

Local students dominate statewide Science Symposium

On a warm, sunny day you may find Yajit Jain outside playing Ultimate Frisbee with his friends. But on any given day, you will probably find him crunching numbers in a laboratory or in his room.

The junior at Oak Ridge High School beat out 30 other students from across the state to win the top spot at the recent 45th Tennessee Junior Science and Humanities Symposium held at the University of Tennessee, Knoxville.

His project, "Electric Field Calculation for Fluid Simulation," earned the student a \$2,000 college scholarship and a spot to compete in the National JSHS held in Bethesda, Md., April 28 through May 2. If Jain wins in the national competition, he will then compete in the International Youth Science Forum this summer in London.

A panel of UT-Knoxville science and engineering



Yajit Jain

faculty members agreed Jain's research, which focused on using mathematical and computational methods to model the effects of an electrical field on the break-up of fluid particles, was the most impressive.

"The paper stood alone in terms of the sophistication of the approach and the excellent grasp that the researcher displayed on complex mathematical and computational modeling," said Dan Roberts, di-

rector of the Tennessee JSHS and professor of biochemistry and cellular and molecular biology.

Jain worked with mentor Leonard Gray at Oak Ridge National Laboratory to develop an algorithm for how an electric field affects fluid, specifically how the drop is formed. Jain hopes this knowledge will aid advancements in the areas of research and industry.

"There are many applications where this knowledge is useful such as DNA sequencing and drug delivery systems," Jain said. "It sounds quixotic, but I want whatever research I am involved in to somehow help people. Some of the applications of my research have this potential, and that makes it exciting."

Jain intends to become a researcher, most likely in mathematics.

Students from Farragut High School took the other top two spots.

Niral Sheth's project, "Understanding Cardiac Arrhythmias through Cellular Automata" focused on the computational modeling of the heart arrhythmias. Sheth's second-place award earned him a

\$1,500 college scholarship.

Ariel Buehler's project, "Effectiveness of RT-PCR for Detecting the Presence of *Listeria monocytogenes*, a Food-borne Pathogen" worked on methods of copying DNA sequences to detect small amounts of bacteria in food. Ariel's third-place award earned her a \$1,000 college scholarship.

Lillie Brown of Cleveland High School and

Ashley Fugua of Greenbrier High School received honorable mention awards.

The judges said all of the winners were distinguished by their senior graduate student level of research, their deep understanding of the project and agility in answering questions from the faculty panel. The top five finishers will serve as the student delegation from Tennessee at the National JSHS.

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