Art in America

NOT ALL MICROBES

By ***Josie Thaddeus-Johns*** March 18, 2022 2:31pm

Jenna Sutela: *I Magma* (detail), 2019, blown glass, goo, and electronics.
COURTESY KUNSTHALL TRONDHEIM

Most of the time, when we hear about microbes, the subject is their extermination: "Kills 99.9% of germs," exclaim the labels on popular disinfectants. We are at war, so the metaphor goes, with an invisible enemy that must be wiped out to keep us safe. Microbes are typically defined by our inability to see them with the naked eye: they are small living things, visible only under a microscope. These tiny life forms—including bacteria like *E. coli*, fungal microorganisms like yeast, and viruses like SARS-CoV-2—are everywhere, from door handles to toilet seats to park benches. They inhabit our bodies and our homes, thriving and multiplying in secret silence, until a hostile bleach-soaked rag arrives to annihilate them.

But martial metaphors miss the full picture. Only a minute percentage of bacterial organisms are dangerous, and many others actually play a significant role in keeping us safe. Over the past two decades, a wave of research has shown that the body's microbiome is full of organisms that regulate the immune system and protect against disease. Indeed, scientists have estimated that as much as 50 percent of the body's cells may be microbes. Some even call the gut the "second brain" because of the microbiotic environment's influence on the body's function. Changing attitudes toward these life-forms are perhaps most evident in what we eat. Trendy menus are now

sprinkled with fermented foods like kombucha, kefir, and kimchi, which add "good" bacteria to the gut. The long-term health benefits of eating yogurt have been studied for more than a century: in 1905, zoologist Élie Metchnikoff sparked an international frenzy when he attributed the long lives of Bulgarians to their diet, which included plenty of fermented milk products.

In his project *Befriend the Bacteria* (2001–07), Bulgarian-born artist Daniel Bozhkov explored the potential correlation between his native country's traditional diet and his family's history of longevity by producing his own tubs of yogurt. Collaborating with two doctors from Memorial Sloan-Kettering Cancer Center in New York, Bozhkov implanted his own DNA in the *Lactobacillus bulgaricus* that ferments yogurt. Exhibited in refrigerated display cases, the resulting tubs look like those in any supermarket dairy aisle, except for the label with a cartoon of the artist's face, accompanied by a colorful squiggle of a bacterium and the sci-fi-sounding tag "human DNA reinforced."

Generally we don't know the source of the bacteria that ferments the food we eat. But Bozhkov's project reminds us that bacteria aren't neutral substances—they are alive and specific. Each of us has a personal microbiome, marked by the microbes that make their home inside and on us. This collection of life represents who we are, where we've been, our family history, and what diseases we have faced and fought off.

Microbes also suggest an analogy for another way we leave our mark on the world: data. At the opening night of the 2016 Transmediale festival in Berlin, artist and biologist François-Joseph Lapointe performed *1000 Handshakes*, a performance in which he collected microbial traces of the people he'd interacted with via the eponymous greetings. Swabbing his palms every fifty handshakes or so, Lapointe used the biodata to produce snapshots, networked mappings of the changing genetics of his microbiome, that take the form of luridly colored diagrams. As Lapointe's performance suggests, microbes create a profile: a sort of record that secretly reacts to what we touch and with whom we come into contact.

This sense of being monitored as we move around, connecting and communicating, is familiar in our technology-filled world, where we slough off masses of evolving data into social media networks every day. Social media platforms turn our behavior into consumer data that can be sold to advertisers: what we buy, where we work, with whom we associate. These fleeting interactions online create warped reflections of how the world views us. Microbes do that too, building their own unseen world of information without our awareness. Just as platforms like Facebook watch us move between social media feeds, news sites, and online shopping portals, assembling a more detailed picture with each click, Lapointe's "Microbiome Selfies," as the artist calls the resulting prints, are portraits of the artist as a collection of data points that shift and bloom on the skin.

Josh Kline's *Share the Health (Assorted Probiotic Hand Gels)*, 2011, similarly takes up the resonance between personal data and an individual's microbiome. Kline swabbed several sites (in a subway car, a Uniqlo store, a graphic designer's mouth), then placed each swab in a nutritional agar gel that would allow the collected microbes to grow. He displayed the results in

Josh Kline:
Share the Health (Assorted Probiotic Hand Gels), 2011, mixed mediums.
PHOTO JOERG LOHSE/COURTESY 47 CANAL.

wall-mounted hand sanitizer pumps at the gallery 47 Canal, with only the list of materials revealing the sources of microscopic life blossoming inside. Kline's labeling of these microbes presents touchstones of contemporary identity—public transport, shops, jobs—as essential traces that can be squirted out on demand. At the same time, the piece invokes the associations of microbial life with filth and contamination, particularly in his use of specimens from notoriously grubby sites like a subway car, incongruously pairing the bacterial gel with hand sanitizer pumps, associated with hygiene and safety.

