

“EMBL pen pals”

A grassroots initiative for
outreach, education and diversity in science

Report 2020: **EMBL-Nigeria** pen pal programme



An overview

Context: The EMBL pen pals programme was created in 2020 by predoctoral fellow Mariana Alves and postdoctoral fellow Rafael Galupa, connecting EMBL scientists with students across the world to create more bridges between science and society, especially in unprivileged contexts.

Results: The first edition was organised with 60 students from the All Souls High School in Ibadan, Nigeria, and involved more than 75 EMBL scientists who received a short training on writing to lay audiences. 97% of the scientists would take part in a similar initiative in the future and 46% stated this experience rekindled their passion for science.

Perspectives: Future editions of this initiative could be easily organised with other schools, especially considering EMBL member states, associate members and prospect members.



All Souls High School students. Credit: Mariana Alves

Background

In 2019, Mariana was invited to participate in a conference in Nigeria. To maximise the impact of her visit, she started planning outreach visits to local schools with the support of the DRTC (Drosophila Research and Training Centre).

Rafael saw an opportunity to connect EMBL scientists and those students, by inviting students to write a postcard with questions they wished to ask a scientist. Mariana and Rafael thus decided to organise a pen pal programme together, and Mariana brought postcards from 60 students to be answered by EMBL scientists.

You can read more about Mariana's school visits [here](#) and [here](#), as part of ELLS School Ambassador programme and part of the first outreach visits by the Drosophila Research Training Centre (Nigeria).



All Souls High School in Ibadan, Nigeria. Credit: Mariana Alves

Aims

Students, especially from low-income communities and countries, often do not see themselves as future scientists and do not consider this type of careers (Carlone & Johnson 2007; Jarvis 2020; Oseguera et al 2019).

The **EMBL pen pal programme** aims to connect students with scientists as role models, busting stereotypes about scientists, science and scientific careers by:

1. Letting students know what it is like to be a scientist and do science;
2. Showing how exciting science can be and raise awareness about science careers;
3. Promoting dialogue about science on topics relevant to people's daily lives;
4. Educating and inspiring the next generation of citizens (and potentially scientists).



Free Icons from the Streamline Icons Pack

Format

1

Students were asked on the spot to write a postcard with **one or more questions they would like to ask a scientist**

2

An email was sent around EMBL inviting **scientists from all career stages** to reply to those postcards. Based on the topics of the questions, we specifically asked scientists whether they had experience or knowledge in those.

3

Scientists were offered a 10-min **training video with tips and advice** on writing their letters, as well as two online informal gatherings for discussions and questions.

4

Scientists submitted their letters and filled in a survey to evaluate their **impressions of the programme** and **attitudes towards science outreach**

5

Letters were sent via post and **students received their letters!** 😊

Students



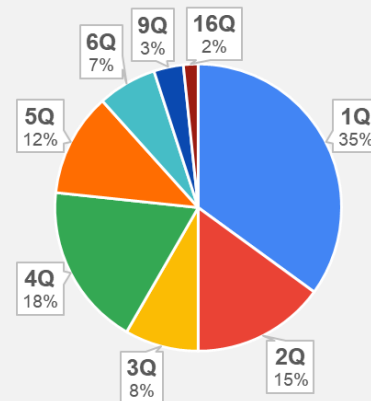
Students write their letters (February 2020)

The students, aged 16-17 years old, were attending their last year at the All Souls High School in Ibadan, Nigeria.

Students were invited to think about what they would like to ask a scientist, and each student wrote their own postcard with one or more questions.

Some students had lots of questions to ask!

How many questions were asked per postcard?

