Lesson Topic: Protein Synthesis

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| Standard(s):  CKS: How DNA sequence makes proteins | |
| Essential Question(s):  How does a cell produce proteins? | Objective(s): SWBAT…  Define transcription and translation  Define Protein synthesis  Compare and contrast transcription and translation  Differentiate between DNA and RNA  Explain the functions of all three types of RNA  Say what adenine pairs with in RNA |
| New Vocabulary: Protein synthesis, RNA, messenger RNA, transfer RNA, ribosomal RNA, uracil, transcription, translation | |
| Do Now: Review notes on DNA replication, create one level 2 questions and one level 3 question | |
| Assessment:  Protein synthesis takes place on which organelle?  Ribosome  Compare and contrast DNA and RNA  DNA - double helix, thymine  RNA - One sided ladder, uracil  What are the three types of RNA and what are their functions?  Messenger RNA (mRNA) - Copies coded messages from DNA in nucleus, and carries into cytoplasm Transfer RNA (tRNA) - Carries amino acids and adds them to the growing protein Ribosomal RNA (rRNA) - Makes up the ribosome  Predict what would happen is transcription never occurred in a cell?  mRNA would never be produced and it would halt the entire process of protein synthesis | |
| CFU Questions:  What function does DNA have?  Define protein synthesis?  Where is protein synthesis taking place?  What role does RNA play in protein synthesis?  Differentiate between transcription and translation  Why are transcription and translation important? | Anticipated Confusion:  Students may mix up transcription and translation and flip the processes  Students may struggle to remember that uracil replaces thymine |

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| Time | Instruction/ Activity | | Materials |
| 3-5 | Do Now: | Review DNA replication |  |
| 3-5 | Review: | Quick review of DNA and replication | TV, science notebooks |
| 15-25 | New Information: | Note on Protein synthesis | TV, science notebooks, writing utensil |
| 15-25 | Guided Practice: | Walking through the differences between DNA and RNA as a class. Going through protein synthesis steps together |  |
| 3-5 | Check for Understanding: | Visually check worksheets to see if students are understanding the differences and the roles that transcription and translation play in protein synthesis | worksheet |
| 15-25 | Independent Practice: | Amoeba sisters video - Amoeba sisters worksheet DNA vs. RNA and protein synthesis  Ordering the steps of Protein Synthesis with table groups | TV, science notebooks, writing utensil. worksheet |
| 3-5 | Assessment (Exit Ticket): | Google Form   1. Protein Synthesis takes place on which organelles? 2. Which type of RNA copies coded messages from the DNA in the nucleus? 3. Define tRNA 4. Predict what would happen is transcription never occurred in a cell? |  |
| 10-15 | Remediation and Extension: | Small groups aside who are struggling to make connections. (based off of exit ticket)  Extension: tic-tac-toe |  |
| n/a | Accommodations | Notes available on website, provide handouts that show the differences between DNA/RNA, transcription/translation |  |