



Women in Chemistry: Making the Difference

Tackling life's big challenges through the chemical sciences

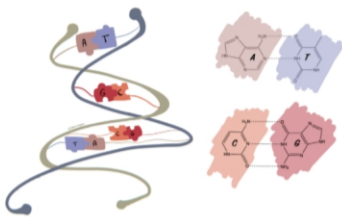
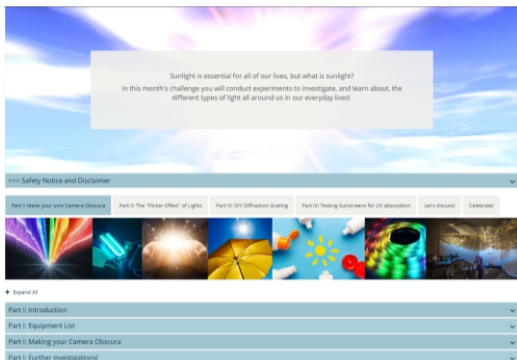
<https://bit.ly/womeninchem>

Background: Research into the impact of outreach and access initiatives and science capital suggests that sustained contact at a younger age has the potential to influence aspirations and career choices¹. Female representation in the chemical sciences is improving (although much remains to be done at higher grades both in academia and industry), yet year-on-year UCAS figures show a shortfall of girls applying to study chemistry, preferring to select medicine related degrees².

¹ Archer, L., Moote, J., MacLeod, E., Francis, B., & DeWitt, J. (2020). ASPIRES 2: Young people's science and career aspirations, age 10-19. London: UCL Institute of Education, Reiss, M., Mujtaba, T., & Sheldrake, R. (2020). Chemistry for All: Reducing inequalities in chemistry aspirations and attitudes. London UCL Institute of Education. ² UCAS Undergraduate Statistics and Reports, <https://www.ucas.com/undergraduate-statistics-and-reports>

Objectives:

1. Develop monthly practical challenges suitable for girls aged approx. 10-14 years old.
2. Construct suitable accompanying resources which highlight relevant research
3. Create career profiles for the females at the Higher Education Institutions supporting each challenge.
4. Host online Q&A meetings throughout each challenge month.



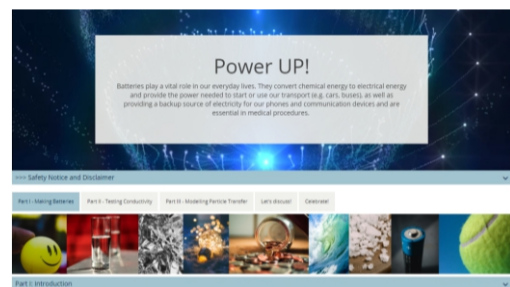
Here, we are going to give you one strand of DNA and your challenge is to find the missing nucleobases in Strand #2:

We did the first 6 letters to show you how to get started.

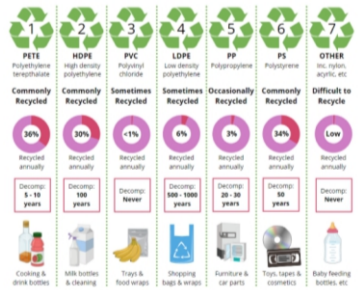
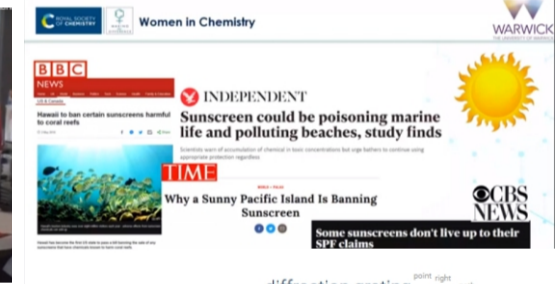
Strand #1	C	T	T	G	A	C	A	A	G	T	T	G	A	G	C	T
Strand #2	G	A	A	C	T	G	?	?	?	?	?	?	?	?	?	

Challenges included:

- * Making batteries, investigating electrolytes and modelling solid-state batteries
- * Comparing the degradation of different carrier bags
- * Making a Camera Obscura, viewing light diffraction, observing LED flickering, and investigating the protection of sunscreens
- * Making alginate gels and model drug delivery systems
- * Cracking codes, extracting DNA, denaturing proteins and research software to visualise proteins
- * Spotting trends in data, analysing large data sets and presenting findings