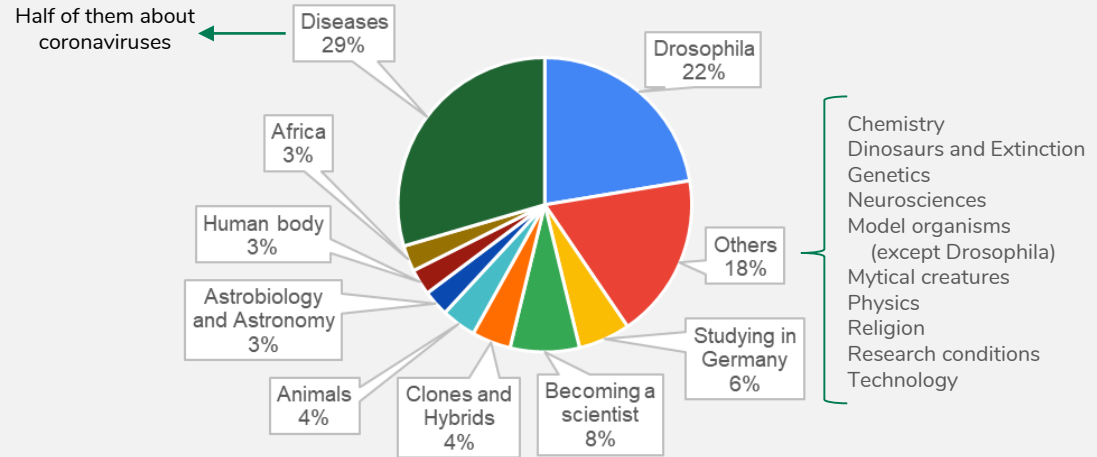


Students

The topics of many of the questions were related to subjects they had heard recently about: the **fruit fly** (Mariana and DRTC scientists presented their work with this model organism) and the **COVID-19** pandemic.

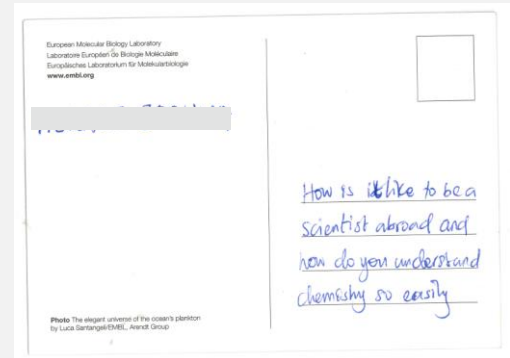
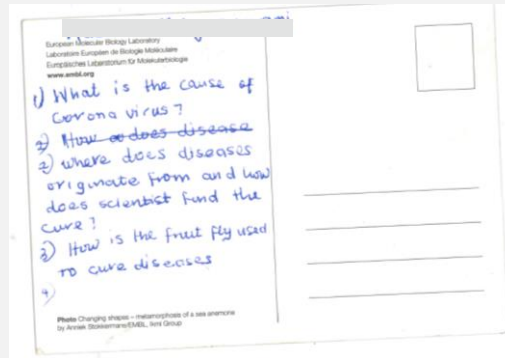
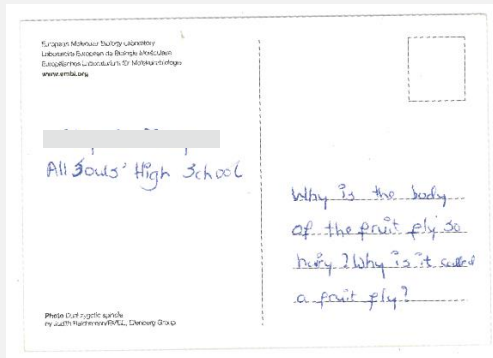
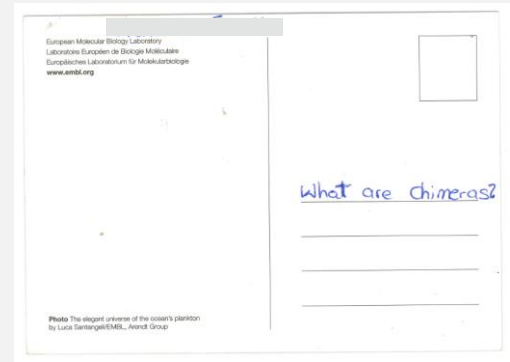
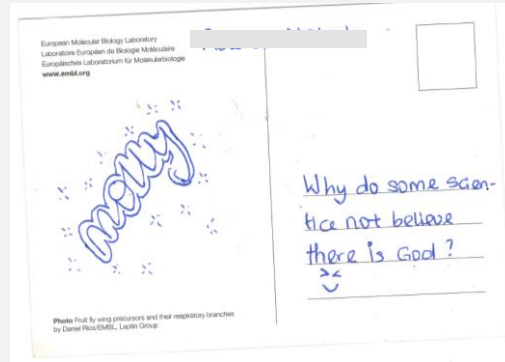
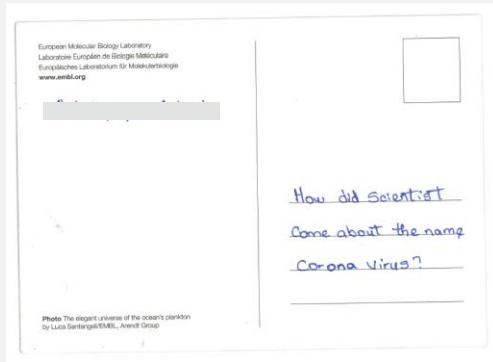
Many also asked questions related to **becoming a scientist** or how to **study in Germany**.

