Kombucha Boom?
Sustainable Options for the Costume Industry

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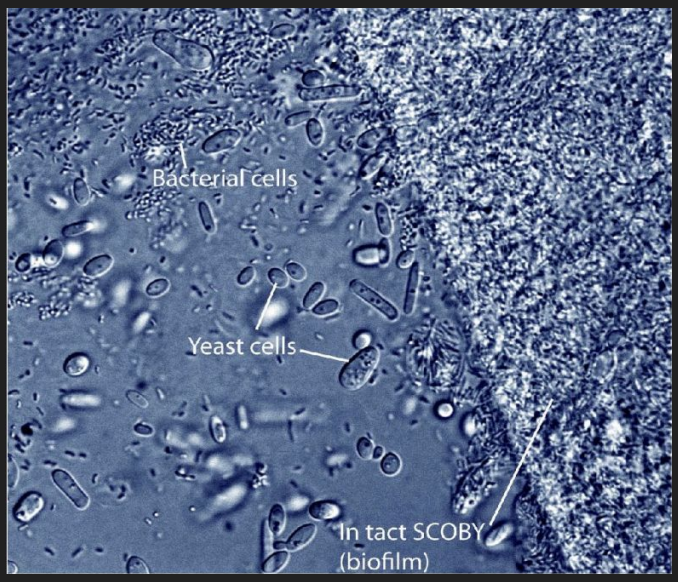
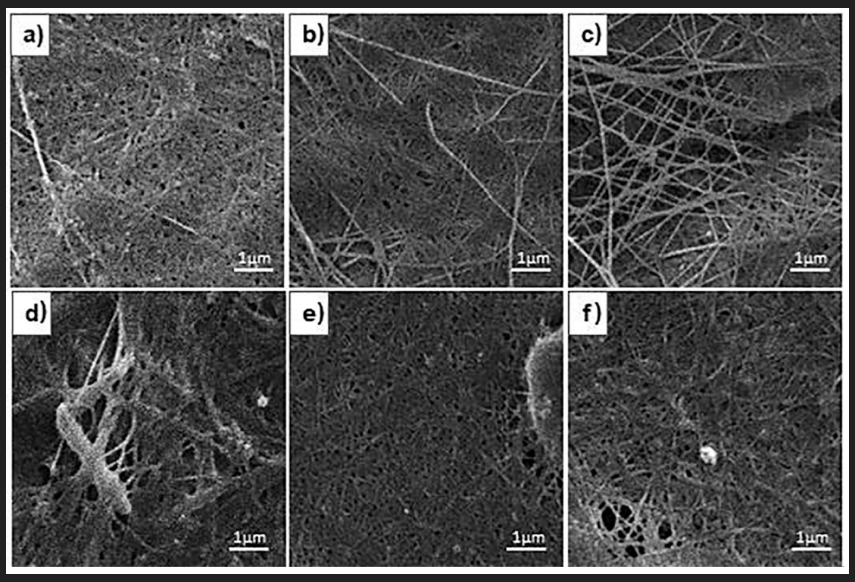
As a costume designer, I cannot help but think about how behind we are in our efforts to move into a more sustainable process. This is why I decided to focus my thesis on sustainability. As we create new stories, we find ourselves adding to the textile pollution dilemma the world currently facing.

Kombucha leather is a material made from a SCOBY, (a symbiotic culture made up of bacteria and yeast) all over the world people have become interested in its use as a textile alternative to create 100% biodegradable garments. A few like designer Suzanne Lee, has had some success in constructing garments.

My question was how well would a costume made of SCOBY hold up on stange and how feasible would it be to adapt the growing and production of kombucha leather into theatre practices.

