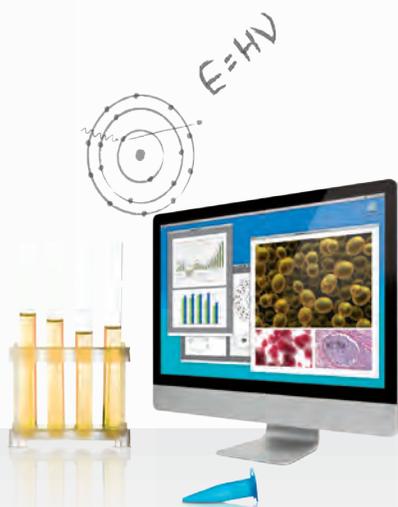


Inspired to Change Our World.



Intel International Science and Engineering Fair 2012 Program

May 13-18, 2012
Pittsburgh, Pennsylvania



⌚ [Matthew Feddersen and Blake Margraff](#)
2011 Gordon E. Moore Winners:
Treatment of Simulated Cancer Cells
with Compton Scattering-Produced
Secondary Radiation



Intel International Science and Engineering Fair

About the Intel ISEF

The Intel International Science and Engineering Fair (Intel ISEF), a program of Society for Science & the Public, is the world's largest international pre-college science competition. The Intel ISEF is the premier science competition in the world and provides a forum for more than 1,500 high school students from 70 countries, regions, and territories to showcase their independent research annually. Each year, millions of students worldwide compete in local science fairs; winners go on to participate in Intel ISEF-affiliated regional, state and national fairs to earn the opportunity to attend the Intel ISEF. Uniting these top young scientific minds, the Intel ISEF provides the opportunity to finalists to display their talent on an international stage, while enabling them to submit their work for judging by doctoral-level scientists. The Intel ISEF provides awards of over \$3 million in prizes and scholarships annually.

Intel International Science and Engineering Fair 2012

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Intel Corporation

Paul S. Otellini

President and Chief Executive Officer

On behalf of Intel, let me welcome you to the Intel International Science and Engineering Fair 2012 in Pittsburgh. This city is well known for its national sports teams and the steel industry of the mid 1900s, but over the years the primary industries have shifted to high technology, health care, nuclear engineering and biomedical technology. The area is also host to several well known universities including Carnegie Mellon, a global research university recognized for its world-class technology programs. All of this makes Pittsburgh a wonderful location for Intel ISEF.

My congratulations to all of you who have worked so hard to compete here this week. You are all talented and deserving of this honor and I am proud of the opportunity to celebrate your work. We all know that there are many who have supported your journey to this point, so let me also congratulate and thank all of your teachers, parents, mentors and fair directors for all that they do to support science, math, teaching and learning. Keep up the good work!

This week you are here to display your work and compete alongside your fellow finalists. Let me also suggest that you take the opportunity to meet your peers who in the future will be working around the world, or maybe along side of you, to solve the scientific challenges and issues our world faces. So, take time to share ideas, challenge each other and, of course, have fun together. And when you return home, take every opportunity to pass on to your friends and to younger students, what this week has meant to you, the wonderful people you met from around the world, the new things you learned, and how participating as a young researcher in science, math, and engineering brought you here.

All of us at Intel encourage you to continue to push the boundaries of science, to remain curious and ask the hard questions, to explore new scientific challenges, and to become ambassadors for science, math, and engineering education. We look forward to your success in the years to come.

Have a great week, and best of luck to all of you.

Sincerely,

A handwritten signature in black ink that reads "Paul S. Otellini". The signature is fluid and cursive.

Paul S. Otellini
President and Chief Executive Officer
Intel Corporation

Society for Science & the Public

Elizabeth Marincola
SSP President and
Publisher, *Science News*



Welcome from Society for Science & the Public

Welcome to the Intel International Science and Engineering Fair 2012, a program of Society for Science & the Public (SSP). Intel ISEF represents the world's best science from young researchers. In the 63rd year of the science and engineering fair, we congratulate each finalist for earning the opportunity to participate. This privilege has been achieved through hard work, perseverance, and ingenuity. As we acknowledge the accomplishments of students, we trust they will acknowledge the critical support of the parents, teachers, and mentors who have been their research partners and enablers.

By virtue of scientific curiosity and achievement, Intel ISEF finalists have the potential to help solve many of the world's most vexing problems and contribute to the realization of our best global community. No matter what the future holds, I urge every finalist to continue to communicate the importance of scientific research to family, friends, and the broader community. SSP wants to stay in contact with our inspiring alumni and encourages you to fill out an alumni profile and follow us on social media. I look forward to meeting students and learning about their research this week in Pittsburgh.

We acknowledge gratefully the Intel Foundation and the Intel Corporation for their continued partnership with SSP, which has made the Intel ISEF possible. Intel's global leadership and commitment to science, engineering, and math education is an inspiring example of corporate investment in the future. The Society also acknowledges with gratitude the more than 70 other organizations that have provided support and awards for the Intel ISEF 2012.

Finally, SSP salutes the hard-working Intel ISEF volunteers in Pittsburgh and around the country. These individuals share an unwavering dedication to scientific research and education and have given their time and energy generously to ensure a successful event.

Congratulations. Enjoy a rewarding, inspiring, and memorable time at the Intel ISEF 2012.

Sincerely,

A handwritten signature in black ink, appearing to read 'Elizabeth Marincola', written in a cursive style.

Elizabeth Marincola
President, Society for Science & the Public, and
Publisher, *Science News*



State of Pennsylvania

Tom Corbett
Governor



GREETINGS:

It gives me great pleasure to welcome everyone to Pittsburgh for the 2012 Intel International Science and Engineering Fair.

I am always excited to hear of talented students who demonstrate a real passion for learning and the motivation to use their knowledge outside of the classroom to address some of the world's most critical issues and concerns. The participants of this event have distinguished themselves as leaders among their fellow students and should be proud of their remarkable accomplishments.

During your stay in Pittsburgh I hope you will have the opportunity to enjoy everything this great city has to offer and view the vast resources and natural beauty of western Pennsylvania. I am sure that you will soon learn there are many truly memorable ways to see and experience western Pennsylvania. As you travel our scenic highways and byways, you will discover the qualities that make this region such an enriching place to visit – the goodness of its people, the richness of its historical significance, and its geographic diversity. Given the area's natural beauty and cultural vibrancy, I am confident that you will create many lasting memories.

As Governor and on behalf of all Pennsylvanians, I extend best wishes for an enjoyable competition and unprecedented success in all of your future endeavors.

A handwritten signature of Tom Corbett in black ink. The signature is cursive and reads "Tom Corbett".

TOM CORBETT
Governor
May 13-18, 2012

State of Pennsylvania
Patrick J. Toomey
U.S. Senate



PATRICK J. TOOMEY
PENNSYLVANIA

United States Senate
WASHINGTON, DC 20510

COMMITTEE
BANKING, HOUSING, AND
URBAN AFFAIRS
COMMERCE, SCIENCE, AND
TRANSPORTATION
BUDGET
JOINT ECONOMIC COMMITTEE

May 13-18, 2012

Intel International Science and Engineering Fair
Society for Science and the Public
1719 N Street NW
Washington, D.C. 20036

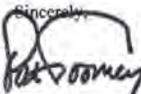
Dear Friends,

It is my pleasure to welcome all of you to the great city of Pittsburgh, Pennsylvania for this year's Intel International Science and Engineering Fair. I would especially like to congratulate all of the Intel ISEF 2012 finalists for their outstanding independent research.

The Intel International Science and Engineering Fair is the world's largest international pre-college science competition exclusively for students in grades 9-12. From its inception as the National Science Fair in 1950, the fair has become a premier science competition with more than 1,500 high school students participating annually from over 70 countries, regions and territories. The Intel ISEF provides a forum that allows these young, talented minds to gather together and showcase their talent on an international stage with the opportunity to compete for over \$4 million in prizes and scholarships.

Pittsburgh, Pennsylvania is an ideal venue for this year's fair. Pittsburgh offers a diverse mix of cultures from all across the world, and this can be seen in any of the 89 distinct and ethnically diverse neighborhoods in the city. In fact Pittsburgh caters to all visitors through its many art museums and theaters, outdoor adventures, architecture, sports and family fun.

Once again, on behalf of the United State Senate and the Commonwealth of Pennsylvania, welcome to Pittsburgh and best of luck to all of this year's Intel ISEF 2012 finalists.

Sincerely,

Pat Toomey
U.S. Senator

Welcome from the U.S. Senate



State of Pennsylvania
Rich Fitzgerald
Allegheny County Chief Executive Officer



May 2012

Dear Friends:

On behalf of Allegheny County and its 1.2 million residents, it is my pleasure to welcome you to our community for this exciting event. The Intel International Science and Engineering Fair (ISEF) competition provides students around the world with an opportunity showcase their talents and abilities, and we are honored that Allegheny County was chosen as the location for this year's event.

With over 1,500 students in grades 9-12 from 65 different countries, regions, and territories, Intel ISEF serves as the world's largest pre-college science competition. This competition functions as an important outlet for students to be able to utilize their knowledge in the fields of science and technology. Each of you should be extremely proud to be taking part in such a distinguished event as you are distinguished yourself as some of the best and brightest students in the world. Our region is celebrating the many "Best of the World" designations that we have received this year and are truly flattered to include the Intel ISEF as one more reason for us to be proud of everything that our region has to offer. I look forward to the wisdom that you will share during your time here, and encourage each of you to fully embrace and learn from the research your counterparts have to offer.

I have no doubt that our community will benefit from your presence, just as much as I hope you will benefit from your time here. Each of you represents a wealth of knowledge, determination, and hard work and I wish the best of luck to each contestant!

Sincerely,


Rich Fitzgerald
Allegheny County Executive

OFFICE OF THE COUNTY EXECUTIVE

1 COURTHOUSE • 436 GRANT STREET • PITTSBURGH, PA 15219 • PHONE (412) 350-6500 • FAX (412) 350-6512
WWW.ALLEGHENYCOUNTY.US • EXECUTIVE@ALLEGHENYCOUNTY.US

City of Pittsburgh
Luke R. Ravenstahl
Mayor



Welcome from the Mayor of Pittsburgh



CITY OF PITTSBURGH

"AMERICA'S MOST LIVABLE CITY"

Office of Mayor Luke Ravenstahl

Dear Friends:

It gives me great pleasure to welcome you to the Intel International Science and Engineering Fair. The City of Pittsburgh is proud to extend a warm greeting to all guests present today to be a part of this special event.

The Intel International Science and Engineering Fair, a program of Society for Science & the Public, is the world's largest international pre-college science competition. The Fair provides an annual forum for more than 1,500 high school students from more than 70 countries, regions and territories to display their independent research. I welcome the over 8,000 people who are attending this event.

I am excited to have the opportunity to showcase our City's revitalization to visitors from around the world. You'll find that the business sectors of technology, finance and industry are infused with a vibrant cultural scene in Pittsburgh that celebrates arts from around the world.

Pittsburgh is rich with numerous historical, recreational and social amenities. From great theater to great dining, Pittsburgh is a city that has something for everyone. I encourage you to take a ride on the inclines and check out the view from Mt. Washington – ranked among the most beautiful views in America. Visit our museums, offering everything from dinosaurs to Andy Warhol. Take in a performance in our Cultural District – among the largest of any such arts district outside of New York's Broadway – where spectacular shows and cutting-edge galleries can be enjoyed.

Pittsburgh is at a particularly exciting point in its history as the City undergoes its third renaissance. We're delighted to be able to show the world why Pittsburgh is such a great place to live, work and visit. With a focus on continued revitalization of the City's neighborhoods, the renaissance aims to keep Pittsburgh as "America's Most Livable City" as well as one of its safest and cleanest cities.

I hope that you enjoy your time in Pittsburgh – a city that keeps surprising people from all over the world. Best wishes to you, and all those attending, for a wonderful event!

Sincerely,

Luke Ravenstahl
Mayor, City of Pittsburgh

512 CITY-COUNTY BUILDING, 414 GRANT STREET, PITTSBURGH, PENNSYLVANIA 15219

Phone: 412-255-2626 Fax: 412-255-2687



pittsburghpa.gov

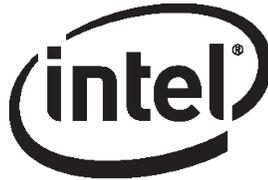
[facebook.com/cityofpittsburgh](https://www.facebook.com/cityofpittsburgh)

twitter.com/citypgh

Society for Science & the Public (SSP)
acknowledges with gratitude

Intel Corporation
and
Intel Foundation

for their support of the Intel ISEF 2012.



In the last decade, Intel has invested more than \$1 billion, and Intel employees have donated over 4 million volunteer hours to improve education in more than 70 countries, regions, and territories.

Intel is actively involved in education programs, advocacy, and technology access to help tomorrow's innovators.

Intel is proud to serve as the title sponsor of the Intel International Science and Engineering Fair through 2019.

SSP and Intel thank the following organizations for their generous support of the Intel ISEF 2012 Public Day to be attended by over 4,000 local middle school and high school students and their teachers.

Agilent Technologies Foundation
Alcoa Foundation
Bayer Corporation
Broadcom Foundation
The Buhl Foundation
Eden Hall Foundation
The Grable Foundation
NOVA Chemicals Corporation
Lynn Peavey Company
PPG Industries Foundation
Ricoh Americas Corporation
Shell Exploration and Production Company
Dr. Nelson Ying

Together they are proud to support these students and hope their participation will inspire them and their teachers, parents, scientists and others.

Society for Science & the Public, Intel and the Pittsburgh Local Arrangements Committee recognize with gratitude the following organizations for their special dedication to Intel ISEF 2012.

Carnegie Science Center
Math and Science Collaborative—Allegheny Intermediate Unit
National Museum of Crime & Punishment
World Affairs Council of Pittsburgh

Intel ISEF 2012—Public Day Sponsors



Bill Nye the Science Guy visits Intel ISEF 2011 during Public Visitation Day

This year, more than 1,500 student finalists earned finalist status at the Intel ISEF in Pittsburgh as a result of their excellent performance at an Intel ISEF-affiliated fair at a local, regional, or national level.

Finalists in 2012 will compete for over \$3 million in awards and prizes. They are judged on their creative ability and scientific thought, as well as the thoroughness, skill, and clarity shown in their projects.

2012 Grand Awards include:

The Gordon E. Moore Award

Intel and SSP are pleased to present an award of \$75,000 to the top Best in Category project.

The Gordon E. Moore Award recognizes the Best of the Best among the outstanding students from around the world who participate in Intel ISEF. The winning project is selected on the basis of outstanding and innovative research, as well as on the potential impact of the work—in the field and on the world at large.

The Intel Foundation Young Scientist Awards

Intel and SSP will present \$50,000 awards to two Best in Category projects. These finalists will be selected for their commitment to innovation in tackling challenging scientific questions, using authentic research practices, and creating solutions to the problems of tomorrow.

The Dudley R. Herschbach SIYSS Award

An all-expense-paid trip enables three finalists to attend the Stockholm International Youth Science Seminar (SIYSS) (www.fuf.org/siyss), which includes attendance at the Nobel Prize ceremonies, in Stockholm, Sweden. The Dudley R. Herschbach SIYSS Award is a multi-disciplinary seminar highlighting some of the most remarkable achievements by young scientists from around the world. Students must be 18 years old prior to the Nobel ceremony in December to be considered. This award is named for Dudley R. Herschbach, Harvard Professor and 1986 Nobel Laureate in chemistry. He is Board Chairman Emeritus of Society for Science & the Public.

European Union Contest for Young Scientists

An all-expense-paid trip enables attendance at the European Union Contest for Young Scientists — located in Bratislava, Slovakia in 2012.

Intel ISEF Best of Category Awards

Intel will present Best of Category project winners with \$5,000. Additionally, a \$1,000 grant will be given to the finalist's school, and the Intel ISEF-affiliated fair they represent.

Intel ISEF Grand Awards

Presented in each of the 17 Intel ISEF categories, Grand Awards are presented for:

- 1st Place—\$3,000 cash award
- 2nd Place—\$1,500 cash award
- 3rd Place—\$1,000 cash award
- 4th Place—\$500 cash award

Massachusetts Institute of Technology— Lincoln Laboratory, Ceres Connection

Lincoln Laboratory has partnered with SSP and the Intel ISEF to promote science education through the Ceres Connection. The names of first and second place category award winners at Intel ISEF will be submitted to the International Astronomical Union (IAU) for a once in a lifetime naming of a minor planet. All minor planets in the Ceres Connection have been discovered by the Lincoln Near Earth Asteroid Research (LINEAR) program, operated by MIT's Lincoln Laboratory.

Monetary awards are allocated by project, not by number of finalists winning the award. For example, a three-person team project that wins 1st place will win \$3,000, to be split evenly among the team members.



Intel ISEF 2012 Special Award Organizations provide education scholarships, cash awards, summer internships, scientific field trips, and equipment grants. Intel and SSP thank the following organizations for their support of the Intel ISEF.

Acoustical Society of America
ADA Foundation
Agilent Technologies
Air Force Research Laboratory on behalf of the United States Air Force
Alcoa Foundation
American Association for Clinical Chemistry
American Association of Pharmaceutical Scientists
American Association of Physics Teachers and the American Physical Society
American Chemical Society
American Committee for the Weizmann Institute of Science
American Geosciences Institute
American Intellectual Property Law Association
American Mathematical Society
American Meteorological Society
American Physiological Society
American Psychological Association
American Society for Horticultural Science
American Society for Microbiology
American Statistical Association
American Veterinary Medical Association
Ansaldo STS
Ashtavadhani Vidwan Ambati Subbaraya Chetty Foundation
Association for Computing Machinery
Astronomical Society of the Pacific and the American Astronomical Society
Carnegie Mellon University
Leonard Gelfand Center for Service Learning and Outreach
China Association for Science and Technology (CAST)
Coalition for Plasma Science (CPS)
Consortium for Ocean Leadership
Drexel University
Duquesne University Bayer School of Natural and Environmental Sciences
Endocrine Society
European Organization for Nuclear Research-CERN
Fondazione Bruno Kessler
Franklin & Marshall College

Google
 IEEE Foundation
 IEEE Computer Society
 Intel Foundation
 International Association of Innovative Science and Technology (IAIST)
 International Council on Systems Engineering - INCOSE
 K. Soumyanath Memorial Award
 K. T. Li Foundation Special Award
 King Abdul-Aziz & his Companions Foundation for Giftedness and Creativity
 LANXESS Corporation
 London International Youth Science Forum
 Monsanto Company
 Mu Alpha Theta, National High School and
 Two-Year College Mathematics Honor Society
 National Aeronautics and Space Administration
 National Anti-Vivisection Society
 National Institute on Drug Abuse
 National Oceanic and Atmospheric Administration — NOAA
 Office of Naval Research on behalf of the United States Navy and Marine Corps
 Oregon Institute of Technology
 Patent and Trademark Office Society
 ProConn Power, Inc.
 Psi Chi, The International Honor Society in Psychology
 Ricoh Americas Corporation
Science News Magazine
 Sigma Xi, The Scientific Research Society
 Society for Experimental Mechanics, Inc.
 Society for Freshwater Science
 Society of Experimental Test Pilots
 Society of Exploration Geophysicists
 SPIDER-MAN Turn Off the Dark
 SPIE-The International Society for Optical Engineering
 United States Army
 United States Environmental Protection Agency
 United Technologies Corporation
 University of the Sciences in Philadelphia
 Vacuum Technology Division of the American Vacuum Society
 Wolfram Research, Inc.

Auditorium Safety

Sticks and large flags are prohibited during the awards ceremonies. Please do not bring flags or state symbols on stage during the presentation of awards. Sticks from flags will be confiscated at the door.

Hotel Safety

- Do not answer the door in a hotel room without verifying who it is. If a person claims to be an employee, call the front desk and ask if someone from their staff is supposed to have access to your room and for what purpose.
- Always walk in groups.
- Use hotel main entrance when returning to your hotel late in the evening.
- Be observant and look around before entering parking lots.
- Close the door securely whenever you are in your hotel room and use the locks.
- Don't needlessly display guestroom keys or convention badges in public.
- Do not carry large amounts of cash or expensive jewelry.
- Do not invite strangers to your hotel room.
- Avoid bringing valuables to the Intel ISEF. Anything that is brought should be placed in the hotel's safe deposit box.
- Make sure sliding glass doors and any connecting room doors are locked.
- Report any suspicious activity to management.

About Pittsburgh

At the convergence point of three major rivers — Allegheny, Monongahela, and Ohio — Pittsburgh was once described as the “only city in America with an entrance.” Pittsburgh is often identified by its iron and steel industries, but many don't realize that it is a clean, scenic river community; it is the only U.S. city rated among the top five “Most Livable” in three editions of the “Places Rated Almanac.” Families can take in The Andy Warhol Museum, Mr. Rogers' Neighborhood at Idlewild Park, The Pittsburgh Children's Museum, and Kennywood Park. Sports fans can follow the Steelers, Penguins and Pirates. And for a step back in time, the city offers two operating inclines: Monongahela Incline (1869) and Duquesne Incline (1877).

Hotels	Address	Phone
Cambria Suites at Consol Energy Center	1320 Center Avenue	(412) 381-6687
Courtyard Pittsburgh	945 Penn Avenue	(412) 434-5551
Doubletree Hotel and Suites	One Bigelow Square	(412) 281-5800
Fairmont Pittsburgh	510 Market Street	(412) 391-1033
Hampton Inn and Suites	1247 Smallman Street	(412) 288-4350
Hyatt Place North Shore	260 North Shore Drive	(412) 321-3000
Omni William Penn	520 William Penn Place	(412) 281-7100
Pittsburgh Marriott City Center	112 Washington Place	(412) 471-4000
Renaissance Pittsburgh	107 6th Street	(412) 562-1200
Sheraton Station Square	300 West Station Square Drive	(412) 261-2000
Westin Convention Center	1000 Penn Avenue	(412) 281-3700
Wyndham Grand	600 Commonwealth Place	(412) 391-4600

About the David L. Lawrence Convention Center

Intel ISEF participants must wear their name badges to participate in fair activities and events. Admission to the David L. Lawrence Convention Center is restricted to persons wearing an Intel ISEF name badge.

The Convention Center is a smoke-free environment. Outside food and beverages are prohibited in the Convention Center.



Intel is proud to present the
Gordon E. Moore Award
The top award for the
Intel International Science and Engineering Fair

Gordon Moore
Chairman Emeritus of the Board, Intel Corporation

Gordon E. Moore co-founded Intel Corporation in 1968, serving as president and CEO as well as Chairman of the Board before his retirement in 1997. With degrees in chemistry and physics from University of California, Berkeley (B.S.) and Caltech (Ph.D.), Moore is widely known for “Moore’s Law,” the driving pulse of the semiconductor industry. He and his wife, Betty Moore, have created the Gordon & Betty Moore Foundation and are among the world’s most generous philanthropists. He is widely admired for his technical leadership and his role as one of the creators of today’s Silicon Valley, as well as for his ongoing philanthropic role supporting environmental efforts and science education and research.

The Gordon E. Moore Award recognizes the best of the Best of Category among the outstanding students from around the world who participate in the Intel International Science and Engineering Fair. The winning project is selected on the basis of outstanding and innovative research, as well as on the work’s potential in the winner’s field and on the world at large.

Intel Foundation is proud to present the 2012 winner of the Gordon E. Moore Award, who will be recognized with an award in the amount of \$75,000.

All Intel ISEF 2012 events take place at the David L. Lawrence Convention Center (DLCC) unless otherwise noted.

Event/Group	Location	Day
Advisory Council Meeting	413/414	5/13-5/14, 5/16-17
AP Testing	Westin — Westmoreland Room	5/14-5/15
Excellence in Science & Technology Panel	Hall A	5/15
Grand Awards Ceremony	Hall A	5/18
Housing Information	Registration Complex	5/12-5/17
HUB (Center of Exhibit Hall)	Halls B & C	5/13-5/18
IB Testing	Westin — Cambria	5/14-5/18
VisitPittsburgh Booth	2nd Floor Concourse	5/12-5/18
Intel e-Lounge	301-305	5/13-5/17
Expo 2012	Spirit of Pittsburgh Ballroom B	5/14-5/15, 5/17
International/Volunteer Office	306/307	5/11-5/18
Locator Card Kiosk	Registration Complex	5/12-5/15
Lost and Found	HUB and Registration Complex	5/13-5/18 5/13-5/17
Medals and Certificates	Registration Complex	5/12-5/17
Official Party Registration	2nd Floor Concourse	5/12-5/18
Opening Dinner	Spirit of Pittsburgh Ballroom A/C	5/14
Opening Ceremony	Hall A	5/14
Press Room	335	5/13-5/18
Project Exhibits	Halls B & C	5/13-5/18
Public Visitation	Halls B & C	5/17
Finalist Resource Center	411/412	5/13-5/15
Retail Store	East Lobby	5/12-5/18
Scientific Review Committee (SRC)	408-410	5/13-5/14
Society for Science & the Public Office	Registration Complex	5/12-5/17
Special Award Ceremony	Hall A	5/17
Student Observer Caucus	Westin Hotel	5/16
Student Pin Exchange	Westin Hotel	5/13
(Finalists and Student Observers Only)	Allegheny Ballroom	
Symposia	402, 403-405, 406	5/14-5/17

By entering the Intel International Science and Engineering Fair 2012 (Intel ISEF), you agree that you may be filmed or photographed for use in various promotional materials.

Please do not provide handouts or other materials at Intel ISEF, unless authorized in writing by SSP.

Open Daily

Exhibit Hall and the HUB

	Halls B & C
Sunday (Project Set-up and D&S Inspections)	8:00 a.m.-8:00 p.m.~OFF
Monday (Project Set-up and D&S Inspections)	8:00 a.m.-6:00 p.m.~OFF
Tuesday	8:00 a.m.-9:30 a.m.~Finalists with Infractions only 9:30 a.m.-11:30 a.m.~Finalists only for Press/PR purposes
Wednesday	8:15 a.m.-11:45 a.m., 3:00 p.m.-3:45 p.m., 4:15 p.m.-6:00 p.m.~Finalists & Judges only
Thursday	9:00 a.m.-9:00 p.m.~Public Visitation Day
Friday	11:00 a.m.-2:00 p.m.~OFF

Finalist Resource Center

	411/412
Sunday-Monday	8:00 a.m.-9:00 p.m.
Tuesday	8:00 a.m.-Noon

Intel e-Lounge

	301-305
Sunday	3:00 p.m.-10:00 p.m.
Monday-Thursday	8:00 a.m.-6:00 p.m.

Expo 2012 booths

	Ballroom B
Monday	2:00 p.m.-6:00 p.m.
Tuesday	9:00 a.m.-5:00 p.m.
Thursday	8:00 a.m.-4:00 p.m.

International/Volunteer Office

	306/307
Saturday	8:00 a.m.-6:00 p.m.
Sunday	8:00 a.m.-9:00 p.m.
Monday-Tuesday	8:00 a.m.-10:00 p.m.
Wednesday	6:30 a.m.-7:00 p.m.
Thursday	8:00 a.m.-7:00 p.m.
Friday	7:00 a.m.-11:00 a.m.

Local Information Desk

Saturday-Friday	2nd Floor Concourse 9:00 a.m.-5:00 p.m.
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Official Party Registration

	2nd Floor Concourse
Saturday	3:00 p.m.-6:00 p.m.
Sunday-Tuesday	8:00 a.m.-9:00 p.m.
Wednesday	7:00 a.m.-9:00 p.m.
Thursday	8:00 a.m.-7:00 p.m.
Friday	7:00 a.m.-10:00 a.m.

Retail Store

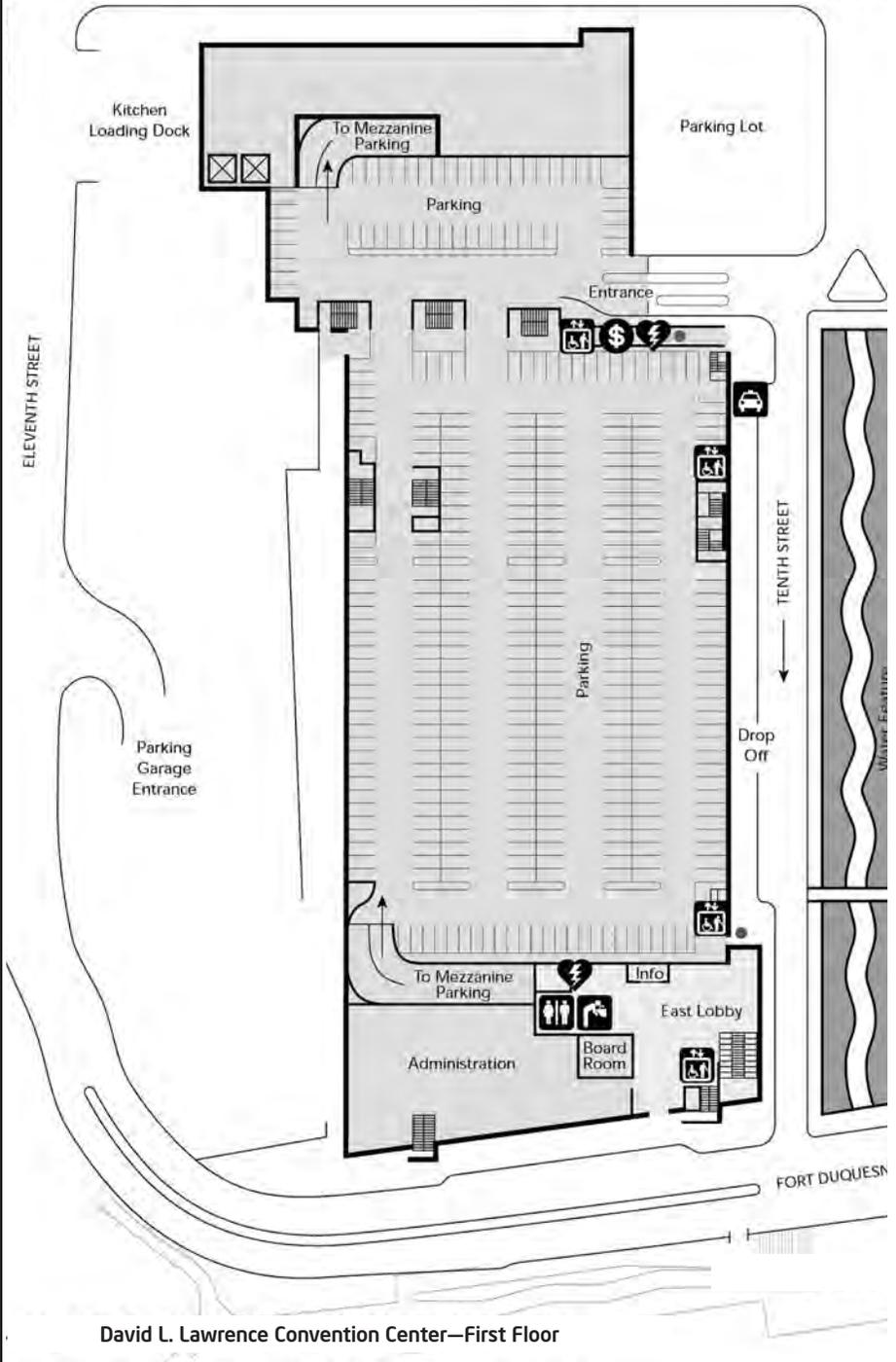
	East Lobby
Saturday	3:00 p.m.-7:00 p.m.
Sunday-Thursday	8:00 a.m.-7:00 p.m.
Friday	8:00 a.m.-3:00 p.m.

VisitPittsburgh Information Booth

	2nd Floor Concourse
Saturday	2:00 p.m.-6:00 p.m.
Sunday-Tuesday	8:00 a.m.-7:00 p.m.
Wednesday-Thursday	8:00 a.m.-5:00 p.m.
Friday	Noon-2:00 p.m.

Participants are encouraged to visit www.societyforscience.org/intelise2012 throughout the week for schedule updates.

