SMALL UNIVERSE : EXPLORING MICROORGANISMS IN WATER FROM AN ARTISTIC PERSPECTIVE

Interdiscipline Art-Science Research Jingying (Crystal) Zhen
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INTRODUCTION:

Humans are infinitely small within the universe, but we are also infinitely huge compared to microorganisms. It is amazing to think that if we try to define a drop of water as a planet, a new world will be discovered and displayed in front of us. I want to express the humans' thinking about life forms that cannot be seen with the naked eye, like microorganisms in water.

This research has pushed me to rethink the way other life forms exist. Viewers will catch the lifestyle of the microorganisms based on their interaction with the illustrations, 3D models, videos, and website. This process can be considered as getting to know a new friend, and finding energy in these small life forms.

RESEARCH QUESTIONS:

What kinds of unseen creatures live in a droplet of water?
What do they look like?
How can they live?
What are their needs?
Can they communicate with each other?

LITERATURE REVIEW:

I used a light-and-dark style associated with ink painting gradation on rice paper to express the characteristics of the microorganisms, and also used 3D printing to show the physical properties of microbes. The world of microbes is very attractive; therefore, besides study on the biological research, other researches on art and aesthetics are also important to my work. As a basis for my research, I wondered to see how other artists created the idea about a Microcosm.

"The earth is one of a million dots." -- Yayoi Kusama (Smigiel, 2018)

"Art is the midwife of science." -- Rogan Brown (Brown, 2014)

"My work relying on the nature or physical peculiarities."
-- Tara Donovan (Donovan et al., 2008)

THEORY AND METHODOLOGY:

Morphology of Microorganisms /

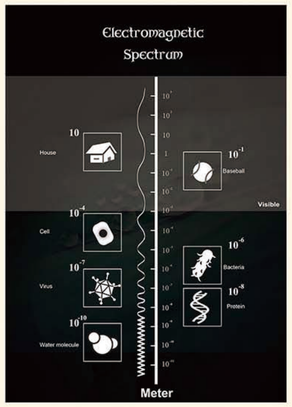

Figure 1. Jingying Zhen, Electromagnetic spectrum, 2019.

I created a comparative chart aligning visible objects with their placement on an electromagnetic spectrum, indicating each item's relative size and consequently, their visibility (see Figure 1). The smallest size that human eyes can distinguish is 10^{-3} meter.

Bacteria:
10^{-6} meter on the electromagnetic spectrum(Nuraisah, 2015).
Flagella are hair-like structures used by bacteria to swim. Some bacteria do not have flagella, and need some medium to move around independently.

Viruses:
10^{-7} meter on the electromagnetic spectrum(Nuraisah, 2015).
Each appendage or "tentacle" on their exterior surface helps them to nourish themselves from the host to reproduce more viruses.

Observation /

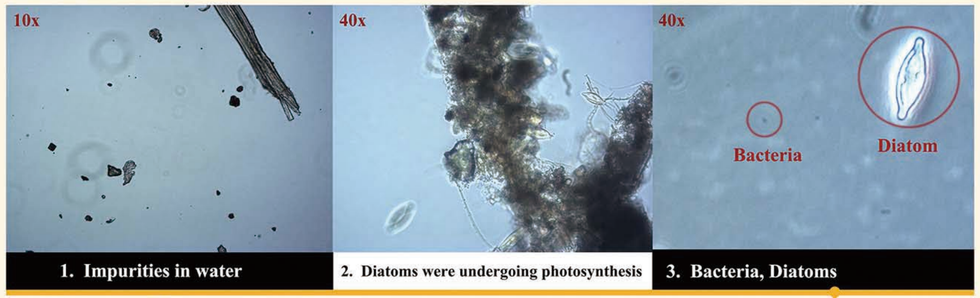

Figure 2. Microorganism under light microscope by Jingying Zhen, 2020.

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In order to observe the characteristics of microorganisms, I visited with biology lab.

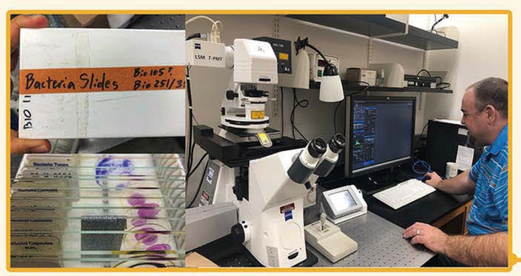


Figure 4. Jingying Zhen, Bacteria Slides and the Instrumentation Specialist Chad Wangeline operating the inverted microscope, 2020.

Figure 3. Glenmere Park and light microscope by Jingying Zhen, 2020.