SCOBY Cell Structure



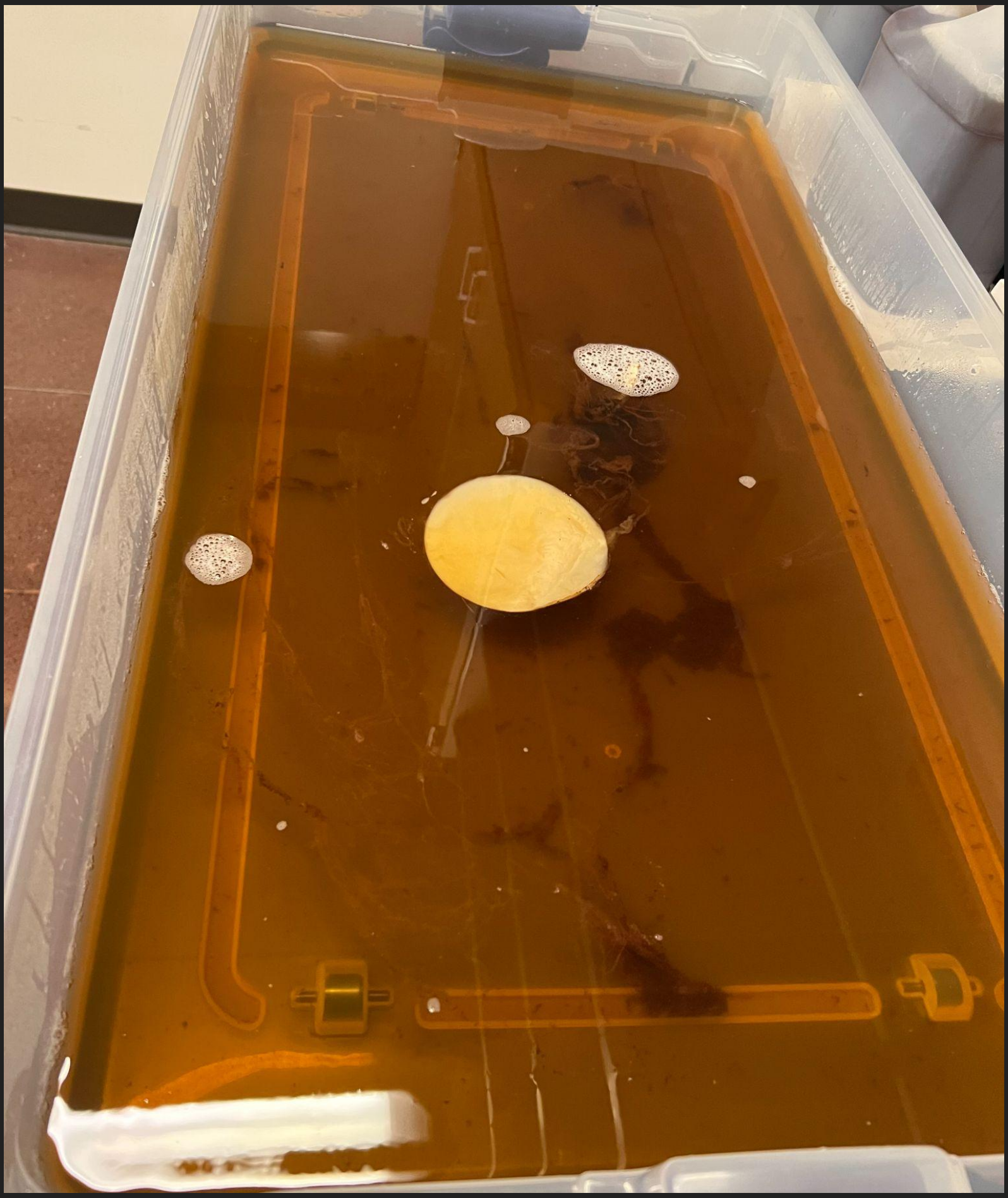


When looking at the structure of a SOCBY and why it may be a good material for sustainable fabrication one study has compared bacterial cellulose (SCOBYs structure) to plant cellulose materials.[58] The results concluded that the features of the bacterial cellulose were stronger than plant cellulose. This is because bacterial cellulose is a more highly purified cellulose. The cellulose found in plants are less pure because they contain polymers in the form of lignin and hemicellulose (different forms of sugar). This difference allows for bacterial cellulose to be more easily degraded than plant cellulose by comparison.[59] With this in mind, the goal of this studieds exploration was to look at the feasibility of constructing a garment out of SCOBY samples, with particular interest to test out the qualities of kombucha leather.