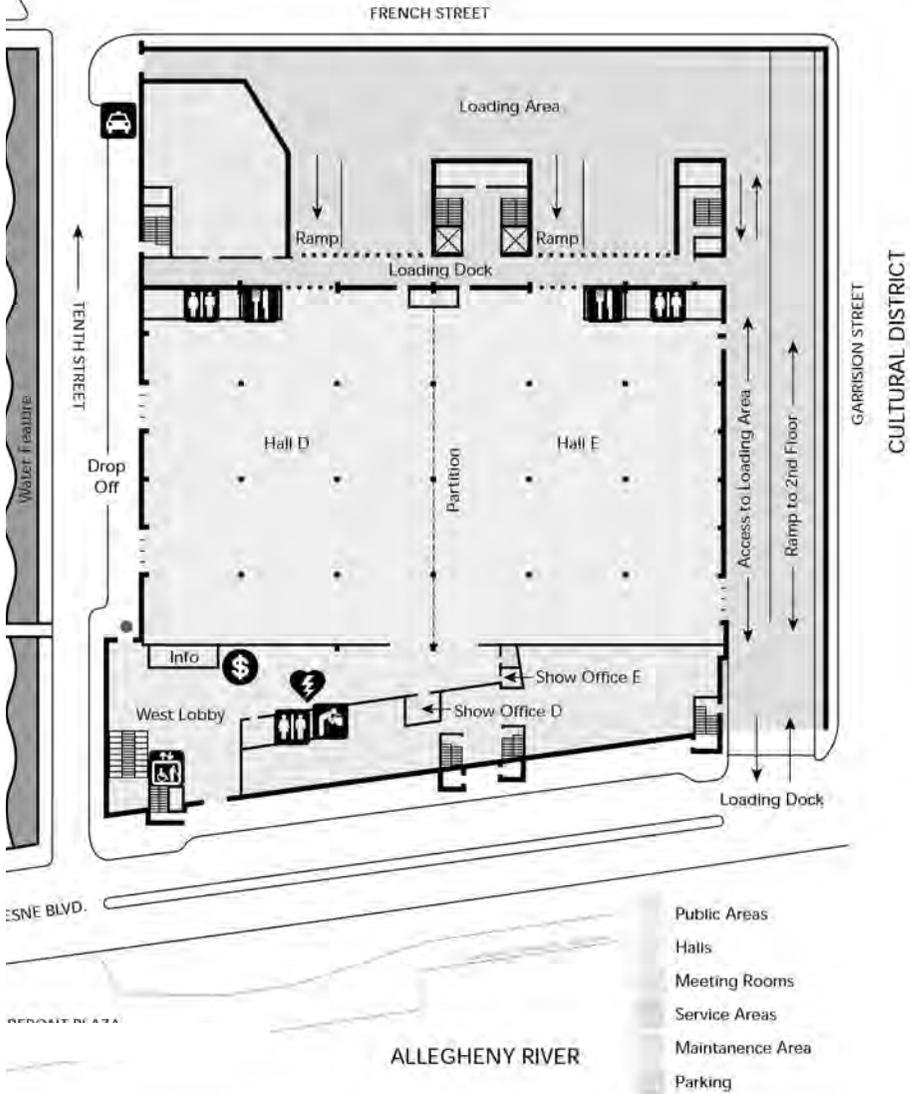
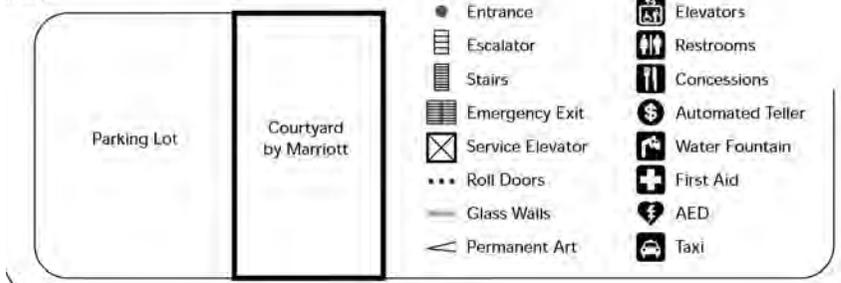
Map of David L. Lawrence Convention Center



David L. Lawrence Convention Center—First Floor

PITTSBURGH

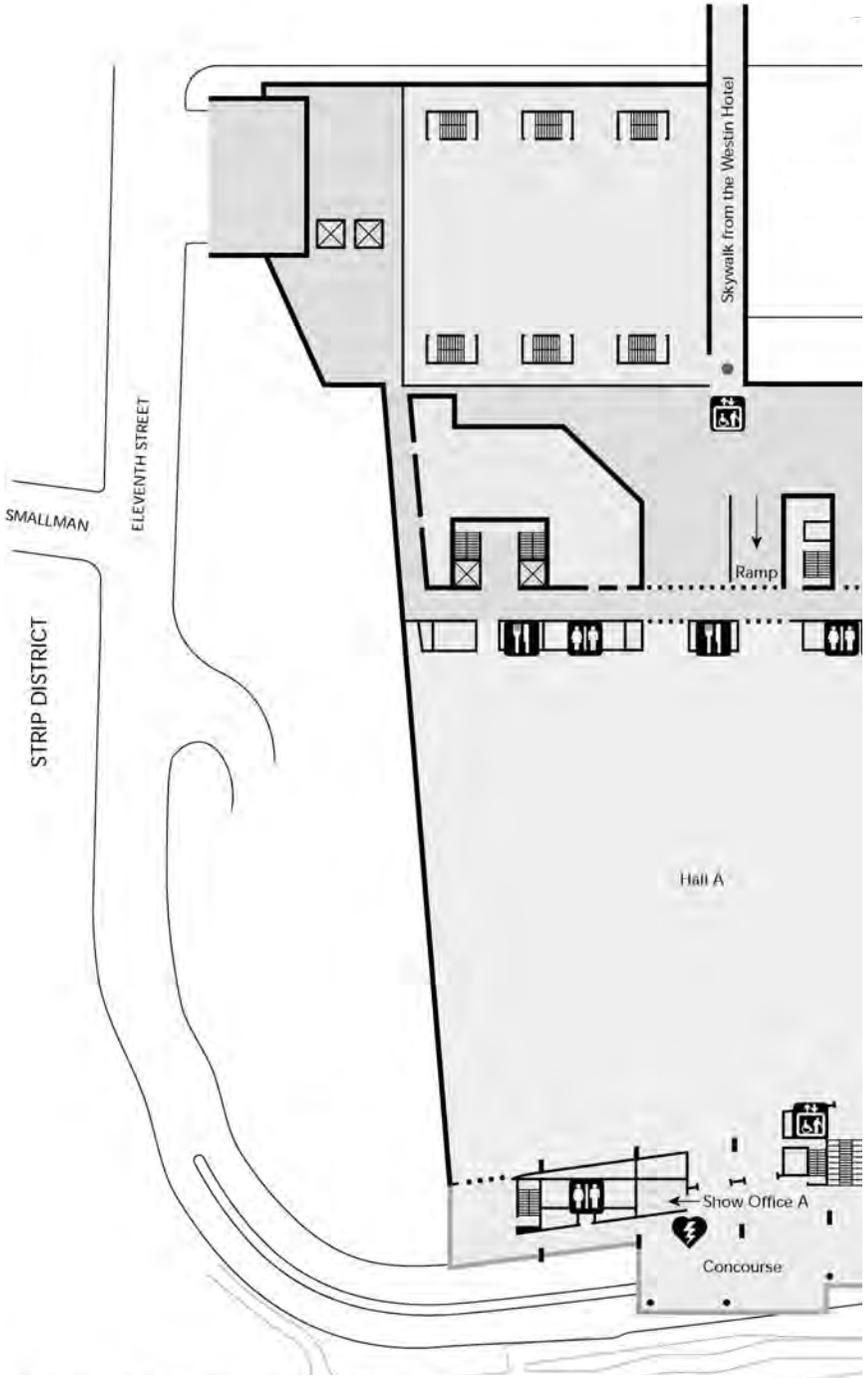
AVENUE



Map of David L. Lawrence Convention Center

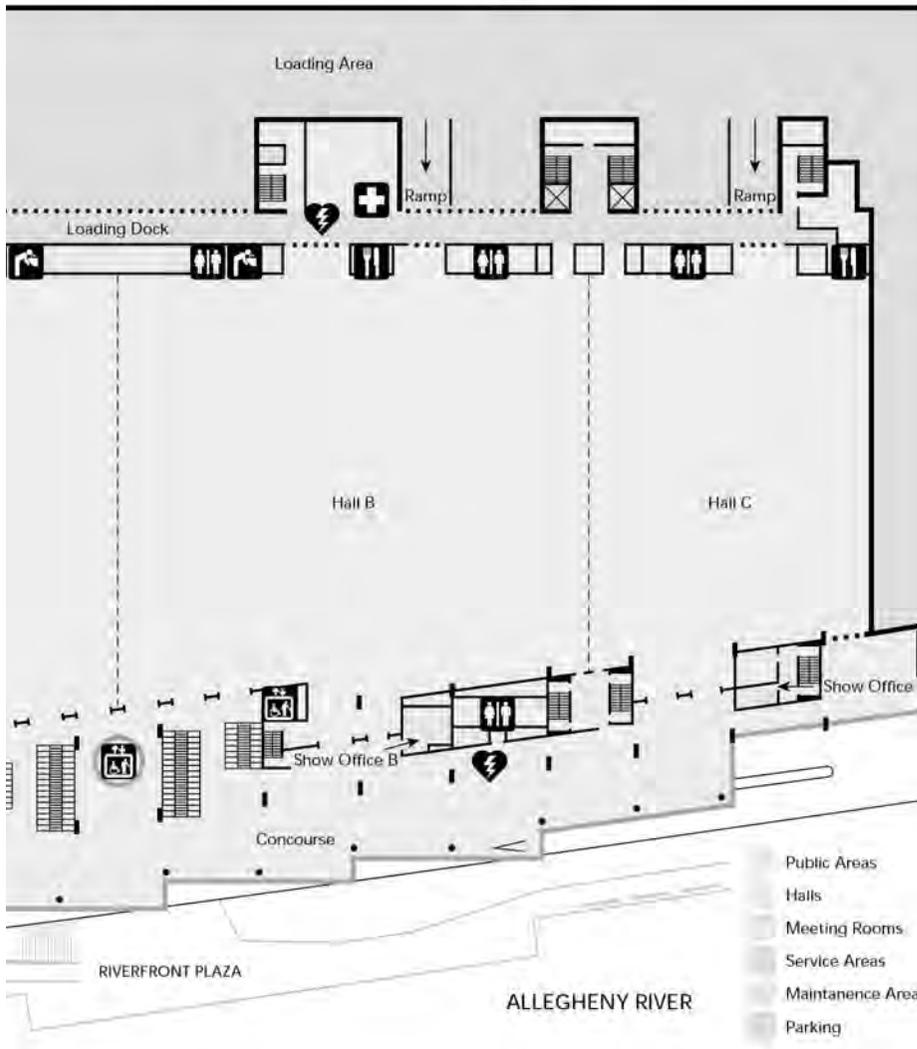
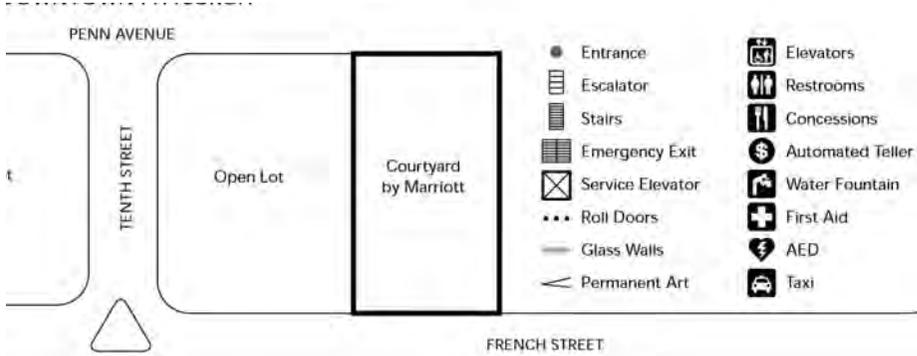
- Public Areas
- Halls
- Meeting Rooms
- Service Areas
- Maintenance Area
- Parking

Map of David L. Lawrence Convention Center

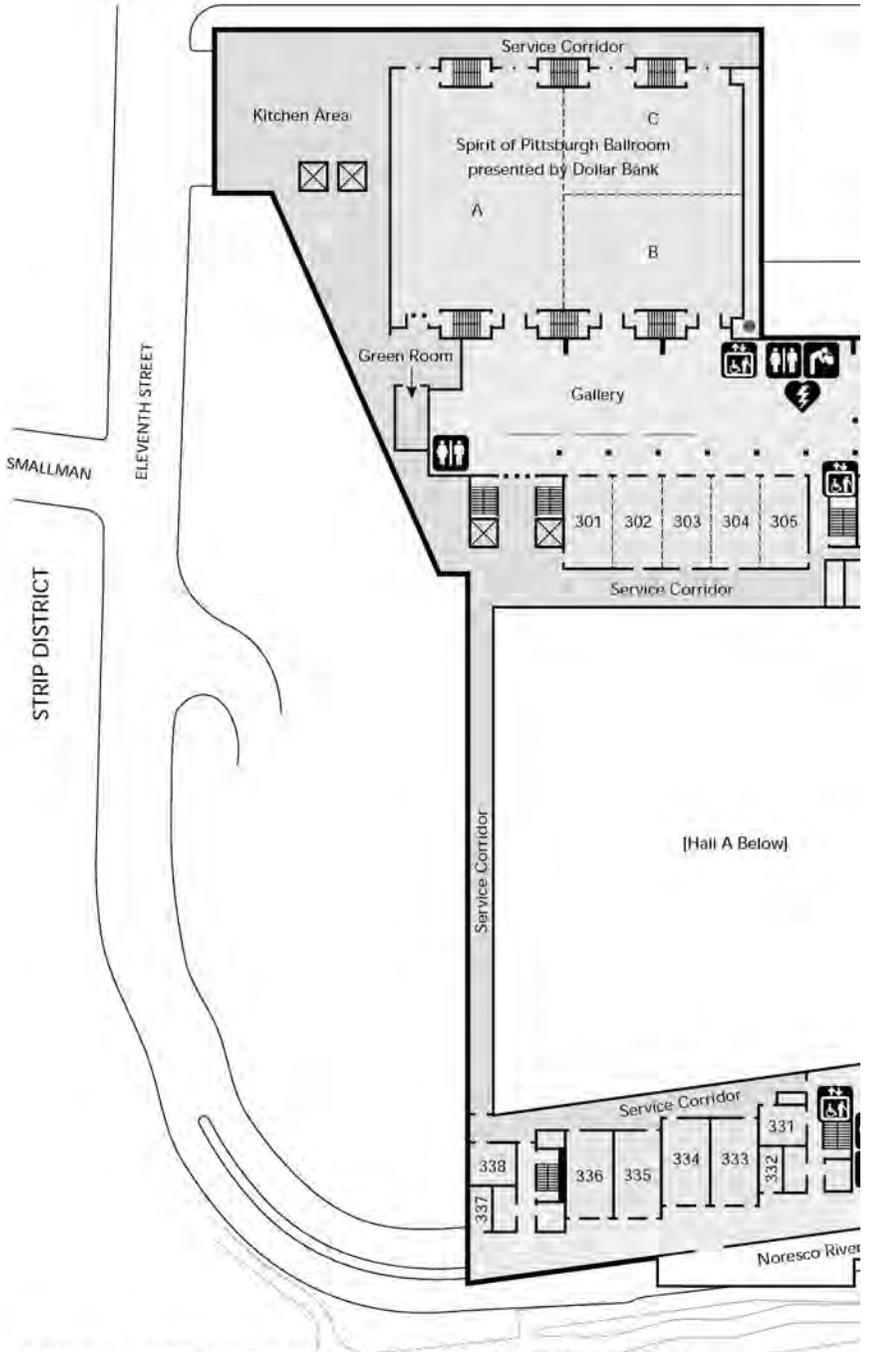


David L. Lawrence Convention Center—Second Floor

Map of David L. Lawrence Convention Center



Map of David L. Lawrence Convention Center

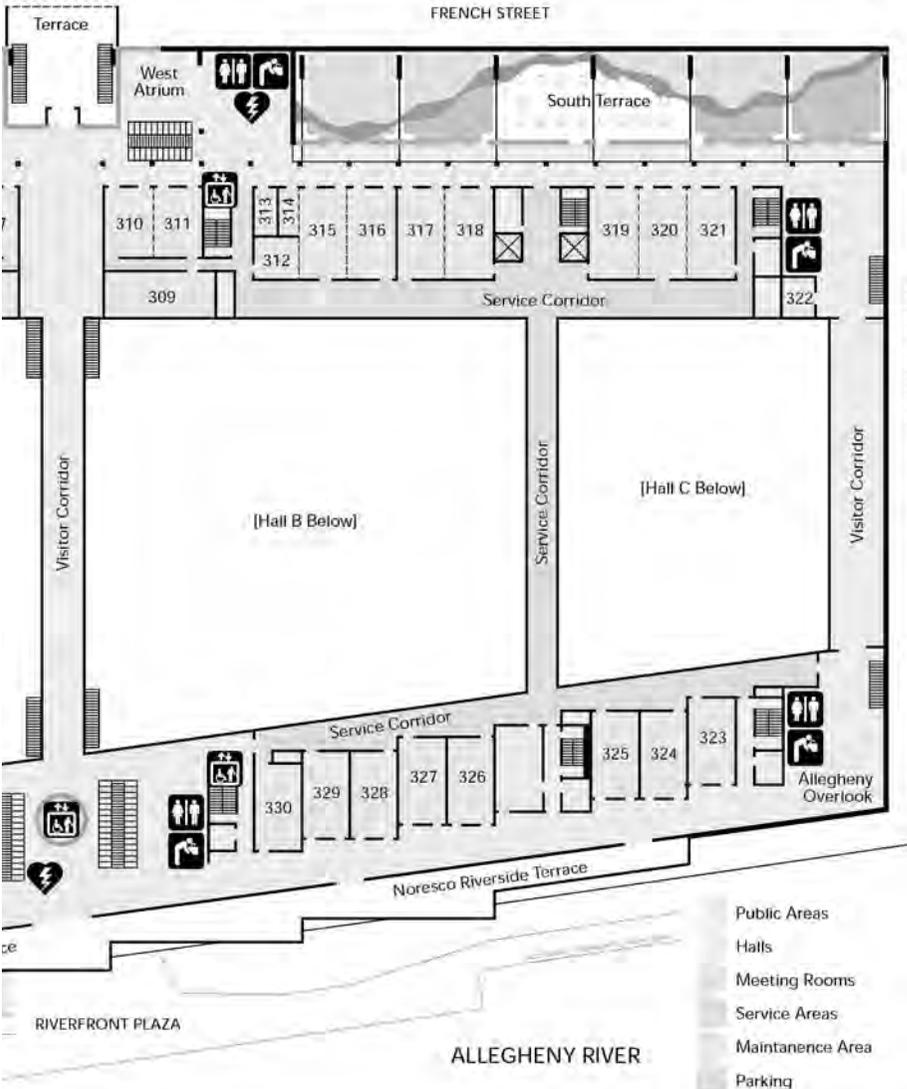
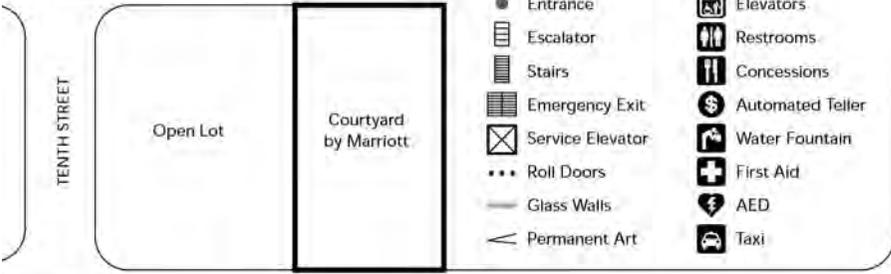


David L. Lawrence Convention Center—Third Floor

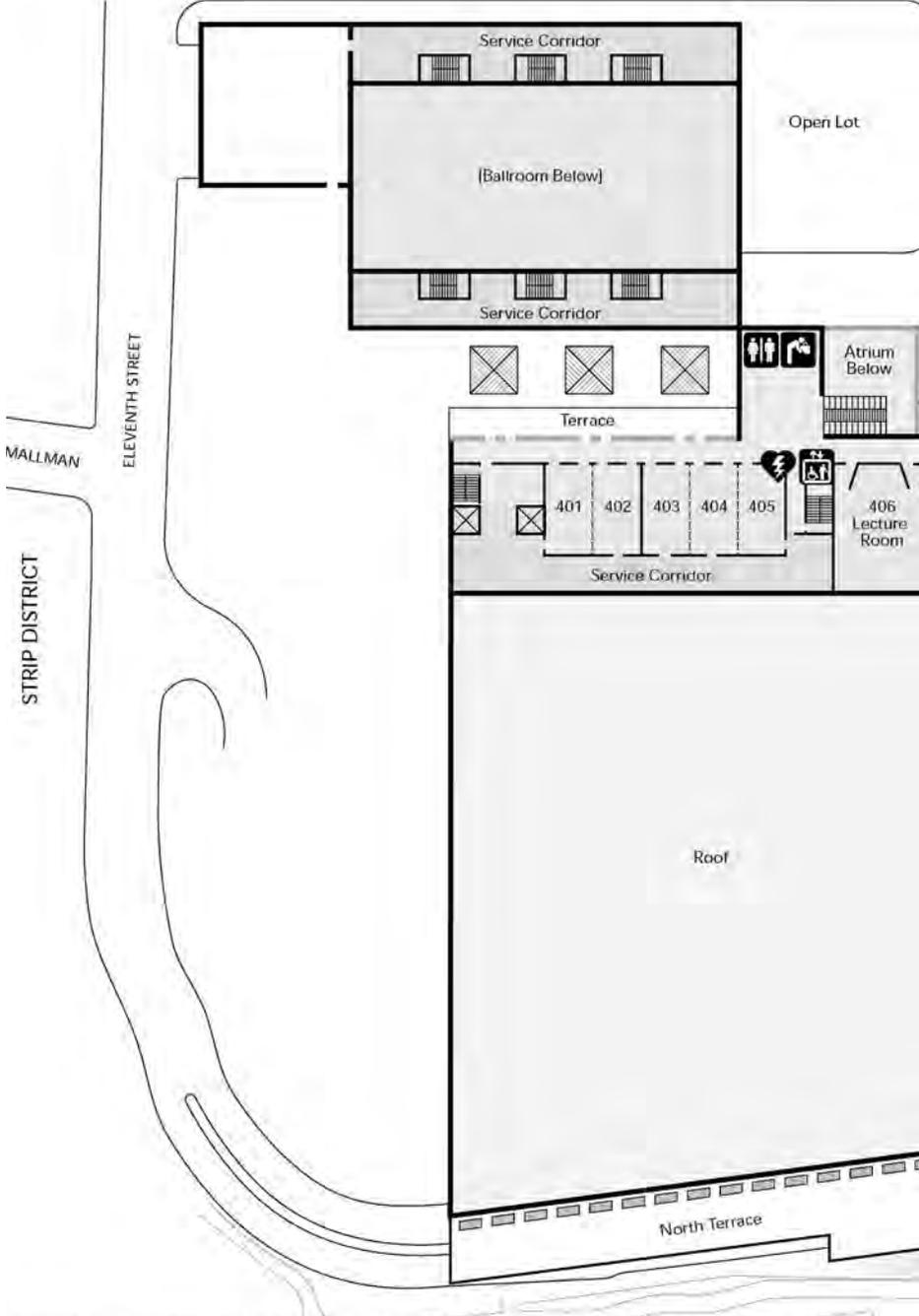
Map of David L. Lawrence Convention Center

TOWN PITTSBURGH

PENN AVENUE



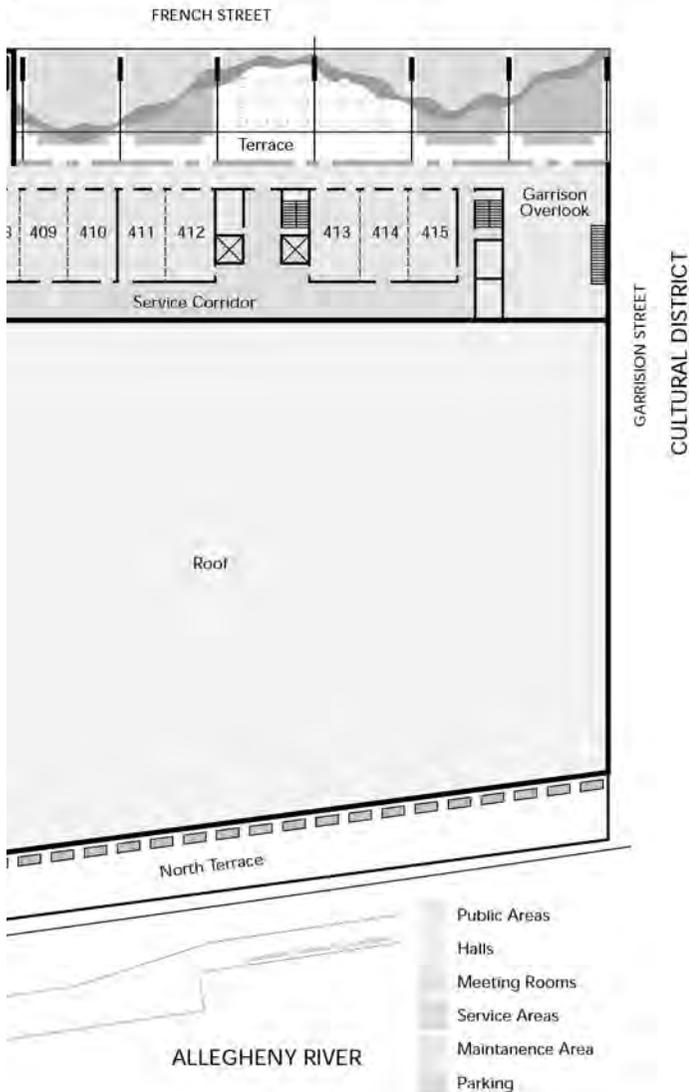
Map of David L. Lawrence Convention Center



David L. Lawrence Convention Center—Fourth Floor

Map of David L. Lawrence Convention Center

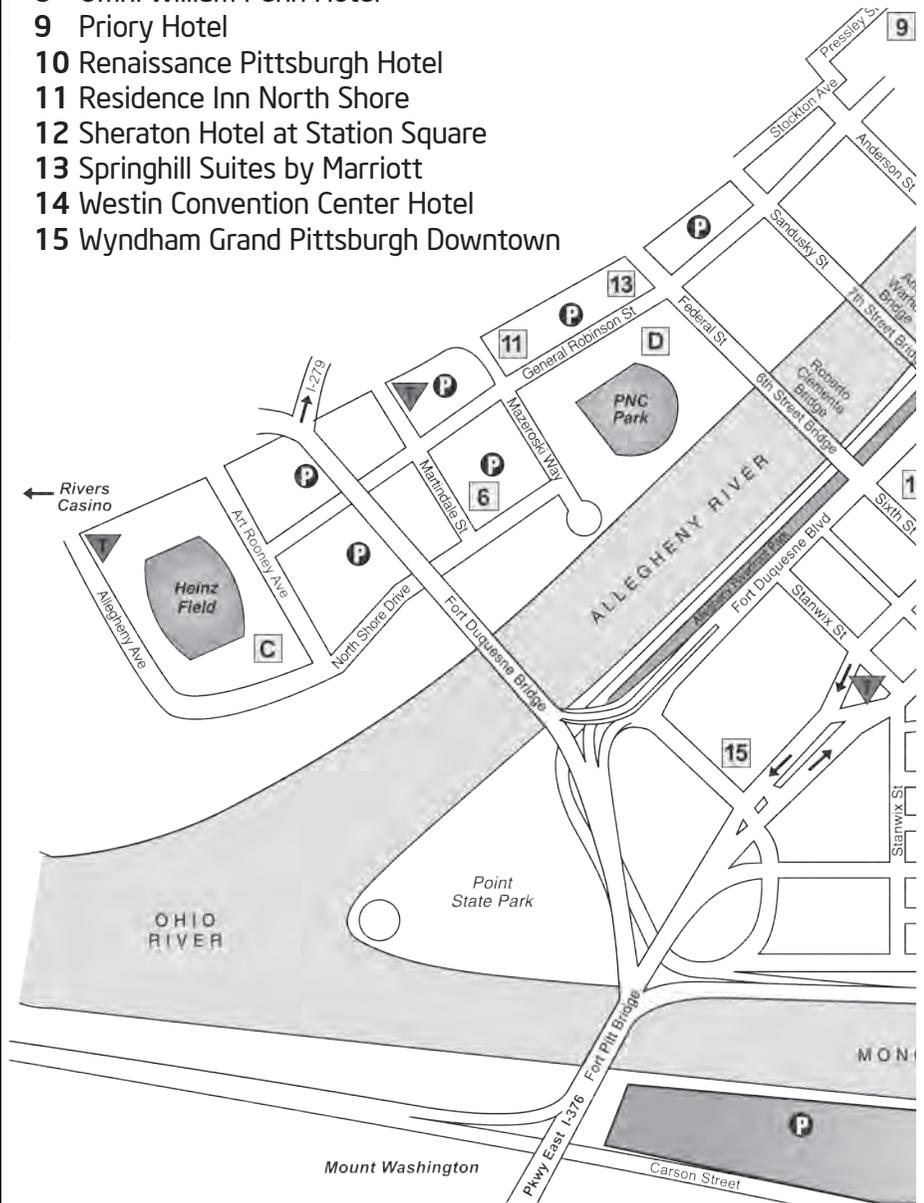
Courtyard by Marriott	● Entrance	Elevators
	Escalator	Restrooms
	Stairs	Concessions
	Emergency Exit	Automated Teller
	Service Elevator	Water Fountain
	⋯ Roll Doors	First Aid
	— Glass Walls	AED
	◁ Permanent Art	Taxi



Map of Pittsburgh and "T" stops

Hotel Key

- 1 Cambria Suites at CONSOL Energy Center
- 2 Courtyard by Marriott
- 3 Doubletree by Hilton Hotel & Suites
- 4 Fairmont Pittsburgh
- 5 Hampton Inn & Suites Downtown
- 6 Hyatt Place North Shore
- 7 Marriott Pittsburgh City Center
- 8 Omni William Penn Hotel
- 9 Priory Hotel
- 10 Renaissance Pittsburgh Hotel
- 11 Residence Inn North Shore
- 12 Sheraton Hotel at Station Square
- 13 Springhill Suites by Marriott
- 14 Westin Convention Center Hotel
- 15 Wyndham Grand Pittsburgh Downtown



Map of Pittsburgh and "T" stops

Map Key

- A David L. Lawrence Convention Center
- B CONSOL Energy Center
- C Heinz Field
- D PNC Park
- P Parking



Inspired to Change Our World.



Visit the Intel ISEF 2012 Expo Hall David L. Lawrence Convention Center — Ballroom B

Join us in the Intel ISEF Expo Hall to interact and engage with industry, academic and community organizations.

From water purification to rubber technology, sustainable materials to hybrid vehicles, microbiology, transportation engineering and more . . . you won't want to miss out on these exciting and inspiring exhibit displays.

Stop by Ballroom B on the third floor of the Convention Center

Monday, May 14 2:00 p.m.-6:00 p.m.

Tuesday, May 15 9:00 a.m.-5:00 p.m.
Refreshments 9:00 a.m.-11:00 a.m.

Thursday, May 17 8:00 a.m.-5:00 p.m.



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Intel ISEF 2012

PITTSBURGH, PENNSYLVANIA

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Saturday: 3:00 p.m. - 7:00 p.m.

Sunday-Thursday: 8:00 a.m. - 7:00 p.m.

Friday: 8:00 a.m. - 3:00 p.m.



APPAREL PROVIDED BY:



1-888-821-2725

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sspstore.myshopify.com

Sunday, May 13

See page 16-17 for hours and locations of daily recurring events and resources. All events take place in the David L. Lawrence Convention Center (DLCC) unless otherwise noted.

- 8:00 a.m.-5:00 p.m.** **Project Drop-Off** **DLCC Loading Dock**
 (Afterwards by appt.) Finalists transporting their own projects may unload them only if registered. Each item must be clearly marked with finalist's name, address, and fair ID number. Only Fair Officials are permitted on the floor before 8:00 a.m. Sunday.
- 8:00 a.m.-8:00 p.m.** **Setup of Projects/Display & Safety Inspections** **Halls B & C**
- 8:00 a.m.-8:00 p.m.** **Scientific Review Committee Interviews** **408**
 Projects must be reviewed and cleared by the Scientific Review Committee (SRC) before they may be set up. An SRC project infraction list will be posted Saturday, May 12 at www.societyforscience.org/intelisef2012.
- 3:00 p.m.-10:00 p.m.** **Intel e-Lounge** **301-305**
 The Intel e-Lounge provides a wireless hotspot as well as Intel® mobile technology-based notebook computers to access the internet and email while you are at the Intel ISEF. Attendees can also take a break and watch movies or play Wii in the visual entertainment area.
- 4:30 p.m.-6:00 p.m.** **Advisory Council Meeting** **413-414**
- 7:00 p.m.-9:00 p.m.** **Student Pin Exchange** **Westin Hotel, Allegheny Ballroom**
 Finalists and Student Observers Only—Casual Attire
 This icebreaker event is for finalists and student observers, who are invited to trade pins and to meet new friends. There will be food, music, and good times for all.

Monday, May 14

- 8:00 a.m.-Noon** **Scientific Review Committee Interviews** **408-410**
Only for finalists whose projects have not been cleared.
- 8:00 a.m.-6:00 p.m.** **Project Setup/Display & Safety Inspection** **Halls B & C**
 Finalists transporting their own projects may unload them only if registered. Each item must be clearly marked with finalist's name, address, and fair ID number.
- 8:00 a.m.-6:00 p.m.** **Intel e-Lounge** **301-305**
- 9:00 a.m.-4:00 p.m.** **Symposia** **402, 403-405, 406**
 See full schedule on pages 37-44.
- 2:00 p.m.-6:00 p.m.** **Expo 2012** **Spirit of Pittsburgh Ballroom B**
 All Intel ISEF 2012 participants are welcomed and encouraged to visit this year's exhibits. Organizations with a science and education focus, including educational institutions, agencies, corporations and other sponsors will be on-hand.
- 1:00 p.m.-2:00 p.m.** **Advisory Council Meeting** **413-414**
- 3:30 p.m.-6:30 p.m.** **Opening Ceremony Dinner** **Spirit of Pittsburgh Ballrooms A-C**
 All registered attendees welcome.

Intel Presents Innovator to Entrepreneur

Monday, May 14
10:00 a.m.-Noon, Room 402

Benjamin Gulak
CEO & Chairman,
BPG-Werks, and
Intel ISEF Opening
Ceremony Keynote
Speaker



Lila Ibrahim
Investment
Partner, Kleiner
Perkins Caufield &
Byers



**Brian David
Johnson**
Futurist, Intel
Corporation



Andre Marquis
Executive Director,
Lester Center for
Entrepreneurship
& Innovation,
University of
California, Berkeley



- Do you think your project could become a business?
- What do you need to know to become an entrepreneur?
- Do you have an idea that could rock the future?

Come listen and talk with professionals who have started companies, who have funded companies and who are looking to the future at an open panel designed to provide information and answer your questions about taking your innovation to the global marketplace. Don't miss this opportunity to talk to a professional about your innovation.

- 6:30 p.m.–7:00 p.m. Opening Ceremony Pre-Show** **Hall A**
 Casual Attire—Doors open at 6:00 p.m.
- 7:00 p.m.–8:30 p.m. Opening Ceremony** **Hall A**
 Sponsored by Intel Corporation
 The Intel ISEF Opening Ceremony officially kicks off the week of events for 2012. This high-energy event will be led by master of ceremonies, Brandon Hudson, News Reporter, Channel 11 WPXI. The keynote will be by Ben Gulak, CEO & Chairman, BPG Werks, and Intel ISEF 2004, 2006, 2007. Mr. Gulak is an inventor best known for creating The Uno, an eco-friendly, electric-powered vehicle and The Shredder, a portable all-terrain vehicle with the handlebars of a Segway and treads similar to those of a tank. You will have the opportunity to ask questions during the event through Twitter, so make sure you have your Twitter account set up and include the hash tag #intelisef to tweet your questions.
- 9:30 p.m. Final Project Infractions List**
 Posted at Registration, outside of Exhibit Halls, and on www.societyforscience.org/intelisef2012.

Tuesday, May 15

- 8:00 a.m.–9:30 a.m. Project Infraction Clearance** **Halls B & C**
 Both the Scientific Review Committee and Display & Safety Committee will have conducted a final review of all projects by Monday afternoon. If any problems with a project are identified during review, the finalist's booth number will be posted outside the Exhibit Hall on Monday, May 14. Only those finalists will be permitted in the Exhibit Hall beginning at 8:00 a.m. A project cannot be judged unless it has been cleared by the SRC by 9:30 a.m., Tuesday, May 15.
- 8:00 a.m.–6:00 p.m. Intel e-Lounge** **301-305**
- 9:00 a.m.–1:30 p.m. Symposia** **402, 403-405, 406**
 See full schedule on pages 37-44.
- 9:00 a.m.–5:00 p.m. Expo 2012** **Ballroom B**
 Free refreshments will be served from 9:00 a.m.–11:00 a.m. inside the Intel ISEF Expo Ballroom B.
- 10:00 a.m.–11:30 a.m. Press/Public Relations Time with Finalists** **Halls B & C**
 All finalists have the opportunity to come to the Exhibit Hall for scheduled press interviews, to be available for impromptu visits from visiting sponsors and dignitaries and to check their booth area.
- 2:00 p.m.–4:00 p.m. Excellence in Science and Technology Panel** **Hall A**
 Presented by Intel Corporation—Casual Attire
 All attendees are invited to a conversation with Nobel Laureates. Panelists are: J. Michael Bishop, Martin Chalfie, Dudley Herschbach, H. Robert Horvitz, John Mather, Douglas Osherooff, Carl Wieman and Ada Yonath. The panel will be moderated by NPR Science Correspondent and SSP Trustee Joe Palca.

Opening Ceremony

Monday, May 14

David L Lawrence Convention Center
West Hall A



INSPIRED TO CHANGE
OUR WORLD.



Ben Gulak, Intel ISEF 2004,
2006-2007

The Intel ISEF Opening Ceremony kicks off the week of events for 2012. This high-energy event will be lead by masters of ceremonies, Brandon Hudson, News Reporter, Channel 11 WPXI. The keynote will be by Ben Gulak, CEO and Chairman of BPG-Werks, and Intel ISEF 2004, 2006, 2007. Gulak is best known for creating The Uno, an eco-friendly, electric-powered vehicle that resembles a motorized unicycle and development of The Shredder, a portable all-terrain vehicle with the handlebars of a Segway and treads similar to those of a tank.

Be part of the show!

You can participate in the discussion by tweeting questions. Make sure you have your Twitter account set up and include the hash tag #intelisef when you tweet your questions.
Start tweeting now!

- 7:00 p.m.—9:00 p.m. Intel ISEF Mixer Event—Students only at AE Stage; Adults only at Heinz Field**
 All registered Official Party members are invited to this celebration event. Attendees should use Light Rail, known as the “T” in Pittsburgh, to get to and from the events. The service is free to the North Side stop, which attendees should use on Tuesday night. “T” stops are located near all block hotels and are noted on the Pittsburgh map on pages 26-27. At AE Stage, finalists and observers will be able to dance the night away at a DJ-hosted dance party. Heinz Field will host only those Official Party members who are over 21. Dinner will be served at both venues. Participants **MUST** wear their Intel ISEF badge in order to attend.

