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Welcome

By Dr Eddie Orija, director, UH Centre for STEM Education

Welcome to the summer ABE UK newsletter, which celebrates the exceptional recognition of three of our educators as ABE Master Teacher Fellows (MTF). Each upcoming edition will feature insights from an MTF, commencing with Dr Sam Ward in this issue. This edition also highlights the significant success of our recent Cutting-Edge Biotechnology Day, which was jointly organised and delivered alongside colleagues at the Wellcome Genome Campus in Cambridge on 18th March 2026.

A key structural transition is currently underway for the organisation. After more than a decade of dedicated coordination from the Centre for STEM Education at the University of Hertfordshire, the management of ABE UK is relocating to the Teacher Scientist Network (TSN), based at our Norwich hub. This administrative relocation is not expected to impact the delivery of the ABE UK programme, meaning all activities for the current academic year will proceed as planned and all summer 2026 ABE CPD sessions are running as scheduled. Furthermore, all trained participants will automatically be eligible for ABE UK kit loans from hubs for the upcoming academic year as usual.

Please note that this transition will introduce a new TSN primary contact email address (ABEUK@nbi.ac.uk) and a new web presence, which we are excited to share with you very soon. Currently, teacher and technician contact details are securely held by the University of Hertfordshire; in alignment with our strict adherence to UK GDPR, we have contacted all stakeholders individually on 17/06/26 and provided formal notification regarding the transfer of data controller responsibilities to TSN and provided an opt out option. **Please note that the transfer of data controller enables you and your school and college to continue to participate in the programme, does not require any action on your part and has no fee attached.** Based at the Norwich hub, TSN is a highly respected, 30-year-old science education charity hosted by the John Innes Centre and led by Dr Phil Smith MBE. TSN and Phil have, since 2016, partnered closely with the Centre for STEM Education and schools across the UK to deliver this impactful and exemplary programme that now reaches over 5,500 students a year nationally. Phil talks more about TSN in his section below.



Update on kit collection and return instructions for Hatfield hub

Recently, there have been occasions when members of the Amgen technical team have not been available via personal mobile phones. To avoid any delays on arrival, we ask instead that all schools please ring the **Stores doorbell** when entering the delivery yard.



The doorbell connects directly to the member of staff on duty via the Stores mobile phone, ensuring a prompt response.

It is located to the left of the Stores doors (**J025**) and is clearly labelled.

During office hours, there will always be a member of University of Hertfordshire staff carrying the Stores phone.

Please make sure your kit collection or return is within office hours (08.30 to 16.30 Monday to Thursday and 09.30 to 15.30 on a Friday).

Correct Use of Micropipettes

We are all aware of what a micropipette is, how it is used and how important it is within the ABE program. The correct use of a micropipette is essential for accurate and reliable practical work.

Even a slight misuse can lead to significant errors in results. If students practise good technique early, they develop precision, consistency and confidence in experimental work.

One common mistake is to overwind the micropipette. Turning the volume dial beyond its stated maximum or minimum can damage the internal piston and calibration mechanism. In the laboratory/classroom, this can lead to problems, wasted reagents and frustration.



Picture 1



Picture 2

There have been a few returns this year when the micropipette has been so overwound it has become unusable. Picture 1 is a P100 wound to 114 and picture 2 is a P20 that has been wound to 96.7. Neither of these can be repaired. Please do not allow overwinding to happen.

Teaching students not to overwind micropipettes encourages respect for specialist equipment. Micropipettes are delicate and expensive tools and correct handling extends their lifespan and ensures classes can rely on properly functioning equipment.

Correct and accurate use of a micropipette is an important and useful skill, that can be included in a student's personal statement and further education applications.

Reinforcing correct use of equipment supports good laboratory practice and prepares students for more advanced scientific work in further education and careers.

