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B12. Inheritance

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B12.01 Chromosomes

Chromosomes: A thread like structure of DNA, carrying genetic information in the form of genes

- In the nucleus of every cell there are number of long threads
- Each contains one very long molecule of DNA
 - DNA molecule carries a code that instructs the cell about which kinds of proteins it should make

Gene: a part of a DNA molecule coding for one protein

- It determines all sorts of things about me
- In 46 chromosomes, each has many genes

B12.02 Cell division

Haploid nucleus: a nucleus containing a single set of unpaired chromosomes(egg & sperm)

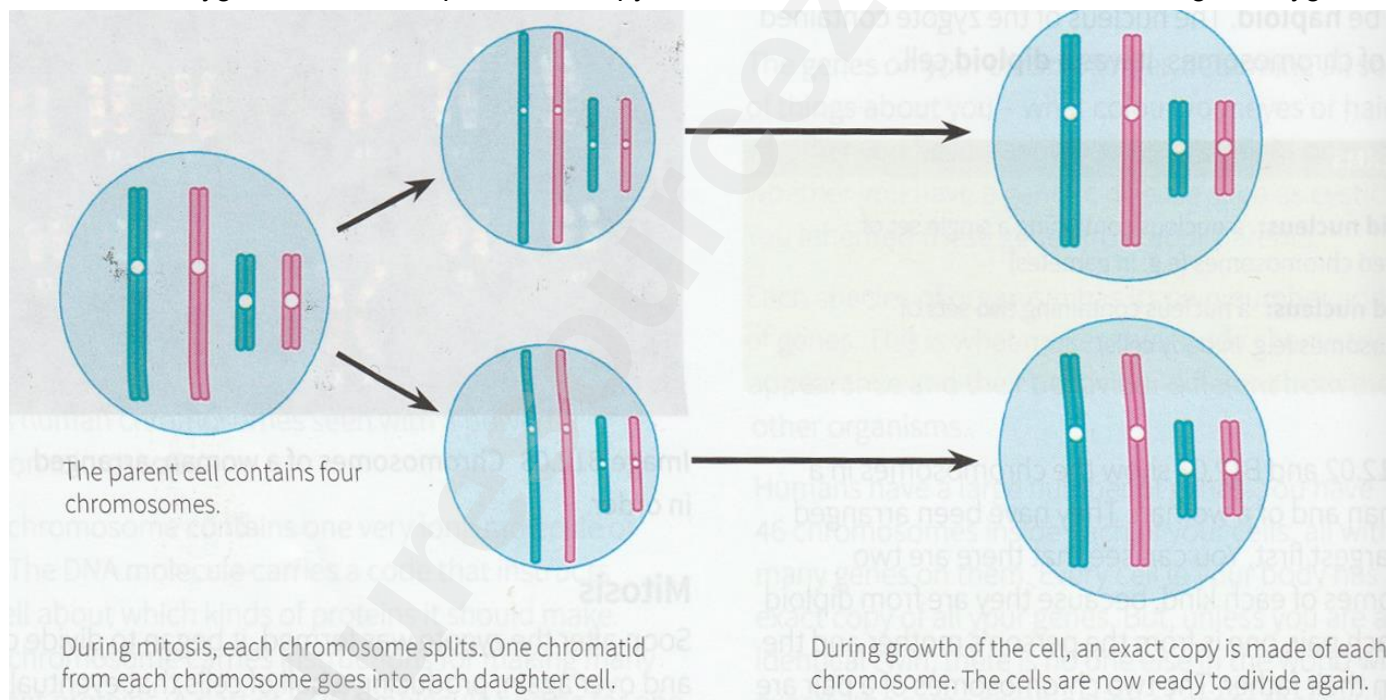
Diploid nucleus: a nucleus containing two sets of chromosomes (body cells)

Homologous chromosomes: two chromosomes of a pair

1. Mitosis

Mitosis: nuclear division giving rise to genetically identical cells

- Used when growing, repairing the damaged part of its body, for asexual reproduction
- When zygote is divided, it provides a copy of the two sets of chromosomes in the original zygote

