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Samantha Brown is one of the first St. Cloud State University students to win an Intramural Research Training Award. She will spend the next year or two as part of a research team with the National Institutes of Health, learning more about the careers available to her.

Biotechnology grad weighs career choices

Training award lets SCSU woman explore options in booming fields

By Amy Becker
TIMES STAFF WRITER

Having recently completed a biotechnology degree at St. Cloud State University, Samantha Brown faces a difficult decision: What to do with the rest of her life.

The university honors student isn't going to wait around for a

because they've got these products," she said.

People tend to associate biotechnology with genetic disease and gene therapies, as well as the cloning of animals. It's much broader than that, McGuire said.

Biotechnology in agriculture has lead to herbicide-resistant and viral-resistant crops on the market. Progress in understanding genes means researchers now are trying to determine which genes create flavors — one way to get picky toddlers to eat their veggies is to make broccoli taste like oranges.

year or two as part of a research team with the National Institutes of Health, learning more about the careers available to her. She may wind up as a physician or as a researcher; opportunities in this field are many and varied.

Brown is one of the first St. Cloud State students to win an Intramural Research Training Award, said biology professor Denise McGuire, her college adviser. The program will offer her one- to two-year's experience and plenty of insight into future jobs.

Brown is planning to go to medical school, but she's not sure if she'll become a physician or a researcher and teacher.

"If I don't become a doctor, I'd like to become a professor. They're both teaching and working with people, so that's important to me," Brown said.

She'll be working on genetic diseases in the National Cancer Institute laboratory of cellular oncology. She'll study gene products and their interactions in cells.

Brown is one of many predoctoral students in the NIH program. It will allow her to work with people on many career paths. And it provides professional — albeit low-paying — work experience on her way to medical school.

"It works well for the government, and it works well for us. It gives us experience, yet they don't need to pay someone at a Ph.D. level," Brown said.

"A lot of people don't want to choose this path because they know they want to go to school right away," Brown said. "(Others) choose corporations, different labs.

"The whole idea is not to stay there very long because you're going on to school."

The question is — what should she do next? She is planning to take her standardized tests this year and apply to a few medical schools.

Brown knows the field is broad. "There's a lot of different jobs because there's so much research going on."

McGuire agreed. "It's a quickly changing field," she said. Eleven years ago, most biotechnology companies were startup firms with big ideas but no products.

"Now they're becoming big names on the stock market (biotechnology) in food products," McGuire said.

Pharmaceuticals are being manufactured through engineering. The human growth hormone once was isolated from human cadavers. Human insulin once was isolated from the pancreas of dogs and pigs.

"Now you can produce it through cloning," McGuire said.

Other dramatic events are on the horizon.

By 2005 or 2010, McGuire said, industry experts predict the human genome will be sequenced.

"We will probably for the first time have a true idea of what makes up the genetic nature of disease and health," she said. "It will really change the way we look at medicine."

In addition to humans, scientists also are sequencing many other organisms, including corn, wheat, rice, soybeans, mice, bacteria and yeast.

"Certainly every industrial prediction is that this area will expand into the next century," McGuire said.

Should Brown become a physician, she will enter a rapidly changing field.

"Medicine is changing quite a bit," said Dr. James Hernandez, a pathologist in St. Cloud. "The technology itself is revolutionizing medicine."

"Some of the diseases we may not have known about, we can now use biotechnology to identify them," Hernandez said.

Technology is providing insight into diagnosing infectious disease, Hernandez said. "We can detect things earlier, and we can detect much smaller amounts."

Researchers can have a dramatic effect on people's lives, Hernandez added. "They give the vast majority of physicians the tools for the future. It's a very exciting time to be in medicine."

The range of opportunities Brown is likely to see at the National Institutes of Health doesn't necessarily make her decision easier.

"I think this will be a really good opportunity for her to see what people with a range of degrees do," McGuire said. "She's a person who could do just about anything. She just has to decide, and that can be the hard part.