

SWOSU Student Involved in Cardiovascular Disease Research

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Steve Stone (center), a sophomore at Southwestern Oklahoma State University in Weatherford, was recently awarded a NASA scholarship for research in the area of disease states. With Stone are Madeline Baugher, principle investigator of the NASA Space Grant program at SWOSU, and research faculty sponsor Dr. Doug Linder, assistant professor in the SWOSU Department of Chemistry and Physics.

Steve Stone, a sophomore at Southwestern Oklahoma State University in Weatherford, was recently awarded a NASA scholarship for his research in the area of disease states.

Stone is a chemistry and math major from Nacoma Park. His research is under the direction of Dr. Doug Linder, assistant professor in the SWOSU Department of Chemistry and Physics.

The main goal of the research is to further study a group of zinc containing hydrolytic enzymes called the matrix metalloproteinases (MMPs). These MMPs have been implicated in a host of disease states, including cardiovascular disease, arthritis and cancer.

Through studies, Stone said it is hoped to learn more of how to inhibit these particular enzymes so as to limit the damages they cause. In particular, using computational quantum chemical techniques, the influence of the active site zinc geometry on the catalytic mechanism of action will be studied. Small models of the zinc active site will be constructed, energies will be calculated, and the results will be analyzed to determine how and to what extent changes in the zinc active site geometry (bond angles and lengths) influence the catalytic properties of the enzyme.

“With these results, we hope to establish a new paradigm to develop effective enzyme inhibitors,” Stone said.

SWOSU is a member of the NASA Oklahoma Space Grant Consortium, which provides scholarship funds for students in science and technology areas at member institutions. SWOSU matches these funds with an equivalent amount of its own. All scholarship awardees are required to volunteer 10 hours of their time to either the Stafford Air and Space Museum, located in Weatherford, or another appropriate community service organization.

The grant principle investigator is Madeline Baugher, faculty member in the SWOSU Department of Entrepreneurship and Computer Systems. Students may submit research proposals for a spring funding cycle until January 31, 2009. A description of the program and an application may be found at <http://www.swosu.edu/academics/ace/compsci/nasa/grant.asp>.