



# DECOMPOSE

TISHMAN ENVIRONMENT AND DESIGN CENTER  
SEPTEMBER 29, 2021



## **Shuyi Cao**

*Co-founder of Decompose*

Artist whose works explores the complex relationship between geological, biological, and technological matters. Her practice explores alchemical approaches to object making and knowledge production.



## **Remina Greenfield**

*Co-founder of Decompose*

Art researcher, informed by collaboration with scientists, artists, and engineers. With a background in biology and computer programming, she is interested in emergent dynamics between organic life and computational systems.

## DECOMPOSE, ORIGINAL GRADUATE COURSES

2021

SIMULATED LIFE

PARSONS SCHOOL OF DESIGN: ART, MEDIA & TECHNOLOGY | SPRING ELECTIVE

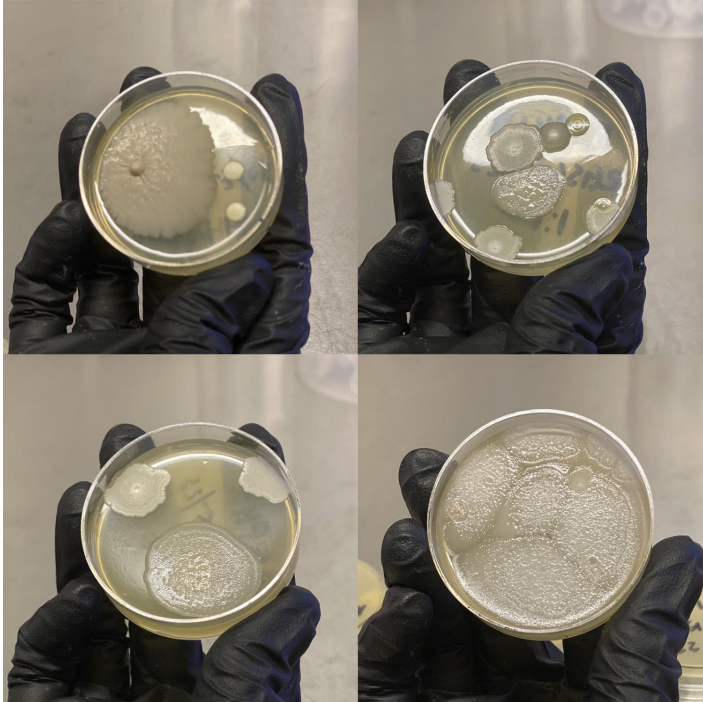
2020

FLUID MACHINES

PARSONS SCHOOL OF DESIGN: ART, MEDIA & TECHNOLOGY | FALL ELECTIVE

HYPERNATURAL STUDIO

PARSONS SCHOOL OF DESIGN: ART, MEDIA & TECHNOLOGY | SPRING ELECTIVE



These microbial assemblages are termed “supercultures,” as they focus on novel relationships between different microbe species and their emergent metabolics. Placing microbes together in new iterations can result in completely unique smells and flavors.

## Research and Development

We conducted an artist residency at Kingdom Supercultures, a natural microbial culture design company. Kingdom Supercultures collects undiscovered, naturally-occurring microbes from the wild and assembles them into communities for fermentation.





## Primary Areas

Experimental mead  
fermentation  
Bioprospecting within the bee  
microbiome  
Environmental analysis of bee  
habitats and honey production

*Images:*

### Top

Microfermentation experiments with different  
microbial species and inoculation methods

### Bottom

Preparing plates for microbial growth from  
honey samples





## Supporting Biodiversity Through Fermentation

Explore food production in New York City, as well as the greater New York State, examining issues of biodiversity, small-scale versus industrial agriculture, urban food production, food justice, and food sovereignty.

This project is supported, in part, by a research grant from the Tishman Environment and Design Center at The New School.

### *Images:*

Site visit at Kutik's Honey Farm, NY State, interviewing commercial beekeepers who use bees both for large-scale honey production and commercial pollination.





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*Images:*

### **Top**

Greenwood Cemetery hives, Astor Apiaries, NYC

### **Bottom**

Visiting NYC rooftop hives, collecting bee samples



## Back to the Lab

Bioprospecting within the bee microbiome, collecting bee and hive samples around New York and lab-culturing the microbes found on these samples.



*Images:*

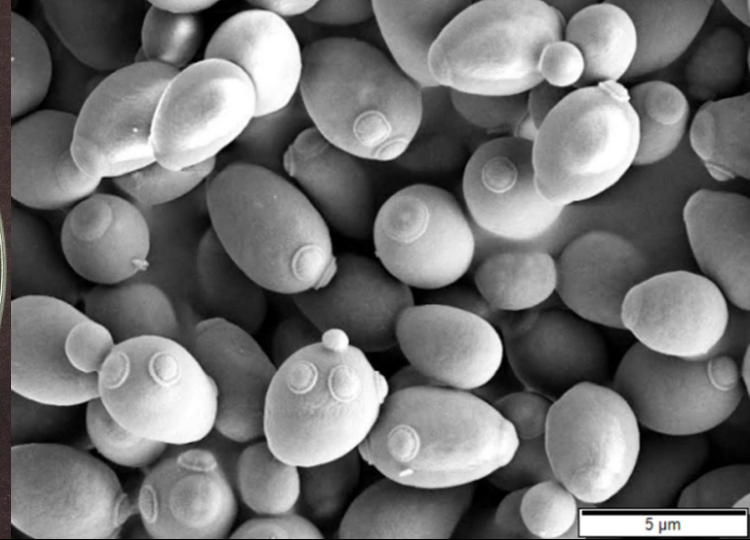
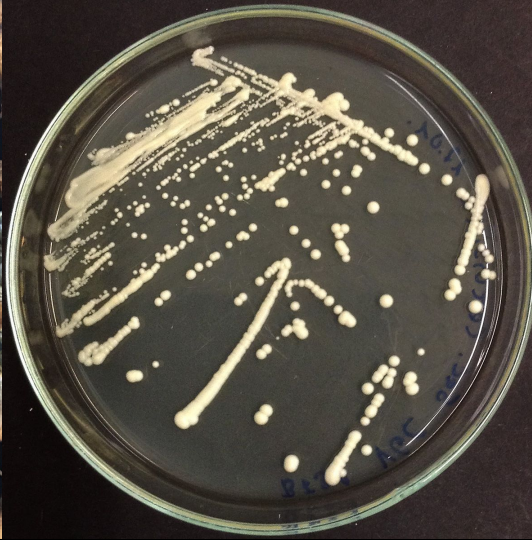
### **Top**

