# Research and Innovation Zone

## May 2023

The Research and Innovation Zone (innovation23.imascientist.org.uk) ran from 17 April to 26 May and was funded by the STEM Ambassador programme.

### Key activity figures

| | Zone |
|---|---|
| Students logged in | 454 |
| Students active | 92% |
| Schools | 18 |
| Scientists given access | 51 |
| Scientists active | 38 |
| Chats booked | 36 |
| Chats took place | 24 |
| Lines of Chat | 7,718 |
| Average lines per Chat | 322 |
| Follow up questions asked | 154 |
| Follow up questions approved | 119 |
| Answers given to follow up questions | 439 |
| Scientist comments | 34 |
| Student comments | 10 |
| Votes | 266 |

### Who took part?

The Zone featured 44 STEM Ambassadors working in consultancies, food companies, schools and in academia - various job titles include a bridge design apprentice, process engineer, safety officer, research and development scientist and forensic analyst. 38 Ambassadors were active in Chats and provided 439 answers. They connected with 454 students from across the UK. 415 students (92%) actively participated by joining Chats, asking follow up questions, posting comments and casting votes.

72% of active students were from priority schools: 23% from underserved schools and 59% from widening participation schools.

A total of 266 votes were cast by students. The winning scientist with the most student votes was Santosh Mahabala, who uses biochemical tools to understand the early stages of tuberculosis.

### Activity

36 Chats were booked. 24 took place. Out of the remaining 12 Chats booked, 7 were cancelled and in 5 the school did not attend and did not give notice. All schools were chased and invited to rebook.

Students asked 154 follow up questions of which 119 were approved and sent to scientists. Duplicate questions (that scientists had already answered) were not sent again, with the student being directed to the previous answer and invited to comment and ask additional questions.

# School activity

Students from 18 schools across the UK participated in the Zone.

| School | Students logged in | Active student users | Chats attended | Chat lines (total) | Chat lines (per user) | Follow up questions approved | Votes |
|---|---|---|---|---|---|---|---|
| Hornsey School for Girls, London (WP) | 113 | 106 | 3 | 786 | 7 | 10 | 61 |
| Parmiter's School, Hertfordshire | 60 | 60 | 2 | 325 | 5 | 3 | 46 |
| Liverpool College, Merseyside | 51 | 47 | 3 | 440 | 9 | 3 | 13 |
| Ashfield Valley Primary School, Lancashire (WP) | 26 | 26 | 1 | 540 | 21 | 1 | 15 |
| Westfield Academy, Somerset (U) | 27 | 25 | 1 | 103 | 4 | 29 | 18 |
| Sir Harry Smith Community College, Cambridgeshire (WP/U) | 24 | 23 | 2 | 424 | 18 | - | 22 |
| All Saints Catholic College, West Yorkshire (WP) | 23 | 20 | 1 | 172 | 9 | - | 19 |
| Niddrie Mill Primary School, Edinburgh (WP) | 22 | 19 | 1 | 281 | 15 | 48 | 13 |
| Bexhill College, East Sussex (U) | 19 | 16 | 2 | 138 | 9 | 1 | 15 |
| Queen Elizabeth's Girls' School, Hertfordshire (WP) | 17 | 15 | 2 | 65 | 4 | 10 | 10 |
| Furness Academy, Cumbria (WP/U) | 18 | 14 | 1 | 170 | 12 | 0 | 11 |
| Unsworth Academy, Lancashire (WP) * | 13 | 13 | 2 | 190 | 15 | 6 | 8 |
| MidKent College, Kent (U) | 15 | 13 | 1 | 75 | 6 | 1 | 6 |
| Europa School UK, Oxfordshire | 7 | 7 | 1 | 148 | 21 | - | 7 |
| St Dunstan's School, Somerset (WP/U) | 7 | 6 | 1 | 32 | 5 | 6 | 1 |

