\*All of the recipes I’ve used, and the cultivation guide comes from the book/website: Radical Mycology (www.radicalmycology.com)\*

Below is a step-by-step cultivation guide for how I prepared my fungi from plate to shoe

**Step one: Prepare plates**

Agar media recipe and preparation:

* 500 mL of distilled water
* 10g of agar
* 10 mL (Light) brewer’s malt
* 1 mL baker’s yeast

1. Cook the agar at a low temperature until all ingredients are dissolved.
2. Pressure cook the liquid at 15psi for 20-30 minutes.
3. Let agar cool for 2 hours.
4. Pour agar in front of sterile hood or in a glove box quickly and cleanly.
5. Stack the plates as they are poured to reduce condensation.
6. Cover the stack in the plastic sleeve they came in and let cool for an hour
7. Wrap plates with a double layer of Perafilm and refrigerate for long-term storage, or if inoculating immediately, wrap with a single layer of Perafilm.

**Step two: Liquid Culture (LC)**

Liquid culture is like a petri dish without agar. It is sugar and nutrient rich and the mycelium will grow through it. This step is optional, but is good to use if you are cultivating without a sterile space. Airport lids (see material sheet) can be used to introduce and extract mycelium. I grew mycelium both in LC and on plates because I wanted to experiment with both. For tissue sampling, I like the agar. For inoculating other media besides plates, I like the LC.

LC Recipe and preparation:

* 500 mL distilled water
* 10 g raw & organic honey

1. Mix and dissolve ingredients on low heat DO NOT boil. Caramelized sugars are antifungal
2. Fill jars half-full of solution.
3. Add magnetic stir bars, or a piece of broken glass in order to stir for oxygen and for breaking up the mycelium to encourage growth.
4. Place an airport lid and cover with aluminum foil.
5. Pressure cook at 15 psi for 15-20 minutes.
6. Allow to cool overnight in the pressure cooker.

To inoculate LC from Agar:

Materials:

* 1 jar with sterilized, distilled water with an airport lid
* 1 jar with sterilized LC
* 1 myceliated, clean petri dish
* 1 syringe with a 16 gauge Luer-Lok needle
* Aluminum foil
* Flame sterilizer
* Sterilization materials

Method:

1. Sterilize all media and tools in the pressure cooker. 15psi for 15-20 minutes
2. Under aseptic conditions, unwrap plate and syringe.
3. Wipe the water jar’s airport lid with alcohol, spray with alcohol, and insert the syringe into the jar. Draw out 5ccs of water.
4. Open plate quickly and without touching the needle to anything other than the mycelium, inject water onto the agar surface
5. Use the tip of the needle to scratch the surface of the mycelium where the drop of water is located, and quickly and efficiently then draw the loosened mycelium. Get as much as possible.
6. Wipe off the injection port and the sterilize the syringe needle with alcohol and a flame sterilizer
7. One the tip of the needle has cooled, insert and inject the mycelium water into the LC
8. Label jar
9. Incubate

\*Be sure to stir your plates daily so that the mycelium gets oxygen. Do Not let the airport filter get wet with the LC during this process. This creates a pathway for contamination.

**Step Three: Grain Spawn**

Once mycelium has grown in the LC or in agar, it is time to transfer the mycelium to a jar of cooked and sterilized grains. The grains provide more nutrients and minerals to feed the mycelium. Once the grains are colonized or myceliated, this will provide you with individual “seeds” to effectively move on to the fruiting stage.

The grains that I use are millet. Though you can use rye, wheat berries, spelt, popcorn, whole birdseed, and milo. I use millet because I can cut out the step of cooking the grains before I pressure cook them.

Recipe for 10 quart jars:

1. Measure out 10 cups of dry grains in a large pot
2. Fill the pot with water and stir and rinse grains. Pour out water and repete this step until there are no more floating debris and the water runs clear.
3. Cover the grains with distilled water and let them sit for 12-24 hours.
4. Pour off any excess water
5. Add 1 tablespoon of gypsum and stir evenly throughout grains. This is a mineral supplement for the mycelium and also helps to prevent stickiness.
6. Fill jars and seal with an airport lid and cover with aluminum foil
7. Pressure cook jars for 60-75 minutes
8. Let grains cool overnight, and inspect in the morning for cracked jars or burnt/burst grains. Discard if you see this.

