

Fauquier County Public Schools

News Release

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FCPS STUDENT A SEMIFINALIST IN NATIONAL SCIENCE FAIR COMPETITION

Joe Barrett, a freshman at Fauquier High School, has been selected as a semifinalist in a national competition for middle school science fair winners – [Broadcom MASTERS](#) (Math, Applied Science, Technology and Engineering for Rising Stars). As an eighth-grader at Marshall Middle School last year, Joe won second place in the junior division of the Fauquier County Regional Science & Engineering Fair March 14 for his project “Biomass Energy: Garbage In - Gas Out,” qualifying him for the national competition.

Joe said that when he received an email from Broadcom MASTERS, the first thing he saw was “Congratulations!”

“I could not believe that I made the semifinalists, and I felt very excited and happy and thrilled. I texted my family immediately,” he said.

Joe is one of 300 students out of 2,230 entrants chosen for the Broadcom MASTERS honor; the next step takes place on Sept. 2 when 30 finalists will be selected from the 300 semifinalists. Finalists will receive an all-expenses-paid trip to Silicon Valley, CA, to attend the Broadcom MASTERS Finals Week competition Oct. 1-7 to showcase their science fair projects and compete in a four-day STEM competition for awards and prizes, including the top education award of \$25,000 presented by the Samuelli Foundation.

Joe’s science project addressed the question “Will using different mixtures of biomass create different amounts of biogas?” The then-eighth grader hypothesized that if different types of biomass – such as cow dung, bananas, dog dung, vegetables and pine needles – were used for a period of 12 days in a homemade biogas generator, then the mixture of cow dung with bananas would create the most biogas.

The Delaplane resident explained why he pursued the idea: “I have always been very interested in renewable energy,” he said, “and my research identified that biogas is the least used renewable energy source. I did this for my project because it needs to be further developed and improved.” Joe’s research and trial data concluded that, indeed, it is possible to produce different amounts of biogas using different biomass materials and that the mixture of cow dung with bananas did create the most biogas.



Placing second in the local science fair for his biomass energy project also won Joe the opportunity to attend the Virginia State Science and Engineering Fair in Lexington in late March as a middle school observer. He garnered further recognition when he spoke about his experience to the Warrenton Town Council at the invitation of Councilman Jerry Wood.

Vineeta Ribeiro, mathematics teacher at Warrenton Middle School and director of the Fauquier County Regional Science & Engineering Fair, said Joe’s depth of thought is reflected in his work.

“I think Joe’s success can be attributed to his interest in the subject and to his dedication and meticulousness in the execution of his experiment,” she said. “The experts who reviewed the projects were no doubt impressed by his excellent project design, careful control of variables, and the repeated trials. In his abstract, Joe not

only acknowledges the limitations of the experiment, but also considers how he might improve and extend his work. It’s this type of thinking that is so valuable in the real world of science and engineering!”

As a Broadcom MASTERS semifinalist, Joe, son of Dan and Denise Barrett, will receive an award ribbon,

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semifinalist certificate of accomplishment, Broadcom MASTERS backpack, a Broadcom MASTERS decal, a one-year family digital subscription to *Science News* magazine, and a one-year subscription to Mathematica+, courtesy of Wolfram Research. In recognition of the role teachers play in the success of their students, each semifinalist's classroom will receive a collection of Sally Ride Science Career Books courtesy of Deloitte.

Joe is already thinking about how his research might benefit the future.

"Maybe one of the first consumer uses could be a home garbage disposer. I think that research will identify biogas can be made quicker and become a profitable renewable energy source," he said.

While Joe obviously enjoys and excels in science, math is his favorite subject. As a freshman at Fauquier High, he has joined the golf team and hopes to be part of the student council, Spanish club, math club and rocket club. His hobbies include golfing, fly fishing, biking, tennis and hiking, and he hopes one day to become an orthodontist.

As director of the regional science fair, Ms. Ribeiro said she is thrilled that Joe's project was chosen as a semifinalist.

"He has brought honor to Fauquier County in the national arena, and we have our collective fingers crossed in hopes that he will be among the 30 finalists for the October weeklong competition in Silicon Valley."



Photos at the Fauquier County Regional Science & Engineering Fair by Fauquier Fotos



At left, Joe Barrett addresses the Warrenton Town Council about his science fair experiences.