

OCR (B) Biology A-level

3.1.2 - Meiosis, growth and development

Flashcards

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What is meiosis?



What is meiosis?

A form of cell division that produces four genetically different haploid cells (cells with half the number of chromosomes found in the parent cell) known as gametes.



What is the significance of meiosis in reproduction?



What is the significance of meiosis in reproduction?

Gametes must be haploid so that when they combine during fertilisation, the full number of chromosomes is present within the zygote that forms. It also creates genetic variation.



Draw diagrams to illustrate the stages of meiosis I.

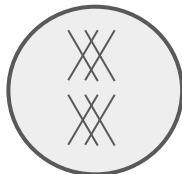


Draw diagrams to illustrate the stages of meiosis I.

Prophase I



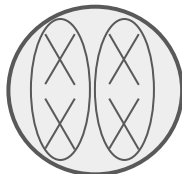
Metaphase I



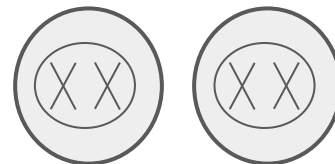
Anaphase I



Telophase I



Cytokinesis →

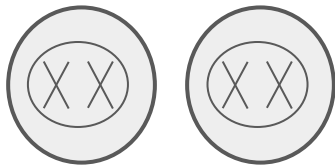


Draw diagrams to illustrate the stages of meiosis II.

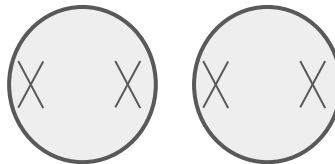


Draw diagrams to illustrate the stages of meiosis II.

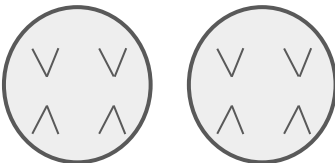
Prophase II



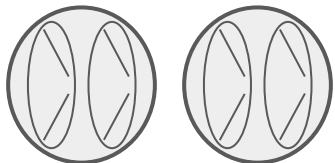
Metaphase II



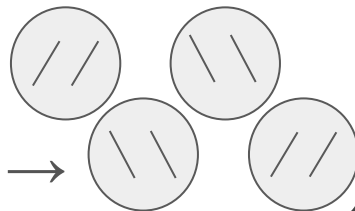
Anaphase II



Telophase II



Cytokinesis →



How does meiosis produce genetic variation?



How does meiosis produce genetic variation?

- Crossing over (chiasma formation) of...
- Independent assortment of...

Chromosomes (metaphase I) and
chromatids (metaphase II)



Give details of pre-conceptual antenatal care in the UK.



Give details of pre-conceptual antenatal care in the UK.

Advice, monitoring health, preparing for pregnancy, improving diet, tracking ovulation, quitting smoking and drinking.



Give details of post-conceptual antenatal care in the UK.



Give details of post-conceptual antenatal care in the UK.

Changing diet (taking folic acid, iron, calcium, vitamins C and D), avoiding teratogenic substances, not drinking alcohol or smoking.



Explain why a pregnant woman should alter her diet.



Explain why a pregnant woman should alter her diet.

- Protein = promotes growth
- Calcium = maintains bone health
- Iron = prevents anaemia
- Vitamin C = protection and repair of cells
- Folic acid = prevents neural tube defects
- Vitamin A = avoid excessive amounts



Explain why a pregnant woman must cease drinking alcohol and smoking.



Explain why a pregnant woman must cease drinking alcohol and smoking.

- Alcohol = associated with birth defects, miscarriage, fetal alcohol syndrome.
- Smoking = associated with low birth weights, sudden infant death syndrome, asthma.



How can ultrasound be used to measure fetal growth?



How can ultrasound be used to measure fetal growth?

Ultrasound used to measure...

- Diameter of the head - biparietal
- Length of the back - crown to rump



Name the techniques used for assessing fetal development.



Name the techniques used for assessing fetal development.

- Foetal ultrasonography
- Amniocentesis
- Chorionic villus sampling (CVS)



Give advantages and disadvantages of fetal ultrasonography.



Give advantages and disadvantages of fetal ultrasonography.

- + Uninvasive, used for sex determination, can check for various conditions.
- Not conclusive, must be used alongside other data.



Give advantages and disadvantages of amniocentesis.



Give advantages and disadvantages of amniocentesis.

- + More conclusive, identifies a wider range of disorders that are not visible on a sonogram.
- Invasive, risk of miscarriage or infection, performed later in pregnancy.



Give advantages and disadvantages of chorionic villus sampling.



Give advantages and disadvantages of chorionic villus sampling.

- + Most conclusive, can be performed earlier in pregnancy meaning a termination would be safer.
- Invasive, highest risk of miscarriage.



What is karyotyping?



What is karyotyping?

The determination of which chromosomes an individual possesses. Used to identify the sex of a fetus, and to diagnose chromosomal mutations.



Briefly describe some chromosomal mutations.



Briefly describe some chromosomal mutations.

- Down's syndrome= extra chromosome 21. Causes facial deformations and slow development.
- Turner's syndrome= lacking an X chromosome, only occurs in females.
- Klinefelter's syndrome= one extra X chromosome, only occurs in males. Causes fertility problems and reduced muscle strength.

