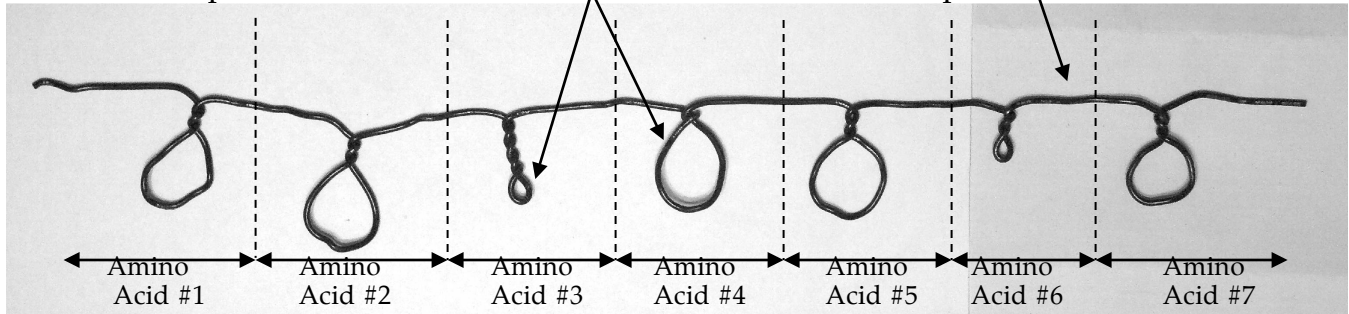


# Bio 111: Protein Folding Demonstration

Today in lecture, you will twist a piece of wire so that it simulates the behavior of a chain of amino acids (also known as a protein). We will then use this to explore protein folding in lecture.

A simulated 7-amino acid protein is shown below; your protein will be similar although it may have a different pattern of loops.

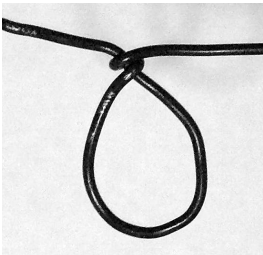


- The more-or-less straight part of the wire simulates the **backbone**
- The loops simulate the **side-chains** (there are 7 in this example)



- One end is the amino terminus; the other is the carboxyl terminus (for this demonstration, it does not matter which is which).

## Side-chains

In the simplified world of this demonstration, there are three kinds of amino acids, each of which is represented by a different type of loop:

Hydrophobic	Positively-charged	Negatively-charged
		
A <u>large open loop</u> . Make it <u>two finger-widths</u> wide.	A <u>long closed loop</u> . Make it <u>four twists</u> long.	A <u>short closed loop</u> . Make it <u>two twists</u> long.

## How to do it

Now you will twist your wire to make a protein of seven or eight amino acids. The sequence of amino acids is up to you, but it works best if your protein contains:

- More hydrophobic amino acids than charged ones.
- At least one positively-charged and one negatively-charged amino acid.

The measurements in this demonstration need not be precise; you will use the width of your fingers as a ruler.

- Leave two finger-widths of space un-twisted at the starting end.
- Leave three finger-widths of space between each amino acid.