Wednesday, May 16 _____

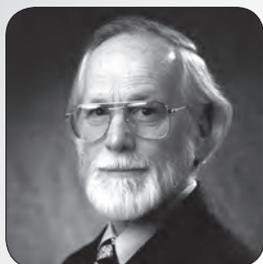
- 8:00 a.m.–6:00 p.m. Intel e-Lounge 301-305**
- 8:15 a.m.–11:45 a.m. Exhibit Hall Open Halls B & C**
 Finalists at Projects for Interviews—Professional Attire
 Finalists & Judges only
- 8:15 a.m.–5:45 p.m. Student Observer Caucus Westin Hotel**
 For students registered as Student Observers with their Official Party and pre-registered for this event here:
www.societyforscience.org/isefstudentobservers
- 9:00 a.m.–5:00 p.m. Symposia 402, 403-405, 406**
 See full schedule on pages 37-44.
- 11:45 a.m.–1:00 p.m. Lunch Break**
 Concession stands and additional seating will be available in Hall D. No outside food may be brought into the Convention Center.
- 1:15 p.m.–3:45 p.m. Finalists at Projects for Scheduled Interviews Halls B & C**
 Finalists and Judges only—Professional Attire
- 4:15 p.m.–6:00 p.m. Finalists at Projects for Unscheduled Interviews Halls B & C**
 Finalists and Judges only—Professional Attire
- 7:00 p.m.–11:00 p.m. Intel ISEF Night**
 For one night, Heinz Field, the Carnegie Science Center, and Sports Works, belong to Intel ISEF. Only Official Party members (students and adults) will be admitted. Attendees should use Light Rail, known as the “T” in Pittsburgh, to get to and from the events. The service is free to the Allegheny stop, which attendees should use on Wednesday night. “T” stops are located near all block hotels and are noted on the Pittsburgh map on pages 26-27. Guests will enjoy exclusive access to all venues throughout the evening. Dinner will be served at Heinz Field and dessert will be served at the Carnegie Science Center.

Thursday, May 17 _____

- 8:00 a.m.–6:00 p.m. Intel e-Lounge 301-305**
- 8:00 a.m.–4:00 p.m. Expo 2012 Spirit of Pittsburgh Ballroom B**
- 9:00 a.m.–5:00 p.m. Symposia 402, 403-405, 406**
 See full schedule on pages 37-44.

Don't miss the
**Excellence in Science and
Technology Discussion Panel**

Tuesday, May 15, 2:00 p.m.
David L. Lawrence Convention Center, Hall A



J. Michael Bishop
Nobel Prize—Physiology or
Medicine
1989



Martin Chalfie
Nobel Prize—Chemistry
2008



Dudley Herschbach
Nobel Prize—Chemistry
1986



H. Robert Horvitz
Nobel Prize—Chemistry
2002



John Mather
Nobel Prize—Physics
2006



Douglas Osheroff
Nobel Prize—Physics
1996



Carl Wieman
Nobel Prize—Physics
1995



Ada Yonath
Nobel Prize—Chemistry
2009



Joe Palca
Science Correspondent, NPR
Moderator

presented by
Intel Corporation

9:00 a.m.–9:00 p.m.	Public Visitation Day	Halls B & C
10:00 a.m.–2:00 p.m.	All Finalists Required at Projects Meal vouchers for concession stands in Halls B and C and in the Concourse outside Hall C will be provided to finalists for lunch.	Halls B & C
1:00 p.m.–3:00 p.m.	Advisory Council Meeting	413/414
7:00 p.m.–10:00 p.m.	Special Award Ceremony (Doors open at 6:30 p.m.)—Professional Attire Ceremony in which Special Award Organizations, academic institutions and government agencies give awards.	Hall A

Friday, May 18

7:00 a.m.–2:00 p.m.	Luggage Storage free of charge	Second Floor Concourse
9:00 a.m.–Noon	Grand Awards Ceremony Sponsored by Intel (Doors open at 8:30 a.m.)—Professional Attire All students are to be seated by 8:45 a.m. Awards Ceremony where winners from each category as well as the top overall winners for Intel ISEF 2012 are announced.	Hall A
Close of Award Ceremony–2:00 p.m.	Exhibit Hall Open for Project Teardown Finalists take down and pack projects for return home. Any stored packing material will be at project booth. Finalists transporting their own projects will load them upon completion of packing. Projects being shipped via UPS or GES/heavy freight must be packed and processed for shipping by 2:00 p.m. Intel ISEF 2012 nametags required at all times during dismantling. No exceptions	Halls B & C

Intel ISEF 2012 Recording Notice

All Intel ISEF participants are advised that you may appear on camera during certain events at Intel ISEF 2012. With your attendance, you consent to the reproduction and use of your photograph, image, voice or a reproduction thereof, either in whole or in part to be used by Society for Science & the Public, Intel, and others they may designate, for any and all advertising, trade, or art purposes and in any and all publications and other advertising media without limitation or reservation.

If you do not wish to be recorded, please exit the area until all filming is completed.

Transportation back to Pittsburgh Airport will be provided on Friday, May 18 from the David L. Lawrence Convention Center immediately following the close of the Grand Awards Ceremony, then from block hotels through the afternoon on Friday and Saturday morning.

Reservations for airport shuttle are required and should have been made online prior to Intel ISEF.

Symposia are an opportunity to share information with students, parents, teachers, fair directors, and faculty. Content is the view and responsibility of the presenter(s), not of Society for Science & the Public nor Intel.

Monday, May 14

9:00 a.m.-10:30 a.m.

Room: 403-405

12:45 p.m.-2:15 p.m.

1 – Talking Science

Jack Franchetti, Jack Franchetti Communications, Inc.

A communications specialist teaches guiding principles and techniques to convey the science of your project in lay terms. Students consider this program helpful with judging, media interviews, and conversing with the public about their project.

Type: Presentation

Audience: Fair Directors, Teachers & Students

9:15 a.m.-10:15 a.m.

Room: 402

2 – Transitioning to College

Robert Glidden, President Emeritus, Ohio University

The first term in college can be exciting and exhilarating...or it can be confusing and discouraging. In preparing for one of life's most important transitions, what things should one consider? How do I make the right choices? What is the college's responsibility for helping to make a successful transition?

Type: Presentation

Audience: Students

10:00 a.m.-Noon

Room: 406

3 – Innovator to Entrepreneur – Taking Your Project to the Global Marketplace

Benjamin Gulak — CEO & Chairman, BPG-Werks, and Intel ISEF Opening Ceremony
Keynote Speaker

Lila Ibrahim — Investment Partner, Kleiner Perkins Caufield & Byers

Brian David Johnson — Futurist, Intel Corporation

Andre Marquis — Executive Director, Lester Center for Entrepreneurship & Innovation,
University of California, Berkeley

Do you think your project could become a business? What do you need to know to become an entrepreneur? Do you have an idea that could change the future in some incredible way? Over the years, many Intel ISEF participants have thought about starting companies based on their research projects. Come listen and talk with professionals who have started companies, who have funded companies and who are looking to the future at an open panel designed to provide information and answer your questions about taking your innovation to the global marketplace. Attendees will have the opportunity to participate in at least one speed mentoring session with one of our panelists. Don't miss this opportunity to talk to a professional about your innovation.

Type: Panel Discussion

Audience: Students, Teachers & Fair Directors

10:45 a.m.-11:45 a.m.

Room: 402

4 – Data Analysis: Statistical Storytelling from Graphs to Inference

Thomas H. Short, John Carroll University, University Heights, OH

Statistical methods are vital to the analysis of data and to the presentation of research results. We'll explore tools for bringing clarity and substance to the presentation and interpretation of research outcomes.

Type: Workshop

Audience: Teachers & Students

Inspired to Change Our World.



Talking Science

A Communications Symposium
for Intel ISEF 2012 Finalists
provided by
Intel Corporation

conducted by
Jack Franchetti Communications

Don't miss this opportunity. Learn how to:

- Positively impact your judging interview.
- Handle questions from the media.
- Talk to the general public without losing them.

All finalists are encouraged to attend.

Multiple Sessions available—David L. Lawrence Convention Center

Monday, May 14	9:00 a.m.–10:30 a.m.	403–405
	12:45 p.m.–2:15 p.m.	403–405
Tuesday, May 15	10:45 a.m.–12:15 p.m.	403–405

Jack Franchetti is a communications specialist who presents workshops for Intel ISEF finalists that teaches guiding principles and techniques to convey the science of your project in lay terms. Students have indicated that this program is helpful with the judging process, media interviews, and conversing with the public about their project.

Be smart and social. Join the conversation!



Stay current and share your experience with friends and family at Intel International Science and Engineering Fair (Intel ISEF)

Read interesting blogs

blogs.intel.com/csr

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Like us on Facebook

www.facebook.com/intel

www.facebook.com/societyforscience

Search for Official Intel ISEF or your country ISEF page

See us on Flickr

www.flickr.com/groups/isef2012

Watch us on YouTube

www.youtube.com/channelintel

www.youtube.com/societyforscience

- 1:15 p.m.–2:15 p.m. Room: 406
5 – Intellectual Property 101
 Joyce Ward, Alan Chen, Susan Anthony and David Phantana-Angkool, U.S. Patent and Trademark Office, Alexandria, VA
 This session will focus on the basics of Intellectual Property (IP), patents, trademarks, copyright, and trade secrets with the primary focus on the patent process.
 Type: Workshop/Presentation Audience: Teachers & Students
- 1:15 p.m.–2:15 p.m. Room: 402
6 – Science News on the iPad
 Tom Siegfried, Editor-in-Chief, *Science News*, Society for Science & the Public, Washington, DC
Science News now exists in a digital tablet form called *Science News Prime*, with multimedia enhancements and special additional features. Light refreshments will be available to attendees.
 Type: Presentation Audience: Teachers & Students
- 2:30 p.m.–3:30 p.m. Room: 406
7 – MyOnlineFair: A 21st Century Science and Engineering Fair
 Nathan Ramos, Hanalani Schools, Millilani, HI
 This session will introduce the beta version of MyOnlineFair (unveiled in January 2012) and its impact on the teaching/learning of scientific inquiry and engineering design thought processes.
 Type: Presentation Audience: Fair Directors, Teachers & Students
- 2:30 p.m.–3:30 p.m. Room: 402
8 – Fundraising Fundamentals
 Robert Glidden, President Emeritus, Ohio University
 Approaches to fundraising for non-profit organizations will be discussed.
 Type: Presentation Audience: Fair Directors & Teachers
- 2:30 p.m.–3:30 p.m. Room: 403-405
9 – Judging at the Intel ISEF
 Charles J. Vukotich, Jr., MS, Judging Chair, Intel ISEF 2012 Pittsburgh
 Robert Yost, Intel ISEF Judging Ombudsman
 Join us for a question-and-answer session about judging at Intel ISEF. The presenters will explain their roles to aid students during judging and provide a brief overview of the judging process for those new to the Intel ISEF.
 Type: Presentation Audience: Fair Directors, Teachers & Students

Tuesday, May 15

- 8:45 a.m.–9:45 a.m. Room: 406
10 – Core Discoveries Beneath the Sea!
 Sharon Katz Cooper, Consortium for Ocean Leadership, Washington, DC
 Come learn how scientific ocean drilling has informed our understanding of Earth's past, and how this can help us learn about Earth's present and even its future!
 Type: Presentation Audience: Fair Directors, Teachers & Students
- 9:00 a.m.–10:00 a.m. Room: 403-405
11 – A Flipped Classroom: Turn Learning on Its Head
 Aaron Sams, Woodland Park High School, Byron, MN
 Troy Faulkner, Byron High School, Byron, MN
 Aaron Sams and Troy Faulkner share their experiences in developing the flipped class concept and implementing it in their secondary science and math classrooms.
 Type: Presentation Audience: Teachers

9:30 a.m.-10:30 a.m.

Room: 402

12 — Energy to the Power of Pittsburgh: Young Leaders and Energy Solutions

Amanda Sennett, Minoli Ratnatunga and Nyya Jones

Allegheny Conference on Community Development

Phipps Conservatory Representative and a PNC Bank Representative

Pittsburgh has been — and is now — a center of innovation in energy production, distribution and conservation. Meet young leaders who are shaping solutions and setting new standards in green building.

Type: Panel Discussion

Audience: Fair Directors, Teachers & Students

10:00 a.m.-11:00 a.m.

Room: 406

13 — The California State Summer School for Mathematics and Science (COSMOS)

Shirley Miranda, Greater San Diego Science and Engineering Fair, San Diego, CA

Come learn about the premier California STEM residential summer program for high school students hosted at UC Davis, UC Irvine, UC San Diego, and UC Santa Cruz.

Type: Presentation

Audience: Teachers & Students

10:45 a.m.-11:45 a.m.

Room: 402

14 — Jumpstart Student Projects by Forming a “Meet the Science Mentor Day”

Patty Dailey, Science Pioneers, Kansas City, MO

Create a “Meet the Science Mentor Day” program to allow students the opportunity to meet area scientists, technologists, engineers, and mathematicians to discuss science fair projects.

Type: Presentation

Audience: Fair Directors

10:45 a.m.-12:15 p.m.

Room: 403-405

15 — Talking Science

Jack Franchetti, Jack Franchetti Communications, Inc.

A communications specialist teaches guiding principles and techniques to convey the science of your project in lay terms. Students consider this program helpful with the judging process, media interviews, and conversing with the public about their project.

Type: Presentation

Audience: Fair Directors, Teachers & Students

11:15 a.m.-12:15 p.m.

Room: 406

16 — Science Buddies: An Online Library of Tools and Resources Empowering Students, Parents, and Teachers to Explore High-quality Science Projects

Tina Lanese, Science Buddies, Carmel, CA

www.sciencebuddies.org helps millions of students and teachers prepare for science fairs. Learn about our newest resources, future plans, and the best ways to use our site. We welcome your feedback.

Type: Presentation

Audience: Fair Directors, Teachers & Students

12:45 p.m.-1:45 p.m.

Room: 402

17 — Paperless & Electronic Fair Process

Kai Kamaka, University of Texas, San Antonio, TX

To share our Texas State Fair process in creating a paperless, “one-system” electronic process, covering registration, SRC, Display & Safety, and Awards.

Type: Presentation

Audience: Fair Directors, Teachers & Students

12:45 p.m. - 1:45 p.m.

Room: 403-405

18 — Life After Winning Intel ISEF

Anthony Krumeich, Bloodhound, Inc., San Francisco, CA

Anthony Krumeich will share his journey from being a first place winner at Intel ISEF 2004 to founding a successful venture-backed tech start-up in Silicon Valley.

Type: Presentation/Panel Discussion

Audience: Students

12:45 p.m.-1:45 p.m. Room: 406
19 – Admit Me!
 Tiffany Meertins, Massachusetts Institute of Technology, Cambridge, MA
 Jamilla Jamison, Harvey Mudd College
 How to use your research in the college admissions process.
 Type: Presentation Audience: Teachers & Students

4:15 p.m.-5:15 p.m. Room: 406
20 – Information Session on Society for Science & the Public's Middle School Program—Broadcom MASTERS (Math, Applied Science, Technology, and Engineering for Rising Stars)
 Stephanie Lemnios, Program Manager, Broadcom MASTERS, Society for Science & the Public, Washington, DC
 Learn more about SSP's Middle School Program - Broadcom MASTERS. Brief presentation followed by a question and answer session.
 Type: Presentation Audience: Fair Directors & Teachers

4:15 p.m.-5:15 p.m. Room: 403-405
21 – Making Science Make a Difference
 Stephen L. Washington, Federal Bureau of Investigation, Clarksburg, WV
 The FBI is inviting science students to go beyond classroom assignments to explore the implementation of futuristic technologies deployed for advanced investigative and law enforcement activities.
 Type: Presentation Audience: Fair Directors, Teachers & Students

4:15 p.m.-5:15 p.m. Room: 402
22 – Intel Science Talent Search Rules and Judging Overview
 Caitlin Sullivan, Program Manager, Intel Science Talent Search, Society for Science & the Public, Washington, DC
 Andrew Yeager, Chair, Intel Science Talent Search Judges Panel
 A summary of the Intel Science Talent Search competition and a general overview of eligibility, rules, and the judging process.
 Type: Presentation Audience: Fair Directors, Teachers & Students

Wednesday, May 16

9:15 a.m.-10:15 a.m. Room: 402
23 – Ethical Considerations When Working with Science Fair Processes Sponsors and Partners (Presentation in English. Spanish version Wednesday, 1:15 p.m.)
 Nathalie Valencia-Chacon, Costa Rica Ministry of Science & Technology
 Mary H. Bialas, Intel Costa Rica
 Discussion using case studies on maintaining transparency of your science fair while dealing with challenging ethical issues around finances, sponsorships, judging and student projects.
 Type: Presentation Audience: Fair Directors & Teachers

9:30 a.m.-11:00 a.m. Room: 406
24 – Scientific Review Committee – 2013 Rules and Guidelines
 Nancy Aiello, Intel ISEF Scientific Review Committee Chair
 Meet with members of the Intel ISEF Scientific Review Committee to learn of changes in the Intel ISEF 2013 Rules and Guidelines. After the presentation, there will be a question and answer period.
 Type: Presentation Audience: Fair Directors & Teachers

10:45 a.m.-11:45 a.m.

Room: 402

25 — Teaching Scientific Methodology, Starting with the Hypothesis

Paul K. Strode, Fairview High School, Boulder, CO

Participants discuss the problems and solutions regarding getting science students to better understand scientific methodology and helping them delineate hypothesis testing from generating predictions.

Type: Presentation

Audience: Fair Directors, Teachers & Students

1:15 p.m.-2:15 p.m.

Room: 402

26 — Consideraciones éticas cuando se trabaja con el proceso de Ferias de Ciencias, los patrocinadores y socios (Presentation in Spanish)

Nathalie Valencia-Chacon, Costa Rica Ministry of Science & Technology

Mary H. Bialas, Intel Costa Rica

En esta sesión se explorarán las consideraciones éticas que se plantean los organizadores y administradores cuando se trabaja con el proceso de las Ferias de Ciencias, patrocinadores y socios.

Clase: Presentación

Audiencia: Directores de las Ferias de Ciencias & Maestros

1:15 p.m.-2:15 p.m.

Room: 406

27 — 2013 D&S Rules Reorganization and Revisions

John Cole, Intel ISEF Display & Safety Chair

Review of Pittsburgh's fair inspection and revisions and reorganization of the Display and Safety Rules for 2013.

Type: Presentation

Audience: Fair Directors & Teachers

2:30 p.m.-4:00 p.m.

Room: 402

28 — Scientific Review Committee — SRC Project Review

Nancy Aiello, Intel ISEF SRC Chair

Meet with members of the Intel ISEF Scientific Review Committee to discuss project review by local and regional SRC's. This will be a small group session where participants will review sample abstracts and paperwork. This session is limited to twenty participants who are members of local or regional SRC's and who have previously registered at the SRC room.

Type: Workshop

Audience: Members of a local, regional SRC

2:30 p.m.-3:30 p.m.

Room: 406

29 — E-Fair: Online Judging

Jill Malcom, Mastodon Science and Engineering Fair, Hillsboro, MO

Score entry and tabulation was streamlined at our fair this year when judges used their own iPhone, iPad, Android, laptop, Kindle or internet-capable devices. Bring your device and judge samples in a live E-Fair.

Type: Presentation

Audience: Fair Directors & Teachers

Thursday, May 17

9:30 a.m.-10:30 a.m.

Room: 402

30 — Scientific Review Committee — PHBAs and Biosafety Levels

Nancy Aiello, Intel ISEF SRC Chair

Meet with members of the Intel ISEF Scientific Review Committee to discuss resources available to determine biosafety levels for studies involving Potentially Hazardous Biological Agents (PHBAs).

Type: Panel Discussion

Audience: Fair Directors & Teachers

1:15 p.m.-1:45 p.m.

Room: 402

31 – Configuring Talent Concept as Epistemic – Experimental Spirit

Dr. Luis Mauricio Rodriguez Salazar, Instituto Politecnico Nacional, Mexico
 Scientific creation and innovation in engineering involves more than psychological capacities. Talent isn't a mind product, but an epistemic faculty or quality of the spirit.
 Type: Presentation Audience: Fair Directors, Teachers & Students

2:15 p.m.-3:15 p.m.

Room: 402

32 – Mentoring Students in the Intel Science Talent Search

Caitlin Sullivan, Program Manager, Intel Science Talent Search, Society for Science & the Public, Washington, DC
 An interactive session for teachers new to Intel STS who want to increase participation, learn how to mentor students and receive basic guidance on the application process.
 Type: Workshop Audience: Teachers

Get Involved.

SSP and Intel are proud to announce that the Intel International Science and Engineering Fair will be held in Phoenix, Arizona in May 2013.



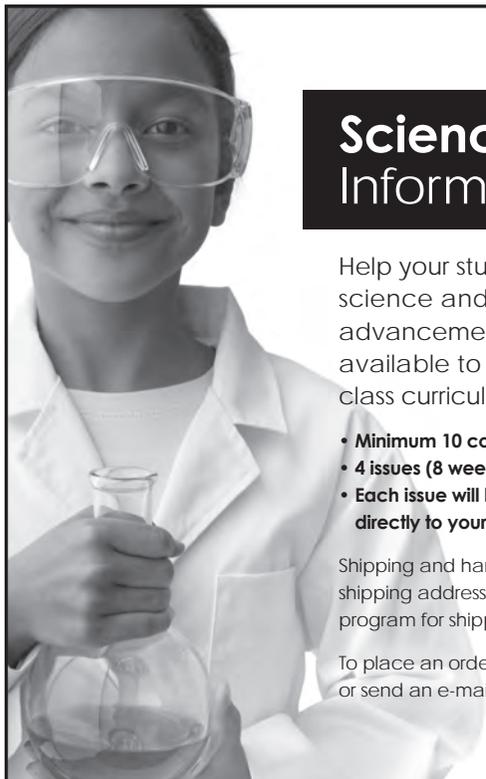
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At the Intel ISEF, EPA will recognize one student with the Patrick H. Hurd Sustainability Award for work that demonstrates a commitment to environmental sustainability and stewardship.

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Bigelow Grille	One Bigelow Square	(412) 281-5013
Braddock's American Brasserie	107 Sixth Street	(412) 992-2005
Bravo Franco	Cultural District 613 Penn Avenue	(412) 642-6677
Capital Grille of Pittsburgh	301 Fifth Avenue	(412) 338-9100
Charley's Grilled Subs	Fifth Avenue Place, 2nd Level, 120 Fifth Avenue	(412) 325-7011
Christos Mediterranean Grille	130 Sixth Street	(412) 261-6442
Common Plea	310 Ross Street	(412) 281-5140
Damon's Grill & Sports Bar	600 Grant Street, U.S. Steel Tower	(412) 434-0800
DiBella's Old Fashioned Submarines	16 Market Street	(412) 338-8634
Elements Contemporary Cuisine	444 Liberty Avenue Four Gateway Center, Suite 100	(412) 251-0168
Eleven Contemporary Kitchen	1150 Smallman Street	(412) 201-5656
Fat Tommy's Pizzeria	115 Forbes Avenue	(412) 980-6887
Fernando's Café	963 Liberty Avenue	(412) 281-4522
Grille on Seventh	130 Seventh Street	(412) 391-1004
Habitat Restaurant @ Fairmont	510 Market Street	(412) 773-8848
Jimmy John's Gourmet Sandwiches	506 Liberty Avenue	(412) 697-0999
Max & Erma's	630 Stanwix Street	(412) 471-1140
McCormick & Schmick's Seafood Restaurant	301 Fifth Ave., Suite 101 Piatt Place	(412) 201-6992
Meat & Potatoes	649 Penn Avenue	(412) 325-7007
Moe's Southwest Grill	210 Forbes Avenue	(724) 766-2525
Monte Cello's Downtown	305 Seventh Avenue	(412) 261-2080
Morton's The Steakhouse	625 Liberty Avenue, EQT Plaza	(412) 261-5055
My Big Fat Greek Gyro	431 Market Street	(412) 261-4976
Nathan's Pittsburgh	305 Wood Street	(412) 246-0876
Nine on Nine	900 Penn Avenue	(412) 338-6463
Original Oyster House	20 Market Square	(412) 261-0820
Palm Court	530 William Penn Place	(412) 281-7100
Penn City Grille	1000 Penn Avenue, 2nd Level	(412) 281-8162
Ruth's Chris Steak House	Six PPG Place	(412) 391-4800
Sammy's Famous Corned Beef Seviche	901 Liberty Avenue 930 Penn Avenue	(412) 765-2244 (412) 263-2107
Sharp Edge Bistro Penn	922 Penn Avenue	(412) 922-3617 x 10
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Sonoma Grille	947 Penn Avenue	(412) 697-1336
Southern Hospitality Restaurant	411 Wood Street	(412) 471-5941
Starbucks Coffee Co.	4008 Northminister Street	(412) 759-9373
Steelhead Brasserie & Wine Bar	112 Washington Place	(412) 394-3474
Subway Restaurant	930 Penn Avenue	(412) 281-7335
T.G.I. Friday's	CONSOL Energy Center	(412) 471-1736
Taste of Dahntahn	535 Liberty Avenue	(412) 224-2240
Tavern 245	245 Fourth Avenue	(412) 281-4345
Terrace Room	530 William Penn Place Omni William Penn Hotel	(412) 553-5235
The Carlton Restaurant	500 Grant St., 1 Mellon Bank Center	(412) 391-4099
The Original Fish Market Rest.	1001 Liberty Avenue	(412) 227-3657
Three Rivers Restaurant	600 Commonwealth Place	(412) 391-4600
Tonic Bar & Grill	971 Liberty Avenue	(412) 456-0460
Vallozzi's Pittsburgh	220 Fifth Avenue	(412) 394-3400

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PNC Bank	600 Grant Street	(412) 762-6120
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Copies For Less Printers	804 Penn Avenue	(412) 288-2525
Ditto Document Services, Inc.	610 Smithfield Street, Suite 200	(412) 434-6666
FedEx Office Print & Ship Center	960 Penn Avenue	(412) 391-2014
Minuteman Press	905 Liberty Avenue	(412) 471-5599

Drugstores

CVS Pharmacy	610 Wood Street	(412) 471-9294
	226 6th at Liberty Street	(412) 281-0403
	429 Smithfield Street	(412) 261-4846
	623 Smithfield Street	(412) 471-8882
Rite-Aid	519 Penn Avenue	(412) 391-0969

Grocery Store — *Outside food cannot be brought into the DLCC*

Giant Eagle North Side	318 Cedar Avenue	(412) 321-3551
Whole Foods	5880 Centre Avenue	(412) 441-7960
Giant Eagle South Side	2021 Wharton Street	(412) 488-1816

Medical/Dental
Hospitals

Allegheny General Hospital	320 East North Avenue	(412) 359-3131
UPMC Mercy Hospital	1400 Locust Street	(412) 232-8111
Children's Hospital of Pittsburgh	401 Penn Avenue	(412) 692-5325
Magee-Women's Hospital	300 Halket Street	1-866-MyMagee

Urgent Care

Bloomfield Urgent Care Center	5201 Baum Boulevard	(412) 687-3627
Concentra Urgent Care	1600 West Carson Street	(412) 391-1137

Dental Care

Emmert Dental Associates	433 Market Street, #3	(412) 434-6060
Sixth Street Dental	125 6th Street	(412) 338-0678

Miscellaneous Stores

Office Depot	623 Smithfield Street	(412) 261-1110
Macy's Downtown	400 5th Avenue	(412) 232-2000
SW Randall Toys	630 Smithfield Street	(412) 562-9252

Movie Theatres

SouthSide Works Cinema	425 Cinema Drive	(412) 381-7335
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Shopping Malls

Ross Park Mall	1000 Ross Park Mall Drive	(412) 369-4400
Station Square	125 West Station Square Drive	(412) 261-2811
South Hills Village	301 S. Hills Village	(412) 831-8652

Society for Science & the Public and Intel thank the dedicated members of the Pittsburgh Local Arrangements Committee who have worked hard in preparation for Intel ISEF 2012:

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Additional Acknowledgements

Society for Science & the Public, Intel and the Pittsburgh Local Arrangements Committee recognize with gratitude the judges, volunteers, parents, teachers and fair directors who make the Intel ISEF possible year after year. The following individuals, volunteers, and organizations are recognized for their special dedication to Intel ISEF.

Leticia Aceret	Hynda Kleinman
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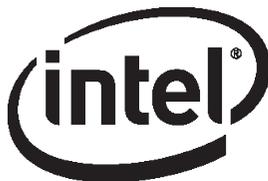
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participating in the Intel ISEF 2012**

Each # next to the finalist's name indicates previous ISEF participation
An * identifies non-competing projects
T: precedes the name of the Teacher-Sponsor of the Finalist
A "T" after the booth ID number indicates a Team Project

AMERICAN SAMOA

Pago Pago, TEAS01, American Samoa Science Fair

- AS055** ***Culex quinquefasciatus* Oviposition Response to Organic Infusions from Common Flora of American Samoa**
Allison Marie Fitisone, 16, Junior, Tafuna High School, Pago Pago, American Samoa,
T: Joserose Jyothibhavan
- ME094** ***Phyllanthus niruri*: A Healing Herb**
Kagiso Malar Samuel, 17, Senior, South Pacific Academy, Pago Pago,
American Samoa, American Samoa, T: Cecilia Tuionoula
- PS051** **The Fungicidal Effects of the Fruit Extracts of the Indian Mulberry, *Morinda citrifolia* (Nonu), on the Plant Pathogens *Lasiodiplodia theobromae* and *Pestalotiopsis* sp.**
Mee Jin Park, 17, Senior, Pacific Horizons School, Pago Pago, American Samoa,
T: Ndeme Atibalentja

ARGENTINA

Villa Martelli, ARG001, National Science Fair of Argentina

- BE305T** **Malvinas: The Silent Inner Battle**
Vanessa Silvana Vaccaretti Fernandez, 17, Junior;
Micaela Del Lujan Soave, 16, Junior
Escuela Secundaria No. 5 "Doctor Saba Zacarias Hernandez", Hernandez,
Entre Rios, Argentina, T: Valeria Noemi Viola
- CS301T** **CARETRONIC**
Oleg Nicolas Tamansky, 19, Senior; Francisco David Rodriguez, 19, Senior
E.E.T. No. 2 Jose Maria Colombo, Gualeguaychu, Entre Rios, Argentina,
T: Mario Ignacio Rivas
- EE304T** **Technological Improvements on Aquaculture Facilities through a Fully Controlled Environment**
Martin Volpe, 18, Freshman; Sebastian Alonso, 19, Senior
Ingeniero Luis Augusto Huergo, Buenos Aires, Argentina,
T: Edgardo Eduardo Jose Vazquez
- EE305T** **ESCALORFRIANTE**
Edgardo Daniel Gauna, 17, Freshman;
Emanuel Alejandro Romero Azcona, 17, Freshman
Escuela de Educacion Tecnica No. 2 "General San Martin", Barranqueras,
Chaco, Argentina, T: Marcos Eduardo Sanchez
- EE306T** **Mobile Stair Handrail**
Carolina Maria Billaud, 17, Junior; Maria Josefina Nazario, 17, Junior
Instituto Privado Belen, Santiago del Estero, Argentina,
T: Jorge Valentin Peralta Ruiz
- EN303T** **Ecological Bionancomposites Films from Patagonian Algae and Volcanic Ashes**
David Ezequiel Perea, 18, Senior; Fredi Danilo Vallejos, 18, Senior
Escuela Industrial No.1 General Enrique Mosconi, Caleta Olivia, Santa Cruz,
Argentina, T: Pablo Sebastian Delgado Dodds

AUSTRALIA

Melbourne, AUS003, BHP Billiton Science Awards

- BE048** **Environmental Factors Influencing Post Stroke Recovery**
Jessica Sarah Lauren Garrett, 15, Sophomore, Telopea Park School, ACT, Australia,
T: Kylie Louis

EN016 Invention of the UView Protector: Reducing Your Risk of Skin Cancer
 Ethan Thomas Butson, 16, Sophomore, The Illawarra Grammar School, Mangerton,
 New South Wales, Australia, T: Margaret Dubowski

AUSTRIA

Austria, AUT001, Vienna International Science and Engineering Fair

CS309T AVIO: Autonomous Vehicle for Independent Operations
 Patrick Marksteiner, 20, Senior; Patrick Neulinger, 20, Senior
 HTBLA Perg fur Informatik, Perg, Oberosterreich, Austria, T: Dietmar Wokatsch

AZERBAIJAN

Baku, AZR001, Azerbaijan Science and Engineering Fair

BI009 Hydrogen Production by BioNanosystem from Water in Sunlight
 Arif Anar Bayramov, 14, Freshman, "Young Talents" Lyceum of Baku State
 University, Baku, Azerbaijan, T: Ralphreed Akhad Gasanov

EN007 Oil Polymer Sorbent with Magnetic Properties
 Mahira Mayis Safaralizade, 17, Sophomore, "Young Talents" Lyceum of Baku State
 University, Baku, Azerbaijan, T: Abdulsayid Abdulhamid Azizov

EN304T New Approach in Oil Industry: Development of Nanosystems to Increase Efficiency of Production
 Orkhan Elshan Mammadov, 15, Sophomore;
 Elkhan Elshan Mammadov, 15, Sophomore
 School named after Academician Zarifa Aliyeva, Baku, Azerbaijan,
 T: Aygun Alafsar Azizova

BANGLADESH

Dhaka, BGD001, Bangladesh Regional Science Fair

EE314T Eco-friendly Multifunctional Cultivator
 MD Shaad Ahmed, 15, Junior; Farhanul Huda, 16, Junior
 Notre Dame College, Dhaka, Bangladesh, T: Vincent Titus Rojario

BELARUS

Minsk, BLR001, BelJunior

MA005 The Probability of Generating the Symmetric Group with a Commutator Condition
 Raman A. Birulia, 16, Sophomore, School No. 41, Minsk, Minsk, Belarus,
 T: David Y. Zmiaikou

MA006 Partially Conjugate-Permutable Subgroups and Their Applications
 Viachaslau I. Murashka, 17, Junior, Gymnasium No. 71, Gomel, Belarus,
 T: Alexander F. Vasil'ev

BELGIUM

Belgium, EUB001, European Union Contest for Young Scientists (EUCYS)

EE068 3Dimensional Display
 Melvin Zammit, 18, Senior, St. Aloysius College, Birkirkara, Malta,
 T: Vanessa Portanier Mifsud

EM323T Antileaks: A Device for Detection and Discontinuation of Leakages in Domestic Water Supply Systems
 Nerya Yair Stroh, 20, Senior; Gal Oren, 20, Senior
 Torah & Science û Yeshivah High School at Machon Lev, Jerusalem, Israel,
 T: Israel Elishvitz

JCT Torah & Science Yeshiva High School, Jerusalem, Israel, T: Israel Elishvitz
MA311T (Almost) Unit-Distance Points in the Polychromatic Plane: Colorings of the n-Dimensional Space
 Fabian Henneke, 19, Senior; Xianghui Zhong, 18, Senior; Danial Sanusi, 19, Senior
 Kippenberg-Gymnasium, Bremen, Germany, T: Klaus Lies

BRASIL

Campinas, BRA003, Escola Americana De Campinas

BI025 Fungal Enzymes for Bio-Ethanol

Julia Cavrell Garcez, 18, Senior, American School of Campinas, Campinas, Sao Paulo, Brasil, T: Mauricio Fernando Gozzi

CH304T Assembly of Polyelectrolyte Multilayers with PolyEthyleneimine by the Layer-by-Layer Method

Flavia Belotti Bedicks, 16, Junior; Talissa Flores Lahaliyed, 16, Junior
American School of Campinas, Campinas, Sao Paulo, Brasil,
T: Mauricio Fernando Gozzi

PS022 Extraction of Protein from Microalgae

Carolina Silva e Lopes, 15, Freshman, American School of Campinas, Campinas, Sao Paulo, Brasil, T: Mauricio Fernando Gozzi

Novo Hamburgo, BRA001, International Fair of South America - MOSTRATEC

BE302T Biojari: The Changers Start from New Ideas

Adymailson Nascimento Santos, 19, Junior; Thysianne de Sousa Teixeira, 19, Freshman; Islla Goncalves Marreiros, 18, Freshman
Scholl Mineko Hayashida, Laranjal do Jari, Amapa, Brasil,
T: Elizabethete Rodrigues Rodrigues

BI301T Improving the Life Conservation: New Purposes to Separate Lactobionic Acid and Sorbitol

Eduardo Thadeu Rodrigues, 19, Senior; Juliana Hoch, 18, Senior
Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Rio Grande do Sul, Brasil, T: Maria Cristina Franck

CS004 EMEPED 2: Software for Risk Assessment of Priority in the Pediatric Emergency

Daniel Henrique Fiala, 19, Freshman, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Rio Grande do Sul, Brasil,
T: Anderson Jean de Farias

EE005 Multitron

Luis Felipe do Nascimento Braz, 18, Freshman, Instituto Rezende Rammel, Rio de Janeiro, Brasil, T: Luiz Henrique Nunes Victorio

EE006 SIMDEB II: Device to Verify the Cardiac Output Measurement through the Swan-Ganz Catheter

