

— JENNIFER WILLET —

## INCUBATOR LAB

WHERE ARTISTS COLLABORATE WITH LIFE

INCUBATOR Lab is a bioart research and teaching facility housed in the School of Creative Arts at the University of Windsor, Canada. Founded in 2009, INCUBATOR Lab supports ongoing student and faculty bioart projects, science and technology studies research, and special events investigating the intersection of biotechnology, art, and ecology. Research/creation projects produced in this environment range from microbial artworks, interspecies performances, large social practice projects, and textual analysis, to very small artworks that can only be seen with the assistance of a microscope.

In January 2018, INCUBATOR Lab opened a new BSL2 (biosafety level 2) laboratory with a floor-to-ceiling glass wall separating the lab from the main atrium of the new School of Creative Arts (FIG. 1). INCUBATOR Lab now supports mixed-use research/creation in molecular biology, microbiology, microscopy, and plant and mammalian tissue culture protocols with integrated multimedia, lighting design, video, and sound capabilities. This new facility provides unique innovations in public engagement through (1) making daily bioart laboratory activities visible to online and local audiences; (2) serving as a gallery where artworks that are unable to leave the BSL2 laboratory setting can be safely displayed for audiences; and (3) providing a multimedia performing arts venue where seated audiences can view theatre and performance events that integrate BSL2 biotechnologies into multimedia storytelling and performance genres.

INCUBATOR Lab is also an artwork. It is a decade long durational performance where an unruly artist manifests (at an institutional scale) a site that serves as a creative and propositional response to objectivity and rationality as a basis for traditional laboratory-based research. Read from this perspective, INCUBATOR Lab is an absurdist monumental task of thousands of hours of meetings, paperwork, and lab work, towards building a laboratory that meets government regulations while also aspiring to alternative (hacker, feminist, post-colonial, ecological, symbiotic, and performative) ideologies. INCUBATOR Lab seeks to re-imagine the laboratory research environment as embedded and entangled, as culturally and geographically specific, as a collaborative site of co-production, as a practice, and as a community within a much larger biological, social, political, cultural, and economic ecology.

This article focuses on one aspect of this ongoing experiment: INCUBATOR Lab as an interspecies community consisting of human (artists, researchers, health and safety officers, and students) and non-human organisms (bacteria, cells, enzymes, and unintentional guests—insects, microorganisms, and even pets) engaged in mutually beneficial but also mutually detrimental relationships towards the production of contemporary artworks. In previous work, I have argued for re-imagining the site of the laboratory as a “laboratory ecology,”<sup>1</sup> re-imagining the practice of biotechnological protocols as human organisms manipulating their environment towards human ends, as all other organisms do. INCUBATOR Lab works to make explicit, and to actively practice,



FIG. 1 Jennifer Willet, *INCUBATOR Lab Portrait* (2018).



biotech protocols in a way that re-positions interspecies relationships in the lab towards less hieratical, more nonsensical, more collaborative, more joyful, and more respectful interspecies exchanges of knowledge and experience. Attempting to turn away from colonial strategies of dominating other organisms in the lab is not new. My research/creation is heavily influenced by feminist science and technology studies luminaries, such as Lynne Margulis and Dorion Sagan, Donna Haraway, and Evelyn Fox Keller.

Margulis, an accomplished evolutionary biologist, proposes that we reject competitive “survival of the fittest” metaphors for understanding evolution and instead read evolutionary histories of microbiology and molecular biology as the basis for collaborative and symbiosis models for the biodiversity of our planet’s ecology. Margulis and Dorion Sagan argue that humans are not the evolutionary apex of life on earth, and our scientific practices are not intrinsic signifiers of our supreme intelligence and dominance of all other species. They state:

We did not invent genetic engineering, we insinuated ourselves into the life cycles of bacteria, which have been directly trading and copying genes on their own for some time now... The reality and recurrence of symbiosis in evolution suggests that we are still in an invasive, “parasitic” stage and that we must slow down, share, and reunite ourselves with other beings if we are to achieve evolutionary longevity.<sup>2</sup>

INCUBATOR lab is striving to slow down, share, acknowledge non-human contributions to scientific knowledge, and re-connect laboratory-based researchers with the organisms they share their labs with and the local community and ecology in which the lab is situated.

