Bellevue edition **Pages 1-2:** Bellevue & West Davidson news **Pages 3-8:** News from other neighborhoods

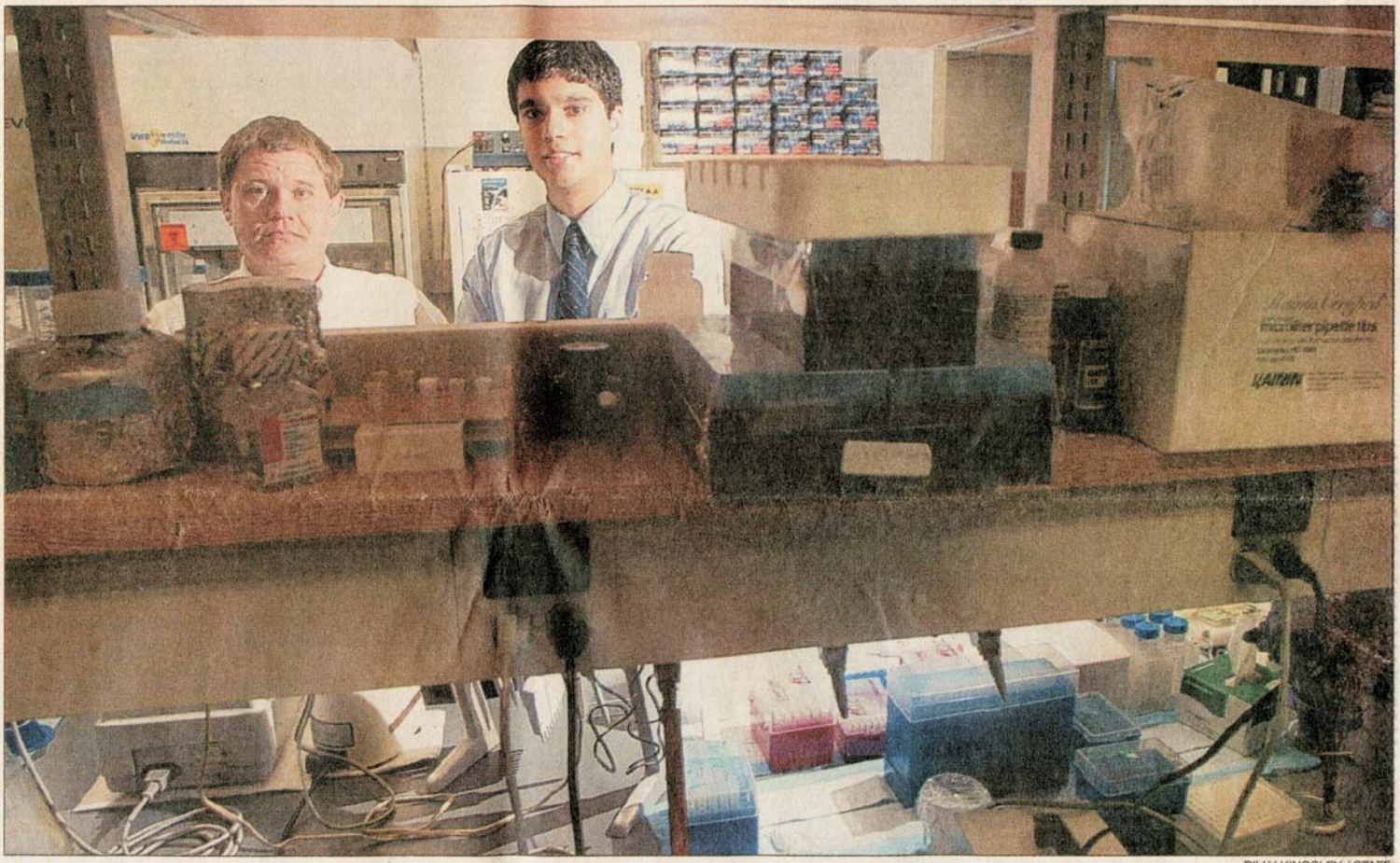
THE TENNESSEAN

DAVIDSON A.M.

WEDNESDAY, NOVEMBER 24, 2004

EDUCATION

Hume-Fogg senior recognized in science contest



BILLY KINGSLEY / STAFF

Rohan Pai, right, has been named one of two state semifinalists in the prestigious Siemens Westinghouse Competition in Math, Science & Technology. The Hume-Fogg senior has worked with Professor Eric Delpire, left, in his lab at Vanderbilt University for more than a year.

16-year-old from Bellevue was one of two semifinalists from state

By SUZANNE NORMAND BLACKWOOD
Staff Writer

BELLEVUE — Bellevue resident Rohan Pai, 16, has been interested in science for as long as he can remember.

"But there's always the question of whether this is something I want to do for the rest of my life," he said.

After spending more than a year working with Dr. Eric Delpire in his lab at Vanderbilt University, Rohan said he's sure this is what he wants for his future.