Caio Francisco Ternus de Abreu, 18, Senior, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Rio Grande do Sul, Brasil,
T: Andre Lawisch

EM004 Photobioreactor for Carbon Absorption: Equipment for the Neutralization of CO₂ Emissions in Domestic Environments

Victor Marelli Thut, 17, Senior, Colegio Dante Alighieri, Sao Paulo, Brasil,
T: Sandra Tonidandel

PS005 Biocontrol Obtention from Vegetables Extracts with Insecticide Potential

Allison Daniel Fernandes Coelho Souza, 17, Junior, Colegio Santa Luzia, Imperatriz, Maranhao, Brasil, T: Jaelbe Jose Sousa de Almeida

PS006 Reuse of Plastic Bottles in the Construction of a Subsurface Irrigation System

Ana Luisa Lopes Marques Coutinho, 15, Junior, Colegio Paraíso, Juazeiro do Norte, Ceara, Brasil, T: Claudio Ribeiro Coutinho

PS301T Banana Vinegar: A New Alternative to Catch the Fruit Fly

Felipe Soares Wolff, 17, Freshman; Hilario Zornitta Junior, 19, Freshman
Instituto Federal Catarinense Campus Camboriu, Camburiu, Santa Catarina, Brasil,
T: Edson Joao Mariot

Sao Paulo, BRA002, FEBRACE - Feira Brasileira de Ciencias e Engenharia

BE308T Collective Food Rituals and Their Effects on Social Relations: A Case Study Involving Homeless People

Julia Generoso Gonzales, 16, Sophomore; Flavia Araujo de Amorim, 16, Sophomore;
Thais May Carvalho, 16, Freshman
Colegio Giordano Bruno, Sao Paulo, SP, Brasil, T: Rogerio Giorgion

- BE312T Making Paper from Natural Fibers: Recycling and Reusing at School II**
 Socorro Magarete Oliveira, 15, Sophomore; Antonia Amanda Araujo, 16, Sophomore
 Escola de Ensino Medio Professora Theolina de Muryllo Zacas, Bela Cruz, CE, Brasil, T: Fernando Nunes Vasconcelos
- BI016 Weaving Health: The Weaving of New Drugs from the Web Silk of Spiders, III**
 ## Leonardo de Oliveira Bodo, 17, Senior, Colegio Dante Alighieri, Sao Paulo, SP, Brasil, T: Pedro Ismael da Silva Junior
- BI304T Manufacturing Challenges of Medicines Containing Low Solubility Drugs**
 Marcelli Tavares Alves, 20, Senior; Julia dos Santos Fernandes, 20, Senior; Jean Lucas Menezes Cotta dos Santos, 18, Freshman
 Instituto Federal de Educacao,Ciencia e Tecnologia do Rio de, Rio de Janeiro, RJ, Brasil, T: Vivian de Almeida Silva
- BI306T *Arrabidaea chica*: Medicinal Use Evidence, Chemical Prospecting and Herbal Products Application**
 Cristopher Mateus Carvalho, 15, Freshman; Jaqueline Campos Costa, 15, Freshman; Julia Maria Resende Ferreira, 15, Freshman
 Escola Estadual Manoel Antonio de Souza, Mateus Leme, MG, Brasil, T: Fernanda Aires Guedes Ferreira
- CH023 Synthesis of Nanostructured Materials (MOF-5) from Recycled PET Bottles**
 Marcos Vinacius Silva Amorim, 19, Sophomore, Colegio de Aplicacao Emmanuel Leontsinis, Rio de Janeiro, RJ, Brasil, T: Pierre Mothe Esteves
- EM028 TiO2 Nanotubes as Catalyst for Photocatalytic Degradation of Textile Dyes**
 Gabriel Lucio de Oliveira, 18, Junior, Instituto Federal de Educacao, Ciencia e Tecnologia de Goias, Inhumas, GO, Brasil, T: Leonardo Lopes da Costa
- EN034 SIMIS-GA: Impact Minimizing System for Gymnastics Floor**
 Paula Szuster Sarue, 18, Senior, Escola Brasileira Israelita Chaim Nachman Bialik, Sao Paulo, SP, Brasil, T: Mauro Pontes Langhi, Jr.
- EN311T REVO FOOT II: Low Cost Orthopedic Prosthesis for Lower Limb Amputations Produced from Recyclable Materials**
 # Lucas Strasburg Ferreira, 20, Senior; # Eduardo Trierweiler Boff, 20, Senior
 Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, RS, Brasil, T: Ramon Fernando Hans

CANADA

Canada, CAN002, Youth Science Canada —Team Canada

- BI031 Correction of F508del-CFTR by the Small Molecule C18 and Its Synergy with Other Corrector Compounds**
 Mu Xuan Zhang, 17, Senior, Bayview Secondary School, Richmond Hill, Ontario, Canada, T: Mitchell Rozen
- CB036 *In silico* Analysis of Functional and Structural Impact of nsSNPs in Genes Involved in IBD**
 # Howard Feng, 16, Junior, Bayview Secondary School, Richmond Hill, Ontario, Canada, T: Jacqueline Sankey
- CS048 Caspar: A Natural Language Understanding Algorithm Based on Isomorphic Language Trees**
 Sandro Alighiero Young, 17, Senior, Lisgar Collegiate Institute, Ottawa, Ontario, Canada, T: David Wright
- CS049 Apodora: Markov Chain-Inspired Microsearch**
 Nicholas Benjamin Schiefer, 17, Senior, Holy Trinity School, Richmond Hill, Ontario, Canada, T: Nina Dolgovykh
- CS050 The Mutable Slipnet: An Experiment in Simulated Analogous Thinking**
 Lloyd Thomas James, 16, Junior, Semiahmoo Secondary School, Surrey, British Columbia, Canada, T: Ingrid J. Woods
- EA012 A Geochemical and Geomicrobiological Examination of the Red Sea — Dead Sea Canal**
 Mofeed Wael Sawan, 16, Senior, Oakridge Secondary School, London, Ontario, Canada, T: Craig Kermer
- EE060 Real-Time Optical Ego-Motion Estimation through Robust Planar Tracking**
 ## Christopher Stephen Nielsen, 18, Senior, Home School, Calgary, Alberta, Canada, T: John Nielsen

- EE081 Domoweb II: Automation via the Web**
Jean-Michel Laliberte, 17, Junior, College Saint-Paul, Varennes, Quebec, Canada,
T: Julie Larochelle
- EM039 Euglena: The Solution to Nanosilver Pollution**
Adam Joel Noble, 18, Senior, Lakefield District Secondary School, Lakefield,
Ontario, Canada, T: Jennifer Adams
- EN029 The Skid Lid Helmet Helper**
Claire Longcroft, 16, Junior, Collingwood School, West Vancouver, British Columbia,
Canada, T: Shirley Frykberg
- ET040 Directing and Accelerating Natural Airflows to Increase Airfoil Circulation
and Generate More Lift**
- # Lauren Heather Reid, 16, Sophomore, O'Neill Collegiate & Vocational Institute,
Oshawa, Ontario, Canada, T: Stephen D. Park
- ET041 Irradiation Based Single Stage Electro-Oxidation for Novel Enhancement
of Direct Methanol Fuel Cells**
Dheevesh Arulmani, 16, Junior, Gordon Graydon Memorial Secondary School,
Mississauga, Ontario, Canada, T: Bradley Easton
- ME061 Assessing the Potential of Skin Derived Schwann Cells
for Peripheral Nerve Remyelination**
Sarthak Sinha, 16, Sophomore, Henry Wise Wood High School, Calgary, Alberta,
Canada, T: Patricia Henderson
- ME062 Effects of Novel Histone Deacetylase (HDAC) Inhibitors
on Breast Cancer Cell Lines**
Camille Champigny, 16, Senior, Ecole L'Odyssee, Moncton, New-Brunswick, Canada,
T: Eric Landry
- ME063 Citracil: The Anti-Colorectal Cancer Activity of an Essential Oil
from Lemongrass**
Yichen Zhang, 16, Junior, Richmond Secondary School, Richmond, British Columbia,
Canada, T: Natalie Seminutin
- ME064 The Effects of *Lycium barbarum* of the Formation of Cataracts**
Christina Ding, 17, Senior, Sir John A. Macdonald Secondary School, Waterloo,
Ontario, Canada, T: Bryan Lozon
- MI042 Co-inoculation of *S. oneidensis* and *G. sulfurreducens*
for Novel Microbial Fuel Cell Enhancement**
Sruti Arulmani, 14, Freshman, Glenforest Secondary School, Mississauga, Ontario,
Canada, T: Albert Fong
- PS031 Mendel's Lentils: Identification and Analysis of the Zero-Tannin Gene in Lentil**
- # Rui Song, 16, Junior, Walter Murray Collegiate Institute, Saskatoon, Saskatchewan,
Canada, T: Eric Rowley
Hamilton, Ontario, CAN001, Bay Area Science and Engineering Fair
- CB044 Unlocking the GENeius behind Telomerase Control**
Eisha Amina Ahmed, 16, Junior, Abbey Park High School, Oakville, Ontario, Canada,
T: Tim Obyrne
- EN317T Construction of Folate Conjugated SYA/J6 Antibodies
to Target *Shigella flexneri* to Specifically Infect Colorectal Cancer Cells**
Dennis Xu, 17, Junior; Manjot Sangha, 17, Junior
Abbey Park High School, Oakville, Ontario, Canada, T: Tim O'Byrne
Iroquois Ridge High School, Oakville, Ontario, Canada, T: Stephen Merner
- ME074 Brain-Derived Neurotrophic Factor Transcript Expression in Hippocampus
of Alzheimer's Disease Subjects**
Camilla Ann Michalski, 16, Junior, Bishop Ryan High School, Hamilton, Ontario,
Canada, T: Rosa Assalone
Montreal, CAN004, Montreal Regional SciTech Fair
- AS027 Rapid Evolution of Brown Trout in the Kerguelen Islands**
Mingsha Zhou, 18, Senior, Marianopolis College, Westmount, Quebec, Canada,
T: Rocco Iaffigliola
- EV031 Dig Deeper: Effect of Insecticides on Soil Components**
Eunice Linh You, 16, Sophomore, Laval Liberty High School, Laval, Quebec, Canada,
T: Heather McPherson

- ME050 A Novel Approach to Inhibiting Breast Cancer Progression: Overexpression of the Proline-Rich Domain of CdGAP**
 # Meagan Helen Henderson, 17, Senior, Marianopolis College, Westmount, Quebec, Canada, T: Ursula Oberholzer

CHILE

Puerto Montt, CHL001, EXPLORA National Youth Science Conference

- AS303T Parasites Inside Thorns: Morphological and Genetic Characterization of the Crab *Pinnaxodes chilensis***

Javier Romanos Zambrano, 16, Freshman;
 Mariana Larroulet Santander, 17, Freshman
 Instituto Inmaculada Concepcion Valdivia, Valdivia, Region de Los Rios, Chile,
 T: Rosa Jara Ahumada

- EV307T Hair Issue: Preserving the Water Resource**

Henry Diaz Castillo, 17, Senior; Nicolas Castillo Cofre, 17, Senior;
 Jorge Gutierrez Aguirre, 18, Senior
 San Agustin de Atacama, Copiapo, Region de Atacama, Chile, T: Ana Garcia Huina

CHINA

Beijing, CHN001, Children Science Fair of Beijing

- EE004 An Amphibious Vehicle with Transformable Wheels**

Meilin Dong, 17, Senior, Beijing No.8 Middle School, Beijing, Beijing, China,
 T: Rong Liu

- EN301T A Developed Cleaning System for Circuit Printing Polluted Water**

Yixin Li, 17, Junior; Haozhi Ma, 18, Junior; Yichen Yuan, 17, Junior
 Zhengzhou Foreign Language School, Zhengzhou, Henan, China, T: Rui Zhang

- PH007 Observation and Investigation on Polarization Shift**

Yuan Fu, 17, Senior, The High School Affiliated to Renmin University of China,
 Beijing, China, T: Jilian Lu

Beijing, CHN004, CASTIC-(China Adolescents and Technology Invention Contest), Beijing

- AS016 Effects of TFA on the Life Span and the Oviposition Number of Three Generations of *C. elegans***

Song Jin, 17, Junior, Experimental Senior High School Affiliated to Jilin University,
 Changchun, Jilin, China, T: Jinhua Li

- CS019 Documents Confidential Cabinet Based on Mobile Phone Key**

BingChen Gong, 18, Senior, Middle School Attached to Northern Jiaotong
 University, Beijing, Beijing, China, T: HaoDong Zu

- EE031 SmartWater-Intelligent Irrigation Management for Greenhouse**

Zehua Lan, 15, Sophomore, Beijing No. 101 Middle School, Beijing, Beijing, China,
 T: Lixia Ma

Fuzhou City, CHN006, CASTIC (China Adolescents Science and Technology Invention Contest), Huanan

- BI003 Smart Conotoxin Detection Kit Based on Novel Single-Chain Fragment Variable Antibody**

Shengxing Yu, 17, Junior, Fuzhou No.1 Middle School, Fuzhou, Fujian, China,
 T: Qunlin Zhang

- CH006 Chemically Treated Ramie Fiber with RE- Silicone Oil Method and Its Green Composites**

Mingsi Chen, 18, Senior, The High School Attached to Hunan Normal University,
 Changsha, Hunan, China, T: Keqin Chen

- ME005 An Ecological Management Research on Protection of Dung Beetles in Controlling Epidemic Disease in Affected Areas of Schistosome of the Dongting Lake of China**

Lingwei Xu, 17, Senior, Changjun Middle School, Changsha, Hu'nan, China,
 T: Shiwen Peng

Guangzhou, CHN005, CASTIC (China Adolescent Science and Technology Invention Contest), Xinan

- CH018 Acidic and Alkaline Hybrid Fuel Cells for Electricity Generation**

Weicheng Lin, 17, Junior, Guangdong Experimental High School, Guangzhou,
 Guangdong, China, T: Zhongyi Liu

- EE307T Innovative Application of Facial Mask as Moisture Sensor for a Low Cost Debris Flow Warning System**
Jingjing Peng, 18, Senior; Yuan Tian, 17, Junior; Zhuoli Feng, 16, Junior
Chengdu Shude High School, Chengdu, Sichuan, China, T: Yukun Zhang
- EV015 Effects of Multicellular *Chlorophyta* on the Microcystin**
Xu Zhang, 16, Junior, Sichuan Emei No.2 High School, Emeishan City,
Sichuan Province, China, T: Xiaorong Zhang
Shanghai, CHN002, CASTIC (China Adolescents Science and Technology Invention Contest), Shanghai
- AS012 Repelling Effect of Plant Extracts on Bees-A Study on Preventing Bees from Pesticide Toxicity**
YiHua Xu, 19, Senior, Bengbu No.3 High School, Bengbu, Anhui, China,
T: Liang Shen
- PH303T Study of Techniques of Ring Electromagnetic Drive and Its Model Design**
Jiajun Cao, 17, Senior; Wei Li, 16, Junior; Yifan Wu, 17, Senior
High School Affiliated to Shanghai Jiaotong University, Shanghai, China,
T: Qiaorong Zhu
High School Affiliated To Fudan University, Shanghai, Shanghai, China
- PS010 Antibacterial and Antiasthmatic Activities of Leaves Extract of *Nandina domestica***
Zhao Yu Guo, 17, Junior, Lu Wan Senior High School, Shanghai, China,
T: Hong Ze Yu
Shanghai, CHN007, The Children Science Fair of Shanghai
- BI010 Exploration of Antidiabetic Compound in Foxglove and Its Molecular Mechanism of Action**
Peiyan Duan, 17, Senior, No. 2 Secondary School Attached to East China Normal University, Shanghai, China, T: Weiyi Lou
- EN008 Anti-bending Bionic Umbrella**
Xiuming Yu, 16, Sophomore, Senior High School Affiliated to Jiangsu Educational Institution, Nanjing City, Jiangsu Province, China, T: Shuli Wu
- EV016 Molecule Sorting and Highly Selective Methane Detector**
Zhendong Lei, 17, Junior, The High School Attached to Shanghai Normal University, Shanghai, China, T: Lin Fu
Tianjin, CHN008, Sichuan Science Fair
- BE027 Does Tetris Make You Smarter? A Longitudinal fMRI Study**
Courtney Kate Guo, 15, Sophomore, International School of Beijing, Beijing, China,
T: Darren Smyth
- CS305T Webcam-based Fingertip Detection**
Nathanael Graham Christenson, 16, Sophomore; Luke Alexander Schuster, 15, Sophomore; # Kevin Kaiyi Chow, 15, Sophomore
Chengdu International School, Chengdu, Sichuan, China, T: Robert Andrew Whitlock
- MI022 Novel Treatment Method of Biofilm-Involved *Staphylococcus epidermidis* Infection through DNase I and Antimicrobial Combination Treatment**
Kevin Z Xin, 17, Senior, Shanghai American School Puxi Campus, Shanghai, China,
T: Alan Bud Chan
Wuhan, CHN003, CASTIC: (China Adolescent Science and Technology Invention Contest), Huadong
- AS015 Research of Lengthening the Larval Stage of Yellow Mealworms, (*Tenebrio molitor* L.)**
Hengli Zhang, 14, Freshman, Shanhu High School, Chongqing, China, T: Yuzhen Qin
- PS303T The Selection of Submergence-tolerant Germplasm and Expression Analysis of the Related Genes under Submergence Stress at the Seed Germination in Rice**
Hang Gao, 17, Junior; Luyu Zhang, 17, Junior; Keren Luo, 17, Junior
Hubei Wuchang Experimental High School, Wuhan, Hubei, China, T: Shuangqing Qu

CHINESE TAIPEI

Taipei, TWN001, Middle Taiwan Regional Science Fair

- AS021 Identification of Ocellar Developmental Genes in *Drosophila***
Tyng-Shiuan Hsieh, 17, Senior, Taipei First Girls High School, Taipei City,
Chinese Taipei, T: Ya-lan Wu

- CH021 Modification of Graphene with Enhanced Efficiency for Direct Methanol Fuel Cells**
Sheng-Huai Wang, 17, Junior, Taipei First Girls High School, Taipei City, Chinese Taipei, T: Chaun-che Chang
- EA302T Observing Sudden Stratosphere Warming by Using Data from FORMOSAT-3**
Yun-Chu Chen, 18, Senior; Hao-Chen Wang, 17, Senior
National Taichung Girls' Senior High School, Taichung, Chinese Taipei, T: Ming-Chu Yu
- MA019 Designing Linkage with Decomposition**
Hung-Chi Sun, 18, Senior, National Hsinchu Commercial Vocational High School, Hsinchu City, Chinese Taipei, T: Dian-Wei Lin
- ME303T Novel Bioactivities and Mechanistic Insights of the Medicinal Fungus *Antrodia cinnamomea* against Human Breast Cancer Cells**
Tzu-Hsuan Su, 17, Junior; # Kuang-Ming Shang, 17, Senior
Taipei Municipal Chien-Kuo High School, Taipei City, Chinese Taipei, T: Lie-Fen Shyur
- PH032 Self-propelled Energy Resource from Geometrical Symmetry Breaking**
Fang-Yu Chang, 16, Freshman, Taichung Municipal Daya Junior High School, Taichung City, Chinese Taipei, T: Wen-sen Chon
- PH306T Reverse Ordering in Dynamical Two-Dimensional Hopper Flow**
Hao-Wen Dong, 16, Sophomore; Chen-Chieh Ping, 16, Freshman
The Affiliated Senior High School of National Kaohsiung Norm, Kaohsiung City, Taiwan, Chinese Taipei, T: Yu-Cheng Chien
- PS304T Do Clocks in Different *Arabidopsis* Tissues Communicate with Each Other?**
Pin-Han Wang, 17, Junior; Chia-Rung Hsu, 17, Junior
Taipei First Girls High School, Taipei City, Chinese Taipei, T: Hung-Hsiao Lee

COLOMBIA

Medellin, COL001, Colombia Science & Engineering Fair

- AS304T Benefits of the *Gliricidia sepium* for Poultry Feeding**
Angie Paola Hoyos Morales, 14, Freshman; Carlos Alfredo Regino, 17, Freshman
Colegio Diocesano San Pedro Apostol, San Pedro de Uraba, Antioquia, Colombia, T: Jorge Alberto Plaza Montes
- BE310T Is Maternity in Adolescents a Factor that Influences Poverty in the Neighborhoods Popular 1 and 2 of the City of Medellin?**
Geraldin Vasquez, 16, Junior; Yessica Marcela Borja, 17, Junior
Institucion Educativa Federico Carrasquilla, Medellin, Antioquia, Colombia, T: Fabio Andres Hurtado
- CS303T Bioinformatics Tools for the Analysis of Genomes and Proteomes: A Pedagogical Proposal for a Rising Science**
Yersson Alexis Zapata, 16, Junior; Jorge Ignacio Mesa, 16, Junior
Institucion Educativa Enrique Velez Escobar, Itagui, Antioquia, Colombia, T: Luis German Aguirre
- EN313T Asphalt Ecological Improvement**
William Junior Alvarez Correa, 17, Junior; David Pizano Posada, 17, Junior; Santiago Galeano Gomez, 17, Junior
Colegio Colombo Britanico, Envigado, Antioquia, Colombia, T: Juan Guillermo Toro Martines
- PS023 Effect of Higher Magnetic Fields on Photosynthesis, Easily and Precisely Measured by the Use of Diabetic Glucometer**
Maria Paulina Tieck, 18, Junior, Colegio Aleman, Medellin, Antioquia, Colombia, T: Miguel Vergara

COSTA RICA

San Jose, CRI001, Feria Nacional de Ciencia y Tecnologia

- EV308T Use of a Waste as an Anaerobic Filter Media**
Natalia Barrantes-Ortiz, 17, Junior; Irene Barrantes-Ortiz, 17, Junior
Colegio Cientifico Costarricense Sede San Pedro, Montes de Oca, San Jose, Costa Rica, T: Adolfo Barrantes-Mendez

- PS028 The Use of Mountain Microorganisms as Biological Control of Downy Mildew (*Peronospora sp.*) in Pumpkin Crops (*Cucurbita maxima*)**
 Maria Alexandra Obando-Garita, 18, Senior, Colegio Tecnico Profesional de Pacayas, Cartago, Costa Rica, T: Vivian Maria Solano-Camacho
- PS306T Design and Development of an Innovative Classification System of Medicinal Plants Used on Alternative Medicine**
 Giancarlo Marin-Hernandez, 15, Freshman; Pablo Andres Marin-Arrieta, 15, Freshman; Andrey Jimenez-Garro, 15, Freshman
 Colegio Tecnico Profesional Don Bosco, Alajuelita, San Jose, Costa Rica, T: Carlos Eduardo Acosta-Chacon
San Jose, CRI002, Technology and Engineering Fair
- CS304T Real-Time Medical Data Transfer System (AMBULANCES – HOSPITAL)**
 Melina Jimenez-Porras, 19, Senior; Angie Pamela Marin-Acuna, 18, Senior; Maylin Patricia Valverde-Torres, 19, Senior
 Colegio Tecnico Profesional Don Bosco, San Jose, Costa Rica, T: Eduardo Rosales-Mejia
- EE050 Design of a Prototype Braille Printing System that Allows Re-Use of a Template Sheet and Development of a Mobile Braille Keyboard with Internal Memory**
 # Jose Miguel Gonzalez-Arias, 18, Senior, Colegio Tecnico Don Bosco, San Jose, Costa Rica, T: Jose Fabian Garro-Aragon
- EE051 RIIS-ED: Prototype of Wheelchair for Quadriplegic People Controlled by Neural Impulses**
 # Luis Gerardo Leon-Vega, 17, Sophomore, Colegio Jose Maria Gutierrez, Bagaces, Guanacaste, Costa Rica, T: Luis Leon-Solano

CZECH REPUBLIC

Prague, CZE002, AMAVET Czech Republic Science Fair

- AS001 Study of Food Relations of Cave Invertebrates**
 Ondrej Vosta, 18, Junior, Anglo-Czech High School, Czech Budejovice, Czech Republic, T: Kveta Tumova
- EN001 Uniaxially Aligned Electrospun Nanofibers**
 Ales Stejskal, 17, Sophomore, Letohradske Soukrome Gymnazium, Letohrad, Czech Republic, T: Marek Pokorny
- ME301T Investigation of the Growth of Czech Children and Adolescents**
 Monika Dobrovodova, 18, Senior; Ivana Smutna, 17, Junior
 Gymnazium a Stredni Odborna Skola Prelouc, Prelouc, Czech Republic, T: Lucie Stribrna
Sezimovo Usti, CZE001, Students' Professional Activities (SPA)
- CH020 Analysis of Access Routes to/from the Active Sites of Human Cytochrome P450 Enzymes**
 Eva Umlaufova, 20, Senior, Gymnazium, Jesenik, Komenskeho 281, Jesenik, Silesia, Czech Republic, T: Michal Otyepka
- CS020 Weird Processing Units for New Programming and Applications**
 Tomas Mariancik, 20, Senior, Stredni Prumyslova Skola Elektrotechniky, Informatiky a Reme, Frenstat pod Radhostem, Czech Republic, T: Richard Stepan
- PS014 Fruit Hybrids Associated with Positive Effects to Human Health**
 Petr Pokora, 17, Junior, Gymnazium, Brno-Reckovice, Brno, Bohemia, Czech Republic, T: Michal Kunak

DENMARK

Aarhus, DNK001, Unge Forskere

- ME097 PET-scanning**
 Kristina Soborg Pedersen, 19, Senior, Dronninglund Gymnasium, Dronninglund, Denmark, T: Dorthe Christensen
- MI057 Immunomodulatory Host Defense Peptides as Novel Anti-infectives**
 Christina Andersen Resende de Paiva, 20, Senior, Nordsjaellands Grundskole og Gymnasium, Horsholm, Denmark, T: Marianne Johansson

EGYPT

Alexandria, EGY002, BA Science and Engineering Fair

AS032 Follow Maus' Paws

Moataz Ahmed Abdelghafar, 18, Senior, Shohada' Thawret 25 Ynayer High Military School for Toppers, Alexandria, Alexandria, Egypt, T: Rosalind Smith

CH309T Using Natural Plant Extract as Corrosion Inhibitor for Some Metals and Alloys

Ola Ezzat Soliman, 16, Sophomore; Clara Halim Zakhary, 15, Sophomore
El-Nasr Girls College, Alexandria, Egypt, T: Dr. Sherif El-huseiny Ali

ET313T Enhancement of Light Absorption of Dye-sensitized Solar Cells

Using a Composite of Olive Drab Dye and Silver Nanoparticles

Esraa Saleh El-Anany, 17, Junior; Magdy Mamdouh Elsayed, 16, Junior;

Osama Ahmed Kamal Abdel Moaty, 18, Senior

Mediterranean Sea High School, Alexandria, Egypt, T: Ahmed Kamal Abdel Moety
Shohada' Thawret 25 Ynayer High Military School for Toppers, Alexandria, Egypt,
T: Ahmeed Kamal Abdelmoaty

Cairo, EGY001, SAS Science and Engineering Fair

CH306T Artificial Production of Octane by Using Ionized Carbon

Mahmoud Refaat Ahmed, 18, Senior; Ahmed Hany Abdelrahman, 17, Junior
IT School, Ismailia, Cairo, Egypt, T: Mohamed Ali Ahmed

EM035 Getting Rid of Egypt's Black Cloud

Khadija Khaled Bassim, 17, Junior, Turkish Salahaldin International School, Cairo,
Cairo, Egypt, T: Sherine Mohamed Halim

ET034 A Biofuel for the Poor: Local Manufacture of a Cost-Effective Biofuel to Improve Rural Energy Access

Yomna Yasser Mohamed, 18, Senior, El Quadah Leaders American School,
Giza, Egypt, T: Dr. Nazar Mohamed Hassan

ESTONIA

Tartu, EST001, Estonian Young Scientist Contest

PH072 Studies on Rail Vehicle Dynamics with Applications to Tramline Network

Kees Vanamolder, 20, Senior, Tallinn Secondary Science School, Tallinn, Tallinn,
Estonia, T: Mart Kuurme

FINLAND

Joensuu, FIN001, Finland National Science & Engineering Fair

EE086 JoPohjo 3D Machine Vision System

Joona Pohjonen, 18, Senior, Karstulan lukio, Karstula, Finland, T: Jari Heikkil

MA043 A Symbolic Calculator in the Finnish Matriculation Examination in Mathematics

Meri Vainio, 17, Senior, Paivolan Kansanopisto/Valkeakosken Tietotien lukio,
Tarttilla, Finland, T: Merikki Lappi

FRANCE

Paris, FRA001, Olympiades de Physique

EN324T Setting Up a Measuring Protocol of the Reverberation Time of a Room to Improve Its Soundscape Quality

Nofoume Ben Ahmed Aly, 17, Senior; Alban Teytaud, 16, Senior; Paul Chassagne,
18, Senior

Lycee Newton, Clichy, France, T: Christophe Boisseleau

GERMANY

Kiel, DEU001, Jugend Forscht

CH312T The New Magic Formula for Eliminating Bad Breath: $C_{42}H_{70}O_{35}$

Gabriel Alexander Salg, 17, Junior; Nicolas Christian Scheidig, 17, Junior

Hanns-Seidel-Gymnasium Hosbach, Hosbach, Bavaria, Germany, T: Roland Full

CS012 Web 2.x ApplicationBase

Simon Strasser, 17, Junior, Joseph-von-Fraunhofer-Gymnasium, Cham, Bayern,
Germany, T: Robert Wagenbrenner

- EE020 RF Properties of Structured Thin Film Layers on Glass: Realization of Innovative Antennas**
Linn Bieske, 18, Senior, Goetheschule Ilmenau, Ilmenau, Thuringia, Germany,
T: Bianka Kramer
- EE021 Construction of a Multi-Channel Analyzer for Gamma Spectroscopy**
Lucas Juergens, 16, Junior, Christian-Gymnasium Hermannsburg, Hermannsburg,
Germany, T: Thomas Biedermann
- EE022 Selfmade Computer Controlled Fiber Winding Machine**
Philipp Peter, 18, Senior, Schulzentrum des Sekundarbereichs II Tech.
Bildungszentrum B, Bremen, Germany, T: Carsten Pieper
- EM012 Computer-based Simulation of Daily Fluctuations in Oxygen Content in Carp Ponds**
Fabian David Scherer, 18, Senior, Gymnasium Hochstadt an der Aisch, Hochstadt
an der Aisch, Bavaria, Germany, T: Markus Bockl
- MA007 Continued Fractions and e**
Frederik Benzing, 18, Senior, Landesgymnasium fuer Hochbegabte, Schwaebisch
Gmuend, Baden-Wuerttemberg, Germany, T: Albert Oganian
- PH022 Building Bridges with Water: The Floating Water Bridge**
Carolin Charlotte Lachner, 18, Senior, Hans-Thoma-Gymnasium, Loerrach,
Baden-Wuerttemberg, Germany, T: Bernd Kretschmer

GUAM

Mangilao, TEGU01, Guam Island-Wide Science Fair

- PS049 HPLC Extraction of Noni (*Morinda citrifolia*) Compounds and Its Inhibition of *E. coli***
Peter Huang Leng, 16, Junior, Father Duenas Memorial School, Chalan Pago,
Guam, Guam, T: Colin Perez

HONG KONG, SAR of the PEOPLE'S REPUBLIC of CHINA

Hong Kong, HKG001, Hong Kong S&T Invention Contest

- CH311T Polyaniline Multi-detecting Toxic Gas Sensor**
Kin Hong Yuen, 16, Junior; Tsun Hong Wai, 19, Senior;
Edmond Yat Man Lui, 16, Junior
King's College, Hong Kong, Hong Kong, T: Bob Lui
- EE325T Privacy Protection System for Colored LED Display**
Yuet Ling Wong, 16, Sophomore;
Chung Yi Chan, 15, Sophomore;
Sum Wing Kei, 16, Sophomore
Heep Yunn School, Hong Kong, Hong Kong, T: Tat Fai Choi
- EM048 Treating Polluted Water and Oil Spillage by Cellulosic Waste**
Shui Yu Bertha Wong, 18, Senior, St. Paul's Convent School, Hong Kong,
Hong Kong, T: Siu Yan Tara Lam
- EM320T Fabrication and Characterizations of Degradable Polyurethane Membranes for the Production of Single-use Culinary Gloves**
Man Ting Chu, 16, Junior; Wing Yan Li, 16, Junior
Shun Tak Fraternal Association Yung Yau College, Hong Kong, Hong Kong,
T: Yuen Kee Tsui
- ET314T Paper-like Photosynthetic Microbial Paper Fuel Cell**
Yiu Tak Wong, 15, Freshman; Chun Sang Pun, 16, Sophomore; Yung Kin Samuel
Tsui, 16, Sophomore
The Chinese Foundation Secondary School, Hong Kong, Hong Kong,
T: Chun Man Ho

HUNGARY

Budapest, HUN001, Innovation Contest for Young Scientists

- MA305T The s(n) Based One-Way Cripting Algorithm**
Gergo Kopenczei, 19, Senior; Peter Enekes, 19, Senior
Bonyhadi Petofi Sandor Evangelical High School and Boarding, Bonyhad, Hungary,
T: Sandor Dr. Katz

INDIA

Chandigarh, IND001, Initiative in Research and Innovation in Science

- CH042 Visible Light Deoxygenation**
Raghavendra Ramachandran, 17, Senior, St. John's International Residential School, Chennai, Tamil Nadu, India, T: Kishore Kumar
- CH050 Nano Zero Valent Iron: The Solution for Wastewater Remediation-- Comparative Study with Photocatalytic Degradation**
Gargi Pare, 15, Sophomore, St. Mary's Convent Senior Secondary School, Ujjain, Madhya Pradesh, India, T: Brijesh Pare
- CS062 Novel Approach to Detection and Quantification of Malignant Biopsy Tissues by Image Analysis**
Onkar Singh Gujral, 15, Sophomore, La Martiniere For Boys School, Kolkata, West Bengal, India, T: Saikat Chakrabarti
- EV058 Bio-Pesticide for the Control of *Helopeltis antonii* in Cocoa Plant**
Sindura Saraswathi Bangaradka, 14, Freshman, Vivekananda English Medium High School, Puttur, Karnataka, India, T: Muralidhar Bhat Bangaradka
- MA040 Properties of Periods of Primes**
Shubham Goel, 17, Senior, Delhi Public School, R.K. Puram, New Delhi, Delhi, India, T: Nagalakshmi Prasad
- MI313T Phosphate Solubilizing Action of *Bacillus subtilis* on Bones: A Novel Biofertilizer for Crop Improvement**
Sara Baweja, 18, Senior; Nishi Paliwal, 16, Senior
Maharaja Agarsain Public School, Delhi, Delhi, India, T: Pallavi Goel

INDONESIA

Jakarta, IDN001, Youth Science Competition

- EE035 Digital Leaf Color Chart**
Muhammad Luthfi Nurfakhri, 17, Junior, Bogor 1st State Senior High School, Bogor, West Java, Indonesia, T: Hasan Salim
- EN307T Termite Resistant Rice Straw Paper with Soursop Leaves Extract**
Marwah Zairah, 17, Junior; Efa Fazriyah Haryono, 17, Junior
Malingping 1st State Senior High School, Malingping, Lebak, Indonesia, T: Raden Supardan
- EN308T Volcanic Mudflow Breaker Dam**
Amelia Nugrahaningrum, 18, Junior; Aulia Azka Januartrika, 17, Junior; Anas Mufid Nurrochman, 18, Junior
Yogyakarta 1st State High School, Yogyakarta, Yogyakarta, Indonesia, T: Suparyono Suparyono

IRELAND

Dublin, IRL001, BT Young Scientist & Technology Exhibition

- MA008 1,400 Years of Change: Letter Frequencies in the Irish Language**
Aoife Dorathea Gregg, 16, Sophomore, Loreto College, Dublin 2, Ireland, T: Yseult Whitaker

Regional and Finals in Kildare, IRL002, SciFest

- EM303T 'Polyfuel': A Novel Solution to Fuel Shortages and Disposal of ELPs**
Eoghan Thomas Flynn, 14, Freshman; Ruairi John O'Neill, 16, Freshman
Blackwater Community School, Co. Waterford, Waterford, Ireland, T: David King

ISRAEL

Jerusalem, ISR001, The Israeli Young Scientists Contest

- BE008 The Psycho-schematic Cinematography of Free Will**
Amit Kahana, 18, Senior, Israeli Arts and Science Academy, Jerusalem, Israel, T: Yael Justus-Segal
- CH017 Gold Nanoparticle Optimization via Stepwise Annealing of Ultrathin Films on Solid Substrate**
Hadass Shifra Inbar, 17, Senior, Galili High School, Kfar Saba, Israel, T: Dorit Bar
- CS021 A Method for Self-Duplicating Data Storage Using Magnetic Bacteria**
Or Sagy, 16, Senior, Ben Gurion Regional School, Emek Hefer, Israel, T: Einat Midroni

EM306T SOWP: DTS Solar Water Purification Using Drop Technology System

Avishai Ketko, 18, Senior; Maya Braun, 17, Senior
Moshe Sharet High School, Netanya, Israel, T: Reuven Dinovich

ITALY

Milano, ITA001, I Giovani e le Scienze

CH310T Development of a Chemical Treatment to Make Materials Hydrorepellent

Aldo Cingolani, 17, Senior; Andrea Paladini, 18, Senior; Roberto Fasano, 17, Senior
Liceo Scientifico Statale "Cosimo De Giorgi", Lecce (LE), Italy, T: Beniamino Lofari

MA306T Music in Town

Elalim Zen Vukovic, 20, Senior; Jasmine Zen Vukovic, 18, Junior
Scientific High School "Lorenzo Mossa", Olbia (OT), Sardinia, Italy,
T: Antonietta Carbone

JAPAN

Tokyo, JPN001, Japan Students Science Awards

AS054 Exquisite Formation of Eye Pigments in Pupae and Imagoes of *Drosophila melanogaster*

Nozomi Ugajin, 17, Junior, Saitama Prefectural Kawagoe Girls' Senior High School,
Kawagoe, Saitama, Japan, T: Mitsuko Yano

CH051 Electric Power Generation by Yoghurt

Haruka Horiuchi, 18, Senior, Nagano Yashirro High School, Chikuma, Nagano, Japan,
T: Takanori Ito

PS313T Dorsiventral Differentiation of *Marchantia polymorpha* L.: When and How Does a Gemma Decide Its Front and Back?

