Mycelium Moulds

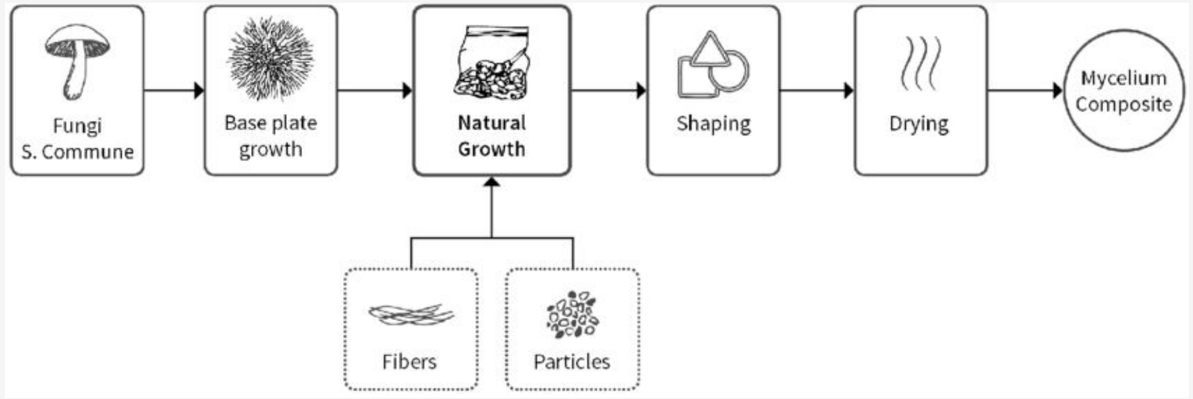
[Zoe // June 2024]

Grown.bio

This creative project is an exploration of using 3D printed moulds to make consumer products out of mycelium - the root-like structures of mushrooms. It was inspired by the work of Grown.bio, an innovative organisation who grow and use mycelium in creative and sustainable ways.