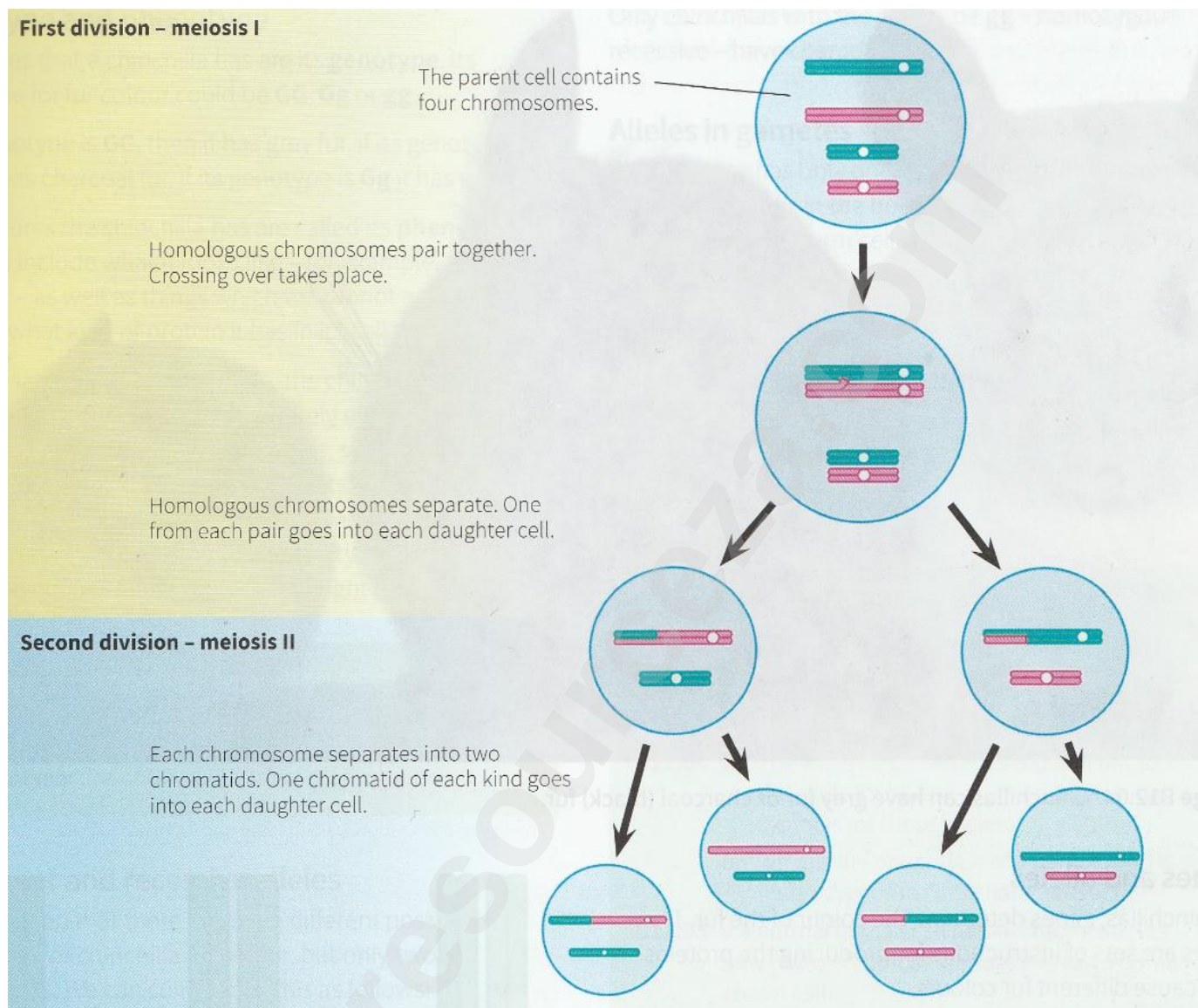


2. Meiosis

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Meiosis- reduction division in which the chromosome number is halved from diploid to haploid, resulting in genetically different cells

