

REPUBLIKA NG PILIPINAS  
 REPUBLIC OF THE PHILIPPINES  
**KAGAWARAN NG EDUKASYON**  
**DEPARTMENT OF EDUCATION**  
 DepED Complex, Meralco Avenue Pasig City, Philippines

*Tanggapan ng Kalihim*  
*Office of the Secretary*

JUN 21 2004

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DepED MEMORANDUM  
 No. 263, s. 2004

**WINNING SCIENCE INVESTIGATORY PROJECTS AT THE INTEL  
 INTERNATIONAL SCIENCE AND ENGINEERING FAIR (ISEF)**

**To:** Undersecretaries  
 Assistant Secretaries  
 Bureau Directors  
 Regional Directors  
 Schools Division/City Superintendents  
 Heads, Public Elementary and Secondary Schools

1. The Department of Education (DepED) joins the Department of Science and Technology (DOST) and Intel Technology Philippines, Inc. in congratulating Filipino student awardees and their advisers at the Intel International Science and Engineering Fair (ISEF) held in Portland, Oregon, USA on May 10-15, 2004. Enclosed is the ISEF Philippine Delegates Profiles.

2. The Intel International Science and Engineering Fair (ISEF) is the world's largest science fair that brings together more than 1,200 young science students from more than 40 countries. The Department takes pride in the honors and awards that the following students brought to the country and to the education system:

**First Place from the American Veterinary Medical Association, and Fourth Place in the Grand Award for Medicine and Health**

Name	School	Project	Category
Joy Anne L. Aquino	E. Rodriguez, Jr. HS, Quezon City	Microbial Assay of the Yellow-Lipped Sea Krait ( <i>Laticauda colubrine Schneider</i> ) Venom	Medicine and Health

**Third Place, Grand Award, Team Category**

Name	School	Project	Category
Anne Margrette C. Velasquez Ma. Katrina D. Rivera Allan Ray E. Gonzales	Manila Science HS, Manila	Development of a Chemically-Modified Carbon Paste Electrode From Green Mussels ( <i>Perna viridis</i> ) for the Analysis of Lead (II) Through Voltammetry	Chemistry


**Fourth Place, Grand Award, Team Category**

Name	School	Project	Category
Jayson Reggie T. Obos Melanie C. Melchor Trina G. Napasindayao	Quezon City Sci. HS, Quezon City	A Simple, Rapid and In-expensive dissolved Oxygen Determination of Wastewater Samples Using the Tube Bioluminescence of Vibrio fisheri (Lumos)	Environmental Science

3. This Department likewise congratulates the other national winners:

Name	School	Project	Category
Anna Kristina B. Bautista	Phil. Science HS, Quezon City	Bioactivity of Crude Prodigiosin Extract from <i>Serratia</i> <i>Marcescens</i>	Microbiology
Mark Leo P. Bejemino	Philippine Science HS, Iloilo City	Ionic Motor Set-Up: Experimental Verification of the Muriel Dresden Microscopic Theory of Turbulence	Physics (Applied Science)
Domingo C. Vargas, Jr.	C. M. Recto HS, Manila	Detoxification of 1- Naphthol-N-Methyl Carbamate in Soil & Water by a Strain of <i>Psuedomonas</i> sp	Environmental Science

4. Wide dissemination of this Memorandum is desired.

  
EDILBERTO C. DE JESUS  
Secretary

Encl.: As stated  
Reference: None  
Allotment: 1—(D.O. 50-97)  
To be indicated in the Perpetual Index  
under the following subjects:

CONTESTS  
STUDENTS  
Learning Area, SCIENCE

reyaba/mppd/isef  
6/7/04

Intel Technology Philippines, Inc.  
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## News Release

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## **FILIPINO STUDENTS WIN MAJOR AWARDS AT THE INTEL INTERNATIONAL SCIENCE AND ENGINEERING FAIR**

*US\$3 million in scholarships and prizes were awarded at the Fair*

Seven Filipino students won major awards at the Intel International Science and Engineering Fair, the world's largest pre-college science competition showcasing the world's most promising young scientists and inventors.

"A passion for science and mathematics ensures that many of these Intel ISEF finalists will become tomorrow's great scientists and innovators," said Intel CEO Craig Barrett. "As these students complete their education and move into the workforce, I hope they will collaborate across national boundaries to help cure diseases, protect the environment and develop breakthrough technologies that may one day change the world."

