Ms. Longsdorf’s Research
My path to research in chemistry
What is Research to You?

- What do you think of when you hear the word “research”?
  - Scientists working in laboratories
  - Doing a lot of experiments
  - Costs a lot of money
  - Takes a long time
  - Hard work
  - Only smart people do research
Research is defined as:

- #1 “diligent inquiry into a subject in order to discover facts or theories”
  - Which means constantly asking questions about something you are interested in getting more information about

- #2 “investigating thoroughly and carefully”
  - Which means taking your time to find out more information about something
What Research Really Is

- Research is really just being curious about something and not giving up when you take the time to get information about how or why something happens.

- What does this mean for you?
  - Research can be about ANYTHING.
  - Research can be done by ANYONE.
  - Research can be done in ANY WAY.
My Research

- Creating “Biomimetic” surfaces with proteins
  - Surfaces that mimic or act like surfaces in biology or in the body
What are proteins?

- Atoms – smallest form of matter
- Molecule – a bunch of atoms that are connected
- Amino acids – a type of molecule with atoms of HONC
- Proteins – even bigger molecule made up of lots of amino acids
Why is This Important?

- For biomedical devices
  - Pacemakers
  - Prosthetics (fake limbs)

- Many times people’s bodies reject these devices.
  - This happens because the body sees the device as a foreign object and attacks it to try to get rid of it.
Why is This Important?

- So, the devices need a disguise!
  - Finding a way to put proteins on the devices gives them a disguise.

- Since the body recognizes the proteins as being “normal”, it won’t attack the pacemaker and try to kick it out of the body!
Main Goals of My Research

- Creating new surfaces with compounds and proteins
- Making patterns with these molecules
- Using several instruments and methods to identify the compounds on the surface
  - After all of the chemical steps are done, there needs to be proof that the compound is actually there!
Instruments are Important
Any Questions?
Additional Information
Contact Angle Goniometry
x-ray photoelectron Spectroscopy
x-ray photoelectron Spectroscopy
x-ray photoelectron Spectroscopy