AMGEN® Biotech Experience

Scientific Discovery for the Classroom

February 2025

ABE UK newsletter

Transformed bacterial plasmids carrying the red fluorescent protein, photo credit Lee Rixon

Welcome

By Dr Eddie Orija, Site Director, ABE UK

I am pleased that we are able to share details of the 2025 ABE CPD schedules for all hubs in this term's edition, along with a few updates, links to resources and a lovely case study written by a student at a participating school.

At our most recent network meeting, we announced the launch of the ABE volunteer programme and shared a link for you to express interest. The programme provides the opportunity for you to invite an Amgen UK member of staff to visit your school. To find out more about the ABE volunteer programme, visit this link, and to sign up use this link. The toolkit is full of information including a link to register to be matched with an Amgen UK staff volunteer. This flyer provides a brief description and some wonderful testimonials from schools in the US who have participated.

For those that have already registered interest in welcoming an Amgen volunteer to your schools, we apologise for any delay in volunteer response. The volunteer co-ordinators office acknowledges all registrations and seeks to match with Amgen volunteers. These arrangements are still in the early stages as Amgen staff have just started to register their interest. As a fledgling initiative, there may be a delay in a volunteer for your school being sourced. We are aware that some of your requests were time sensitive and this has been fed forward.

I hope that you are finding the ABE resource LabXchange useful in your schools. There is additional information in the 'Find out about LabXchange' section at go.herts.ac.uk/amgen.

We are always open to widening ABE access and participation. If you know of any schools that are interested in joining ABE, please signpost them to complete our **registration of interest form**.

Continuing professional development

We are delighted to share our 2025 Amgen Biotech Experience CPD schedule below. The sessions are available to book via Eventbrite (click the location link in the tables below) and we recommend booking your place as soon as you can to ensure availability as some hub sessions fill up quickly. For schools keen to join the programme, the first step in the process is for the senior science technician, along with a relevant member of the science teaching staff, to attend the Course 1 training sessions held at their local hub.

Course 1- introduction to DNA manipulation for the classroom		
Hub	Day 1 (teachers & techs) 9.30 to 15:30	Day 2 (techs only) 9.30 to 15:30
Hertfordshire	23rd June 2025	24th June 2025
Cambridge	25th June 2025	26th June 2025
Norwich	2nd July 2025	3rd July 2025
MidKent*	9th July 2025	N/A
Hull*	1st July 2025	N/A

Course 1 (an introduction to DNA manipulation) is two days long, with teachers attending day 1 and technicians attending both day 1 and 2. The course covers micropipetting and working with plasmids, the theory of restriction digestion, and preparing labs 2 (restriction digestion), 3 (ligation) and 5 (gel electrophoresis).

It is a minimum requirement that a technician and teacher from participating schools attend Course 1 and/or Course 2 within the previous three years prior to any kit loan, so book your place through Eventbrite soon.

*For hubs using MiniOne kits for their CPD, there will be a slightly longer day1 for techs rather than a separate session on Day 2.

Course 2 extends the teaching and learning from Course 1 through additional and extension ABE labs (4/4a, 5, 6/6a, 7/7a), new practical techniques, including DNA profiling, transformation and analytical PCR, and new activities and teaching techniques.

Course 2 – extending DNA manipulation in the classroom		
Hub	Lab day 9.30 to 15:30	Twilight session (online) 16:00 to 17:00
Hertfordshire	25th June 2025	26th June 2025
Cambridge	27th June 2025	30th June 2025
Norwich	4th July 2025	7th July 2025
Hull	2nd July 2025	N/A

The CPD provided is both practical and engaging and allows the opportunity to share ideas with colleagues from other schools in your area. We provide lunch and refreshments, and, as with the rest of the ABE programme, there is no fee.

ABE facts

In an average ABE year, the programme reaches

90,000 students

and **1,500** teachers

£0 - The programme curriculum, professional development, and all needed materials are provided **free** of charge.

Globally, the programme has impacted more than

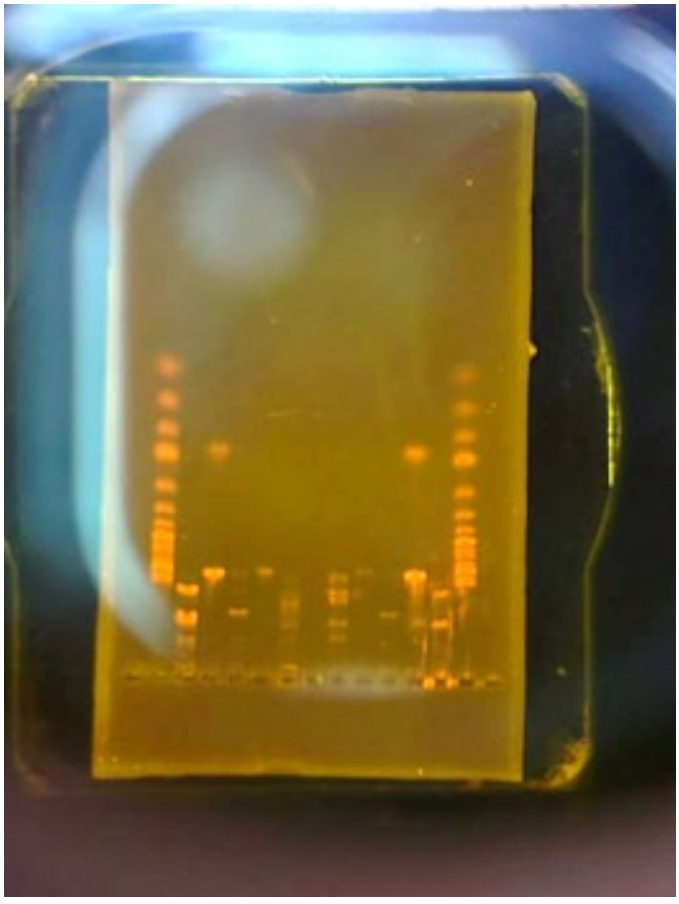
1,000,000

students to date because of the Amgen Foundation's

$60+ million

commitment to the programme

The ABE experience in Woodford County High School



We were glad to receive a lovely news article from Year 13 students at Woodford County High School in Essex, which we summarise for you below:

