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Davies students conduct real-world research with Wolbachia Project

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1 of 2



Charlize Liranzo and **Aliyah Donahue**, collect insects in the field at Davies as part of the international Wolbachia Pro

LINCOLN – Thirteen students from a biomanufacturing technology class at William M. Davies, Jr. Career & Technical High School are participating in an international study called the Wolbachia Project.

The initiative is an immersive lab series where students from all over the world can participate in discovering whether or not insects in their surrounding area have the Wolbachia gene.

According to Davies biomanufacturing/technology teacher Katherine Sutton, the Wolbachia gene is a type of bacteria infecting insects, but makes it so the affected insect can't transmit diseases. For example, a mosquito with Wolbachia can't transmit malaria to humans.

“Our goal is to collect insects, obtain DNA from those insects, and then to isolate the Wolbachia bacteria from the rest of the DNA to find out if any of our insects have the bacteria,” said Samuel Davis, a senior student from Pawtucket.

Sutton said that if her students find Wolbachia in the insects, they will be able to contribute the first set of data ever from Rhode Island to a worldwide database. Additionally, students will be able to have their findings published and will be considered published researchers.

The students began their research by building traps and collecting bugs outside of their school. They then had to immerse the bugs in ethanol, and used dry ice to kill any flying insects so they would stay in one spot, said student Ian Leon Guerrero of Warwick.

“Then we had to extract the insect guts or ‘scoop the goop’ to get DNA,” explained student Charlize Liranzo of Johnston. After DNA was obtained, students “cleaned” the DNA and froze the filtered materials.

From there, students will use a machine to replicate the DNA to make analyzing the data easier. Students will then separate DNA again before trying to analyze whether or not it matches DNA that has Wolbachia.

If testing positive, Davies students will send the sample to partners at Penn State who will send back the exact DNA code, which Davies students will then evaluate.

“No school in Rhode Island has done this before, and there is currently no data from Rhode Island, so we really don’t know what the results will be or how it will go,” said Sutton.

Liranzo, also a senior, said she’s excited about participating in the effort, saying “getting this real world lab experience makes me happy because it makes me feel super prepared for college. It’s cool that by doing this, I’m contributing to actual research while I’m still in high school.”

Davis said that for him and his peers, the whole process has been difficult but rewarding.

“There have been a lot of mistakes,” he said. “But we’ve learned a lot from all of them; I think we’ve learned even more from the mistakes than we have successes, and I feel like we’ve gotten way better at working in the lab.”

Sutton said she’s proud of the work her students have done, and that regardless of the end result, she believes completing this project will open more doors for current and future Davies students to participate in more research opportunities.