



# **Aspiring Scientists Training Programme 2023**

## **End of Programme Report**

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# Summary

**Duration:** Sunday 9 July 2023 – Friday 14 July 2023.

**Participating colleges:** St Catharine's College, Pembroke College.

**Participating institutes:** Gurdon Institute, Sainsbury Laboratory, MRC Mitochondrial Biology Unit, Cambridge Institute for Medical Research, Wellcome -MRC Institute of Metabolic Science.

**Overview:** The Aspiring Scientists Training Programme (ASTP) aims to support students from under-represented backgrounds apply to scientific courses at the University of Cambridge and other leading institutions. By offering participants work experience and the chance to network with scientists, the programme allows students to make informed decisions about higher education. Research laboratories are often difficult to access, particularly for students who do not have good personal connections to people who work there. The training programme seeks to break down this barrier and demonstrate that scientific careers, higher education, and the University of Cambridge, are attainable and welcoming environments for students of all backgrounds.

This year's iteration of the ASTP was the largest to date, hosting 29 students across two colleges and five scientific institutes. This expansion was thanks to the funding provided by the Isaac Newton Trust Widening Participation and Induction Fund.

The programme gave students the opportunity to work in a research laboratory, learn more about careers in higher education and academia, and receive support and guidance in their applications to Cambridge and other leading universities. Students worked on a range of lab-based projects over the course of the week, assisting their mentors with ongoing research, learning valuable scientific skills and techniques, and working on a presentation which they delivered to their peers and lab groups on the final day. See the appendices for some timetables from the programme.

Alongside their lab work, students received a talk on applying to the University of Cambridge from outreach staff at St Catharine's College and Pembroke College, and a talk on presentation skills by Professor Giles Yeo. There were also a range of evening activities, including a punting tour, an open air Shakespeare performance, a ghost tour, and a quiz night, allowing the aspiring scientists to get a taste of university life and socialise together. Food and accommodation were provided by St Catharine's College and Pembroke College.

# Summary

## Student Selection

716 Students from across the UK applied to participate in ASTP 2023. Students were selected for the programme based on eligibility and widening participation criteria. More information on the application process can be found here:

<https://www.gurdon.cam.ac.uk/programmes/astp/>

Some notable statistics from the application process include:

- 83.7% of ASTP applicants came from a minority ethnic background compared to 35.7% Nationwide in 2022/23
- 6.8 % of applicants identified as a young carer, compared to 0.6% of students in English state-funded secondary schools.
- 27.25% of applicants provided postcodes that identified them as living in either quintile 1 or 2 in the POLAR4 classification

## Evaluation

### Participants

- 100% of the surveyed students would recommend ASTP to a friend or fellow student.
- 86% or more have developed a network with scientists, got relevant experience to add on their CV, found out what it's like to be a scientist and what Cambridge University life is about.
- The number of students intending to apply to Oxbridge increased significantly (14 pre-programme, 22 post-programme).
- *'I would recommend the ASTP to anyone interested in anything stem related. It is a once in a lifetime opportunity to work with some of the worlds top scientists and meet amazing friends.'* - student participant 2023
- *'I loved and enjoyed every single day, and I thought the variety of things we got to do and the different scientists that we got to meet was amazing. I thought our days were extremely well planned and well thought out and I can truly only think of positives when it comes to feedback. But all in all, this was the best work experience I could have hoped for, and I cannot say how grateful I am to you and all the scientists that took time out of their work to spend time with us.'* - student participant 2023

### Researchers

- 100% of respondents said they felt “somewhat positive” or “very positive” about ASTP.
- All respondents said they were “likely” or “very likely” to take part in ASTP in the future.

### College Staff

- All the chaperones indicated in the survey that they “strongly agree” with the statement “I enjoyed working as a chaperone for the ASTP”.

## Finance

- The programme's allocated budget: £20,000.
- Actual spend: £16,861.83

## ASTP 2024

- Next year's programme will expand to accommodate 40 students.
- Efforts will be made to increase applications from Scotland, Wales, and Northern Ireland.
- Fully funded transport to and from Cambridge will be offered to all students.

# Application Data

## Student Selection

Students were selected for the programme based on eligibility and widening participation criteria.

### Eligibility

- Students must be attending a state/non-fee paying school or college.
- Aged 16+.
- Be pursuing A Level/IB/Higher/Advanced Higher Biology and Maths.
- Have achieved a 7 or above in GCSE maths and two GCSE sciences or a B or above in National 5 maths and two National 5 sciences.

### Widening Participation Criteria

The selection matrix was created in accordance with guidance from the University of Cambridge Admissions Office (CAO) in the report "WP Selection Criteria – Guidance for Practitioners". Indicators were grouped by priority level, with the exception of 'in care' which was treated as a 'super flag' (as advised by the CAO).

The selection matrix was as follows:

Criterion	Score
In care	100
FSM/Pupil Premium	5
Underrepresented ethnic group	3
Disrupted education	3
POLAR	2
First generation	3

Students were invited to attend the ASTP based on their eligibility and widening participation 'score'. Where students received the same 'score' and there was an insufficient number of places remaining, a name was chosen at random. All applicants were required to provide details for a teacher who could act as a referee. Once the programme's participants were selected, their referees were contacted. Referees were asked to confirm that the information submitted by the student was accurate to the best of their knowledge and that the student would be well-suited to the programme. After collating the references, successful applicants were informed.

Unsuccessful applicants were also contacted, emphasising that although their application had been unsuccessful, this was no reflection on the strength of their applications and would have no impact on their eligibility to apply for undergraduate study at Cambridge. In 2024, unsuccessful students will also be offered access to some online provisions and resources.

## Applicant Demographics & evaluation of targeted promotion

Applicant data was compared to the national data set from Gov.uk from their "Schools, pupils and their characteristics" dataset (year 2022/2023). This data is from English state schools only, but provides a reasonable benchmark to ensure that we are reaching the demographics targeted by the programme.

### Young carers:

6.82% of applicants identified as a young carer, compared to 0.6% of students in English state-funded secondary schools. From this, we can reasonably assume that the measures taken to encourage this group to apply are effective and should be continued in 2024. A full breakdown of young carer data in schools in England can be found here:

### Ethnic background:

**Overall, 83.7% of ASTP applicants came from a minority ethnic background compared to 35.7% Nationwide in 2022/23\*.**

*\*Pupils classified as any ethnic group other than White British are defined as being an ethnic minority in this release.*

A detailed breakdown of the ethnicity data from the applicants is available on the following page alongside the data from the latest national census (2021) and the UK government "Schools, pupils and their characteristics" dataset (year 2022/2023).

Overall, the ethnicity data shows that we are meeting our goal of encouraging students from underrepresented ethnic groups to apply for the programme. Most ethnic groups identified by Cambridge Admissions Office (CAO) as 'underrepresented' in higher education and academia are significantly overrepresented in our 2023 applicants, compared to the national percentages in state-funded secondary schools. However, applicants of Black Caribbean and Gypsy, Roma & Traveller backgrounds are underrepresented in our applicants and therefore efforts should be made when promoting the 2024 programme to specifically target these groups to ensure that they are encouraged to apply.

Free School Meals (FSM)/Pupil Premium:

24.67% of applicants stated that they are eligible for free school meals or pupil premium which is not significantly different from the 22.7% seen across all state-funded English secondary schools. As eligibility for FSM is often used in the education sector as a proxy for identifying socio-economic status, particularly pupils from low-income households, more effort could be made in 2024 to encourage students who meet this criterion to apply.

A full breakdown of eligibility for free school meals in schools in England can be found [here](#):

## Applicant Ethnicity Data

Compared to National Census and National Schools Datasets

\*Ethnic groups with score >0 in selection matrix

Ethnicity/Ethnic Group	2021 National Census (%)	English school pupils (2022/23) (%)	ASTP 2023 Applicants (%)
<b>Asian or Asian British Bangladeshi*</b>	1.1	1.8	<b>6.56</b>
Chinese	0.7	0.7	3.77
Asian or Asian British Indian	3.1	3.7	12.15
<b>Asian or Asian British Pakistani*</b>	2.7	4.5	<b>8.66</b>
Other Asian background	1.6	2.1	6.98
<b>Black or Black British African*</b>	2.5	4.3	<b>17.88</b>
<b>Black or Black British Caribbean*</b>	1.0	0.9	<b>0.56</b>
Other Black background*	0.5	0.8	<b>0.56</b>
Mixed White and Asian	0.8	1.6	1.68
<b>Mixed White and Black African*</b>	0.4	0.9	<b>1.26</b>
<b>Mixed White and Black Caribbean*</b>	0.9	1.6	<b>0.14</b>
Other Mixed background	0.8	2.7	3.07
White British	74.4	62.6	19.69
White Irish	0.9	0.2	1.12
<b>Gypsy, Roma, Traveller*</b>	0.3	0.4	<b>0.14</b>
Other White background	6.2	7.2	7.96
Other Ethnic background	2.2	2.3	11.18
Prefer not to say	N/A	1.7	1.40

Overrepresented

Underrepresented

Representative

# Applicant Demographics & evaluation of targeted promotion

## In care/Looked after children:

Although data on the percentage of secondary school children in care is not readily available, the [gov.uk](https://www.gov.uk) report '[Children looked after in England including adoptions](#)' stated that in 2022 there were 82,170 looked after children in England. According to the 2021 UK census, there are 13,040,505 under 19s living in England, therefore children in care represent roughly 0.6% of those.

In 2023, 1.6% of applicants answered yes to "Are you currently or have you ever been in local authority care in the UK?" which, when compared to the 0.6% nationally, indicates that this group is well represented within the applicants and that the measures taken to encourage applicants with care experience are effective and should continue in 2024.

