

Teaching Unit 1

How are medicines developed?

Keywords and concepts: Drug discovery and development. Laboratory assays. Clinical trials. Marketing of new drugs.

'Xplore Health related tools: Videotape: *The long and incredible story of a pill*; Game: *Develop a drug in this race against time*; Game to engage in a dialogue: *Who pays to develop drugs?*

Introduction: The development process of drugs is long and costly. It can take up to between 10 and 15 years on average to develop a drug with an estimated cost of about 700 million Euros. Moreover, not all drugs reach the market.

In order for a drug to reach the market, it will have to pass a series of stages, from research in the lab, where it will have to be demonstrated that the drug is useful for the disease under study, to preclinical laboratory trials and clinical trials, where its safety and effectiveness will be assessed and tested.

Only those drugs that pass all these tests will be granted marketing approval.

ACTIVITY 1

Order the stages of drug development and match each image with its corresponding name:

Phase I Clinical Trials;

Approval and Marketing of the drug;

In vitro assays;

Phase II Clinical Trials;

In vivo laboratory;

Animal testing



ACTIVITY 2

Please look at the interactive materials provided in the links below and make a schematic representation of the drug development process, briefly explaining in your own words each of the steps.

<http://www.wellcome.ac.uk/bigpicture/drug/runflash2.html>

<http://www.irsicaixa.es/en/how-hiv-vaccine-being-researched>

OTHER RECOMMENDED RESOURCES:

You can work on the subject of biological testing and clinical phases using the interesting activities that you will find in the following links:

1. How are medicines developed and tested? – Centre of the Cell (game)
http://www.centreofthecell.org/lessonplans/lessonplan.php?lp_id=4
2. Double Blind Trials - Centre of the Cell
http://www.centreofthecell.org/lessonplans/lessonplan.php?lp_id=11