Plate to grain inoculation:

Move a wedge of myceliated agar to a cooked and cooled grain jar

Materials:

* Myceliated petri dish
* Cooked, sterilized, and cooled jar of grains
* Flame and sterilization materials
* Scalpel

Method:

1. Prep your transfer space for aseptic work.
2. Shake jar vigorously to loosen grains. Shake grains until they are sloping in the jar.
3. Unwrap the plate and loosen (but don’t open) the lid on the grain jar.
4. Sterilize your scalpel with alcohol and a heat source and allow it to cool.
5. Clamshell-open the petri dish and cut out a small chunk of agar at the leading edge of the mycelium.
6. Close the petri dish
7. Open the loosened grain jar lid and drop the agar wedge into the grains at the bottom of the slope. DO NOT touch the agar/tool to anything else and DO NOT place your hand over the opening of the jar.
8. Close the jar and tighten the lid.
9. Gently shake the grains over the agar at the wedge so they cover the mycelium. This prevents the mycelium from drying out and helps it recover from the stress of being transferred.
10. Wrap the plate with Perafilm and label the jar

**Step four: Fruiting Substrates**

I used a wood-based substrate for my Reishi and Oyster spawn. Each species is different and requires a different food source. For specific information regarding species and fruiting, I recommend referring to the Radical Mycology book (a super-amazing resource), or websites like shroomery.org, fieldforest.net or fungi.com.

Materials:

* Alder or Oak pellets from hardware store.
* Distilled water
* Plastic bin
* Large pot for pasteurization
* Heat tolerant plastic bags
* Thermometer

Method:

1. Soak pellets in distilled water for 20-30 minutes. Barely cover the pellets with water. You do not want to have to drain excess off as this leaches out the sugars that the mycelium wants to eat.
2. Once the pellets have broken apart, use your hands to mix-up and further break up the medium. You want the perfect moisture content, which is being able to very tightly squeeze a handful of the sawdust with barely a drop of water coming out. It is important that the sawdust is not too wet, as standing water will pool at the bottom of the bags and this will host other organisms that you do not want to grow. If your material is too wet, I would recommend adding more pellets to the mixture to help soak up the water. If this isn’t possible – carefully drain excess the water out.
3. Once the proper moisture content is achieved, fill the heat tolerant bags about half-way full. Wipe the bags of any excess sawdust around the top.
4. Close the bags tightly and place bags in a pot of water with a weight on top. Bring the temperature to 140-160 degrees F for 1 hour. Once the temperature in the bags has reached 120 degrees, turn off the stove.
5. After 1 hour, remove bags and allow them to cool in a clean environment.

**Step five: pack shoes!**

Once I had grain spawn grown out and sawdust ready to be inoculated, I prepared my “shoes” and feet molds by covering the interior of the cardboard with clean, plastic sheeting. I further sterilized the interior and the foot mold by spraying it down with alcohol and wiping this with a clean paper towel.

Materials:

* Clean, plastic bin with lid (cleaned with bleach and alcohol)
* Cardboard shoe forms with plastic-lined interiors
* Feet molds
* Pasteurized sawdust
* Grain spawn
* Clean plastic sheeting (for top)
* Tape
* A knife

Method:

1. In a clean work-space without moving air, place shoe forms into plastic bin
2. Open pasteurized sawdust, and pour into bottom of shoe forms. Fill 1/3 of the way up.
3. Place clean, foot form on top of the sawdust.
4. Cover foot with a bit more sawdust, and then right above the shoe, open 1 jar of grain spawn and shake grains into the form.
5. Cover grains evenly with more sawdust.
6. Cover shoe form with clean plastic sheeting and tape.
7. Poke holes throughout the plastic in order to allow oxygen flow.
8. Label and date each shoe.
9. Cover plastic bin with a lid and place in an incubator.