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Langberg, 17, won a top prize for her Earth and Space Sciences project titled, "Petrology, Morphology and Geochemistry of the Southern Juan de Fuca Ridge." Langberg conducted chemical investigations, ran a mathematical simulation and studied video footage from the ocean floor in her effort to explain the distinct features that characterize one of the earth's most active volcanic regions.

Treske's top prize resulted from his Physics project titled, "Low-cost Scanning Tunneling Microscope." To develop an inexpensive but powerful microscope that delivers an improvement in resolution over a normal light microscope, Treske, 18, used common materials such as a tungsten filament from light bulbs, recycled Styrofoam blocks and a standard PC sound card for digitizing the measuring signal.

Zhu, 19, won a top prize for his Computer Science project titled, "Real-Time Remeshing With Optimally Adapting Domain: A New Scheme for View-Dependent Continuous Levels-of-Detail Mesh Rendering." Zhu developed a method for generating high-quality, three-dimensional computer graphics that improves the level of detail while speeding up the time required for rendering precise images.

More than 500 students received scholarships and prizes at the Intel ISEF. Sponsored by Intel since 1997, the ISEF is the biggest gathering of youth science and math enthusiasts from all around the globe. The students that competed in Portland this year emerged from a worldwide field of several million science fair participants during the past academic year. They then went on to compete with over 65,000 students at more than 500 regional Intel ISEF-affiliated science fairs around the world to win the right to attend the Intel ISEF.

Intel's sponsorship of the Intel ISEF is part of the Intel® Innovation in Education initiative, a sustained commitment – in collaboration with educators and government leaders worldwide – to help prepare students to succeed in a knowledge-based economy.

of the fair, committing millions of dollars to develop and promote the program and increase the number of awards. This year Portland, Oregon will host a record number of participants – 1,429 finalists from 542 affiliated fairs across the globe.

### **Impacting Lives – The Ripple Effect**

Many science fair participants go on to achieve great success in scientific, medical and technical careers. Pete Kissinger developed the electromechanical technologies that are used in consumer glucose monitors by 16 million diabetics; Joseph Ungari became senior director of Advanced Research and Development at Nike; Ray Kurzweil received that National Medal of Technology and was inducted into the National Inventor's Hall of Fame for numerous innovations including the Kurzweil Reading Machine which scans and reads printed material for the blind; and aerospace engineer and novelist Homer Hickam became a household name with the publication of his memoir *Rocket Boys* and the subsequent major motion picture *October Sky*.

Many participants go on to become science teachers themselves, having been inspired by a mentor during their science fair years. Distinguished biology professor Don Linzey was twice named Virginia Professor of the Year; Malcolm Brown, Jr. holds the Johnson & Johnson Centennial Chair in Plant Cell Biology; Kristian Sandberg teaches applied mathematics at the University of Colorado; and Hiroko Hasegawa accompanies her high school students to ISEF from Japan.

Many others go back to organize local fairs or serve as judges to give today's students the opportunity to experience the excitement they felt. Larry Chick, of the Mid-Columbia Regional Science Fair recalls, "I remember waking up one morning, after working on my project until late the previous night, and realizing that I knew something that no one else had yet known. It was the thrill of discovery. I hope the science fairs I've helped organize as an adult have stimulated that thrill for a few other kids." For Bill Cordova, finalist from 1989 and co-chairman of the 2007 Intel ISEF, it's a way to bring his career back to where it started. "After seeing my first science fair, and then competing, I decided one of my goals would be to bring the fair back to New Mexico to help students do what I did. It's a fulfilling thing to come full circle. It does change lives, and not for just the ones who win."

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Cordova adds, "Being brought up in the scientific method is one of the best ways to help kids become critical thinkers. A small number may become scientists, but others will do other things with their lives."

Kathryn Hedges reminds us of the ripple effect possible when students are challenged, encouraged, and given the opportunity to explore.

I don't know that any of the students that I am presently working with will ever become a great scientist but the science fair is making a great difference in the lives of these students and in the community in which they live. The community is impoverished and only about 40% of the parents in the community graduated from high school. The first student who won a chance to go to the international science fair had been expected to drop out of school. The community is beginning to recognize that their children are capable of doing more and gradually, one student, or maybe two at a time, the science fair is providing the opportunity for students to see beyond where they are now and into the future.

