

PUBLIC
ENGAGEMENT
PRIZES 2018

WELLCOME GENOME CAMPUS
CONNECTING
SCIENCE





BUILDING OUR WORLD-LEADING ENGAGED RESEARCH CAMPUS

Foreword from the Campus Directors

We are delighted to support the inaugural Connecting Science Public Engagement Prizes at the Wellcome Genome Campus.

Our Campus is a vibrant community of scientists, bioinformaticians and other professionals working together to tackle big challenges in global health and wellbeing.

The knowledge we create directly impacts on society and therefore it is vital that we, as individuals and teams, and collectively, embed thoughtful and purposeful engagement with people as part of our scientific journeys. We're working hard to build a culture of engagement across our Campus, spanning both major research institutes, Wellcome Sanger Institute and European Bioinformatics Institute (EMBL-EBI), and other organisations working on the applications and implications of genomes and biodata.

These prizes support this culture shift, not only by rewarding and celebrating outstanding effort, but by spotlighting the myriad of ways in which engagement can happen.

We thank all those who underpin our world-leading engaged research Campus ambition, and extend particular congratulations to this year's prize winners.

*Mike Stratton, Director,
Wellcome Sanger Institute*

*Ewan Birney and Rolf Apweiler, Directors,
European Bioinformatics Institute*

*Julian Rayner, Director, Wellcome
Genome Campus Connecting Science*



Connecting Science Public Engagement Prizes 2018

Supported by Wellcome and coordinated by Wellcome Genome Campus Connecting Science whose mission is to enable everyone to explore genomic science and its impact on research, health and society.



MARÍA ADELAIDA DUQUE CORREA

Winner, 2018 Innovator Prize

Our Innovator Prizes recognise staff at earlier stages of their careers or public engagement journeys, who have demonstrated outstanding achievement in engaging with schools or public audiences.



“The connections I make with the public through engagement give meaning to my research. They enable me to establish a dialogue with the patients suffering from the diseases I study and spread the word, creating greater awareness of these infections.”

María Adelaida Duque Correa

María’s passion for public engagement is inspired by her own experiences of growing up in Colombia, a part of the world where neglected tropical diseases cause everyday problems for vast numbers of people, particularly children.

Supported first by a Marie Skłodowska-Curie Fellowship, and more recently by an NC3Rs David Sainsbury Fellowship, María’s research focuses on the infection biology of such diseases, and in particular, the human whipworm (*Trichuris trichiura*). This parasitic worm affects 700 million people across many parts of Asia, Africa and South America, infecting the gut and causing abdominal pain and diarrhoea. For children, the debilitating symptoms affect both their intellectual and physical development.

The Worm Hunters project

María’s project - Worm Hunters - is a collaboration with the University of Antioquia, Colombia that combined public engagement with a deworming programme in Ciénaga, a town in Colombia’s Caribbean coast where 50% of the children are infected with whipworms and other intestinal parasites.

Worm Hunters uses blended approaches to share and discuss María’s research with school children and their families. With support from Wellcome Genome Campus Public Engagement, María developed a children’s comic book to help explain parasite infections and the importance of handwashing in preventing infections. The comic also characterised María’s research using “mini guts”, enabling the children to learn more about approaches to combat whipworm infections. The engagement activity empowered more families to help the research effort through sample provision.

Interactive methods accompanied the comic, allowing children to look at worm eggs under the microscope and play games that show potential sources of infection using a special gel and UV torches.

Worm Hunters brought the experiences of María and the children she visited to a wider audience through an associated website - wormhunters.org - and through regular updates on Twitter via [#wormhunters](https://twitter.com/wormhunters).

Outcomes

The blended approach of combining a comic and hands-on activities was key to the success of Worm Hunters. It created a fun, engaging experience for both researchers and pupils that influenced an increase in participation in the research. Previous deworming campaigns in this region achieved 50% participation, while the approach taken by Worm Hunters has resulted in 90% participation.