What were the students curious about?
(% questions per topic)



Students

Examples of postcards



Students

The students received the replies to their letters by EMBL scientists back in Nigeria, along with **certificates of participation** in the EMBL pen pal programme, with the help of scientists from DRTC.

Due to several logistic issues, including pandemic-related, it was difficult to develop a strategy to assess the impact of this initiative on the students, and/or their feedback on this experience. This is an aspect that should definitely be considered in future editions.




Students receiving their letters and participation certificates (October 2020)

EMBL Scientists


EMBL staff across all sites with a background in science was invited to participate in the programme and write a letter to reply to the students' postcards.

78 EMBL scientists wrote letters to the 60 high school students (some students got replies from more than one scientist due to the high number of questions they wrote 😊 this was also a way to let all the scientists who showed interest to participate)


Who were the 78 EMBL pen pal scientists?



30 PhD students
18 Postdocs/Staff Scientists
14 Technicians/Facilities
7 Science Admin
6 Research Trainees
3 Group Leaders



56 work in Heidelberg
10 work in Barcelona
7 work in Rome
3 work in Hinxton
2 work in Grenoble
0 work in Hamburg



72% identify as female
28% identify as male



26 nationalities

EMBL Scientists

Scientists were offered a 10-min training video entitled “Tips and Advice for writing your letter”, as well as two online informal gatherings for discussions and questions.

The training video included context about the programme and the students and many suggestions on how to structure the letters, how to write about science for lay audiences and how to be mindful about cultural differences.

Some figures regarding the letters of the scientists:



65% mention aspects of how science works – the method, the questions, the unknowns



39% mention that science is international



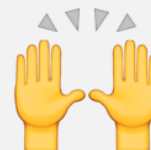
35% mention science as a group endeavour



71% talk about the person behind the science (their hobbies, families, ...)