GROWING THE SCOBYs

First a Mother SCOBY is placed in a container of brewed tea, sugar, and distilled water. Each SCOBY was allowed to grow for three weeks. After three weeks the SCOBYs were about ¾’ thick. Once grown to the desired thickness the SCOBYs are soaked in Bleach and water to prevent continued growth.

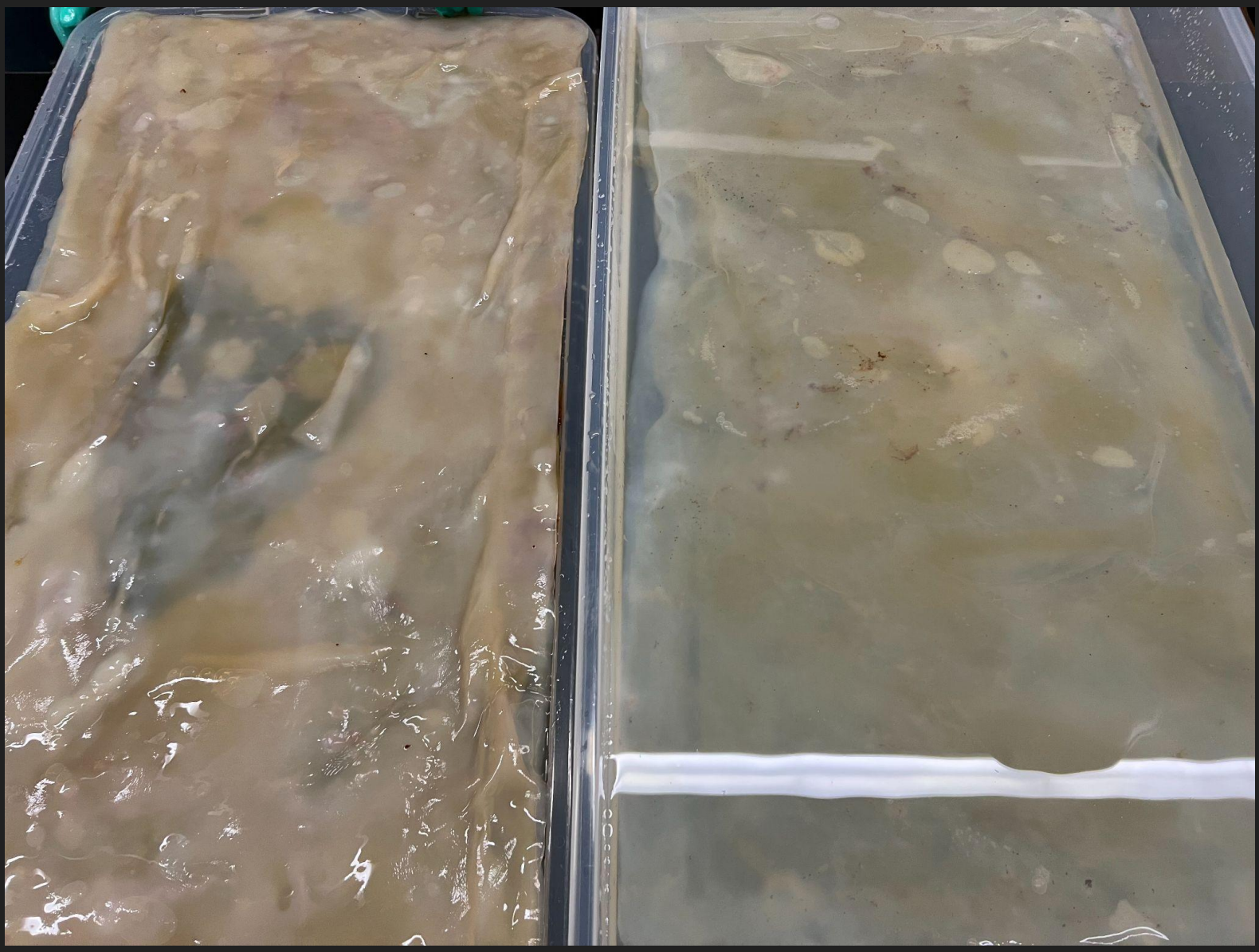
Start



After 3 weeks

Thickness

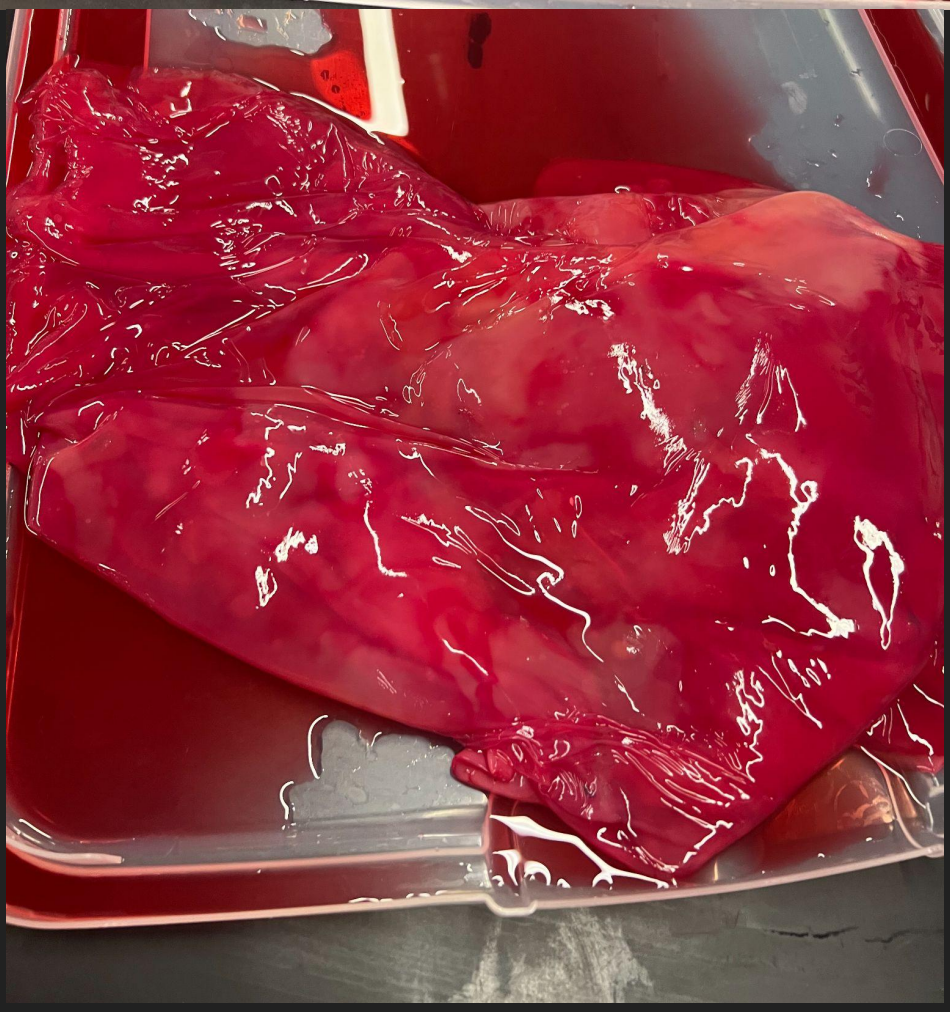
