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The Mighty Fruit Fly

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As a high school student in Columbus, Ohio, Andrew Steffensmeier volunteered in a nursing home, where he witnessed the toll of Alzheimer's on the elderly.

Next week, the sophomore University of Dayton pre-med major travels to Chicago to present scientific findings about cell death in the eye of a fruit fly. The research, conducted under the guidance of assistant professor of biology Amit Singh, may hold the secret to early detection and treatment of Alzheimer's.

It's rare for an undergraduate student to land an invitation to present at the annual Drosophila Genetics Conference, which draws the world's leading biomedical researchers and graduate students. Steffensmeier, an honors student who plays on the varsity golf squad, will present a poster at the March 7-11 conference.

"I hope it's that wow factor you need to get into medical school," Steffensmeier said. "It's awesome to be able to pursue your dream to find a cure for disease and do innovative research one-on-one with faculty."

Steffensmeier works in Singh's laboratory, where researchers are using the fruit fly's retina as a model. They learned that neuronal death — a hallmark of Alzheimer's disease — can likely be prevented by blocking the death of cells through the manipulation of key genes. They're now collaborating with University of Dayton biologists Panagiotis A. Tsonis and Madhuri Kango-Singh to test 3,000 different drugs on the fruit flies to find candidates for stopping the death of neuronal cells in the eyes of the flies.

"We want to curb the effects of Alzheimer's, Steffensmeier said. "Can the eye be rescued? It's interesting how a tiny fly with four chromosomes can be so related to humans."

Singh calls the common fruit fly "the Cinderella of genetics." The fly looks nothing like a human, but it shares similar genetic traits. In Singh's lab, researchers also are using fruit flies to gain a greater understanding of how birth defects occur in eyes.

"At most big universities, it's hard for undergraduate students to work in labs," Steffensmeier said. "When Dr. Singh asked me to stay on campus and work in his lab last summer, I was in awe."

Already Steffensmeier has tested 1,500 drug candidates and plans to finish up that work this summer.

In addition to the international conference in Chicago, he will present his research April 18 at the University's annual Brother Joseph W. Stander Symposium, which celebrates student research on campus. He's also going to talk about the work at Beta Beta Beta's regional and national conventions at the University of Indiana and San Juan, Puerto Rico. Steffensmeier has received a research fellowship from Beta Beta Beta, a national biological honor society. His travel expenses are being funded by the College of Arts and Sciences, honors program and biology department.

Singh admires Steffensmeier's drive. He juggles classes and research with competing on the varsity golf team and performing community service.

While a student at St. Charles Preparatory School in Columbus, he played golf on a team that won the state championship. He also led an effort to collect more than 4,000 books and start a library in Choma, Zambia, where a friend was serving in the Peace Corps.

At the University of Dayton, he calls the Flyers golf squad "a force to be reckoned with in the NCAA." He volunteers to tutor other athletes and teaches middle school students how to play basketball through the local YMCA. Twice a month he helps plant trees and clean up debris in city parks as a volunteer with Leaf a Legacy.

"In high school, I was known for my golf. I had a brain on the side," he quipped. "Here, I get to do both. It's the best of all possible worlds."
For more information, contact Andrew Steffensmeier at 937-229-2507.