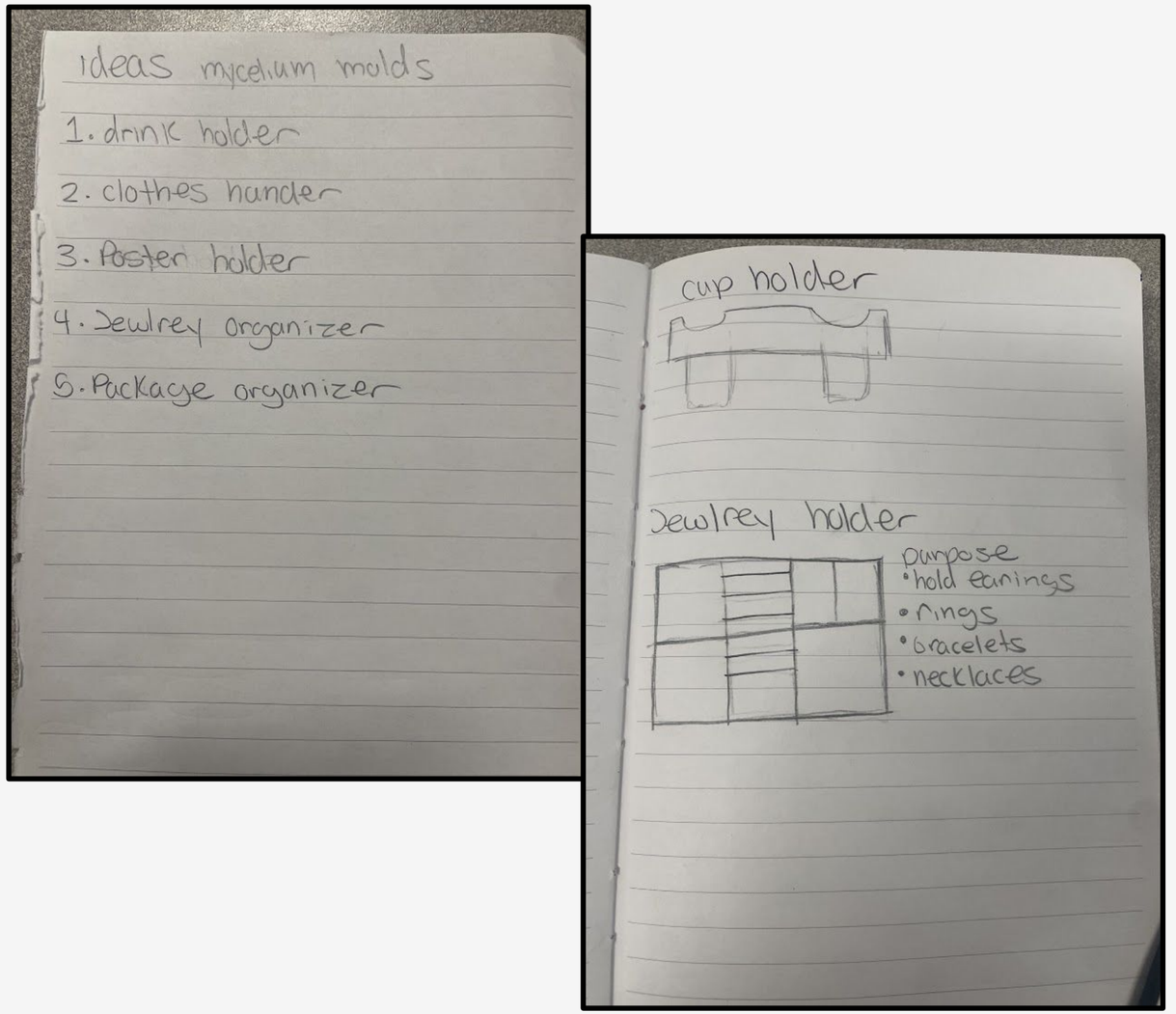
Growing Mycelium

FIrst a mold is created by 3D printing a reverse image of what you want the final product to be. After the printing process is done, the mold is taken to the vacuum former. The vacuum former melts the plastic and is then is pressed to the 3D printed object. The plastic then cools and a mold is created. This mold is then packed with mycelium, which then grows in the shape of the mold in 3-5 days,



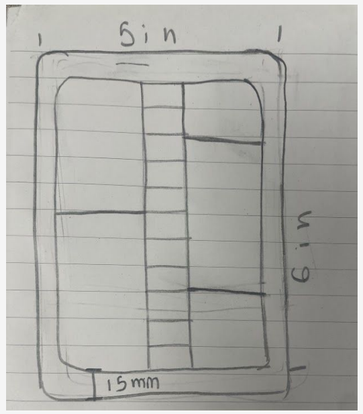
Idea Brainstorm

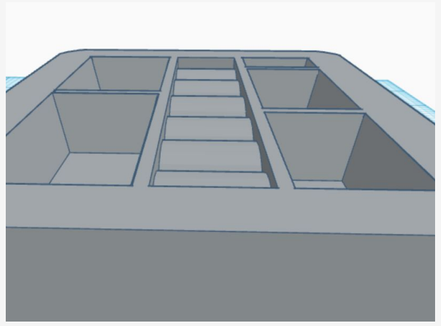
Considering all of the criteria we wanted to create something that can be used in people's daily lives to make tasks easier. We first thought of a cup holder similar to fast food places but more simple and easier to use. We wanted to be safe so we moved to something that would never be exposed to water or food. So we came up with the idea of a jewelry holder. The jewelry holder will be simple and will not be exposed to water.

