

Tortoise-Studying Teen Takes Broadcom Prize

by [Sid Perkins](#) ^[1]

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WASHINGTON — Even a tortoise enthusiast can speed through a three-day gauntlet of science, engineering and math challenges to claim victory. River Grace, 14, from West Melbourne, Fla., did just that. At an awards ceremony Oct. 1, he picked up the top prize — an educational award of \$25,000.

The teen was one of 30 finalists from 17 states who came to Washington, D.C., for the third annual Broadcom MASTERS competition. (MASTERS stands for Math, Applied Science, Technology and Engineering for Rising Stars.) The Samueli Foundation, a nonprofit organization created by Broadcom cofounder Henry Samueli, provided River's winnings. Nine additional finalists took home major cash awards or funding to attend a science camp of their choice.

The Broadcom Foundation and Elmer's Products together provided more than \$500,000 in awards for this year's Broadcom MASTERS participants, including finalists, semifinalists, their teachers and schools.

"I had no idea I'd win this," said River. "Any one of us could have won, we were all so deserving."

Although finalists qualify on the basis of a middle-school science fair project, Broadcom MASTERS is not a science fair. A student's entry project will, in fact, account for only about one-quarter of his or her eventual score.

River's entry project described an unusual swaying behavior in an endangered species of tortoise. The animals lived at a captive breeding facility where he volunteers. In a project he called "The Rain Dance of the Radiata," the teen observed how the tortoises rise up on their legs and sway back and forth whenever it rains. At first, he thought the strange behavior might help the tortoises better avoid drowning during flash floods, which sometimes occur in their native Madagascar. (It's an island nation off Africa's southeastern coast). River conducted tests that disproved that notion. However, he notes, the true purpose of that swaying dance remains unknown.

The rest of River's winning score reflected his performance in a series of science challenges. During a two-day stretch, judges in the contest divided the finalists into five-member teams.

Each team designed, built and tested everything from electrical circuits to models of wind turbine blades, roller coasters and tall buildings. Other, less hands-on tasks included analyzing data to figure out the cause of a massive fish kill. They also deciphered which parts of stone carvings left by the Maya denoted numbers representing dates of important events.

Eitan Acks, 14, of San Diego, Calif., came in second place, earning the Marconi/Samueli Award for Innovation. This includes a cash award of \$10,000. The teen's younger brother has a medical condition called dyspraxia. A lack of muscle tone in his face and tongue makes it hard for him to speak clearly. This inspired Eitan to design several versions of a device to help strengthen those weaker-than-normal muscles.

By attaching a tongue depressor to a joystick, the teen developed a way to exercise a patient's tongue and facial muscles. At the same time, the device collects data to chart its user's progress. Such data collection is often missing from current speech therapy, he says. By using the device regularly, Eitan's brother showed steady improvement in muscle strength.

This year's crop of finalists included 14 girls and 16 boys. They tackled a variety of topics. One boy analyzed ways to boost the performance of wind turbine blades (hint: make them look more like a whale's fins). One girl studied how moving air through a beehive cools it and improves the health of bees (which then make better honey). Another boy made a device that duplicates specific scents by releasing mixtures of chemicals (smell-o-vision, anyone?).

STEM awards

Eight finalists earned first- or second-place awards in four different areas: science, technology, engineering and mathematics. Collectively, these fields are abbreviated as STEM. These first- and second-place awards (worth \$3,500 and \$2,500 respectively), are to help cover the costs of attending a STEM-oriented camp of each winner's choice. All of these STEM winners also take home an iPad.

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