## POLAR:

*POLAR classifies local areas into five groups - or quintiles - based on the proportion of young people who enter higher education aged 18 or 19 years old.*

Of the applicants who provided a valid UK postcode (n=466), **27.25% provided postcodes that identified them as living in either quintile 1 or 2 in the POLAR4 classification.** Given that quintiles are split proportionately, this is not representative of the general population as you would expect a value closer to 40%. It is, however, significantly higher than the percentage of student admissions to Cambridge colleges. In 2021, students who lived in quintiles 1 and 2 represented only 15.47% of all admissions (n=2,857).

Going forward, more work could be done to specifically target promotion of the programme to schools within areas identified as high-deprivation or with a high proportion of students who live in POLAR quintile 1 and 2 postcodes.

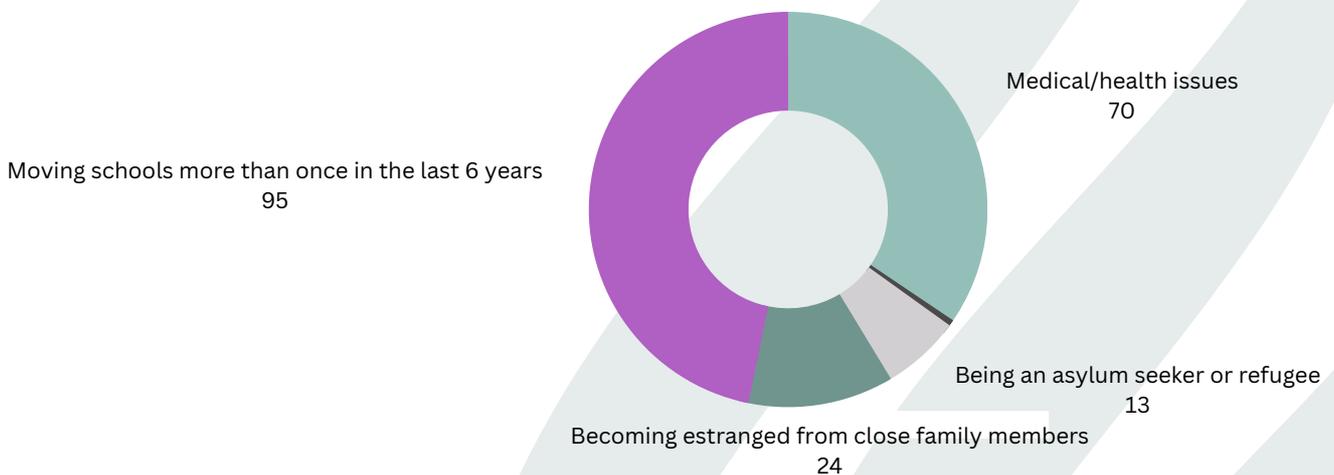
# Applicant Demographics & evaluation of targeted promotion

## Disrupted education:

In accordance with the CAO's guidance on selection criteria, applicants who identified as having experienced any of the circumstances in the table below would be considered to have had a 'disrupted education'. These factors have been shown to negatively affect school attainment and progression to higher education.

- Medical/health issues (including mental health), particularly those that have resulted in long or extended periods of absence (over 8 weeks) from school in the last 6 years
- Medical/health issues (including mental health), particularly those that have resulted in long or extended periods of absence (over 8 weeks) from school in the last 6 years
- Becoming a parent
- Being an asylum seeker or refugee
- Becoming estranged from close family members (e.g. parents/carers)
- Moving schools more than once in the last 6 years

The chart shows the number of applicants who identified as having experienced these disruptions to their education:



We were not able to identify any relevant benchmarking data for these criteria as some are not routinely recorded either on national or school datasets. We will continue to make explicit in our promotion that we recognise that these criteria are linked to students having lower attainment and progression to HE and so encourage students who have experienced these to apply. We will also consult with CAO to ensure that we are using the most up-to-date data and criteria to assess whether a student's education should be considered 'disrupted'.

# Applicant Demographics & evaluation of targeted promotion

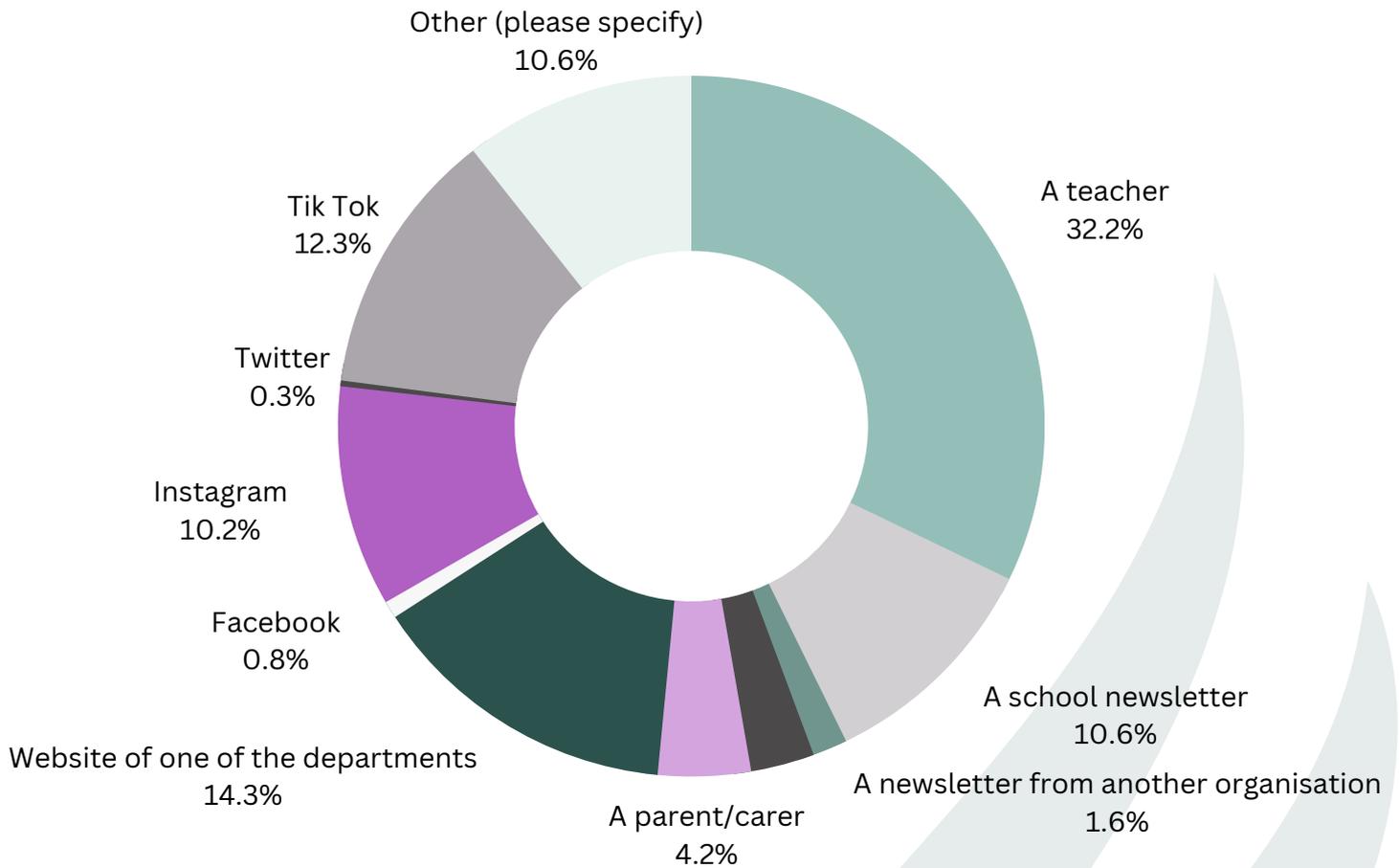
## Geographic spread of applications

The map below shows the geographic spread of applications. As can be seen, the programme received far fewer applications from Scotland, Wales, and Northern Ireland than it did from England. In advertising and promoting the application next year, attention will be paid to reaching schools and contacts in these regions. Applications from the north east and south west of England were also lower than those from other parts of England. Similar efforts will be made to reach students and schools in these areas. Advertisement of fully funded travel may have a positive impact on applications from these areas.



# How did you find out about this programme?

n=703



A teacher	243
A school newsletter	80
A newsletter from another organisation	12
A career/other guidance counsellor	22
A parent/carer	32
Website of one of the departments	108
Facebook	6
Instagram	77
Twitter	2
Tik Tok	93
Other (please specify)	80

# Marketing & Promotion

## Teachers & school newsletters:

Overall, as with previous years, the majority of applicants heard about the programme via their school teacher. We find that this method is the most effective way of communicating the project for several reasons:

- the students have a teacher that is aware of the programme that they can ask for a reference
- teachers will understand who the programme is targeted at and encourage eligible students to apply
- we can target teachers who work at schools with a high proportion of students who meet the WP criteria

Going forward, we will continue efforts to communicate with teachers about the programme via the Cambridge Admissions Office newsletter, the School Liaison Officers' network of schools and our own teacher contact lists. We will also make efforts to identify more channels to reach teachers and schools effectively.

## Website of the departments:

A relatively high proportion of the applicants stated that they heard about the programme from the institute/departmental websites. We will continue to ensure that the programme has a strong presence on all relevant websites when the application process launches for 2024.

## Social Media:

As with previous years, we put together a strong social media marketing campaign for the programme. We used Instagram, Facebook, Twitter and (a first for 2023) Tik Tok.

Instagram: In previous years, Instagram has been the primary social media that applicants found out about the programme. The results of the survey suggest that it is still an effective communication channel, with 43.3% of people who found us via social media doing so via Instagram.