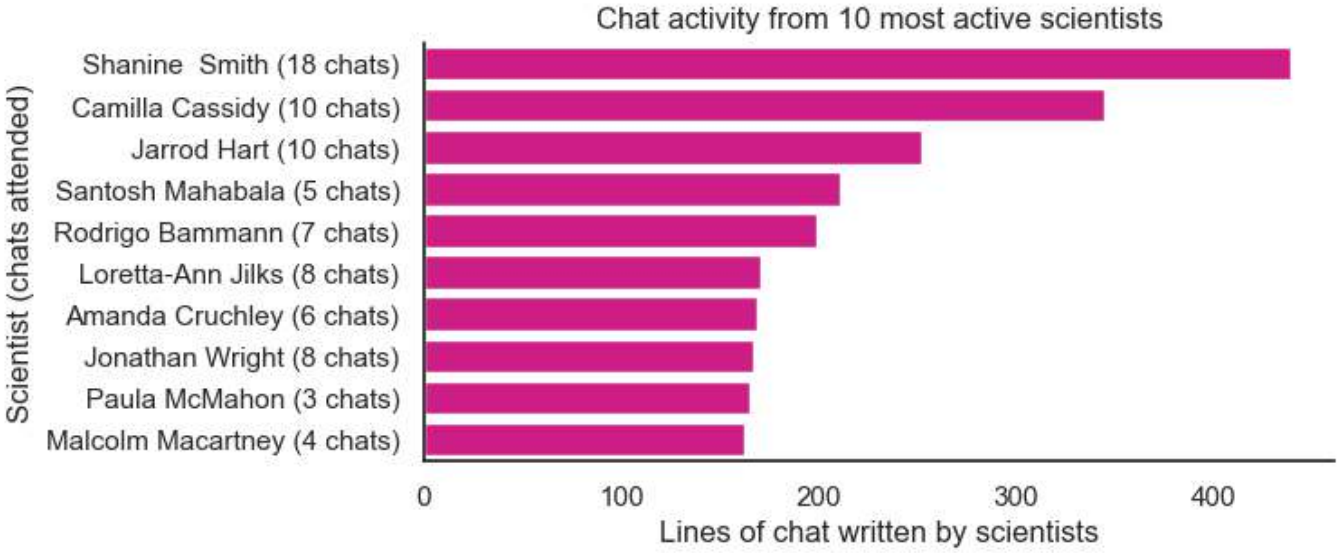
| School | Students logged in | Active student users | Chats attended | Chat lines (total) | Chat lines (per user) | Follow up questions approved | Votes |
|---|---|---|---|---|---|---|---|
| The North Halifax Grammar School, West Yorkshire | 3 | 3 | 1 | 34 | 11 | - | - |
| Chewton Mendip Primary School, Somerset * | - | - | 1 | 33 | 33 | - | - |
| Victoria Primary School, Edinburgh City (WP) | 4 | 2 | - | - | - | 1 | 1 |

** In these chats teachers typed questions on behalf of their students, with the chat displayed on a screen. There were 2 Chats where the teacher asked questions on behalf of their students. It is also common for students to share login details or computers during Chats. Therefore, the number of students engaged is expected to be higher.*

