

## Schools @ Darwin Tree of Life Progress Report: March–July 2021

**Schools @ Darwin Tree of Life** ([schools.darwintreeoflife.org](https://schools.darwintreeoflife.org)) is a part of **The Darwin Tree of Life project**. The Zone launched in March 2021, in line with British Science Week and runs until July 2022. This report will detail progress of the Zone from 15 March 2021 to 17 July 2021.

Initially, over 50 teachers signed up to take part. However, during April and May teacher assessed grade workloads left sixth form teachers with little time for student enrichment activities. During June, the coronavirus pandemic heavily impacted teaching and learning in schools by causing almost 1 in 4 school students in the UK to be absent.<sup>12</sup> During the Summer Term, teachers of younger years were invited to take part, to allow experts to experience the activity.

The Zone features the experts working on **The Darwin Tree of Life project**, from institutions including Wellcome Sanger Institute, Earlham Institute, Marine Biological Association, University of Oxford, Royal Botanic Gardens Edinburgh, Natural History Museum, and Royal Botanic Gardens, Kew.

### Key activity figures

Schools	14
Students logged in	291
Students active	68%
Experts	35
Questions asked	19
Questions approved	18
Answers given	25
Comments	0
Live chats	32
Lines of live chat	3,572
Average lines per live chat	*188
Votes cast	61

<sup>1</sup> Reference: [school attendance figures published on gov.uk site](#)

<sup>2</sup> Reference: "Staffing is a major problem at the moment. With people having to isolate it means we are having to be used for cover in our frees. The marking load is also huge due to all mocks/assessments having to be moved from earlier in the year when we were teaching remotely." - [Teacher](#).

This work was supported by the Wellcome Trust, grant reference 206194/Z/17/Z and 218328/Z/19/Z.

## Experts

35 experts created a profile in the Zone. See who has taken part so far at:

[schools.darwintreeoflife.org/teams](https://schools.darwintreeoflife.org/teams).

The winning team of the Summer Term with the most votes from students was **Code Crackers**, who write and use computer code to understand DNA code.

## Students

291 students from 14 schools across the UK actively participated through taking part in live chats, asking follow up questions, and casting votes.

87% of active students were from target schools: 62% from underserved schools and 29% from widening participation schools.

## Live chats

32 live chats took place: 13 were school classes booked by teachers and 19 were additional chats, open to all the students.

An additional 5 live chats were booked: 1 was terminated due to technical issues at the school, 1 was cancelled and in 3 the school was unable to attend.

On average, 4 experts attended each live chat.

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## School activity

To date, students from 14 schools across the UK have participated in the Zone. In addition to live chats booked by teachers, there were 19 open chats for the students and their families. Some Sixth form students took part independent of their teachers. These students signed up through links promoted via [Wellcome Connecting Science student activities](#) or were family members of experts taking part.

School	Active users	Chats attended	Chat lines (total)	Questions asked	Questions approved
St Bridget's Primary School, Glasgow City (WP)	52	2	696	0	0
Litcham School, King's Lynn (U)	49	3	483	4	4
Beaulieu Convent School, Jersey (U)	21	1	69	1	1
The Arnewood School Academy, New Milton (U)	19	1	165	2	2
Sandymoor Ormiston Academy, Runcorn (U)	17	3	112	0	0
Kingsley Academy, Hounslow	16	1	144	0	0
John F Kennedy Catholic School, Hemel Hempstead (U)	12	2	88	0	0
The Basildon Upper Academy, Basildon (WP/U)	7	1	44	0	0
Hexham Middle School, Hexham (U) †	1	1	9	0	0
Kimbolton School, Huntingdon †	1	1	6	0	0
East Leake Academy, Loughborough †	1	1	5	0	0
Northampton International Academy, Northampton (WP/U) †	1	1	4	0	0
Bournemouth School, Bournemouth (U) †	1	1	1	0	0
The Henrietta Barnett School, London * †	1	0	0	2	2
Independent sixth form students †	7	4	33	7	7
Royal Institution Young Members †	1	1	38	3	2

\* In these chats teachers typed questions on behalf of their students † These schools only took part in open chats.