Twitter/X: Very few applicants heard about the programme via our Twitter channels. We do however continue to share the programme via Twitter as it is the primary social media used by scientists and scientific institutions. We believe that it is important to share our WP work within the scientific community to create a culture that values this work and encourage others to get involved.

Facebook: Of the applicants that found out about the programme via social media, only 3.4% of those found out via Facebook. We may decide not to put our advertising efforts into this channel in 2024.

# Marketing & Promotion

## Tik Tok:

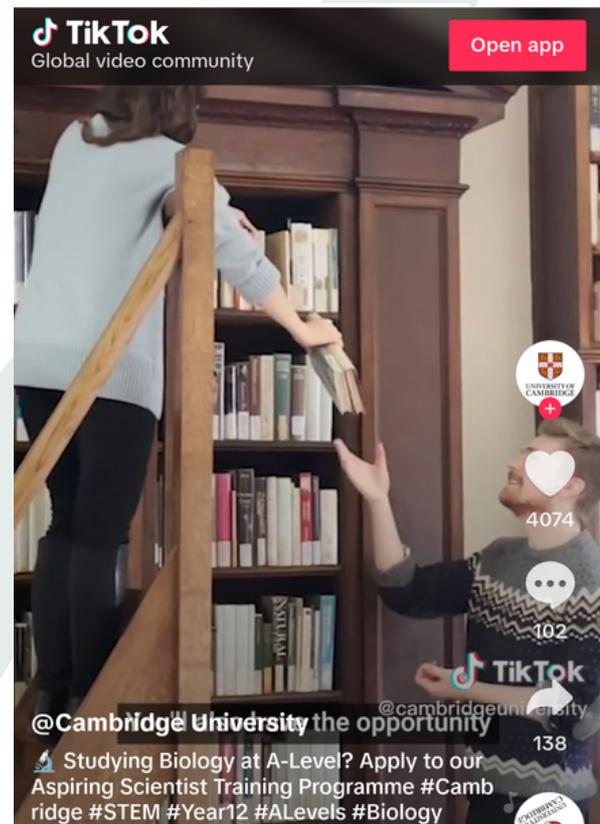
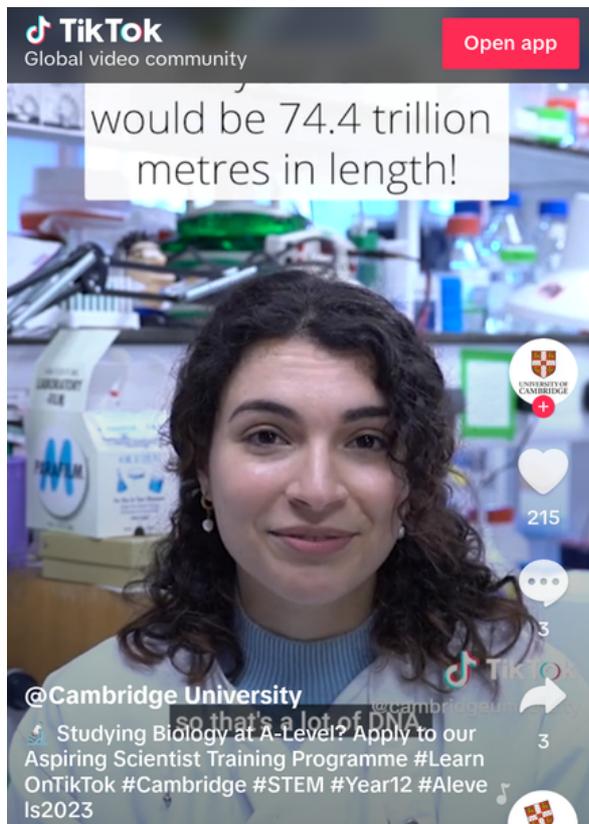
We worked with the Cambridge University Office for External Affairs and Communication (OEAC) to create content for the University Tik Tok account. By collaborating, we were able to leverage their very large following and increase the programme's marketing reach.

We collaborated with the OEAC team to create a series of three videos advertising the programme: one detailing the programme and what's involved, and two follow-up videos featuring a Gurdon Institute scientist sharing fun science facts alongside the programme logos and information in the caption.



## Stats for ASTP video series\*:

Views: 53,450  
Likes: 4,475  
Comments: 106  
Saves: 845  
Shares: 144



We will contact the OEAC again and invite them to collaborate on the creation of more content for their Tik Tok during the promotional period for the 2024 programme.

\*Stats correct at time of writing (23/08/23)

# Evaluation

## Student Questionnaires

Students were required to complete pre- and post-programme questionnaires. Both focussed on what the cohort sought to gain from the programme and how they felt about the prospect of higher education and a career in science. The post-programme questionnaire also gave students an opportunity to give feedback on the laboratory work, food and accommodation, and evening activities. Twenty students completed the pre-programme and 22 completed the post-programme survey. This feedback will be used alongside that of previous cohorts to continually improve the ASTP.

Students also consented to their personal data being uploaded to the Higher Education Attainment Tracker (HEAT). This allows the programme coordinators to track student progress into higher education and monitor the long term efficacy of the programme.

### Comparing Pre- and Post-Programme Surveys

#### Outcomes

Students were asked what they wished to achieve during the course of the programme.

Goal	Indicated as pre-programme goal	Achieved
Develop a network and relationships with scientists	80%	86.36%
Get a relevant experience to put on my CV for applying to university	85%	95.45%
Find out what it's like to be a scientist or work in a research environment	100%	100%
Understand the research conducted in your lab	70%	95.45%
Find out what Cambridge University life is about	70%	90.91%

## Aspirations

Overall, when asked where the students plan to apply to university/college, there seemed to be an increase in students aiming towards high-ranking UK universities.

- **The number of students intending to apply to Oxbridge increased significantly** (14 pre-programme, 22 post-programme).
- There were significantly more students stating an intention to apply to Medicine courses (21 pre-programme, 28 post-programme) and a smaller, but significant, increase in interest in Chemistry (1 pre-programme, 3 post-programme). There were also courses in the post-programme survey that did not appear in the pre-programme, such as Biotechnology and Plant Biology (from a student at the Sainsbury Lab).

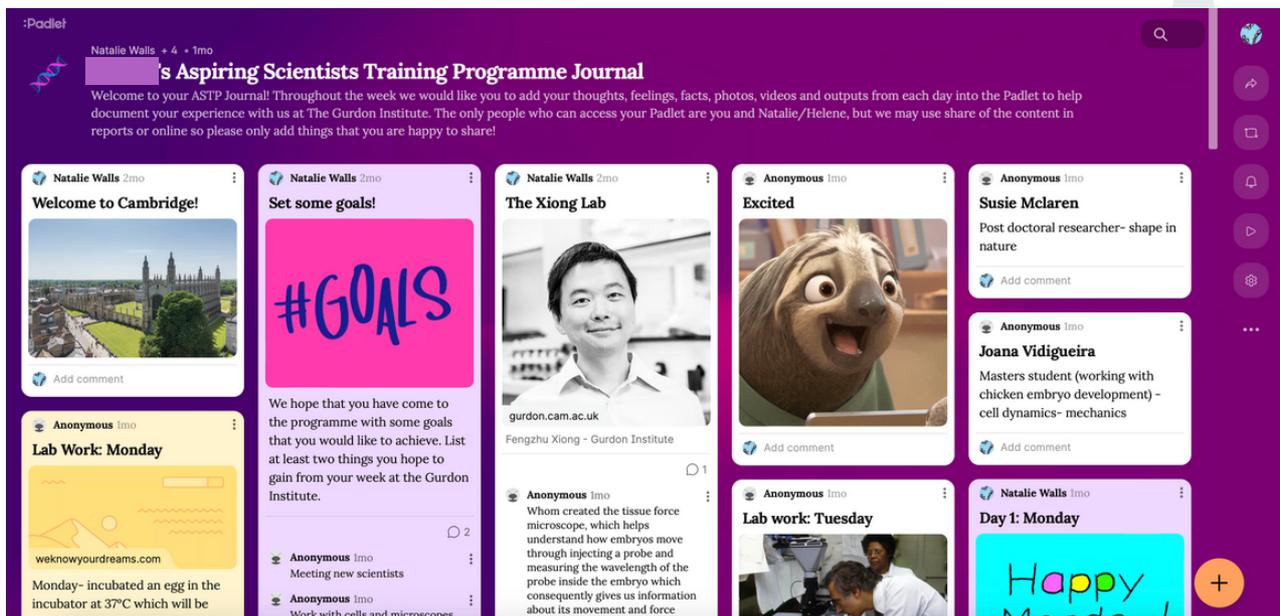
## Perceptions

Before the programme, participants were asked a variety of questions regarding careers in science, knowledge about university education, feelings towards university, and their use of scientific skills. Participants' post-programme responses reveal significant increases in relation to a number of questions.

- Participants **displayed enhanced skills in utilising scientific evidence** for persuasive arguments ( $p = 0.014$ ), indicating a boost in critical thinking and communication abilities.
- **Participants' knowledge about university education substantially increased** ( $p = 0.005$ ).
- **Participants reported heightened comfort within a university environment** after the programme ( $p = 0.022$ ).
- In areas such as career aspirations, participants' desire to become a scientist ( $p = 0.567$ ) and their intention to have a job that utilises science ( $p = 0.121$ ) there seemed to be no statistically significant changes. Prior to the programme, 86.37% of the surveyed students agreed or strongly agreed that they would like to become a scientist. 100% agreed or strongly agreed they 'want to have a job that uses science'.

