

OAS Optional Skill Module Drug discovery & development

If you've ever watched T.V. and don't get up for commercial breaks, there is a great likelihood that you've seen an advertisement for some sort of prescription drug...say, Lipitor. With all of the health problems that afflict our society, it does not surprise me that Fortune 500 ranked pharmaceuticals as the third most profitable industry in the United States in 2007. While I hope Lipitor doesn't apply to you, it doesn't hurt to learn how the drugs that may be saving the lives of your closest friends and family came to be.

To gain credit for this skill module, I'd like you to complete the following tasks.

Task 1: Choose a drug and find out more about it

- Using a T.V., magazine, or yourself as a resource, find a drug that you'd be interested in learning more about. In about 200 words, tell me a little history behind the drug's discovery, and describe its purpose and mechanism of action (i.e. target and downstream effects). Are there any side effects that caused controversy or resulted in the drug being taken off of the market?

Task 2: Learn about the drug discovery process

- People are always interested in the end product, but years of work go into finding that one drug that will do the job well and efficiently. List and describe *five* different properties that you think are important to consider when pharmaceutical companies develop a new drug. If an illness has ever required you to take meds, use your experience to brainstorm some ideas.
- There have been tons of cutting-edge developments in research that are used throughout this process. After doing some of your own research on the web, describe *two* techniques that scientists may use to identify and characterize that one special molecule. For example, how do they screen thousands of potential molecules as drugs, determine binding affinity to the target, etc.?
- After scientists optimize a lead in the lab, tons of money and time are poured into three phases of clinical trials before the drug is FDA approved and can hit the market. Of course, these trials require human subjects, not mice. Therefore, if you were given the opportunity to be an unpaid trial participant, would you take it? Why or why not? What benefits and risks associated with these trials affected your decision?