This has strengthened the role of such engagement activity among the wider research collaboration for whom public engagement might have been viewed as an optional extra. In a separate outcome, the digital awareness effort undertaken by Worm Hunters, through the website and social media, brought it to the attention of the International Association for Neglected Tropical Diseases (IANTD). This resulted in the project being

nominated for, and winning, the comic award in the IANTD festival hosted in London at Wellcome in March 2018.

“The project is exceptional for its involvement with groups in Colombia normally considered the hardest to reach.”

Edward Duca, 2018 judge



KIM JUDGE

Runner up, 2018 Innovator Prize



“Anyone can be a scientist, regardless of what school you go to or what your background is. My project has been about inspiring students with the science we do at the Wellcome Sanger Institute, and expanding their awareness of their options for the future.”

Kim Judge

Kim’s enthusiasm and expertise for the latest developments in DNA sequencing technology has underpinned an innovative outreach programme that is pushing the boundaries of what can be achieved with real-time DNA analysis in the classroom.

The Sequencing in Schools project

As a senior staff scientist in the Research and Development team at the Wellcome Sanger Institute, Kim’s sequencing specialism centres on the uses of portable sequencing devices called MinIONs developed by Oxford Nanopore Technologies.

The opportunity this opened up for real DNA sequencing in schools was seized by Kim in 2017, giving secondary school students the chance to do real-time DNA sequencing in their classrooms.

In a typical session, students carry out a DNA extraction, prepare the DNA library for sequencing, and load the DNA sample into the MinION sequencer. A discussion follows, where students are encouraged to think about the applications and issues surrounding widening access to DNA analysis. This gives time for the MinION to produce first results, further stimulating the pupils’ curiosity as they watch data appear on the same platforms used by many scientists at the Wellcome Genome Campus.

Outcomes

The practical skills gained through this workshop were warmly received by students and teachers alike, who embraced the chance to set up and use experimental science kit. For instance, it was the first opportunity for many to use a lab pipette.

The sessions were also designed to give an opportunity for students to discuss and debate ethical and societal issues such as personal genome sequencing and applications of DNA sequencing technology.

This is one of the first projects anywhere to refine technology and protocols to be able to carry out DNA sequencing in an extended school lesson. Kim’s focus has been to work with underserved schools, for example in her home town of Kettering, Northamptonshire. Kim has further embedded widening access by asking independent and fee-paying schools, from which many requests come in, to involve students from local non-fee paying academies, when planning a session.

Closer to Campus, Kim’s enthusiasm to work with the Public Engagement team and expand the programme has impacted on our capacity to grow the project. As of Spring 2018, Kim has trained 30 scientists across the Wellcome Genome Campus to deliver Sequencing in Schools, reaching students in Nottingham, Downham Market and Dublin. Further afield, Kim has been sharing her expertise in partnership with the European Laboratory for Molecular Biology (EMBL) in Heidelberg. By delivering sessions for EMBL’s European Laboratory for Life Sciences teacher training programme, Kim has catalysed a first step in expanding Sequencing in Schools to link with education curricula across Europe.

“The students absolutely loved it. It was brilliant that they could see sequencing in action and link it to what they are currently studying. I got them to write up what they had seen so they could talk about it at their university interviews.”

Biology teacher,
Harris Westminster Sixth Form



GENOME DECODERS

Winner, 2018 Engaged Team Prize

Our Engaged Team Prize celebrates an outstanding collaborative effort in engaging external audiences with aspects of Campus science or research.



“Genome Decoders has led us to reflect carefully on how we do genome annotation - from approaches to skills and training of future scientists through to different ways of organising large-scale international genome projects.”

Kevin Howe

Genome Decoders is a collaboration between the Wellcome Sanger Institute Parasite Genomics team, the WormBase team at the European Bioinformatics Institute, and the Institute for Research in Schools.

