

Scientists of the Future Day

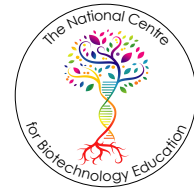
Post-activity report



BIOCHEMICAL
SOCIETY

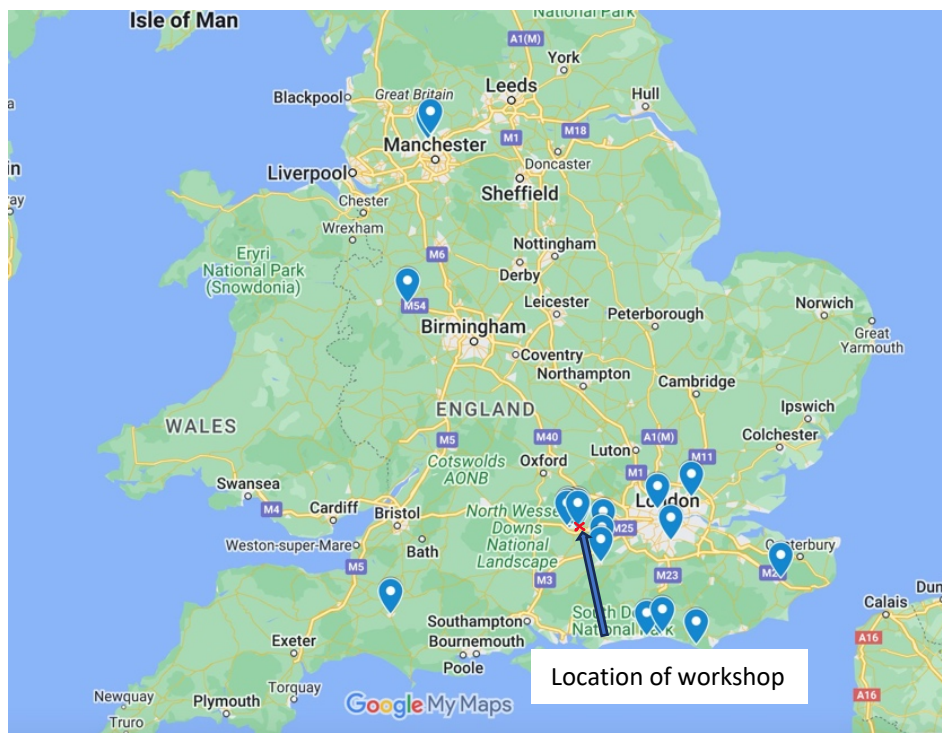


University of
Reading



In February half term we ran our “Scientists of the Future Day”, which was an all-day workshop for students aged 15-17 from widening participation backgrounds. The aim of the workshop was to inspire students and encourage them to study science in the future. The workshop was based at the University of Reading and run in university teaching labs.

We had over 100 students sign up to come to the day and only 30 places, it was great to see so much interest and shows that this sort of workshop is in demand. The map below shows where the students travelled from on the day of the workshop, each blue peg represents a student, and the red cross shows the location of the workshop. Some of the students travelled a long way, showing the level of enthusiasm for the day.



The plan for the day was:

Time	Session
9.15 am	Registration
9.30 am	Welcome
9.35 am	First session- DNA analysis and micropipettes
12.30-13.10	Lunch
13.15	Second session- chemistry; equilibria
14.45	Third session: food science; alternative proteins
15.45	Finish

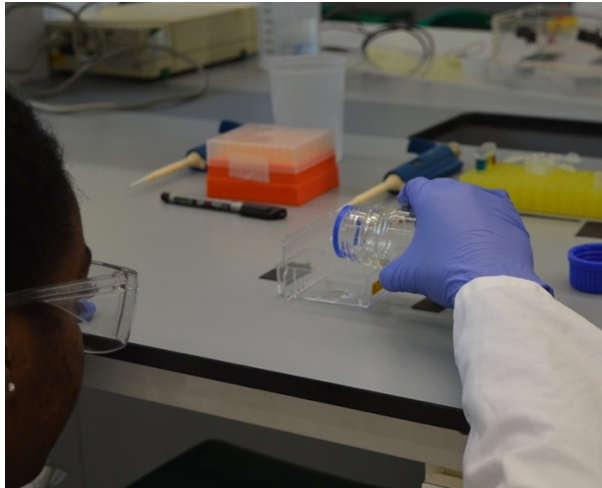
Once the students had registered, they were given small leaflets showing them the plan for the day and QR codes which linked to videos about different careers in STEM. This was to get them thinking about where different subjects could take them.