Unbleached vs Bleached



DYEING PROCESS

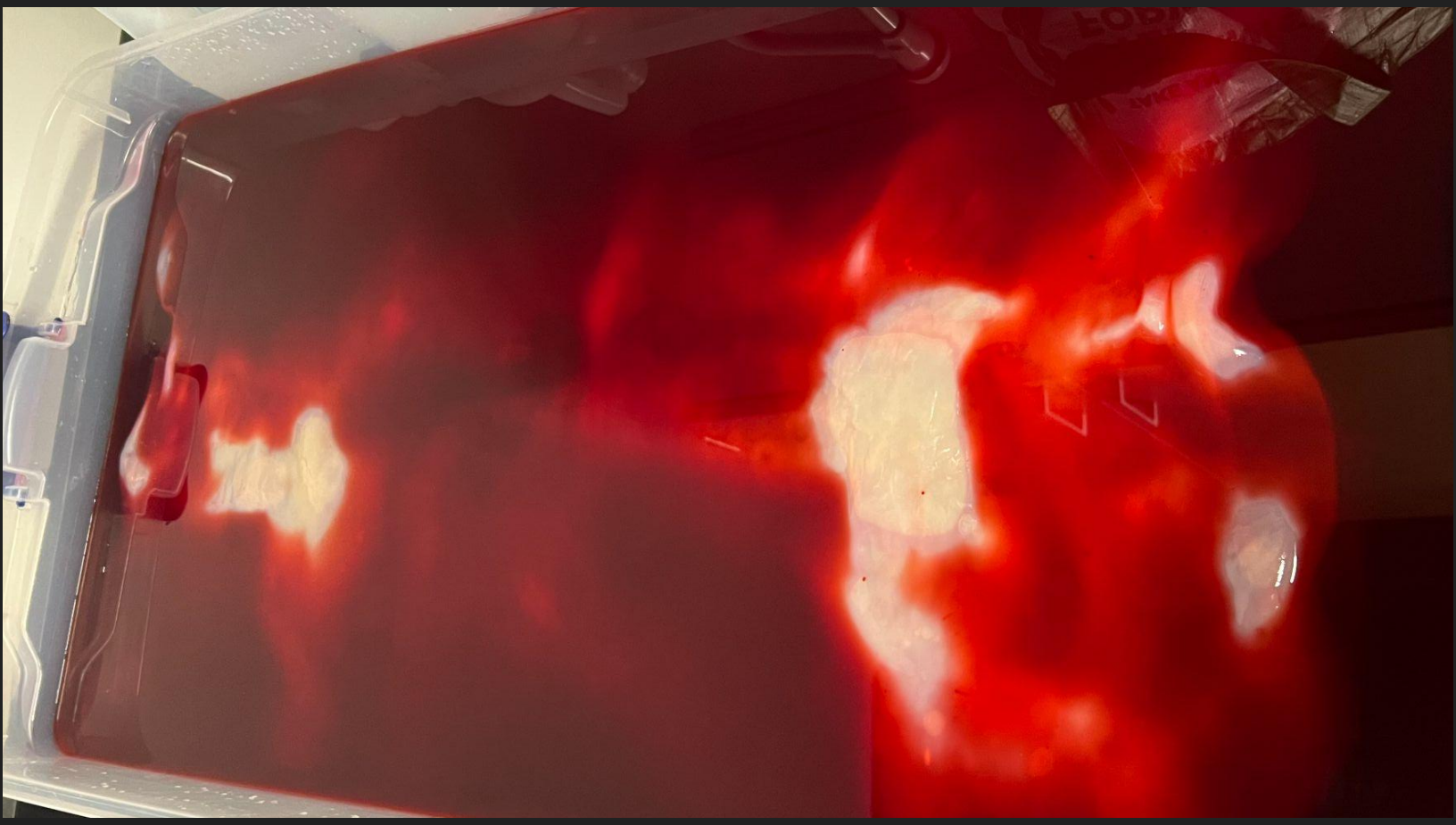
I used two methods of dyeing. One with Cochineal Insect Dye and the other with a Synthetic Dye. Each SCOBY resulted in a flesh like material.

