DNA

Download the teacher notes, student workbook and PowerPoint that accompany this resource at rsc.li/3RDNTaW.

Read our health & safety guidance, available from rsc.li/3IAmFA0, and carry out a risk assessment before running any live practical.

The safety equipment suggested is in line with CLEAPSS requirements. For non-hazardous substances, wearing lab coats can help to protect clothes. The safety rules might be different where you live so it is worth checking local and school guidance.

The composition of the extraction solutions used in the demonstration and activity may vary from the quantities described here depending on the detergent used. It is advisable to try out the extraction solution made prior to the session to ensure success.

Acknowledgements

This resource was originally developed by the University of Reading to support outreach work delivered as part of the Chemistry for All project.

To find out more about the project, and get more resources to help widen participation, visit our Outreach resources hub: rsc.li/3CJX7M3.

This list assumes a class of 30 learners working individually. Halve the amounts if learners are working in pairs. Supply eye protection and lab coats (if available) for all learners.

Demonstration: extracting DNA from strawberries

Amount	Equipment
1 box	Medium-sized strawberries
1	Zip-lock bag
1	10 ml measuring cylinder
1	Boiling tube
1	Boiling tube rack
1	Coffee filter
1	Funnel
1	Spatula (or glass rod)
1	Wire hook
1	Plastic Pasteur pipette
1	Stop clock
1	250 ml beaker
500 ml	Ethanol: provide the beaker of ethanol on ice in a suitable container. Danger: highly flammable. Wear eye protection. Ensure the laboratory is well ventilated for open-bench work.  © Shutterstock
≈1 L	Strawberry extraction solution in beaker, labelled (100 ml detergent : 720 ml water : 30 g salt). Non-hazardous but avoid contact with the eyes.
200 ml	Pineapple juice in a 250 ml beaker with five dedicated plastic Pasteur pipettes. Non-hazardous but be aware of any potential allergies.

Activity 1: extracting DNA from kiwi fruit

Amount	Equipment
30	Kiwi fruit
5	Kitchen knives to cut open kiwi fruit – can be shared
30	250 ml glass beakers
60	Coffee filters/filter papers
30	Sieves or funnels
30	10 ml measuring cylinders
30	Spatulas (or glass rods)
30	Stop clocks (or use mobile phones)
60	Boiling tubes
30	Boiling tube racks
30	50 ml beakers
30	Plastic Pasteur pipettes
≈1 L	Kiwi extraction solution in beaker, labelled (500 ml detergent : 500 ml water : 250 g salt). Non-hazardous but avoid contact with the eyes.
200 ml	Pineapple juice in a 250 ml beaker with five dedicated plastic Pasteur pipettes. Non-hazardous but please aware of any potential allergies
500 ml	Ethanol: provide the beaker of ethanol on ice in a suitable container. Danger: highly flammable. Wear eye protection. Ensure the laboratory is well-ventilated for open-bench work.  © Shutterstock
1	Marker pen