In another article, Sagan describes the “more-than-human” model for the human body evolving out of contemporary research on the microbiome.<sup>3</sup> The microbiome refers to the gut microbes that live within our digestive system, which aid in the digestion of food but also contribute to brain development and the endocrine system, amongst other integral functions. Modernist concepts of the individual human body are challenged by a significant biomass of non-human microbes essential to the functioning of the human body revealing itself to us through contemporary biomedical research. We are learning that symbiosis is the norm. Organisms are more like biospheres than like machines. And in my laboratory, we are exploring how ecological, symbiosis, and biosphere models can inform and transform laboratory-based research models and interspecies relationships within a complex ecology. From this perspective, microbes and other organisms in the lab play an invaluable role in both the production of knowledge and technological innovation. Rather than seeing the human researcher as the “discoverer” of previously unknown biological functions, we can conceive of the non-human organisms as beings who possess and impart important knowledge—beings who generously teach human researchers about their physiology, skills, and experience. Beings who are valued members of the laboratory ecology, to whom we need to extend kindness, respect, and reciprocity for their contributions and companionship.

My bioart practice exhibits a long engagement with exploring creative strategies towards sharing our laboratories (as well as our kitchens, vacations, and lived experiences) with our human and non-human cohabitants. In early performance photography works such as *BIOPlay* (2008), and collaborative works with Kira O’Reilly including *Untitled (Hamster Ovaries Protocol)* (2008) (FIG. 2),



FIG. 2 Jennifer Willet and Kira O’Reilly, *Untitled (Hamster Ovaries Protocol)* series (2008). The Art and Genomics Centre, University of Leiden, The Netherlands. Photo: Rune Peitersen.

I put my body into the position of the laboratory organism; naked and cold in a fume hood with live bacteria cultures, or in a sterile cabinet with living cells. These works strived to visually upset traditional interspecies interactions between humans and non-humans in the lab. Removing the authority of lab coats, and placing the human body on equal footing as microscopic lifeforms, perpetuates new visualizations of organisms comingling in the lab. But possibly more compelling (for me at least) was the embodied experience of being one of many organisms inhabiting a technoscientific ecology. Through these experiences, I gained first-hand understanding of what it might be like to be an organism subjected to experimentation and scrutiny in an institutionalized lab environment. I provide a description of my sensorial experience from my lab notes:

I lay down, and rest—and let the bacteria rest. The tiles are cool beneath my back—and the glass cabinet starts to collect perspiration and breath. Warm and moist—and very very cold at the same time. I can hear the shutter of the camera clicking again and again—and the hum of the florescent lights—and the rumbling of the ventilation. A sting in my lower back. A glass shard, missed in the clean up—pierces my skin. Chemical or biological contamination? The moment is over. The bacteria dishes are relegated to biological waste bins—and I get quickly to the shower.<sup>4</sup>

By placing myself in the position of the specimen, even for a short while, I developed empathy, a perspective, a *feeling* that persists with me as I design and execute bioart protocols towards a more harmonious relationship with lab organisms today.



FIG. 3 Jennifer Willet, *Biotechnology is a Technology of Love...* (2012). Photo: Arturo Herrera.

Evelyn Fox Keller, a physicist and feminist science studies scholar, charts a history of empathy-driven research methods in the sciences with her biography of Barbara McClintock, *A Feeling for the Organism* (1983). She illustrates for the reader research approaches rooted in mystery and insight more often linked to creative arts practices than traditional scientific methodologies. McClintock describes her subjective experience of the moment of scientific discovery: “When you suddenly see the problem, something happens that you have the answer—before you are able to put it into words.”<sup>5</sup> McClintock developed an intimate relationship with her focus of study, specifically genetic transposition in maize. She spent hours every day in the cornfields—she knew each plant individually, and she developed what she called “a feeling for the organism.” Fox Keller describes this relationship: “Over the years, a special kind of sympathetic understanding grew in McClintock, heightening her powers of discernment, until finally, the objects of her study have become subjects in their own right; they claim from her a kind of attention that most of us experience only in relation to other persons.”<sup>6</sup>

Although this language is not often used to describe the relationship between biologists and their organism of study, this level of personal commitment towards the studied organism is not uncommon. However, this model is still very hieratical, unidirectional in its concept of empathy and care and the creation of knowledge in a scientific environment. But it serves as an excellent entry point to start conversations with scientists about interspecies relationships in a laboratory ecology.