**Intel International Science and Engineering Fair  
Major Awards 2004\***

**Intel Foundation Young Scientist Award**

The top three finalists each receive a \$50,000 college scholarship.

**Seaborg Stockholm International Youth Science Seminar (SIYSS) Award**

Three finalists will be selected to attend the SIYSS during the Nobel Prize Ceremonies in December 2004. Students will be selected from qualified\*\* individual Best of Category winners.

**European Union Contest for Young Scientists and the MILSET – Expo-Sciences International**

The two top-scoring teams will be awarded a visit to the European Union Contest for Young Scientists in Dublin, Ireland or the MILSET – Expo-Sciences International in Dresden, Germany.

**Intel Foundation Achievement Awards**

Selected by a panel of Intel judges, the Achievement Awards are given for outstanding work in any field. The awards are \$5,000 each.

**Best of Category**

In each category, a Best of Category winner will receive a \$5,000 award and an Intel® Centrino™ mobile technology-based notebook computer. Additionally, a \$1,000 grant will be given to the winner's school and the Intel ISEF Affiliated fair they represent.

**Grand Awards**

Grand Awards are given in each of the 14 categories and the team category, in first, second, third and fourth places. Awards are \$3,000 for First Place, \$1,500 for Second Place, \$1,000 for Third Place and \$500 for Fourth Place

**Intel ISEF Excellence in Teaching Award**

The Intel ISEF Excellence in Teaching Award recognizes high school math and science teachers who have demonstrated excellence in the teaching of project-based learning. Five teachers will be named as "Award Winners" and will receive an all-expense paid trip to Intel ISEF, as well as a \$3,500 cash award. Each winner will also have an opportunity to meet with Intel Foundation representatives to request up to \$10,000 in funding for his/her proposal.

**Special Awards, Scholarships and Government Awards**

Organizations representing a wide variety of scientific disciplines affiliate with the Intel ISEF as Special Awards Organizations. These governmental, industrial and educational institutions present more than 800 grants, scholarships, internships, and scientific field trips.

\*Awards are reviewed annually. \*\* Students must be 18 years of age by Dec. 1, 2004  
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## About Intel Philippines

Intel Technology Philippines Inc., the local subsidiary of Intel Corporation, is Intel's second offshore assembly operations center in Asia and the first American multinational and semiconductor company in the country. To date, Intel Philippines has a total investment in the country of US\$2.4 billion and a skilled workforce of over 5, 000 Filipinos.

Intel Philippines keeps its industry leadership alongside a steadfast commitment to support national economic growth. It significantly contributes to the growth of the Philippine electronics industry, which accounts for almost 70% of total Philippine exports. Because of its sizable input, the Export Development Council of the Board of Investments has acknowledged Intel Philippines as the leading company in the Philippines in terms of value-added export revenues since 1995. Intel Philippines has also been receiving the Top Exporter Award from Philippine Economic Zone Authority (PEZA) for five consecutive years now.

Intel Philippines' world-class assembly and test and technology development facilities in Gateway Business Park, General Trias Cavite, is where much of Intel's new and emerging product platforms are tested and assembled. It is a major site for the assembly and test of Intel® Flash Memory products, chipsets and high-end microprocessors such as the Intel Pentium®4 processor.

As it celebrates 30<sup>th</sup> year in the Philippines, Intel Philippines strengthens its commitment to contribute to the growth of the Philippine electronics and semiconductor industry.

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*Intel Corporation's mission is to be the premier silicon "building block" supplier to the computing and communications industries worldwide. In the Philippines, Intel is committed to contribute to the long-term development of the country as a center for high-technology manufacturing.*