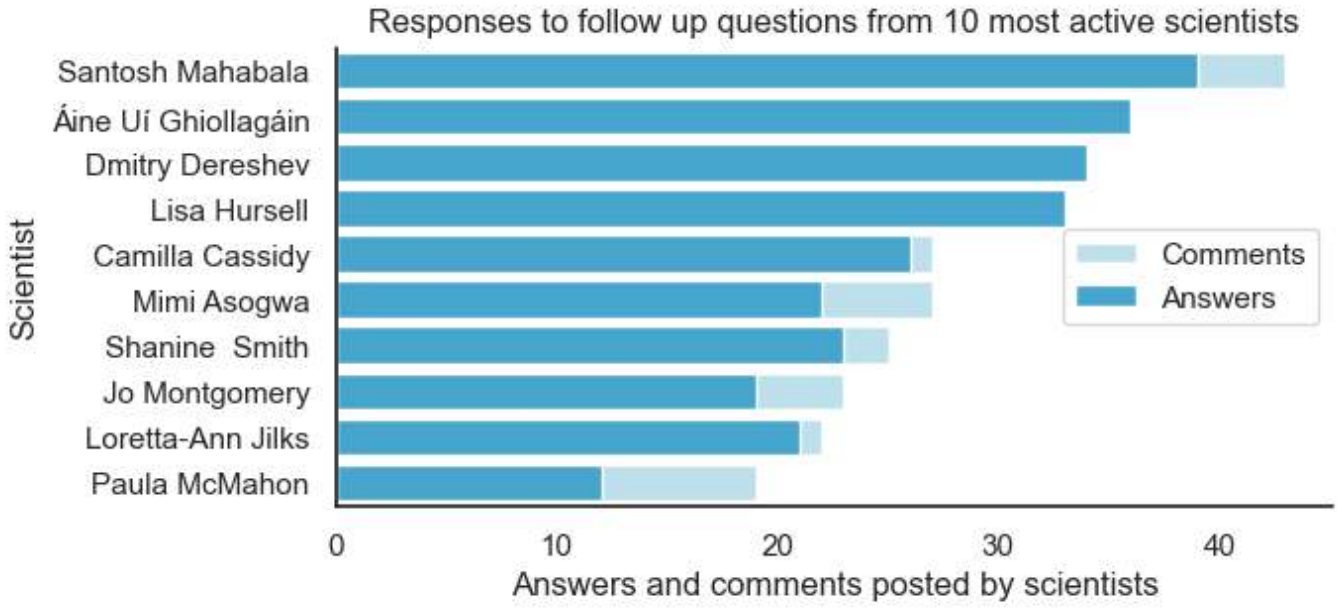
We want to increase the participation of under-represented groups. Find out what we mean by under-served (U) and widening participation (WP) schools, and how you can support us in working with more of these: **about.imascientist.org.uk/under-served-and-wp**

# Scientist activity

During the Zone the scientists interacted with students by writing 3,668 lines of Chat, and providing 439 answers to 119 follow up questions. On average, 7 scientists took part in each Chat.




The scientists shown wrote 62% of the lines of chat in the zone.
The average scientist attended 4 chats, and wrote 97 lines.



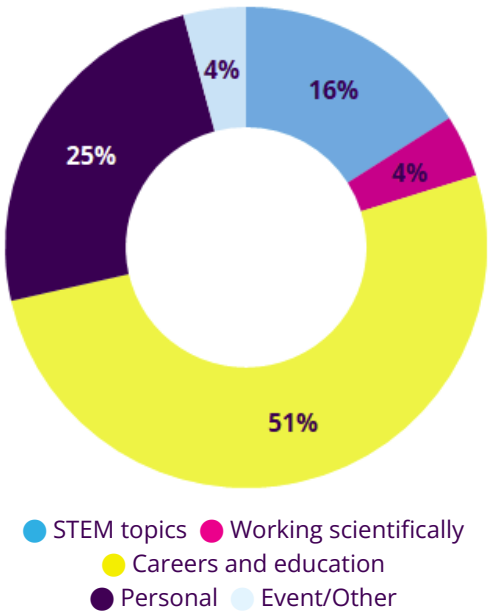

The scientists shown posted 60% of the answers, and 73% of the comments in the zone.
The average scientist posted 12 answers, and 1 comments.

# Chats

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


# Follow up questions

The chart below shows an analysis of questions students sent to the scientists. Questions are coded into overarching categories. The examples are coloured by category.




| |
|---|
| What do you think is the most interesting science fact? |
| What do you think about global warming? |
| How do you stick the tags on the birds? Do you catch them then stick them on? |
| Did you always want to be a scientist? |
| Have you ever gotten a scholarship? |
| What's the worst crime you had to help the police with? |
| What do you do in your free time to relax? |
| What's the best thing you've cooked/eaten? |
| What's your favourite type of animal? |
| Are there any TV shows about science which you recommend? |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# Examples of good engagement

Students engage with scientists by asking about the ways in which research looks and how long things take to complete. In this example, a student is asking about how scientists make a judgement call on when they consider their research to be completed, and as we can see from the answers, this isn't always the case!