# Digital Diaries

As well as completing the pre- and post-programme surveys, students at the Gurdon Institute were encouraged to complete daily entries into an online 'Digital Diary' hosted on [Padlet](#). The aim of these diaries was to allow the programme coordinator at the institute to get feedback and insight from the students throughout the programme, capturing their thoughts and reflections and identifying areas where students may require extra support. The diaries also act as a place for students to record not only their feelings and reflections, but also information, links, photos and contacts that they have made throughout the week.



Example of student's Digital Diary

Some reflections recorded in the student diaries:

*"The inside of the institute was not what I expected. There are a lot of new, expensive machines and technology being used to discover lung development."*

Response to the prompt "Day 1: Was the inside of the institute what you expected?"

*"The workshop was amazing and I learnt so many new things."*

Reflecting on the Presentation Skills workshop with Prof. Giles Yeo

*"I made new friends who are from different cities, got to know with their culture a bit and some of the brilliant scientist. I like my professor. She is a stem cell biologist and a fantastic person..."*

Comment from student under the prompt "Who did you meet today and what are their roles...?"

Coordinators from the Gurdon Institute will liaise with the programme lead at St Catharine's to implement a similar online diary for all students in the 2024 programme with time allocated for the students to complete this task daily.

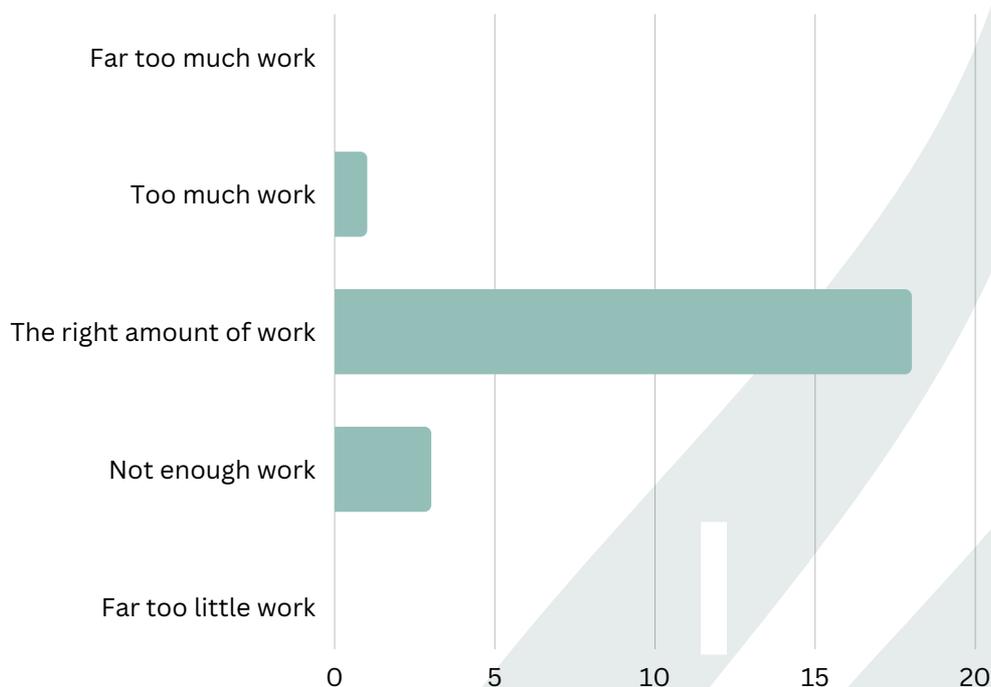
## Post-programme surveys

### Reflections on Lab-Based Work

Students were overwhelmingly positive about their respective work experience postings, with **100% stating they felt they were given an appropriate amount of guidance and support throughout the week**. Eighteen students also agreed they received a good amount of work. Three students, however, reported there was 'not enough work'. This will be addressed in the 'Looking Ahead' section of the report.

### How did you find the workload at your lab?

n=22



Answer choices		
Far too much work	0%	0
Too much work	4.55%	1
The right amount of work	81.82%	18
Not enough work	13.64%	3
Far too little work	0%	0

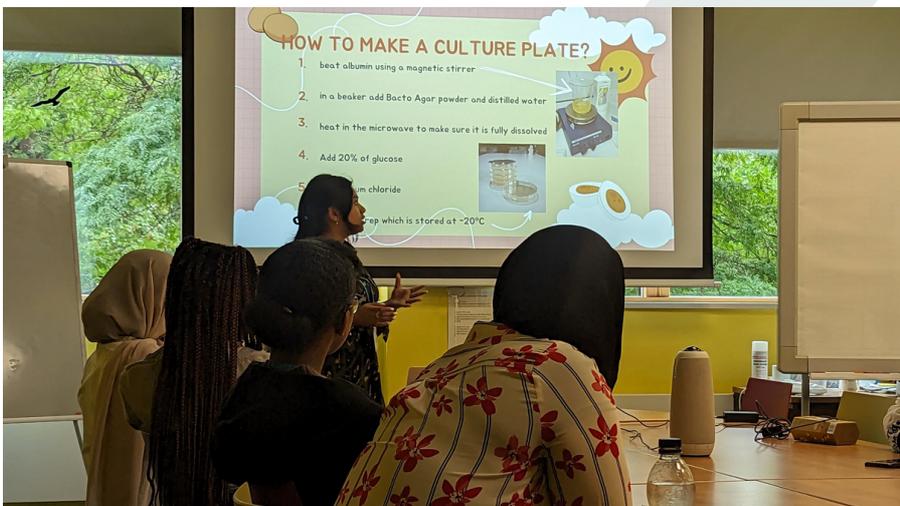
## Applying to Cambridge and Presentation Skills

Overall, 93% of students found the sessions on applying to Cambridge and presentation skills 'Useful' or 'Very Useful'. In the 'Applying to Cambridge' session, students were given information on the application process and reminded of the ways in which the university take personal circumstances and educational disruption into account. In the 'Presentation Skills' session, Professor Yeo talked about the importance of clear understandable communication, especially when discussing highly academic and complex subjects. The students were visibly enthused by the chance to hear from Professor Yeo and the current undergraduate students helping with the application talk.



Professor Giles Yeo giving his 'Presentation Skills' session

By introducing the participants to current students and leading public figures, the programme immerses students in university life, giving them insight into what higher education is like and encouraging them to see themselves working and studying at a world-leading institution.

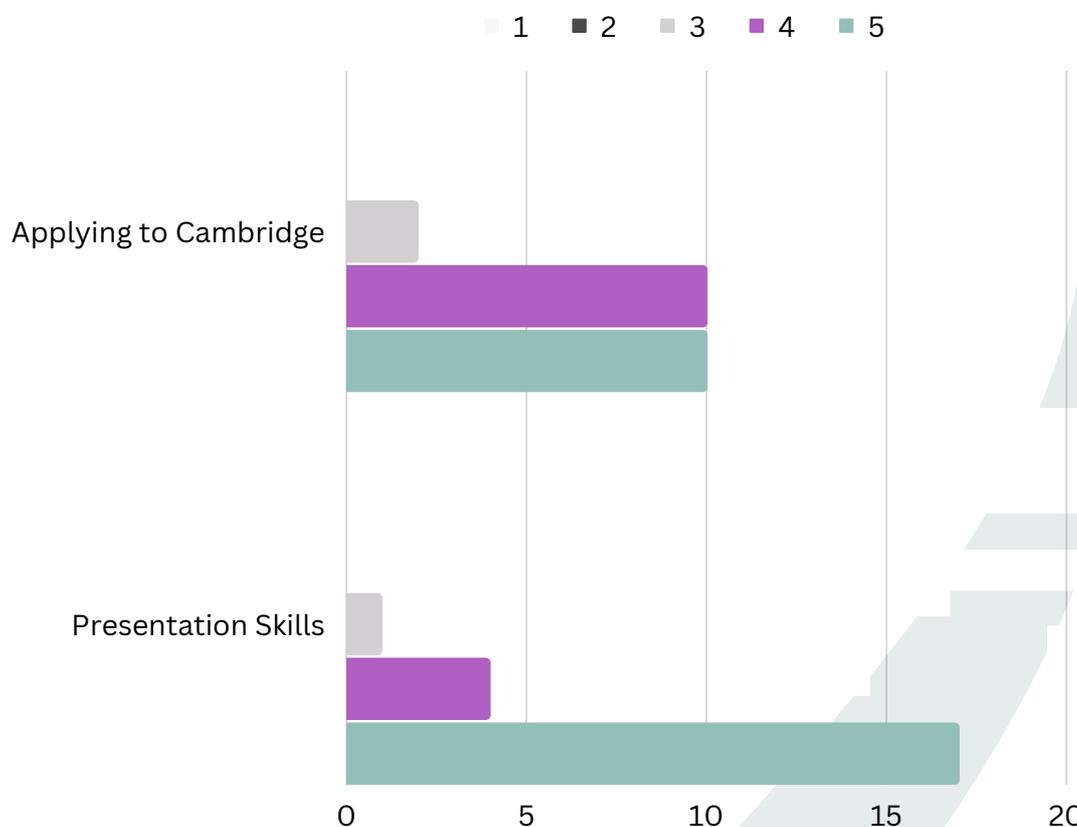


A student presenting their work at the Gurdon Institute

## How useful were the sessions held in St Catharine's?

(1=not useful at all, 2=not useful, 3=neither useless nor useful, 4=useful, 5=very useful)

n=22



	1	2	3	4	5	Weighted Average
Applying to Cambridge (Thomas Williams & Amber Cuttill)	0 (0%)	0 (0%)	2 (9.09%)	10 (45.45%)	10 (45.45%)	4.36
Presentation Skills (Giles Yeo)	0 (0%)	0 (0%)	1 (4.55%)	4 (18.18%)	17 (77.27%)	4.73

"Never before I was known that we can share our vulnerable life stories in the 'my Cambridge application' form and it attracted me most. Also they offer students loans and scholarships in high amount which are really supportive for the students who come from low income or [a] big family. I'm feeling much confident to follow my path towards Cambridge and I've considered it as my first priority."