Reflections on the Master Teacher Fellowship

Dr Samantha Ward RSci Tech
Senior Science Technician
Thomas Alleyne Academy



As the Master Teaching Fellowship programme draws to a close, I find it hard to believe how quickly the time has gone. It has been a real privilege to be part of this year's international cohort, and especially rewarding to feel that I may be helping to pave the way for more technicians to apply for the Fellowship in the future.

One of the highlights of the programme has been the monthly online sessions, where we have explored a wide range of topics, from student inquiry to the augmentation of biotechnology within the curriculum. It has been fascinating to learn how biotechnology is taught across the different countries represented in our cohort, although also somewhat sobering to realise how far the UK still has to go in this area. There is clearly plenty of scope for the ABE UK programme to continue promoting biotechnology within UK schools.

The Fellowship has also provided the opportunity to develop a biotechnology project that I have been considering since last summer. The project investigates the impact of land management and land use on invertebrate biodiversity, and I am fortunate to be working with a small group of Year 12 students who are developing the project as part of their Gold CREST Award.

Our project builds upon the "Barcoding for Beginners" seed project run by the Wellcome Centre for Education and will contribute data to both the [National Education Nature Park](#) (NENP) and [BIOSCAN](#) projects. We will begin by mapping the school site and recording the different habitats present before uploading the data to the NENP platform. Biodiversity will then be compared across two contrasting areas of the school grounds: a "wild" area with minimal maintenance, and the main school field, which is used daily and regularly maintained.

Students will record invertebrate species using a variety of field sampling techniques, including hedgerow brushing, sweep netting in long grass, and pitfall trapping along a line transect. Specimens that cannot be easily identified morphologically will be frozen for further analysis.

The biotechnology element of the project involves extracting DNA from the invertebrate samples and amplifying the DNA barcode gene, cytochrome oxidase subunit 1 (CO1), using PCR. PCR products will be checked using gel electrophoresis before successful samples are sent to the Wellcome Genome Campus for purification and sequencing. Students will then analyse the returned sequences and chromatograms, using BLAST to identify species from their DNA barcode sequences.

The wider BIOSCAN project aims to study the genetic diversity of one million flying insects across the UK over a five-year period, and we hope our data will contribute to this important national initiative. Ultimately, we also hope to generate sufficient data for students to construct phylogenetic trees and develop a "Tree of Life" for the invertebrates sampled on our school site.

Beyond the scientific techniques involved, the project will encourage students to reflect on the impact our school environment has on biodiversity and to consider practical measures that could enhance habitats and improve biodiversity across the site.

I feel incredibly fortunate to have received such strong support throughout this process from the UK programme office at the University of Hertfordshire, from Phil Smith at the Norwich Hub, and from STEM partners at the National Education Nature Park based at the Natural History Museum, as well as staff at the Wellcome Education Centre.

My biggest takeaway from the Master Teaching Fellowship? Don't be afraid to put yourself forward and apply for opportunities when they arise. There is a whole world of new colleagues, ideas, and challenges waiting to be discovered.



To find out more about the ABE Master Teacher Fellowship (now open to science technicians), please visit:

[ABE Master Teacher Fellowship](#) | [Amgen Biotech Experience](#)

Cutting Edge Biotechnology: a day of research, resources and classroom inspiration

On 18 March 2026, teachers and technicians from across the ABE network came together at the Wellcome Genome Campus for the *Cutting Edge Biotechnology Day*, delivered in collaboration with Wellcome Connecting Science. The day brought together cutting-edge genomics research, classroom-based case studies and structured opportunities for discussion, offering participants both inspiration and practical ideas to take back to their schools and colleges.

The conference opened with a welcome from ABE UK director Eddie Orija and Francesca Gale MRSB, Head of Science Engagement and Enrichment at Wellcome Connecting Science, including an overview of the ABE Master Teacher Fellowship (MTF) Programme and the celebration of a significant milestone for ABE UK: recognising Alison Ackroyd, Patricia Hess and Sam Ward as the first UK ABE Master Teacher Fellows.

