Appendix 1. Art Exhibit Content

The art show communicated the findings of Hua et al. (2015) that wood frog tadpoles exposed to non-toxic levels of the pesticide, carbaryl, as embryos were capable of rapidly inducing increased tolerance to lethal concentrations of carbaryl via the process of phenotypic plasticity. To portray the findings described in Hua et al. (2016), the artwork highlighted the finding that the parasite (*Echinoparyphium* Lineage 3) is slightly sensitive to the carbaryl pesticide during their free-swimming life cycle stage (Hua et al. 2016). We created and displayed three acrylic paintings and one digitally generated painting. The three acrylic paintings provided a close-up view of the trematode parasite (Appendix 1a), depicted wood frog tadpoles swimming in their natural environment (Appendix 1b), and portrayed the effects of carbaryl and trematode infection on a wood frog tadpole (Appendix 1b). The digitally generated image was produced via Adobe Illustrator CC 2015 and portrayed an idealized wood frog tadpole via a cubist lens (Appendix 1c). All four paintings were either painted or printed on canvas and displayed on the wall.

The art exhibit also contained eight sculptures depicting the chemical structure of carbyl in three-dimensional space (Appendix 1b), the life cycle of a wood frog tadpole (Appendix 1d), a free-swimming trematode (Appendix 1e), and four tadpoles depicting phenotypic plasticity (Appendix 1f). All sculptures were created using aluminum foil, liquid glue, coffee filters, primer, and acrylic paint. To create the shape of the structure, we molded multiple layers of aluminum foil together. Next, we applied four to six layers of coffee filters to the aluminum skeletons of these sculptures using liquid Elmer's glue to create a paper maché mold. Once the glue dried, to smoothen the surface of each sculpture and to create an appropriate medium for acrylic paint to adhere, we applied gesso to all surfaces of each sculpture. All sculptures were hung on the walls, except for the carbaryl molecule and trematode models, which sat on tables

We also created two infographic posters (Appendix 1f) designed to convey the major research findings from both papers in a bold and concise fashion. Both were created using Adobe Illustrator CC 2015 and were displayed on the wall.

In addition to physical art pieces, laptops were set up along the perimeter of the room displaying an interactive walkthrough of the methodology behind the two scientific papers (Appendix 1f). This exhibition piece was made using the website-creator software, wix.com, and included custom-made

visuals and animations to convey the experimental processes of both papers. The visuals included in the website were created using Adobe Illustrator CC 2015 and Adobe Photoshop CC 2015.

Video footage of trematodes (Appendix 1g) swimming in a controlled lab setting was spliced together and projected on the far wall of the conference room. We made these videos in the Hua Lab by illuminating a beaker full of free-swimming trematodes collected from snails (Helisoma trivolvis). Using cardboard stock paper, we also depicted the complex life cycle of the trematode parasite (Appendix 1h).

We also created an interactive station where visitors of the art show could use a dissecting microscope to observe live free-swimming trematodes (Appendix 1e). This station included living snails, a lamp to keep the trematodes active, a dissecting microscope, microscope slides, and pipettes to transfer trematode samples to and from the microscope.

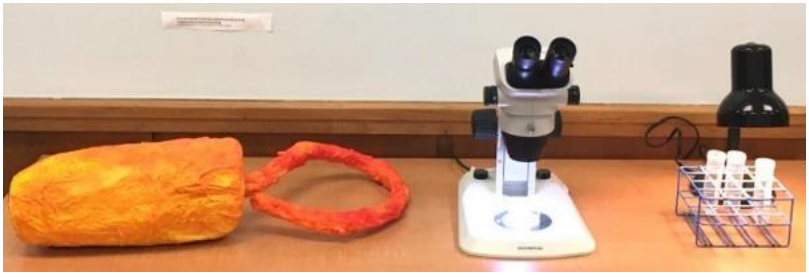
Finally, we set up with an exhibit representing an optimal freshwater environment for wood frog tadpoles (Appendix 1i). To create this exhibit, we filled an aquarium tank with 25 L of well water. We added natural aquatic vegetation and 15 live wood frog tadpoles. The use of tadpoles in this display was approved by Binghamton University's Institutional Animal Care and Use Committee (Protocol 757-16).

