Teaching Unit 5
Antibiotics as a tool in biotechnology

Keywords and concepts: Antibiotics. Bacterial transformation. Plasmid.

'Xplore Health related tools: Virtual experiment: *Produce a drug target!*

Introduction: Antibiotics are substances that are toxic to bacteria at low doses but innocuous to human beings. Hence, at the proper dosage, antibiotics can be used to treat diseases of a bacterial origin. In addition, antibiotics have other applications in research. In this teaching unit you will learn about one of the uses of bacteria in biotechnology.

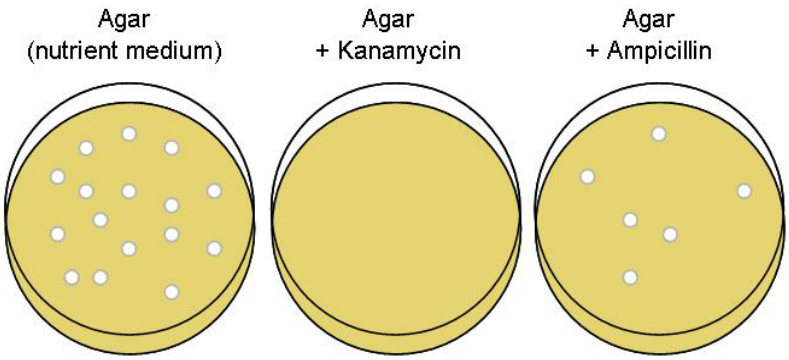
ACTIVITY 1

In the virtual experiment *"Find a target for a drug"* you have performed a bacterial transformation in order to obtain bacteria that produce the target for the drug under investigation. Imagine that you are a scientist that is investigating a new drug and you need to produce the protein which is the target with which your drug has to interact. In order to produce the protein you need to incorporate its coding gene into a plasmid and then insert the plasmid into a bacterium which will produce the protein. To introduce the bacterium you will be using bacterial transformation but not all bacteria incorporate the plasmid.

What would you do to find out which bacteria have the plasmid incorporated into them?

ACTIVITY 2

a) **Take a look at these Petri dishes where we have grown the bacteria you produced in the previous activity, and select the antibiotic to which the plasmid (that you incorporated into the bacteria) is resistant.**



b) **Which of the plates contains the colonies that you need?**

c) **Why can't the colonies from the other plate be used?**