**Plating Stock Samples Lesson Plan**

**Materials:**

* Agar plates (Pre-made) – 1 per student
* Stock Sample of Algae in small flasks (1 per pair)
* Bunsen Burners/Flame (1 per pair)
* Lighter (1 per pair)
* Inoculating loops (1 per student)
* Inoculating loop holder (1 per table)
* Sharpie (1 per pair)

**Starting Question:**

* **How many species of algae are in your sample?**
  + Most likely more than one. Could be hundreds or thousands
  + If we’re trying to find a specific kind of algae to research, this is a problem. Therefore, we need to isolate a single kind of algae
  + We have a process that works pretty well. The only drawback is that it takes a few days for results.
  + What we are going to do is grow the algae on petri dishes. What we can then do is take an entire colony out and start growing it in a liquid media.
* **How will we know that a single colony is a single species?**
  + Species of algae will naturally compete for space.  Therefore two species of algae are unlikely to grow in the exact same space on a solid medium.
* **What is agar?**
* Our petri dishes are made with agar.  Agar simply solidifies a liquid media to allow it to be used on petri dishes.
* Our agar mixture is only made out of the Miracle Gro media and agar.
* Only Miracle Gro compatible species of algae will grow on these plates. But we know only a handful of species that grow in Miracle Gro media, so if you find a new species of algae that grows on it, you will actually be helping out our lab.

**Methods:**

1. Obtain algae samples, bunsen burner or flame source, inoculating loop, agar plates, and sharpie
   1. Have a pile of petri dishes with agar for them to gather by themselves.
   2. Have them label the bottom of their petri dish with Name, Date, and Sample Name.
2. Talk about fire safety
   1. No horseplay
   2. Wear goggles
   3. Don’t put your hand/arm over it
   4. Respect the equipment
3. Start Bunsen Burner.
4. Swirl algae sample for a few seconds
5. Hold an inoculation loop in your right hand.
6. Flame the loop and allow it to cool.
7. Insert the loop into the algae culture broth, swirl around and withdraw.
8. Partially lift the lid of the Petri dish containing the agar.
9. Hold the inoculating loop parallel to the surface of the agar. Smear the inoculum backwards and forwards across a small area of the medium **(see streaked area ‘A’ in the photograph).**
10. Remove the loop and close the Petri dish.
11. Flame the loop again and allow it to cool.
12. Turn the dish about 90°
13. With the cooled loop, streak the plate from area ‘A’ across the surface of the agar in three or four parallel lines (area ‘B’). Make sure that a small amount of the culture is carried over.
14. Remove the loop and close the Petri dish.
15. Flame the loop again and allow it to cool. Turn the dish through 90° anticlockwise again and streak from ‘B’ across the surface of the agar in three or four parallel lines (area ‘C’).
16. Remove the loop and close the Petri dish.
17. Flame the loop again and put it away in the inoculating loop holder.

