

**U.S. Army, Navy & Air Force sponsored  
52<sup>nd</sup> National Junior Science & Humanities Symposium  
2014 Winners**

Tri-service sponsored awards for excellence were presented to the seven students who presented their research in poster presentations. The top three award recipients received: 1st place \$1,000; 2nd place \$800 and 3rd place \$600. There were also a total of four runner up winners who each received an iPad mini donated by Bluehill Research, a company owned by Ralph Rodriguez, a Board member of the Academy of Applied Science.

**Honorable Mentions:**

**Swetha Shutthanandan, Washington Region  
Richland High School, Richland, WA**

*Synthesis, Characterization and Solar Cell Application of Zinc-Oxide Nano-Structures*

**Ellen K. Kendall, Kentucky Region  
Notre Dame Academy, Park Hills, KY**

*Bioethanol Production from Encapsulated Active Dry Yeast*

**Tanya Hoatson, Virginia Region  
Governor's School for Science and Technology, Hampton VA**

*Measuring the Luminosity of Stars at Known Distance Using MatLab*

**Harsha Uppili, Oregon Region  
Oregon Episcopal School**

*The Fabrication and Characterization of Short and Long Term Memory Proton Induced Thin Film Synaptic Transistors*

**3<sup>rd</sup> Place:**

**Braeden Benedict, Southern California Region  
Palos Verdes Peninsula School**

*Development of an Electroencephalography (EEG) Device for Evaluation of Mild Traumatic Brain Injury*

**2<sup>nd</sup> Place:**

**Priyanga Selvakumar, Pennsylvania Region  
Marple New Town High School, New Town Square, PA**

*Nano-Formulated Quercetin: A Novel Therapy for Neuroblastoma by the Re-expression of RIZ1*

**1<sup>st</sup> Place:**

**Laura Beth Fulton, Northern New Jersey Region  
Egg Harbor Township High School, Egg Harbor Township, NJ**

*Development of a Novel, Safe Method for In Vitro Re-creation of the Tooth Enamel Layer*

Tri-service sponsored undergraduate tuition scholarships were presented to a total 21 students who presented their research in oral paper competition. 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place student winners were named in each of seven categories of competition. The following students were named as 3<sup>rd</sup> place winners and awarded a \$4,000 scholarship.

### **3<sup>RD</sup> PLACE**

#### **Environmental Science**

**Bluye' DeMessie, Ohio Region**

**William Mason High School, Mason, OH**

*Developing a Sustainable Water Cleaning System for use in Rural Areas of Low Income Countries*

#### **Life Sciences**

**Kristi Kan, Greater Washington DC Region**

**Centennial High School, Ellicott City, MD**

*The effects of LED light exposure on strawberry quality in a simulated retail setting*

#### **Medicine & Health**

**Grace Niewijk, Chicago Illinois Region**

**Oak Park and River Forest High School, Oak Park, IL**

*Creation of Novel Absorbent Antimicrobial Bandages and Ointment from the Slime of the Pacific Hagfish, *Eptatretus stoutii*, for Use on Burns and Wounds*

#### **Mathematics & Computer Science**

**Garrett Davidson, DoD Europe Region**

**Bahrain School**

*Can Mathematics Predict Popular Music?*

#### **Physical Science**

**Isabelle Goldstein, Connecticut Region**

**Ridgefield High School, Ridgefield, CT**

*Spectral and spatial analysis of Fermi Large Area Telescope observations to investigate Weakly Interacting Massive Particle dark matter*

#### **Chemistry**

**Michael Trinh, Texas Region**

**Plano East Senior High School, Plano, TX**

*Novel Dilithium Phthalocyanine-Graphene Composite Electrodes for Hybrid Supercapacitor Applications*

#### **Engineering**

**Samuel Rohrer, Virginia Region**

**Thomas Jefferson High School for Science and Tech, Alexandria, VA**

*A Novel Beamforming Approach to Stereo Sound*

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## 2<sup>nd</sup> PLACE

### Environmental Science

**William Mitchell, Alaska Region**

**West Valley High School, Fairbanks, AK**

*Effects of Kerosene Co-contamination on Sulfolane Biodegradation*

### Life Sciences

**William Jin, Georgia Region**

**Gwinnett School of Mathematics, Science & Technology, Lawrenceville, GA**

*Novel pertussis antibiotic targets of protein interactions*

### Medicine & Health

**Sanjana Rane, Kentucky Region**

**duPont Manual High School, Louisville, KY**

*Effects of the Environmental Pollutant Acrylic Aldehyde on Renal Fibrosis*

### Mathematics & Computer Science

**Owen Kelly, Florida Region**

**Spruce Creek High School, Port Orange, FL**

*Comparison of Terrain Rendering Using Dynamic Versus Static Mesh Generation And Management*

### Physical Science

**Tian-Shun (Allen) Jiang, North Carolina Region**

**North Carolina School of Science and Mathematics, Durham, NC**

*The Radio Number of Grid Graphs*

### Chemistry

**Alexandra LaGrassa, New York, Metro Region**

**Bronx High School of Science, Bronx, NY**

*Using Ligands to Control the Growth Kinetics of Cadmium Selenide Clusters*

### Engineering

**Megan Miller, North Carolina Region**

**Western Alamance High School, Elon, NC**

*Fuel Efficient Passive Flow Control for Class 8 Tractor Trailers*

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## 1<sup>st</sup> place

### Environmental Science

**David Shipe, Pennsylvania Region**

**Freeport Area Senior High School, Sarver, PA**

*Investigation of Aquatic Plants and Bacterial Solutions as Efficient Bio-filters to Remove Ammonia from Water*

### Life Sciences

**Jordan Cadle, Indiana Region**

**Paoli Junior/Science High School, Paoli, IN**

*Utilizing the Isolated Components, Variation in Mammals, and Treatment Processes of Milk for Grain Yield Enhancements*

### Medicine & Health

**Adam Illowsky, Upstate New York Region**

**Ossining High School, Ossining, NY**

*The MAPT H1 haplotype is Associated with Increased Clinical and Neuropathological Severity of Chronic Traumatic Encephalopathy*

### Mathematics & Computer Science

**Yousuf Soliman, Southern California Region**

**Canyon Crest Academy, San Diego, CA**

*Personalized Medical Treatments Using Novel Reinforcement Learning Algorithms*

### Physical Science

**Viola Mocz, Hawaii Region**

**Mililani High School, Mililani, HI**

*Helicotoroidal Topology of Leptons, Quarks, and Hadrons*

### Chemistry

**Carolyn Jons, North Central Region**

**Eden Prairie High School, Eden Prairie, MN**

*Improved Efficiency of Seawater Steam Generation Using Carbon Nanoparticles*

### Engineering

**Neil Movva, Northern California & Western Nevada Region**

**The Harker School, San Jose, CA**

*A Novel Use of Infrared Light in Eye Tracking Systems*