

WINK SHEET— Protein Synthesis and Biotechnology

Theme: In order for information stored in DNA to direct cellular processes, a gene needs to be transcribed from DNA to RNA and then must be translated by the cellular machinery into a protein or an RNA molecule. The protein and RNA products from these processes determine cellular activities and the unique characteristics of an individual. Modern techniques in biotechnology can manipulate DNA to solve human problems.

Expectations:

- * Develop and use models to describe how the structure of DNA determines the structure of resulting proteins or RNA molecules that carry out the essential functions of life.
- * Obtain, evaluate and communicate information on how biotechnology (including gel electrophoresis, plasmid-based transformation and DNA fingerprinting) may be used in the fields of medicine, agriculture, and forensic science.

Objectives: On a scale of 0-5, with 0 being “I know absolutely nothing” and 5 being “I am exceptionally confident in my ability,” please rank your understanding of each objective at the end of the unit.

- _____ Define the processes of Replication, Transcription and Translation
- _____ Differentiate between Transcription and Translation
- _____ Sequence the steps of transcription and translation
- _____ Recognize the consequences of mutations to the genetic code
- _____ Relate the structure of DNA to the Protein that is produced
- _____ Explain how Biotechnology is used in medicine, agriculture and forensic science
- _____ Apply the field of Biotechnology to uses in the world

Textbook: We will be covering pages 192-215 in your textbook. Please mark which statements apply to your use of the textbook on this unit.

- _____ I read the entire reading for this chapter
- _____ I read part of the reading for this chapter
- _____ I used the textbook to assist in my understanding of vocabulary from this unit
- _____ I used the textbook to assist in my understanding of the objectives
- _____ We have a text book?
- _____ Other _____

Vocabulary:

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| • Transcription | • anticodon | • biotechnology |
| • Translation | • peptide bond | • gel electrophoresis |
| • Protein Synthesis | • stop codon | • transformation |
| • mRNA | • amino acid | • DNA fingerprinting |
| • rRNA | • mutation | • Plasmid |
| • tRNA | • gene mutations | |

Activities

- Transcription and Translation Sentences
- Mutations Consequences
- Plasmid Transformation
- DNA Fingerprinting