

Investigation 18.B: Simulating Protein Synthesis Answer Key

Answers to Analysis Questions

1. Your answer should be well-reasoned and should make specific reference to the simulations presented by other groups.
2. The mRNA codons UAA, UAG and UGA are stop codons. The ribosome moves along the mRNA molecule during the translation cycle until it reaches a stop codon. It then releases the polypeptide and the ribosome assembly comes apart, ending the translation cycle.

Answer to Conclusion Question

3. Advantages of simulating molecular processes: A model or simulation may help clarify the steps in a complex process, may allow scientists to envision processes involving relatively small molecules, and may enable scientists to communicate their ideas to other scientists or the general public.

Disadvantages of simulating molecular processes: Use of models may reinforce misconceptions (i.e., electrons orbit the nucleus like planets orbit the Sun) and may not actually represent the molecular processes they intend to simulate or the structures involved. Effective simulations may be characterized by an accurate and realistic depiction of structures involved in the modelled process, careful analysis of the sequence of steps involved, and choice of a medium or form that can be clearly understood by others considering the model.