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Life Begins

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Rochester Institute of Technology

MFA Thesis by candidate for the Degree of
Master of Fine Arts in Metals and Jewelry
Department of the School for American Crafts
The College of Imaging Arts and Sciences

Life Begins

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Signature

Thesis Title: Life Begins

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Abstract

My work reveals the world I see, the world I feel, and the world I imagine. The story I want to tell in my thesis is about every stunning moment when a life begins. While the sculptures and jewelry in my thesis body of work differ in scale, they are all singing the same theme: when a life starts to grow and when a flower blooms.

The forms of my thesis work are inspired from various natural lives, such as virus, fungi, jellyfish, bacteria, blooming flowers, and sea creatures. They are vividly waving, rotating, spinning their tentacles, antennas, and microfibers with the flow of wind and water.

Blooming tentacles is the motif of my thesis work. This motif presents life’s ultimate yearning for reproducing offspring in the world. Years of scientific training in biology impressed upon me the beauty of the living organisms I observed under the microscope. Through my imagination, I transform the touching moment when a life begins into abstract sculptures formed from different media, such as wax, enamel, metal, and paints on canvas.
Inspiration and Research

Ever since I was a child, I have been fascinated with plants, insects, animals, and the human body. I hail from a family of doctors in Taiwan, and it was my grandfather and parents who evoked my interest in living organisms, leading me towards the world of life sciences. As a child, I recorded the life cycles of many plants in my little garden by sketching them down. Following my heart towards nature, I chose biology as my major in college, which thankfully gave me an opportunity to observe many kinds of cells under a microscope. This broadened my horizons to see the beauty of organic structures at different scales. During my four years studying biology, the amazing art forms of microorganisms made a strong impression on me. In my art, I seek to translate the scenes I saw under the microscope to work of metal and various other materials.

The form of my thesis work is inspired by the various movements of viruses, fungi, bacteria; of jellyfish and other sea creatures spinning in and waving with water; as well as the reproduction mechanisms of plants and microorganisms. Blooming tentacles is the motif of my body of work. At the moment of reproduction, plants and cells tend to extend their tentacles to spread their seeds and spores, almost as if the flow of water and wind carries their hopes with the next generation, towards a new journey. This motif presents the power of lives producing and blooming in the natural world.

Figure 1: Pacific sea nettle (chrysaora fuscescens)
The goal of my body of work is to transform a moment when a life starts to grow and to bloom.

I attempted to imaginatively visualize and transform that amazing scene from the world of microorganisms. I also wanted to enlarge the scene into a larger scale, so that people can see and feel how stunning a life is, even that of an invisible microbe.
Color and surface texture are extremely important factors in my work. Although most microbes and cells look transparent under a microscope, in my imagination, the beginning of life should be very colorful, thriving and full of vitality. When a cell starts to divide in two, there are many messenger particles transferring into and out from the cell membrane. In my work, I colored all the particles and cell organs in different hues, with various textures on the surface, to convey a sense of individually unique character.
In order to create various organic forms and surface textures for my work, I experimented with different media such as copper, brass, bronze, steel wool, pins, canvas, acrylic paints, plaster powder, and oil paints. Fabricating with a range of techniques such as forging, hammering, chasing, and piercing, I developed a gravelly, granule-like form on my metal work.

Figure 3: Julie Blyfield – Pressed desert plants series 2005

In the course of researching the practice of colors and texture on metal work, Julie Blyfield’s special enamel jewelry caught my eye. Blyfield, an Australian contemporary jewelry artist, represents Australian native flora and plants in her vivid, metal work. Most of her jewelry pieces are engraved with leaf vein-like textures and layered with colorful glossy or matte enamels. Her work does not merely copy natural
objects; rather, through contrasting colors, each of her pieces have different personalities, as if they are really alive. With the glossy surface finishing, there is a sense of juiciness and stickiness to her art, while the bumpy matte textures convey a sense of scratchiness. Her accomplishments with enamel opened my eyes to different possibilities with the material, and I thus applied enamels to my own pieces.

Figure 4: Julie Blyfield – brooches from the Pressed Desert Plant series 2005
Another artist I drew inspiration from is Lee Bontecou, one of my favorite sculptors. I fell in love with her metal-framed canvas sculptures when I first saw them in the Museum of Modern Art (MoMA) in New York City. She created a living machine by welding steel and stitching canvas, and hanging them on the wall as paintings. The size of her sculpture is so big it is as if I can walk into another world. Her work struck a chord in my mind—I realized the importance of the scale of a work in creating a visual impression. This led me to create some larger pieces with metal and canvas in order for people to see my microbe objects on a large scale.
Body of thesis work

My work sings through colors and forms to people. Scale is an essential factor of my thesis work. I approach my goal of “transforming a moment when a life starts to grow and bloom” by creating colorful organic forms at different scales of size.