**Student 1:** How long do you work on research before you consider it finished - no more answers to uncover?

**Camilla (scientist)**: In my opinion a good bit of research is never really done! You have an answer, a best guess, or a pretty solid idea. But hopefully you've come up with lots more questions in the process

**Dmitry (scientist)**: There's always more answers, it's more about how much money/time you can spare :D When I was doing a PhD, a typical research project would take ~6 months :)

**Lisa (scientist)**: I don't think it's ever "finished" - we do as much as we can to answer the question and get a result, but we might revisit something later and see if new technology means we can do things differently.

**Mimi (scientist)**: In my experience, I can never finish a research project, because the more answers you get, more questions pop up. The longest research project I have embarked took 5 years, there were many answers and unanswered questions at the end.

**Shanine (scientist)**: Sometimes you want to continue but you also have to weigh up if its worth it. Research is expensive and you don't always get the results you want!

How are STEM careers and jobs viewed by wider society? Lisa, one of the RI Zone scientists, provides an interesting answer to this question.

**Student 2:** What is the typical reaction of people when they discover what you do for a living?

**Lisa (scientist)**: "Have I seen something you've done in the news?!"

**Student 2**: That is actually really good

**Lisa (scientist)**: and the answer is yes, you have ;)

Coding is a topic that is of increasing interest to students. Engagement with this topic, specifically from minority groups of students, is also of benefit and should be encouraged. Dmitry helps clarify what programming languages he uses in his work.

**Student 3:** What programming languages do you use? Do you know about Lua? If so, have you used it before?

**Dmitry (scientist)**: I've heard about Lua, though I haven't used it. My primary programming language is Python, but I coded in several others, including JavaScript, Visual Basic, Pascal, and Matlab :)

**Student 3**: Very interesting, thanks!

**Dmitry (scientist)**: You are welcome :)

Five scientists react to this popular question! Students often ask about the reasons why candidates end up studying or working in STEM fields. In hearing about the scientists experiences', students can find common ground and may be inspired to take associated subjects at school.

**Student 4:** Why did you get into STEM?

**Dmitry (scientist)**: It's really interesting and opens up so many different possibilities!

**Jonathan (scientist)**: An interest in complex things, enjoying fixing things and making them better

**Ling (scientist)**: Originally as a teenager, because there are more career opportunities. Now, I realise that having a STEM career allows me to make a difference and contribute to solving grand challenges.

**Yumi (scientist)**: I enjoyed maths and chemistry during school/college and wanted to take it to university. I like problem solving and knowing that work you do can make a difference.

**Emily (scientist)**: I enjoyed maths and science most at school so this is probably why I got into STEM. I especially enjoy analysing and conducting experiments.

# Scientists of the week

Students voted each week for their favourite scientist to be named Scientist of the Week.

**The Scientists of the Week were:**

**Santosh Mahabala**, using biochemical tools to understand the early stages of tuberculosis

**Dmitry Dereshev**, uses computer models to help students select the best university!

# Winning scientist

**The overall winner, with the most votes at the end of the Zone was:**

- **Santosh Mahabala**, using biochemical tools to understand the early stages of tuberculosis

As Zone winner, they receive £500 to spend on further public engagement projects.

"I am on cloud nine on winning in the Research and Innovation zone. I am humbled and this award encourages me to engage with the young minds more and inspire them towards the STEM subjects and research... I thank the students voting for me. I thoroughly enjoyed interacting with them in the past few weeks. I relished answering their live and offline questions on my research, my career and life.

I am planning to use the prize money to resume our STEM podcast series (@portpostdoc) and make it student centred."

You can read their full statement at **here**

# Feedback

"Thank you for engaging with my pupils - we really appreciate it!" - **Teacher**

"Thank you all for coming and taking the time to speak with us :)"

**Student**

"Great chat everyone, with brilliant, curious questions! Keep wondering about the world and finding things out!"

**Jo** (scientist)

"It's easy to fit in around meetings which is nice!!

**Lisa** (scientist)

"Thank you ALL for taking the time to answer the many questions asked.  Our students have benefitted immensely from the opportunity and we are extremely grateful. We ALL wish you well for the future"

**Teacher**

"The session has been fantastic and our students have been enriched, thank you for giving up your time, it is appreciated"

**Teacher**

"Thank you all for your questions. It has been great chatting with you"

**Charles** (scientist)