## 2019 ISEF EXPERIENCE

The Society for Science and the Public, in partnership with the Intel Foundation hosts the annual Intel International Science and Engineering Fair (ISEF). This year, fifteen students, representing DVSF as winners of 2019 regional science fair in Oaks, **Pennsylvania, traveled to Phoenix, Arizona to compete for top prizes, awards, and scholarships.** Accompanied by five teachers, three DVSF staff members, and one adult volunteer, these students joined approximately 1,850 other young scientists selected from 422 affiliate fairs held in more than 80 countries, regions, and territories.

Of the fifteen DVSF students who traveled to Intel ISEF in 2019, three students earned awards. Eleventh Grader, Neil Deshmukh, from Bethlehem, Pennsylvania presented a project in the Systems Software category and won Grand Prize, Fourth Place with a \$500 prize, a Special Award from USAID Science for Development, 3rd Place and \$2,000, and a Special Award from the Association for the Advancement of Artificial Intelligence, Honorable Mention. He researched "An Adaptive, Low-Cost Device for Automated & Offline Medical Analysis Utilizing Neural Networks with Reinforcement Learning Optimization." Neil explains, "my science project this year is essentially an AI doctor that can conduct a 5-minute, private, preliminary medical analysis, right in your home with an accuracy comparable to medical personnel; it can recognize skin afflictions, detect cardiac anomalies, and identify biomarkers of cognitive decline: it also helps alert medical professionals if there are any medical conditions present by processing symptoms. I was inspired to undertake this project after seeing the sparsity of healthcare in less-fortunate areas, and I hope that my project will be able to identify high-risk patients, helping people get treatment, and eventually, saving lives." When asked how entering a Science Fair impacted his life, Neil wrote, "Science fair has allowed me to be creative and innovative while finding solutions to the problems I care about. It has reinforced my passion with STEM, and, more importantly, helped me find a group of people that I love to be around... I would not be where or who I am today without Science Fairs."





Tenth grader, Carolyn Almonte, from Burlington, New Jersey presented a project in the **Animal Sciences** category and won Grand Award, Fourth Place with a \$500 prize. Carolyn, when asked how her participation in a Science Fair impacted her life, stated "Entering Science Fairs helped me find my people... Science Fairs made me happier, knowing that people like me exist." Carolyn's 2019 entry, "The Effect of Chronic Exposure to Artificial Light at Night on the Development & Fecundity of Manduca sexta" took her lifelong passion for insects and turned it into research. Carolyn explains, "I encourage other students to pick projects that interest them. Explore your passion. The best part of my project was turning a room into a hawkmoth rearing laboratory of sorts. The worst part of my project was cleaning up everything that came with rearing hundreds and hundreds of hawkmoths from egg to adult moth. At times it seemed like a never-ending sea of caterpillar frass, but the long hours were worth every minute because I am doing the type of research I want to do as my profession."



## Tenth grader, Prathysha Kothare, from Allentown,

Pennsylvania presented in the Biochemistry category and won Grand Prize, Third Place with a \$1,000 prize with her project entitled "Re-envisioning Erythrocyte Dynamics: Computational vs. Experimental Modeling of RBC in Capillary Shearing." Prathysha, a two time ISEF participant, explained her research and goals: "I wanted to explore the mechanical properties of red blood cells. We are probably all familiar with heart pumps and diseases like sickle cell and anemia, but if someone asked us to explain how red blood cells behave molecularly during circulation in each of these situations, we'd probably scratch our heads. Thus, I sought to study how these cells and their molecular structures respond to different blood flow conditions. I went about accomplishing this goal using computer models combined with laboratory studies. The long-term goal of this research is to publish a simple mathematical model that can predict red blood cells' responses to different circulation environments that can be accessed by pharmaceutical researchers and bioengineers to understand disease mechanisms and optimize biomedical device designs."









2019 Delaware Valley Science Fairs representatives enjoy the opportunity to participate and compete in the Intel International Science and Engineering Fair (ISEF) in Phoenix, Arizona.

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