EMBI-EBI team: Kevin Howe, Michael Paulini and Gary Williams.

Wellcome Sanger Institute team: Faye Rodgers, Nancy Holroyd, María Adelaida Duque Correa and Matthew Berriman.

The Genome Decoders journey

When thinking how genomics can lend itself to participation by non-professionals, the concept of genome annotation offers a fascinating opportunity. When the research goal is to understand and combat a neglected tropical disease, it makes the prospect of mass participation both more realistic and also especially beneficial.

Genome Decoders centres on the annotation of the human whipworm (*Trichuris trichiura*) genome, working with 52 schools across the UK. This innovative project engages primarily A-level science students with the topics of neglected tropical diseases and bioinformatics through the curation of gene structures in the genome.

The project officially launched in September 2017, at the Wellcome Genome Campus. To date it has attracted more than 1,000 students who are working alongside the scientists to identify all 15,000 genes in the human whipworm genome. To support the students in carrying out their annotation work the team have produced comprehensive but accessible training guides and walk-through video tutorials.

An email “hotline” and discussion forum have also been established, giving students direct access to the scientists who provide help and advice on topics ranging from the basic use of the tools, to the interpretation of complex and ambiguous cases.

Outcomes

The project is very accessible for schools, requiring only a computer with an internet connection. This has meant that a broad range of schools have engaged with the project, including those that would otherwise find it difficult to be involved with such opportunities.

Although manual curation of genomes remains the “gold standard” for high-quality genome annotation, it is time-consuming and hard to scale. Genome Decoders hopes to demonstrate that the active involvement of enthusiastic science students is a viable model for increasing the amount of genome data that can be manually reviewed. Initial feedback indicates it is also an excellent way to inspire a new generation with genomics and biodata.

“It is one of the most exciting, fun, interesting, challenging and wholly engrossing things I have ever done in my professional life. I’ve been overwhelmed by the enthusiasm and commitment from the students - more than 75 at the last count- but I’ve also loved everything that I’ve learned myself about using Apollo and annotating a genome.”

Head of Biology,
Oxford High School



FRANCESC GALBAN HORAJCO

Winner, 2018 Excellence Prize

Our Excellence Prizes recognise staff with a long standing commitment to public engagement and where the activity has helped influence or amplify the impact of the science.



“To achieve progress, communities need to be involved and included along the way. People are empowered to embrace and accept the changes that, together, we develop.”

Francesc Galban

Francesc is a Senior Development Manager at the Wellcome Sanger Institute’s Global Health and Population Group. He manages the research operations for H3A diabetes project, which studies the genomic and environmental factors leading to diabetes in Africa, as well as operations for the African Partnership of Chronic Disease Research (APCDR) and the Uganda Medical Informatics Centre (UMIC).

Francesc’s journey of engagement

Francesc’s portfolio represents an impressive track record of public engagement through public and patient involvement, collaborative research and community engagement with research focusing on underserved communities in Africa. Francesc’s approach demonstrates the value of embedding a strong public engagement ethos into a sustained research journey.

Through his work at the Wellcome Sanger Institute and under the APCDR, Francesc has driven programmes enabling access to science education, population based health and genomic studies, and the development of health infrastructure.

He has extended the breadth of his engagement work, encompassing design and delivery of training in computational biology and genomics, and support of a scholarship and fellowship programme for African students.

A stand out example of this work has been building strong relationships with underserved, vulnerable communities in Africa to support and enable them to carry out health surveys. He and his colleagues worked with a local NGO to translate questionnaires and consent terminology into the local language, and worked with community leaders to carry out engagement activities to widen

participation with the research.

Francesc has organised inclusive and gender balanced conferences, meetings and courses to promote Big Data health research, genomics and chronic disease research in Africa, with students and researchers from over 11 different African countries attending.

