**Primary Schools:  
Discovering DNA**

Approximate timing: 1 hour

Required resources: PowerPoint presentation, recipe sheet, strawberries, washing-up liquid, water, salt, beakers, funnel, Pasteur pipettes, coffee filters, alcohol, ice, lab coat, goggles, gloves

Summary: This lesson will introduce students to what DNA is, why we want to know about it and includes an experiment extracting DNA from strawberries.

**The lesson supports:**

*Primary Curriculum – working scientifically*

Pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

They should use simple measurements and equipment to gather data, carry out simple tests, record simple data, and talk about what they have found out and how they found it out. With help, they should record and communicate their findings in a range of ways and begin to use simple scientific language

*AQA GCSE Biology*

4.6.1.4 DNA and the genome

4.6.1.5 DNA structure (biology only)

4.6.2 Variation and evolution

4.6.2.4 Genetic engineering

*EDEXCEL GCSE Biology*

3.4 Describe DNA as a polymer

3.5 Describe the genome as the entire DNA of an organism and a gene as a section of a DNA molecule that codes for a specific protein

3.13 Explain the term: chromosome

*OCR GCSE Biology*

B1.1 What is the genome and what does it do?

B1.2 How is genetic information inherited?

B1.3 How can and should gene technology be used?

Links to Babraham Institute research themes:

<https://www.babraham.ac.uk/our-research/epigenetics>

|  |  |
| --- | --- |
| **Learning outcomes** | |
| All students will: | Carry out an experiment scientifically |
| Most students will: | Explain what DNA is |
| Some students will: | Describe what DNA does, where it was discovered, and why scientists research it |
| Key word/s | DNA, experiment, Watson, Crick, Franklin |

|  |  |
| --- | --- |
| **Teaching notes** | **Student learning activities** |
| **Starter** (5 mins)  Identify students’ existing knowledge  Teacher asking questions to students individually or in groups:   * Who can tell me something about DNA?   Refer to fact sheet for more questions.  Can split into table discussions where students are shy to answer in front of whole class. Think-pair-share & talking partners. | Slide(s) 1  Student actions  Answer questions about DNA |
| **Development** (15 mins)  Teacher notes  Go over slide content & fact sheet prior to lesson   * Add picture of yourself/famous person for slide 11   Presentation designed in question / answer format: ask questions before showing the answer to help with engagement. | Slide(s) 2-13  Student actions  Listen and answer questions to gauge and add to their existing knowledge around DNA, what it is, what it does etc. |
| **Principal Activity** (30-40 mins)  Teacher notes:   * See recipe sheet for instructions   Ensure that you are clear with the students about the risks of alcohol (poisonous, flammable, dries skin). Do not consume materials (detergent etc.), and do not touch face/mouth during experiment, be careful to avoid splashes & spills. Refer to CLEAPSS safety document and local health and safety policies | Slide(s) 14-15  Student actions  Work in groups to extract DNA from a strawberry. Do not touch face/mouth during experiment; be careful to avoid splashes & spills.  Tidy up afterwards, wash hands, and clean tables. |
| Plenary (5 mins)  Plenary questions are linked to initial learning outcomes | Students answer question(s) on summary slide XX to assess learning.   * What is DNA? * What does it look like? * Who discovered it? * Where is it?   Who has DNA? |
| **Homework/extension activities**  Suggested area of research or follow-up activity | [DNA origami](https://www.yourgenome.org/activities/origami-dna)  Making DNA from sweets  Making your Mark resource  Epigenetics model challenge |