During the early days of the pandemic, such sanitizer dispensers became particularly symbolic of our social desire to control microbial contamination. The new virus was potentially deadly, and invisible: how could we avoid what we can't see? The anxiety rumbles on today. Even though hand sanitizer and transparent plastic dividers (another popular anti-Covid measure) are largely ineffective in preventing the virus's spread, they are still ubiquitous talismanic precautions against a pandemic we continue to fight.

Our understanding of hygiene has always been shaped more by social factors than scientific ones. As anthropologist Mary Douglas wrote in her 1966 book *Purity and Danger: An Analysis of Concepts of Pollution and Taboo*, ideas of moral and physical cleanliness are often formed by contingent social mores: "Dirt is the byproduct of a systematic ordering and classification of matter, in so far as ordering involves rejecting inappropriate elements." It's no wonder that during the pandemic, a new taxonomy was hastily put together, an emergency system to soothe anxieties about the microbial world outside our control.

Covid, initially linked in the press to its origins in Wuhan, China, also sparked a dangerous wave of racism, evident in growing numbers of anti-Asian incidents since March 2020. But even before the pandemic, artists were considering how systems of classification such as race are socially constructed through fear about contamination and difference. Jes Fan makes this literal in his work *Systems II* (2018), a wood and resin sculpture inspired by the networks of fibers that fungi and plant roots create. The wonky, earth-toned scaffold, resembling a hand-crafted system of pipes, is dotted with glass cells filled with transparent silicone. Suspended within the drooping, glob-like forms are flecks of different bodily substances: testosterone, estrogen, and eumelanin, the last a pigment that darkens skin. Fan specifically chose to produce the eumelanin

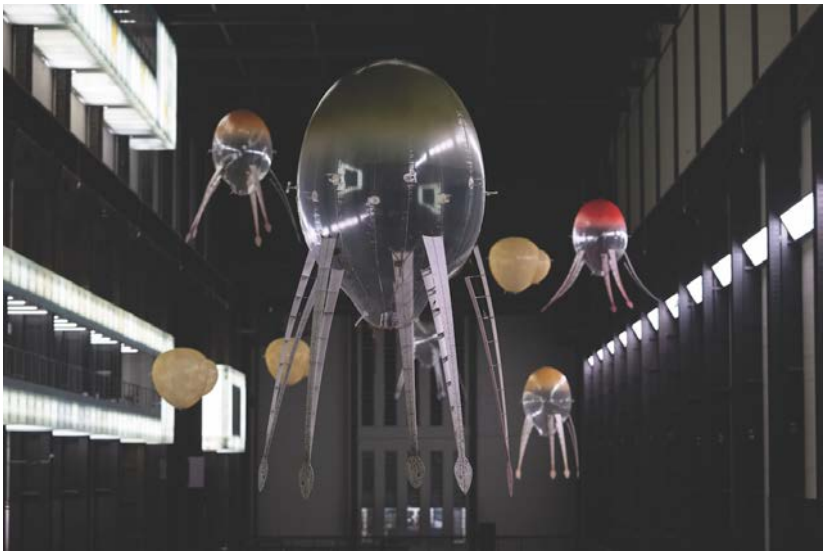
by genetically modifying *E. coli* in order to invoke the terror of contamination, since some strains of the bacteria can cause food poisoning. In a white supremacist framework, meanwhile, darker skin color is used as a marker of supposed impurity, a way to discern and reject those who endanger the imagined sanctity of whiteness. Of course, in the body, eumelanin and *E. coli* work invisibly, at a microscopic level, manifested only through skin color and illness, respectively. Fan's sculpture gives visual expression to these substances, prompting the viewer to consider preconceptions about them: *E. coli* (most strains of which aid in digestion) as dangerous; eumelanin as a signifier of racial difference. At a molecular level, he suggests, things are never so simple.