← AXIO Observer. Z1

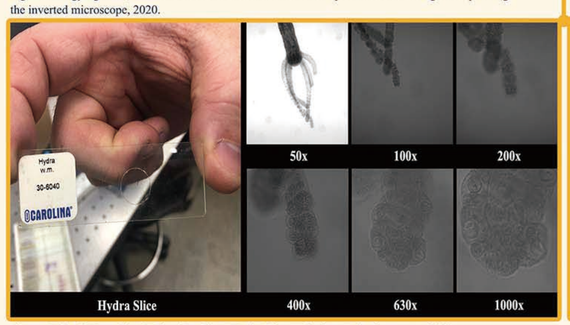


Figure 5. Chad Wangeline & Jingying Zhen, Hydra Slice under inverted microscope, 2020.

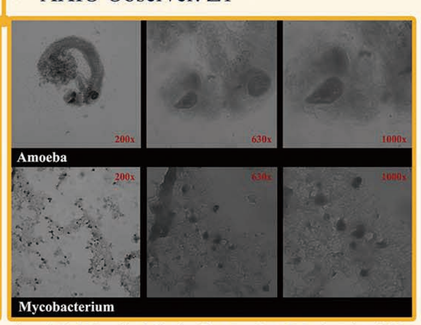


Figure 6. Chad Wangeline & Jingying Zhen, Amoeba and Mycobacterium, 2020.

The Process of Creating the Artwork /

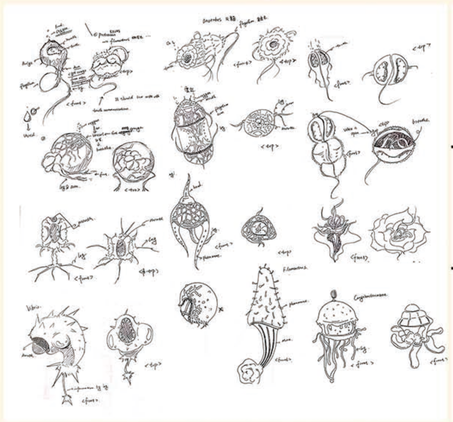


Figure 7. Jingying Zhen, Sketches of Microorganisms, 2020.

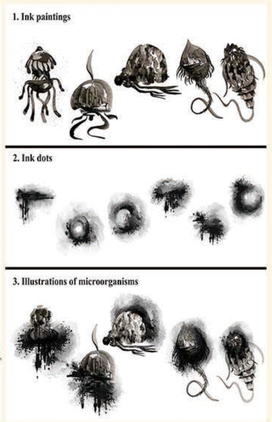


Figure 8. Jingying Zhen, The process of illustrating microorganisms, 2020.

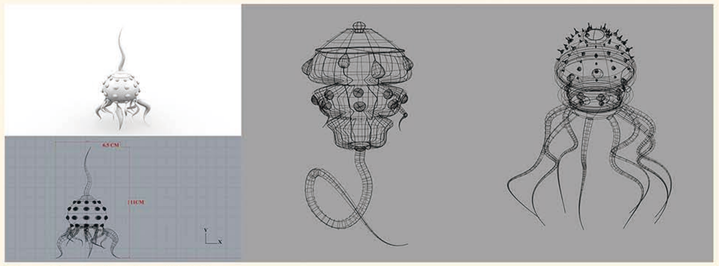
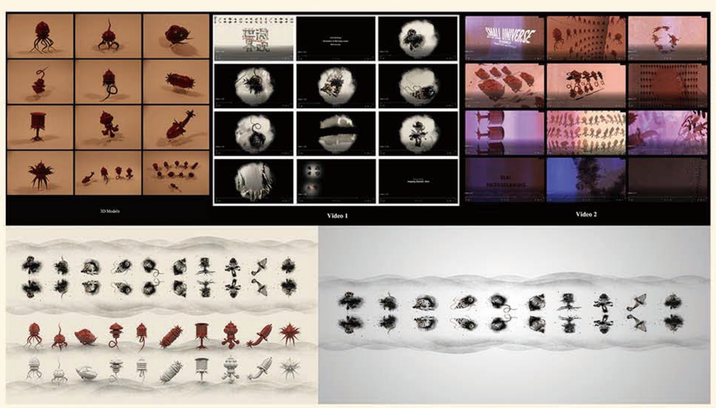


Figure 9. Jingying Zhen, 3D models, 2020.

RESULTS:



In conclusion, I want to express human thinking about life forms that cannot be seen with the naked eye, like the world I am investigating. This thinking, whether it is human perception of life and the world, or not, is trying to understand the emotions that other unknown lives convey. Taking an interdisciplinary approach has led me to new experiences and perspectives.

REFERENCES & MORE INFO:

Please see my website:
https://www.jingyingzhen.com/small-universe-0