

Biology

6. Inheritance, Variation and Evolution

Revisiting Booklet

Name:

Reproduction

Name the process by which body cells divide:

What kind of cells are produced this way?

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Name the process by which sex cells divide:

What kind of cells are produced this way?

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What happens to gametes when they meet?

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Name the gametes found in animals.

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Name the gametes found in plants.

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During sexual reproduction there is _____ of genetic information which

leads to _____ in the offspring.

During asexual reproduction, there is only _____ parent and no _____ of gametes. Therefore there is no _____ of genetic information so all offspring are _____ (because they are genetically _____).

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What happens to the number of chromosomes in the gametes after meiosis?

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How many chromosomes are there in human body cells:

State the female sex chromosomes:

State the male sex chromosomes:

Outline the process of meiosis.

1.
2.
3.

As an embryo grows, _____ is used. Cells also _____ at this point.

Outline the structure of DNA, you can use a diagram to help if you wish.

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What is a gene?

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What is a genome?

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Why is studying the human genome important?

1.
2.
3.

What is a chromosome?

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What is an allele?

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What is a dominant allele?

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What is a recessive allele?

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What meant by the term homozygous?

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What meant by the term heterozygous?

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What meant by the term genotype?

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What meant by the term phenotype?

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Most characteristics are controlled by more than one gene interacting.

Name two characteristics that are controlled by a single gene (even if this single gene has different alleles).

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Adam has brown eyes, he is heterozygous for this trait.

Eve has blue eyes, she is homozygous for this trait.

Draw a punnett square to explain the probability of Adam and Eve having blue eyed offspring.

What is polydactyly and is it caused by a dominant or recessive allele?

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What is cystic fibrosis and is it caused by a dominant or recessive allele?

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How can genetic disorders be discovered?

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What are the economic and ethical implications of your answer above?

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Variation

Give an example of when the genome of an organism and its interaction with the environment influenced the development of the phenotype in the organism.

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Differences in the characteristics of individuals in a population is called variation. These may be due to:

1.
2.
3.

How does most variation within a population arise?

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How often do these events cause a change in the phenotype?

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If a new phenotype does arise, and is suited to the environment, what can happen?

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What is evolution?

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According to the theory of evolution by natural selection, what did all life start as?

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Define the term species

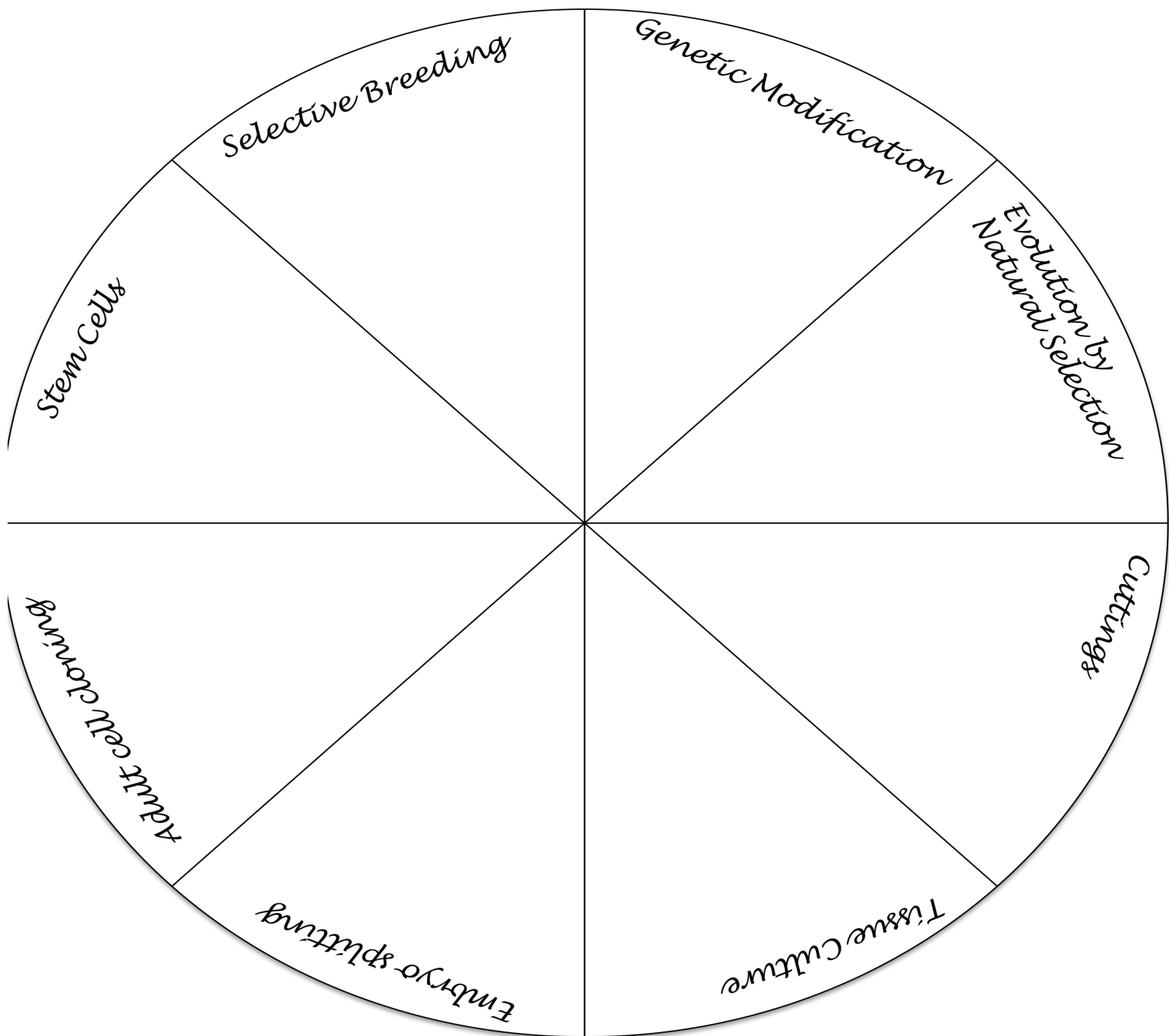
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If two populations can no longer do the above, what has occurred?