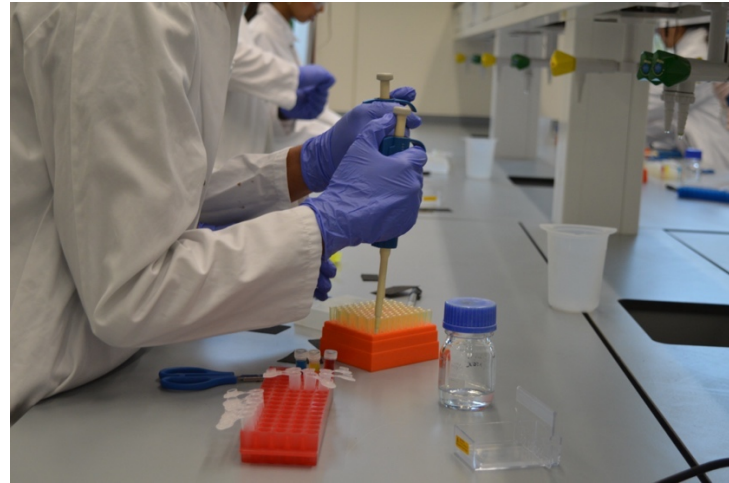
The students were then taken through into one of the large university teaching labs where they were kitted out with PPE. They were then introduced to the forensics story for the session, which involved a theft and some blood being left at the crime scene. We then explained to them about using PCR to amplify small tandem repeat sequences, and explained how gel electrophoresis can be used to analyse DNA bands of different sizes.

The students then poured their own gels and learnt how to use micropipettes:

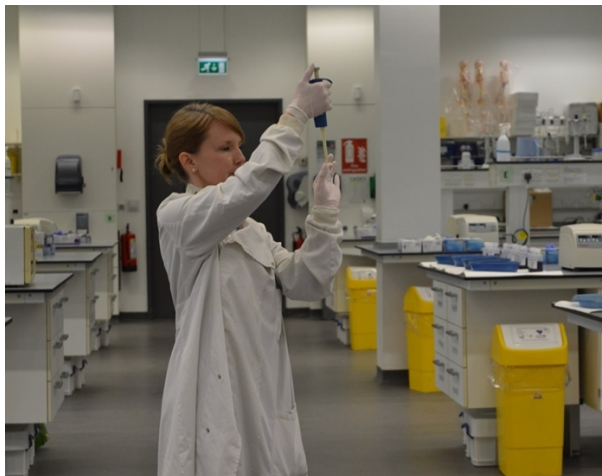
Pouring gels



Getting to grips with micropipettes



Micropipette demonstration



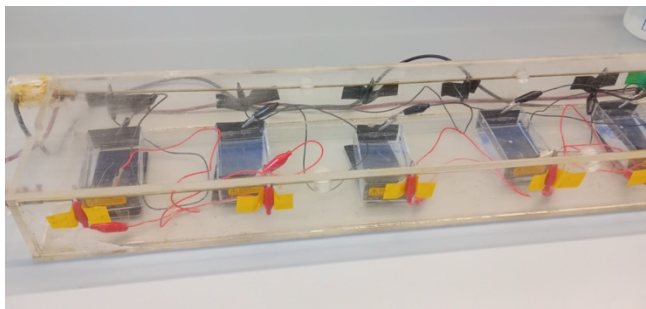
After using micropipettes, the gels were ready to be loaded. We had a few issues at this point, with some gels not being deep enough. If we were to run this workshop again, we would make sure this was more thoroughly checked while the students were pouring them. Fortunately, we had poured some spare gels before the session, so we had enough to go around.