In 2012, I completed an artwork called *Biotechnology is a Technology of Love...* (FIG. 3). It is a simple piece. The letters L - O - V - E are cut out of leather and felt scraps and placed into petri dishes, and agar is poured over the letters. Of course, the letters are filled with microbes that bloom overnight in the incubator. The petri dishes are arranged in a similar formulation to Robert Indiana’s *LOVE* (1967) and photographed. This work came from the startling realization (at the completion of a grueling multi-year bioart project) that biotechnology could be conceived of as a technology of love; that the time, and care, and intimate knowledge and nudging it takes to sustain life in a hostile laboratory environment could be conceived of as a significant act of love; that scientists (and bioartists)



FIG. 4 Jennifer Willet and Jude Abu Zaineh working in INCUBATOR Lab (2018). Photo: Josh Babcock.

are compelled to make substantial sacrifices (in terms of personal relationships, health, and quality of life) to perpetuate laboratory activities that are so tedious and often counterintuitive to human life, vitality, love, and jouissance. Fox Keller (and McClintock) would never use the word “love” to describe McClintock’s feelings towards maize. Even acknowledging the role of feelings in scientific research in 1983 when the book was published, or in the 1940-1960’s when McClintock was practicing her research, was a radical position to take in interpreting scientific methodologies. Fox Keller writes of the deep emotional investment McClintock possessed for corn from a scientific perspective and beyond as a “longing to embrace the world in its very being, through reason and beyond.”<sup>7</sup> *Biotechnology is a Technology of Love...* is a work that can less cautiously express a similar sentiment I experience working with lifeforms in the laboratory as an artist.

However, in *Biotechnology is a Technology of Love...* I am not thinking of the unidirectional love that a scientist offers towards the research organism, but of a type of love that entangles humans and non-humans in the mutually beneficial and mutually detrimental collaborative relationship. In thinking about love, I realized that all of my research/creation was focused on extending better, more sympathetic forms of care for the organism with no consideration for care of the self or care of the other human organisms with whom I was sharing my laboratory. I also wonder, in what way (if any) can we speak of the care afforded by the non-human organisms in the lab—towards themselves, and towards the other humans and non-humans in this complex entangled set of practices? More generally, what would scientific communities and practices look like if they were driven by principles of love and care? The next phase of my research/creation hopes to explore responses to these questions through development of new community standards, laboratory protocols, and the production of bioartworks within the INCUBATOR research group reimagined as an interspecies microbiome.

It is August 2018, and I am preparing for the first full-year of operations for the new INCUBATOR Lab and expanded INCUBATOR research team (FIG. 4). I am thinking through some of the steps we will take over the coming months towards embracing ecological, biosphere, and



biophilia models for interpersonal and interspecies interrelations, and reciprocal actions of love in the daily operations of the INCUBATOR Lab. I have always perpetuated strategies of respect, egalitarianism, joy, empathy, and play in teaching my classes, managing a team, and in coaxing other humans and non-humans to participate in my projects. But with this next research/creation cycle, I want to focus on developing and experimenting with, and charting, bioart research/creation methods in laboratory practices, bureaucracy, and management, that model after ecological, symbiosis, and biosphere metaphors towards an aesthetics of care.<sup>8</sup> Is it possible to induce jouissance, love, and biophilia (as experienced by human and non-human organisms) into the daily operations of our laboratory ecology? I often experience a type of ecstatic moment working in the lab myself, “the electric excitement of every cell in my body that I experience when I am deep in the caverns of human/technological spaces holding fragile lifeforms in my hand.”<sup>9</sup> With this new research endeavour, I am looking to better understand, articulate, and propagate these interspecies experiential knowledges as valuable methods and outcomes of bioart research/creation.

If this project is to be at all successful, I will also need to find strategies for acknowledging human and non-human suffering that takes place in the lab, and the intrinsically unequal relationship between humans and non-humans in this environment. Donna Haraway provides us with a model for thinking about human/animal relationships in laboratories. She states: “animals work in labs, but not under conditions of their own design.”<sup>10</sup> She describes them as significantly unfree partners in the co-production of laboratory research: “When I say ‘unfree,’ I mean that real pain, physical and mental, including a great deal of killing, is often directly caused by the instrumental apparatus, and that the pain is not borne symmetrically.”<sup>11</sup> But she also reminds us that relations between beings in all instances are almost never symmetrical, and often involve pain and suffering. Haraway argues that complex relations between beings (involving pain, death, joy, and pleasure) are exactly what companion species, or symbiosis in an ecological sense, is all about. If we re-imagine the laboratory as an ecology, then waste, pain, suffering, death, and consuming the dead as fuel for future life is as essential as sharing, love, biophilia, and jouissance to the functioning of the laboratory community. Haraway suggests that we as humans, in an unequal laboratory ecology, should not overburden ourselves with guilt or quit our jobs in penance for the suffering caused to the non-humans we work with. However, we should reject moral comfort or righteousness in our perception of the research activities we perpetuate.<sup>12</sup> Similarly, I am arguing that we need to experience directly, and understand and acknowledge the contributions and suffering of our human and non-human collaborators in the production of laboratory research/creation.