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Complete the summary task to outline the differences between how humans have impacted species:



What are the main concerns regarding GM crops?

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What is the evidence for evolution?

1.
2.

Why is Darwin's theory of evolution by natural selection now widely accepted?

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What is a fossil?

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How are fossils formed?

1.
2.
3.

What are the big problems with the fossil record?

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Define extinction

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State six factors that might cause extinction.

1.
2.
3.
4.
5.
6.

Why are bacteria able to evolve rapidly?

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Outline how antibiotic resistance occurs, and link it to evolution by natural selection.

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Name a bacteria which is resistant to all antibiotics.

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State three ways to reduce the rate of development of antibiotic resistant bacteria.

1.
2.
3.

Why are we worried about the development of antibiotic resistance? (Hint, link to development of new drugs)

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Classification

Define:

Classification

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Taxonomy

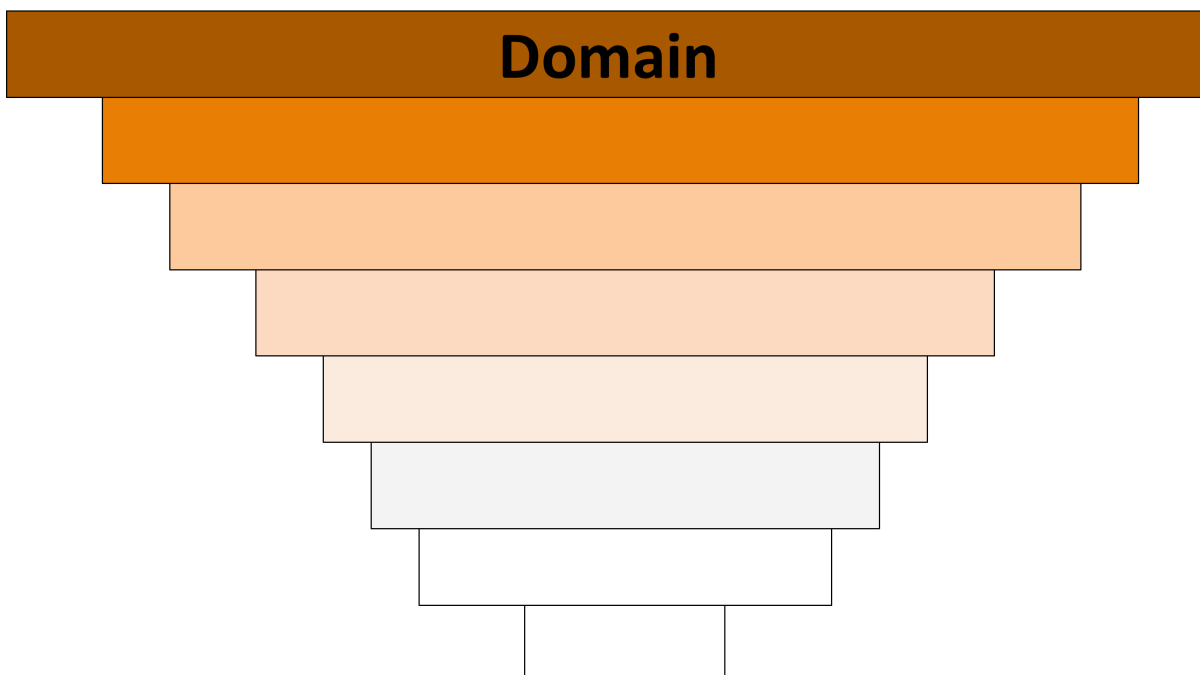
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How does the system developed by Carl Linnaeus arrange species?

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Linnaeus's hierarchy comprises the following taxa. Label them.



How has our classification system changed with new developments? (Hint, consider the work of Carl Woese and his "three-domain" system)

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