual reproduction, the offspring gets half of its genes from the mother and the other half from the father.

If your gametes weren't haploid, you would get ***all*** of your mother's genes AND ***all*** of your father's. If this happened, each generation of offspring would have twice as many genes as the parents!



This sounds more complicated than asexual reproduction...

Well, it is!!! It takes a lot of energy and resources for an organism to find a mate and reproduce sexually.

This is a ***disadvantage*** of sexual reproduction, yet many eukaryotic organisms reproduce sexually anyway.

So what's the advantage of sexual reproduction?

GENETIC VARIATION

A species is biologically driven to survive and reproduce. If all the offspring are genetically different, they will have slightly different traits.

This means that even if the environment changes, chances are good that at least a few offspring will be able to survive.