Anicka Yi: *Grabbing at Newer Vegetables*, 2015, plexiglass, agar, female bacteria, and fungus, 84 1/2 by 24 1/2 inches.
PHOTO JASON MANDELLA/COURTESY 47 CANAL

Fear of microbes often seems to stem from our own anthropocentric projections of boundaries. Hygiene, then, reflects a desire to keep things separate, in their "proper" place. This is particularly evident in the work of Anicka Yi, among the most prominent artists currently exploring the sociopolitical meaning of bacterial life. For her 2015 show "You Can Call Me F" at the Kitchen in New York, she collected microbial samples from a hundred women in the art world and combined them into a single culture. The resulting work, *Grabbing at Newer Vegetables* (2015), was presented in a large petri dish at the center of the gallery, surrounded by makeshift quarantine tents. Paranoia about the Ebola epidemic inspired Yi's use of bacteria and contagion imagery. The live, growing installation, created from intimate traces of women's bodies (some of the samples were taken from participants' vaginas) is designed to induce discomfort: Yi described the work's smell as "very pungent." In the exhibition, this foul odor interacted with another scent, one that was surreptitiously captured during a visit to Gagosian Gallery and re-created by the artist as a critique of the art world's traditional maleness. Yi's all-female microbial sources are positioned as a contaminating threat, eluding the confines of both the private individual's body and the petri dish growing its female-coded bacteria. In *Grabbing at Newer Vegetables*, unruly microbes traverse the boundaries of their original growth medium, even sneaking their way into the viewer's own body in the form of scent molecules.

Yi's bacterial work explores the politics of bodies overstepping their containers, especially feminine ones. "The feminized body, like feminized nature, was enclosed precisely so that it could be penetrated," Elvia Wilk writes in a recent essay titled "This Compost: Erotics of Rot." "In response, women and femmes have become expert at boundary dissolution." This interplay between inside and outside is not only an essential aspect of eroticism, but of being human, she argues: "One can remain human while being mixed up—because to be human is to be mixed up."

Indeed, on a microbial level, all bodies are a mess of teeming borders. The microbiome in an individual differs from the forearm to the armpit to the genitals, science journalist Ed Yong writes in his 2016 book, *I Contain Multitudes: The Microbes Within Us and a Grander View of Life*, and each of these areas may be less distinctive than we think. “The variations that exist between body parts dwarf those that exist between people. Put simply, the bacteria on your forearm are more similar to those on my forearm than to those in your mouth,” he writes. “No matter how hard we squint at the problem, it is clear that microbes subvert our notions of individuality.”



View of Anicka Yi’s installation *In Love With the World*, 2021-22, at Tate Modern, London.
PHOTO JOE HUMPHREY/COURTESY TATE MODERN.

For artists like Yi, microbes are a way to think about humans more expansively, as players in a fundamentally porous ecosystem. For her work *In Love with the World*, a commission for Tate Modern’s Turbine Hall in London that opened in October 2021, Yi used visitors as stimuli for a computer-powered installation with robot performers. The artist created floating, helium-filled machines she called aerobes, whose movements, inspired by fungi and oceanic life-forms, are determined by an AI program that simulates natural biological processes. In the Turbine Hall’s huge cavern, Yi hoped to draw attention to the air itself as territory, a space with communal natural resources: one that we share with other people, as well as microbes.

As Yi explains in the show’s catalogue, she initially wanted to have the aerobes interact with the air by collecting and responding to bacterial data on petri dishes attached to their bulbous bodies. In the era of Covid, she chose to scrap this element, so instead, the aerobes’ AI program is fed by electrical sensors placed around the room to pick up data like the changes in heat signatures of people nearby. Just like a “black box” algorithm in which the machine’s decision-making process is opaque, so many of the consequences and causes of microbial life are mysterious. Yi’s work draws a parallel between the development of bacterial ecosystems and neural networks, neither of which humans fully understand.

Finnish artist Jenna Sutela also sees analogies between the networks created by microbes, computers, and humans. The audiovisual work *nimiia cétiï* (2018), produced during a residency at the Google Arts & Culture Lab at Somerset House in London, shows a computer generating a handwritten script in response to the movements of a *Bacillus subtilis* bacterium under a microscope. Using a neural network, the machine interprets a "Martian" language supposedly channeled by the nineteenth-century medium Hélène Smith, creating an audio representation of this tongue to match the microbe's movements, which recent research suggests may be able to survive on Mars. The particulars of the interaction between the microbe and the computer are opaque to the viewer, and even to Sutela herself, as the algorithm responds to cues that we humans can't perceive. Thus Sutela theorizes that the communication between these two nonhuman nodes is akin to channeling an alien language, employing its own kind of wondrous logic. Sutela's work challenges our anthropocentric gaze and the assumption of human exceptionalism by playfully engaging the linguistic-adjacent capacities of these entities.

For artists, microorganisms often evoke a surprising, secret world that is all around us—and that might not be as hostile as we think. Mostly unobserved, ancient, and entwined in everything we do, microbes are a challenge to the status quo, and what we think we know. Indeed, a 2017 Stanford study indicated that 99 percent of the microbes inside the human body are unknown to science. For artists, they suggest a way of engaging with many other equally invisible structures that govern our lives, often upturning long-held assumptions in the process. If we can't even figure out our own bodies, what else might we be missing?