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## **NATION'S TOP SCIENCE PRIZE FOR HIGH SCHOOL STUDENTS GOES TO MATHEMATICS AND BIOINFORMATICS RESEARCH**

### **2006-07 SIEMENS COMPETITION IN MATH, SCIENCE & TECHNOLOGY WINNERS ANNOUNCED**

Dmitry Vaintrob of Eugene, Oregon, Wins \$100,000 Individual Prize;  
Scott Molony, Steven Arcangeli and Scott Horton of Oak Ridge, Tennessee,  
Win \$100,000 Team Prize

NEW YORK, NY, December 4, 2006 – Mathematics and bioinformatics won top honors for Dmitry Vaintrob and the team of Scott Molony, Steven Arcangeli and Scott Horton in the 2006-07 Siemens Competition in Math, Science and Technology, the nation's premier high school science competition. The Siemens Competition, a signature program of the Siemens Foundation, is administered by the College Board. The awards were presented this morning by U.S. Secretary of Education Margaret Spellings at New York University, host of the 2006-07 Siemens Competition national finals.

Dmitry Vaintrob, a senior at South Eugene High School in Eugene, Oregon, won the \$100,000 Grand Prize scholarship in the individual category for exciting research in an abstract new area of math called string topology. Scott Molony, Steven Arcangeli and Scott Horton, seniors at Oak Ridge High School in Oak Ridge, Tennessee, won the \$100,000 prize in the team category, which they will share equally, for developing a promising technique that could one day help scientists engineer biofuel from plants.

“The sheer talent and ingenuity of these remarkable young people never fails to amaze me,” said Thomas N. McCausland, chairman of the board of the Siemens Foundation. “These young science stars are solving tomorrow's problems today.”

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“These students represent the best of America’s spirit of entrepreneurship and innovation. They’re terrific role models for all of us, and I hope students around the country will be inspired to follow their lead,” said U.S. Secretary of Education Margaret Spellings.

The national finals were judged by a panel of nationally renowned scientists and mathematicians headed by lead judge Dr. Kathryn Thornton, a former astronaut and Professor and Associate Dean, School of Engineering and Applied Science, University of Virginia. Twenty students competed in the national finals, including six individuals and six teams. The national finalists previously competed in a series of regional competitions held at six leading research universities over three consecutive weekends in November.

### **The Winning Projects**

Dmitry Vaintrob’s project, *The string topology BV algebra, Hochschild cohomology and the Goldman bracket on surfaces*, is in the exciting new mathematical field of string topology. With a focus on mathematical shapes, Mr. Vaintrob’s work offers insights which are universal and applicable in any field. His research could provide knowledge which mathematicians and physicists might apply to understand the fundamental forces of nature: electricity, magnetism and gravity. His mentor was Pavel Etingof, MIT Professor of Mathematics.

“Mr. Vaintrob found a very beautiful formula for describing the way shapes combine in string theory,” said competition judge Dr. Michael Hopkins, Professor of Mathematics, Harvard University. “His work is at the PhD level, publishable and already attracting the attention of researchers.”

Mr. Vaintrob was initially introduced to his research by Dr. Etingof, who proposed a problem that came out of his own recent work. “It was an insanely difficult problem, which he solved within weeks and then came up with an important additional development,” continued Dr. Hopkins. “This brilliant young mathematician showed amazing maturity and perspective, which would be surprising in a graduate student, let alone a high school senior.”

Mr. Vaintrob is hoping to translate a lifelong fascination with mathematics into a career teaching on a college level. His project is the latest example of mathematic problem solving that has been encouraged by his parents since childhood. Mr. Vaintrob volunteers in two libraries, in his high school and the mathematics library at the University of Oregon. He is also the organizer of the math club in his school. A pianist, Mr. Vaintrob enjoys reading classical literature and carrying on the Russian tradition of memorizing poetry. He is fluent in Russian, French and English.