The use of research grade lab equipment to carry out recombinant DNA technology practicals provided a unique hands-on experience for the students and brought the subject to life, giving them new skills in the use of micropipettes and gel electrophoresis.

The first experiment undertaken by the students was 'digestion', where they isolated DNA fragments using restriction endonucleases (enzymes) to 'cut up' the two plasmids. 'Ligation' was next, where the DNA fragments were joined together to form one recombinant plasmid, catalysed by ligase. PCR (polymerase chain reaction) created many copies of the DNA, making them easier to see in the next stage – gel electrophoresis.

The session generated discussion of how the analysis of DNA bands can identify genetic relationships, while recombinant DNA technology may enable scientists to identify the presence of a disease-causing gene, and finally, the use of DNA technology to produce useful proteins for the production of human insulin, among other things.

As well as the above benefits and opportunities for skill development and knowledge expansion, students interested in pursuing a higher education qualification in Biology will be able demonstrate their passion for the subject by drawing on the experience.

Summary provided from an article written by A Kashif (Year 13 student), photographs shared with permission.

If your school would like to provide a case study, news item or short video clip for our newsletter or website, we'd love to hear from you. Contact us via email for guidelines and details of how to submit: stem@herts.ac.uk

Tell us what you think, then tell us again!

We know you love the programme, because you tell us when we meet you at the CPD or for kit loan collection and return and by email, but not many of you are using the feedback forms to tell us. The feedback forms are part of our commitment to ABE in order to keep delivering the programme, so they are more than just a "nice to have".

We provide here a reminder of the QR codes for the CPD, the kit loan, and also for your wonderful students. The combination of feedback gives us (and ABE) a great view of what you love and how we can make it even better, so please spare the time to help us deliver on our commitment to ABE.

CPD feedback

https://app.onlinesurveys.jisc.ac.uk/survey/cm1j1tyjg00198up6ez6gsk1s/build

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Kit loan feedback

https://app.onlinesurveys.jisc.ac.uk/survey/cm1j1pv9700138up6i41rkwhf/build

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Student feedback

https://app.onlinesurveys.jisc.ac.uk/s/herts/abe-student-feedback-2024-2025

ABE UK in 2024

We were delighted to host **12** events across our **5** hubs in **2024**, bringing over **300** people together to learn key skills and engage in discussion with their peers.

Our most popular event in 2024 was the Introduction to DNA Manipulation Course (Hatfield Hub), which delivered CPD to **60** teachers and technicians from across Hertfordshire.

Each year provides opportunities to inspire and engage new students in the UK. You have helped the ABE UK programme to reach over **18,000** students since the University of Hertfordshire's initial delivery of the programme in 2014.

Thank you, Lisa

In other news, Lisa Bagley is leaving our STEM centre and the ABE programme at the end of February. Lisa continues at the University of Hertfordshire in other roles, and we wish her all the very best in all endeavours. She has been a valuable and supportive member of the team. Lisa will be dearly missed in both the bespoke and strategic support she has provided to ABE colleagues, hubs, and schools. Please allow me to thank Lisa for all her ABE work on behalf of all involved in ABE UK, Eddie.

Feedback from participants at Hull's 2024 CPD

Kit loan collection and return

Our treasured techs have asked us to issue a kind reminder that kits should be returned in the same condition as when loaned. To ease your kit collection and return, please phone the contact number provided in your instructions when you arrive, this will save you time and make it much easier for our lovely techs to find you.

A word from Dr Phil

The sharp eyed among you (and that is clearly not me!!) may have spotted an error in our 5-page, quick-start MO guide.

On page 1, under the 5th bullet point, it states to measure 0.17g agarose and add 11ml of 1 x SB buffer. This will (and one school can confirm this!) create a mini-brick and not a useable gel! It should say 0.088g agarose, but in fact the better advice is not to make just a single gel as measuring such small amounts isn't easy! – A better approach is to bulk prepare your agarose, so typically prepare 50 ml of agarose using 0.4g of powder + 50 ml 1 x SB and once cooled, pour 4 MO gels putting approx. 11ml in each casting tray (and leaving you a spare 6 ml at the end) – pour by eye, don't measure by the way.

While we are on the subject of consumables, please remember that GelRed should be diluted 15ul in 100 ml (and not 30ul as you will have done previously). This still allows clear staining of the gels and at least one re-use of the solution.

We are delighted to have announced our training dates for the summer extra early this year. PLEASE help us promote the programme (& particularly Course 1) to new schools through your networks and contacts and via posts on social media. Please use #amgenbiotechexperience and tag @STEM_UH and @TSNphil if characters allow. You just never know who (or where) will be grateful for this information.