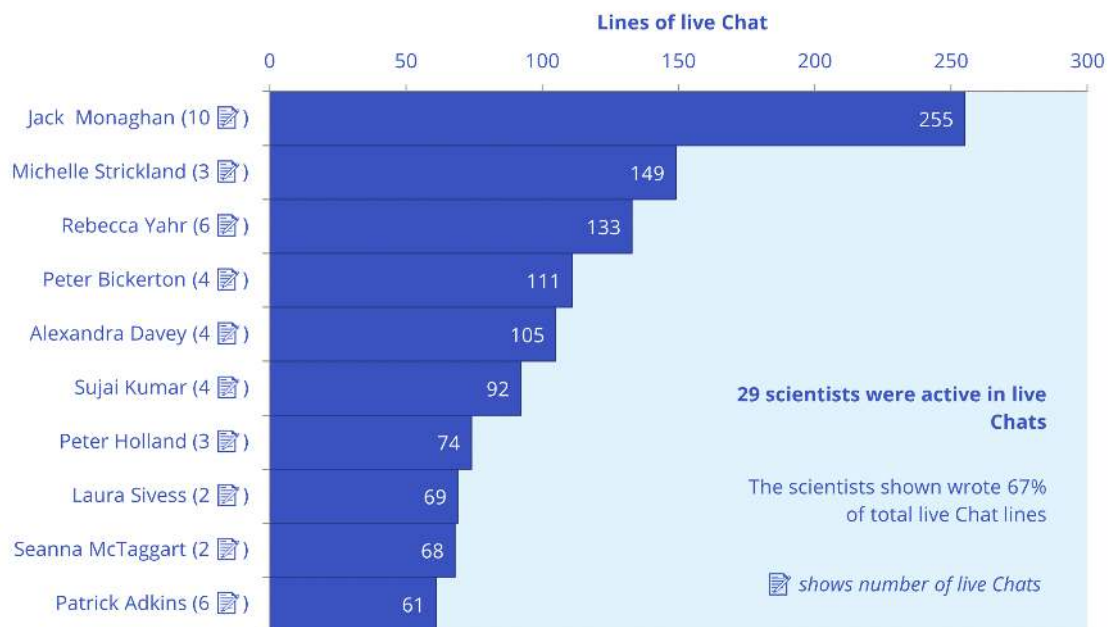
We want to increase the participation of under-represented groups. Find out what we mean by under-served (U) and widening participation (WP) schools, and how you can support us in working with more of these: [about.imascientist.org.uk/under-served-and-wp](http://about.imascientist.org.uk/under-served-and-wp)

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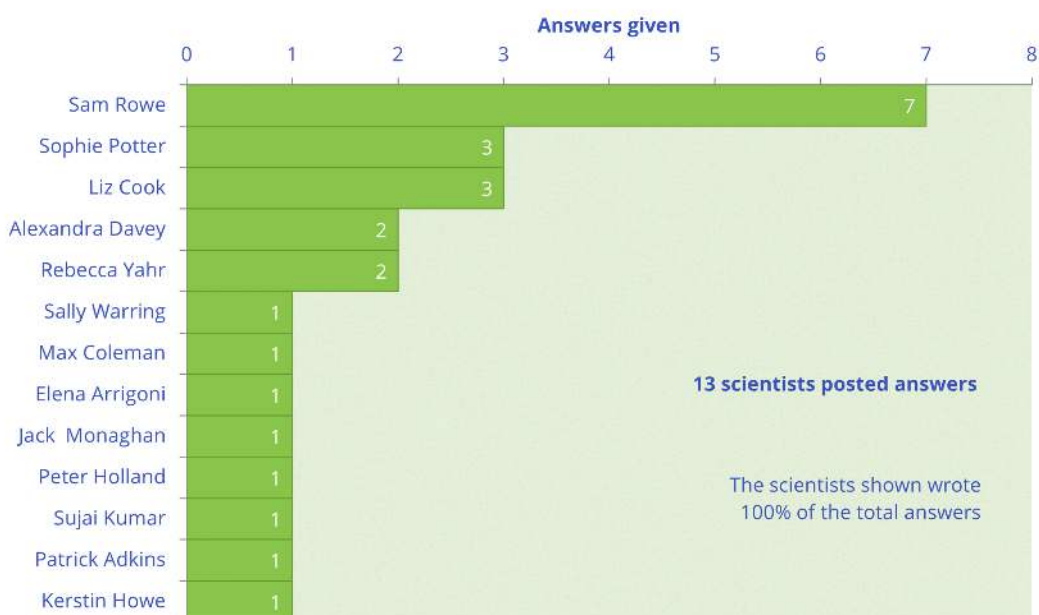
## Expert activity