Toshikazu Tatematsu, 18, Senior; Maiko Suzuki, 18, Senior; Masaharu Suzuki, 18,
Senior
Koyo Senior High School, Nagoya, Aichi, Japan, T: Masao Ito

Tokyo, JPN002, Japan Science & Engineering Challenge

AS017 The Secrets of Soil Ecosystem Engineers: Species Composition and Biomass in Space and Time Variation in Japan

Sarasa Yano, 17, Junior, Seishingakuen High School, Kashima, Ibaraki, Japan,
T: Hideyuki Jumonji

BE009 How Invaders Become Queens: Temporary Social Parasitism of Spiny Ant, *Polyrhachis lamellidens*

Naoto Idogawa, 17, Junior, Soka High School, Kodaira, Tokyo, Japan, T: Yasuo Kubo

PH305T Multiplied Water Transport by Water-Jet

Koichi Shiga, 16, Sophomore; Kazushige Ueda, 16, Sophomore; Hiraku Doi, 16,
Sophomore
Hiroshima Prefectural Hiroshima Kokutaiji Senior High School, Hiroshima,
Hiroshima, Japan, T: Yo Muneta

JORDAN

Amman, JOR001, Science Fair of The Jordanian Ministry of Education

BE316T The Effects of Limited Playing Space on Teens Behavior (Aged 12-15 Years Old)

Rani Osama Qasem, 15, Freshman; Sameh Mutaasem Abu Al Ragheb, 15,
Sophomore
Modern Systems School, Amman, Jordan, T: Ehab Jabr Abu Nimreh

CH302T Small Scale, Low Cost, Environmentally Friendly Galvanic Cells

Hasan Omar Bani Salameh, 17, Junior; Qusai Ahmad Bani Yassin, 17, Junior
Alkourah Pioneer Center, Irbid, , T: Mohammad Ali Amayreh

EA015 A Device for Measuring the Vibrations and Earthquakes

Mohamed Maamoon Sehimat, 16, Sophomore, Zaid Ben Hartheh, Al-karak,
Al-Adnaniah, Jordan, T: Mohamed Abdel Razzeq Jdou

EE040 Measuring the Slope of Floors Using an Analog Device

Dana Ibrahim Alhanani, 16, Sophomore, Jubilee School, Amman, Jordan,
T: Abd El Khaleq Alshboul

- EM310T w3s: Water Sensing Saving System**
Nedeen Majidi Al Sharif, 16, Junior; Abeer yousef Jazzar, 16, Junior;
Raghad lyad Hanbali, 16, Junior
Ahliyyah School for Girls, Amman, Jordan, T: Qais Al Hinti
- ET306T Reviving Green Energy**
Ahmad Adel Qaralleh, 18, Senior; Mahmoud Maher Ashour, 18, Senior
Prince Al-Hassan Secondary School for Boys, Al-Karak, Al-Karak, Jordan,
T: Maher Mahmoud Ashour
- ET307T Using Dead Sea Salt and Fresnal Lens in Concentrating Solar Power to Produce Continuous Electricity**
Mothanna Moh'd Najeh Almegdad, 17, Junior;
Ayman Moh'd Amin AlRazem, 16, Junior
Jubilee School, Amman, Shafa Badran, Jordan, T: Ahmad Sabateen
- EV304T Environmental Refrigerator**
Fawzi Moh'd ghassan Almitwalli, 15, Sophomore;
Nour Abdel Hay Maraaqa, 16, Sophomore
Al-Ra'ed Al-Arabi School, Amman, AL shimaisani, Jordan, T: Ahmad Ali Obeidallah
- EV305T Car Exhaust Purification System to Reduce Air Pollutants of Car Engines**
Hazem Husam Aldean Khadash, 16, Junior; Sohaib Ali Maghnam, 16, Junior
Jubilee School, Amman, Shafa Badran, Jordan, T: Abd El Khaleq Alshboul

KAZAKHSTAN

Astana, KAZ001, DARYN National Junior Science Projects Competition

- EA301T Electron-Nuclear Showers in the Atmosphere**
Arman Kadyrov, 17, Sophomore; Stanislav Zhdanovich, 17, Junior
Specialized High School No. 90, Almaty, Kazakhstan,
T: Elena Aleksandrovna Beisembayeva
- EE034 Design and Creation of Small Wind-Power Engines for Low Wind Speeds Based on Magnus Effect**
Assiya Kussainova, 16, Junior, Specialized School for Gifted Children Daryn,
Karagandy, Karagandy, Kazakhstan, T: Kapas Kussainov
- MA013 Finding a Winning Strategy in the Game "Chomp"**
Nurbek Mambetuly Kungozhin, 17, Junior, Republican Specialized School in Physics
and Math, Almaty, Kazakhstan, T: Saule Syzdykovna Shinassilova

KUWAIT

Kuwait, KW001, Kuwait Science and Engineering Fair

- EE085 (BAS) Bracelet Alarm System for the Hearing Impaired Parents**
Hawraa Fawzi ALQallaf, 18, Senior, Salmiya High School, Kuwait, Kuwait,
T: Eman Atef Jamil
- EE087 How to Save More Energy by Using NiChrome Wires**
Salmaan Fahad Alotaibi, 16, Sophomore, Sabah Alsaalem High School for Boys,
Kuwait, Kuwait, T: Abdullah Mubarak Alowaise
- EM051 Saving Our Environment from the Hazards of Plastic Wastes**
Farah Khalifa Alazimi, 16, Junior, Khalda Bint Alaswad, Kuwait, Kuwait,
T: Eman Atef Gamil
- ET067 Solar Energy Utilization in Schools in GCC Countries**
Ohood Ali Almutairi, 15, Sophomore, Rawd Alsalheen School, Kuwait, Kuwait,
T: Eman Atef Gamil

LEBANON

Beirut, LBN001, Lebanon Science Fair

- BE317T National Online Blood Bank**
Ola Khaled Abou Draa, 15, Junior; Nisrin Abdel Salam Abdullah, 16, Junior
Iman High School, Saïda, Lebanon, T: Abdel Waddoud Nakouzi
- EE077 Wireless Power Transmission**
Mohamad Ali Oussayran, 17, Sophomore, College Notre Dame des Soeurs
Antonines, Nabatiyeh, Lebanon, T: Wassim Rihane

Beirut, LBN002, Lebanon Science Fair

EE078 Step Forward

Jason Elie Naoufal, 17, Senior, Antonine Sisters School Mar Elias, Ghazir, Lebanon,
T: Tony Abi Atmi

EE327T Infinity Engine

Nour Hanna Bou Malhab, 15, Freshman; Gilbert Moussa Bustros, 15, Sophomore;
Hicham Abdullah Nasr, 16, Sophomore
Mar Doumit, Roumieh, Lebanon, T: Hanadi Salhab

ME099 Surgeon Aid Device

Radwan Mohamad Faisal El Othman, 17, Junior, Rawdat Al Fayhaa Secondary
School, Tripoli, Lebanon, T: Ahmad El Arja

MACAU, SAR of the PEOPLE'S REPUBLIC of CHINA

Macao, MAC001, Macao Region Science Fair

EM307T The Feasibility Study of Using Brine Shrimp as a Biological Indicator in the Water Quality Evaluation

Ka Kei Lao, 18, Senior; Nam Hei Lam, 17, Senior
Escola Keang Peng (Seccao Secundaria), Macao, Macau, T: Kai Heng Lam

MA303T A Secret Lock for Any Three People

Chih Wei Tan, 15, Sophomore; Hok Wai Chang, 14, Freshman
Pui Ching Middle School, Macau, , T: Chan Lam Wong

MA304T The Lee Model of "Completeness" Polyhedrons with Matching Color and a New Way of Making Polyhedrons Models

Man Chong Leong, 18, Senior; Wai Chon Lio, 17, Senior
Macao Pooi To Middle School, Macao, Macau, T: Wai Chuen Lee

MALAYSIA

Selangor, MYS001, National Schools Science Innovation and Engineering Competition

EN314T Cassava Stem Core as Heat Insulator (CaSteC)

Nurul Nadiyah Rusli, 17, Junior; Sufi Syahadah Mohd. Ali, 17, Junior;
Norain Kambali, 17, Junior

EV055 Agro-Based Water Treatment for Rural Communities

Benjamin Ngie Xiong Wong, 17, Sophomore, Sekolah Menengah Kebangsaan Batu
Lintang, Kuching, Sarawak, Malaysia, T: Yee Chuen Lim

Transkrian, MYS002, MRSM Young Scientist

EE323T The Egg Separator Machine

Farida Hamimi Mohd Tarmizi, 17, Junior; Nurul Ashikin Mohd Sisis, 17, Junior
Maktab Rendah Sains Mara Muadzam Shah, Rompin, Pahang, Malaysia,
T: Suhaimi Mat Sulong

ET060 Kenaf Plant : A Green Source of Energy

Wan Muhammad Syafiq Bin Wan Mohd Zairuddin, 17, Freshman, Mara Junior
Science College Taiping, Taiping, Malaysia, T: Wan Rohani Binti Wan Harun

PS054 Presence of Luciferase in Grass Prolongs Photosynthesis Process

Muhammad Danial Bin Ahmad Helmi, 16, Freshman, Maktab Rendah Sains MARA
Beseri, Beseri, Malaysia, T: Natrah Binti Mat Arif

MEXICO

Puebla, MEX001, Gran Encuentro de Ciencias Joven

BE058 Social Inclusion of Poor Women: Analyzing Liebowitz Social Anxiety Scale for a Training Proposal in Microfinance

Magdaly Esther Santillanez Olivas, 18, Senior, COBAES 21, Dr. Genaro Salazar
Cuellar, Guamuchil, Salvador Alvarado, Sinaloa, Mexico, T: Alvaro Perez Giusti

BE321T Generation "WE" and the Video Games

Nancy Jazmin Perez, 16, Freshman
CBT No 2 Cuautitlan, Cuautitlan, Estado de Mexico, Mexico, T: Lilia Cristobal

BI307T ALPIMIX

Carolina Velazquez Jimenez, 17, Freshman;
Daniel Esteban Sanchez Sanchez, 16, Freshman
Colegio de Estudios Cientificos y Tecnologicos del Estado de, Tecamachalco,
Puebla, Mexico, T: Adriana Reyes Castro

- CH314T NOQUIM: A New and Different Didactic Tool Used to Teach Chemistry**
Adriana Jaqueline Maximiliano, 17, Senior; Gustavo Rendon, 17, Senior;
Karla Janeth Barron, 17, Junior
Colegio Alzate, Ozumba, Estado de Mexico, Mexico, T: Eric Perez
Colegio de Bachilleres del Estado de Sinaloa (COBAES 65 " E, Rosario, Sinaloa,
Mexico, T: David Macias
- CS072 Virtual Measurement of Brain's Skills**
Erendira Citlalli Jara Diaz de Leon, 17, Senior, Centro de Bachillerato Tec. Industrial
y de Servicios No.168, Aguascalientes, Mexico, T: Antonio Diaz de Leon Gonzalez
- EM322T Biodegradable Packaging from Prickle Pear and Lime Peels**
Maria Selene Hernandez, 18, Senior; Juan Carlos Jaramillo, 18, Senior
Centro de Bachillerato Tecnologico Industrial y de Servicios, Cortazar, Mexico,
T: Miguel Angel Quintana
- EN321T Polystyrene Roofs**
Sarai Montiel Ramirez, 16, Senior; Mariela Cortes Barragan, 16, Junior
Colegio de Bachilleres del Estado de Puebla Plantel 6, Ixcaquixtla, Puebla, Mexico,
T: Felix Bernabe Romero
- ET316T Transforming Energy**
Xochitl Franco Morales, 17, Senior; Alejandro Perez Mendez, 18, Senior;
Lucia Itzel Pereyra Lagunez, 20, Senior
Preparatoria Oficial No. 144, Estado de Mexico, Mexico, T: Claudia Garcia Salazar
- EV059 Ecofilters**
Adaliz Miranda Larios, 16, Junior, Colegio de Bachilleres del Estado de Puebla
Plantel 6, San Juan Ixcaquixtla, Puebla, Mexico, T: Felix Bernabe Romero
- PS314T Ozumba's Marketplace Medicinal Flora as an Alternative of Health**
Gemali Toledano, 17, Senior
Colegio Alzate, Ozumba, Estado de Mexico, Mexico, T: Eric Perez

NORTHERN IRELAND

Belfast, NFK001, Sentinus Young Innovators

- CS013 OpenCL Program that Utilises the Full Potential of Multiple Processors**
Henrik Bruesecke, 19, Senior, St. Columba/Es Comprehensive School, Glenties,
Co. Donegal, Ireland, T: Kathleen Molloy

NORTHERN MARIANA ISLANDS

Saipan, NM1001, Northern Mariana Islands Science & Engineering Fair

- ME085 CoCoSun**
Jee Hui Hwang, 17, Junior, Marianas Baptist Academy, Saipan, Saipan, Northern
Mariana Islands, T: Lorna Binondo Liban

NORWAY

Oslo, NOR001, Norwegian Contest for Young Scientists

- BE057 Guanxi: The Significance of Relations and Social Networks in Chinese Business**
Alex Bergsaaker, 18, Senior, Tryggheim Vidaregaaende Skule, Naerbo, Rogaland,
Norway, T: Svein Bertil Dybesland
- CH014 An Investigation into Volumetric Behaviour of Salts and Saccharides in Aqueous Solutions**
Alexander Zakharov, 18, Senior, International School of Stavanger, Stavanger,
Norway, T: Lynn Park

PAKISTAN

Islamabad, PAK001, Intel Science Fair

- AS301T Energy Square for Cattle**
Mahnoor Hassan, 17, Junior; Shiza Gulab, 17, Junior; Bushra Shahed, 17, Junior
Institute of Computer and Management Sciences, Peshawar,
Khyber Pakhtunkhwa, Pakistan, T: Mohsina Asmat
- PH023 Water and Heat Detector**
Musa Rahim Khan, 17, Senior, Aga Khan Higher Secondary School, Chitral, Khyber
Pakhtoonkhwa, Pakistan, T: Muhammad Ajmal Khan

PH024 Production of Artificial Magnetic Domains in Non-Metals

Syed Shahzeb Zarrar, 17, Junior, Iqra Army Public School and College, Quetta Cantonment, Balochistan, Pakistan, T: Erum Zafar

PALESTINE

Ramallah, PSE001, Palestine Regional Science Fair

EE052 Random and Temporary Traffic Detection System for Car Parks

Yazid F Aalawna, 17, Junior, Selat Eddher Vocational School, Jenin, Palestine, T: Murad S. Sulaiman

EE318T Vehicle Supplementary Braking System

Ammar Yasser Assi, 17, Junior; Amir Khaleel Hamdan, 17, Junior Nablus Secondary Vocational School, Nablus, Palestine, Palestine, T: Omar Hasan Diab

ME051 The Role of Sweet Basil (*Ocimum basilicum*) in the Treatment of Vaginal Discharges and Its Antibacterial Activity

Qasam Salem Musallam, 16, Sophomore, Talfeet Secondary Girls' School, Talfeet, Palestine, T: Nawal Mahmoud Hamad

ME052 E-Nursing

Khawla M.A. Rimawi, 16, Junior, Dr.Qasem Alrimawi Girls School, Ramallah, Palestine, T: Amira K.R. Taha

PH043 Ping-Pong- Laser Ball

Muhanad Awad AbuHadid, 16, Junior, Arab Institute, Jerusalem, Palestine, T: Ahmed Khaled Al Ammouri

PS307T Carbon - Soil Sensor

Aseel Yacoub Shehadeh, 17, Junior; Rawan Khalil Askafi, 17, Junior Wedad Naser Aldeen High School, Hebron, Palestine, T: Abeer Rushdi Qunaibi

PANAMA

Panama City, PAN001, Feria Cientifica del Ingenio Juvenil

EV310T Micro Plant Desalinitation

Pedro Alecsei Caballero, 17, Senior; Genesis Enith Cedeno, 18, Senior Centro Educativo El Progreso, Chiriqui, Panama, T: Alicia Serrano

PERU

Lima, PER001, Peru Science and Engineering Fair

EE311T Looking into the Microworld

Ricke Claudio Velazco Chiara, 16, Senior; Yozet Manuel Munoz Cayo, 16, Senior Tupac Amaru, San Francisco de Ravacayco, Parinacochas, Peru, T: Julio Cesar Guillermo Gutierrez

EM304T Reduction of Environmental Pollution by Phytoremediation in Tailings of the Mine "RECUPERADA", (Huancavelica, Peru)

Stephany Karla Mendieta Yanez, 15, Senior; Mishel Shady Manrique Guzman, 16, Senior, Nuestra Senora del Carmen, Lircay, Angaraes, Peru, T: Neil Walter Romero Espinoza

EM305T An Intelligent Irrigation System to Optimize the Use of Water

Cynthia Elizabeth Julian Bacilio, 16, Senior; Alexander Manuel Rodriguez Bocanegra, 16, Senior Simon Bolivar, Otuzco, Peru, T: Vicente Alipio Moya Salinas

PHILIPPINES

Pasig City, PHL001, Philippines Science Fair

EM049 Potentials of Common Herbal Plants in Sequestering Copper in Former Mine Brownfields

Ven Gabriel Galang Tan, 15, Freshman, Marinduque National High School, Boac, Marinduque, Philippines, T: Riena Angco Rodriguez

EN044 Eco-Fabric from Fragrant Screw Pine (*Pandanus amaryllifolius*) Leaf Fibers

Elson Ian Nyl Ebreo Galang, 16, Sophomore, Philippine Science High School-Southern Mindanao Campus, Davao, Davao del Sur, Philippines, T: Sharon Masucol Dejarme

- EV313T Regenerating Coral Fragments on Bamboo Artificial Reefs**
Julian Paolo Talamera Biyo, 17, Freshman; Paul Caesar Mason Flores, 16, Sophomore; Hazel Anne Jurado Hernandez, 16, Sophomore
Philippine Science High School - Western Visayas Campus, Iloilo, Philippines, T: Edward Chua Albaracin
- ME312T Bioprospecting for Active Compounds of *Dolabella auricularia* (Sea Hare) Ink Secretion**
Lanz Gabriel Sales Jabla, 16, Sophomore; Bryce Abraham Marasigan Anos, 16, Sophomore; Carla Beatriz Herceda Lazara, 16, Sophomore
Philippine Science High School- Southern Mindanao Campus, Davao City, Davao del Sur, Philippines, T: Sharon Masucol Dejarme

POLAND

Warsaw, PLD001, Poland Science & Engineering Fair

- AS056 Influence of Different Ecosystems on Reproduction of the Red Mason Bee (*Osmia rufa L.*) on the Example of a Meadow, an Orchard, a Forest and an Arboretum**
Anna Julia Kusnierczak, 18, Senior, Liceum Ogólnokształcące sw. Marii Magdaleny, Poznan, Poland, T: Monika Fliszkiewicz
- BI041 Synthesis of Trimethylguanosine Cap Analogues with the Potential Use in Gene Therapy**
Jakub Nagrodzki, 16, Sophomore, XXXIII Liceum Ogólnokształcące Dwujęzyczne im. Mikolaja Kope, Warsaw, Mazowieckie, Poland, T: Jacek Jemielity
- ET065 The Impact of the Wind Turbines on Living Organisms**
Nicola Jurata Leonczyk, 18, Junior, Secondary School name of Adam Mickiewicz, Pomorskie, Poland, T: Grazyna Linder

PORTUGAL

Lisboa, PRT001, Portuguese Contest for Young Scientists

- BE318T Phonological Skills in Pre-school Children, an Empirical Case Study**
Teresa Costa, 18, Senior; Joana Nunes, 18, Senior; Ricardo Moura, 18, Senior
Colegio Luso-Frances, Porto, Portugal, T: Rita Rocha
- EN319T A One-Lead Electrocardiograph with Digital Transmission as Communication Tool and Affordable Fieldwork Device for Fighting Cardiovascular Diseases**
Joao Ramos, 17, Senior; Luis Miguel Fresco, 19, Senior; Wellington Luis Sousa Almeida, 19, Senior
Escola Secundaria c/3 Ciclo Dr. Mario Sacramento, Aveiro, Portugal, T: Sergio Eduardo Peixoto de Menezes de Ramos

PUERTO RICO

Arecibo, TEPR02, Arecibo Regional Science Fair

- AS033 Relationship between Migratory Birds and the Coastline Wetlands of Camuy, Puerto Rico**
Alan Franqui Guzman, 15, Sophomore, Pablo Avila, Camuy, Puerto Rico, T: Marta Rosa
- BI029 Apis Mellifera's Honey as a Vaccination and Prevention Method Against Zucchini Yellow Mosaic Virus (ZYMV) and Papaya Ringspot Virus (PRSV) Affecting *Cucurbita maxima* Duch Crops in Puerto Rico**
Caroline Lopez, 16, Sophomore, Brigida Alvarez Rodriguez, Vega Baja, Puerto Rico, T: Elsie Garcia
- EV035 Environmental Analysis of a Hydrocarbon-contaminated Soil to Identify the alk3 Gene by Biochemical-molecular Technique**
Jordanalys Berrios-Colon, 17, Senior, Jose Rojas Cortes, Orocovis, Puerto Rico, T: Maria Margarita Melendez
- PS309T First Bryophyte Classification at Quebradillas, Puerto Rico**
Carlos A. Ramos, 16, Sophomore; Juan G. Vives, 15, Junior
Colegio San Rafael, Quebradilla, Puerto Rico, T: Iris Crespo

- Bayamon, TEPR03, Bayamon Regional Science Fair I*
EE320T Diluvium Detector: Design and Implementation of a Flood Alert System to Save Lives
 ## Pedro Julio Hernandez-Rodriguez, 18, Senior; ## Elliot Josue Ramos-Cheverez, 17, Senior
 Adela Rolon Fuentes, Toa Alta, Puerto Rico, T: Ruth M. Rosa
- MI036 Microbiological Analysis of Bacteria Present in Objects at the Reach of Our Fingertips**
 Lyneiza Emine Collazo, 18, Senior, Jose Rojas Cortes, Orocovis, Puerto Rico, T: Carol J. Morales
- Caguas, TEPR04, Caguas Regional Science Fair*
CH029 Natural Fruits and Plant Extracts as Potential Antacids
 Carlos Enrique Rodriguez, 17, Junior, Pablo Colon Berdecia High School, Barranquitas, Puerto Rico, T: Diana S. Gonzalez
- EE319T Volcano of Energy**
 Asuwie Marie Serrano, 17, Senior; Jennifer Colon, 17, Senior
 Luis Munoz Marin High School, Barranquitas, Puerto Rico, T: Jose Roberto Gerena
- MI037 Isolation, Purification and Characterization of Mycobacteriophages Obtained from the Soil and Water of Rivers in the Puerto Rican Towns of Comerio, Mayaguez, Ponce, Vega Baja and Rio Grande**
 # Kiara Rivera, 18, Senior, Superior Juana Colon, Comerio, Puerto Rico, T: Jackeline Colon Melendez
- Cayey, TEPR11, Radians Science & Engineering Fair*
CH047 Intercalation of a Ferrocene Derivative in Zirconium Phosphate Layers
 # Francisco Roberto Martinez, 17, Senior, Colegio Radians, Cayey, Puerto Rico, T: Luz Deliz Burgos
- PS052 The Effects of Different Sources of Light on Fern**
 Luis Angel Ramos, 16, Junior, Colegio Radians, Cayey, Puerto Rico, T: Luz D. Burgos
- Humacao, TEPR05, Humacao Regional Science Fair*
CH030 Analysis of the Chemical Properties of the Active Ingredient Found in a Slimming Pill
 Keishaly Cabrera Cruz, 17, Junior, Rafael Rocca High School, Naguabo, Puerto Rico, T: Elianid Espinosa
- EV036 Applied Electrochemistry for the Analysis of Heavy Metals in Vieques Soils**
 Natalia Nahi Olmeda, 16, Senior, Petra Mercado Bougart, Humacao, Puerto Rico, T: Gilda Sylvette Jiminez
- MI307T GMOs vs. Non-GMOs: The Field of the Uncertainties**
 Julian E. Morales Delgado, 16, Junior; Rose Mary Figueroa, 16, Junior
 Florencia Garcia High School, Las Piedras, Puerto Rico, T: Mayra Cancel
- Mayaguez, TEPR08, Mayaguez Regional Science Fair*
BI030 Novel Sulf-oxyMb Crystallization for Structure Determination
 Efrain Rodriguez-Ocasio, 17, Senior, CROEM, Mayaguez, Puerto Rico, T: Brenda Cabrera
- CH307T Synthesis of Silver Nanoparticles Using Vitamin C**
 Luis Alberto Diaz-Alicea, 16, Junior; Dangel Alexis Castillo-Rodriguez, 17, Junior
 Vocacional Dr. Pedro Perea Fajardo, Mayaguez, Puerto Rico, T: Evelyn Lopez-Rosario
- PH048 Cosmic Ray Muons: Speed and Lifetime**
 Joel Eduardo Fuentes-Santiago, 17, Junior, CROEM, Mayaguez, Puerto Rico, T: Elba Margarita Sepulveda
- Mayaguez, TEPR10, SESO Regional Science Fair*
EE003 Heliocentrix: Portable Parabolic Trough vs. Fresnel Lens Array
 Giancarlo Alberto Barillas, 15, Sophomore, Southwestern Educational Society, Mayaguez, Puerto Rico, T: Evelyn Montalvo
- Ponce, TEPR06, Ponce Regional Science Fair*
EM311T Study about Marine Flora and Water Quality in La Guancha Beach in Ponce and Its Use for Educational Workshops
 Paola M. Caraballo, 17, Senior; Ramon L. Colon, 17, Senior
 Bernardino Cordero Bernard Vocational High School, Ponce, Puerto Rico, T: Edna I. Martinez

- EV037 A Comparative Study of the Effect of Salinity in Some Wetlands of Puerto Rico during Drought and Flood Season**
Kelianet Roque-Rodriguez, 16, Junior, Thomas Armstrong Toro, Ponce, Puerto Rico, T: Ana I. Homs
- PH047 Effect of the Reflectance and Emittance of Heat in the Energy Saving and Preservation of the Environment**
Nataly Camacho-Rodriguez, 16, Junior, Asuncion Rodriguez de Sala, Guayanilla, Puerto Rico, T: Gladys Beatriz Vega-Gonzalez
San Juan, TEPRO1, Western Regional Mathematics Fair
- MA028 Mel Innovation Formula**
Melanie Rivera-Canals, 16, Junior, Ramon Power y Giral, Las Piedras, Puerto Rico, T: Marilee Soto
- MA029 Graph Theory to Find Fibonacci in Pascal and Evacuation Routes in Case of a Tsunami**
Valeria Taiz Rivera Martinez, 15, Sophomore, Escuela Brigida Alvarez Rodriguez, Vega Baja, Puerto Rico, T: Hector Otano Vega
- MA030 Analysis between the Mach Number (M) and the Apex Angle of the Cone**
Karolyne Li Lopez-Otero, 17, Senior, Francisco Morales, Naranjito, Puerto Rico, T: Raul Ortiz
- MA307T Study of Archimedes' Spiral Polar Equation**
Irma Liz Alicea, 16, Junior; Darlene Janice Nieves Cruz, 16, Junior
Francisco Morales, Naranjito, Puerto Rico, T: Liza Marie Rodriguez
San Juan, TEPRO7, San Juan Archdiocesan Region I Science Fair
- BE319T Beautiful Brains: A Comparison between Risk-Taking Adolescents and Successful Adults**
Rochelle Amanda Rivera-Leal, 16, Sophomore; Jose Ignacio Ramirez, 15, Sophomore
Academia del Perpetuo Socorro, San Juan, Puerto Rico, T: Maribel Garcia
- EV056 Electrical Conductivity as a Simple Cost-Effective Indicator of Heavy Metal Water Pollution**

Conrado Andres Asenjo, 17, Junior, Academia del Perpetuo Socorro, San Juan, Puerto Rico, T: Maribel Garcia
- EV057 Efficiency of Biogas Producing Materials**
Jose Manuel Alvarez, 15, Sophomore, Colegio San Ignacio de Loyola, San Juan, Puerto Rico, T: Wilma Giol
- ME095 Almond Extract Induces Death and Mitochondrial Dysfunction in Human Leukemic Cells**
Ashley Nicolle Gutierrez, 17, Senior, Academia Maria Reina, San Juan, Puerto Rico, T: Julio A. Galan
- MI312T PPDT: A Cost-effective Autoclave that Inhibits Periodontal Bacteria Associated to Diabetes, Parkinson's and Alzheimer Patients**
Antonio M. Bauza, 15, Sophomore; Christopher Fernandez, 15, Sophomore
Academia del Perpetuo Socorro, San Juan, Puerto Rico, T: Maribel Garcia
San Juan, TEPRO9, San Juan Regional Science Fair
- AS034 Comparative Study about the Influence of Urbanism on the Structure and Composition of the Nests of the Species *Coereba flaveola* (Bananaquit)**
Brian Ricardo Colon-Rodriguez, 17, Senior, Escuela Especializada en Ciencias y Matematicas University G, San Juan, Puerto Rico, T: Wilmer Rivera
- MI038 Comparative Study on the Effectiveness of Different Methods of Sterilization and a Method of Disinfection in the Elimination of the Normal Flora Found in Odontological Instruments Used in the Human Oral Cavity**
Kevin Manuel Rodriguez-Santos, 17, Senior, Escuela Especializada en Ciencias y Matematicas University G, San Juan, Puerto Rico, T: Annia E. Calcano

ROMANIA

Suceava, ROM001, Romania Science and Engineering Fair

- CS069 Human Computer Interface: Using Artificial Intelligence to Help Blind People to See with Their Tongue**

Ionut Alexandru Budisteanu, 18, Junior, Grup Scolar Oltchim, Ramnicu Valcea, Valcea, Romania, T: Adelina Avram

- CS311T I.E.P. - Interactive Educational Platform (Where Lessons Have Never Been More Accessible)**
Vlad Daniel Pavel, 16, Sophomore; Tudor Patuleanu, 18, Senior; Tiberiu Rosca, 17, Junior
Colegiul National "Petru Rares" Suceava, Suceava, Romania, T: Anca Greculeac
- ME098 "Bioscabicide": An Alternative Bio-Remedy for the Existing Toxic-Chemical Treatment for Scabies**
Alexandra Elisabeta Matea-Moldovan, 17, Sophomore, "Dimitrie Bolintineau" High School, Bucharest, Muntenia, Romania, T: Valeria Purcarea-Ciulacu
- RUSSIA**
Chernogolovka, RUS005, Avangard
- CH027 N-Hydroxysuccinimide Ester of 4-pentynoic Acid: Bifunctional Reagent for the Synthesis of Neoglycoconjugates**
Maria Panova, 17, Junior, Moscow Chemical Lyceum, Moscow, Moscow, Russia, T: Sergey Semenov
- MA025 (C, B, A)-Permutations, Their Young Diagrams and Arnold Discrete Dynamic Systems**
Danila Alexandrovich Baygushev, 14, Freshman, Lyceum "Vtoraia Shkola", Moscow, Russia, T: Pavel Vital'evich Bibikov
- MA308T On Ranks of Varieties Generated by Finite Semigroups**
Grigory Gerasev, 16, Junior; Vladimir Alexandrovich Mazin, 16, Junior
Laboratory of Continuous Mathematical Education, Saint-Petersburg, Russia, T: Stanislav Isaakovich Kublanovskij
The Laboratory of Continuous Mathematical Education, Saint-Petersburg, Saint-Petersburg, Russia, T: Stanislav Isaakovich Kublanovsky
Moscow, RUS002, Junior - I
- CH054 Hydration and Photocatalytic Properties of Layered Perovskite titanates**
Iuliia Sokolova, 16, Junior, Anichkov Lyceum, St. Petersburg, Russia, T: Oleg Silyukov
- CH055 Versatile Transformations of Chlorinated Fullerenes for Biomedical Applications**
Anastasiia Iurkova, 18, Junior, Municipal Budget Educational Institution "School No.51" Brya, Bryansk, Russia, T: Tatyana Shipilina
- CS073 Biometrical Voice Authentication System for Computer Networks**
Alexey D. Gusev, 18, Junior, AESC MSU, Moscow, Russia, T: Konstantin V. Dmitriev
- CS312T A Prototype of a P2P File-Sharing Network with a Fully Decentralized Search Engine**
Dmitry Nikulin, 17, Junior; # Evgeny Varganov, 17, Junior
Laboratory of Continuous Mathematical Education, Saint-Petersburg, Russia, T: Dmitry Shtukenberg
- EE328T The Deposition of Protective Coatings on Aluminum Foils in the Magnetron Discharge**
Alexander Sergeevich Prishvitsyn, 16, Junior; Nikolay Lozbenov, 17, Junior
State Budget Educational School Lyceum 1511, Moscow, Moscow, Russia, T: Michail Sergeevich Zibrov
- PH074 The Appearance of a Vertical Jet with the Fall of Meteorite on a Celestial Body**
Alisa Dorofeeva, 17, Junior, AESC MSU, Moscow, Russia, T: Konstantin V. Dmitriev
Moscow, RUS003, Russian Youth Program "Step Into the Future"
- EE079 MARS ROVER <SAMM>**
Semen Tingishev, 16, Sophomore, Lyceum No. 110, Ekaterinburg, Russia, T: Natalia Tokmakova
- PS039 The Features of Yano-Adichansky Plateau Dwarf Siberian Pine (*Pinus pumila*) Accretion**
Igor Sleptsov, 15, Freshman, School of Batagay, Batagay, Verkhoyansk Region, Russia, T: Maria Artemieva

Nizhny Novgorod, RUS001, ROST

PH001 Estimation of the Electric Field Parameters for Particles Superdeep Penetration into the Target

Daria Liutina, 16, Sophomore, Municipal School No. 146, Perm, Russia,
T: Irina Rozhkova

PH002 Astrocyte vs. Neuron: What Dominates?

