



Virtual Learning

# Medical Interventions Manufacturing Proteins

May 8, 2020



# Medical Interventions

## Lesson: May 8, 2020

### **Objective/Learning Target:**

Outline the steps required to produce a protein in the laboratory and describe the role of biomedical professionals along this processing path. (4.1.5)



## Let's Get Started:

1. Review the process of manufacturing a protein from this week. What are the major steps involved?
2. In order for this to be accomplished, what type of biomedical professions would be involved?



## Let's Get Started: **Answers**

1. Review the process of manufacturing a protein from this week. What are the major steps involved?
  - a. Bacterial transformation, protein isolation, protein purification, protein electrophoresis, getting the drug to market
2. In order for this to be accomplished, what type of biomedical professions would be involved?
  - a. Biomedical engineer, Process engineer, Quality assurance/quality control officer, FDA researcher, Pharmaceutical sales representative, Safety officer, Marketing agent, Package designer, design engineer, or material science engineer, Laboratory technician, Chemist, etc.



## Lesson Activity

Either in your notebooks or on lucidchart, create a flowchart or outline for the entire process of manufacturing a protein. You can use GFP as your example protein but include a description of what happens at each step. Include at least 3 biomedical science professionals who would be involved with the process, where they would be involved, and what their roles would be.



## Lesson Activity - Answer

Either in your notebooks or on lucidchart, create a flowchart or outline for the entire process of manufacturing a protein. You can use GFP as your example protein but include a description of what happens at each step. Include at least 3 biomedical science professionals who would be involved with the process, where they would be involved, and what their roles would be.

- One possible answer is shown [here](#).



## Practice

Identify what biotechnology would be required at each step:

1. Bacterial transformation
2. protein isolation
3. protein purification
4. protein electrophoresis
5. getting the drug to market



## Practice - **Answers**

Identify what biotechnology would be required at each step:

1. Recombinant DNA using plasmids
2. centrifuge
3. chromatography
4. SDS-PAGE
5. Clinical trials





## Additional Practice/Resources

1. Check your understanding by reviewing with these [flashcards](#).
2. Consider writing a [cover letter](#) for one of the three biomedical professionals you chose and reflect on how you would be best suited for the job.
3. Read more about how proteins are created in [labs](#).