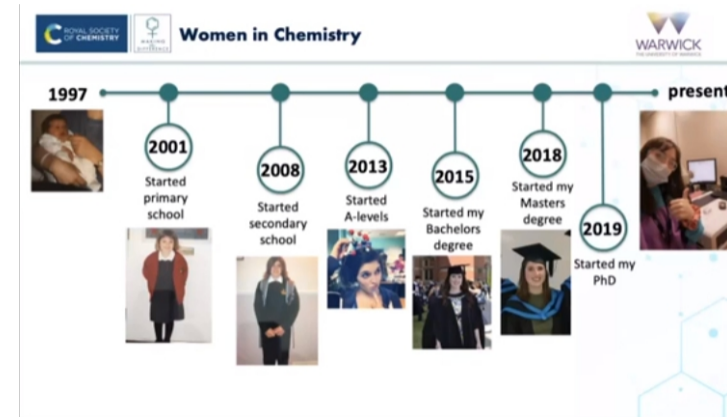
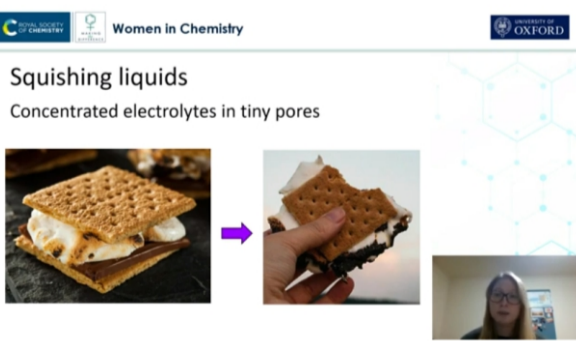
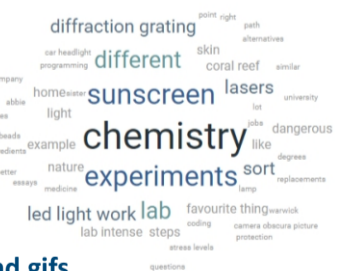


2. Construct suitable accompanying resources which highlight relevant research



Research resources:

- * Simple explanations
- * Laboratory tours
- * Glossaries
- * References
- * Diagrams, figures, videos and gifs
- * Research covered in profile videos



PROFESSOR CHARLOTTE WILLIAMS OBE ECONOMIC

My research has the potential to make an impact on climate change by the plastics problem.

I studied Chemistry because I like problem solving and wanted to make a difference to environmental problems.

The best part of my research is creating completely new molecules and materials, and working with other scientists around the world.

In the future, I hope to change the way we make, use, recycle and dispose of plastics.

My science hero is Shovel House – he was a true innovator in the area of carbon dioxide utilisation.

My advice to my 13-year old self would be to believe in yourself and maths will get easier!

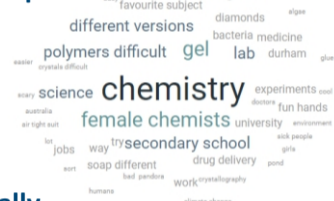
I enjoy cycling, swimming and climbing mountains. At school, I enjoyed learning languages.

- BSc in Chemistry, Physics, Maths and Spanish
- BA in Chemistry with a year in Spain, Imperial College London
- PhD in Organometallic Chemistry, Imperial College London



Career profiles included:

- * Short videos of career and research journeys
- * Quick fire facts about the person
- * Photograph



Additionally

- * A wall of faces of other chemists

4. Host online Q&A meetings throughout each challenge month.

There's an opportunity to catch up with members from the team at our LIVE events.

We'd love to hear from you via the Q&A channel. Post your questions/comments at any time during the month and we'll look forward to answering these at our LIVE events.

7 Jun: Professor UPI Meet the Challenge Team 1
17 Jun: Professor UPI Meet the Challenge Team 2
29 Jun: Professor UPI Meet the Challenge Team 3



Live Q&A:

- * YouTube LIVE and moderated chat
- * Questions covered multiple themes, focusing on career pathways, research applications, life at University, struggles at school, and the monthly challenges.

Objectives

Sustained contact

Overall Aim

'Your output is excellent, very much appreciated and if we can plan it appropriately, would really help inspire our pupils and break down the preconceptions about Universities/subjects that they could inspire to.'

'I love the Women in Chemistry resources, and will definitely show them to our pupils!'

'Thank you for sending me these. They seem very exciting...'

'We have had a lot of fun doing the Q&A sessions.'

'We have all thoroughly enjoyed it! It's been such a wonderful project to be a part of.'

'My daughter was very excited to be involved and really enjoyed taking part in the YouTube live event. The interactive Q&A were so effective too.'

'She read your instructions and made the whole thing very carefully. She loved it,.... She did a few trial and error runs, where it wasn't quite right, she'd think about the problem, note it down and then try to fix it.'

Open up target audience to all genders

Work alongside STEM / After-school clubs

Adapt for community organisations

Produce short clips from LIVE streams

Overall Project Aim: Increase the perception of chemistry as a discipline that impacts positively on society and one in which females thrive and contribute.