During the Zone the experts interacted with students by writing 1,117 lines of live chat, and providing 25 answers to 20 posted questions.

**10 most active scientists in live Chats**



**10 most active scientists in posting answers**



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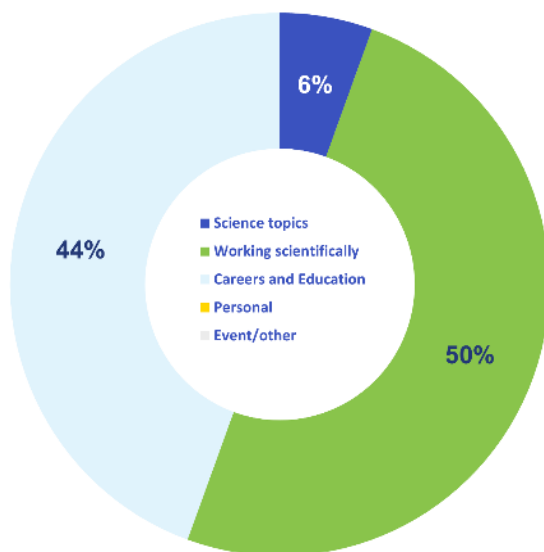
## Live chats

The word cloud below demonstrates what students and experts talked about in live chats. The bigger the word, the more frequently it was used.



## Questions in the Ask section

The chart below shows a breakdown of questions students sent to the experts. Examples are coloured by category.



Has there been a main thing that has been a catalyst for discoveries into improving human health yet?

What is the difference between 'good' and 'bad' quality DNA samples?

I'm also interested to know what kind of patterns you look for, or typically see, when analyzing base sequences?

Does the approximate time taken to sequence an animal differ depending on which group they belong to? Are there more complex families?

What is the most satisfying part of your job?

I wanted to ask what, in your opinion, has been the most interesting thing that you have discovered so far?

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## Examples of good engagement

The students had the opportunity to learn how modern science is conducted on a large scale, in collaborative, multidisciplinary environments.

**Student:** @Seanna What kind of projects do you deliver?

**Seanna (Project Manager):** I am project managing three projects for the DToL. One is one protist- single cell eukaryotes. This is a really complex and challenging project as we are trying to sequence a nice genome from a single cell!

**Seanna:** Protists are hugely important to all ecosystems, incredible diverse and we know VERY little about them. So this is a big discovery project! We haven't managed to get to end building the pipeline yet, but we are getting close. Very exciting.

**Student:** @Seanna: Do you do many complex projects or do you mostly do simple ones?

**Seanna:** The protist project is the most complex, as there are scientists from two institutes and 4 different groups. Coordinating everyone's efforts can be challenging, especially when we can't meet face to face

**Seanna:** I spend a LOT of time on zoom calls :)

**Seanna:** The other two projects are simpler. There is a project that is looking at pollinators (mostly bees). This has four projects within it, looking at bee populations that are in decline, and also those populations that are expanding.

...

**Student:** @Liz How long does it take for DNA to be sequenced?

**Liz (Project Manager):** It will also take a lot longer than that for a whole species to go from being collected to the final DNA sequence being known. There are a lot of steps and different teams involved... The collectors find the specimen, log what it is and carefully send it on. Then we have to make sure we have carefully logged which species are in which tubes, and take the DNA out. It then gets processed in the lab and the DNA is sequenced. The DNA sequence is then passed onto another group who check it. So there's a lot of work involved!