He has also been involved with the development of the Uganda Medical Informatics Centre, the largest research Data centre in East-Africa. Through this centre they are training the first female system engineers in the region.

“Public engagement runs through this applicant’s work like a stick of rock. The range of their engagement is varied and impressive, working with communities who might not normally engage with science.”

Bella Starling, 2018 judge



ALENA PANCE

Runner up, 2018 Excellence Prize



“I enjoy sharing the research I do and our understanding of how biology works with people. It is deeply rewarding to see children’s faces light up with excitement and to provide access to information that can help people make up their own minds about science.”

Alena Pance

Alena is a Senior Staff Scientist, working in the Malaria programme at the Wellcome Sanger Institute. Her research focuses on the development of stem cell-based strategies to study the host contribution to malaria infection.

Alena’s journey of engagement

Alena has been involved in a wide range of public engagement activities for over eight years and her portfolio demonstrates a proactive desire to test varied approaches designed to reach different audiences.

Alena has developed a long standing partnership with William Westley Primary school in Whittlesford. For the last six years she has worked with individual classes discussing DNA and genomes, their impact on our daily life and their applications to medical advances. She delivers a whole day of activities for all year groups as part of the school’s science week with the help of her colleague Frank Schwach. This effort is also providing valuable outreach opportunities for PhD students and postdoctoral researchers from the Malaria programme.

Alongside her strong work with primary schools, Alena has also worked with colleagues on a national scale helping to develop content for the OCR Cambridge Technical Level 3 qualification aimed at 16-18 year olds.

Alena has also written blogs about her research and short articles for New Scientist answering questions from the public about subjects such as cloning, genomic integrity and population genetics, one of which was published by The Guardian.

She collaborates with the Science Media Centre, giving details, comments and clarifications about leading research to ensure that it is reported responsibly and accurately.

Alena is a strong role model for women in science. Her passion and dedication to public engagement has inspired others in her team to carry out their own activities in schools.

“Alena is clearly passionate about engagement, demonstrating a longstanding commitment to working with schools and to talking publicly about her work and the societal issues related to it.”

Helen Featherstone, 2018 Judge



VALERIE VANCOLLIE

Highly commended, 2018 Excellence Prize



Valerie is an Advanced Research Assistant on the Mouse Genetics Project Phenotyping Team at the Wellcome Sanger Institute. Her application was highly commended by the judges for her enthusiasm and commitment to public engagement on and off Campus.

Valerie was first bitten by the public engagement bug in 2009, volunteering at the Cambridge Science Festival. Since then she has taken part in a range of festivals and events including the Royal Society Summer Science Exhibition, Big Biology Day and the Peterborough STEM Festival.

Valerie trained as a Campus tour leader in 2014, and she can be seen regularly interacting with groups of visitors, talking about Campus science and her own work. She is an advocate for speaking openly and honestly with people about how, why and when we use animals in research and all of the legal requirements and oversight that are in place to ensure high welfare standards.

“Valerie is a great ambassador, and embodies how we hope to see more members of staff engaging the public throughout their careers; from light touch interactions, through to ongoing and sustained engagement activities.”

Alexis Mannion, 2018 judge

ACKNOWLEDGMENTS

The Prizes attracted a wide range of high-quality entries from across our Campus and we would like to take the opportunity to thank all our applicants and extend our congratulations on their rich and varied work.

We also thank our 2018 Connecting Science Public Engagement Prizes judging panel who had a difficult task in assessing the winners. They are:

Lindsey Crosswell, Head of External Relations, EMBL-EBI

Edward Duca, Innovation Communication Lecturer, University of Malta

Helen Featherstone, Head of Public Engagement, University of Bath

Alexis Mannion, Public Engagement Development Manager, Wellcome

Steve Palmer, Director of Communications, Wellcome Sanger Institute and Wellcome Genome Campus

Bella Starling, Wellcome Engagement Fellow and Director of Public Programmes at Manchester University NHS Trust



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