



**SILVER AWARD**

# SHAMPOO AND HAIR TYPES



Typically 30 hours of project work  
Recommended for 14-16 year olds



**Practical  
project**

Investigate why we use shampoo and whether different kinds should be used on different hair.

**#chemistry**

**#hygiene**

**#toiletries**



# HOW TO RUN CREST USING THIS ACTIVITY

Entering your project without a teacher or facilitator? No problem! You can enter your work yourself by following this link:  
[www.crestawards.org/sign-in](https://www.crestawards.org/sign-in)

Looking for some support? Find a mentor by contacting your local STEM Ambassador hub:  
<https://www.stem.org.uk/STEMambassadors/localstem-ambassadorhubs>

To use their project to achieve a Silver CREST Award your students will need to:

- **Develop and lead the project**
- **Complete a minimum of 30 hours of project work**
- **Consider the broader impact of their project and demonstrate an innovative approach**
- **Write a project report or portfolio of evidence**
- **Reflect on their work during the project using a student profile form**

## Preparation

Ready to get going with CREST? Sign up for a CREST account here:  
[www.crestawards.org/sign-in](https://www.crestawards.org/sign-in)

Create a new Silver Award project with the name(s) of the student(s) and the title of the project. If you don't have the details yet, you can fill these in later!

## Run the project

We have some super handy workbooks and profiles for your students to use when running a CREST Award. You can download these when you create your CREST account by following the link above.

Encourage your students to use the Silver student guide to plan and carry out their project. Each student involved in the project should complete their own profile form.

You don't want all their good work to go to waste, so be sure they keep a record of all their amazing progress. Keeping a regular project diary will save them precious time when writing their final project report.

Make sure you consider safety and risks!

## Reflection

So, your students have been hard at work and completed their CREST project, but don't let this be the end of their learning. At the end of the project, each student should complete a Gold profile form and communicate their project. This is a chance for them to reflect on all the interesting things they've learnt and the invaluable skills they have used.

Students working in a group can either submit a joint report or separate reports, but they must each complete a profile form.

Use the CREST criteria on the profile form to help the students check that they have included everything in their report

## Enter your project for a Silver CREST Award

Hard work deserves a reward! Celebrate and certify your students' achievements by entering their project for a Silver CREST Award. Simply:

Log in to your CREST account at  
[www.crestawards.org/sign-in](https://www.crestawards.org/sign-in)

Select your project and upload the profile form per student, project report and other evidence, such as pictures and diagrams.

Finally, complete the delivery and payment details for assessment and to order your snazzy certificates. Congratulations on submitting for CREST Silver!

## What next?

Is university on the horizon for your students? They can use their project to help demonstrate their newly found STEM skills and knowledge in UCAS personal statements.

The scientific discovery doesn't need to end here. Students can have a go at the next level up - CREST Gold.

Don't keep all the fun to yourselves, encourage others to take part in CREST projects and share the wonder of science. For free ideas on how to get started, see [www.crestawards.org](https://www.crestawards.org)

# STUDENT BRIEF

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## Shampoo and different hair types

There are lots of different liquids that we use to clean things. In this project you can do some experiments to see why we use shampoo to wash our hair. You will investigate how different shampoos affect the appearance of different hair types.

### Getting started

Start by thinking about shampoo and other liquid cleaning products. What shampoos do you and your friends use? Why do they choose them? Why don't we wash our hair with washing-up liquid or liquid soap?

#### Picking your samples:

If you look around you'll notice lots of different hair types - different colours, different levels of waviness and different thickness for example. You need to decide how many different hair types you'll need to test in order to gain a fair representation of the population. You'll also need to decide how many hairs make up one sample.

Most school microscopes use low magnification. In other words, they can't see really small things. To see things under a high magnification you need to use an oil immersion lens. Ask your teacher how to do this. You could also try gaining access to a powerful microscope, perhaps by speaking to your local hospital. This will allow you to look at your hair samples in much greater detail.

#### Washing the samples:

Remember to keep all non-variables constant. For example, amount of cleaning product, temperature of water and method of drying. You should test about three different shampoos on each hair type. You should also test other liquid cleaning products, such as washing-up liquid.

When the hair has been washed and dried, look at it again under the microscope:

- Has it changed? How?
- Did the different types of cleaner/shampoo make a difference?
- Did the type of hair make much difference?
- What are the pH values of the cleaning products you used? What difference do you think the pH value makes?

### Things to think about

People don't just wash their hair; they style it and colour it, too. So you could investigate the effect these sorts of treatments have on hair. Again, you'll need to think about sampling a range of hair types.

It's up to you which sorts of treatment you want to look at. Some suggestions are, curling straight hair, blow-drying hair, or use of hairspray. You may want to test these over a period of time. In other words, see if prolonged use makes a difference. Again, remember to keep non-variables constant.

You might want to visit a hairdresser and ask why they use certain shampoos on certain hair types.



# STUDENT BRIEF

## SILVER AWARD



### Health and safety

A science project work is both dynamic and exciting but can also carry some risk. To avoid any accidents, make sure you stick to the following health and safety guidelines before getting started:

- find out if any of the materials, equipment or methods are hazardous;
- assess the risks (think about what could go wrong and how serious it might be);
- decide what you need to do to reduce any risks (such as wearing personal protective equipment, knowing how to deal with emergencies and so on);
- make sure your teacher agrees with your plan and risk assessment.

**Are there any hygiene issues you need to consider?**

### Remember!

Science isn't just about data. The most successful projects will demonstrate good communication skills and show original ideas that address a real-world problem.

Look at the world around you and consider all the innovative ways that you could address the challenge. Even if things go wrong, use this to show what you have learned. Don't forget to use the student profile form to help structure your project.