



TOPIC IN A BOX

WARWICK

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GCSE Bacteria and Genetic engineering (Biology) Lesson Plan

Lesson Plan:

Lesson objectives: Change student's perspective of what bacteria are – they don't just cause disease.

Focus of the lesson: Give students a brief overview of what bacteria are, bacterial diseases, antibiotics, antibiotic resistance, how bacteria can be useful when we genetically engineer them and chemotaxis (extension of the syllabus).

Activity	Time Taken	Resources	Related GCSE Topic
Brief introduction: <ul style="list-style-type: none"> - What is iGEM, the team and our project? - Learning outcomes of this lesson 	2 mins	BEACON Topic in a box PowerPoint if a volunteer is present: https://shorturl.at/y2Pe6 Introduction video: https://youtu.be/i8SLehm1WPw	
Presentation on bacteria This lesson will go through: <ul style="list-style-type: none"> - What are bacteria? - How can bacteria be useful to us? 	10 mins	Watch BEACON Topic in a box videos if a volunteer is not present Lesson videos <ol style="list-style-type: none"> 1. What are bacteria? https://youtu.be/8gBIYB1cKbQ 2. How can bacteria be useful to us? https://youtu.be/6g1tA7dO0GY 	Eukaryotes and Prokaryotes Communicable diseases- Bacterial diseases, antibiotics Genetic engineering Resistant bacteria

Chemotaxis activity video explanation and students carrying out the activity	20 mins	<p>Watch BEACON Topic in a box videos if a volunteer is not present</p> <p>Chemotaxis activity explanation video: https://youtu.be/Po5TSrr92no</p> <p>Chemotaxis apple pie activity example:</p> <ol style="list-style-type: none"> 1. Random walk: https://youtu.be/wZV49dVBe6w 2. Random BIASED walk: https://youtu.be/NLJ3Vpg05DE <p>Students will run and spin on the spot to demonstrate a random walk and random biased walk towards an attractant (Apple pie) for 10 minutes.</p>	Extension on GCSE topics relating to bacteria
Ethics debate	15 mins	<p>Show the BEACON Topic in a box video if the volunteer is not present:</p> <p>Ethics debate: https://youtu.be/2lpXzAvhEtc</p> <p>Explanation of genetic engineering ethics debate: Split the classroom into 2 groups: one group for genetic engineering and one group against genetic engineering.</p> <p>Example question the teacher could ask: Do you think genetically engineering bacteria/crops/ humans is beneficial or harmful?</p>	Genetic engineering
Feedback and Q&A	5 mins	<ul style="list-style-type: none"> - If a volunteer is present, the students can ask the volunteer about their university experience. - Ask the students what the main takeaway point from this lesson is - If not, the teacher can write down feedback from the students on what we could have improved on in the lesson and what the students enjoyed about this lesson. The feedback can be sent to SEMFacultyWP@warwick.ac.uk 	