**2004**  
**Intel International Science and Engineering Fair**

**Fact Sheet**

**Fast Facts**

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- The Intel International Science and Engineering Fair (Intel ISEF) is the world's largest pre-college science fair.
  - Since 1950, more than 30,000 finalists have participated in ISEF.
- Between May 9 and May 15, 2004, more than 1,428 finalists from 42 countries will compete for more than \$3 million in scholarships and prizes.
- These finalists have emerged from an original worldwide pool of several million science fair participants; going on to compete as semi-finalists with over 65,000 students at more than 500 regional Intel ISEF-affiliated science fairs around the world and won the right to compete at the Intel ISEF.
  - The largest Intel ISEF-affiliated fair took place in Sydney, Australia, with over 4,500 exhibits
- Students compete in 14 scientific categories. Approximately one third of the projects are entered in three categories – engineering, environmental sciences, and medicine and health.
- More than 1,000 experts volunteer their time to judge projects. All Intel ISEF judges have a Ph.D. or equivalent in one of the 14 scientific disciplines or six years of related professional experience.
- 267 Intel ISEF finalists have obtained or are in the process of obtaining a patent on their projects.
- 55 percent of Intel ISEF finalists are male; 45 percent are female. Finalists range in age from 12 to 20 years. 70 percent of finalists are either seniors or juniors in high school.
- At age 12, Sergei Chavez of Lima, Peru and Benjamin Nash of Austin, TX are the youngest finalists.

### **Scientific Category Details**

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<u>Category</u>	<u># of finalists</u>
Behavioral and Social Sciences	96
Biochemistry	96
Botany	89
Chemistry	67
Computer Science	83
Earth and Space Sciences	76
Engineering	192
Environmental Sciences	198
Gerontology	29
Mathematics	75
Medicine and Health	154
Microbiology	91
Physics	106
Zoology	79

### **Age Group Details**

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<u>Grade Level</u>	<u># of finalists</u>
Seniors	541
Juniors	468
Sophomores	245
Freshmen	174

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Joy Anne L. Aquino from E. Rodriguez Junior High School won the First Place from the American Veterinary Medical Association, and Fourth Place on the Grand Award for Medicine and Health, for her project entitled *Biologically-Guided Isolation of the Antimicrobial Component on the Sea-Snake Laticauda colubrina Schneider Venom*. Aquino, who extracted a new antimicrobial drug from sea snakes, brought home a total of US\$1,500 in cash awards.

Two team delegates also scored victories for the Philippines from Manila Science and Quezon City Science High Schools. Both teams focused on environmental science, particularly pollution control, in their projects. The Manila Science High School team developed an electrode from green mussels that can detect the presence of lead in bodies of water. The Quezon City Science High School team, on the other hand, explored the effectiveness of an endemic water-borne bacteria called *Vibrio Fischeri* as pollution-indicator. *Vibrio Fischeri* glows when exposed to contaminants.

Alan Ray E. Gonzalez, Maria Katrina Rivera, and Anne Margrette Velasquez from Manila Science High School won a Third Place Grand Award for their project entitled *Development of a Chemically Modified Carbon Paste Electrode from Green Mussels (Perna viridis) for the Analysis of Lead (II) through Voltammetry*.

Meanwhile, Quezon City Science High School's Trina Napasindayao, Melanie Melchor and Jayson Reggie Obos won a Fourth Grand Award for their project entitled *Simple, Rapid, and Inexpensive Dissolved Oxygen Determination of Wastewater Samples Using the Tube Bioluminescence Extinction Method of Vibrio Fischeri USTCMS*.

At the Intel International Science and Engineering Fair, top prize winners and named as Intel Young Scientists are Sarah Rose Langberg of Fort Myers, Florida; Uwe Treske of Grafenhainichen, Germany; and Yuanchen Zhu of Shanghai, China. The three teens prevailed over more than 1,300 students from all over the world.

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## 55 Years of Brilliant Thinkers

It's been 55 years since 30 bright and curious high school students met in Philadelphia at the country's very first National Science Fair. They competed for prizes worth a grand total of \$1,000. Boys and girls were judged separately. The year was 1950 and along with the launch of what would become the world's largest pre-college science competition, we saw the introduction of the first Xerox\* machine, the first Peanuts\* comic strip, the first Japanese tape recorder (weighing in at 40 pounds) and Sucaryl\* artificial sweetener. The New York Yankees would beat Philadelphia in the World Series, Uruguay would beat Brazil in the World Cup, and the Mambo would rage across American dance floors, while 30 young students would get a taste of life as a scientist.