Preparing bee microbial samples for lab culturing

### **Bottom**

Rural and urban honey samples collected from different sites





## Unique Microbial Strain from Bee Biome

We collected bee samples from hives around the city and cultured the microbes found in and on the bees

We found several unique microbial strains and were interested if any of them could be used for fermentation

After doing a PCR analysis to identify the species, we found one unique *S. cerevisiae* (champagne yeast)



## Shadow Metabolism

Can algorithms breathe, digest and mold?

We combined artist research on microbial fermentation and algorithmically generated 3D structures, in order to simulate the dynamics of a microbial ecosystem. The proposed work is part of our long-term research project which contemplates decomposition as a shadow of metabolism.



Gnawed in the murk by tiny, gentle teeth  
Molecular data, holographic LED-Display, galvanised steel base, 2021.  
Power Station of Art, Shanghai, Residency showcase





## A Recipe For Decay

A food-based event centered around decay and fermentation. Commissioned by NEW INC for the Creative Science Popup, “Biophilic Cities” at Pioneer Works in June 2021.



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## SO SWEET, THIS ROOT ROT

Numbing, "hot and cold" Szechuan pickles made from fermented wild radish roots and carrot roots. Served in honey brine and accompanied by a kirimochi dumpling dusted in masa harina.

Flavors: Spicy, tangy, sweet.

Beverage pairing: Mirror Finish mead.

Some plants grow only on air.  
Others wriggle toes into the dark earth,  
Dirt carvers work particle by particle,  
Sip toxic knots and mineral broth from shadowy ground.  
But one can become too tender in the absence of light,  
As surplus fluids overflow the gulping cup.  
Is it possible to absorb the unabsorbable?  
Fermented roots make fragile boundaries.  
No sign of collapse until days later, weeks later.  
Rotted roots become the fastener of death.

Better to let go while you can.  
But if you ask, is this flesh salvageable?  
Then now is the time for root-work, rot-work.  
Did your stems let loose their leaves? Don't despair.  
When buds have withered to husks, all is not lost.  
Not too late to revive pickled limbs and wrecked skin.  
As long as there is still some green pith in these branches.  
Unearthed roots can be mended slowly, softly, sweetly.  
Soil caressed away, damp plant hairs combed and let dry.  
Stalks trimmed to where they still show signs of life.



## LEAVES TO LEAVES, BLOOMS TO BLOOMS

Assortment of edible spring flowers and micro-greens in fermented salsa verde. Served on a bed of rainbow chard chips.

Flavors: Fresh, green, salty, sour.

Beverage pairing: Memento Mori dandelion wine

In the cold of night, I was a swarm of perfume,  
A well of spider lilies, with trembling legs like antennas.  
Our many mossy eyes greened and steamed,  
While blue/black orchids let loose fevered sighs,  
Dew oozing, leaves falling gold as stones.  
What was the occasion for all this splendor?  
Which eclipsed a call to be plucked or pollinated.  
Crushed, stained, bled. That is the way of the flower.  
But no occasion for mourning. Simply the way it is.  
Blooms give birth to blooms and then to blooms return.

When the time of flowering is finished,  
The fruit stews. Eaten or rotten. We are all mouths.  
With bloated earthen bellies swamped by flowers,  
Honeycombs, bread loaves, clay pots, brine, wine, sex.  
Our humble brew of grave goods that serve to sweeten.  
When these remains are left to sink beneath the marsh,  
Ritual bones gravied in the muck by tiny, gentle teeth.  
In a subterranean tapestry, reweoven, resurfaced,  
Threaded through mud, back into the sun's cradle,  
Then will come another season for our blooming.







## POTENTIAL APPLICATION TO CURRICULUM

### SEMESTER COURSE

A course focused on the ecological entanglements of fermented foods. Students will choose a particular fermented food and trace it through a supply chain, exploring local urban and rural networks of production. Working equally through lab work and field work, students will learn about micro and macro ecologies. Students will apply what they have learned to a personal narrative, connecting their choice of food to their environment. Final works might result in a written report or artwork (food performance, video essay, zine, set of illustrations) that tells an ecological story of their food.

### INTENSIVE COURSE IDEA

A similar, shortened course with a narrow focus. This course would be focused on the ecological entanglements of honey and mead production. Each student would choose 1 particular area of the ecological supply chain to explore. Educators lead several urban field trips to local apiaries, a fermentation lab, and a mead distillery.

# DECOMPOSE

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WEBSITE & IG: DECOMPOSE.INSTITUTE

Please contact us if you are interested in our projects or potential collaborations!

Sincerely,

Shuyi & Remina