Alexander Korotkikh, 17, Junior, Lyceum 40, Nizhny Novgorod Region, Nizhny Novgorod Region, Russia, T: Victor Borisovich Kazantzev

PH301T Study of Biefeld-Brown Effect: Capacitors Can Fly

Anton Kutlin, 16, Junior; Mikhail Mlodik, 16, Junior
Municipal Lyceum No. 40, Nizhny Novgorod, Nizhny Novgorod Region, Russia,
T: Alexey Bulatov

St. Petersburg, RUS004, Intel Baltic Science and Engineering Fair

CH046 New Biocide Hybrid Materials Based on Mesoporous Silica and Silver Nanoparticles

Sergey Uoltsev, 16, Junior, School No. 6, Ivanovo Region, Russia,
T: Aleksandr Timin

CS066 Time Machine for Google Android

Gadzhi Osmanov, 17, Junior, Center of Mathematical Education, St. Petersburg, St. Petersburg, Russia, T: Dmitriy Shtukenberg

MA314T Quivers of Self-Injective Algebras

Anatoly Zaikovskiy, 18, Junior; Artemy Bezguzikov, 16, Sophomore
Center of Mathematical Education, St. Petersburg, Russia,
T: Sergey Olegovich Ivanov

SAUDI ARABIA

Riyadh, SAU001, Mawhiba Science & Engineering Fair, Central Region

AS044 The Effectiveness of the Cytochrome C Oxidase Gene on the Identification Barcode of Indigenous Red Sea Porifera

Mohammed Dakhil Al-Johani, 18, Senior, Bin Baz secondary High School, Riyadh, Saudi Arabia, T: Timothy Ravasi

BE042 A Survey-Based Study to Determine the Preferences of Web-Users via Unique Visual Evaluation Aspects

Omar Abdulrahman Al-Hadlag, 17, Senior, Al Manarat Schools, Riyadh, Riyadh, Saudi Arabia, T: Katharina Reinecke

BE043 An Innovative Method for the Comprehensive Textual Reading Ability of the Visually Impaired

Abdullah Abdulfatah Mashat, 17, Junior, Ain Jalout Secondary School, Makkah, Saudi Arabia, T: Abdullah Saleh Al-Ali

BE044 The Effect of Normal Frequency Heartbeats on Improving Visual Communication for Young Individuals with Autism

Lujain Abdulghaffar Aljawi, 18, Senior, Ibd'a'a School, Jeddah, Western, Saudi Arabia, T: Muna Hussien Kisk

CB302T Effect of Venoms Extracted from *Walterinnasia aegyptia* and *Echis coloratus* Snakes on the Induction of Growth Arrest of Colon Cancer Cells

Maysoor Hassan Amin, 17, Senior; Mohannad Hassan Amin, 17, Senior
Manarat Al-Riyadh, Riyadh, Central, Saudi Arabia, T: Jamal Badr

CH036 Synthesizing Biogenic Compounds for the Sustainability of the Aqueous Suzuki-Mayura Reaction: A Novel Green Chemistry Approach

Nayif Sohail Alhomoud, 18, Senior, Dhahran Ahliyya School, Dammam, Eastern, Saudi Arabia, T: Fayig Alqadri

CH037 Using a Novel Method to Synthesize Silver Nanospheres for Optical Viability and Cost Effectiveness

Mohammad Jamal Al-Sharif, 18, Senior, Najd National School, Riyadh, Saudi Arabia, T: Osman Bakr

CH038 The Synthesis of the Novel Organocatalyst, Pentanidium, to Efficiently Produce D- Form Amino Acids

Dana Abduladhim Abdullatif, 17, Senior, Dhahran Ahliyya Schools, Dammam, KSA, Saudi Arabia, T: Xiao-Yu Guan

- EM316T The Evaluation of Environmental Pollution on Heavy Metals in Pastoral Plants from Mahad Althahab Regional Mine**
Abdulrhaman Sulaiman Almutari, 18, Junior; Abdullah Sulaiman Almutari, 17, Senior
Almmhahhab Bin Abisufyan Secondary School, Madinah, West, Saudi Arabia, T: Ahmad Mohammad Alazizi
- EN035 Application of a Novel Electrochemical Etching Method to Fabricate Nano-Scaled Probes for Use in Scanning Probe Microscopy**
Hisham Khalid Al Falih, 18, Senior, Dhahran Ahliyya School, Dammam, Eastern, Saudi Arabia, T: Boon S. Ooi
- EN036 The Development of an Effective Wireless Sensor Network for a Flood Monitoring System**
Abdulla Ahmed Almazrooa, 17, Senior, Al Andalus Private School, Jeddah, Western, Saudi Arabia, T: Christian Claudel
- EN037 Fabrication and Comparison of Plastic and Metal Ferroelectric Capacitors for Information Technology Applications**
Fatimah Ghassan Alajaji, 17, Senior, Alfaisaliah Islamic School for Girls, Alkhobar, Eastern, Saudi Arabia, T: Mohammed Adnan Khan
- EN039 Comparison of Transverse Damage Behavior in Nanoreinforced and Non-Nanoreinforced GFRP**
Hanan Naji Al-Ali, 18, Senior, Dhahran Ahliyya School, Dammam, Eastern, Saudi Arabia, T: Isaac Enrique Aguilar Ventura
- ME308T A Study of Carcinoma Tumor Suppression via Employment of P16 Gene Replacement**
Sarah Hasan Al Abdullatif, 15, Sophomore; Rund Essam Tawfiq, 16, Sophomore
Dhahran Ahliyya Schools, Dammam, Eastern Province, Saudi Arabia, T: Afifa Esam Hamad
- ME309T Linking Biomarkers to Behaviors for Novel Early Diagnosis, Treatment, & Prevention of Autism Spectrum Disorders**
Majd Abdulla Alabandi, 17, Senior; # Saleem Abdulfattah Aldajani, 17, Freshman
Dhahran Ahliyya School, Dammam, Eastern, Saudi Arabia, T: Mohammed Saleh
- MI049 The Effect of Natural Herb Extracts on the Production of Dengue Fever Virus in Cell Culture**
Jumana AbdulRahem Turkistani, 18, Senior, Albayan Model School for Girls, Jeddah, Makkah Almukarrama, Saudi Arabia, T: Essam Ibrahim Azhar
- PH066 Explaining the Origin of the 511 KeV Line through the Simulation of Galaxies with the Introduction of Helium Shell-Detonation Supernovae**
Rayan AbdulRahman Alrubaish, 17, Senior, Dhahran Ahliyya School, Dammam, Western, Saudi Arabia, T: Osama Asad
- PS040 Determining Natural Tissue Development of Edible Plants Using Electrical Impedance Measurements**
Sarah Mohamed Marie, 19, Senior, Altarbiah Alislamia School, Riyadh, Central, Saudi Arabia, T: Hana Mohamed Suhion

SINGAPORE

Singapore, SGP001, Singapore Science and Engineering Fair

- CS308T Generalized Quantum Tic-Tac-Toe**
Ananya Kumar, 17, Senior; Yan Sheng Ang, 18, Senior
NUS High School of Mathematics and Science, Singapore, Singapore, T: Ming Huang Chai
- EE074 e-AID: Enabling Assistance and Independence for Home-Along Elderly**
Jonathan Wei Zhi Lee, 17, Senior, NUS High School of Mathematics and Science, Singapore, Singapore, T: Aung Phyio Wai Aung
- ME086 Treatment of B-RAF(V600E) Colorectal Cancer**
Kay Yi Low, 17, Senior, Raffles Institution, Singapore, Singapore, T: See Wai Lim

SLOVAKIA

Bratislava, SVK001, Scientia pro Futuro

- CH015 Synthesis of Triazene Compounds and Their Application in Spectrophotometric Determination of Cadmium**
Peter Horvath, 18, Senior, High School of Jan Chalupka, Brezno, Slovakia,
T: Jana Chlebusova
- CS016 UniShader: Interface for General-Purpose Computing on Graphics Processing Units and Working with Shader Programs**
Ivan Sevcik, 19, Senior, Gymnazium Ludovita Stura, Trencin, Slovakia,
T: Katarina Stanikova
- PH304T Influence of Magnetic Field on Free Surface Ferrofluid**
Michal Fabian, 18, Senior; Michal Habera, 18, Senior
Gymnazium sv. Tomasa Akvinskeho, Kosice, Slovakia, T: Maria Svikova
Bratislava, SVK002, AMAVET-Slovak Association for Youth, Science & Technology
- CS022 HandControl**
Martin Sunik, 19, Senior, Gymnazium Velka Okruzna, Zilina, Slovakia,
T: Lubomir Konrad
- EE313T Utilization of Autonomous Robotic Systems in Rescue of Victims of Disastrous Events**
Jan Matas, 16, Senior; Andrej Oliver Chudy, 17, Junior
Gymnazium Jozefa Gregora Tajovskeho, Banska Bystrica, Slovakia,
T: Anna Belanova
Stredna Priemyselna Skola Jozefa Murgasa, Banska Bystrica, Slovakia,
T: Ladislav Stec

SOUTH AFRICA

Boksburg, ZAF001, Expo for Young Scientists —South Africa

- AS013 A Study of the Endogenous Activity Rhythms of the Marine Isopod *Exosphaeroma truncatitelson***
Sasha Carmen Holloway, 15, Sophomore, Springfield Convent School, Cape Town, Western Cape, South Africa, T: Una Christopher
- BE007 The Development of an Educational Board Game to Improve the Study Techniques of High School Students**
Brandon Gary Ramnath, 16, Junior, Christian Brothers' College, Boksburg, Boksburg, Guteng, South Africa, T: Shaneela Ramhith
- EA006 Bones 2 Stones: Observations on Processes of Fossilisation in Calcium Carbonate Environments**
Megan Leigh Berger, 15, Sophomore, Roedean School, Parktown, Gauteng, South Africa, T: Leigh Kleynhans
- EE025 An Affordable Functional Prosthetic Hand**
Hearn Max Johnson, 18, Senior, Hoerskool Drie Riviere, Three Rivers, Guateng, South Africa, T: J. Kostner
- EE026 S.A.K.E.R.S: Shock Absorber Kinetic Energy Recovery System**
Byron Richard McNally, 16, Junior, St Patrick's College, Christian Brothers College Kimberley, Kimberley, Northern Cape, South Africa, T: Susan Ferreira
- EM015 Biodegradation of Toxic Dyes**
Vivienne Abigail Dames, 16, Junior, Victoria Girls' High School, Grahamstown, Eastern Cape, South Africa, T: Nadia Czeredrecki-Schmidt
- EV017 The Effect of Cyanide Pollution Due to Slimes Dams on Plant Growth**
Ntuthuko Winston Mthabela, 17, Senior, Harmony High School, Virginia, Free State, South Africa, T: Eben Engelbrecht
- ME024 Evaluation and Training of Proprioception in Male Subjects Aged 13-16 Years**
Saul Reuben Bloch, 16, Junior, Herzlia High School, Cape Town, Western Cape, South Africa, T: John Brandsby
- MI010 An Effective Method to Annihilate Toothbrush Pathogenic Bacteria**
Chene Mostert, 17, Senior, Ladysmith High School, Ladysmith, Northern Kwazulu Natal, South Africa, T: Rienie Conradie

SOUTH KOREA*Daejeon, KOR003, Korea National Science Fair***BE053 The Study of Acoustic Characteristics of Percussion Instruments that Elicit Avoidance Behavior of Rats**

Su Wan No, 15, Sophomore, Seodajeon High School, Daejeon, Daejeon, South Korea, T: Kun Ho Song

EM319T Research on the Way to Reduce Cold-Weather Damage to Greenhouse Farms by Diminishing Mpemba EffectJinKyu Oh, 16, Sophomore; Gyeongyeon Pyo, 16, Sophomore
Dajeon Daseong High School, Korea, Dajeon, South Korea, T: JeYong Song**ET039 Reducing Risks from the Left-Turning Tendency by Computing and Measuring P-Factor Torque, and by Flight Control Testing to Invent the Auto-Compensator**

Sehyun Hwang, 18, Senior, Posung High School, Seoul, South Korea, T: Hokeun Chung

*Daejeon City, KOR002, KSEF (Korea Science & Engineering Fair)***CH313T The Study of Chemical Encryption: Using the Structure and Properties of the Metal Complexes**SeungJin Baek, 16, Junior; YongJae Jo, 18, Junior; Sang Chan Gang, 17, Junior
Gyeong Nam Science High School, Jinju, Gyeong Nam, South Korea, T: SeonGyung An**EN320T Toward Artificial Endospores: Introducing Versatility and Functionality to Living Cells by Biomimetic Formation of SiO₂-TiO₂ Nanocomposite Shells**Jimin Hwang, 16, Junior; Yeonjung Yoon, 17, Junior
Korea Science Academy of KAIST, Busan, South Korea, T: Insung Choi**MI315T Removal of Antibiotic Resistant Bacteria from Animal Fecal Contaminated Water by Bacteriophage**Hyunjin Rho, 16, Junior; Myeong Soo Ko, 16, Junior; Hong Seung Ki, 16, Junior
Daejeon Science High School, Daejeon, Daejeon, South Korea, T: Jiyong Lee*Seoul, KOR001, Korea Olympiad in Informatics***CS063 Installable Auto Search Engine: Grouper**

Sang Min Heo, 19, Senior, Whimoon High School, Gangnam, Seoul, South Korea, T: Jun Jae Sim

CS307T Real-time Stability Algorithm Implementation of a Humanoid RobotChanyoung Youm, 18, Senior; Ki Young Sung, 17, Senior
Gyeonggi Science High School, Suwon, Gyeonggi-do, South Korea, T: Jong Hye Kim**EA305T A Study on the Relationship between Wave Energy and Rounded Beach Cobbles**Young Jin Heo, 18, Junior; Min Chae Jwa, 18, Junior; Young Kyoung Bae, 18, Junior
Gyeongnam Science High School, Jinju, Gyeongnam, South Korea, T: Ju won Kang**SPAIN***Barcelona, SPN001, National Science & Engineering Fair of Spain***EN048 Analyses and Simulation of Human Skin Pigmentation Developing an Individual-based Model (IBM)**

Gloria Macia Munoz, 17, Senior, INS Escola Industrial d'Arts i Oficis de Sabadell, Sabadell, Barcelona, Spain, T: Tomas Padrosa Cervera

CS067 Digitalization of a Basketball Coach Board

Adria Arbues Sanguesa, 18, Senior, INS Vilatzara, Vilassar de Mar, Barcelona, Spain, T: Jesus Arbues Garcia del Moral

SRI LANKA*Colombo, LKA001, Sri Lanka Science & Engineering Fair***CS310T NP System Computer Program for Blind and Visually Impaired People**Liyanadura Nipun Kavishka Silva, 13, Freshman;
Liyanadura Pipunika Vimanthi Silva, 17, Senior
De mazenod College, Kandana, Western, Sri Lanka,
T: Paththini Kuttige Joseph Lakshman Geramanu Nonis

- EA016 A Novel Method of Rainfall Forecasting through Star Locations on Azimuth Grid**
Maleen Jayanath Wijeratna, 15, Junior, Maliyadeva College, Kurunegala, Northwestern Province, Sri Lanka, T: Mahesh Edirisinghe
- EE082 Multi Functional Shoe Pair**
Gameralalage Chathura Madusanka Saman Kumara, 20, Senior, Pinnawala Central College, Rambukkana, Sri Lanka,
T: Dasanayaka Mudiyanseelage Sarath Abeyesiri Dasanayaka

SWEDEN

Stockholm, SWE001, Utställningen Unga Forskare

- AS050 The Global Invasion and Settlement of the Japanese Oyster, *Crassostrea gigas*: Assessing the Oyster as a Bio-engineer and Its Potentially Harmful Influence**
Kei Landin, 19, Senior, KITAS Senior High School of Natural Sciences, Gothenburg, Vestra Götalands län, Sweden, T: Johan Grudemo
- PH067 Quantum Bridge**
Armin Erik Tavakoli, 18, Senior, Kungsholmens Gymnasium/Stockholms Musikgymnasium, Stockholm, Sweden, T: Lena Comstedt-Ekelund
- PS050 Boron Uptake in Birches**
Katerina Rodiouchkina, 18, Senior, Lulea Gymnasieskola, Lulea, Sweden,
T: Peter Sandstrom

THAILAND

Bangkok, THA001, National Science Projects Competition

- AS028 Biodiversity of Millipedes in Takhli, Nakornsawan**
Phornwimol Siabamrung, 18, Senior, Takhliprachasan School, Nakhonsawan Province, Nakhonsawan, Thailand, T: Suwannee Phomprasith
- EM312T Synthetic Gem Made from Ashes of Tamarind Wood and Lignite**
Teerapat Satjalak, 18, Senior; Satawat Atipunyapunt, 18, Senior
Assumption College Lampang, Muang, Lampang, Thailand, T: Somsak Gathong

Bangkok, THA002, Young Scientists Competition

- AS052 Effect of Food Types on Quantity and Nutritional Quality of Weaver Ant, *Oecophylla smaragdina*, Larvae**
Kitthanaet Thanaroungrochthawee, 18, Senior, Kanthararom School, Kanthararom District, Sisaket, Thailand, T: Jatuporn Pornkiattikun
- AS311T Effects of Mucus from Siamese Snail (*Cryptozona siamensis*) on Natural Rubber Coagulation and Anti-*Phytophthora botryose* Activity**
Jatuporn Chaweepak, 17, Junior; Nattapong Chinnara, 17, Junior; Nantakan Longlod, 17, Junior
Suratpittaya School, Suratthani, Thailand, T: Suwaree Pongtheerawan
- MA315T Untangling Theta Graphs with Modified Gauss Codes**
Karn Imwattana, 18, Senior; Varot Pakavatsontorn, 16, Junior
Triam Udom Suksa School, Bangkok, Thailand, T: Nipon Srinarumon

TUNISIA

Tunis, TUN001, Tunisia Science and Engineering Fair

- BE059 FLM (Feel Good, Live Good Machine)**
Ahmed Dhia Eddine Zitouni, 15, Sophomore, Pilot High School of Gabes, Gabes, Tunisia, T: Cherifa Chaieb Riahi
- EE083 Locomotion Aid for Blind People**
Nebras Djemel, 15, Freshman, Pilot High School of Gabes, Gabes, Tunisia,
T: Cherifa Chaieb Riahi
- PH073 S.S.S: Science Serves Student A New Method of Reading and Writing in School to Solve Most of the Students' and the Pupils' Problems**
Ahmed Boubaker Farah, 13, Freshman, Preparatory Pioneer School, Gabes, Gabes, Tunisia, T: Cherifa Chaieb Riahi

TURKEY

Ankara, TUR002, Tubitak Fair

BE320T A Medical Sociology Project on the Family Medicine Model in Turkey-Mersin CaseBurcu Usta, 17, Senior; Irem Peker, 18, Senior
Mersin High School of Science, Mersin, Turkey, T: Mehmet Sevgili**CB055 Expression Profiling of Y Chromosome Genes at Embryo, Larva and Adult Stages of *Drosophila melanogaster***

Bersan Ozcan, 19, Senior, Ankara Science Lycee, Ankara, Turkey, T: Pan-Pan Jiang

EN322T Improving Piezoelectric Properties of Materials by Gamma Radiation ExposureMuzaffer Arda Buyuksan, 17, Junior; Ugurcan Onduc, 17, Junior
Leyla Turgut High School, Yenimahalle, Turkey, T: Asli Hascelik**EN323T Synthesis and Characterization of Polyaniline-based New Electrochromic Polymer Composites**Onur Can, 17, Senior; Fatih Ekrem Gulce, 17, Senior
Izmir Fen Lisesi, Izmir, Turkey, T: Mustafa Erkan**MA316T Some Useful Equations on P-adic Order and Their Applications**Cuneyd Ozturk, 18, Senior; Kursat Rasim Mestav, 19, Senior
Ankara Science Lycee, Ankara, Turkey, T: Nufur Ozturk**PH070 Tribomagnetic Connection System**

Tansel Baran Yasar, 18, Senior, Bahcesehir High School for Science and Technology, Istanbul, Turkey, T: Pinar Elgay

Istanbul, TUR001, 12th National Environmental Project Olympiad

ET066 Obtaining Fatty Acid Methyl Ester (Biodiesel) from Terebinth (*Pistacia terebinthus* L.), A Wild Plant, through Transesterification of Its Fruit Oil

Ahmet Faruk Erdem, 17, Junior, Private Fatih High School, Istanbul, Marmara, Turkey, T: Mehmet Metin Summak

ME314T Tinnitus Masker Head-Set by Honeybee Magnetic ResonanceMelek Danaci, 17, Junior; Betul Budun Budun, 17, Junior
Kesan Anatolian Health Vocational High School, Edirne, Turkey, T: Hasan Avcu**PS315T The Effect of Stinging Nettle (*Urtica dioica* L.) on Chemical Interaction between Plants**Bahadir Omer Polatcan, 17, Junior; Furkan Karaer, 18, Junior
Ozel Ufuk Anadolu Lisesi, Samsun, Turkey, T: Isa Cural

Istanbul, TUR003, 11th International Environmental Project Olympiad

EN047 Protection of Wooden Materials against UV Radiation Using Environmentally Friendly Sesame and Jojoba Oils

Yunus Ibrahim Alayli, 17, Junior, Private Fatih High School, Istanbul, Marmara, Turkey, T: Turan Tekin

UKRAINE

Kyiv, UKR001, Intel-TechnoUkraine

EE024 Electricity-Independent, Life-Saving High-Rise Building Emergency Evacuator

Andriy Sytnyk, 16, Junior, Netishyn Education Complex General Secondary Education School, Netishyn, Khmelnytskyi, Ukraine, T: Yuri Yuryev

EE312T Saving Millions Worth of Gas Using a New Way to Cool Natural Gas Pipeline TurbinesOleksandra Gulenko, 15, Freshman; Anastasiya Ivanova, 14, Freshman
Nature-Science Lyceum No. 145, Kyiv, Ukraine, T: Artem Khalatov**PH025 New Way of Obtaining Fluorescent Clusters of Silver Molecules**

Ievgeniia Soroka, 17, Junior, "Naukova Zmina" Lyceum, Kyiv, Kyiv, Ukraine, T: Volodymyr Nazarenko

Kyiv (Kiev), UKR002, Intel — EcoUkraine

BI011 Synthesis, Virtual Screening and Biological Activity Studies of 3,4-Dihydroisocoumarin Derivatives

Mykhaylo Rimel, 15, Junior, Lvivs'ka Szosh No. 45, Lviv, Ukraine, T: Victor Turytsya

- EM014 Full Recycling of Tungsten Based Superalloy Scrap by Selective Electrochemical Methods**
Hanna Yemets, 17, Junior, Dnipropetrovsk Chemical Ecological Lyceum, Dnipropetrovsk, Ukraine, T: Vadym Kovalenko
- EN009 Smart Windows: New Template Synthesis of Thin Nickel Hydroxide Film for Electrochromic Devices**
Polina Kovalenko, 16, Sophomore, Chemical Ecological Lyceum, Dnipropetrovsk, Ukraine, T: Vadym Kovalenko

UNITED ARAB EMIRATES

Dubai, ARE001, United Arab Emirates Science and Engineering Fair

- CH052 Alarm for the Car Driver**
Saif Saeed Alyammahi, 18, Senior, Abu Tammam High School, Fujairah, Fujairah, United Arab Emirates, T: Hany Abdulmahdi Bedier
- CH315T Prolonging the Age of Lead Batteries**
Khalid Abdulla Alali, 17, Sophomore; Rami Assim Karkout, 16, Junior Muath Bin Jabal, Sharjah, United Arab Emirates, T: Mohammad Mohammad Raof Abdul Razak
- ET317T Let My Vision Clearer**
Maryam Ebrahim Al Tenajji, 17, Junior; Maryam Salem Almarri, 17, Junior Alroya for Pri & Sec School, Ras Alkhaimah, United Arab Emirates, T: Ebtisam Ahmed Alshemeili

UNITED KINGDOM

Birmingham, GBR001, The Big Bang: UK Young Scientists and Engineers Fair

- EA008 Ozone Monitoring**
Mark David Hammond, 18, Senior, The Royal Grammar School, Guildford, Surrey, United Kingdom, T: Wai-Shun Lau
- ET063 Jet Fuel: An Explosion Hazard? Modeling the Hot Surface Ignition Characteristics of Jet Fuel**
Ivo James Dawkins, 18, Senior, The Perse School, Cambridge, Cambridgeshire, United Kingdom, T: Jeremy Burrows
- London, GBR003, Young Engineers for Britain*
- EE084 DaveDave, Autonomous Metal Detector**
Dawid Kozielec, 18, Senior, Sutton Grammar School for Boys, Sutton, Surrey, United Kingdom, T: Jamie Costello

UNITED STATES

ALABAMA

Auburn, USAL01, Greater East Alabama Regional Science and Engineering Fair

- ET022 Lithium-Ion Batteries for Electric Cars: A Study of Solid Electrolyte Interface Using Electrochemical Impedance Spectroscopy**
Rohan Bodh Gupta, 15, Sophomore, Auburn High School, Auburn, Alabama, T: Mary Ann Aglan
- ME054 A Study of the Effectiveness of Antimicrobial Scrubs When Used as an Aid in the Prevention of Nosocomial Infections**
Megan Elizabeth Moody, 17, Senior, Wetumpka High School, Wetumpka, Alabama, T: Virginia Vilardi
- Birmingham, USAL02, Central Alabama Regional Science and Engineering Fair*
- BE051 Brain Plasticity: The Effect of Age (A Three Year Study)**
Olivia Albin Dure, 16, Junior, Altamont School, Birmingham, Alabama, T: Maureen Frye
- CS061 Exploring Motion Triggered Audio Permutation in iOS**
Ashby Alexander Marriott, 18, Senior, Alabama School of Fine Arts, Birmingham, Alabama, T: Carol Strickland Yarbrough
- EE059 Amount of Lift Generated by Different Wing Shapes**
Ian Black, 14, Freshman, Jefferson County International Baccalaureate, Birmingham, Alabama, T: Paula Beeton

- PH052 Development of a Low Cost Infrared Spectrophotometer and a Matlab Program to Detect Terrestrial and Extraterrestrial Water Vapor**
Lakshmi R. Raju, 16, Junior, Alabama School of Fine Arts, Birmingham, Alabama, T: Tessa Magnuson
Huntsville, USAL03, North Alabama Regional Science and Engineering Fair
- CB008 Leukemia Patient DNA Analysis after Bone Marrow Transplant**
Courtney Marie Kloske, 16, Junior, Pope John Paul II Catholic High School, Huntsville, Alabama, T: Brian Finzel
- EE017 The Silk Spider Returns: Design of a Control System for Robotic Leg Motion**
David Christopher Lofts, 16, Junior, Covenant Christian Academy, Huntsville, Alabama, T: Rhonda Lisauckis
- EN005 Inflatable Structures for Earth and Space Applications**
Jodie Leigh Tinker, 15, Sophomore, Covenant Christian Academy, Huntsville, Alabama, T: Rhonda Lisauckis
Huntsville, USAL50, Alabama Science and Engineering Fair
- CH053 Depolymerization of Chitin Using Ionic Liquids**
Vivian Vu Ho, 16, Junior, Murphy High School, Mobile, Alabama, T: Lisa Sudeiha
- EV061 The Effects of Zinc Contaminated Soil on Wisconsin Fast Plants**
Monica Sai Pasala, 14, Freshman, Alabama School of Fine Arts, Birmingham, Alabama, T: Shawn Wade
- MI056 Antibiotic Concentration and Bacterial Resistance: A Study Using Ampicillin and *Escherichia coli***
Joshua Cyril Abreo, 14, Freshman, Liberty Middle School, Madison, Alabama, T: Michelle Cleveland
- PH060 Amateur Laser Physics: Engineering Affordable Gas Lasers to Discover What Affects Output Power**
Joseph Patrick Lee, 15, Freshman, Saint Peter's Academy, New Market, Alabama, T: Kevin Nishimuta

Livingston, USAL05, West Alabama Regional Science Fair

- PH069 Cooling Down the Sunshine**
Nicole Louw, 15, Freshman, Holy Spirit Catholic High School, Tuscaloosa, Alabama, T: Deborah Samaniego
Mobile, USAL04, Mobile Regional Science Fair
- BI043 Determination of Allelopathy in Kudzu (*Peuraria montana*), Part II**
Suranjana Dey, 18, Senior, W.P. Davidson High School, Mobile, Alabama, T: Phillip Herring
- CS065 Play It by Ear: Mathematical Decomposition of Sound Waves**
Rohan Palanki, 15, Freshman, W.P. Davidson High School, Mobile, Alabama, T: Barbara Hall

ALASKA

Anchorage, USAK50, Alaska Science and Engineering Fair

- AS310T Intertidal Invertebrates and Their Nutritional Values**
Alisa Rachel Aist, 15, Freshman; Taylor Jade Seitz, 14, Freshman
Polaris K-12 School, Anchorage, Alaska, T: Kathryn Kurtz-Smith
- BE040 Quantifying Human Compensation for Visual Processing Lag**
Stephen Thomas Kranich, 16, Sophomore, West Anchorage High School, Anchorage, Alaska, T: Gwen Lupfer-Johnson
Juneau, USAK01, Southeast Alaska Regional Science Fair
- BI302T How Temperature Affects Circulating Concentrations of the Carbohydrates Trehalose and Glucose in the Hemolymph of Tanner Crabs (*Chionoecetes bairdi*)**
Sally Paul, 16, Junior; Erin Gaffaney, 16, Junior
Juneau-Douglas High School, Juneau, Alaska, T: Jonathan Smith
- BI303T The Effects of Potential Anesthetics on the Nervous System of Humpy Shrimp (*Pandalus goniurus*)**
Ariana Gross, 16, Sophomore; Amalia Tamone, 16, Sophomore
Juneau-Douglas High School, Juneau, Alaska, T: Jonathan Smith

ARIZONA

Phoenix, USAZ50, Arizona Science and Engineering Fair

CB056 Translocation of HDAC6 during Oxidative Stress

Joshua Leon Burdoo, 18, Senior, Tucson Magnet High School, Tucson, Arizona,
T: Margaret Wilch

CH045 The Synthesis of Cross-Linked PEI Polymers in Order to Aid in the Efficacy of Gene Transport to Cancerous PC3 Cells

Kapil Ashok Kanagal, 16, Junior, Brophy College Preparatory, Phoenix, Arizona,
T: Patricia Mazier

CS064 Real-Time Terrain Rendering with Dynamic Modification

Varun Ramesh, 16, Junior, Hamilton High School, Chandler, Arizona,
T: Debbie Nipar

EE080 Intelligent Self-Sensing Composite Structures

Abhishek C. Rajadas, 16, Junior, McClintock High School, Tempe, Arizona,
T: Barry Siegart

MA313T The Effects of Human Dynamics on the Proliferation of the Ebolavirus

Rajan Upendra Sheth, 17, Junior; Alfred T. Xue, 17, Junior
Hamilton High School, Chandler, Arizona, T: Deborah Nipar

ME313T Effects of Creatine Phosphate on Aortic Smooth Vascular Tissue

Jasmine Chi-min Chien, 18, Senior; Thuy-Duyen Cao Nguyen, 17, Senior
Hamilton High School, Chandler, Arizona, T: Debbie Nipar

MI054 A Comparative Study of the Antimicrobial Activity of Different Spices on the Shelf-Life of an Emergency Food Product

Sarah Ariyan Sakha, 16, Sophomore, Xavier College Preparatory, Phoenix, Arizona,
T: Jennifer Weiland

PH071 The Strange Case of WASP-43b

Christian Drew, 18, Senior, La Joya Community High School, Avondale, Arizona,
T: Kenneth Zeigler

PS312T The Effects of Growing Microalgae *Chlamydomonas reinhardtii* in Municipal Secondary Effluent Wastewater on Biomass Yield for Biofuel Production

Sumedha Ravishankar, 17, Senior; ## Sirtaj Bir Singh, 17, Senior
Empire High School, Tucson, Arizona, T: Michael Frank

Sierra Vista, USAZ02, SSVEC's Youth Engineering and Science Fair

EE308T Magnetic Motion

Lindsey Nicole Ellis, 18, Senior; Gregory Alexander DePaul, 18, Senior;
Dillon Forrest Snyder, 16, Junior
Buena High School, Sierra Vista, Arizona, T: Mark O. Goldie

PH016 The Theory Behind the Rise Ball

Kaitlin Jenice Wilson, 18, Senior, Buena High School, Sierra Vista, Arizona,
T: Sandra Trevino

Tucson, USAZ03, Southern Arizona Regional Science and Engineering Fair

CB012 A Prebiotic Thermally-Driven RNA Replication Mechanism

Stanley Paul Palasek, 17, Junior, Sonoran Science Academy, Tucson, Arizona,
T: William Bennett

EE027 Holographic Light Filtering with Photovoltaic Concentrator Systems

Ostin David Zarse, 16, Junior, Tucson High Magnet School, Tucson, Arizona,
T: Margaret Wilch

EE028 Imbricated Compression Solar-Air Stirling Engine

Cory Nicholson Owan, 17, Junior, Catalina Foothills High School, Tucson, Arizona,
T: Chris Paul Owan

EE310T Solar Heater for Rural Use for Unheated Homes Off the Grid

Arne Joi Nipales, 16, Junior; Jacquel Rivers, 15, Junior
Baboquivari High School, Sells, Arizona, T: Yolanda Flores

EV022 The Effect of Air Pressure and Air Flow on Infiltration: A Box Model Study

Stephen Yao, 15, Sophomore, University High School, Tucson, Arizona,
T: Pamela Tautz

ARKANSAS

Conway, USAR50, Arkansas State Science Fair

BI042 Effect of Artificial Sweeteners on Neurodegenerative Disorders: Using PC12 Neuronal Cells as a Model

Abhilasha Gokulan, 15, Sophomore, Little Rock Central High School, Little Rock, Arkansas, T: Melissa Donham

ME307T Going Antiviral: An Evaluation of PI3 Kinase Inhibitor LY294002 as a Novel Class of Antiviral Drug

David He Chen, 16, Junior; # Alexander Zhang, 15, Sophomore
Little Rock Central High School, Little Rock, Arkansas, T: Melissa Donham

MI058 Cloning of Coronavirus Nonstructural Protein NSP15 for Expression in Mammalian Cells

Nathanael Yongxiang Ji, 15, Sophomore, Little Rock Central High School, Little Rock, Arkansas, T: Mary Parson

Fayetteville, USAR03, Northwest Arkansas Regional Science and Engineering Fair

BE306T Does the Apple Fall Far from the Tree?: The Evolution of Political Thinking

Erin Elizabeth Farmer, 14, Freshman; Kate Campbell Woolverton, 14, Freshman
Haas Hall Academy, Fayetteville, Arkansas, T: Kelly Pomajevich Magoulick

EM008 Leaching Lead, Phase Four

James Andrew Rose, 17, Senior, Alpena High School, Alpena, Arkansas,
T: Roger Glenn Rose

ET012 Wind Power! Phase IV

Annamica Therese Reding, 16, Junior, Alpena High School, Alpena, Arkansas,
T: Mark B. Welch

Hot Springs, USAR07, West Central Regional Science Fair

ME009 Getting Closer to Treating Cancer: Using Fe-C Nanoparticles and RF to Deliver Erlotinib and DOX to Pancreatic Cancer Cells

Maliha Bhatti, 18, Senior, Arkansas School for Mathematics, Sciences,
and the Arts, Hot Springs, Arkansas, T: Brian Monson

MI024 Allicin & Penicillinase: Reversing Penicillin Resistance in Bacterial Culture

Alec Cole Emry, 18, Senior, Arkansas School for Mathematics, Sciences, and the
Arts, Hot Springs, Arkansas, T: Dan Kostopulos

Jonesboro, USAR04, Northeast Arkansas Regional Science Fair

MI017 Regular or Throwback? Do *Drosophila melanogaster* Prefer Real Cane Sugar over High Fructose Corn Syrup?

Sarah Grace Pitts, 14, Freshman, Annie Camp Junior High School, Jonesboro,
Arkansas, T: Derek Lynn Cato

PS020 Let's Grow Some Taters

Christopher Abbott Carver, 15, Sophomore, Blytheville High School, Blytheville,
Arkansas, T: Jeremy Lamb

Little Rock, USAR05, Central Arkansas Regional Science Fair

EN006 Sensitivity of Polyaniline/Titanium Dioxide Gas Sensors to Ammonia

Dev Raj Nair, 16, Sophomore, Pulaski Academy, Little Rock, Arkansas,
T: Annice Floyd Steadman

EV025 Adverse Effects of Malathion on Brine Shrimp

Sarthak Garg, 15, Freshman, Little Rock Central High School, Little Rock, Arkansas,
T: Patrick Thomas Foley

MA004 On Finding Roots Relative to Semiprime Moduli

Zen Tang, 15, Freshman, Little Rock Central High School, Little Rock, Arkansas,
T: Patrick Foley

Monticello, USAR06, Southeast Arkansas Regional Science Fair

PH056 Which Golf Ball Will Travel the Farthest Tested by Various Golfers?