Begin (medium sized enamel sculptures)

Waving Cell (large, 7 feet sized hanging sculpture)

Mitosis (large sized frame-breaking painting on canvas)

Sprout (medium sized metal and canvas sculptures on a wall)

Living Jewelry (small sized wearable sculptures)
Begin collection:

Five enamel-metal pieces of sculpture make up the Begin Collection.

Begin #3 Orange

12 x 12 x 15 cm, copper, brass, enamel glass, 2011
In the *Begin* collection, my goal is to describe a moment when sea creatures sprout tentacles, a moment when a fungus spore buds hyphae, a moment when a seed germinates the first root and leaf—magical moments in quiet, dark, and wet environments.
Creating an ideal environment to display my work is essential in my thesis show. In nature, a life cannot survive away from its ecological niche—fish swim in the water with aquatic plants, birds fly in the sky and rest on tree branches. Were I to display my organic sculptures directly on cold white pedestals, they would be like dead specimens.

All my thesis creatures live in aquatic worlds, some floating in tissue fluid, some rotating and waving under the sea. To hint at their home under the sea, I set rocks and sea sands in my showcase, with the transparent water to be filled in by the audience’s imagination. Hung from the lid of the showcase by transparent nylon thread, these enamel creatures swing occasionally by the vibration of the ground, as if floating and waving under the sea.

To make my sculptures just like a bright snapshot of life’s beginnings, the ideal material needs to never fade in color, but rather remain bright forever. Before choosing enamel as the main practice for colors in this collection, I studied and practiced with many media such as acrylic paints, oil paints, and wall paints on my metal sculptures.

I found enamel to have long lasting color, whether transparent or opaque. In addition, there was considerable diversity in the surface finishes of enamel. Either directly heating enamel powder by a torch or baking it in an oven by different temperatures and time created hundreds of different finishes on the surface of metal. By baking in the oven, I could create an even enamel color and texture on the metal. However, I preferred heating enamel directly by a torch, so I could see the process of
color and texture changing and thus could make glossy, matte, and rough finishing all on one piece at the same time.

The rough, sugar-crystal look of enamel can be made by a torch in shorter time. Once the enamel powder starts to melt, stop heating right away. Enamel powder gathers together as tiny balls sticking on the surface of copper. By heating longer, enamel powder melts evenly, and produces a glossy glass look on the surface. I could create the most juicy, watery, plump look of enamel surfaces. I applied this glossy finishing technique on the skin of my sea creatures. Over-heating enamel ends up with an interesting dry cracked surface, which I practiced a lot in this collection. These cracked surfaces are a symbolic hint of timeframes, as if those cracked zones developed earlier than the glossy watery zones, a look similar to the old and new parts on our skin tissue.
When I baked copper pieces with white enamel, the color on the edges turned green every time. I tried the same technique with white enamel powder on silver, but it never showed this green tone. Heating white enamel on a copper piece with a torch caused the copper to be oxidized as Copper(II) carbonate, which is similar to verdigris patina. I applied this green hue of enamel-copper carbonate on one of the pieces in the Begin collection – #1 White and Green – which gave this piece a richer color.

**Begin #1 White and Green**

15 x 12 x 15 cm, copper, brass, acrylic paint, enamel glass, 2011
I applied copper-ammonia complex patina as my blue hue for another piece of the *Begin* collection, #4 *Blue and Yellow*. By covering copper with sawdust and soaking it in an ammonia solution overnight, a turquoise-blue layer appeared on my copper tentacles. There are many different tissues and organs in a living cell. Each organ plays its specific role for the metabolism process and transports different information, possessing distinctive characteristics, and altogether forming a complicated “personality” for the cell. I depicted the character of my cell pieces through various colors and textures, linking warm and dynamic characters to the soft, fluffy textures of wool and

*Begin #4 Blue and Yellow*

10 x 10 x 15 cm, copper, brass, enamel glass, 2011
steel wool. The micro-organism world has random and unpredictable sides, but is also full of beauty and order. I used industrial produced pins to show the precise geometric structure inside the cell, as well as a contrast with the smooth contour of the body surface. The sharp tips of the pins also convey a hazard warning to aggressive bacteria or viruses. I burned the wool and plastic balls of the pin to create a diversity of colors and shapes. Every aspect of my work has its own delicate personality and takes more time to be discovered.

**Begin #5 Yellow and Green**

12 x 12 x 15 cm, copper, enamel glass, wool, pins, 2011
**Waving Cell:**

Inspired by the floating movement of plankton, I created a large piece with flagella all around a core body using my imagination. In this project, I attempt to reach two goals: first, to fabricate the biggest work I have ever made, and second, to let my work interact with my audience by spinning the art and watching how it moves back to its balance.