In their winning team project, *Linking Supercomputing and Systems Biology for Efficient Bioethanol Production*, Scott Molony, Steven Arcangeli and Scott Horton contribute to a growing body of research on creating microorganisms that can produce alternative fuels.

“This team used supercomputers to analyze biological networks, looking at tens of thousands of genes and their biological pathways to discover clues for engineering direct biofuel production by microorganisms,” said competition judge Dr. Gary Benson, Associate Professor, Department of Computer Science, Department of Biology, Director of Graduate Studies Program in Bioinformatics, Boston University. “Through a real team effort and a sophisticated, interdisciplinary approach, they developed a promising method that takes us a step closer to engineering biofuel.”

Based partly on the team’s work, the Oak Ridge National Laboratory received a major grant to continue this research. The team’s mentors were Dr. Nagiza Samatova, Mr. Chris Symons, Dr. Byung-Hoony Park, and Dr. Tatiana Karpinets, all with Oak Ridge National Laboratory.

Scott J. Molony is a member of his high school cross-country team, editor-in-chief of the school literary magazine, and a varsity member of the Scholar’s Bowl Academic Team. Possible college majors include philosophy/theology, Japanese and mathematics.

Steven Arcangeli was a finalist in the National Chemistry Olympiad last year. His high school team finished 20th nationally in the National Science Olympiad. Mr. Arcangeli is a member of the National Honor Society, Math Club and Science Club. He expects to major in materials engineering in college.

Scott Horton became interested in science because of his parents, who both work at Oak Ridge National Laboratory. He was a member of the second place regional team in the Physics Bowl and plans to major in engineering in college. He aspires to work in a laboratory.

The other national winners of the 2006-07 Siemens Competition were:

### **Individuals**

- \$50,000 scholarship – Madhavi Gavini, Columbus, Mississippi
- \$40,000 scholarship – Arjun Ramamurti, Lexington, Massachusetts
- \$30,000 scholarship – Dominic Ludovici, Morgantown, West Virginia
- \$20,000 scholarship – Guannan (Roger) Wang, Horseheads, New York
- \$10,000 scholarship – Elizabeth Monier, San Antonio, Texas

### **Teams**

- \$50,000 scholarship – Lucia Mocz and Philip Mocz, Mililani, Hawaii
- \$40,000 scholarship – Sagar Indurkha and Nicholas Tang, Durham, North Carolina

- \$30,000 scholarship – Jinju Yi, Plainview, New York and Vijay Jain, New Hyde Park, New York
- \$20,000 scholarship – Jenny Yeh, Houston, Texas and Mary Catherine Wen, Queens, New York
- \$10,000 scholarship – Catherine McCarthy, Lily Roberts and Rochelle Rucker, Shaker Heights, Ohio

### **The Siemens Competition**

The Siemens Competition was launched in 1998 to recognize America's best and brightest math and science students. This year, 1,660 students entered the competition.

Entries are judged at the regional level by esteemed scientists at six leading research universities which host the regional competitions: Carnegie Mellon University (Middle States), University of Notre Dame (Midwest), Stanford University (West), Massachusetts Institute of Technology (New England), Georgia Institute of Technology (South), and The University of Texas at Austin (Southwest).

### **The Siemens Foundation**

The Siemens Foundation, established in 1998, is a national leader in math and science education, providing nearly \$2 million in scholarships and awards annually. Based in Iselin, New Jersey, the Foundation's signature programs – the Siemens Competition in Math, Science & Technology, the Siemens Awards for Advanced Placement, and the Siemens Teacher Scholarships – recognize exceptional achievement in science, math and technology. By supporting outstanding students today, and recognizing the teachers and schools that inspire their excellence, the Foundation helps nurture tomorrow's scientists and engineers. The Foundation's mission is based on the culture of innovation, research and educational support that is the hallmark of Siemens' U.S. operating companies and its parent company, Siemens AG. For more information, please visit [www.siemens-foundation.org](http://www.siemens-foundation.org).

**NOTE TO EDITORS:** Photos and b-roll of winners is available upon request.

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