Introduction to Protein Synthesis Webquest

Objective: The purpose of this assignment is to give you a better understand of how the message found on a molecule of DNA is used to build a protein.

Link 1 – DNA and RNA Comparison  http://www.diffen.com/difference/DNA_vs_RNA

1. Use the information in the table to complete the following comparison table:

<table>
<thead>
<tr>
<th>A. Structure: How many strands are in each nucleic acid molecule?</th>
<th>DNA</th>
<th>RNA</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Structure: What sugar is found in each nucleic acid molecule?</td>
<td>DNA</td>
<td>RNA</td>
</tr>
<tr>
<td>C. Base-Pairing: What are the base pairing rules in each nucleic acid molecule?</td>
<td>DNA</td>
<td>RNA</td>
</tr>
<tr>
<td>D. Location: Where in the cell can each nucleic acid molecule found?</td>
<td>DNA</td>
<td>RNA</td>
</tr>
<tr>
<td>E. Stability: How easy is it for an enzyme to attach each nucleic acid molecule?</td>
<td>DNA</td>
<td>RNA</td>
</tr>
<tr>
<td>F. Unique Features: Describe how UV light affects each nucleic acid.</td>
<td>DNA</td>
<td>RNA</td>
</tr>
</tbody>
</table>

2. Scroll down until you see the section titled “Function.” Describe the functions of the 3 types of RNA. Don’t be basic! Remember, half an answer only gets half the credit. 😊

A. Messenger RNA (mRNA): _____________________________________________________
   _____________________________________________________
   _____________________________________________________

B. Transfer RNA (tRNA): _____________________________________________________
   _____________________________________________________
   _____________________________________________________

C. Ribosomal RNA (rRNA): _____________________________________________________
   _____________________________________________________
   _____________________________________________________
3. Proteins make up ____% of the dry weight of a human body.

4. What single protein holds our hair, skin, nails and bones together? _____________________________

5. a. Proteins are made of building blocks called ____________ acids.

   b. How many amino acids are used to build our proteins? ____

6. List the 6 high protein foods described on the website: ____________________________________________
________________________________________________________________________________________

7. What happens to a protein when we eat it? How are the amino acids reused? _____________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________

Link 3- More Information about Proteins
https://www.wisc-online.com/learn/natural-science/life-science/ap13304/biomolecules—the-proteins
Read and click through the slides and answer these questions as you go.

8. Fill in the blanks: Proteins are built from ____ common building blocks called _______________________________.

9. What identifies the various amino acids? ___________________________________________________________

10. What determines the primary structure of a protein? __________________________________________________________________

11. What kind of bond connects the amino acids together? ______________________________________________

12. What kind of bonding results in the secondary structure of a protein? _______________________________

13. Give 2 examples of secondary structures in a protein: _____________________ and ______________________

14. What determines the function of a protein? _______________________________________________________

15. When a protein is destroyed it’s called “denaturing” the protein. List 4 things that can cause the destruction of a protein:
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________

16. Why are animal proteins considered “complete proteins?” ___________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________

17. Why are plant proteins considered “incomplete proteins?” __________________________________________
________________________________________________________________________________________
________________________________________________________________________________________