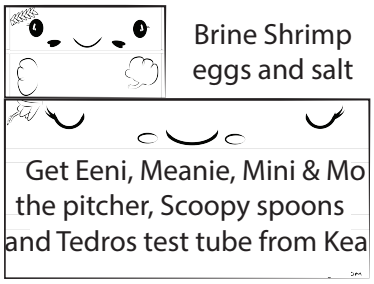
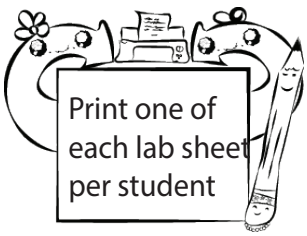
Growing Artemia NGSS- Plants and animals have internal structures that help them survive (From Molecules to Organisms: Structures and Processes 4-LS1-1). Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
-Students recreate the extreme living enviroment for their own brine shrimp to grow in.
-Students learn about how oceans differ from freshwater and brine enviroments like this one.

Lab Prep:

1

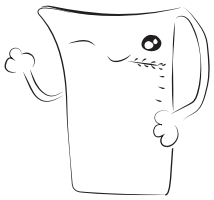


2



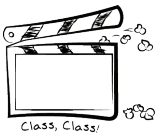
3

Fill Mo with tap water



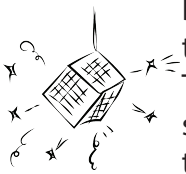
4

Lab 1:

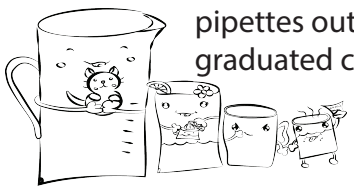


1. **Show the in-class Movie** (5 min).

2. **Talk about The Great Salt Lake** (10 min) **-** This lake is the eighth saltiest bodies of water in the world and came from a prehistoric freshwater lake that covered over half of Utah called "Lake Bonneville". Climate warmed and the lake water evaporated and concentrated the salt. Also, this is a terminal lake without an outlet stream with many streams bringing minerals in making the lake saltier. The lake is too salty for fish but is home to Artemia a "Brine Shimp" that has adapted to live in this salty environment. Brine shrimp are able to monitor how much salt they allow in their body better then any organism in the world. They are a crustacean with a hard outer covering that does not allow salt in. The salt that gets in from eating is taken care of by a special stomach lining that absorbs it and pumps excess salt out their gills rather then letting it go through their whole body. They also have another mini salt pump on their neck. Let's recreate this extreme salt water environment.



3. **Talk about the Lab tools** (5 min) - Show students how they will use Pippi the Pipette to measure out 40ml of water in Tedros the test tube. Talk about how ml is one unit of measurement that is good when measuring small amounts of liquids. Show students how they will carefully scoop out one spoonful of salt (the big end of the spoon). Make sure it is a flat spoonful and not heaping. This is equivalent to 1/4 teaspoon of salt.



4. **Students get their tools. Set out the water and salt** (5 min) – Put the test tubes, spoons and pipettes out and let students walk through and get them. Use your Eenie, Meanie, and Minie graduated cylinders for salt and water stations at table groups. Use Mo to add water to the stations

5. **Work on Measuring Skills** (10 min) - Students follow their recipe to make "Mo's Salt Lake Punch". Students pour their test tube of salt water to the pitcher

6. **Clean up -** (5 min) Return Pippi pipette and Scoopy spoon to their bag. Tedros will need a little rinsing out in the sink or bin with water. Once rinsed pile him back in his bag with the top off to dry.

7. **Read and Graph** (10 min) - Take a little time at the end to allow students to read and graph about the extreme environment they just created for their future baby shrimp.