Reflection on the Cambridge Admissions presentation by a student in their Digital Diary

## Accommodation and Catering

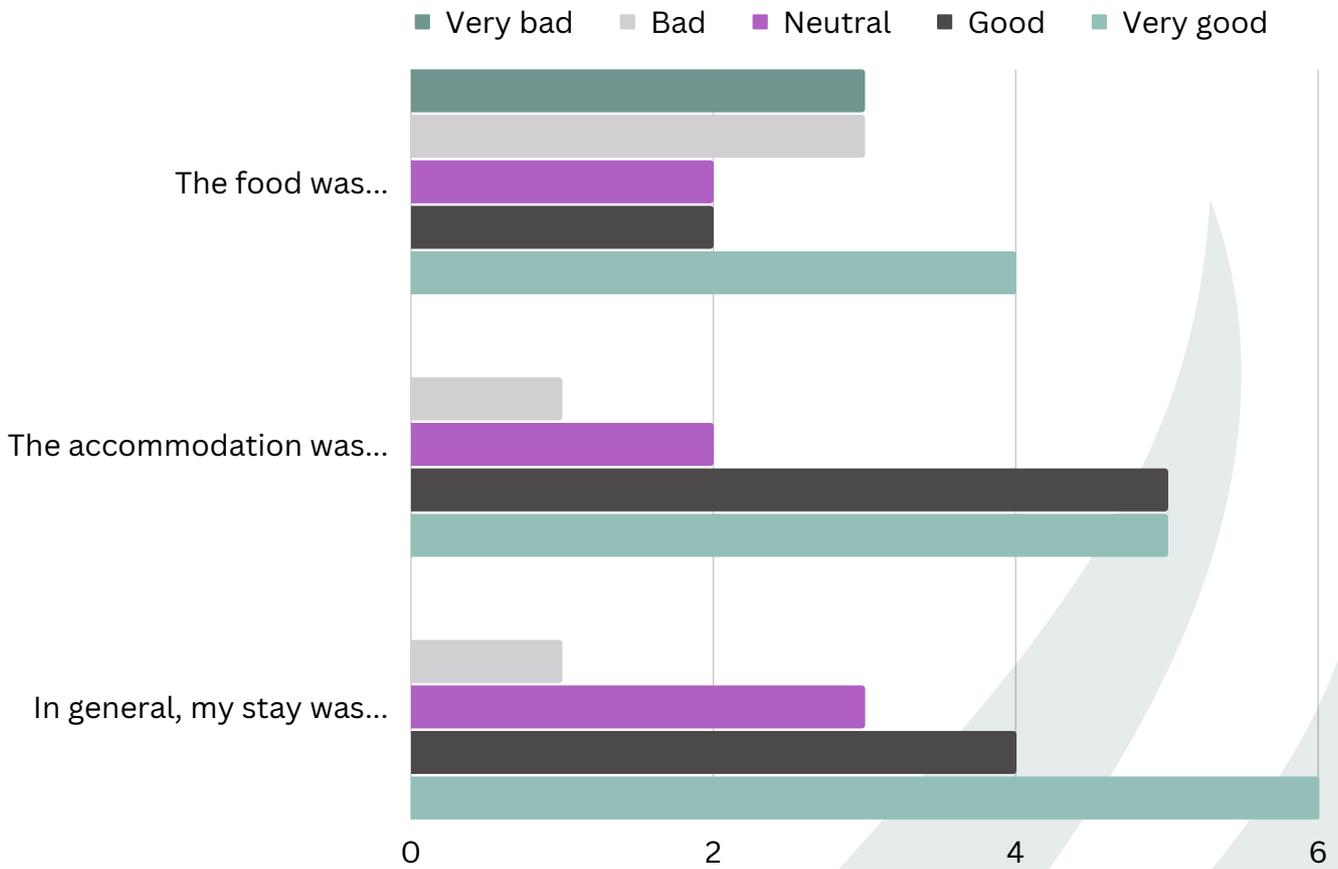
Of those surveyed, 100% of the students said that they felt welcome at the college in which they stayed. Students feeling welcome and comfortable at the University of Cambridge is integral to the programme's aim of inspiring and empowering students from widening participation backgrounds at the University of Cambridge. Despite feeling welcome, students did give a variety of responses regarding accommodation and catering, although most did not go on to give specific reasons for this. Those who did cited their room was cold overnight and there was a lack of halal options that were not vegetarian. This feedback will be addressed in preparation for ASTP 2024.



Dining hall at St Catharine's. Photo credit: Ian Olsson Photography

# St Catharine's College

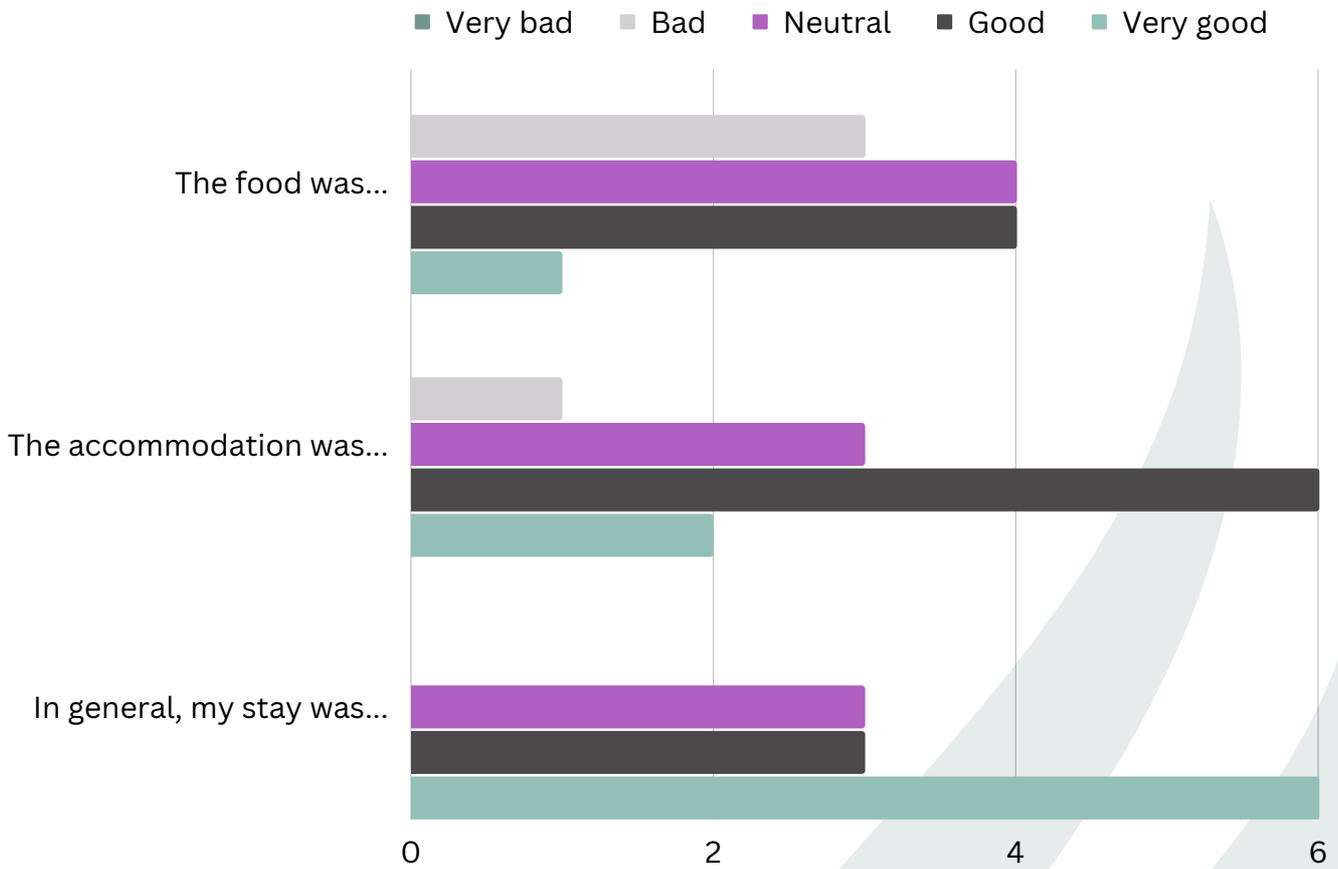
n=14



	Very bad	Bad	Neutral	Good	Very Good	Total
The food was...	3 (21.43%)	3 (21.43%)	2 (14.29%)	2 (14.29%)	4 (28.57%)	14
The accommodation was...	0 (0%)	1 (7.69%)	2 (15.38%)	5 (38.46%)	5 (38.46%)	13
In general, my stay was...	0 (0%)	1 (7.14%)	3 (21.43%)	4 (28.57%)	6 (42.86%)	14

# Pembroke College

n=12



	Very bad	Bad	Neutral	Good	Very Good	Total
The food was...	0 (0%)	3 (25%)	4 (33.33%)	4 (33.33%)	1 (8.33%)	12
The accommodation was...	0 (0%)	1 (8.33%)	3 (25%)	6 (50%)	2 (16.67%)	12
In general, my stay was...	0 (0%)	0 (0%)	3 (25%)	3 (25%)	6 (50%)	12

