CREST AWARDS

SILVER AWARD

How does cooking change pasta?

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

Practical project

Investigate how cooking pasta affects its properties.

#chemistry
#cooking
#food

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**

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**

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**

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**

STUDENT BRIEF

SILVER AWARD

How does cooking change pasta?

Pasta is mainly sold as dried shapes or strands that are hard and brittle. After cooking for only a short time they become soft and flexible. In this project, you're going to investigate how cooking pasta affects its properties. You'll see if this is linked to how starch in pasta in altered during cooking.

Getting started

Have a look for starch grains present in uncooked pasta. Look at a variety of different types of pasta, for example ones with different ingredients. Use the instructions below to help you, making a note of what you'll need:

- Soak a piece of pasta in water to soften it up a little.
- Mash the pasta up. Scrape up a little of the mashed pasta and place it onto a microscope slide.
- Put a drop of 0.01M iodine solution onto the mashed pasta. Careful, iodine solution may stain skin and clothing.
- Examine the specimen using a light microscope. You should see the starch grains stained blue-black by the iodine solution.
- Count the number of starch grains present.
- Draw a diagram of what you see.

Investigating the effect of cooking on pasta:
Cook each of your different types of pasta according to the instructions on the packet. When they've cooked and cooled down see how they've changed physically Record the differences you observe between the uncooked and cooked pasta.

Cooking the perfect pasta:
Although cooking pasta is quite straightforward people have different ways of improving the standard instructions you'll find on the packet. They add oil or salt to the water the pasta is cooked in. Adding oil is supposed to help prevent the pasta sticking together as it cooks.

See if it improves how much the pasta sticks together during cooking.

Compare the water the pasta has been cooked in to see how much starch is present. You can add iodine solution to do this. Look for starch grains in the cooked pasta under the microscope.

Can you come up with instructions for cooking pasta so it sticks together as little as possible?

Things to think about

Are they a different size? You'll need to measure the pasta before cooking so you can compare this.

- How hard are they compared to before cooking? Is there a way you can measure this?
- How easily can they be torn or pulled apart? Is there a way you can measure this?
- Look for the starch grains in the cooked pasta using the technique above.

Why not try different kinds of pasta and see the effects on these?

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.

Do NOT taste the pasta unless you have cooked it in a food technology room under hygienic conditions.

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.