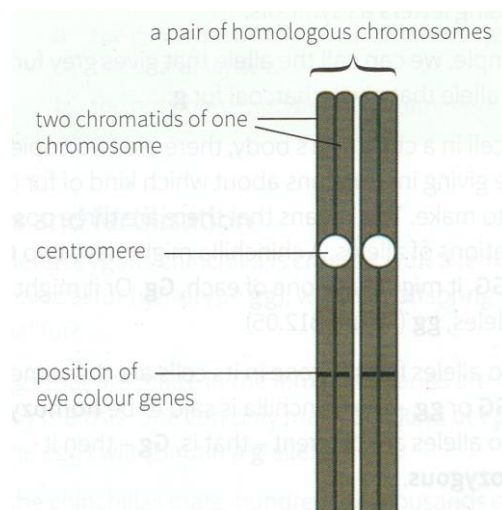
- It is used when the gametes are formed by the division
- one from mother, one from father - new cells get a various combinations
- produces genetic variation



B12.03 Inheritance

inheritance: the transmission of genetic information from generation to generation

- Each chromosome in pair contains genes for the same characteristic in same positions
- true for all animals and most plants



1. Genes and alleles Downloaded from eduresourceza.com

allele: a different form of genes

- e.g) GG, Gg, gg

homozygous: have two identical alleles of a particular gene e.g) GG

heterozygous: have different alleles of a particular gene e.g) Gg

2. Genotype and phenotype

genotype: the genetic makeup of an organism in terms of alleles present

phenotype: the observable features of an organism

3. Dominant and recessive alleles

dominant: an allele that is expressed if it is present

recessive: an allele that is only expressed when there is no dominant allele of the gene present

carrier: heterozygous one - it is an organism that has inherited a recessive allele but usually does not display

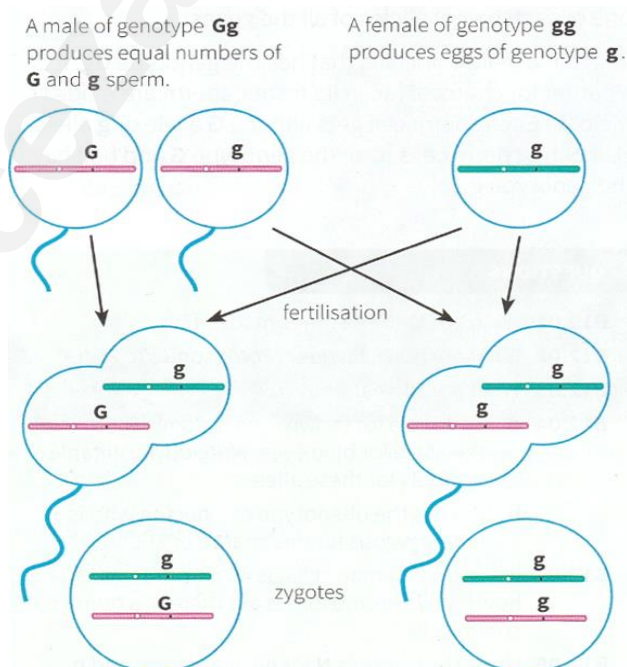
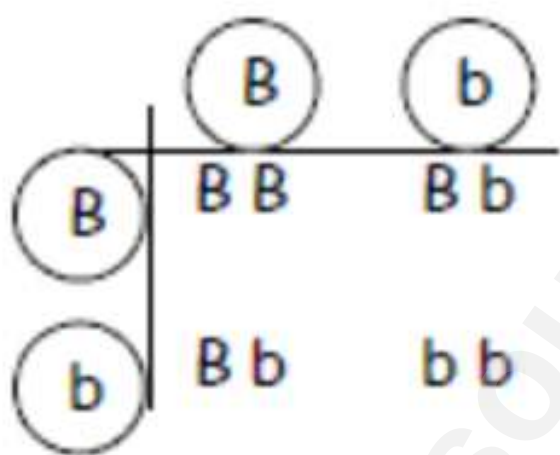
4. Alleles in gametes

- Each gamete has only one kind of chromosome instead of two, as in the body cells
- 23 and 23 each - only carry one of each pair of alleles of all the genes

5. Genetic diagrams

- stand way of writing out all of genetic information

↓ **monohybrid inheritance:** illustration of the inheritance of one pair only of contrasting characteristics



6. Pure breeding

pure breeding: always homozygous for the pure-breeding characteristic

- e.g) strain of brown rabbits + strain of brown rabbits => constant offsprings with brown strain

7. Sex determination

	X from egg
X from sperm	XX - female
Y from sperm	XY - male