We next demonstrated mixing the loading dye with the DNA and then the students came over in batches of 10 students to load their gels. There were 5 loading stations and 5 demonstrators, so students were able to observe how to load a gel in pairs.

Gels being loaded



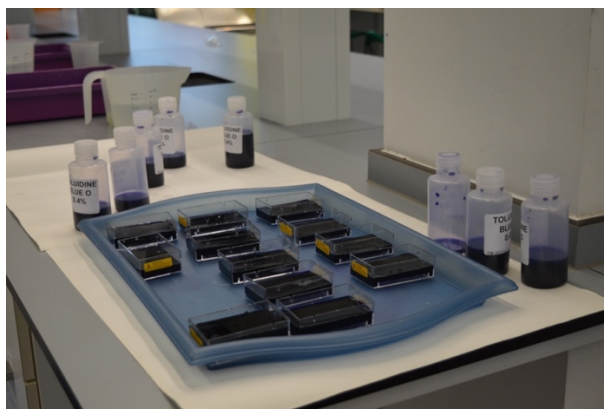
Mini gels running in our gel tanks



While the gels were running, the students went and got some fresh air with our student ambassadors and had a nice walk around the lake on the university campus.

When they came back, the gels had run and were ready to be stained. These were stained with toluidine blue O which stains the DNA blue over the course of a few hours. The pictures below show the students staining their gels.

Gels being stained and then washed with water



We then showed them what their results would look like in a few hours and wrapped up the story; revealing the thief. The students put their gels in a small plastic bag and were allowed to take it away with them to watch the bands develop over the course of the day.

The next stop was lunch, we had ordered some sandwich and fruit platters, which the students enjoyed. The students also had the opportunity to socialise with each other during this time and meet students from other schools.

After lunch, the students were escorted over to the chemistry department where they had their second session. They started off in a lecture theatre where they had a mini lecture about equilibria before they went through into the chemistry lab, where they were once again kitted out with PPE and were then able to get involved with a variety of practical activities that showcased the concept of biological equilibria. The photo below shows the lecture at the beginning of the session and then the subsequent photos show the students taking part in the practical activities.

Initial lecture about equilibria and what the practical activities would be.



Students using the magnetic stirrers, which they were very excited about!



Students measuring out the different reagents.



Demonstration for how to do the next activity and what is happening in the reactions



The students took part in a competition for who could come up with an original way of arranging their bottles as the solutions cycled through the various colours, as the different equilibrium reactions took place.



During the chemistry session, the students worked in pairs and had instructions on the bench for how to undertake the different activities. This worked well and allowed the students some independence to work at their own pace.

The chemistry session finished with the famous screaming jelly baby demonstration to show what can happen if biological equilibria become out of control. This was a great way to end the session, with a memorable reminder about how important equilibria are in biological processes.

Screaming jelly baby experiment.



After the chemistry session, the students went over to the university's food and nutritional sciences department. The students started in a seminar room where they were given a talk on alternative proteins and research into these. They then went off to the sensory science centre where they were given three snacks, one of which contained cricket protein. They had to taste them and fill in a sensory profile for each and then guess which one they thought contained the cricket protein. This sort of activity is used to understand consumer opinion and preferences for all new food products. The photos below show the students having the initial talk and then doing the sensory science activity.

Initial talk about alternative proteins



Snacks for the sensory science activity



Sensory science booths, with the students completing the food science activity



Final debrief talk on the results of the activity and importance in coming up with new food sources.



The students then had the opportunity to ask any questions to our student ambassadors. Some of the questions that were asked were about what the students planned to do after university and about industrial placements they had done as part of their course.

Students then filled out feedback forms and were then escorted back to where they started the day. Overall, the day went really well, the students were very engaged, and the feedback was very positive.