Cochineal Dye Bath



Cochineal Dyed SCOBY

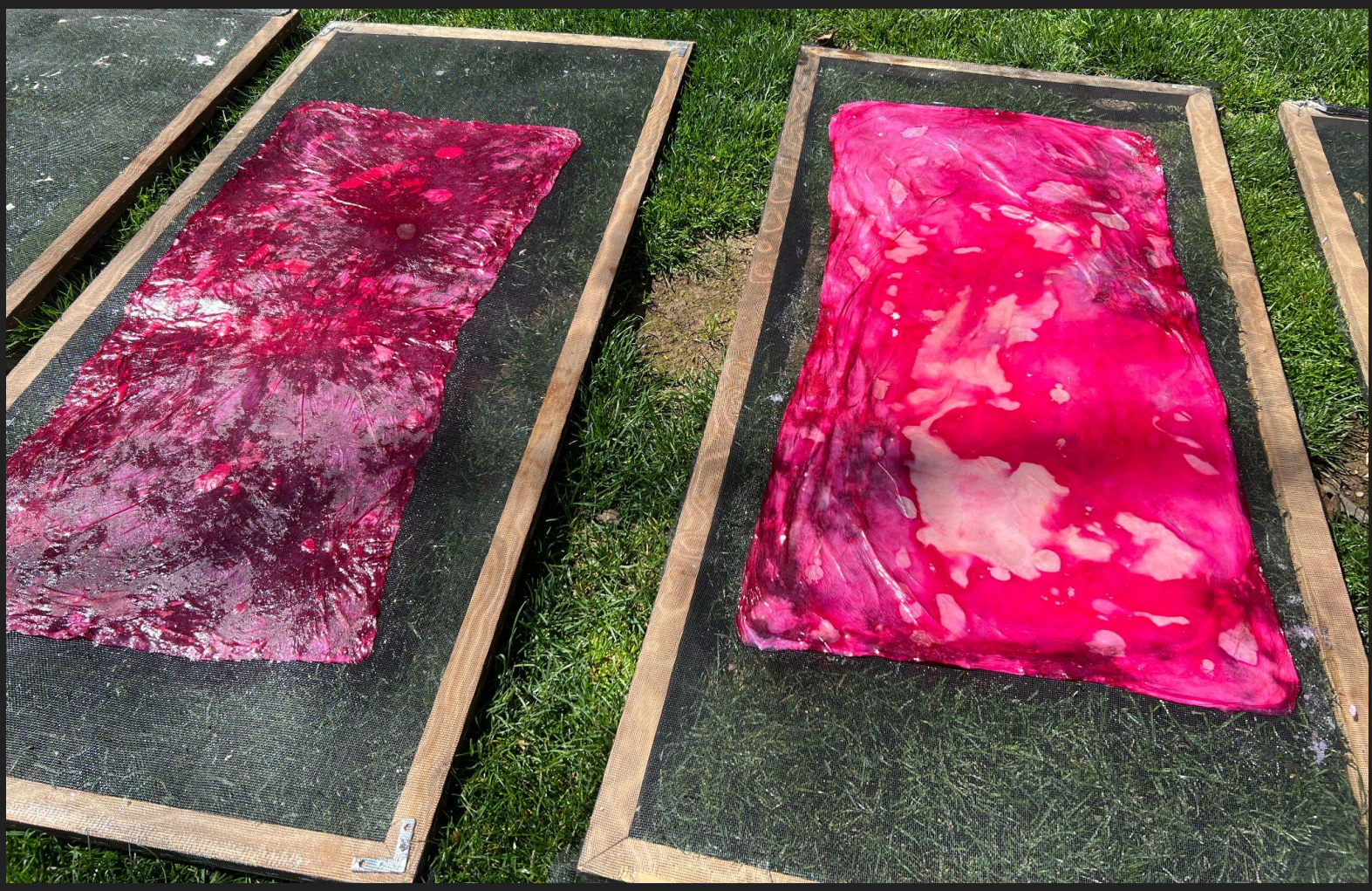
Synthetic Dye Bath



Synthetic Dyed SCOBY

DRYING PROCESS

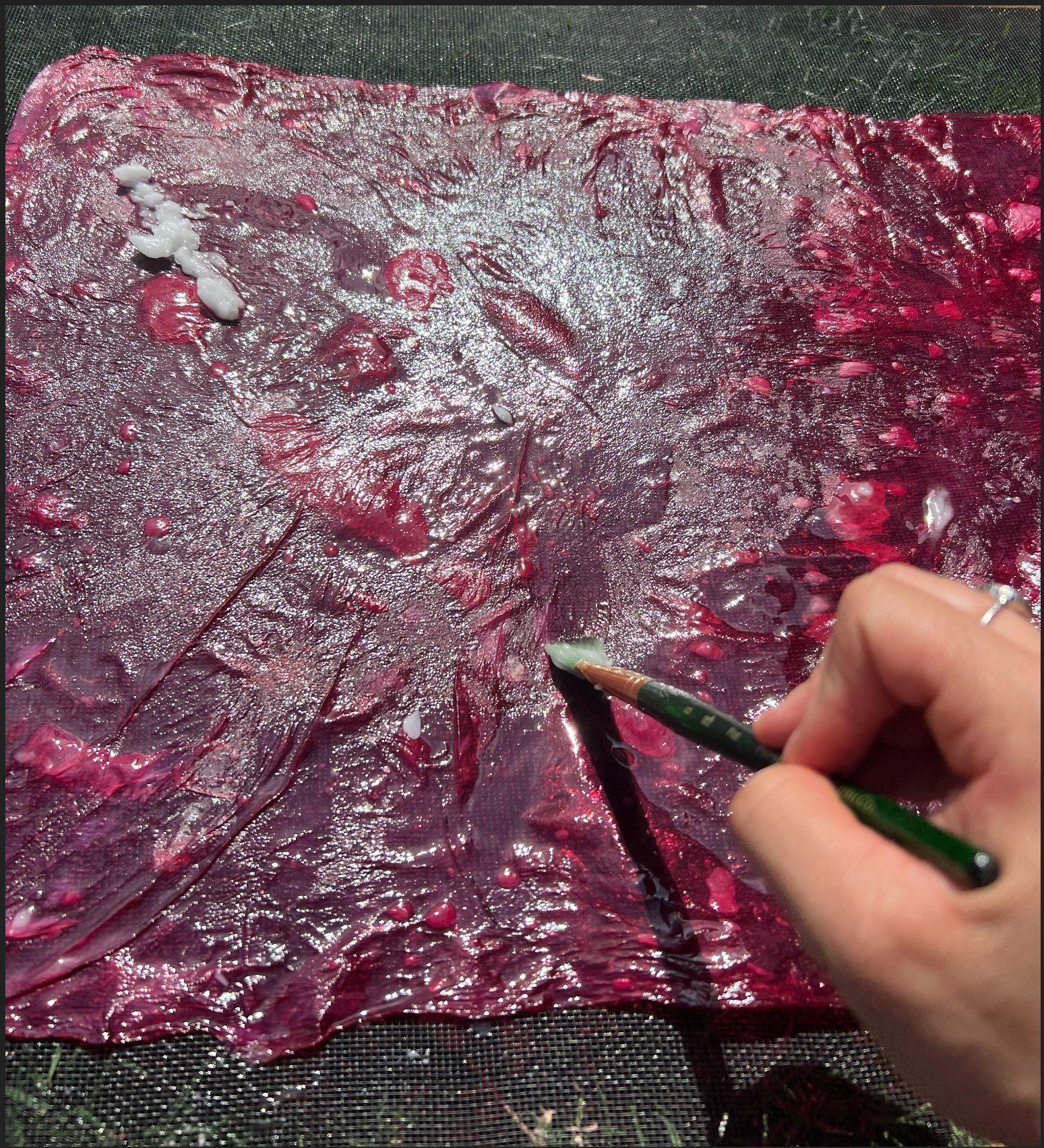
Once dyed each please is placed on a piece of silk between two screens to air dry. The SCOBYs receive daily treatments of oil to lock in moisture. On sunny days the SCOBYs were left to dry under the sun




COCONUT OIL

Partially Dry

Completely Dry




NOTICE
SPILL
CLEAN UP
KIT
FLAMMABLE
P FIRE AWAY

CONSTRUCTION PROCESS

The construction of the garment posed may problems. Once the SCOBY is dry its difficult to keep the moisture in so I had to continue to treal the SCOBY and I constructed the garment. I found that when backed with linen this increased the durability. Though, I still had issues with rips, I was able to repair them with moulding paste. Once half the garment was constructed I noticed it was a bit stiff so I treated with water to allow shape to settle and apply a layer of vegetable oil to hold moisture as it dries. Afterwards, I continued to treat the garment for a few weeks until the material was moist enough to be worn and not tear apart.

Repairing Rips w/ Moulding Paste

Dry vs. Wet


ROYAL
FORM
COLLAPSIBLE
MODEL 2001
10