Timothy Michael Aulds, 18, Senior, Ridgway Christian School, Pine Bluff, Arkansas,
T: Diedre Marie Young

CALIFORNIA

Camarillo, USCA14, Ventura County Science Fair

BI021 Structural Integrity of the Cytoskeleton in Response to Myosin Inhibitors

Cynthia Yin, 15, Sophomore, Westlake High School, Westlake Village, California,
T: Chih-Ming Ho

- MA024 On Mathematical Growth Models: Representing Accurate, Meaningful, and Continuous Change with Dynamic Limiting Factors**
 Jeffrey Neal Rosenberg, 17, Junior, Calabasas High School, Calabasas, California,
 T: Robin Midiri
Contra Costa, USCA08, Contra Costa County Science and Engineering Fair
- CB039 Evaluating the Interaction between LRRK2 and N-MAP as a Pathway to Neuronal Degeneration in Parkinson's Disease**
 Raymond Zhu, 17, Senior, Monte Vista High School, Danville, California,
 T: Meghan Faerber
- CS032 PDFClearance: Developing Software to Detect Malicious PDFs**
 Eric Sauer, 17, Junior, Dougherty Valley High School, San Ramon, California,
 T: Katherine Huang
- ME067 # The Effect of Deer Antler on the Proliferation of Endothelial Cells *in vitro***
 Christina Ren, 15, Sophomore, Monte Vista High School, Danville, California,
 T: Linda Bandrowski
Costa Mesa, USCA01, Orange County Science and Engineering Fair
- EE073 Far-Field Wireless Power Transmission: A Novel Energy Efficient Method for Producing Spatially Dynamic Coherent Radiation in Real-Time**
 Austin Kingsley Russell, 17, Junior, Saint Margaret's Episcopal School, San Juan Capistrano, California, T: Dr. Jennifer Ross-Viola
- ME088 Utility of the Spatial Peaks QRS-T Angle in Distinguishing Left Ventricular Hypertrophy from Athletic Heart Syndrome**
 Kevin K. Lee, 15, Sophomore, University High School, Irvine, California,
 T: Tim Smay
Fresno, USCA03, Central California Regional Science, Mathematics and Engineering Fair
- CS041 Reflective, Object Oriented Operating System Kernel Design and Development for the ARM Architecture**
 George D. Morgan, 14, Freshman, Clovis North High School, Fresno, California,
 T: Jonathan Bowns
- EM036 Investigating the Effectiveness of Indigenous Plants in Inhibiting Mosquito Larvae Development**
 # Jorie Ann Moore, 17, Senior, Sanger High School, Sanger, California,
 T: Nathan Whittington
Hayward, USCA09, Alameda County Science and Engineering Fair
- CS043 Mantis: A Novel Symmetric-Key Block Cipher**
 Aditya Sinha, 16, Junior, Amador Valley High School, Pleasanton, California,
 T: Richard Hanson
- PS026 DNA-Binding Protein in Xcv Bacteria Manipulates Plant bHLH Gene to Promote Pathogen Growth during Infection: A Genetic Study**
 Moniyka Sachar, 16, Junior, Irvington High School, Fremont, California,
 T: Pete Murchison
- Los Angeles, USCA02, Los Angeles County Science and Engineering Fair*
- ET044 A Composite Study of Bio-Diesel**
 Cameron Carr Coulter, 16, Sophomore, Palos Verdes High School, Palos Verdes Estates, California, T: Graham Robertson
- MI044 Bacterial Biofilms Are Influenced by Beta-Lactam Antibiotics**
 # Kathleen Rose Maguire, 18, Senior, Marlborough School, Los Angeles, California,
 T: Stacy Sjoberg
Palos Verdes Peninsula, USCA10, Palos Verdes Peninsula Unified School District Science and Engineering Fair
- AS023 The Effect of the Removal of the Rhopalia on the *Aurelia aurita*, Year Three**
 # Manu Vaish, 17, Senior, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Peter Starodub
- ME096 Mathematical Modeling of Cancer Cell Proliferation after Radiotherapy**
 Shu Hee Kim, 17, Senior, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Peter Starodub
- Sacramento, USCA04, Sacramento Regional Science and Engineering Fair*
- CB041 Developing LymphoLab: Mathematical Modeling Ionic Fluxes in T-Lymphocytes**
 Benjamin Edward Jin, 17, Junior, Davis Senior High School, Davis, California,
 T: Tim Peevyhouse

- ET045 Beyond the Nanostructure in Solar Cells**
Shyamal Buch, 16, Junior, Vista del Lago High School, Folsom, California, T: Suekyung Baker
- MI055 A Unique Approach in DNA Based Identification of Airborne Fungal Population in the Sacramento Area**
Ryan Hsu, 17, Junior, Davis Senior High School, Davis, California, T: Patrick Leung
San Bernardino, USCA13, Riverside, Inyo, Mono, San Bernardino (RIMS) Science and Engineering Fair
- CH043 Fabrication and Manipulation of One-Dimensional Photonic Crystals**
Michael Leonard Janner, 16, Sophomore, Redlands East Valley High School, Redlands, California, T: Colleen Sumner
- EA304T Evidence for Oxygenic Photosynthesis 2.75 Billion Years Ago**
Ashwarya Sharma, 16, Junior; Virgiline Dominguez Ongkingco, 16, Junior
Martin Luther King High School, Riverside, California, T: Michele Hampton
- MI311T Saving Citrus Trees: Serological Detection of Bacteria Associated with Citrus Greening Disease, Year Two**
Nehaly Manoj Shah, 16, Senior; Neera Manoj Shah, 16, Senior
Martin Luther King High School, Riverside, California, T: Michele Hampton
- PH064 Using the Temperature Dependence of the Speed of Sound to Detect Volatile Organic Compounds in Air**
Connor Everett Tom, 15, Freshman, John W. North High School, Riverside, California, T: Lara Soldmann
- PS048 Novel Genes and Mutations in *Arabidopsis thaliana***
Ashley Marie Bianco, 17, Senior, River Springs Charter School, Temecula, California, T: Kim Failor
San Diego, USCA05, Greater San Diego Science and Engineering Fair
- BE036 Role of the Basal Forebrain in Mediating Selective Attention**
Apoorva Mylavarapu, 15, Sophomore, Torrey Pines High School, Encinitas, California, T: Julia Newman
- EN028 Effects of Polycaprolactone and UV Treated Poly (Methyl Methacrylate) Electrospun Fibers on Osteogenic Differentiation of Dental Pulp Stem Cells**
Manita Singh, 17, Senior, Canyon Crest Academy, San Diego, California, T: Wendy Slijk
- MI041 Creation of Alginate Microparticles as a Novel Drug Delivery Vehicle**
Melissa Rachel Fagan, 17, Junior, San Diego Jewish Academy, San Diego, California, T: Jane Willoughby
- PH051 Neuronal Nonlinear Dynamics: From an Optical Illusion to Parkinson's Disease**
Sara Kornfeld Simpson, 15, Sophomore, Patrick Henry High School, San Diego, California, T: Lara Dickens
San Francisco, USCA06, San Francisco Bay Area Science Fair, Inc.
- PH031 The Role of Reynolds Number in Liquid-Liquid Drop Experiments**
Alison Nicole Logia, 17, Senior, Sequoia High School, Redwood City, California, T: Tiffany Burkle
- PS016 Effects of Dilution on Carnivorous Pitcher Plant Digestive Enzyme Concentration**
Garrett Kenneth Soiland, 18, Senior, Jewett Academy, Petaluma, California, T: Dawn Soiland
San Jose, USCA07, Synopsys Silicon Valley Science and Technology Championship presented by the Santa Clara Valley Science and Engineering Fair Association
- BE038 Predicting Real World Characteristics from Virtual Behavior**
Athman Ramana Adiseshan, 15, Junior, Ramana Academy, San Jose, California, T: N. Yee
- CB032 A Microfluidic-Based Single Cell Analysis Identifies a Critically Depleted Vasculogenic Subpopulation in Diabetic Mesenchymal Stem Cells**
Shubha Srinivas Raghvendra, 18, Senior, Saint Francis High School, Mountain View, California, T: Linda Segal
- CB033 Interrogation of Cancer: Development of a Novel Biomarker Discovery Tool to Identify Clinical Signatures from Statistically Deconvoluted Expressions**
Natalie Ng, 16, Sophomore, Monta Vista High School, Cupertino, California, T: Joe Kim

- CB040** **Pancreatic Cancer Differentiation Markers Identify Risk Groups**
Ryan Dz-Wei Chow, 17, Senior, Leland High School, San Jose, California,
T: Anu Sarkar
- CB048** **Role of Epidermal Hif-1 Alpha in the Inflammatory and Angiogenic Response to Ischemia in Diabetic Wound Healing**
- ##** Revanth Sai Kosaraju, 18, Senior, The Harker School, San Jose, California,
T: Chris Spenner
- EE064** **The Z-Engine: My Internal Combustion Rotary Engine with Only Four Moving Parts**
- #** David Andrew Zarrin, 17, Junior, Saratoga High School, Saratoga, California,
T: Robert Kucer
- EE065** **The Synthesis of Quantum Dots for Application in Solar Cell Efficiency**
McKenna Pearl Duzac, 17, Junior, Oak Grove High School, San Jose, California,
T: John Allen
- EN030** **Intracellular Ion Channel Drug Potency Assay: Ensemble Measurements of Mitochondria Demonstrates Potential Applications of Artificial Lipid Bilayer Platforms**
Emily To, 17, Senior, Oak Grove High School, San Jose, California, T: John Allen
- MA310T** **Neighbors with Prescribed Prime Factors**
Theresa Lynn McLaughlin, 16, Sophomore; Mark Alan Holmstrom, 17, Junior
Ann Sobrato High School and Live Oak High School, Morgan Hill, California,
T: Brian Conrey
- Santa Cruz, USCA11, Santa Cruz Science Fair*
- AS024** **Jumping Galls: A Novel Mechanism for Motility**
Saige Jessica Manier, 16, Junior, Harbor High School, Santa Cruz, California,
T: David Deamer
- EA010** **Morphological Disparity during the Ammonoid Recovery after the Permian Mass Extinction**
Rose Landis Leopold, 18, Senior, Pacific Collegiate School, Santa Cruz, California,
T: Darrell Steely
- Seaside, USCA12, Monterey County Science and Engineering Fair*
- AS018** **Endosymbiotic Sustainability: Effects of Ambient Nitrate and Phosphate on Intracellular Zooxanthellae of *Anthopleura elegantissima***
Ailis Clare Dooner, 15, Freshman, Carmel High School, Carmel, California,
T: Jason M. Baldwin
- BI007** **Investigating the Inhibitory Effect of Resveratrol on Ovarian Cancer Cells**
- #** Jimmy Lin, 17, Senior, Robert Louis Stevenson Upper School, Pebble Beach, California, T: Daniel Tzu-Bi Shih
- PS009** **Triflorine Sensitivity in Lettuce, Year Two**
- ##** Aradhana Sinha, 15, Junior, Salinas High School, Salinas, California, T: Diego Scott

COLORADO

Alamosa, USCO01, San Luis Valley Regional Science Fair, Inc.

- EM016** **Water In, Water Out: Using a Water Balance Model to Estimate Net Consumptive Availability**
- #** Johanna Lynne Phillips, 18, Senior, Monte Vista Senior High School, Monte Vista, Colorado, T: Judith Lopez
- EV020** **Macroinvertebrate and Nutrient Response to Stream Water Quality after a Wildfire in Medano Creek, Great Sand Dunes National Park & Preserve**
Tayler Ann Rocha, 16, Sophomore, Monte Vista High School, Monte Vista, Colorado, T: Loree' Ann Harvey

Boulder, USCO09, Corden Pharma Colorado Regional Science Fair

- ET011** **Examination of Power Grid Cascading Failure through Simulation**
Wyatt Jonah Goodin, 16, Junior, Fairview High School, Boulder, Colorado,
T: Paul Strode
- ME041** **The Role of the miR-106b-25 miRNAs in Predicting Breast Cancer Outcomes in Differential Subtypes**
Nicolette Marie Laird, 17, Senior, Monarch High School, Louisville, Colorado,
T: Kristin Donley

Brush, USCO03, Morgan-Washington Bi-County Science Fair**ME013 Chemotaxis in *Physarum polycephalum*: A Model for the Effects of Cancer Progression**

Teisha Maree Coffield, 15, Freshman, Lone Star High School, Otis, Colorado,
T: Dena Marlee Herskind-Palser

PH014 An Investigation of the Washboard Road Phenomenon

Jacob Floyd Nichols, 16, Sophomore, Brush High School, Brush, Colorado,
T: Dave Miner

*Colorado Springs, USCO04, Pikes Peak Regional Science Fair***EA007 How Well Is Your Well? The Effects of Hydraulic Fracturing Fluids on a Eukaryotic Species**

Sydney Clarke Matteson, 14, Freshman, William J. Palmer High School, Colorado Springs, Colorado, T: Nancy Goodwin

EE324T Ion Propulsion: Electrostatic Thruster Design and Optimization for Space Applications

Matthew Garrett Hileman, 14, Freshman; Wesley Hileman, 16, Junior
The Classical Academy, Colorado Springs, Colorado, T: Candus Muir

EV023 "Lights Out": The Use of *Vibrio fischeri* to Determine Water Quality

Maislinn Pheobe Helfer, 15, Freshman, Palmer High School, Colorado Springs, Colorado, T: Brent Wallace

*Denver, USCO10, Denver Metropolitan Regional Science and Engineering Fair***EM308T Self-Sustained Desalination in Combination with Wastewater Treatment: Hybrid Microbial Desalination System, Phase II**

Boyu Wang, 16, Senior; Yichen Liu, 17, Senior; Stephan Xiahuan Liu, 16, Junior
Lakewood High School, Lakewood, Colorado, T: Suzanne McClung

*Durango, USCO02, San Juan Basin Regional Science Fair***PS053 Biological Control of Diffuse Knapweed:****Analyzing Two Natural Insect Enemies**

Nakayla Anne Lestina, 18, Senior, Dove Creek High School, Dove Creek, Colorado,
T: Clint Schurr

*Fort Collins, USCO50, Colorado Science and Engineering Fair***CB010 miRNA 205: Suppressing Inpp4b and Wnt5a Expression**

Lawrence Zhang, 16, Sophomore, Fairview High School, Boulder, Colorado,
T: Paul Strode

EE013 Fine Motor Skills Using EEG Technology and Biomechanical Prosthesis

Easton James LaChappelle, 16, Sophomore, Mancos High School, Mancos, Colorado,

T: Kelly Gregory Finlay

ET021 Optimizing Algae Biofuels: Artificial Selection and Nitrogen Stress as Methods to Induce Lipid Synthesis

Sara Ellen Volz, 16, Junior, Cheyenne Mountain High School, Colorado Springs, Colorado, T: David Volz

*Grand Junction, USCO05, Western Colorado Regional Science Fair***AS302T *Mytilus edulis* Protein Strength: Mussels Have Muscles**

Nikki Taylor Buhrdorf, 18, Senior; ## Vikash E. Hypio, 18, Senior
Hotchkiss High School, Hotchkiss, Colorado, T: Douglas Ray Horton

BE309T The Rubik's Cube of Political Gridlock: Resistance to Change in the American Tax System

Brydie Mitchell, 17, Junior; # Braeden Thomas Horton, 18, Senior; Elizabeth AnnMarie Wood, 17, Senior

Hotchkiss High School, Hotchkiss, Colorado, T: Douglas Ray Horton

*Greeley, USCO06, Longs Peak Science and Engineering Fair***MIO30 Irradiation Extermination, Part Three: A Portable System to Eliminate Waterborne Microorganisms**

Kelli Ann Lynch, 18, Senior, Rocky Mountain High School, Fort Collins, Colorado,
T: Mike Viney

*La Junta, USCO07, Arkansas Valley Regional Science Fair***EV010 Mycoremediation: Using *Pleurotus ostreatus* Mycelium to Remove Petroleum Hydrocarbons from Freshwater and Saltwater Environments**

Devon M. Enke, 16, Sophomore, La Veta Junior-Senior High School, La Veta, Colorado, T: Patricia Keeling

Sterling, USCO08, Northeast Colorado Regional Science Fair

- ME019** **The Effects of *Ganoderma lucidum* and *Spirulina platensis* on the Proliferation of Rat Adrenal Pheochromocytoma Cells**
 Kayla Elizabeth Sherman, 17, Senior, Sterling High School, Sterling, Colorado,
 T: Carlye Jo Armstrong

CONNECTICUT

Danbury, USCT01, Science Horizons, Inc. Science Fair and Symposium

- EN003** **Isotropic versus Anisotropic Violin Sound Post Materials: Affect on Violin Resonance Using Young's Modulus**
 Samantha Carly Skaller, 17, Junior, Brewster High School, Brewster, New York,
 T: Edward Schmidt
- ET006** **The Effect of a Bacteria's Source on a Microbial Fuel Cell's Electrical Output**
 Jaden Allen Williams, 17, Junior, New Milford High School, New Milford,
 Connecticut, T: Virginia Landgrebe

Hamden, USCT50, Connecticut Science & Engineering Fair

- BE023** **Optogenetic Interrogation of Prefrontal Cortex Dopamine D1 Receptor-Containing Neurons as a Technique to Restore Timing: A Novel Approach to Treat Prefrontal Disorders**
 John Edward Solder, 18, Senior, Staples High School, Westport, Connecticut,
 T: Alfred J. Scheetz
- CB013** **Role of MyD88 in DNA Damage Response**
 # Yiyuan Hu, 18, Senior, Hamden High School, Hamden, Connecticut, T: Sonia Beloin
- EM026** **Mycoremediation of PCB Soil Contaminants with *Pleurotus ostreatus***
 Mallory Claire Madfes, 16, Junior, Greenwich High School, Greenwich, Connecticut,
 T: Andrew Bramante
- EN015** **An Organic Thin Film Transistor and Elastic Organic Solar Cell Based Electronic Skin for Biochemical and Tactile Sensing**
 # Ryota Ishizuka, 18, Senior, Greenwich High School, Greenwich, Connecticut,
 T: Andrew John Bramante
- ET025** **Geometrical Symmetry Analysis of *Skeletonema costatum*'s Amorphous Cell Structure**
 Genesis Garcia, 17, Senior, Bridgeport Regional Aquaculture Science and
 Technology Educa, Bridgeport, Connecticut, T: Kirk Shadle
- ET026** **Polyvinylidene Fluoride (PVDF) Piezoelectric Generator: A Novel Approach to Harvesting Vibrations from Human Respiration to Power Biological Implant Devices**
 Bridget Mary Oei, 16, Sophomore, East Catholic High School, Manchester,
 Connecticut, T: Holly Noble

DISTRICT OF COLUMBIA

Washington, USDC01, District of Columbia Science and Engineering Fair

- AS026** **Sleep Deprivation in Fruit Flies**
 Daulton Sink, 18, Freshman, School Without Walls, Washington, District of
 Columbia, T: Sydney Bergman
- EM030** **Improving Seawater Desalination**
 Amy Jaya Vallis, 17, Senior, School Without Walls, Washington, District of Columbia,
 T: Sydney Bergman

FLORIDA

Bushnell, USFL18, Sumter County Regional Science Fair

- EA001** **Evaporation vs. Evapotranspiration**
 # Breanne Williams, 17, Junior, South Sumter High School, Bushnell, Florida,
 T: Emily Keeler
- MA017** **MMSE vs. mCDR: Tools in Detecting Alzheimer's Disease**
 Mackinzie J McDaniel, 16, Sophomore, The Villages Charter High School,
 The Villages, Florida, T: Shelby Strickland Wiley
- PS001** **The Effects of Trifolixon on the Elimination of Citrus Greening**
 ## Alex Keeler, 17, Senior, South Sumter High School, Bushnell, Florida,
 T: Emily Keeler

Clewiston, USFL01, Heartland Regional Science and Engineering Fair

MI013 Does Extract from *Opuntia spp.* (Prickly Pear Cactus) Inhibit Bacterial Growth?

Brandon David Beatty, 16, Sophomore, Hardee Senior High School, Wauchula, Florida, T: Robert Douglas Beatty

PS047 Does the Amount of Chlorine in Water Affect the Rate of Grasses Commonly Grown in Florida Seed Germinations? (Year Three)

Milli Lynne Jones, 15, Freshman, Hardee Senior High School, Wauchula, Florida, T: Robert Beatty

Fort Myers, USFL05, Thomas Alva Edison Kiwanis Science and Engineering Fair

EA004 Characterization, Detection, and Toxicity of the Oil Dispersant Corexit 9500

Mariah Sturdivant Coughlin, 18, Senior, Fort Myers High School, Fort Myers, Florida, T: Cathy Tucker

EM006 *Chlorella vulgaris* as an Agent of Bioremediation

Tarini Chandok, 15, Freshman, Fort Myers High School, Fort Myers, Florida, T: Carey Folgate

EM301T Analyzing Mercury Concentrations in Water Sources with *Brassica rapa* through a Mercury Calibration Curve Using UV-Vis Spectroscopy, Atomic Absorption, and Least Squares Regression Statistical Analysis

Nicole Lynn Miller, 17, Senior; # Nadia Kemal, 17, Senior
Charlotte High School, Punta Gorda, Florida, T: Jason Wikman

MA302T Developing an Application of the Gauss-Ostrogradsky Theorem and Flux Operators to Investigate an Architectural Situation of Fluid Dynamics

Vaibhav Venkat Penukonda, 17, Senior; # Neil J.G. Singh, 17, Senior
Canterbury School, Fort Myers, Florida, T: Kelly Etcheverry

Fort Pierce, USFL06, St. Lucie County Regional Science and Engineering Fair

EM009 Influence of Genetic Variation of Brazilian Peppertree (*Schinus terebinthifolius*) on the Survival of a Biological Control Agent, *Pseudophilothrips ichini*

Neha Kambam Reddy, 15, Sophomore, Lincoln Park Academy, Fort Pierce, Florida, T: Charles Hatherill

MA002 Mathematical Music, Methodical Masterpieces II: A Continuing Study on the Creation of Music Using Irrational Numbers

Danae Jean Pick, 17, Senior, Olivet Private School, Port Saint Lucie, Florida, T: Lori Kay Barbeau

Fort Walton Beach, USFL07, Northeast Panhandle Regional Science and Engineering Fair

EE038 Auto-Tracking Solar Panel

Brayton Davis Miles, 15, Freshman, Niceville High School, Niceville, Florida, T: Gina Emery

ET007 A Better Way to Fly: Exploring the Benefits of Lifting Fuselages and Blended Wing Bodies

Connor Sullivan McCree Lynch, 16, Freshman, Rocky Bayou Christian School, Niceville, Florida, T: Brian Alldredge

ET008 Alternate Energy: A Shocking New Find!

Nicholas Aaron Hopkins, 15, Sophomore, Fort Walton Beach High School, Fort Walton Beach, Florida, T: Tavia Lee Marez

ET009 On Thin Ice: Controlling, Slowing, and Stopping the Motion of a Car Sliding on an Icy Road and Other Slick Surfaces

Kyle Scott Saleeby, 17, Junior, Niceville High School, Niceville, Florida, T: Regina Gaskin

Ft Lauderdale, USFL09, Broward County Science Fair

AS043 Differences in the Primary Songs of Blue-gray (*Traupis episcopus*) and Palm Tanagers (*Traupis palmarum*): Consequences for Hybridization

Jonathan Michael Galka, 15, Sophomore, North Broward Preparatory School, Coconut Creek, Florida, T: Howard York

ET053 A Study of the Practical Application of Non-equilibrium Plasma in Gas Turbine Engines to Enhance Combustion

Felipe Gomez del Campo, 18, Senior, Cypress Bay High School, Weston, Florida, T: Jay Rosenberg

- EV049** **Influential Factors that Lead to Increased Levels of Atmospheric Haze**
Kristina Marie Thoren, 16, Sophomore, American Heritage School, Plantation, Florida, T: Charles Josh Golden
- MA035** **Novel Optimized Runge-Kutta Methods to Increase Computational Accuracy in Numerical Integration of Differential Equations**
Pratheek Nagaraj, 18, Senior, Marjory Stoneman Douglas High School, Parkland, Florida, T: Joanna Pearce
Gainesville, USFL08, Alachua Region Science and Engineering Fair
- BI018** **Life Is Short When Sweet: Dietary Fructose Decreases Lifespan and Fertility**
Alexandra Andreevna Sourakov, 16, Sophomore, Eastside High School, Gainesville, Florida, T: Natalie Williams
- ME025** **Synthetic Nanoparticle-Based Nanozymes for Pancreatic Cancer Therapy**
David D. Liu, 16, Junior, Eastside High School, Gainesville, Florida, T: Natalie Williams
Green Cove Springs, USFL35, Clay Rotary Regional Science and Engineering Fair
- EN019** **Empirical Formula for Prediction Coefficient of Friction**
Matthew B. Emig, 18, Senior, Clay High School, Green Cove Springs, Florida, T: Charlene Campbell
- PS033** **Conventional vs. Aquaponics vs. Hydroponics (A Third Year Study)**
Taylor Lorraine Kennedy, 16, Junior, Keystone Heights High School, Keystone Heights, Florida, T: Ronald Hartman
Jacksonville, USFL10, Northeast Florida Regional Science and Engineering Fair
- BE301T** **A Superior Brain-Computer Interface Paradigm for Communication in Normal and Aphasic Stroke Patients**
Kevin Daniel Shih, 16, Sophomore; Ryan Matthew Shih, 16, Sophomore
Stanton College Preparatory High School, Jacksonville, Florida, T: Gigi Hornilla
- EE001** **An Innovative Method to Detect, Filter, Digitize, and Wirelessly Transmit Brainwaves to Control Electro-Mechanical Devices**
Rory G Petersen, 13, Freshman, Darnell-Cookman High School, School of the Medical Arts, Jacksonville, Florida, T: Michael Addison
- ME003** **Identifying Novel Inhibitors of DNA Methyltransferase 1 as a Treatment for DNMT1 Overexpression Caused Tumors**
Alexander William Forsyth, 17, Junior, Episcopal School of Jacksonville, Jacksonville, Florida, T: Marion Zeiner
- PS003** **Improving the *Oryza sativa*'s Abiotic Stress Tolerance Based on the Genetic Engineering of the Osmoregulated Trehalose Synthase A Gene, Year Three**
Andrew Michael Joseph, 17, Senior, Episcopal School of Jacksonville, Jacksonville, Florida, T: Marion Zeiner
Jensen Beach, USFL25, Martin County Regional Science and Engineering Fair
- AS003** ***Danaus plexippus*' Response to Anti-herbivory Defenses of *Asclepias curassavica***
Kirsten Nicole Geiger, 15, Sophomore, Martin County High School, Stuart, Florida, T: Natalie A. Drumm
- MI002** **Inhibition of *Xanthomonas citri* by Organic Substances**
Vishalakshi Lakshmanan, 17, Junior, South Fork High School, Stuart, Florida, T: Paula Hall
Lake City, USFL11, Suwannee Valley Regional Science and Engineering Fair
- BI006** **Does the Resin Content in Pine Feedstock Affect Energy Output? Year Three**
Holly Linn Tucker, 16, Sophomore, Union County High School, Lake Butler, Florida, T: Renae Allen
- PH015** **Effect of Surface Coatings on DBD Actuator Performance**
Kelly Elizabeth Gray, 18, Senior, Union County High School, Lake Butler, Florida, T: Renae Allen
Lakeland, USFL50, State Science and Engineering Fair of Florida — Ying Scholars
- BE005** **A Psychophysiological Analysis of Sonification Comprehension: A Fourth Year Study**
Neel S. Patel, 17, Senior, Oviedo High School, Oviedo, Florida, T: PJ Krehling
- CB043** **Determining the Role of Thalamic Neurotrophin-3 on Neocortical Projection Neuron Development**
Miguel Ignacio Paredes, 17, Junior, American Heritage School, Plantation, Florida, T: Dawn Gregor

- CH016** **The Electrochemical Effects of Saccharides on the Voltage Output of a Microbial Fuel Cell Using *Penicillium chrysogenum***
 # Jack Erdozain, Jr., 17, Junior, Westminster Christian School, Palmetto Bay, Florida, T: Lisa Marie Garrido
- ET054** **Algae to Oil in a Three Step Wet Process**
 Evie Sobczak, 15, Sophomore, Shorecrest Preparatory School, St. Petersburg, Florida, T: David Hyink
Melbourne, USFL13, South Brevard Science and Engineering Fair
- AS011** **The Effects of Round-Up® and Its Components on Acetylcholine Esterase Activity in *Palaemonetes paludosus* through Different Means of Exposure**
 Emily Catherine Seitz, 18, Senior, Melbourne Senior High School, Melbourne, Florida, T: Joseph Estevez
- EE303T** **Autonomous Robotic System Engineered to Collect and Sterilize Microorganisms, Remove Allergens, and Monitor Environmental Conditions within Air Duct Systems**
 ### Spencer Steven Tuttle, 17, Senior; # Dalton James Stanley, 17, Senior; # Zen River Campbell, 18, Senior
 Palm Bay High School, Melbourne, Florida, T: Mike O'Donnell
- ME022** ***In vitro* Study of Antioxidant Activity of *Ocimum* Genus against Hydrogen Peroxide Induced Oxidative Stress and Apoptosis in Human Lung Fibroblasts**
 # Sangamithra Vardhan, 16, Junior, West Shore Junior/Senior High School, Melbourne, Florida, T: Mary C. Anderson
Merritt Island, USFL14, Brevard Intra-coastal Regional Science and Engineering Fair
- CB009** **Adipose Become Neurons with a Helping Hand from Nanog**
 # Jacob Kimmel, 18, Senior, Satellite High School, Satellite Beach, Florida, T: Joe Scott
- EE023** **Design and Analysis of a Fractal Antenna for Free OTA TV**
 Sarah Elizabeth Van Sickle, 16, Junior, Satellite High School, Satellite Beach, Florida, T: Joseph Scott
Merritt Island, USFL28, Brevard Mainland Regional Science and Engineering Fair
- MA009** **On the Fine Classification of Periodic Orbits of Continuous Endomorphisms on the Real Line with Application in Chaos Theory**
 Rashad Abdulla, 15, Junior, West Shore Junior/Senior High School, Melbourne, Florida, T: Paula Ladd
- PS011** **Phytoremediation: A Comparative Study of Selenium Metabolism in Conjunction with ATP Sulfurylase Activity in Organic and Transgenic Crops, Year III**
 Michelle Man-Si Chin, 16, Junior, West Shore Junior/Senior High School, Melbourne, Florida, T: Paula Ladd
Miami, USFL15, South Florida Science and Engineering Fair
- CS017** **Decreasing Latency on a Distributed Microblogging System**
 Benjamin Englard, 16, Junior, Dr. Michael M. Krop Senior High School, Miami, Florida, T: David Buncher
- EE029** **Street Smart: Car Energy Harvesting Device**
 # Eric A Riehl, 17, Junior, Westminster Christian School, Palmetto Bay, Florida, T: Lisa Garrido
- EM044** **The Impact of Varying Productivity Levels on Abundance and Feeding Patterns of *Callinectes sapidus*: What Does Blue Crab Behavior Tell Us About Wetlands Restoration?**
 # Jamie Rachel Odzer, 15, Sophomore, Dr. Michael M. Krop Senior High School, Miami, Florida, T: David Buncher
- ME023** **A Novel Immunostimulating (1,4)-alpha-D-glucan from *Tinospora cordifolia* for Cancer Therapy**
 ## Renuka Ramchandran, 16, Junior, John A. Ferguson Senior High School, Miami, Florida, T: Francisco Jurado
New Port Richey, USFL30, Pasco Regional Science and Engineering Fair
- EE010** **Green Board**
 David Miguel Gamero, 15, Freshman, Academy at the Lakes, Land O' Lakes, Florida, T: Amy Louise Jordan
- EM018** **Showing the Effects of Alum and Eutrophication on Algal Growth**
 William George Meisner, 18, Senior, J.W. Mitchell High School, New Port Richey, Florida, T: Ed Braddy

- Ocala, USFL16, Big Springs Regional Science Fair*
- CH005 Chiral Molecules Study, Year Two: Measuring the Effect of Temperature on the Hydrolysis of Sucrose to Invert Sugar by Beta-fructofuranosidase Using Polarized Light**
Cassandra Shae Mosley, 15, Freshman, Vanguard High School, Ocala, Florida,
T: Robert Hoki
- MI302T Effect of Salinity on the Growth of *Vibrio fischeri***
Stacy Gayle Hebrock, 17, Senior; Sara Jane Johnson, 18, Senior;
Jamie Lynn Cicchella, 17, Senior
North Marion High School, Citra, Florida, T: Jill Stephens
- PS004 Castor: Nodes and PGR's**
Megan Courtney Mears, 16, Junior, North Marion High School, Citra, Florida,
T: Jill Stephens
- Orlando, USFL17, Dr. Nelson Ying-Orange County Science Exposition — Physical Science*
- BI004 Identification and Characterization of Atypical SNARE Complexes in *Plasmodium falciparum***
Preethi Raghavan, 15, Sophomore, Lake Highland Preparatory School,
Orlando, Florida, T: Christi Tamayo
- CH007 The Study of Conjugated Polymer Growth on Graphitic Surfaces and an Analysis of Their Interactions**
Nicholas Anthony Buoniconiti, 17, Junior, Lake Highland Preparatory School,
Orlando, Florida, T: Christi Tamayo
- ET301T Manufacturing of Solid Oxide Fuel Cells**
Joseph Gabriel Gapuz, 17, Senior; Alexander Arsenio Mestre, 17, Senior
Lake Highland Preparatory School, Orlando, Florida, T: Christi Tamayo
- EV007 Design and Fabrication of Fluorescent Silica Nanoparticle Based Probes for Potential Detection of Toxic Heavy Metal Ions in Contaminated Drinking Water**
Rikhav Shah, 14, Freshman, Lake Highland Preparatory School, Orlando, Florida,
T: Christi Tamayo
- ME008 Cellular Therapy of Ovarian Cancer, Year Two: Impaired Cytokine-Induced Cytotoxic Activity of Mononuclear Cells from Ovarian Cancer Patients and Umbilical Cord Blood**
Collin Randall Edwards, 17, Senior, Lake Highland Preparatory School, Orlando,
Florida, T: Christi Tamayo
- PH008 First Place Finish: Reducing Drag on Boat Hulls**
Claire Elise Glenn, 14, Freshman, Lake Highland Preparatory School, Orlando,
Florida, T: Christi Tamayo
- Palmetto, USFL02, Manatee Lockheed Regional Science and Engineering Fair*
- EE019 Water for the World: A Solar Powered Water Purification System**

Katherine Lee Zimmerman, 16, Sophomore, Braden River High School,
Bradenton, Florida, T: Marybeth Witham
- PH006 Wireless Energy through Tesla Coils**
Bryce Anthony Register, 15, Sophomore, Manatee High School, Bradenton, Florida,
T: Patricia Zalo
- Panama City, USFL19, Florida Three Rivers Regional Science and Engineering Fair*
- ME092 Why Organic? Organic vs. Non Organic Fruit's Effect upon *Drosophila melanogaster* Flies Reproduction with Implications on Human Health**
Arwa Akram, 18, Senior, Rutherford High School, Panama City, Florida,
T: Keilan McWhorter
- Pensacola, USFL20, West Panhandle Regional Science and Engineering Fair*
- EE016 Wing Vortexes**
Thomas Sterling Walsh, 14, Freshman, Pensacola High School, Pensacola, Florida,
T: Cherie Chrisco
- PH019 Resonance Circuit with a Nonlinear Liquid Crystal Capacitor**
Sami Thabet Alsheikh, 17, Senior, Pensacola High School, Pensacola, Florida,
T: Cherie Chrisco

Saint Augustine, USFL21, River Region East Science Fair

ME001 Depletion of Progranulin (Pgrn-1) Increases Levels of Exogenous Human TDP-43 in *Caenorhabditis elegans*: A Molecular Model for Neurodegenerative Brain Disease

Joseph West Paul, 17, Senior, Ponte Vedra High School, Ponte Vedra, Florida,
T: Kathryn Kehoe

Sanford, USFL23, Seminole County Regional Science, Mathematics & Engineering Fair

CS002 Author Confirmation through Text Mining and Machine Learning, Year Two

Daniel A. Hammack, 17, Senior, Oviedo High School, Oviedo, Florida, T: PJ Kreehling

ME010 Validation of a Capsule Endoscopy Simulation; Evaluating the Fidelity of a Magnetically-guided Capsule Endoscopy Procedure

Francine Zura Miranda, 18, Senior, Crooms Academy of Information Technology, Sanford, Florida, T: Josue Urbina

Sarasota, USFL32, Sarasota Regional Science, Engineering and Technology Fair

CS038 Global Neural Network Cloud Service for Breast Cancer

Brittany Michelle Wenger, 17, Junior, The Out-of-Door Academy, Sarasota, Florida,
T: Joanne Barrett

EM017 Degradation of MIB and Geosmin through Photocatalysis for Use in Aquaculture

Amanda C. Holly, 18, Senior, Sarasota High School, Sarasota, Florida,
T: Andrew Raymond Harshman

Tampa, USFL27, Hillsborough Regional Science Fair

ME018 Can Chitosan Effectively Deliver Genes to Organs for Gene Therapy?