97% explain the jargon words they use

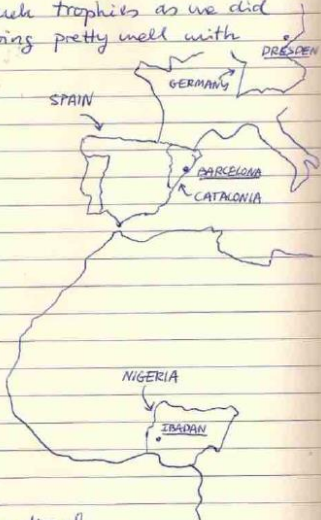


67% leave an empowerment message to the student

EMBL Scientists

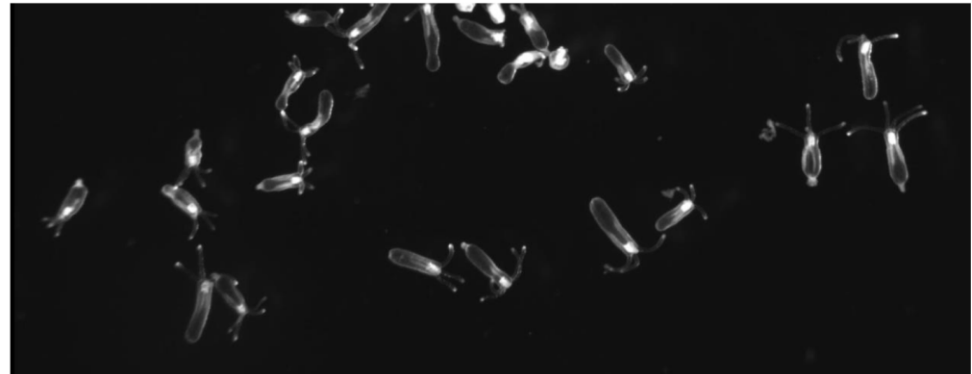
Excerpts of letters

My name is _____, and I am a scientist working at the European Molecular Biology Laboratory (EMBL) in Barcelona. Do you like soccer? Then, I am sure you've heard about the FC Barcelona football team! We are not winning as much trophies as we did in the past but we are still doing pretty well with Messi in our team :). Barcelona is the capital of a region called Catalonia, which in turn is a region in Spain (see drawing). I was born in a town 100km far from Barcelona and I moved there when I was 10 years old. I got a degree in Physics in the University of Barcelona and later I got the doctorate in Physics from the same university. Then, I decided to move to Germany to grow as a scientist and I worked in Dresden for 3 years. It was a very nice experience! I worked in an international institute with people from all around the world.

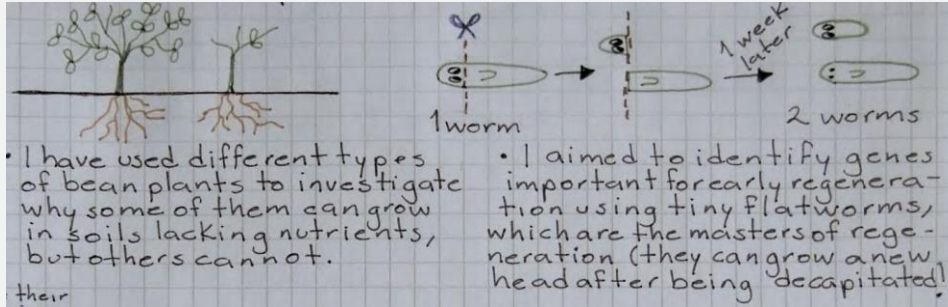


The drawing is a hand-drawn map of Europe. It shows the outline of the continent with several countries labeled. 'SPAIN' is labeled on the Iberian Peninsula. 'GERMANY' is labeled in the north-central part of Europe. 'DRESDEN' is marked with a dot in Germany. 'CATALONIA' and 'BARCELONA' are labeled in the northeastern part of Spain. 'NIGERIA' is labeled in West Africa, with 'IBADAN' marked with a dot in the southwestern part of the country.

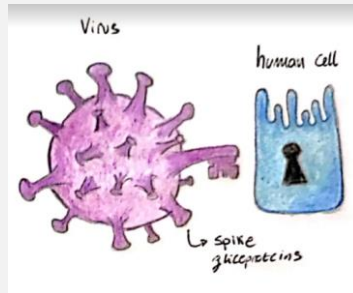
humans have. For most of the research we use developing animals with the age of 0-7 days. After 7 days, the anemones have 4 tentacles and look like mini-adults. At this age, they are a little bit smaller than a grain of rice and we need a microscope to study them. This is how they look like:



What I like about working with *Nematostella* is that you can make very nice pictures 😊. It is beautiful to sit behind the microscope and look at the animal and see how perfect everything is, how cells are connected with each other and how all the small building blocks (cells, tissue, organs) all work together to make a living organism.



Regarding your other two questions: I have not personally tried to eat a fruit fly (at least not on purpose), but theoretically you can certainly eat them. They are however very tiny, you would have to eat lots of flies to be full. Also, I doubt they're very tasty. But because they like sitting on the fruits we like to eat, I can imagine that they get eaten accidentally every once in a while.



Here's what these vials with the flies look like:



After some time working in other research fields, last year I had the opportunity to join a new established lab in Barcelona that is working on malaria. We are trying to find the mechanism by which the malaria parasites get trapped in the brain and cause ~~the~~ several symptoms of malaria. So, I was super happy to have a pen-pal friend that asked me about malaria.

The answer of your question is... **YES** Only female *Anopheles* mosquitoes are responsible for transmitting malaria. And the reason is the following:



EMBL Scientists

At the end of the programme, we asked scientists for their impressions and feedback related to their participation as pen pals, as well as regarding science outreach in general.

