**Winogradsky Columns** Winogradsky columns are built to mimic microbial ecosystems. They are made by
combining the sediment from a body of stagnant water (pond) to a clear cylindrical container, adding enriching supplements and providing the growing ecosystem with sunlight. Over time, gradients can be seen within the column that are home to a diverse array of heterotrophic and chemo/autotrophic bacteria.

**Step 1:**
Go to this page:

<https://media.hhmi.org/biointeractive/click/winogradsky/>

a. Click on “Background” on the header bar.
Read the Introduction, Gradients and Zonation, and Metabolic Strategies.

b. Click on “Interactive Column” on the header bar.
Explore the virtual Winogradsky column by clicking on each zone and reading about the microbial life found in each zone.

**Step 2:**
Access the pdf posted on our project page with instructions on assembling and monitoring your Winogradsky columns. Read through the instructions and begin the project by assembling your columns in time for you to be able to accumulate 8 weeks of data.
 **Step 3**. As the semester progresses, follow the protocol by recording changes weekly in your columns as directed by the protocol and developing answers for the questions found at the end of pdf.

**Step 4:** Submit the results of your completed Winogradsky project, including answers to the questions found at the end of the pdf, by May 1st . The protocol requires you to
take pictures of your columns weekly to track the changing contents of your columns. All photos should also be in color and all sketches scanned in color and attached to the typed body of your document.