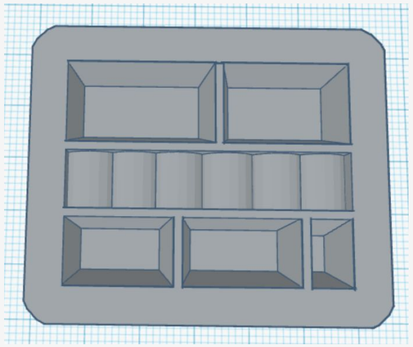


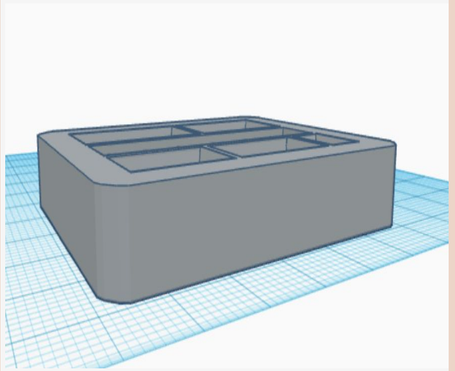
Visual Brainstorm

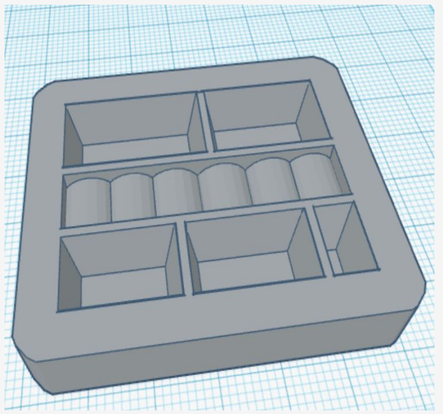
Or key idea is the jewelry box that we crafted on tinkercad. We first started with the walls that are a little bit more that 15mm thick. These walls with help to keep a stable structure as the mycelium is a weak material. We then constructed the inside of the box and added component of our ideas. We rounded the corners and added a slope inwards to make it easier to remove it from the mold.



