

Investigation 18.B: Simulating Protein Synthesis

Question: How can you use materials available in your home or classroom to simulate the processes of transcription and translation?

Experimental Plan

1. As a group, list the steps that are involved in transcription and translation. For each step, note the structures, molecules, and events involved.
2. Discuss how you might simulate transcription and translation in your classroom. Your simulation could take any form. For example, you could prepare an interactive computer program, write and perform a play, or construct a physical model.
3. Once you have agreed on a plan, list the materials and equipment you will need to carry out your simulation. Assign responsibilities to each member of your group. Then assemble your materials and prepare your simulation.

Data and Observations

4. Present your simulation to the class. Record any comments you receive from your classmates.

Analysis

1. Which parts of your presentation seemed to be the most effective at simulating protein synthesis? Now that you have seen what other groups did, how would you revise your own simulation?

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2. Explain how a stop codon triggers the termination of the translation cycle. How does your simulation illustrate this?

Conclusion

3. What are some advantages and disadvantages of simulating molecular processes? What characteristics help to make a simulation effective?