What scientists thought about the “EMBL pen pal programme”:



97% would take part in a similar initiative in the future



89% learnt new information to reply to their pen pals

80% classified the experience as **FUN**



For **33%** this was their first experience doing science outreach



For **75%** the training helped feeling more comfortable with the initiative

69% classified the experience as **MEANINGFUL**



39% classified the experience as **CHALLENGING**



EMBL Scientists

For many scientists, this initiative helped them valuing their work as a scientist:



62% felt like a role model



56% felt a positive impact on their lives



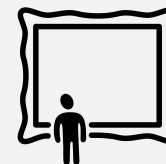
43% felt more comfortable doing science outreach



46% rekindled their passion for science



43% developed or improved soft skills



23% saw the big picture behind their work more easily

EMBL Scientists

Impressions about public engagement in general:



67% chose “I would like to have more time to do public engagement”



62% chose “I would like to have more opportunities to do public engagement.”



57% chose “I feel I don’t do enough public engagement.”



56% chose “I feel supported by EMBL to do public engagement.”



33% chose “I feel well equipped to do public engagement.”



30% chose “I would like to have more training to do public engagement.”



41% chose “I feel supported by my supervisor to do public engagement.”

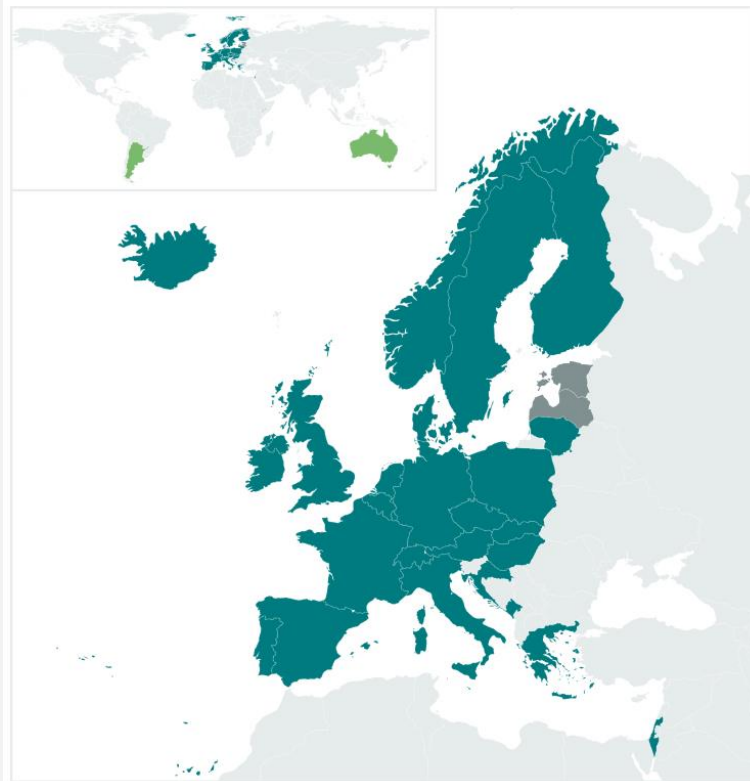
Future perspectives

The format of the “**EMBL pen pal programme**” can be easily adapted to different target groups, in particular to classrooms in different countries.

It could be implemented in EMBL member states, associate members and/or prospect members, alongside training for science teachers and students provided by EMBL’s education facility ELLS, and public engagement promoted by EMBL’s Science and Society programme.

This format also provides an excellent opportunity for EMBL's equality and diversity mission, since it can foster EMBL's links with underprivileged communities in member states and/or via new relationships with other countries and continents. By reaching such pupils from unprivileged backgrounds, EMBL can contribute to fixing the "leaking pipes" of access to science careers at its start.

Having such a programme in in the students’ mother tongues could be beneficial, but represents larger constraints in organization; conducting the programme in English can nevertheless promote language literacy and may therefore involve not only science teachers but also language teachers and/or collaborations between them.



Team and Support

The **EMBL pen pals** programme was created in 2020 by:



Mariana Alves
EMBL predoc



Rafael Galupa
EMBL postdoc

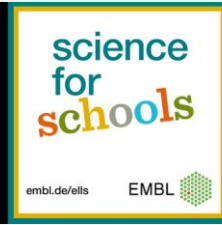
This programme would not have been possible without the financial and/or institutional support of:



Edith Heard



DRTC



ELLS



DrosAfrica

The **EMBL pen pals** programme has its own blog: <https://emblpenpals.wordpress.com/>