

Bright and Early

The College of Engineering's best students get a head start with undergraduate research.

By Joan Slattery Wall



Undergraduate student Rebecca Routson and assistant professor Robert Siston are basing the design of an assistive walking device on a child's gait and daily activities as well as a mechanical analysis of the child's current walker. When he conducts research projects with undergraduates, Siston hopes to help them improve their technical abilities as well as oral and written communication skills and open their minds to other career options.

KEVIN FITZSIMONS

When Robert Siston was hired as an assistant professor of mechanical engineering at Ohio State in 2006, he made space in his new office for the Denman Undergraduate Research Forum award he received here as a student six years earlier.

Now that he is taking the role as mentor, he sees how undergraduate research benefits both himself and the students.

"Maybe explaining things like the basic concepts of a technical topic, how to structure a manuscript, how to critically analyze and interpret data, time management, goal setting, etc., will make us better faculty members," he says. "It's rewarding to see students who are very eager to learn about something of personal interest grow and develop as young researchers."

Siston's protégé, senior Rebecca Routson, says her undergraduate research with Siston lets her apply her classroom knowledge for real-life benefit: designing and building a more efficient walking device for a child with cerebral palsy (see story, "Finding Altruism," page 15).

The College of Engineering is committed to providing research opportunities for undergraduates, says Gregory Washington, associate dean for research, because of the additional value the experience gives to students.

Indeed, Allison Snow, director of Ohio State's Undergraduate Research Office, says studies show students who do research tend to be more satisfied with their education.

Undergraduate research also holds promise for the fields of science, technology, engineering and mathematics because it creates a pipeline of students who are more likely to consider graduate and doctoral degrees, Washington and Snow say.

"Statewide and nationally," Snow notes, "trends show we're

not training enough people in these areas to keep up with the need. There's very clear evidence that students who do a research project are more likely to stay involved in science."

Routson is a prime example: She wants to earn a master's degree and then pursue a career in academic research.

"To me, most importantly, undergraduate research allows students to interact with some of the best graduate students in the country and with high-quality faculty on a one-on-one basis," says Washington, who himself regularly mentors students as a professor of mechanical engineering.

"A research lab is like an academic family, so I think it really helps to have someone like Rob as the advisor," Routson says. "He is both really fun and really challenging."

Siston's own undergraduate research project, which confirmed his initial interest in biomechanics, involved determining how different gaits of a dog change the distribution of the inertia about the center of mass of the body. Understanding that, he says, is important for the design and control of legged robots. Routson's efforts allow him to broaden his research to develop a scientific basis for the treatment of human movement disorders.

"When working with me," he says, "I hope students learn how exciting and rewarding it can be to apply mechanical engineering principles to the treatment of movement disorders, do some good and make a positive impact in the world."

Contact:

Robert Siston, (614) 247-2721, siston.1@osu.edu

Allison Snow, (614) 292-3445, snow.1@osu.edu

Gregory Washington, (614) 292-8486, washington.88@osu.edu