You can catch up with what some of those who attended had to say about the ABE programme and the event in this short film by Mark Danson: <https://url.uk.m.mimecastprotect.com/s/Bs72COEN1FV3yMnlvhJcGykYI?domain=youtu.be>

Topic talk from the Coelho Lab and case studies from the ABE programme



The first Cutting Edge Science topic talk, *Using CRISPR gene editing to study how DNA variants affect cancer*, was delivered by Eloise Lockyer, Staff Scientist in the Coelho Lab. The session explored how advanced gene-editing technologies and genome analysis are being used to investigate cancer drug resistance, clearly linking fundamental genetics to real-world research and healthcare applications.

This was followed by ABE classroom case studies, with two short presentations from practising educators sharing how ABE works in their settings and highlighting practical approaches to embedding advanced biotechnology activities across A-level, T Level and vocational routes, managing time and resources, and developing technical competencies. Delegates particularly valued the honest reflections on what works in practice and the reassurance that flexibility and problem-solving are central to successful delivery.

From pipettes to pathways: what we heard at the sharing tables at our recent Cutting-Edge Biotechnology conference

At the *Sharing Tables* discussions, one message came through strongly: schools are eager for practical experiences that are flexible, inclusive and connected to the wider world of science and work. Participants highlighted the value of longer kit loans and locally supported equipment, giving students more time to practise core skills such as micro-pipetting and to build confidence before formal assessments. There was also lively discussion about taking genetics beyond biology, linking activities to PSHE, maths, physics, chemistry and computing – particularly bioinformatics, lab automation and robotics. Teachers saw real potential in using practical science to develop wider skills too, from teamwork and presentation to employability and structured discussion, including ethical debates that encourage reasoning and counter-arguments. Importantly, colleagues shared creative ways to embed these experiences across different routes and learners: induction activities between Year 10 and 11, preparation for SEND students undertaking work placements, off-timetable workshops for BTEC and applied science courses, and bite-sized practicals that fit busy timetables.



"It was brilliant. The round table discussions yielded lots of ideas - I hope these will be shared to delegates. Also I hope the idea of creating some packs to use in classroom to discuss Bioethics becomes a reality. Impressed with how things have moved on."

Together, these ideas painted a picture of practical science not as a one-off experience, but as a powerful tool for engagement, progression and showcasing where STEM learning can lead. We'd love to hear your thoughts on the topics discussed, do get in touch.

We love to see your social media posts about the ABE programme or any of our events, please tag [@AmgenFoundation](#), [@ABEProgOffice](#) and [@STEM_UH](#) in your social media so that we can celebrate with you. The ABE Foundation is the funder of this wonderful programme. Please don't tag Amen Corp or other variants as they have different foci and remits.

Resources and activities from the Wellcome Sanger Institute and Your Genome



Showcasing how materials available via yourgenome.org can support the teaching of genomics, included a spotlight on the Barcoding for Beginners programme, supported by a Royal Society SEED grant, alongside discussion about how schools can get involved and run these practicals with their students. A wealth of information can be found via [Wellcome connecting science home](https://www.wellcomeconnectingscience.org/) and [YourGenome.org](https://yourgenome.org)

History, campus tour and topic talk on biodiversity and evolution

The guided campus tours allowed delegates to explore the history, mission and scientific impact of the Wellcome Sanger Institute, including its role in landmark projects such as the Human Genome Project and the Darwin Tree of Life. Seeing the research environment first-hand helped teachers and technicians connect classroom topics to large-scale sequencing, automation and data-driven science.



The second Cutting Edge Science topic talk, presented by Karin Näsval (Postdoc Researcher, Tree of Life Programme) and Caroline Mitchell (Advanced Research Assistant, Long Read Sequencing), focussed on what South American butterfly chromosomes can tell us about the mechanics of evolution and speciation. Among other things, the talk explored our understanding the evolution of DNA and how genomics is transforming our understanding of biodiversity and evolution.

