

Subject Spotlight Lesson Plan

Title of Session	Subject Spotlight: Biology – Dying to Live
Description:	Did you know that every day millions of our cells die? But if this is the case... Why are we not dead? Cells die to keep us alive and protect us against disease. When cells don't die, cancer can occur. Many chemotherapy drugs which are used to treat cancer cause death in cancer cells. In this workshop, students will discover more about cell death, cancer and chemotherapy. They'll also see just why understanding cell death is important to curing cancer.

Duration of session:	~45 mins	Target Audience:	Y12/13
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Regional Progression Framework - Learning Outcomes:
LO1 - Awareness of HE and the different opportunities available. Be able to challenge any myths relating to HE.
LO2 - Identify the link between GCSE attainment and progression opportunities and how these can support life or career goals
LO5 - Learner knows how to research different routes into HE and how to make an application
Gatsby Benchmarks:
7. Encounters with Further and Higher Education - All students should understand the full range of learning opportunities that are available to them. This includes both academic and vocational routes and learning in schools, colleges, universities and in the workplace.

Please note: This workshop centres on a sensitive topic and may be upsetting for any students whose lives have been affected by cancer. If any students do get upset, please direct them to the [Macmillan Cancer Support website](#) where support is available.

Timings:	Activity/Task/Information:	Instructions for teacher:	Resources needed:
0:00-1:55	Brief overview of me/the workshop	Play the video	Video
1:56-2:27	What does 100 billion look like? Short think pair share	Pause the video at 2:27 and facilitate a Think Pair Share for ~1min	Video
2:28-3:47	Introduction to cell death. Class brainstorm of ideas.	Pause the video at 3:47 and encourage students to share ideas (perhaps write ideas on the whiteboard for everyone to see). If the class is stuck, offer prompts such as "quality control", "protection", "homeostasis"	Video
3:48-6:33	Overview of cell death and introduction of how cell death links to cancer. Short class Q&A.	Pause the video at 6:33. Invite students to offer their thoughts as to what may form if cells continue growing.	Video
6:34-8:30	Exploration of the characteristics of cancer cells. Anagram activity of cancer cell characteristics.	Pause the video at 8:30 and invite students to spend no more than 5mins trying to unscramble the anagrams. If students are struggling, prompt them to think about what has already been discussed in the video or what they may already know about cancer – "death", "blood supply", "mutations", "growth", "division"	Video, worksheet
8:30-11:14	Summary of cancer cell characteristics and introduction to trying to kill cancer cells. Labelling an animal cell.	Pause the video at 11:14 and ask students to revise the parts of an animal cell by labelling the diagram. This should take no longer than 5mins.	Video, worksheet
11:15-15:56	Focusing in on the mitochondria. Short class discussion about mitochondria.	Pause the video at 15:56. Facilitate a very brief class discussion about mitochondria, providing prompts as necessary.	Video
15:57-20:05	Introduction to the chemotherapy part of the workshop with stretch and challenge matching activity.	Pause the video at 20:05 and give students no more than 3-4mins to have a guess at matching up the drugs to the targets (Note: It is not expected that students will be able to know this, the activity is designed to show the complexity of chemotherapies. Please reassure any students who may feel daunted by this task that it is not knowledge they are currently expected to have).	Video, worksheet

20:06-24:43	Summary of the complexities of chemotherapy and overview of the concept of personalised cancer medicine. End with quick brain teaser.	Pause the video at 24:43 and quickly invite someone in the class to answer what all of the people on the screen have in common.	Video
24:44-27:04	Final summary and end of workshop	Watch the video.	Video

Overview of all resources:	
Pre-recorded video	
Worksheet	
Online resources to share with students	<p>A Guide to Studying Biological Sciences: https://www.thecompleteuniversityguide.co.uk/subject-guide/biological-sciences</p> <p>Explore Biological Sciences: https://www.ucas.com/explore/subjects/biological-sciences</p> <p>Find out information about Access schemes for University of Manchester: http://www.access.manchester.ac.uk/</p> <p>Other subject talks from University of Manchester: https://www.manchester.ac.uk/connect/teachers/students/classroom-activities/post-16/</p> <p>Find out about all aspects of student life: https://www.manchester.ac.uk/connect/teachers/students/classroom-activities/student-life/</p>