I understand the relationship between human and non-human organisms within the scientific laboratory as one similar to domestication. George Gessert offers a definition: “Domestication occurs when two species evolve mutually beneficial (although not necessarily equal) relationships, and at least one of the partners can no longer best complete their lifecycle except in association with the other.”<sup>13</sup> Though Gessert is writing of the relationship ornamental plants have with their human propagators, this could be similarly said of organisms bred for laboratory research—only the benefits that human propagators gain from breeding these lifeforms have a significant impact on human health, longevity, and reproduction. I see our relationship with non-human organisms in the lab as co-dependent—we both require the other’s collaboration to best complete our respective lifecycles. Laboratory grade organisms would not exist without their human authors, companions, clinicians,

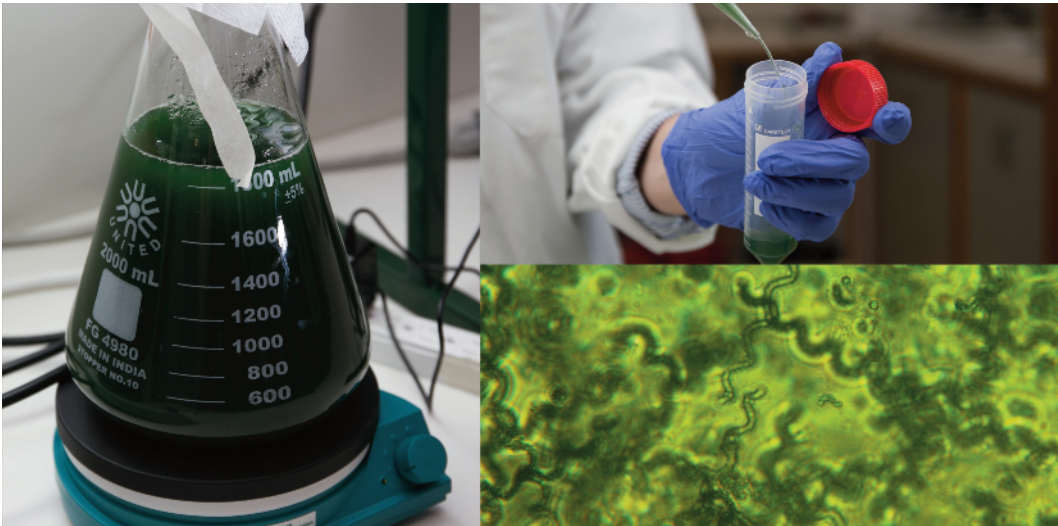


FIG. 5 Spirulina algae colony working in INCUBATOR Lab (2018). Photo: Josh Babcock.

and killers. And conversely, humans have evolved (towards longevity, improved infant mortality, and significantly better quality of life) with the assistance (and are possibly now reliant on) an enormous biomass of laboratory-based organisms co-producing our biosphere/cyborg bodies.

I see the co-production of biotech research by humans and non-human organisms in the lab as a collaborative, co-dependent endeavour. Richard Lewontin reminds us that collaboration and co-dependency is necessary for all organisms on our planet. He states that “organisms interact with one another (no species, anywhere in nature, lives in splendid isolation) and with their environment.”<sup>14</sup> The laboratory is an extension of the human/non-human corporeal biosphere; it is a component of our planetary ecology. I think we hesitate to call interspecies relationships in the lab (and in other environments) collaborations because the power dynamics at play between humans and non-humans seem very unequal. But not all collaborations are equal. It is hubris to presume that the inequality of human/non-human interactions always favours the human. We are so enamoured with our perceived evolutionary domination of all species on planet Earth, we are obtuse to the ways in which other organisms are manipulating us towards their own selfish ends. I think we also hesitate to call a practice collaborative if the organisms engaged in the co-production of mutually beneficial and mutually detrimental outcomes are not able to explicitly understand, communicate, and agree upon the terms of their co-dependence. But not all collaborations are explicit. It is arrogant to presume that because we cannot understand the chemical utterances of microbes and plants that they are without agenda or agency in the courting of human companion species. Arguably, we are already always collaborating with other organisms in laboratory ecologies, kitchen ecologies, digestive ecologies, etc.