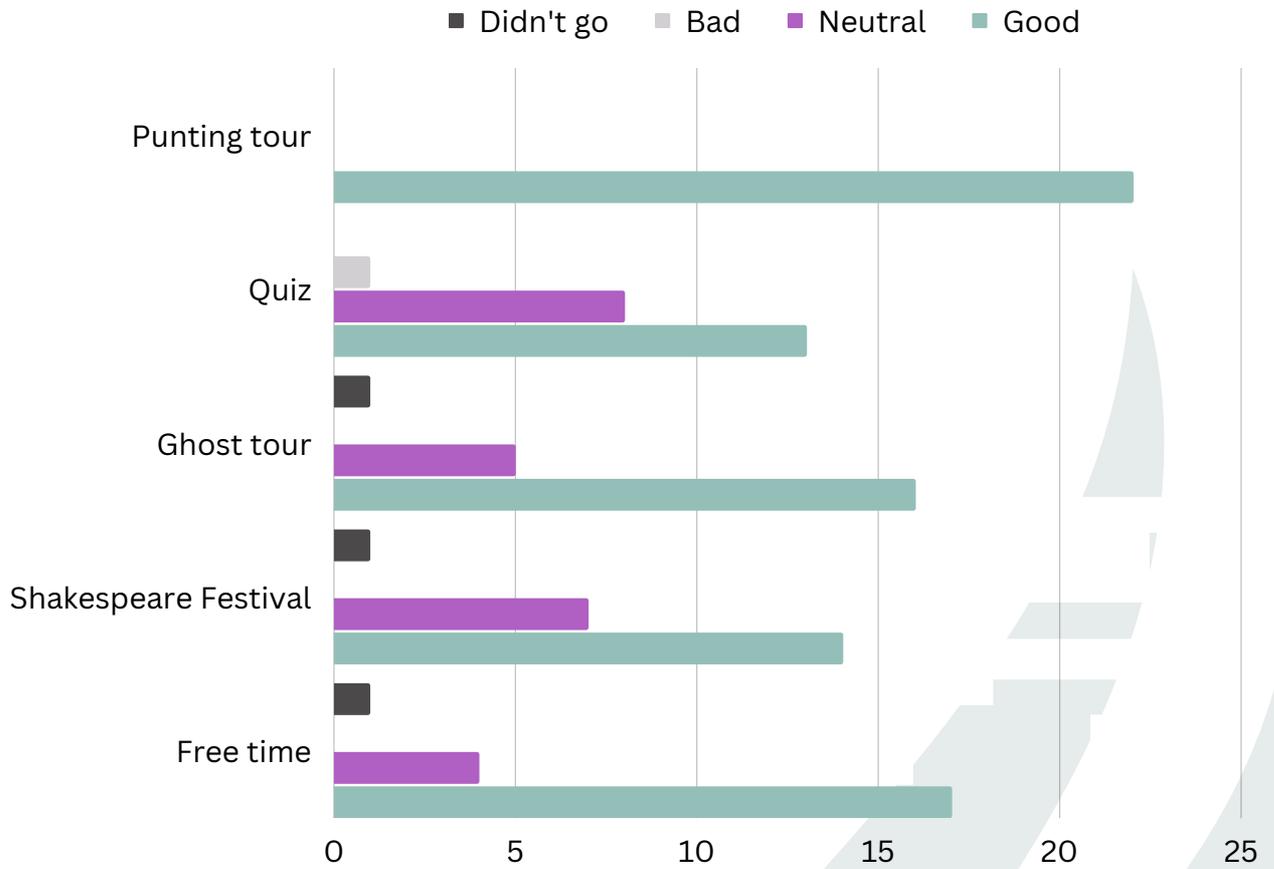
## Evening Activities

The range of evening activities allowed students to explore Cambridge and socialise. Students from widening participation backgrounds, such as the programme's participants, may have limited opportunities to speak to fellow students aspiring to highly selective universities or careers in science when at home. The programme gives participants the opportunity to meet and develop a network like-minded individuals. Evening activities are essential to this process, allowing students to relax and get to know each other in an informal space.

Students were positive about the evening activities that were provided this year, with some noting that they 'made an amazing network of friends' and 'Building friendships and participating in leisure activities added a fun and social dimension to the experience'.

# Evening & Social Activities

n=22



	Didn't go	Bad	Neutral	Good	Total
Punting tour	0 (0%)	0 (0%)	0 (0%)	22 (100%)	22
Quiz	0 (0%)	1 (4.55%)	8 (36.36%)	13 (59.09%)	22
Ghost tour	1 (4.55%)	0 (0%)	5 (22.73%)	16 (72.73%)	22
Shakespeare Festival	1 (4.55%)	0 (0%)	7 (31.82%)	14 (63.64%)	22
Free time	1 (4.55%)	0 (0%)	4 (18.18%)	17 (77.27%)	22

## Student Reflections

100% of the surveyed students would recommend ASTP to a friend or fellow student.

- *'Overall, my week on the ASTP program has been transformative, leaving me with newfound knowledge, a sense of belonging to the scientific community, and a strong determination to overcome obstacles on the path to achieving my goals. I am grateful for this enriching experience and excited about the possibilities that lie ahead.'*



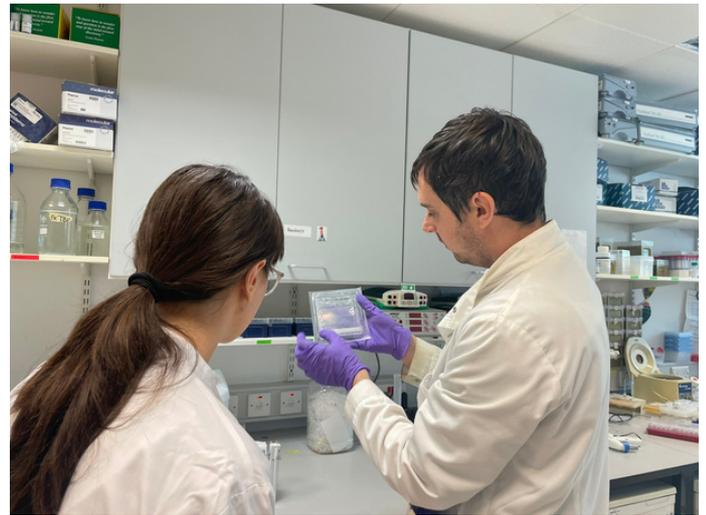
Students working at the Institute of Metabolic Science



- *'It's an AMAZING programme that allows a person to have an accurate insight of their scientific career in the future.'*
- *'I've had the most amazing time networking with scientists with so much experience and being able to work alongside them in a proper research facility, living the life of a real researcher for a week, and I would want everyone to have that opportunity like I did.'*
- *'The knowledge I learn in this week is much more than I have learned at school for a month.'*

Student and workshop facilitator at the Gurdon Institute

- *'I loved and enjoyed every single day, and I thought the variety of things we got to do and the different scientists that we got to meet was amazing. I thought our days were extremely well planned and well thought out and I can truly only think of positives when it comes to feedback. But all in all, this was the best work experience I could have hoped for, and I cannot say how grateful I am to you and all the scientists that took time out of their work to spend time with us.'*
- *'It is such a rare and valuable opportunity that I don't think could be gained elsewhere, a mixture of learning and having work experience, networking and being trained with everything provided by the organisation for you.'*



Student and their mentor in the Mitochondrial Biology Unit



- *'I would recommend the ASTP to anyone interested in anything stem related. It is a once in a lifetime opportunity to work with some of the worlds top scientists and meet amazing friends.'*
- *'...had the most amazing experience where I met so many knowledgeable people and friends.'*
- *'Thank you so much for this amazing opportunity. I have learnt a lot and would take away so much from this experience.'*

Student working with their mentor in the Sainsbury Lab

# Feedback From Laboratories

All participating researchers and institute staff were invited to complete a survey after participating in the programme. It is vital that researchers have the opportunity to give feedback and we are keen to ensure researchers and staff enjoy their time on the programme. Positive experiences increase the likelihood of continued widening participation work at their institute. Fourteen individuals completed the survey.

## Key Findings

- 100% of respondents said they felt 'somewhat positive' or 'very positive' about the ASTP
- All respondents said they were 'likely' or 'very likely' to take part in ASTP, or a similar programme, in the future. 92% said they were 'very likely'.



Students and a researcher at the Sainsbury Lab

## Reflections

- *'Working with a student felt like it lent a fresh perspective to my research and reminded me how cool it is to be working on such fundamental research. It also reminded me of the importance of being able to communicate my research to others who may not have the same background knowledge.'*
- *'I'm trying to learn what excites young people about science and how it make it more of a fun experience, so this was quite enlightening.'*
- *'insight into how students from different backgrounds view science as a career initially/their preconceptions about who works in science and how accessible (or not) it is to them as a career- it was rewarding to see their opinions about this change during the week.'*
- *'Student feedback was that they were tired due to all of the social events in evenings running quite late.'*
- *'I would suggest reducing their evening timetable if possible as many were very tired.'*
- *'maybe give them a sense of what they are going to do so they can read up before hand and thus saving sometime since it is limited once they are here.'*

# Feedback From Chaperones and Colleges

Four students were employed to help with the ASTP, two each from St Catharine's College and Pembroke College. Student chaperones assisted with transporting students to and from labs, evening activities, and were also on hand to give advice and guidance to the programme's participants.

All the chaperones indicated in the survey that they “strongly agree” with the statement “I enjoyed working as a chaperone for the ASTP”.

Two respondents also mentioned that students appeared tired by the end of the programme and may benefit from more relaxed evenings. This echoed the feedback from labs and students.

