

Make a WINOGRADSKY COLUMN at home!

What is a Winogradsky Column? A Winogradsky column is an enclosed self-sustaining microbial system. Start with a clear container filled with dirt, water, and nutrients. Over time, different types of bacteria and other microorganisms will grow in it. These microbes form colorful layers. These layers appear at different levels in the column based on nutrient, light, and oxygen availability. This science experiment shows us how different organisms live together, occupy neighboring niches, and use different and complementary resources in nature.

What will you need?

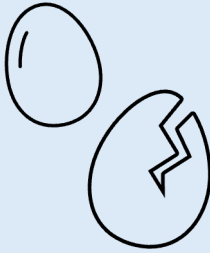
- (1) Shredded paper towel/newspaper or Calcium carbonate (chalk)**



This component supplies Carbon for your Winogradsky Column. Carbon is essential for microbes to grow and build their cells.

- (2) Egg (raw, boiled, shells)**

This component supplies Sulfur, as essential nutrient for most organisms. Some organisms will use Sulfur compounds to “breathe” or respire.



- (3) Dirt and water**

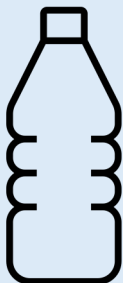


Dirt acts as your **inocula**. This is the source of all the microbes that will live in your column. Water ensures that many bacterial organisms are able to grow to populations that we can see as layers in the column.



- (4) A tall clear vessel**

This is the container that your organism will live in. Use a clear bottle so that you can see the layers. Use a tall bottle to create a gradient of nutrients and oxygen in the column,



Instructions

Here:

Who is living in your Microbial Zoo?

Aerobes
(gray/white)

Cyanobacteria
(green/cyan)

Purple Nonsulfur
Bacteria (pink)

Purple Sulfur
Bacteria (red)

Green Sulfur
Bacteria (green)

Iron oxidizing
bacteria
(orange/brown)

Anaerobes-
Iron reducing
bacteria,
methanogens,
sulfur reducing
bacteria
(black)