In conclusion, INCUBATOR Lab is an institutional space, an artwork, an ecology, and a biosphere where human and non-human organisms collaboratively and co-dependently produce bioart research and creation. The complex relationships between the organisms inhabiting INCUBATOR Lab are mutually beneficial and mutually detrimental. As cognizant human actants



FIG. 6 LB agar and microbes from Jude Abu Zaineh's arm working in INCUBATOR Lab (2018). Photo: Josh Babcock.

in the laboratory ecology, my team and I try to induce pleasure, joy, and jouissance in our interspecies community while acknowledging the suffering, pain, and death that is a regular component of bioart ecological cycles. We practice bioart and biotech protocols with the understanding that biotechnology is a technology of love.

In closing, I wish to acknowledge and thank the large colony of spirulina algae growing and oxygenating the lab in preparation for an exhibition next month (FIG. 5). The lab smells fresh, and a little salty, and of the sea with your presence. I want to acknowledge the LB Agar sculptures growing swabs of microorganisms from my lab assistant's skin (FIG. 6). There is a funkiness that lingers around the incubator, and the comforting presence of yeast in the air simultaneously evokes memories of beer making and bread rising in the kitchen. I also want to thank Jude Abu Zaineh, an emerging bioartist and arts administrator extraordinaire who tends to our biotech garden regularly. She has gifted our ecology her companionship, her collaboration, her quirky humour, and her microbes, and she had gifted me the opportunity to mentor her during this exciting time in her life and career.

I am marveled by life in the lab. There is a magic I cannot explain in seeing and being seen (or perceived, or transformed, or metabolized—or even ignored) by other life forms. It feels good (and sometimes bad, messy, and confusing) in my body to connect with other life forms—it makes me feel alive.<sup>15</sup>

## NOTES

- 1 Jennifer Willet, "INCUBATOR Art Lab: Re-imagining Biotech Species as Co-Producing our Shared Ecology" *Artnodes 20: E-Journal on Art, Science and Technology* (2017), <https://artnodes.uoc.edu/articles/abstract/10.7238/a.voiz0.3140/>: 78.
- 2 Lynn Margulis and Dorion Sagan, *Microcosmos: Four Billion years of Microbial Evolution*. (Berkeley, CA: University of California Press, 1997), 196.
- 3 Dorion Sagan, "The Human is More than Human: Interspecies Communities and the New 'Facts of Life,'" *Cultural Anthropology Online*, April 24, 2011, <http://www.culanth.org/fieldsights/228-the-human-is-more-than-human-interspecies-communities-and-the-new-facts-of-life>.
- 4 Jennifer Willet, "BIOPLAY: Bacteria Cultures," in *Human Futures: Art in the Age of Uncertainty*, ed. Andy Miah (Liverpool, UK: Foundation for Art and Creative Technology, 2009), 23.
- 5 Evelyn Fox Keller, *A Feeling for the Organism: The Life and Work of Barbara McClintock* (New York: Henry Holt and Company, 1983), 103.
- 6 Ibid, 200.
- 7 Ibid, 199.
- 8 Oron Catts, ed., *The Aesthetics of Care?* (Nedlands, Australia: School of Anatomy and Human Biology, University of Western Australia, 2002), 3.
- 9 Jennifer Willet, "Feasting the Lab and Other Projects: Art and Science that Skirts the Limits of Institutional Frameworks," in *The Routledge Handbook of Art, Science, and Technology Studies*, eds. Hannah Star Rogers, Megan Halpern, Dehlia Hannah, and Kathryn de Ridder-Vignone (London: Routledge Press, 2019). Forthcoming.
- 10 Donna Haraway, *When Species Meet* (Minneapolis: University of Minnesota Press, 2011), 73.
- 11 Ibid.
- 12 Ibid., 75.
- 13 George Gessert, *Green Light: Toward an Art of Evolution* (Cambridge: MIT Press, 2010), 7.
- 14 Richard Lewontin, *Biology as Ideology: The Doctrine of DNA*. Canadian Broadcasting Corporation, Massey Lecture Series (Concord: House of Anansi Press, 1991), 89.
- 15 Cat Lau, "CREATORS—JENNIFER WILLET," Art The Science Blog, September 28, 2008, <https://artthescience.com/blog/2017/09/28/creators-jennifer-willet/>.