



DNA Detectives: The Hunt for Bigfoot KS3

Duration: 1.5 hours, max capacity: 30 students

Bigfoot is reputed to be an ape-like creature that inhabits the forests of the Pacific Northwest USA. Using animal hair, photos, and tracks from the location of a recent sighting we apply the techniques of microscopy, gel electrophoresis, and DNA fingerprinting and weigh up the evidence!

Key Words:

DNA, Cells, Microscopy, Detection, Forensics, Crime, Evidence, Gel electrophoresis, Laboratory, Enzymes, Applied science, Reliability

Learning objectives

KS3

Understand the role of reliable evidence in a scientific investigation.

KS3 & KS4

Gain an understanding of DNA fingerprinting as a tool to differentiate between species.

Understand how restriction enzymes are used to cut DNA into fragments.

Develop micro-pipetting and gel loading skills.

Obtain practical experience of running an electrophoresis gel analysis and interpret results.

Gain an appreciation of the reliability of DNA fingerprinting, including contamination risk.

Learn about modern genetic technologies and DNA forensic science.

Develop problem solving and interpretative skills.

Develop team working skills to solve a problem.

KS4

Learn about the historical context of DNA and DNA fingerprinting technique.

Recognise the importance of a control in a scientific investigation.

Content

Students are introduced to the mystery of Bigfoot.

Students examine evidence from the Pacific Northwest to discover if they have scientific proof of Bigfoot.

Consider the relevance of modern genetics for the identification of a new animal species.

Use micropipettes to measure small volumes of liquid and work with real, digested DNA samples.

Load, run, and analyse electrophoresis gels.

Work in pairs to complete a gel electrophoresis activity.

Consider the significance of contamination and how this risk might be minimized.

Use DNA fingerprinting to draw conclusions based on evidence, and to attempt to solve the mystery of Bigfoot.

Curriculum Links:

KS3

Working scientifically

Ask questions and develop a line of enquiry based on observations of the real world.

Make predictions using scientific knowledge and understanding.

Use appropriate techniques, apparatus, and materials during laboratory work.

Biology

Cells as the fundamental unit of living organisms.

The function of the cell nucleus.

The variation between species and between individuals of the same species.

we the curious Workshop



KS4

Working scientifically

Appreciate the power and limitations of science

Explain everyday technological applications of science

Use scientific theories and explanations to develop hypothesis

Apply a knowledge of a range of techniques

Carry out experiments appropriately having due regard to the correct manipulation of apparatus

Make and record observations and measurements using a range of apparatus and methods

Potential Hazards and accessibility

Students will work in a laboratory environment with TAE buffer and gel electrophoresis tanks.