Over the previous decade, some 800 science clubs had been forming around the country through the work of Science Service and the American Institute of the City of New York. They were organized under the moniker Science Clubs of America. Competition among club members evolved into local and regional fairs. It was only natural to want to nurture and honor the best of the best with a national event. Astronomer and author Armand Spitz, who was then Director of Education at the Franklin Institute in Philadelphia, coordinated this first national gathering with Science Service. Today it takes more than 700 staff and volunteers to conduct the world-class event that honors the 1,300 students from 40+ countries around the world who compete for more than \$3 million in scholarships and prizes.

### **Growth and Change**

The National Fair grew steadily each year and opened to international competitors in 1959 with participants from Canada, Germany and Japan. The following year the name was changed to reflect this new international component; by now the number of participants had increased ten-fold. Thailand joined the fair in 1961, Sweden in 1963. By 1970, the number of affiliated local fairs whose winners came to the International Science and Engineering Fair numbered more than 200. 1995 was the year the number of competitors topped 1,000 and by 2000, the number of affiliates swelled to 502. In 1996 Intel Corporation became the title sponsor

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By conducting their research and presenting their findings to the judges, many finalists find a necessary confidence in themselves. Indiana fair director Kathryn Hedges tells this story of one of her students:

He had accepted the idea that he would eke out a living in the Black Oak portion of Gary fixing cars...When I asked kids to work on projects Nick told me that he wanted to do a project and brought in several bottles of motor oil. The oil sat on the floor for several weeks and after I finally asked what he intended to do, he told me that he planned to figure out if heating oil multiple times would affect the viscosity...He struggled to type up his data and make the graphs and we put the board together. He seemed pleased with the outcome and we had to try to find him clothes appropriate for the science fair. I thought that he might win something...but I was amazed to discover that he was the second place overall winner. Now Nick is attending meetings with engineers that he met at the science fair, he is talking about next year's project, and instead of talking of dropping out of school is talking about going on to college to study mechanical engineering.

Chick laments that many high school science teachers don't emphasize experimental inquiry and that competitions that encourage research are being displaced by contests requiring only the memorization of science facts. "Doing a challenging science fair project and presenting it on a poster to judge is really a lot like what professional scientists do."

Intel Senior Fellow and long-time Intel ISEF judge Gene Meieran is motivated to stay involved because of the great work students are accomplishing. "I never was a movie star buff or a follower of rock stars or sports figures, and I like that what these kids do has an impact rather than celebrity status. I want to make the point that intellectual pursuit is at least as valuable as making a gold album, and deserves at least as much recognition. And the stuff is so advanced that one cannot help being impressed." Bill Cordova echoes, "I stay involved because it's the one area in the education environment where you can be creative and explore. It's boundless."

Over the years, the science projects presented have increased in sophistication and quality. The level of analysis has increased with the advent of accessible technology tools. As students repeat their experiences and mentors, coaches and judges give better feedback, the quality of the research improves systemically. As Paige Kuni, worldwide K-12 education manager at Intel sums it up, "The value of fairs is it gives kids an opportunity to practice authentic science."

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## Snapshots from ISEF History

"I won the very first Baltimore Science Fair in 1956 and participated in the 7<sup>th</sup> National Science Fair in Oklahoma City where I won a Fourth Place Award. My original science fair project was about herpetology – the study of amphibians and reptiles. It has played a major role in my career. I have written nine books. I am currently engaged in the 9<sup>th</sup> year of a study of declining amphibians in Bermuda."

– Dr. Donald Linzey, 1956 Finalist, Oklahoma City, Oklahoma, Professor of Biology at Wytheville Community College and Fair Director, Blue Ridge Highlands Regional Science Fair.

"I got my professional career from science fair participation and got my employer involved in the science fair process. The key was my participation in the 1958 and 1959 National Science Fairs. I never would have landed a job at the highly prestigious United Technologies Research Center if it wasn't for being recognized for my science project work." – George "Bob" Wisner, 1959 Finalist, Hartford, Connecticut, Electrical Engineering Consultant and Fair Director, Connecticut Science Fair.

"In 1958, my second grade teacher held a science fair. My dad helped me build a project on 'The Six Great Inventions of Early Man.' Later, I entered the Snohomish County Fair in 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> grades. In 10<sup>th</sup> grade, my project on Lunar Crater Analysis went to ISEF #17. This was before the lunar landing, and I had set out to show whether there was a significantly thick layer of dust on the lunar surface into which the lunar lander might sink. The convention hall was huge and full of really good projects. What I most remember is getting my picture taken shaking the hand of Glenn T. Seaborg, Nobel Laureate and discoverer of several elements." – Larry Chick, 1966 Finalist, Dallas, Texas and Laboratory Fellow at Pacific Northwest National Laboratory.