"I loved the cutting edge science talks- they were exceptionally well delivered. The butterfly talk I loved how they talked through the lab process and equipment used to give an insight into modern tech used in labs."

Wrap up and feedback

In recognition of how busy our delegate timetables are within their own work environment, at the end of the day, time was set aside for reflection and action planning, enabling delegates to consolidate ideas and identify next steps for their own practice.

- Delegates reported increased understanding of genomics and biotechnology applications.
- Teachers felt inspired to implement new teaching resources, practical activities and case studies.
- The event encouraged future participation in the Amgen Biotech Experience programme, with many delegates stating intentions to sign up or investigate involvement.
- Delegates identified practical classroom applications, including DNA barcoding, CRISPR, bioinformatics, careers activities and genomics case studies that could be applied to their teaching.
- Networking and interaction with researchers strengthened delegates' confidence and engagement with current biotechnology topics.
- Action-planning responses demonstrated clear intention to apply learning directly within schools and colleges. Many delegates planned to integrate genomics resources into lessons, explore DNA barcoding activities, investigate CRISPR content, and share resources with colleagues.

Feedback from the day was overwhelmingly positive, with participants praising the quality of the science, the practical relevance of the sessions and the opportunity to connect with colleagues across the ABE network. Many left feeling inspired to trial new activities, to make greater use of [ABE](https://www.abenetwork.org/) and [Your Genome](https://yourgenome.org) resources, and to further embed genomics in their teaching. We are grateful to [Wellcome Connecting Science](https://www.wellcomeconnectingscience.org/) for their collaboration in delivering such a thoughtful and inspiring event.



A slightly different beach guide...



As thoughts turn to well-earned summer breaks and time by the sea, don't forget to check out the all-important "[brown flag beach awards 2026](#)" compiled using EA (Environment Agency) water quality data from around the UK and backed up by environmental DNA analysis (specifically **Genetic Faecal Pollution Diagnostics (GFPD)**).

This year's report sees Heacham climb from 'poor' to 'sufficient', avoiding a 3rd consecutive brown flag. Encouragingly, Norfolk beaches appear to be improving their water quality (up 4 places on last year).

That said... BEWARE – 16 brown flags were still issued this year (although none in Norfolk!). To know more you can visit [Holiday Park Guru](#). The report ranks beaches around the UK, so thanks to ABE, you can be sure, wherever your summer takes you, you'll be well equipped to choose a top-ranked spot.

Happy holidays!

And finally – a word from Dr Phil

(Dr. Phil Smith, MBE)

What a few months it has been; from notice of redundancies at the University of Hertfordshire to the opportunity to step in and ensure that ABE UK has an exciting new home in Norwich, now under the banner of the Teacher Scientist Network (TSN), (hosted at the world-leading plant and microbial science research institute, the John Innes Centre).

I was first invited to be a part of ABE back in 2012, when the pilot project landed in Cambridge. From a scientific perspective, I had been using the techniques within the program throughout my own research career – and with TSN already supporting schools through resource loans, this felt like a natural fit – the perfect combination!

Those who have met me at training sessions, know my love of this project and have experienced my commitment to ensure each and every school or college has the same high-quality ABE experience.

TSN, the charity I have been running for 20 years, is a genuinely bottom-up science education organisation, with teachers having a clear voice in the Steering Group. These solid foundations will ensure ABE UK continues to deliver high-quality CPD, kit loans and a vibrant Community of Practice, with ALL 5 hubs continuing, as before, just under different management.

I am delighted that EDC and the Amgen Foundation have put their faith in me and TSN to lead ABE UK into the next grant cycle and hopefully beyond!

You'll also be pleased to know that Eddie and Philippa are continuing in new roles with TSN, so it really is business as usual!



TSN
TEACHER
SCIENTIST
NETWORK