Appendix 1a. Close up image of a trematode parasite.

Appendix 1b. Clockwise from the top-left: acrylic painting depicting wood frog tadpoles in their natural environment; acrylic painting portraying the effects of carbaryl and trematode infection on a wood frog tadpole; and sculpture of the chemical structure of carbaryl in three-dimensional space.

Appendix 1c. Painting of an idealized wood frog tadpole via a cubist lens.

Appendix 1d. Sculptures depicting the life cycle of a wood frog tadpole.



Appendix 1e. From left: Sculpture of a free-swimming trematode (Echinoparyphium); and a dissecting microscope to observe live free-swimming trematodes and freshwater snails.

Appendix 1f. Four sculptures of tadpoles exhibiting phenotypic plasticity, alongside two infographic posters conveying research findings and laptops displaying an interactive walkthrough of research

methodology.

Appendix 1g. Projected video footage of trematodes swimming in a controlled lab setting.

Appendix 1h. Images depicting the life cycle of the trematode parasite.

Appendix 1i. Aquarium with natural aquatic vegetation and 15 live wood frog tadpoles.

Appendix 2. Perceptions of Research Survey

PLEASE **DO NOT** WRITE YOUR NAME- This is an **ANONYMOUS SURVEY**

Occupation: _____.
Highest level of education:_____. **Major (if applicable):**_____.
Gender identity: M F Non-Binary Prefer not to disclose
Ethnicity:_____. Prefer not to disclose

BEFORE PARTICIPATING IN THE ACTIVITY

1. Please circle a number that best represents your interest in the pursuing research as a career?

1	2	3	4	5
Not interested		Indifferent		Interested

2. How likely would you spend 15 min/ day of your free time learning about pesticides in the environment (includes: browsing websites, reading news article, talking to professors, journal articles)?

1	2	3	4	5
Not likely				Likely

3. How likely are you to spend 15 min/ day of **your free time** learning about disease ecology (this includes browsing websites, reading news article, talking to professors, or journal articles)?

1	2	3	4	5
Not likely				Likely

AFTER PARTICIPATING IN THE ACTIVITY

1. Please circle a number that best represents your interest in the pursuing research as a career?

1	2	3	4	5
Not interested		Indifferent		Interested

2. How likely would you spend 15 min/ day of your free time learning about pesticides in the environment (includes: browsing websites, reading news article, talking to professors, journal articles)?

1	2	3	4	5
Not likely				Likely

1. How likely are you to spend 15 min/ day of **your free time** learning about disease ecology (this includes browsing websites, reading news article, talking to professors, or journal articles)?

1	2	3	4	5
Not likely				Likely

Appendix 3. Comprehension and Retention Quiz

PLEASE **DO NOT** WRITE YOUR NAME- This is an **ANONYMOUS SURVEY**!

Major: _____. **Overall GPA:_____.**
Year (FY, SO, JR, SR):_____. **Expected letter grade in Biol 355:**
:
Gender identity: M F Non-Binary Prefer not to disclose
Ethnicity:_____. **Research experience?** Y or N

Multiple Choice Quiz- Please select the correct answer

1. What trematode life stage did we focus on in the trematode study (Study #2)?
    a. Egg stage
    b. Free-swimming stage
    c. Cyst stage (in snail)

2. In Study #1 (Tadpole and Pesticide), what was the mechanism that allowed tadpoles to induce tolerance to pesticides?
    a. Natural selection
    b. Phenotypic plasticity
    c. Constitutive tolerance

3. Based on Study #1 (tadpole and pesticide), which tadpole is most likely to be able to induce tolerance to pesticides
        a. Tadpoles that lived farther from agriculture
        b. Tadpoles that lived closer to agriculture
        c. All tadpole populations showed equal levels of induced resistance

4. Based on the trematode study (#2), if you were a trematode and there is pesticide in the water/arena that you are swimming in, which tadpole would you choose to infect?
    a. The tadpole that has never been exposed to pesticides
    b. The tadpole that was previously exposed to pesticides
    c. It doesn't matter- trematodes can't detect pesticides

5. Where do trematodes form stationary cysts in the snail?
        a. Kidneys
        b. Reproductive tissue
        c. Liver