- *'I've really enjoyed it, and it was very well organised. I feel bad for being paid for having such a nice time'*



Students and chaperones from St Catharine's College

# Financial Report

## Projected Spend

Expenditure	Budget	Total
For students and chaperones based at St Catharine's	Per person	
Accommodation (15 students, 2 chaperones)	£165	£2,805.00
	(£33 x 5 nights)	
Packed lunch (15 students)	£40	£600.00
	(£8 x 5 days)	
Evening meal (15 students, 2 chaperones)	£35.50	£603.50
	£7.10 x 5 days)	
Chaperone lunches (2 people)	£40.00	£80.00
	(£8 x 5 days)	
Salary for the chaperone (2 people)	£366.60	£733.20
	£12.22 per hour x 30	
For students and chaperones based at Pembroke	Per person	
Accommodation / breakfast / dinner (15 students, 2 chaperones)	£259.75	£4,415.75
	(£51.95 x 5 nights)	
Packed lunch (15 students)	£50	£750.00
	(£10 x 5 days)	
Chaperone lunches (2 people)	£8	£80.00
	(£8 x 5 days)	
Salary for the chaperone (2 people)	£858.20	£1,716.40
	£12.26 per hour x 70	
Travel	Per person	
Student travel to and from Cambridge (30 students)	£100	£3,000.00
Taxis to labs (15 people)	£30	£450.00
	£6 x 5 days	
Evening Activities for students	Per person	
Evening Activities for students (30)	£100	£3,000.00
DBS Checks		
Enhanced DBS Checks (4 chaperones)	£38	£152.00
Other		
Photographer (ARU collaboration)	£800	£800.00
Contingency (5% of total budget)	£1,000	£1,000.00
Allocated budget (up to £20,000)		£20,185.85

## Programme Spend

Expenditure	Projected Spend	Actual Spend	+/- Projected spend
Students and chaperones at St Catharine's			
Accommodation (15 students, 2 chaperones)	£2,805.00	£3,036.00	+£231.00 7 additional rooms
Packed lunch (15 students)	£600.00	£640.00	+£40.00 5 additional meals
Evening meal (15 students, 2 chaperones)	£603.50	£674.50	+£71.00 10 additional meals
Chaperone lunches (2 people)	£80.00	£71.00	-£9.00
Salary for the chaperone (2 people)	£733.20	£1,026.12	+£292.92
Students and chaperones at Pembroke			
Accommodation / breakfast / dinner (15 students, 2 chaperones)	£4,415.75	£4,967.05	+£551.30
Packed lunch (15 students)	£750.00	£431.20	-£318.80
Chaperone lunches (2 people)	£80.00	£80.00	
Salary for the chaperone (2 people)	£1,716.40	£1,176.96	-£539.44
Travel			
Student travel to and from Cambridge	£3,000.00	£1,631.16	-£1,368.84
Taxis to labs (15 people)	£450.00	£932.95	+£482.95
Evening Activities for students	£3,000	£1,739.90	-£1,260.10
Shakespeare Festival		£820	
Punting		£495	
Ghost Tour		£350	
Quiz		£62.10	
Arrivals		£12.80	
DBS Checks			
Enhanced DBS Checks (4 chaperones)	£152.00	£152.00	£0.00
Other			
Photographer (ARU collaboration)	£800	£0.00	-£800.00
Contingency spend	£1,000.00	£2,323.79	+£1,323.79
St Catharine's			
Churchill College Accommodation	Twin room	£279	
Outreach staff overtime	37 hours	£642.52	
Increased accommodation and meal charge		£1,090.20	
Lanyards		£23.99	
Catering at CIMR		£288.08	
<b>Projected Spend</b>	<b>£20,185.85</b>	<b>£18,882.63</b>	<b>-£1,303.22</b>
		Return to Isaac Newton Trust WPIF	£1,117.37

## Notes

### St Catharine's College

#### Additional accommodation costs

- Thomas Williams (External Partnerships & Outreach Officer at St Catharine's) stayed on site for the duration of the residential, leading the programme and coordinating student chaperones. This accounts for 5 additional rooms.
- Due to travel arrangements, one student chaperone needed to arrive in Cambridge a day earlier than planned. This accounts for 1 additional room.
- One student attending this year's programme was a young carer and the project team were proud to be able offer accommodation to her and her mother. Her mother required support from her daughter, but did not need to accompany her to the lab during the day. Due to planned refurbishment and building work at St Catharine's College, fully accessible accommodation was unfortunately unavailable. Alternative accommodation was sought at Churchill College. All meals were provided at St Catharine's College and one day, to ensure the comfort and safety of the student's mother, a guest room was booked so she could remain on site. This accounts for the last additional room.

#### Catering

- The student's mother was provided with lunch for the duration of the programme. This accounts for the 5 additional packed lunches.
- The 10 additional meals were for Thomas Williams (5) and the student's mother (5).
- Student chaperones ate in St Catharine's College, rather than receiving a packed lunch. This reduced the cost of their lunch from £8 to £7.10.

#### Chaperone wages

- Student chaperones at St Catharine's College were integral to the smooth running of the programme. Transporting students to and from their laboratories - two of which were on Addenbrookes Site - and supporting with evening activities led to chaperones working more hours than originally forecast. Their wages in the programme spend reflect this.

### Pembroke College

#### Catering

- Packed lunches were charged at £7.70 rather than the forecast £10.

#### Chaperone wages

- Student chaperones worked 48 hours, instead of the forecast 70.

#### Travel

- Fewer students than anticipated made use of the travel support grant offered by the programme. All students were given multiple opportunities to make use of this fund, both before and after the programme.
- Taxi costs during the programme were higher than anticipated. This will inform budgeting decisions for next year's programme.

### Evening activities

- The cost of evening activities was lower than forecast. This will be taken into account for next year's programme, with a view to offering all students free travel to and from rather Cambridge.

### Photographer

- Lab contacts took photographs (with student and parental consent). Due to the multiple locations involved in this year's programme, it was decided a photographer would not be employed. This will be changed for next year's programme.

### Contingency Spend

- Accommodation at Churchill College was used as, due to planned refurbishment and building work, St Catharine's accessible accommodation was unavailable.
- During the week, Thomas Williams worked overtime managing the project. The additional pay (including national insurance contributions) totals £642.52 for 37 hours.
- The increased accommodation and meal charges increase the B&B and dinner rate at St Catharine's (charged at £40.10) to that of Pembroke College (£51.95). This remains a 20% discount on external rates for guests at St Catharine's - at £40.10 the discount was 49%. The college would be grateful if the trust accepted this additional claim and it would bring equity between the colleges.

# Conclusions

The ASTP successfully achieved its key aims. Feedback from students, labs, and chaperones demonstrates that the programme was able to inform, encourage, and inspire this year's participants. Participants ended the week more likely to apply to Oxford and Cambridge, in possession of improved scientific skills, and better informed about and comfortable in a university environment. Students also left the programme better equipped to make applications to leading institutions, having heard from outreach staff and developed a network of like-minded individuals.

## Plans for ASTP 2024

In analysing student, chaperone, and researcher feedback, a number of topics presented themselves for consideration. In preparing for the next iteration of the ASTP, these topics will be addressed.

### Scheduling

All three groups (participating students, chaperones, and labs) noted that the schedule left little time for students to relax during the week. Whilst students felt overwhelmingly positive about all of the evening activities provided, four reported that they felt very tired by the end of the week and would have appreciated more free time in the evening. Two students also felt they needed more time in the evenings to work on their presentations.

Action: Reduce the evening timetable by one, based on the popularity of the events ran this year. This will allow students more time to relax and/or work on their presentations.

### Preparation

Five students mentioned that they would have liked to know what work they would be doing in advance, so they could do some brief preparation ahead of the programme. They stated this would make them feel more confident at the start of the week and potentially allow for deeper exploration of their subjects.

Action: Circulate some lab-specific information to students prior to the start of the programme. The project team are conscious too much information before the programme may overwhelm students or even deter them from attending. However, it is felt that giving students a broad overview of the some of the work they might encounter will better prepare students, without overwhelming them.

### Catering

Some students expressed disappointment that the halal food options were vegetarian.

Action: The project team will ask the catering departments at St Catharine's and Pembroke if they would be able to provide halal meat during the dates of the residential.

### Asking Questions

when asked 'If you could give some advice to yourself when you started the programme, what would you say?', ten students mentioned they would encourage their former selves to ask more questions.

Action: All those working with students to encourage questioning and leave sufficient time

### Leaving night

One participant mentioned it would be nice to have a leaving night in the final evening.

Action: Whilst students attended a leaving event at their respective labs on the final day of the programme - giving their presentations and being awarded their certificates - a college-specific or whole cohort event could be arranged for the final evening. This would give the students a chance to come together as a whole cohort one final time. This event could be hosted in St Catharine's College or Pembroke College, perhaps in the format of a formal hall meal.

### Gender split in participants

One participant mentioned that they noticed only four of the programme's 29 participants were male.

Action: The ASTP's primary aim is to support and empower students from widening participation backgrounds. In assessing a student's background, the project team adhered to the widening participation criteria laid out by the central university. Gender is not a category that is used. As such, although this year's cohort was predominantly female, the team were pleased they had selected students who fulfilled the stated criteria.