The elegant movement of plankton—as seen under a microscope—touched me when I studied botany in college. It would be an astonishing experience to see and feel giant plankton hanging over us. I made this sculpture to be 7 x 7 x 4 feet, which should be large enough to impress people, but not so large as to overwhelm them. To optimize interaction with the audience, the proper hanging height is also essential. The audience

![Waving Cell](image-url)
should be close enough to see the color and to touch the detailed surface textures and to feel the attempts at moving in this living creature.

For hanging purposes, the materials of this piece were to be light and strong. I built the main structure by steel; stitched canvas with thread to make its skin; and painted the canvas skin with a mix of acrylic paints, sand, plaster, and metal scraps to make its surface texture.

Plankton has an acceptor-ball on the end of each flagella. This acceptor is a sensor to discover the environment. These acceptor-balls have a soft and sticky look. I tried many materials to make the acceptor-balls lighter and with different textures on each one. Finally, I found styrofoam balls to be best suited. By rolling the balls in melted
wax several times and at different angles, I produced a unique texture on each ball. I chose oil-based metal paint for a glossy finish on the surface giving it a wet and sticky appearance.

Movement is an important factor in accomplishing this work. *Waving Cell* has plenty of legs at different angles and lengths, so it always tries to approach its balancing point and continuously swings and rotates with the wind or vibrations. These movements vividly represent how micro-organisms and plankton float in the water.
It was exhilarating to see people’s responses when they observed *Waving Cell*. Some people screamed and tried to run away from this work; some wanted to play with it; some people thought it was dangerous and afraid to be walking under it; some people thought it was intriguing and tried to touch the texture; some people saw its beauty and took a closer look at it. People did not have as many different responses toward my smaller-scaled art work. I believe this indicates that the size of this piece is crucial. This great experiment of making a larger work broadened my scope of seeing, feeling, and making art. In the future, I will keep creating more pieces at larger scales to touch people’s hearts. I will transform my amazing experiences of observing micro-animals under a microscope to larger scales such that people can see the beauty and the power of lives from a different perspective.
Mitosis (cell division)

Mitosis

6’ x 3’ x 3”, Brass, bronze, wood, canvas, acrylic paint, extra coarse pumice gel, plaster, Cotton swap, hot melt Adhesive glue 2011

A frame-breaking painting object

The mission of this painting was to create an environment where my thesis creatures could live, wave, and float. Instead of drawing a cell on a regular rectangle-framed canvas, I made my own cell-shaped canvas with wood boards and canvas. I hung one side of the work lower than the other in order to indicate the dynamic movement of cell division and an unstable moment of life. I enjoy painting so much. The dream is visualized through my hands. When I have a brush in my hand, my imagination dances on my canvas. Giving my audience a strong visual impact of the beginning of life is also
essential in my thesis show. My motif of blooming is another important appearance of cell division. All the organs and particles line up in the middle line of the cell and a pair of developing spindle bodies pulls each set of essentials toward each pole. When a cell starts dividing into two, many messenger particles are transported inward and outward. DNA, proteins, and cell organs are so busy during the duplication process in preparation to be divided. In my imagination, the process of cell division is full of joy and hope. I combined plenty of different materials such as metal sawdust, sand, plaster, pumice gel, and acrylic paint to create a busy, crowded world bustling with noise and excitement.

Red is a special color in my mind. As our blood color, red is a metaphor of life and sex, full of passion and danger. The two red objects are the messengers transported toward the cell. They also carry the blossom motif as their messages of birth. I built their structure with cotton swabs and hot-melt glue, which gave them their lightweight and furry look.

*Mitosis*
Sprout Collection:

After several experiments with canvas and metal frames, I found the potential and flexibility of canvas sculptures. I really enjoyed the process of making these canvas sculptures, as they completely visualized the details of my fantasy. These two sculptural creatures are comprised of a metal skeleton and a canvas skin. They are like two colorful lives climbing on the wall, stretching their tentacles and waving with the flow. The form for the Sprout collection was inspired by sea anemone, barnacle, and fungi, and were transformed by my imagination.

Sprout

A set of 2 wall-hanging sculptures, 25 x 22 x 15 inch, 14 x 10 x 6 inch,
Copper wire pumice gel, clay, plaster, oil and acrylic paint on canvas
As an important part of my thesis work, the Sprout Collection shares the same motif of the movement of blossom. Numerous wavy tentacles freely extruded from blood-red mouths. These tentacles are not only sensors to feel the world, hands to grab food, but also organs to spread their next generation. The contrasted colors of red and green show a strong yearning for blooming. From dark blue, green, yellow, orange, to intense red, the gradient colors are also hints of different temperatures and emotions.
The shape of a half dome oval is also a metaphor for an iceberg; there might be a larger part underneath the interface, just like the way most parts of benthic creatures are hidden by the sand.