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Students also learned how they can conduct Darwin Tree of Life experiments on a smaller scale in their own homes or at school.

**Teacher [On behalf of their students]:** How do you get hold of this DNA from such small animals - such as a fly

**Jack M (Public Engagement Coordinator):** Because DNA is so small, we only need a tiny amount. We've run DNA tests on things as small as the pollen on a bees legs, and the microscopic creatures in ponds that are too small to see.

**Jack M:** Correction: bee's - scientists make mistakes too class. Don't tell your English teacher!

**Rebecca (Scientist):** We use simple chemicals sort of like soap and alcohol - there are some simple recipes to do DNA extraction at home!

**Teacher :** @Rebecca: Please can you tell us?

**Rebecca:** <https://askbiologist.asu.edu/activities/banana-dna>

Students connected with the experts about organisms they are personally interested in...

**Student:** I'm currently obsessed with tardigrades and reading about them they're fascinating and so helpful with science :D

**Rebecca (Scientist):** Ask @Neil about these -- he runs into them down the microscope sometimes looking at his mosses!

**Student:** @Neil i actually have two moss balls, Fred and Frank

**Neil (Scientist):** Wonderful!

**Neil:** There is a whole ecosystem in there.. tardigrades, rotifers, mites, springtails..

**Student:** @Neil Yeah, i want to have a couple different reptiles when im older and some specialists say moss is helpful to keep in their enclosures because of how self sufficient they are

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This student was interested in finding out about whether the experts felt that they had faced any barriers in their careers. Seeing people like them working in STEM can help all students see these careers as for them too.

**Student:** @Sophie @Alex As a woman has there been any barriers to you finding a career in science

**Alex (Scientist):** great question. I have been very lucky. I have three children and can only work part-time at the moment which limits my career progression. But my institution are quite supportive of families.

**Sophie (Scientist):** I've been very fortunate to be surrounded by supportive men and women- the only time I personally have had any concern was doing fieldwork in remote areas where you are more aware of your personal safety than men might be- but I have never had a problem.

...There was still time to discuss the experts' hobbies and interests too! Understanding that scientists are "regular people" helps students relate to them.

**Student:** @Jack M what football team do you support?

**Jack M (Public Engagement Coordinator):** Hi [Student name]. I must say I fell out of love with football a bit this year. I used to support Man U, but the whole super league just feels like it is all moving further and further from the fans.

**Jack M:** Who do you support?

**Student:** i support west ham united, who do you think is going to win the euros?

**Jack M:** Ah, that's such a difficult question. I'd love to say England but I think we might need a bit more experience. I hope the team does well though. Probably France, but I'd quite like it to be a bit of a wildcard. Who do you think will win?

**Student:** I hope England but I think either France or Portugal

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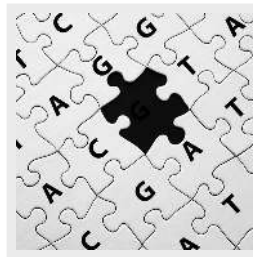


## Winning Team of the Summer Term

The students voted for their favourite experts; the team with the most team member votes was named Team of the Term.

The Winning Team with the most votes over the Summer Term was...

- **The Code Crackers**, who write and use computer code to understand DNA code!



 The **Schools @ Darwin Tree of Life** trophy is on its way to the **Code Crackers!** 

## Feedback



**St. Brigid's Primary**  
@StBridgetsPS

Great excitement in p7 today when we had two live chats with scientists and others working on the Darwin Tree of Life project @imascientist @STEMglasgow @TBF\_Glasgow #dyw



thanks for answering all my questions about Darwin I know stuff thanks it was really informative hope to get more chats

**Student**

Your replies are fantastic. Thank you so much for your time today. I am always amazed at how much I learn from these live chats, never mind the amount of knowledge the children are gaining about your subject area and future careers. **Teacher**

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