

BUS: The Future Begins Yesterday-Making Medicines (HS)

Summary

Learn about the drug discovery process and professionals working in this field

Time Frame

1 class periods of 45 minutes each

Background for Teachers

Brief History of the Pharmaceutical Industry

The earliest drugstores date back to the middle ages. The first known drugstore was opened by Arabian pharmacists in Baghdad in 754 and many more soon began operating throughout the medieval Islamic world and Europe.

Many of today's major pharmaceutical companies were founded in the late 19th and early 20th centuries.

The Food and Drug Administration (FDA) was established in 1906 and is an agency of the US Department of Health and Human Services. They are responsible for protecting and promoting public health through the regulation and supervision of dietary supplements, prescription and over-the-counter pharmaceutical drugs (medications), vaccines, and medical devices, among other things. A pharmaceutical drug is also referred to as medicine or medication, and can be loosely defined as any chemical substance intended for use in the medical diagnosis, cure, treatment, or prevention of disease.

The pharmaceutical industry remained relatively small in scale until the 1970's when patent law came in to force. Safety and environmental regulations and new advances in technology furthered the industry through the 80's. The introduction of the internet changed the marketing of drugs from a focus on physicians only to today's direct-to-consumer advertising. The Process of Drug Discovery and Development

Drug discovery is the process by which potential drugs are discovered or designed. In the past most drugs have been discovered either by isolating the active ingredient from traditional remedies or by serendipitous discovery.

Modern biotechnology often focuses on understanding metabolic pathways related to a disease state or pathogen and manipulating these pathways.

Drug development refers to activities undertaken after a compound is identified as a potential drug in order to establish its suitability as a medication.

Objectives of drug development are to determine appropriate formulation and dosing, as well as to establish safety.

Drug discovery and development is very expensive. Of all compounds investigated for use in humans only a small fraction are eventually approved. Each year, only about 25 truly novel drugs (new chemical entities) are approved for marketing. It has been estimated that the cost of developing a successful new drug at about 1-2 billion dollars U.S.

Despite these initial costs, the pharmaceutical industry is -- and has been for years -- the most profitable of all businesses in the U.S. What jobs are available in the Pharmaceutical industry?

- Pharmaceutical Scientist

- Pharmaceutical/Clinical Project Manager

- Pharmaceutical Sales Representative

- Pharmacologist

- Product Safety Scientist

Process Development Scientist
Processing Technician
Clinical Trials Monitor
Clinical Trials Research Coordinator
Packaging Technician
Patent Lawyer

Instructional Procedures

Review the background material for teachers.

Give the students the worksheet prior to showing the presentation, so that they can answer questions as the video progresses.

Show The Future Begins Yesterday video. It moves quickly so you may need to stop and start it so that the students catch all of the answers to the worksheet questions.

Discuss the material and information presented in the background material for teachers.

Discuss some of the jobs available in this industry.

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