"I was so new to research while a lot of kids had been in well-established science research programs. Their exhibit boards looked good; mine was awful, just pen and ink. My project had failed; I didn't have a solution. I had to articulate and defend my process to the judges without a good outcome. I didn't yet have the perspective to know science is about the process. To defend my thinking I really had to understand my stuff, and it built up a stronger understanding and important confidence. I was not expecting any awards, but ended up winning 3<sup>rd</sup> place. I felt rewarded for my hard work, not just results." – Paige Kuni, 1984 Finalist, Columbus, Ohio and Worldwide K-12 Education Manager at Intel Corp.

"In 1983, Albuquerque hosted ISEF. I was in the 6<sup>th</sup> grade and my teacher took me to see the fair. I really enjoyed it and started competing, mostly with rockets. In my senior year of high school, I went to the 40<sup>th</sup> ISEF in Pittsburgh with a project called 'Observation of Phase Front Reversal from Nonlinear Laser Levitated Materials (Phase 3).' It was not practical but was cutting edge in terms of lasers. At one point during the judging, there were some 35 people around me. Someone brought me a microphone and I just talked and talked and talked. I had this huge group of judges and I thought it was kind of normal. It didn't occur to me there was anything weird going on. During the special awards, I didn't do as well as the year before. At the Grand Awards ceremony I had wanted at least a 3<sup>rd</sup> place but I didn't get it. Then when they got to announcing 1<sup>st</sup> place, they announced Alamogordo, New Mexico, and I thought, 'Who is here from Alamogordo?' Well, it was me. I was ecstatic, floored. I was hopping all over the stage." – Bill Cordova, 1989 Finalist, Pittsburgh, Pennsylvania and Co-Chairman, 2007 Intel ISEF.

"I had been interested in science phenomena from the time I was a child. At the science club in my high school, I met a wonderful teacher who helped me develop research from my junior high school days. I advanced my study on the spawning, development and environmental conditions of frogs by focusing on fieldwork. This was my first visit to America and I felt deep emotions. It was very difficult to present to the judges using English and to make myself clear. It was also a great stimulus for me to watch and listen. I think that the experiences that move the heart are life treasures. I majored in biology and engaged in science education as a teacher. Now, I'm studying more about research-based learning and working to educate young scientists." – Hiroko Hasegawa, 1984 Finalist, Columbus, Ohio, Science Teacher and Fair Administrator, Tokyo, Japan.

**About Intel**

Intel, the world's largest chipmaker, is also a leading manufacturer of computer, networking and communications products. Additional information about Intel is available at [www.intel.com/pressroom](http://www.intel.com/pressroom).

**About Intel Innovation in Education**

The Intel International Science and Engineering Fair is part of the Intel® Innovation in Education initiative, a collaboration with educators in communities around the world to improve the quality of math, science and engineering education. Intel provides commitments of time, programs and resources to help students realize their full potential. For more information, visit [www.intel.com/education](http://www.intel.com/education).

## Geographic Details By Region

Region	# of finalists
<b>Africa:</b>	3
South Africa	3
<b>Asia Pacific:</b>	86
Australia	4
China	47
Chinese Taipei	20
Guam	1
Japan	7
South Korea	7
<b>Europe:</b>	55
Belarus	3
Czech Republic	2
Denmark	2
Germany	3
Hungary	1
Ireland	2
Italy	1
Kazakhstan	7
Northern Ireland	2
Norway	2
Portugal	2
Russia	20
Sweden	2
United Kingdom	6
<b>North America:</b>	1,168
American Samoa	2
Canada	18
Puerto Rico	67
United States	1,077
Virgin Islands	4
<b>Middle East and South Asia:</b>	53
India	8
Israel	2
Jordan	1
Malaysia	11
Pakistan	4
Philippines	10
Singapore	5
Thailand	5
Turkey	7
<b>South America:</b>	66
Argentina	12
Brazil	27
Chile	5
Costa Rica	5
Mexico	11
Peru	6
<b>Total International</b>	354