

DNA Detectives



2 hours ○ **£4.50 per student** ○ **Min 12 - Max 30 per workshop**

DNA Detectives is an engaging, interactive introduction to the world of our genes and modern genetic technologies. Set within @Bristol lab facilities, we delve into the thrilling world of forensic science. We examine the theory, techniques and applications of modern DNA technologies and provide students with the opportunity to benefit from hands-on activities with micropipettes and electrophoresis gels. After exploring the ethics of how we should use these new technologies, we provide our budding scientists with a crime to solve, employing their new-found skills in DNA fingerprinting.

Learning objectives

- Build on an understanding of what DNA is and how it is structured
- Gain an understanding of DNA fingerprinting as a tool to differentiate between individuals
- Obtain practical experience of running an electrophoresis gel analysis
- Gain an appreciation of the caveats to using DNA fingerprinting, including contamination risk and multiple matches
- Develop debating skills
- Develop problem solving skills

Workshop content - students will:

- Work in pairs to develop a working knowledge of DNA analysis
- Learn how to pour, load, run and analyse electrophoresis gels
- Develop practical skills in using micropipettes to measure small volumes of liquid
- Consider contamination risk and how this could be minimised
- Calculate a multiple match probability
- Participate in an ethical debate
- Attempt to solve a crime using their new skills

Curriculum/Syllabi links from 2011

AQA

GCSE Science A/Biology

Unit 1 Biology: B1.7.1 Why organisms are different?

GCSE Science B

Unit 2: 3.4.1.3 Human inheritance and genetic disorders

GCSE Additional Applied Science

Unit 1: 3.3.6 The use of science in analysis and detection

GCSE Additional Science

B2.7 Cell division and inheritance

OCR

GCSE 21st Century Science/Biology/Additional:

B1 You and your genes: B1.1

B5 Growth and development: B5.3

Gateway GCSE Science/Biology:

B1 Understanding ourselves: B1h

B3 Living and growing: B3a and B3b

Edexcel

GCSE Science

Unit B1: Topic 1 Classification, variation and inheritance

GCSE Additional Science/Biology

Unit B2 Topic 1: The building blocks of life

Edexcel BTEC

Introductory—Level 1

Unit 12 Investigating crime scenes

Firsts—Level 2

Unit 13 Investigating a crime scene

Unit 20 Biotechnology procedures and applications

Nationals—Level 3

Unit 18 Genetics and genetic engineering

Unit 32 Forensic evidence collection and analysis

Picture gallery



Students learn how to pour, load, run and analyse electrophoresis gels

“A great chance to handle complex equipment and improve practical skills in preparation for A-level.”

Teresa King, Teacher, Pate's Grammar School

“Everything was placed into context. Pupils were able to do experiments that they can't do at school.”

Cheryl Dean, Teacher