The Update of the Outdated Mosquito Collection Device

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Mosquitoes are organisms whose lives are closely related to the lives of humans. Therefore, research related to the diseases that mosquitoes spread and their unique physiology is important to protect the general population of humans. Unfortunately, the device that is currently being used to collect mosquitoes in research labs is outdated and inefficient. After extensive personal use of the device, I sought to create a new device that made improvements to the original. I first identified problems with the original device and then researched and discovered all of the electrical components that would solve the issues. For example, the PWM would allow for fan speed variability while the step-up booster would allow the device to be cordless and rechargeable. Afterward, I tested various fans for their RPM and also their suction power by using a homemade manometer and recording the water lift. Lastly, I designed various casings that would house all of my components in Fusion 360 and 3D printed them. The end result was 4 different prototypes, each of which revolved around a different kind of fan (suction source) and improved upon its predecessor. The final version featured an impeller-diffuser fan that provided great suction while being compact. Furthermore, the new device featured a long-lasting battery (10 hours), ergonomic handle design, and charging port. Overall, this project has yielded favorable results. Prototype 4 in particular was so satisfactory that it is actually being field-tested. After receiving feedback, a Prototype 5 will be created and possibly manufactured. If not, I will make my project open-source so that anyone can make this device.

Awards Won:
Fourth Award of $500