Rohan recently completed a science project for the Siemens Westinghouse Competition in Math, Science & Technology. The contest is among the most prestigious high school science competitions in the country.

Rohan, a senior at Hume-Fogg Academic Magnet School, was one of two semifinalists from Tennessee. Although he was not a regional finalist, being a semifinalist is quite an accomplishment said Marie Gentile, spokeswoman for the Siemens Foundation.

Out of 1,037 entries, only 268 were chosen for the regional competitions. The final competition will be Dec. 3-6 in Washington, D.C.

"I worked on this particular project for about a year," Rohan said.

The rest of the time, he said, he has been working with Delpire.

Delpire, also a Bellevue resident, said his lab is working with "the movement of salt and fluid across biological membranes."

This movement of ions and water is "mediated" by specific proteins embedded in these biological membranes, he said. A multitude of proteins, he added, can alter the transport of ions, and Rohan's work focused on the characterization of one of these "regulatory" proteins.

Delpire said the transport processes serve multiple functions, ranging from salt and fluid absorption and secretion in the lungs, stomach, intestines and kidneys to nerve transmission.

"I was working with a group of proteins that are responsible for moving chloride ions into cells," Rohan said.

"They are responsible for making sure cells are taking in and releasing chloride at appropriate times. This movement of chloride is responsible for regulating the size or volume of a

▶ Please see **AWARD, Page 2**

Award: Hume-Fogg senior recognized in science contest

FROM PAGE 1

cell and for regulating the concentration of significant body fluids, such as cerebrostitial fluid in the brain."

Specifically, Rohan said, "I was looking at an enzyme that's responsible for activating the protein. I found that there are two sizes of this enzyme."

"My project was to prove that these two sizes exist naturally in the body — two different forms of the same protein."

Delpire said this research "has relevance to several human diseases," including salt wasting disorders, or sodium imbalances, hypertension, nerve degeneration and epilepsy.

"We're trying to expand the basis of knowledge about how proteins work," Rohan said.

He said basic research like this lets clinical researchers look at why diseases progress the way they do and helps pharmaceutical companies develop medications to treat them.

"No one has done this work before, so we didn't know what the results were going to be," Rohan said.

While working on the project, Rohan said he would regularly spend two hours in the lab each morning before school and two to three hours after school.

Because of the many approaches to this type of research, it can be very time consuming, he said. There also was some problem solving that he didn't anticipate.

But Rohan said that's the part he enjoyed most — "learning how to think scientifically and analyze problems in various ways to find solutions to circumvent the problems."

Rohan said he became interested in the field of neuroscience after taking an Advanced Placement biology class at his school.

He's also been in a few science fairs and even did an environmental science project for one of the fairs.

The project, which combined environmental chemistry with biochemistry, involved finding alternative fuel sources that can be created by using bacteria as a catalyst to decompose natural waste. David Wilson, a retired Vanderbilt professor, was his mentor for that project.

Rohan described his recent project as "a progression I enjoyed and that developed as my interests grew."

He said he found out about Delpire through his sister, Anita, who was paired with a Vanderbilt professor while she was in high school.

"I found Dr. Delpire's work to be very interesting," Rohan said. When he told Delpire he wanted to enter the competition, "we discussed possible projects I could pursue in the time I had."

Rohan is vice president of his school's student government association. He plays the clarinet and is coordinator of KIN Day, a volunteering initiative at his school. He is a National Merit semifinalist and an AP scholar with distinction.

Rohan said he had to be careful to keep a steady balance between his research and other activities he enjoys.

He credits his science teacher at Hume-Fogg, Brenda Royal, and his mother, Padma, with helping him stay focused.

"She motivated me to keep working when it got frustrating," he said about Royal. "She was the one who was really influential in getting me started in research."

His mom, he said, is the "one who keeps me grounded to make sure I don't become a slacker." Also, he said, "She's a sounding board for a lot of my ideas."

As for helping him maintain a balance, Rohan said his mom is responsible for that.

She encourages him to explore life outside of research, taking him from the lab to clarinet lessons to student government meetings and to tennis matches.

"She makes sure I enjoy all the other parts of my life, too," he said.

Describing his student, Delpire said Rohan is "extremely bright. He's extremely fast. He's very committed. He's independent. He's altogether a great kid."

Delpire said he worked with a high school student on another occasion but not to the extent he has worked with Rohan. He said Rohan is doing work that would be considered between undergraduate and graduate level. He said he has acquired skills "that are unusual for his age group."

Rohan said he's not sure yet whether he would like to study medicine, but that's something he is certainly considering. His grandfather Ramesh Pai, his father Ram and several of his uncles are all physicians. His sister is a pre-med student at Duke University.

"I'm really interested in patient care, but I'm also interested in research," Rohan said.

But now, he said, it's much easier to combine the two. Hospitals are on the cutting edge of research, and doctors are working more closely with clinical specialists.

But Rohan said the work he has done was not about winning the competition, or even, necessarily, getting a head start on a career.

It was kind of an experiment on another level, he said.

"This is more of a discovery of my own interest. The experience is about learning." ■