ASTP cohort 2023

# Appendices

## Appendix A

Timetable for students at the Sainsbury Laboratory

### SCHEDULE

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
09:00	Induction	College tour & presentation at St. Catharine's	Presentation skills w/s [REDACTED]	Lab Work	Modelling Workshop [REDACTED]
11:00	Lab Work	Lab Work	Lab Work	Lab Work	Lab Work
13:00	Lunch	Lunch	Lunch - pizza with the summer students	Lunch and Poster Session	Lunch
14:00			Lab Work	13:45 - 14:45 Herbarium Tour	Presentations
15:00	Cryo SEM with Ray Wightman	Infiltration with [REDACTED]		14:45 - 16:00 Lab Work	Celebrations, cake and photographs
16:00			Write up	Write up	Travel home
17:00	Sign out of institute	Sign out of institute	Sign out of institute	Sign out of institute	
19:00	Dinner at St. Catz: The Great BioQuest	Shakespeare Festival	Dinner at St. Catz: free evening	Dinner at St. Catz: free evening	
22:00	Back at St. Catharine's	Back at St. Catharine's	Back at St. Catharine's	Back at St. Catharine's	

# Appendix B

## Timetable for students at the Institute of Metabolic Science

Dates	Activity	Time	Location	FOR DECISION AT IMS, MBU, CIMR; NOTES
Monday 10th July	Welcome and Induction	9.30 – 11.30	IMS	<i>Introductions to the Institutes; Health and Safety induction Scientific presentations</i>
	Lunch	12.00 – 13.00		<i>Bring your own lunch</i>
	Lab time	13.00 – 17.00	Lab	<i>How can nutrition alter development of our brain before we are born? We use mice to model how obesity in pregnancy alters development of the parts of the baby's brain that control food intake. We will explore the anatomy of the mouse brain and practise mounting tissue sections onto slides for histology.</i>
Tuesday 11th July	Report to Lab	11.30	IMS	
	Lunch	12.00-13.00		<i>Bring your own lunch</i>
	Lab time	13.00 – 17.00	Histopathology Lab	<i>staining on the slides / continuation of experiment from Monday Core Facilities Demos</i>
Wednesday 12th July	Report to Lab	11.30	IMS	
	Lunch	12.00-13.00		<i>Bring your own lunch</i>
	Lab time	13.00 – 17.00	Lab	<i>Is too much fat toxic? Is all fat bad? How can I investigate this? Let's check how much fat is there and which kind of fat is there! Techniques: lipid extraction and Gas Chromatography Mass Spectrometry (GCMS) supported by visualisation of adipocytes (cell culture, adipose tissue) and fatty liver histology.</i>
Thursday 13th July	Join talks with CIMR and MBU	9.30 – 11.30	Level 7 Lecture theatre, Keith Peters Building	<i>How genetic variation can drive disease, influence disease risk, and what this means for both research and medicine. This workshop will also provide essential background for the more practical Workshop #4 on Friday,</i>  <i>(i) Intro; 10 mins</i>  <i>(ii) The genetics of disease (monogenic &amp; polygenic); 30 mins; IMS speaker (</i>

				<p>(iii) Genetic variation and protein structure; 30 mins; CIMR speaker ([REDACTED] CIMR)</p> <p>Break (10 mins)</p> <p>(iv) Genetics and physiology of mitochondrial diseases; 30 mins; MBU speaker ([REDACTED])</p>
	Lunch	12.00-13.00		Bring your own lunch
	Lab time	13.00 – 17.00	Lab [REDACTED]	<p>1. Tissue culture. Cells before and after diff, to see adipocytes. We will then have some Hela cells to split and look at the cells on Friday.</p> <p>2. BCA assay. Challenge to get the best standard curve and to solve a mystery of some mixed up (access to computers).</p> <p>3. Imaging. During the BCA assay incubations, we will talk groups through immunofluorescence and show some pictures and videos.</p>
Friday 14th July	Workshop with CIMR and MBU	9.30 – 11.30	Clinical School IT Teaching room	<p>A practical extension of Workshop #3 where students will have their own terminals.</p> <p>Part 1: DNA sequencing a little and a lot. Bioinformatics practical exploring genetic variation [REDACTED]</p> <p>Part 2: Protein structure practical [REDACTED]</p>
	Lunch	12.00-13.00		Bring your own lunch
	Lab time	11.30 – 13.30	Lab	<p>Lab ASTP only Students to email presentations by 14.30 at the latest to mailto: <a href="mailto:engage@cimr.cam.ac.uk">engage@cimr.cam.ac.uk</a></p>
	Presentations	13.45 – 15.00	Level 7 Seminar Room, Keith Peters Building	5 min presentations from the 11 combined CIMR, IMS, and MBU ASTP students.
	Celebration	15:00-15.30	Level 7 Seminar Room, Keith Peters Building	End of the program celebration Taxi pick up (ASTP) 15.45

# Appendix C

Timetable for students at the Cambridge Institute for Medical Research and Mitochondrial Biology Unit



MRC  
Mitochondrial  
Biology Unit



## Aspiring Scientists Training Programme 2023

### Timetable

Date	Time	Location	Activity	Details
Monday 10 <sup>th</sup> July	9:30-11:30	Keith Peters Building, Room 2.30	Welcome and induction	<p><b>9:30</b> HR collect right to <a href="#">work documents</a>, hand out visitor passes and IT passwords</p> <p><b>9:40-9:50</b> Welcome: [REDACTED]</p> <p><b>9:50-10:10</b> Introduction to the week's programme: [REDACTED]</p> <p><b>10:10-10:30</b> Health &amp; Safety: [REDACTED] hand out lab coats &amp; notebooks</p> <p><b>10:30-10:45</b> Building tour</p> <p><b>10:45-11:15</b> Coffee break with lab</p>
	11:15	Labs	CIMR students shown to labs MBU students stay in Room 2.30	<b>11:15-11:30</b> IT induction (with individual labs: shown which computers they can use, test login details)
	11:30-15:45	Labs/ Level 7 cafe	Lab work, including 1 hour for lunch in the cafe	Lab supervisors to escort students to microscopy (Room 1.5) for <b>15:45</b>
	15:45-16:40	Microscopy, flow cytometry & proteomics	Core facilities demos CIMR PE Team to escort to Rooms 1.28 and Level 5.9	<p><b>15:45-16:00</b> CIMR microscopy [REDACTED]</p> <p><b>16:05-16:20</b> CIMR Flow cytometry [REDACTED]</p> <p><b>16:25-16:40</b> CIMR proteomics ([REDACTED]) [REDACTED]</p>
	16:45-17:00	Lab/ reception	Collect belongings CIMR PE Team to escort	Back in reception by 17:00 to meet taxis

Date	Time	Location	Activity	Details
Tuesday 11 <sup>th</sup> July	9:30-11:00	College	College visits	College visit guided by School Liaison Officer, with the whole ASTP group
	11:00-11:30	Taxis	Travel to CIMR/ MBU	
	11:30-17:00	Labs/ Level 7 cafe	Lab work, including 1 hour for lunch	Use any spare time you have in the lab to start your presentations ( <i>you could just do the introduction slide today</i> )
	17:00	Reception	Taxis back to college	
Weds 12 <sup>th</sup> July	9:30-11:00	College	Workshop	Presentation skills workshop (■■■■■ Institute of Metabolic Science)
	11:00-11:30	Taxis	Travel to CIMR/ MBU	
	11:30-17:00	Labs/ Level 7 cafe	Lab work, including 1 hour for lunch	Use any spare time you have in the lab to continue your presentations
	17:00	Reception	Taxis back to college	
Thursday 13 <sup>th</sup> July	9:30-11:30	Level 7 lecture theatre	Workshop	How genetic variation can drive disease and influence disease risk, and what this means for research and medicine. <b>Introduction:</b> ■■■■■ (CIMR) <b>Is Obesity a Choice?:</b> ■■■■■ (IMS) <b>Genetic variation and protein structure:</b> ■■■■■ <b>Genetics and physiology of mitochondrial diseases:</b> ■■■■■ ■■■■■
	11:30-17:00	Labs/ Level 7 cafe	Lab work, including 1 hour for lunch	Use any spare time you have in the lab to continue your presentations
	17:00	Reception	Taxis	

Date	Time	Location	Activity	Details
Friday 14 <sup>th</sup> July	9:30- 11:30	All Meet at Keith Peters Building at 9:30 then escorted walk to School of Clinical Medicine IT E Learning room 3	Workshop	Part 1: <b>DNA Sequencing: A Little and a Lot</b> [REDACTED] Part 2: <b>Protein structure</b> practical [REDACTED]
	11:30	Labs		You will be escorted back to your department
	11:30- 13:30	Labs/ Level 7 cafe	Finish lab work and presentations	<i>Complete any final bits of lab work; make presentations (concentrate on this)</i>  <i>Students to email presentations by <b>13.15</b> at the latest to <a href="mailto:engage@cimr.cam.ac.uk">engage@cimr.cam.ac.uk</a></i>
	13:45- 15:00	Level 7 Seminar Room	Presentations	Presentations from each of the 13 combined CIMR, IMS, and MBU students.  Strictly 5 minutes each (no questions/ discussion necessary)
	15:00- 15:30	Level 7 Seminar Room	Celebration	Snacks and drinks provided. There will also be a short Survey Monkey feedback form for you to complete
	15:30- 15:45		Taxis to Cambridge train station	Collect all belongings and be in reception for taxis to the station by 15.45

# Appendix D

Timetable for ASTP cohort 2023, including evening activities



	Monday	Tuesday	Wednesday	Thursday	Friday
07:30	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
09:00	Depart for labs	Tour of Pembroke College and talk on applying to Cambridge	Presentation skills session in St Catharine's	Depart for labs	Depart for labs
11:00	Labs	Labs	Labs	Labs	Labs
13:00	Lunch	Lunch	Lunch	Lunch	Lunch
15:00	Labs	Labs	Labs	Labs	Labs and departure
17:00	Return to colleges	Return to colleges	Return to colleges	Return to colleges	
18:00	Dinner	Dinner	Dinner	Dinner	
19:00	Quiz in St Catharine's	Ghost tour of Cambridge	Cambridge Shakespeare Festival	Free time	
22:00	Return to rooms	Return to rooms	Return to rooms	Return to rooms	