

AMGEN BIOTECH EXPERIENCE PROGRAMME - FAQ

Q. What is the recommended age group for the programme?

The recommended age group is upper secondary and tertiary level. Schools can also offer it at Secondary 2 level as a form of exposure of the students. At Secondary 1-2, we would recommend a reduced content of just Labs 1-4 or ABE Express Beginner.

Q. How can I implement this programme?

This programme can be implemented by a number of ways:

- (i) Teachers who are comfortable to conduct the programme on their own can do so in their school. Science Centre Singapore will provide the necessary reagents and equipment.
- (ii) Science Centre educator can come to your school to conduct the programme for your students. This can also be done through co-teaching with your teacher.
- (iii) Teachers can bring the students to Science Centre over a number of days or a holiday programme and the Science educator at Science Centre will conduct the programme.
- (iv) Alternatively, Science Centre has developed a few planned workshops (ABE Express and Developing a Scientist's Mind) that schools can book.

If there are other ways in which you would like to implement this programme, please contact Science Centre.

Q. Who should attend the teacher workshop?

Teachers conducting this programme for your students must attend the workshop. It is also advisable for your school's lab technician to attend the workshop, so that he/she can assist with the lab preparation. Schools who do not plan to implement the ABE programme yet but would like to attend the workshop for professional development may do so too, but priority will be given to the schools who will be implementing the programme.

Q. Must I attend the teacher workshop in order to implement this programme in my school?

For teachers who plan to conduct the programme on your own, it is compulsory to attend the teacher workshop. During the teacher workshop, teachers will do the experiment and learn the content of each lab, so that they will be comfortable to teach the students. The proper use and care of the equipment provided, procedure for rental of kits and how to prepare certain reagents will also be covered in the workshop. If a science educator from Science Centre is conducting the programme for your school, it is not necessary to attend the teacher workshop.

Q. Will lesson plans, powerpoints and other teaching resources be provided for the programme?

There are suggested lesson plan provided in the guidebook and there are powerpoints and other teaching resources provided in the online portal. However, teachers are strongly recommended to prepare their own lesson plan and powerpoint to suit their students learning.

Q. Is there a minimum/ maximum number of students for the school to implement this programme?

There is no minimum number for the school to conduct this programme. You will just need to inform the number of students so we can prepare the materials accordingly. However, if our Science Educator is conducting the programme either in your school or at Science Centre, the minimum number in a class is 20.

Science Centre has sufficient equipment to cater to a maximum of 160 students at a time (done concurrently). If the practical session for different classes are not done at the same time, it is possible to have more students doing it over different days or times.

Q. How much time in advance do we need to inform Science Centre if we are interested to do the programme?

The equipment are available on a first come first serve basis, hence it would be best to inform Science Centre as soon as you have planned your programme schedule. The latest that you will need to inform Science Centre is 2 months before the workshop date (subject to availability), so that we can prepare the items and arrange for the kit to be delivered to your school.

Q. How long can we borrow the kits for?

There is no fixed duration for loaning the kits, schools can request as necessary. However, there are limited kits to be shared among all the schools, hence schools should only loan the kits during the period that they require, subjected to availability. The maximum duration of loan is 3 months at a time.

Q. My school does not have some of these equipment. Is it still possible to conduct the programme?

- Lab grade freezer (-20°C) or fridge (4°C)
Some of the reagents are temperature sensitive. Schools should minimally have a household freezer and fridge to keep the reagents. However, do note that the success rate of the experiments may be affected if the reagents are stored in a household freezer or fridge over prolong periods.
- Microwave
The microwave is required to prepare the agarose gel for Lab 4. If this is not available, please inform Science Centre and we will suggest alternative methods.
- Autoclave machine
The biohazard wastes can be returned to Science Centre where we will autoclave them before disposal.

An "Equipment checklist" form will be sent to the school prior to the start of the programme. This will enable Science Centre to know what equipment is available in schools and what equipment we will need to provide. During the teacher workshop, teachers will be advised on some alternatives that can be done if some equipment or materials are not available in the school. Alternatively, schools can consider to do some of the labs that require more advance equipment in Science Centre (eg. Lab 5-8).

Q. Why are Day 1 and Day 2 of ABE Express Advance not held consecutively?

The bacteria plated in Day 1 requires 24-48h to grow in order for the students to do colony PCR in Day 2. Hence it is recommended that there is at least 1 day break between Day 1 and Day 2.

Q. How many days will be required for ABE: Developing a Scientist's Mind?

The workshop is divided into 5 sessions, which can be conducted over 2.5 days or over 5 half days (either consecutively or on a weekly basis). However, there must be a minimum 1-day break between Session 4 and 5, to allow the bacteria to grow. There is an optional session 6 available upon request, to allow students to do a presentation on their experimental design and results.

Q. How do I book for these lessons?

These lessons are not available for booking through the Online Booking System. To book these lessons, please contact Charissa at charissa_lin@science.edu.sg or dnalab@science.edu.sg.

If you have any other questions that are not addressed, please contact Charissa Lin at charissa_lin@science.edu.sg (6425 2789).