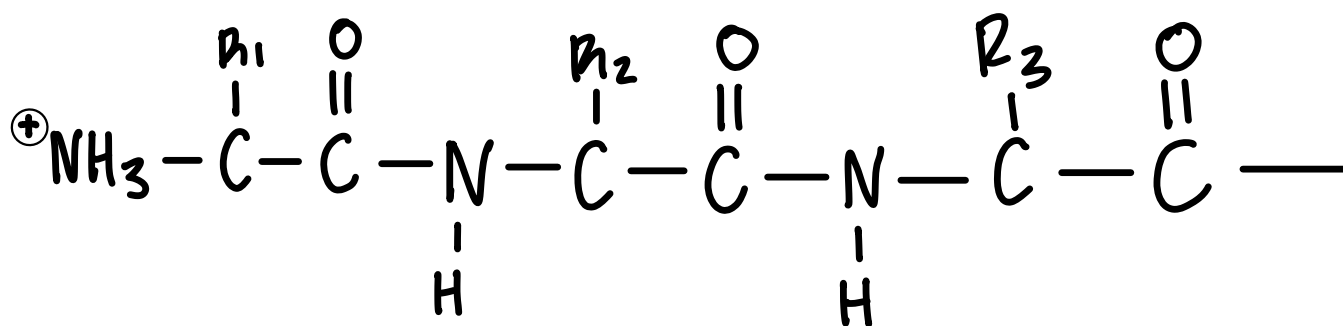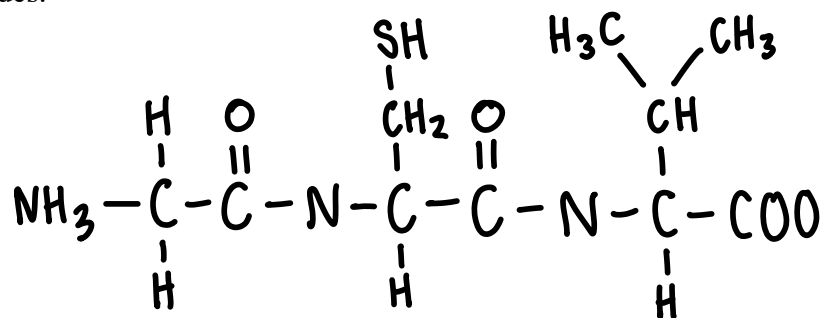1. Label the following on the image below: Peptide bond, Dipeptide, Amino Acid(s), Peptide Backbone, C-Terminus, and N-Terminus. Also, circle the groups that are "fixed/rigid" and which can freely rotate? Why are these groups able to rotate?

$$\overset{+}{N}H_3 - \overset{\overset{R_1}{|}}{C} - \overset{\overset{O}{\parallel}}{C} - \overset{}{N} - \overset{\overset{R_2}{|}}{C} - \overset{\overset{O}{\parallel}}{C} - \overset{}{N} - \overset{\overset{R_3}{|}}{C} - \overset{\overset{O}{\parallel}}{C} -$$

(with H below the first and second N)

2. What amino acid is special in regard to the rules above? Why is it special and is its "nickname"?

3. Provide the name of the following image using its full name, their 3 letter codes, and their 1 letter codes.

$$NH_3 - \overset{\overset{H}{|}}{C} - \overset{\overset{O}{\parallel}}{C} - N - \overset{\overset{CH_2}{|}}{C} - \overset{\overset{O}{\parallel}}{C} - N - \overset{\overset{CH}{|}}{C} - COO$$

with SH above CH_2, H_3C and CH_3 above CH, and H below the carbons.

4. Draw the following amino acid sequence. Give it it's additional names.

TLPS

5. Define what a primary structure is.

6. Define what a secondary structure is. Give examples learned in class.

7. What interactions are present in a secondary structure?