

STUDY GUIDE

Before the video

Guess the word

Have the students try to explain the following terms, first individually and then in pairs:

Heredity
DNA
Punnett square
Zygote
Trait
Gene
Mutation
Chromosome
Breeding
Clone

Discuss your explanations in the group and write down your conclusions on the classroom's whiteboard/digital tool, to go through them after the video.

Discussion questions

It is important that the teacher/leader prepares the exercises for the video and considers how to handle the discussion and the answers. Feel free to divide the class into smaller groups and have the participants write down their own answers first. You are welcome to adapt the material and distribute the questions among the groups. The following questions are divided up according to the chapters.

Introduction

What is genetics?

Gregor Mendel—father of genetics

Who was Gregor Mendel?

What did he want to achieve with his experiments?

What is a Punnett square?

Explain how Mendel did his experiments with yellow and green peas and what his results were.

Genes and chromosomes

What are our genes made of?

What is a chromosome?

About how many genes does a human have?

What is another name for these genes?

How do you get your genes?

What is a zygote?

What is cell division?

Genes—dominant and recessive

How many pairs of chromosomes are there in a cell?

What is a dominant trait?

What is a recessive trait?

How do we indicate dominant and recessive traits?

In the video, we saw an example of how children can inherit blue eyes. How was the process described? Discuss together.

The video says that real life is usually more complex when it comes to eye color. What does that mean?

How sex is inherited

There are two different sex chromosomes, what are they?

How do the chromosome pairs for sex differ between men and women?

What determines the sex of a zygote?

Genetic changes

What is a mutation and how do they occur?

How is a new cell formed?

Are mutations hereditary?

Breeding

What is breeding?

What does artificial selection mean?

How is cross-breeding done?

How does insemination occur?

What is genetic engineering?

What does genetically modified organism, GMO, mean?

How is insulin manufactured?

Clones

How do single-cell organisms reproduce?

Some plants spread via runners from their roots. What does that mean?

What are identical twins?

How are identical twins created?

Sustainable development

What positive things has genetic technology created in society? Give some examples.

What negative things can genetic technology do? Give some examples.

The video says that genetic technology is about the issue of ethics and morals. What do you think that means?

What does chromosomal aberration mean?

Summary

What did you think of the video?

How would you summarize what you learned from watching the video?

After the video

Guess the word

Go through the words under “Guess the word,” which you wrote before seeing the video, and see if you now understand the meanings of the terms, or if you need to investigate further.

Debate

Divide the class into two groups. One group is for genetic technology and one group is against it. Have the groups learn more information about genetic technology and prepare arguments for their position. They can search for information on the Internet, in books, magazines and films. Then have the two groups debate each other. Afterwards, you might want to discuss as a group what you think about the topic and how it should or should not be used.

Further study

Divide the class into groups of three or four students. Have the groups choose a topic in genetics that they want to learn more about. For example:

- Gregor Mendel
- DNA
- Cross-breeding
- Mutations
- IVF
- Twins
- GMOs
- Heredity

They can search for information on the Internet, in books, magazines and films. Have the groups present their work to the rest of the class in a digital presentation. After each presentation, it's a good idea to have the class discuss the subject together and ask follow-up questions.