

## Interns find cure for summertime blues

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# The Solon Times

# Interns find cure for summertime blues

By SUE HOFFMAN

Solon High School junior Tejas Sathe has been featured in a new Web-based video on the work of young scientists at the Cleveland Clinic.

Entitled "MRI: My Research Illuminated," the program showcases groundbreaking research undertaken by Northeast Ohio high school students during summer internships at the Cleveland Clinic. The "world premiere" of the segment featuring Tejas took place recently in Solon High School's lecture hall. All five segments, each featuring a different high school intern, were produced in question-and-answer format by summer interns Annette Drapac, of Midpark High School in Middleburg Heights, and Kaleigh Eichel, of Strongsville High School.

Donning his white coat, Tejas gives viewers a tour of the laboratory and explains his research on the effect of cigarette smoke on the blood brain barrier, a dynamic interface that regulates what goes into the brain. During his internship, he studied endothelial cells which line the capillaries inside the brain. The cells were grown in the laboratory.

"These cells are strict regulators of what can enter or exit the brain from the blood stream," Tejas said. He also studied astrocytes, which nourish and support the neurons in the nervous system.

"We used vitamins C and E, which are anti-oxidants, to see if they protect the cells from oxidants in the cigarette smoke," Tejas said.

In the video, Tejas shows pictures of endothelial cells subjected to smoke, and many were dead. He said he saw the most improvement from vitamin E in protecting the cells from the cigarette smoke.

"We need to run more tests," said Tejas, who spent nine weeks working with Luca Cucullo, lab manager of the Cleveland Clinic's cerebrovascular research center. Dr. Cucullo, who has his doctorate in biotechnology and pharmacology from the University of Pisa in Italy, has been studying the disruption of the blood-brain barrier and the effects of cigarette smoke and fine particle exposure on endothelial cell function.

"From these studies, we'll move into artificial models of the blood-brain barrier," Tejas said. If the blood-brain barrier becomes leaky, it can cause dis-

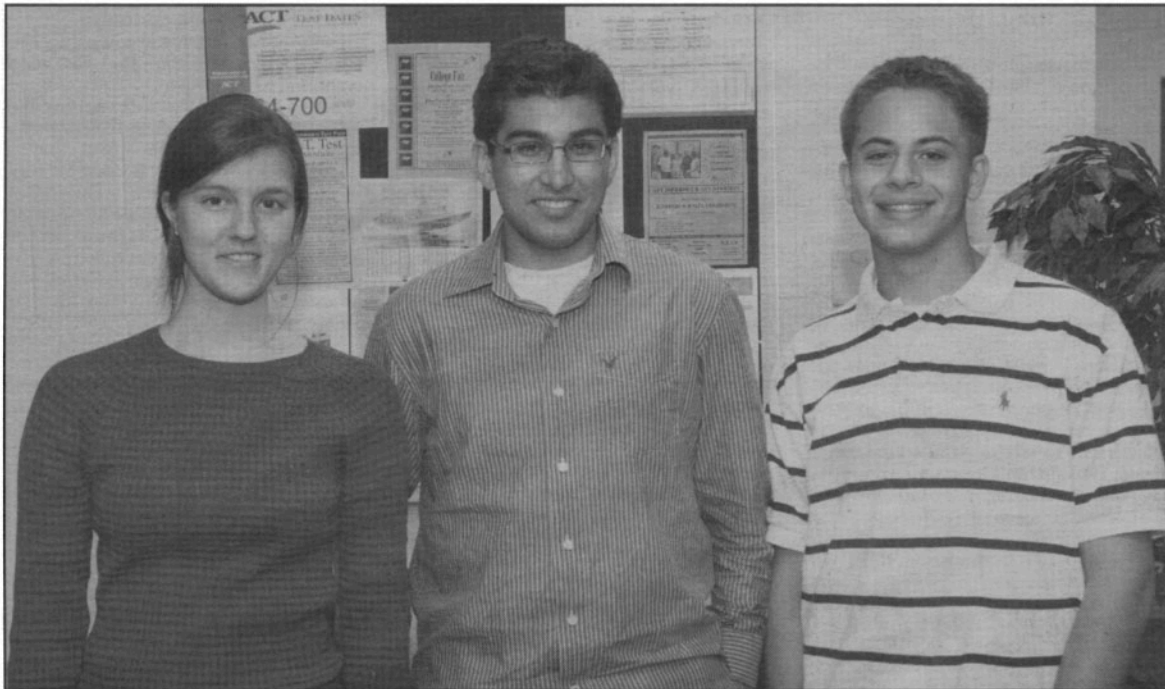


Photo by Itamar Gat

Solon High School students Tiffany Kaul (from left), Tejas Sathe and Alex Chaitoff worked as interns at the Cleveland Clinic last summer.

eases such as epilepsy, he said.

For Tejas, the laboratory investigations were exactly what he wanted to do last summer, he said. "I have a strong interest in science and biology and wanted to get research experience."

Tejas is one of three Solon High School juniors who worked as interns at the Cleveland Clinic last summer. The others were Tiffany Kaul and Alex Chaitoff. All three of the students are members of Solon High School's Science Olympiad team.

"I became interested in this internship when I learned it was an opportunity to work hands on in a real research and clinical environment," Tiffany said. "I want to go into medicine and, hopefully, be a surgeon who does research projects on the side. This was my first job, and, as far as first jobs go, I think it's got to be one of the most interesting and exciting out there. I got to see surgery, work with modern technol-

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# Interns find

ogy and come up with quantitative results on real-life problems.”

Tiffany said she studied the questions: “Do asthmatics differ in antioxidant amounts compared to non asthmatics? Does this make the effects of the disease worse?”

She worked in the laboratory with Suzy Comhair, a Ph.D. research scientist, and Dr. Serpil Erzurum, who chairs the pathobiology department at the Lerner Research Institute. Their research found that the antioxidant glutathione increased in asthmatics. The research involved testing three groups of people: a healthy control group, those with non-severe asthma and those with severe asthma.

Alex Chaitoff’s project involved the accuracy of factors used in assessing the progression of expressed heart failure symptoms.

“I became interested in this topic while studying for Science Olympiad,”

Alex said. “There, I learned the anatomy of the heart and its basic function.” After taking Advanced Placement biology, he said, he knew he wanted to study more cardiology.

“Specifically, my project dealt with the accuracy of two factors on the expressed symptoms of congestive heart failure: ejection fraction, the physical performance of the heart, and the hemoglobin level found in the blood,” Alex said.

“The purpose of identifying which of these two variables most affected a patient’s quality of life is that once known, treatments can be given to patients that target those specific factors. My study provided the statistical data that supported the claim that kidney failure, which leads to reduced erythropoietin levels which causes a shortage of hemoglobin, does actually affect the symptoms expressed by heart failure patients more than the actual function

of the heart.”

The study was conducted at Cleveland Clinic’s Hillcrest Hospital heart-failure clinic. Alex’s medical adviser was Veronica Sumodi, clinical nurse specialist, and mentor was Hal Kominsky, a student at the University of Michigan.

The internships were designed to increase high school students’ interest and literacy in science by expanding their learning experiences beyond the classroom. The nine-week internships provide “an opportunity to advance

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learning” and engage in “peer-to-peer learning,” said Rosalind G. Strickland, senior director of the Cleveland Clinic’s office of civic education initiatives.

The Cleveland Clinic has also conducted the Health Expressions program, which uses the arts to engage high school students in the world of scientific research. Last year, four Solon High School students, Holly Miller, Arielle Scott, Matthew Wissing and Chelsey Allen, received awards for their artwork in the program.