

Baylab workshop “Enzymes” agenda

On arrival please drop your students off at our front entrance. This can be found opposite Pepsico and their carpark, address 400 South Oak Way, Green Park, RG26AD. A member of the Baylab team will be in reception to greet you.

On occasion, schools/colleges/youth groups ask their members/students to meet at Bayer. If this is the case please inform a member of the Baylab team on baylabinfo@bayer.com so we are aware and can staff this accordingly.

If there are any problems on the day please contact Emma Schierbaum, Baylab Manager, on +44 118 206 3284 or 07393759447.

For your workshop we do run to a fairly tight schedule so we politely ask you aim to arrive at the following times for a prompt start if possible.

10:00 – Arrival and Intro

10:15 – 11:30 – Lab: Proteins, Enzymes specificity and uses

11:30-11:45 Break

11:45 - 13:00pm Lab: Biotechnology and Enzyme immobilisation

13:00 - Depart or Lunch

13:00-13:30 Lunch if you selected to stay

Please note these times are a rough guide and exact timings on the day may vary dependent on the needs and ability of the group. The Baylab team will always endeavour to ensure we can remain on schedule for a prompt departure. For further information please refer to our terms and conditions.

Parking

Coaches

There is limited Coach parking on Green Park. Should your coach stay may we suggest parking on Longwater Avenue or at the Madejski Stadium. Should the coach company wish to park at the Madejski, this does require prior permission from the stadium itself. Please contact your coach company if this is of concern.

Minibuses

There are limited spaces for minibuses in our visitors car park to the right of the main entrance. Should these be full you are allowed to use one of the disabled bays if available. We kindly ask that you let Reception know if this is the case on arrival.

Lunch and refreshments

Bayer do not provide lunch for the students. Please ensure your students bring lunch with them on the day if you wish to stay to eat following the end of your session.



Workshop Summary

Summary

- Designed for students between the ages of 13 and 18 years old
- Lasts for around 4 hours including a 40 minute break for lunch (not provided)
- The maximum group size is 32
- *Link to national curriculum:*

Structure of enzymes

Enzymes as catalysts

Activation energy

Lock and Key theory

Enzyme specificity

Factors affecting the rate of enzymatic reactions

Biotechnology

Higher level: Competitive and non-competitive inhibition

- *Baylab advantage:*

Uses equipment usually found at degree level.

Method

GCSE Level:

- Students conduct protein characterization of the enzymes; and study the action and effects of enzymes as catalysts using different substrates (sugar, starch, sugar analogues).
- Discover factors effecting enzymatic reactions such as pH.
- Take a look at biotechnological uses of enzymes as an enzyme is incorporated in a spherical matrix and placed in a bioreactor to cleave a substrate.

A Level:

- In the first experiments, students study the action and effects of enzymes as catalysts using different substrates and proving enzyme specificity.
- The second experiment looks at factors affecting enzymatic reaction. Students focus on and investigate the effect of different pH on enzyme activity.
- The third experiment takes a look at how enzymes can be inhibited and the different types of inhibition with many drugs acting as enzyme inhibitors.
- Finally students move into their fourth experiment taking a look at the biotechnological uses of enzymes; incorporating an enzyme in a spherical matrix ,and placing in a bioreactor to cleave a substrate.

Outcome

This workshop shows students what enzymes are made of, how they are used in the production of medicines, and their medical and biotechnological uses. They find out that the human body is full of enzymes relying on them to do lots of different processes from digesting foods and replicating DNA, to helping repair damaged cells. They also discover the biotechnological uses of enzymes in industry.