The surface texture of these two creatures is made by acrylic gel. In order to create the sticky and soft look, I studied the pattern and texture of mold, fungi, and microbes. By patting the gel up and down, I created an interesting texture just like a terrain model. I applied the base color with vivid red, orange, yellow hue, and then applied another layer of dark green, blue, purple hue on the top. After sanding off the top surface with sand paper, the base bright color comes out. The color contrast creates an illusion of greater depth, and the detail of the texture becomes even more vivid and dynamic. Lighting and shadow completed this work. By watching the shadow of tens of tentacles vibrating on the wall, I want to pull my audience into my world and imagine how these two creatures move on the wall.
Living Jewelry:

glass-silver creatures on human body

The rings and earrings of *Living Jewelry* are not only wearable jewelry pieces, but also live vividly growing on the human body. The dimension of this collection is scaled down to an inch level. These jewelry pieces are singing the same motif as all the other thesis pieces, namely blooming tentacles and membranes full of opening entrances. Living jewelry shows the passion and strong will of a tiny life to grow, to bloom, and to give birth.
The form of an organic bubble is inspired by budding yeast and a sponge calcium skeleton. After the casting process, the sterling silver ring looks like a white skeleton of an organism. These two rings in the Living Jewelry collection were made by wax carving and investment casting. The touch of the filling process when carving the wax left a rough texture, and left the silver surface even, like the look of animal bone.

**Living Jewelry#1 Ring**

1 x 0.75 x 2 inch, Ring size 5, Sterling silver 2011
Although the pure white color of silver is impressive as the skeleton, I wanted to bring life into the *Living Jewelry* pieces by filling juicy, watery, transparent, and colorful materials as its body fluid. The best material I found was Pyrex glass. I heated the glass with a torch and squeezed the melting glass from the inside of the silver skeleton that had already been cast or forged. The Pyrex glass extrudes from the openings of the silver shells. Held by the surface tension, the glass formed into half domes from each opening, and created a juicy look.

**Living Jewelry#2 Ring**

1.25 x 0.75 x 1.5 inch, Ring size 5, Sterling silver 2011
In order to have a colorful body, I painted the bottom of the glass with oil paint. The reflection of the glass then fills the inside of the whole body full of color. The fresh, clean whiteness of silver makes a great contrast with the colorful glass body fluid.

The silver membrane of these pieces were rolled with paper to apply a soft texture on the surface and forged with chasing tools and a hammer. When extruding the melting Pyrex glass into the silver shell, the extremely hot glass melted the surface of the silver. This process created a unique wrinkly silver skin, as if an aging happened naturally. Melting silver also dissolved into glass and shows the unique orange-yellow color of silver ion. I made an environment with sand and rocks to display this collection, as if these juicy creature families are living under the sea.

Living Jewelry#3 Earrings
1.25 x 0.75 x 1.5 inch, Ring size 5, Sterling silver 2011
Evaluation and Future Outlook

Through the process of finding inspiration and gathering ideas, researching and studying cases towards accomplishing the final work, I learned far more than I expected. These few months, I kept asking myself what I want to say, why I need to say it, and how I was going to make it work. Now is the time to evaluate how much I achieved.

Countless failures and problems arose after I started to make the metal pieces. Welding steel was a challenge for me, and the enamel process required great patience and care for control and precision. I also burned numerous silver models to see how hot glass would interact with my mounting. Technique issues were overcome in the end, though, and gave way to the true joy of making an idea into tangible works of art and seeing the reactions of the audience to those works during the show. I achieved my goal of making my motif into different scales, from tiny pieces to large sculpture. The audience could walk between the tentacles of the large sculpture Waving Cell, moving along as the cell spun. This sculpture elicited different responses and feelings – it even frightened a baby into crying for her mother. I loved seeing people staring at the details of my work, wondering what these creatures were, and where they might come from.

Knowing nature better, I found even more incredible beautiful life in this world. Life is a journey, and there are always surprises waiting for me. All lives strive to grow and to give life to the next generation, no matter how small a life it is. With passion and thankfulness towards life, I will try my best to see, to feel, to imagine and to tell these stories to people.
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2. Penicillium roqueforti (mold) © Dennis Kunkel Microscopy, Inc.
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3. Photography: Grant Hancock, Julie Blyfield: Contemporary jewelry and objects 1990-2010.

4. Work by Adelaide-based jeweller Julie Blyfield – brooches from the Pressed Desert Plant series, 2005, sterling silver, oxidised sterling silver, enamel paint, wax, dimensions variable. Photo by Grant Hancock, courtesy
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