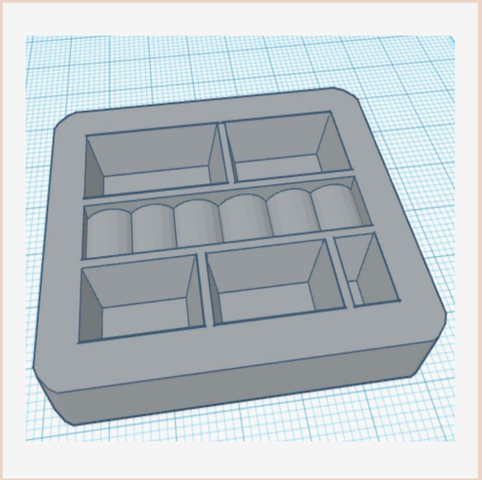


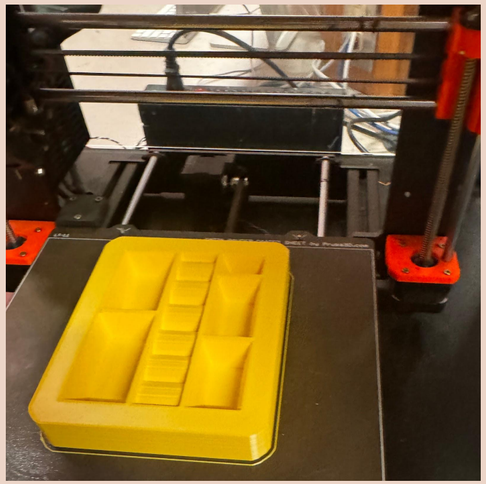


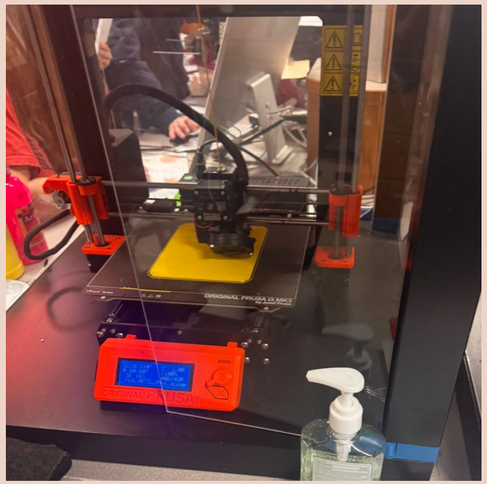




Concept Development



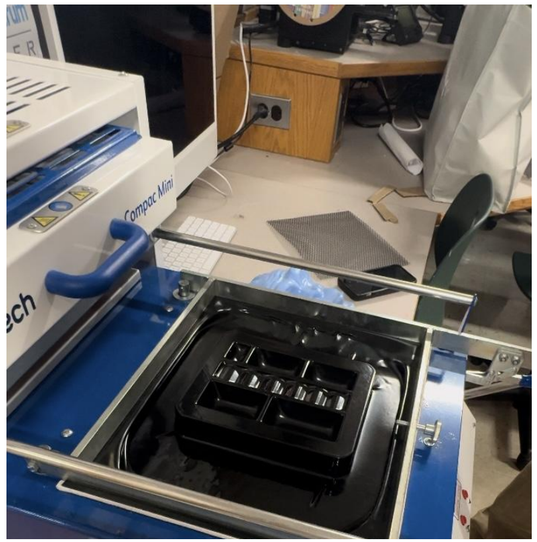


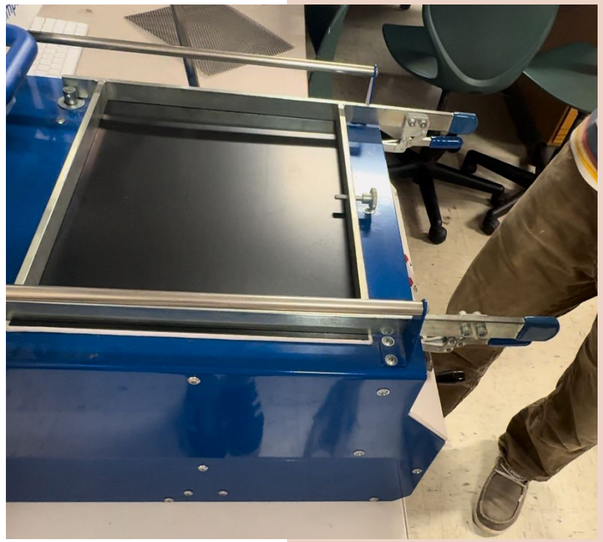


We made a 3d printed mold on Tinkercad. This mold has 6 sections with different Sizes. One of the sections has ridges to hold smaller objects. The other sections can be customizable and has larger spaces for larger species of jewelry and smaller sections for smaller pieces of accessories. The mold is 5 by 6 inches and is 0.6 inches thick which will make is easy for the mycelium to hold its structure.

Making the Mould

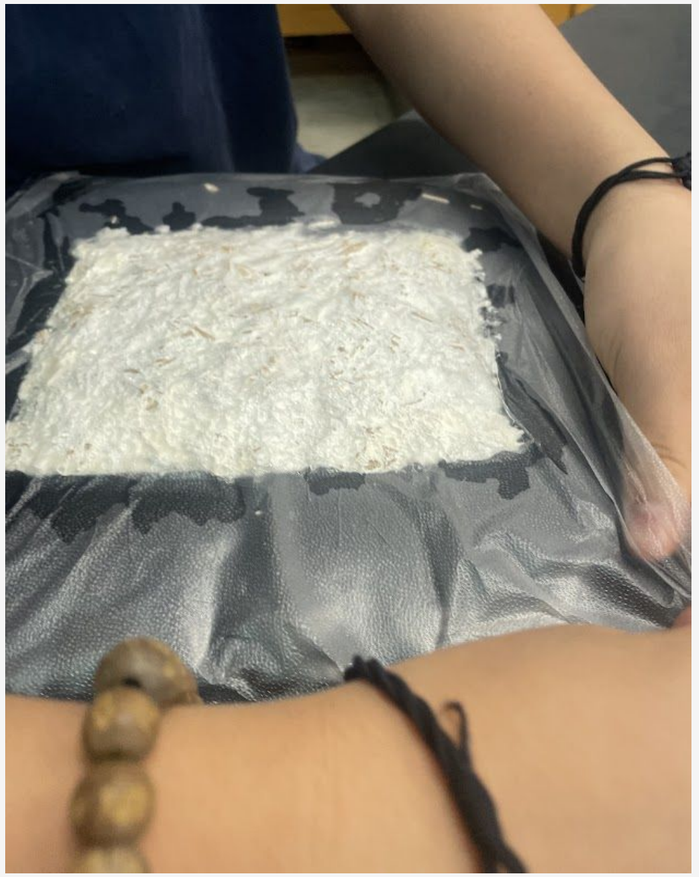
We used a vacuum former to turn the 3d printed design into a mould. First at the top of the machine is a heater which melts the plastic so that it is flexible enough to be formed. Then the vacuum sucks the plastic down while the printed model gets pushed up. Then we let it cool. Finally we popped the printed model out careful not to break the mould.





Planting and Growing

When starting the growing the growing process we had to account for many things. We first took about a ¼ of the mycelium and mixed it with the required amount of flour. We had to make sure it was a good consistency. After mixing we packed the mixture into our mold very tightly because we knew that during the baking process it would shrink. Once we knew that it had filled the whole space we covered the mold in wrap and poked holes around the whole wrap.



Reflection

Throughout this is whole project it was very interesting to watch the mold develop into a final project and see the final product. I think my favorite part of this process was watching the mold form around the 3D print because it gave us a view of how the final project would look. At first looking at the examples it was hard to believe that the mycelium would grow to look like that but it was fun to see it actually work. Our biggest challenge was getting all aspects of the 3D print right to make sure that the mold would correctly work. I think mycelium molds have strong potential to induce the environment in the future.