Rachita Das, 17, Junior, C. Leon King High School, Tampa, Florida,
T: Michael Hutchison

ME031 Discovery of a Molecular Target of Vitamin E Delta-Tocotrienol in Human Pancreatic Cancer

Samra Kazim, 17, Junior, Tampa Bay Technical High School, Tampa, Florida,
T: Julie Sackles

Tavares, USFL34, Lake Regional Science & Engineering Fair

CH001 Laser-induced Resonance Light Scattering Method for Detecting Trace Amounts of Curcumin in Solution

Chelsea Lynn Massaro, 18, Senior, Christian Home and Bible School, Mount Dora, Florida, T: William Tandy Grubbs

Vero Beach, USFL31, Indian River Regional Science and Engineering Fair

EV011 A Novel Study of the Effects of Caffeine and Estrone on the Reproduction of the *Lytechinus variegatus*, Sea Urchin

Michael Alexander Kaiser, 14, Sophomore, St. Edwards's School, Vero Beach, Florida, T: Kerryane Monahan

PS002 The Effects of Pheromones on Diaprepes Root Weevils

Evan Cliff MacKay, 15, Freshman, Vero Beach High School, Vero Beach, Florida,
T: Heather Holden

West Palm Beach, USFL29, Palm Beach County Science and Engineering Fair

CS058 The Art of Chess: Strategy and Artificial Intelligence

Youssif Hossam Hassanein, 16, Junior, Suncoast Community High School, Riviera Beach, Florida, T: Marilyn Pedek

EV045 Modeling Salinity to Evaluate Saltwater Intrusion: A Case Study of the Loxahatchee River

Christopher X. Wan, 16, Junior, Alexander Dreyfoos School of the Arts, West Palm Beach, Florida, T: Stephen Anand

Winter Haven, USFL12, Polk Region Science and Engineering Fair

EE043 Solar Wind: Its Effect on Radio Transmissions

Andrew Kenneth Noonan, 15, Freshman, International Baccalaureate School at Bartow High School, Bartow, Florida, T: Debbie Kennon

EV004 Calcium: A Possible Active Component in Cacti Mucilage for Phosphate Removal

Kirstie Rae Tandberg, 16, Junior, Chain of Lakes Collegiate High School at Polk State College, Winter Haven, Florida, T: Suzanne Halverson

GEORGIA

Albany, USGA01, Darton College/Merck Regional Science Fair

ET023 Creating an Energy Generation Process Using a Stirling Engine
Dylan Alexander Globerman, 17, Junior, Colquitt County High School, Moultrie, Georgia, T: Vance Alan Hurst

Athens, USGA50, Georgia State Science and Engineering Fair

CB047 Characterizing the Last Universal Common Ancestor of Life
Justin Krish Williams, 17, Junior, Henry W. Grady High School, Atlanta, Georgia, T: Andrew Nichols

CB052 Optimizing 3D Cellular Scaffolds Using Collagen and Gelatin
Briana Noel Cowles, 17, Junior, Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Amanda Baskett

EN026 Carotenoids for a Cure: Zeaxanthin Production by the Hydroxylase Enzyme of *Chlamydomonas reinhardtii*

Erin Elizabeth Hollander, 17, Junior, Cedar Shoals High School, Athens, Georgia, T: Stella Guerrero

PS036 Use of Cyanobacteria as an Alternative Nitrate Source in the Hydroponic Growth of *Zea mays v. Indentata*

Mary Margaret Penniman, 17, Senior, Woodstock High School, Woodstock, Georgia, T: Jennifer Forsyth

Athens, USGA02, Northeast Georgia Regional Science and Engineering Fair

AS307T The Effects of Schreckstoff on Minnows
Charley Lynn Denmark, 18, Senior; Katheryn Amelia Bennett, 18, Senior
Winder-Barrow High School, Winder, Georgia, T: Cris Cook

Atlanta, USGA03, Atlanta Science and Mathematics Congress

BI001 Protein Deformation: Geometric Detection of Ligand Binding to Proteins in Three Dimensions

Troy Justin Kleber, 16, Junior, Henry W. Grady High School, Atlanta, Georgia, T: Andrew Nichols

PH004 How Does the Shape of the Cross-section of a Four Foot Pine Beam Affect How Much Load It Can Support at Its Middle Point?

Daniel Mohsen Tehrani, 14, Freshman, Henry W. Grady High School, Atlanta, Georgia, T: Cadence Spearman

Conyers, USGA12, Rockdale Regional Science & Engineering Fair

BE001 Analyzing the Effectiveness of the Projective Inkblot and Multiple Intelligences Test Correlation in a Clinical Setting

Katlyn Marie Firkus, 18, Senior, Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: David Bonar

MA001 Mathematical Time-Models of Networks in the World

Heeyoon Kim, 17, Junior, Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Scott Bolen

ME002 QTL Analysis of a Diabetic Mouse Backcross

Lauren Nicole Reagin, 18, Senior, Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Mary Mansell

Duluth, USGA11, Gwinnett Regional Fair

CB011 ASCL3: A Novel Positive Regulator of Vascular Smooth Muscle Cell Proliferation

Vivek Kamlesh Patel, 16, Senior, Collins Hill High School, Suwanee, Georgia, T: Laura Herbig

CH049 Does Chemically Lightening Affect the Structure of Human Hair?

Christina Kim To, 15, Freshman, Grayson High School, Loganville, Georgia, T: Jenny Beck

ME011 Arterial Hemodynamics in Atherosclerosis Patients, a Mathematical Model

Aprotim Cory Bhowmik, 15, Sophomore, Parkview High School, Lilburn, Georgia, T: Steve Kuninsky

Griffin, USGA09, Griffin RESA Regional Science Fair

ET001 Biogas Production

Stephanie Anne Clark, 16, Sophomore, Starr's Mill High School, Fayetteville, Georgia, T: Christina Bryant

- MA301T Bloodspatter... Just a Stain, or Crime Solving Evidence?**
Jonathan Lee Ciecka, 15, Freshman; Benjamin Edward Naber, 15, Freshman
McIntosh High School, Peachtree City, Georgia, T: Maelee Terrell
McDonough, USGA06, Henry County Science and Engineering Fair
- EM022 Using Oxidation as a Advantage: Producing Electricity and Purifying Wastes**
Tushar Mittal, 15, Sophomore, Dutchtown High School, Hampton, Georgia,
T: Shaheen Begum
- ET024 Improving Backyard Wind Turbines with Blade Additions**
Daniel James Dorminy, 17, Junior, Sola Fide Home School, McDonough, Georgia,
T: Ann W. Dorminy
- PS021 Rice for Ripening**
Han Ngoc Bui, 15, Freshman, Dutchtown High School, Hampton, Georgia,
T: Shaheen Begum
Milledgeville, USGA07, Georgia College & State University Regional Science and Engineering Fair
- EV029 Does the Close Proximity to Kaolin Processing Affect Water Quality?**
Makayla Amithy-Cora Moon, 16, Sophomore, Washington County High School,
Sandersville, Georgia, T: Kelly Taylor Severance
Savannah, USGA08, Savannah Ogeechee Regional Science and Engineering Fair
- EN315T P.A.K.: Portable Artificial Kidney, an Amelioration of Kidney Dialysis**
Rebecca Caroline Smith, 16, Junior; Brandon Mittchel Kight, 17, Junior
Vidalia Comprehensive High School, Vidalia, Georgia, T: Randall Jeff Ikner
Warner Robins, USGA10, Houston Regional Science and Engineering Fair
- BI002 How Can Biodiesel Be Created from Different Types of Oil (Canola, Soybean, Corn, Peanut, and Used) and Which Oil Source Is the Most Efficient Compared to Regular Diesel?**
Navin Buxani, 15, Freshman, Houston County High School, Warner Robins, Georgia,
T: Stacy McLean
- EE011 Liquid Cooling Taken Literally**
Stephen Burgess Hall, 16, Junior, Veterans High School, Kathleen, Georgia,
T: Cherri Nix
- HAWAII**
Hilo, USHI05, Hawaii District Science and Engineering Fair
- BI039 Medicinal Profiling of *Colletotrichum boninense*, a Fungal Endophyte Derived from *Clermontia parviflora*, an Endemic Hawaiian Plant**
Shalila Shek de Bourmont, 17, Senior, Hilo High School, Hilo, Hawaii,
T: Pascale Pinner
Honolulu, USHI01, Hawaii Association of Independent Schools Science and Engineering Fair
- EM302T The DOCTORs: A Fusion of Engineering and Biological Analysis**
Erin Lynn Main, 17, Senior; Logan Keahi Davis, 17, Junior;
Kyle Randolph Miki Flores, 17, Junior
'Iolani School, Honolulu, Hawaii, T: Margaret Edwards
- ME012 Characterization of Cerebellar Phenotype in Mice with Mutated Rreb1**
Danielle Lyn Keahi, 18, Senior, Kamehameha Schools Kapalama High School,
Honolulu, Hawaii, T: Gail A. Ishimoto
Honolulu, USHI50, Hawaii State Science and Engineering Fair
- BI040 The Regulation of Length-Dependent Myosin Light Chain Phosphorylation in Bladder Smooth Muscle**
Alec Kaipo Takeshi Matsumoto, 17, Junior, Kamehameha Schools Kapalama High School, Honolulu, Hawaii, T: Gail Ishimoto
- CB053 PAX 9 Gene Variations Associated with Numbers of Wisdom Teeth**
Kyle Tadao Yoshida, 16, Sophomore, Kamehameha Schools Kapalama High School,
Honolulu, Hawaii, T: Gail Ayame Ishimoto
- CH044 Analyzing the Optical and Electrical Properties of Variable Deposition Volumes of Carbon Nanotubes to Optimize the Efficiency of Thin-Film Photovoltaic Cells**
Danten Rand Masaji Inouye, 17, Senior, Waipahu High School, Waipahu, Hawaii,
T: Lucille Imamura

- ET064 The Effect of Heat Combustion and Density on the Best Fuel for Biodiesel Production in Hawaii**
April-Joy Baldado McCann, 15, Sophomore, Mililani High School, Mililani, Hawaii, T: Nel Venzon
- PH065 A Neural Network Approach to Forecasting Geomagnetic Storms**
Travis Le, 17, Senior, Punahou School, Honolulu, Hawaii, T: Michael Gearen
Kaneohe, USHI06, Windward District Science and Engineering Fair
- PS015 Trampling Seagrass**
Rebecca Marie Weible, 18, Senior, James B. Castle High School, Kaneohe, Hawaii, T: Karen Kimura
Lihue, USHI04, Kauai Regional Science & Engineering Fair
- BE011 Who Do You Listen To? An Exploration on the Effects of Age and Gender on Listening Comprehension**
Savannah Quinn Frisk, 16, Junior, Kapa'a High School, Kapa'a, Hawaii, T: James Cox
- MI015 The Effects of Various Nitrogen Sources on the Growth Rate and Lipid Production of *Chlorella sp.***
Noelani Hannah Murray, 17, Junior, Kauai High School, Lihue, Hawaii, T: Kevin Johnson
- PH021 Solar Tsunami**
Kayla Lokelani Ishida, 14, Freshman, Waimea High School, Waimea, Hawaii, T: Kristal Ann Daligcon
Mililani, USHI07, Central Oahu District Science and Engineering Fair
- BI005 Denitrification Prevention in an Aquaponics System**
Abraham Kwan, 16, Junior, Moanalua High School, Honolulu, Hawaii, T: Kathy Lin
- MI304T Analyzing the Effects of Antibiotics Produced from Soil-borne Microbials on the Inhibition of *E. coli*, *M. luteus*, *P. aeruginosa*, and *S. aureus***
Danielle Erin Terukina, 16, Junior; Marc Siler, 16, Junior
Mililani High School, Mililani, Hawaii, T: Nel Venzon
- PH011 New Ideas in Physics: The Mass Ratio of Elementary Particles from Torus Geometry**
Viola Mocz, 16, Sophomore, Mililani High School, Mililani, Hawaii, T: Namthip Sitachitta
Pearl City, USHI02, Leeward District Science and Engineering Fair
- CB003 HepG2 (Human Hepatocellular Liver Carcinoma Cell Line): Inflammation Response**
Jennifer Manyu Wong, 17, Junior, Kapolei High School, Kapolei, Hawaii, T: Estan Reynon
- CS007 Simulating Orbital Dynamics & Planetary Collisions in a Video Game**
Erik Keoni Wessel, 18, Senior, Hale Kula Home School, Ewa Beach, Hawaii, T: Marites Barangan
Wailuku, USHI03, Maui Schools Science and Engineering Fair
- EN046 Save the Three-legged Dogs: Myoelectric Prosthetic's for Dogs**
Moriah Ka'iulani Jenkins, 16, Senior, Molokai High School, Ho'olehua, Hawaii, T: Lee DeRouin
- ET302T Purpose-Built Electric Vehicle**
Sage A. Trudeau, 18, Senior; Travis Douglas Taylor, 17, Senior; Dominic Mills, 17, Senior
Seabury Hall, Makawao, Hawaii, T: Martin Emde

ILLINOIS

- Chicago, USIL01, Chicago Public Schools Student Science Fair*
- BE035 Is Dominance Status a Potential Confound in DAT Transgenic Mice?**
Afolayan Kehinde Oladeji, 17, Senior, Lincoln Park High School, Chicago, Illinois, T: Patricia Riley
- BI028 FoxO1 Signaling/AKT-Mediated Phosphorylation and Novel Morphometric Analysis of Muscle Fibers in Skeletal Muscular Atrophy**
Saad Ahmed Khan, 18, Senior, Lane Technical High School, Chicago, Illinois, T: Dianne Lebryk
- EE056 Photovoltaics: Novel Method for Passive Tracking**
Anthony Vladimir Surganov, 18, Senior, Albert Grannis Lane Technical College Preparatory High School, Chicago, Illinois, T: Chris Oster

- EN025 Discovering the Effects of Coated Fe₃O₄-TiO₂ Nanoparticles on DNA Cleavage**
Justin Howard Boganey, 17, Senior, Chicago High School for Agricultural Sciences, Chicago, Illinois, T: Gail Gavin
DeKalb, USIL06, Illinois Junior Academy of Science Region V Science and Engineering Fair
- CB014 Heat Shock Protein 70 Regulates Interleukin 10 Producing Regulatory T-Cells**
Anuj Sanjay Marathe, 17, Junior, Illinois Mathematics and Science Academy, Aurora, Illinois, T: Judy Scheppeler
- EN018 Collagen-Hyaluronic Acid Membranes for Tissue Regeneration**
Nilesh Atul Kavthekar, 17, Senior, Illinois Mathematics and Science Academy, Aurora, Illinois, T: Judith Scheppeler
- ME042 Regulation and Role of Regulator of G-protein Signaling-1 in Celiac Disease Pathogenesis**
Yiyun Cao, 17, Senior, Illinois Mathematics and Science Academy, Aurora, Illinois, T: Judith Scheppeler
Edwardsville, USIL02, Illinois Junior Academy of Science Region XII Science Fair
- CS057 Computer Assisted Evolution: A Natural Approach**
Conner Thomas Ruhl, 16, Sophomore, The Governor French Academy, Belleville, Illinois, T: Christine Hallberg Stewart
- MA014 On the D-modular Rho-labelings of the Union of Two Cycles**
Alexander Charles Su, 16, Sophomore, University High School, Normal, Illinois, T: Saad El-Zanati
Macomb, USIL03, Heart of Illinois Science and Engineering Fair
- BE311T Liar Liar Face on Fire: The Effects of Not Telling the Truth on Nuchal Temperature**
Marissa Lee Rademaker, 17, Junior; Daniel Steven Long, 17, Junior
Delavan High School, Delavan, Illinois, T: Mary Kay M. Wonders
- BE315T Effects of Sleep Deprivation on Cognitive and Physiological Functions in Adolescent Males**
Aaron Matthew Borton, 18, Senior; Logan Thomas Dirks, 17, Senior
Delavan High School, Delavan, Illinois, T: Mary Kay M. Wonders
Skokie, USIL05, Illinois Junior Academy of Science North Suburban Region 6 Science and Engineering Fair
- CB015 How Does the Evolutionary Conserved Region Adjacent to the RALDH2 Gene Affect the Patterned Accumulation of Retinoic Acid in a Developing Zebrafish Embryo?**
Ariella Galya Hoffman-Peterson, 17, Senior, Niles North High School, Skokie, Illinois, T: Jacklyn Naughton
- EE041 V-BIT: Vision-Based Interactive Table**
Elan Meir Ness-Cohn, 17, Senior, Niles North High School, Skokie, Illinois, T: Jacklyn A Naughton
- EM029 Biomineralization of Calcium-Based Plant Crystals as a Model for Phytoremediation**
Haley Roman Sproull, 17, Junior, Niles North High School, Skokie, Illinois, T: Jacklyn Naughton
- ME038 Exogenous Retinoic Acid Supplements as a Novel Approach to Reduce the Negative Phenotypes of Fetal Alcohol Syndrome Using a Zebrafish Model of Development**
Ayana Jamal, 17, Senior, Niles North High School, Skokie, Illinois, T: Jacklyn Naughton
- MI023 Investigating the Compatibility of Autoinducer Systems: One Molecule to Target Multiple Signal Transduction Pathways**
Felix F Angelov, 18, Senior, Niles Township West High School, Skokie, Illinois, T: Ruth Gleicher
Springfield, USIL04, Illinois Junior Academy of Science Region X Science Fair
- EM034 Can Corn-by-products Be Used as Effective Substitute Insulators?**
Zachary Alan Parrish, 18, Senior, A-C Central High School, Ashland, Illinois, T: Jeff Pfaffe
- EM313T The Kinetics of Cellulosic Ethanol**
Heath Edward Garner, 18, Senior; # Hayden James Garner, 18, Senior
Taylorville High School, Taylorville, Illinois, T: Mary Dawson

INDIANA

Angola, *USIN01, Northeastern Indiana Tri-State Regional Science Fair*

BI033 Bisphenol A and *C. elegans*: Accumulation and Larval Recovery

Kathryn Marie Merklng, 18, Senior, East Noble High School, Kendallville, Indiana,
T: Mark Liepe

Bloomington, USIN02, South Central Indiana Regional Science and Engineering Fair

PS044 Utilizing Assorted Monosaccharides from Foliar Application for Glycoside Linkage to Enhance *Triticum aestivum* Yields

Jordan Ray Cadle, 17, Sophomore, Paoli Junior/Senior High School, Paoli, Indiana,
T: Laurie Jo Andry

Evansville, USIN03, Tri-State Regional Science and Engineering Fair

EV046 Got Metals? In Your Seafood! Extraction of Metals from Seafood for Induced Coupled Plasma Mass Spectrometry Determination

Shane Michal Flanagan, 15, Freshman, Castle High School, Newburgh, Indiana

Fort Wayne, USIN04, Northeast Indiana Regional Science and Engineering Fair

BI038 The Decomposition of Hydrogen Peroxide by Various Catalysts and Its Affect on Aging

Iman Mahoui, 14, Freshman, Eman Schools, Fishers, Indiana, T: Mia Sankari

CS056 Evolving Chess Engines

David L. Pan, 16, Junior, Canterbury School, Fort Wayne, Indiana,
T: Robert Brothers

Gary, USIN05, Calumet Regional Science Fair

PS037 Synthetic Water Absorbing Polymer for the Future of Sustainable Agriculture: Use of Hydrophilic Polymer (Sodium Poly-acrylate) to Improve Water Retention of Soil and Sand and Improve Plant Growth under Various Irrigation Treatments

Sachin Aggarwal, 17, Freshman, Lake Central High School, St John, Indiana,
T: Sudhish Chandra

Greencastle, USIN10, West Central Indiana Regional Science and Engineering Fair

CB042 Investigating Variation in Serotonin 1e Receptor Genes in a Polymorphic Species, *Zonotrichia albicollis*

Emma Sperry, 16, Junior, Terre Haute South Vigo High School, Terre Haute, Indiana, T: Melanie Beth Huber

ET061 Production of Hydrogen Gas from *C. reinhardtii*

Priya Renee Kirtley, 14, Freshman, Terre Haute South Vigo High School,
Terre Haute, Indiana, T: Melanie Beth Huber

Indianapolis, USIN06, Central Indiana Regional Science and Engineering Fair

CH031 Paper Analytical Devices (PADs) for Counterfeit Drug Detection

James Robert Firth, 17, Senior, Marian High School, Mishawaka, Indiana,
T: Ken Andrzejewski

CH034 Development of a Green Solvent and Catalyst System for Suzuki Coupling Reactions

Claudia Huang, 15, Sophomore, Carmel High School, Carmel, Indiana,
T: Jennifer Marlow

EN031 Influence of Bone Adaptation and Loading on Stress Fracture Susceptibility

Anthony Joseph Spalding, 18, Senior, Marian High School, Mishawaka, Indiana,
T: Ken Andrzejewski

MA309T Counting Zeros of Rational Harmonic Functions: Parameter Spaces

Lyndon Ji, 17, Senior; Youkow Homma, 18, Senior
Carmel High School, Carmel, Indiana, T: Jennifer Marlow

PH050 An Optical Coupler to Prevent SiPM Desensitization

Connor Lawrence Burke, 17, Senior, Marian High School, Mishawaka, Indiana,
T: Ken Andrzejewski

Indianapolis, USIN50, Hoosier Science and Engineering Fair

AS046 A Study on the Reactions of the *Zophobas morio* to Hues of Light

Shadrach Foster Jakes, 16, Sophomore, Northwestern High School,
Kokomo, Indiana, T: Patricia Arnett Zeck

EV047 Acid Mine Drainage Remediation: A Novel Approach, Phase III

John Tyler Barnes, 18, Senior, Northwestern High School, Kokomo, Indiana,
T: Patricia Zeck

- PS041 Genetic Engineering: A Potential Protection for Allelopathy Created by the Giant Ragweed**
Jenna Christine Jordan, 18, Senior, Northwestern High School, Kokomo, Indiana,
T: Patricia Zeck
Muncie, USIN07, East Central Indiana Regional Science Fair
- EN042 Prickly Pear Cactus Mucilage Used to Filter Copper Sulfate from Water**
Heya Kaakeh, 14, Freshman, West Lafayette Junior/Senior High School,
West Lafayette, Indiana, T: Overlay Marshall
- MA033 A Unitary Group Relaxation of the Traveling Salesman Problem and Its Applications**
Anirudh Prabhu, 17, Senior, West Lafayette Junior/Senior High School, West Lafayette, Indiana
- ME089 Effects of Chemotherapeutic Drugs on Oral Flora**
Farhat Alucozai, 18, Junior, West Lafayette Junior/Senior High School,
West Lafayette, Indiana, T: Marshall Overlay
South Bend, USIN09, Northern Indiana Regional Science and Engineering Fair
- CB054 Altered Lipid-Protein Localization in Niemann-Pick Disease Type C**
Sarah Catherine Briann Baker, 16, Sophomore, Penn High School, Mishawaka, Indiana, T: Lynda Rose
- EE063 Designing a Buoyancy Supported Vertical Axis Wind Turbine**
Timothy Samuel Liu, 16, Sophomore, Penn High School, Mishawaka, Indiana,
T: Lynda Rose
West Lafayette, USIN11, Lafayette Regional Science and Engineering Fair
- ET048 A Novel Solar Cell Combining Coordinated Metal Ion Substitution and Self-Assembly to Broaden the Absorption Spectrum and Efficiently Transform Light Energy into Electricity**
Nathan Sai Kondamuri, 17, Junior, Munster High School, Munster, Indiana,
T: Shaun Kondamuri
- MI048 Can the Properties of a Biofilm Be Studied Using Impedance Measurements?**
Kaylyn Christine Risse, 16, Sophomore, Lake Central High School, Saint John, Indiana, T: Lynn Christine Risse
- IOWA**
Ames, USIA50, State Science and Technology Fair of Iowa
- CH308T Determining If the Khlor Gen. 3000 Produces Enough Chlorine to Sterilize Water**
Nicholas Howard Whitcomb, 16, Sophomore; Brice Nelson Plein, 16, Sophomore
Burlington Community High School, Burlington, Iowa, T: Elizabeth Sanning
- EM042 From Grey Water to Potable Water: Is It Possible?**
Quinn Taylor Groff, 16, Junior, Sheldon High School, Sheldon, Iowa,
T: Kristopher John Groff
- PS046 Impact of Allelic Diversity of Wx and ALK Genes on the Nutritional Characteristics of Rice and the Evaluation of Rice Starch Biosynthesis in the Hybrid Y58S Male Sterile Breeding Line**
Pavane Lakshmi Gorrepati, 18, Senior, Rivermont Collegiate, Bettendorf, Iowa,
T: Linda Hampton
Cedar Rapids, USIA01, Eastern Iowa Science and Engineering Fair
- AS031 A MRSA Threat in CAFOs: Swine vs. Bovine**
Micaela Jayne Bryant, 14, Freshman, Central Lee High School, Donnellson, Iowa,
T: Alicia Schiller
- CH019 The Determination of the Quantity of Potassium Hydrogen Phthalate Buffer Needed to Inhibit pH Increase by the Action of Urease in Artificial Urine**
Surekha Uma Mullangi, 18, Senior, Burlington Community High School, Burlington, Iowa, T: Elizabeth Sanning
Sheldon, USIA02, Western Iowa Science and Engineering Fair
- AS014 Trans-Resveratrol, Nature's New Fountain of Youth: A Longevity Study of Its Effects on *Ascaris suum*, Year Seven**
Erin Renae Brassler, 18, Senior, South O'Brien Community High School, Paullina, Iowa, T: Kevin Jay Brassler

KANSAS*Wichita, USKS50, Kansas State Science and Engineering Fair***PH057 The Effect of SPF on UVA Transmittance**Sana Cheema, 16, Sophomore, Hays High School, Hays, Kansas,
T: Cheryl Shepherd-Adams**PS310T Acid Rain on Germinating Grain**Larcyn Lemuel Carter, 18, Senior; Desirae LeeAnn Courkamp, 18, Senior
Liberal High School, Liberal, Kansas, T: Melisa Westerman**KENTUCKY***Bowling Green, USKY01, Southern Kentucky Regional Science Fair***CB031 The Discovery of AngeDeLaMort: A Novel Mycobacteriophage**Meaghan Cailun Scarlett Dunn, 17, Junior, The Carol Martin Gatton Academy of
Mathematics and Science i, Bowling Green, Kentucky, T: Rodney A. King*Highland Heights, USKY04, Science and Engineering Fair of Northern Kentucky***AS019 Longitudinal Study of Effects of B-estradiol on Reproduction and Longevity
in *Drosophila melanogaster***Laura Kathryn Irons, 17, Junior, Notre Dame Academy, Park Hills, Kentucky,
T: Sister Mary Ethel Parrott**EE030 Studies of a Mediatorless Microbial Fuel Cell**Cassandra Joan Schoborg, 17, Junior, Notre Dame Academy, Park Hills, Kentucky,
T: Sister Mary Ethel Parrott*Lexington, USKY05, Central Kentucky Regional Science and Engineering Fair***AS010 Evidence for a Role of Genetics and Foaling Date in
Equine Wobbler Syndrome**Miranda Nickole Richardson, 17, Senior, Paul Laurence Dunbar High School,
Lexington, Kentucky, T: Heidi Anderson**EE014 Infrared Void Detection in Stay Cable Bridges**William Frank Prince, 17, Senior, Paul Laurence Dunbar High School,
Lexington, Kentucky, T: Heidi Anderson**PH017 Correlated Giant Dielectric Peaks and Antiferromagnetic Transitions Near
Room Temperature in Pure and Alkali-doped BaMnO_{3-δ}**Idrees M. Kahloon, 17, Senior, Paul Laurence Dunbar High School,
Lexington, Kentucky, T: Heidi Anderson*Louisville, USKY02, Louisville Regional Science Fair***CS039 The Traveling Salesman Problem**Robert Rene Lewis, 17, Senior, Saint Xavier High School, Louisville, Kentucky,
T: Gregory S. Cambron**EV028 Record Flood Impacts on Biodiversity in Upper Green River, Kentucky****##**
Aimee Michelle Turner, 17, Junior, Ballard High School, Louisville, Kentucky,
T: Ronda Fields**PH041 A New Lepton Mass Relationship and Its Prediction for the Mass
of the Tau Lepton**

Mazin Zakaria, 17, Junior, Ballard High School, Louisville, Kentucky, T: Kelly Risinger

*Louisville, USKY03, duPont Manual High School Regional Fair***CS028 A Program to Remove Drawing Smudges**Andrew Turner Hamm, 17, Junior, duPont Manual High School, Louisville, Kentucky,
T: Robert Baar**EN306T Magnetic Fe₃O₄ Nanoparticles and Thermoreversible Pluronic® F127 for
Localized Hyperthermia and Sustained Anti-Cancer Drug Delivery, Year Two****#** Sarah Yi Wang, 16, Junior; **#** Michelle Chencheu Liu, 16, Junior
duPont Manual High School, Louisville, Kentucky, T: Robert Baar**EV018 Ubiquitous Environmental Pollutant Acrolein (C₃H₄O) Enhances the Anti-HIV
Therapy Mediated Liver Toxicity**Sanal Dinar Gupte, 17, Junior, duPont Manual High School, Louisville, Kentucky,
T: Robert Baar**ME034 4-1BBL: A Potent Adjuvant for Therapeutic Cancer Vaccines**Jenci Lyn Hawthorne, 16, Junior, duPont Manual High School, Louisville, Kentucky,
T: Robert Baar

Richmond, USKY50, Kentucky Science and Engineering Fair

- AS047 Control of Drosophila Heart Rate (HR): The Effects of Ca⁺⁺ and Ca⁺⁺ Regulation on the Larval *Drosophila* HR**
Valerie Sarge, 14, Sophomore, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Heidi Anderson
- CH041 A Novel Approach to Treat Dry Eyes Exacerbated by Contact Lens Wear**
Sravya Vishnubhatla, 17, Junior, duPont Magnet High School, Louisville, Kentucky, T: Robert Baar
- EE076 Program RFID Tags Under Dynamic Environments**
Yuki Inoue, 18, Senior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Heidi Anderson
- EM317T Enhanced Electrochemical Water Treatment with Carbon Nanotube Catalyst Support**
Julie Elizabeth Graf, 17, Junior; Vania Jiayi Ma, 17, Junior
Paul Laurence Dunbar High School, Lexington, Kentucky, T: Heidi Anderson
- ME082 The Effects of Diferuloylmethane on Auto-immune Diseases: The Effect of Curcumin on Type 1 Diabetes**
Dishant Yogendra Chhabra, 16, Junior, duPont Manual High School, Louisville, Kentucky, T: Glenn Zwanzig
- ME091 Exploring Sequence Similarity between Immune-Regulating Genes, Viruses, and miRNAs: Using miR21 as a Model**
- ##** Mary Olivia Richardson, 17, Junior, duPont Manual High School, Louisville, Kentucky, T: Robert Baar

LOUISIANA

Alexandria, USLA07, Louisiana Region IV Science Fair

- CB004 The Impact of Structural Features on Chromosome Stability: Fragile Site Disruption in *Saccharomyces cerevisiae* as a Model**
Deeksha Deep, 17, Senior, Louisiana School for Math, Science, and the Arts, Natchitoches, Louisiana, T: Allison Landry
- CH009 Asymmetric Conjugate Addition of Ortho-Quinone Methides as a Pathway to the Core of Nomofungin**
Joshua Moses Kubiak, 18, Senior, Louisiana School for Math, Science, and the Arts, Natchitoches, Louisiana, T: Mark Ward

Baton Rouge, USLA50, Louisiana Science and Engineering Fair

- CS047 Development of an Automatic File Synchronization Framework Using the File Transfer Protocol**
Grant David Bourque, 17, Junior, Benjamin Franklin High School, New Orleans, Louisiana, T: Lisa Hartman
- EM038 Going...Going...Gone? Bioremediation Using Kudzu and Commercial Peat Moss**
Mitchell Grant Hartley, 18, Senior, John Curtis Christian School, River Ridge, Louisiana, T: Cathy Bocvault
- MA031 Sensitive Dependence on Initial Data in Backwards-in-Time Difference Equations**
Steven Alexander Olsen, 17, Senior, Baton Rouge Magnet High School, Baton Rouge, Louisiana, T: Lai Cao
- MI032 Does Epstein-Barr Virus Play a Role in the Epidemic of Human Papilloma Virus Associated Head and Neck Cancers?**
Sean Jeffrey Nathan, 17, Junior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Purdy Clements

Baton Rouge, USLA01, Louisiana Region VII-Science and Engineering Fair

- CH002 A Comparison of Analytical Methodologies for the Determination of Sulfur Dioxide Levels in Bleached, Wooden Chopsticks**
Allison Claire Young, 16, Junior, Saint Joseph's Academy, Baton Rouge, Louisiana, T: Linda Messina
- EA002 Molecular Hydrogen and Far-Ultraviolet Extinction Due to Dust**
Marianne Virginia Konikoff, 16, Sophomore, Saint Joseph's Academy, Baton Rouge, Louisiana, T: Linda Messina

Bossier City, USLA02, Bossier Parish Community College Louisiana Region I Science and Engineering Fair

BI008 **The Evaluation of Small Molecule Inhibitors of PKM2, a Downstream Product of mTOR, in Neuroblastoma**

Christina Diane Collins, 18, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements

CB005 **Matrix Specific Endothelial Cell Responses to Advanced Glycated End Products**

Ruth Anne Bishop, 18, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements

PH018 **A Generalized Holographic Model of Cosmic Accelerated Expansion**

Henry WanJune Lin, 16, Junior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Purdy Clements

Houma, USLA03, Terrebonne Parish Science Fair

EM047 **Soak It Up**

Taylor Leigh Bergeron, 14, Freshman, Houma Junior High School, Houma, Louisiana, T: Anne Buquet Barrios

ET057 **Cajun Cane Logs**

Cole William Bergeron, 17, Junior, Terrebonne High School, Houma, Louisiana, T: Adrianna Dupre Adams

Lafayette, USLA04, Louisiana Region VI Science and Engineering Fair

AS004 **An Investigation of Brain Laterization and Intelligence in Conures**

Alexandra Kaye Badeaux, 17, Junior, Catholic High School — New Iberia, New Iberia, Louisiana, T: Alix Stelly

EV013 **Non-Point vs. Point-Source Pollution: Water Quality Assessment of the Vermilion River with Various Climate Conditions**

Gina Gabrielle Biddick, 16, Junior, Ovey Comeaux High School, Lafayette, Louisiana, T: Lisa Ranney

Lake Charles, USLA05, Louisiana Region V Science and Engineering Fair

EN010 **Examining the Strength of Various Ratios of Aggregates in Concrete**

Wilson Jennings Brown, 15, Sophomore, DeRidder High School, DeRidder, Louisiana, T: Bob McLamore

New Orleans, USLA08, Greater New Orleans Science and Engineering Fair

ET018 **Lightning in a Bottle, Phase II: Exploring Fusion**

Caleb George Gestes, 18, Senior, John Curtis Christian School, River Ridge, Louisiana, T: Cathy Boucvalt

ET030 **The Effect of Electric Fields on Solar Power: Exploring a New Mechanism for Solar Cells**

Kinga Janina Malkinska, 16, Junior, Benjamin Franklin High School, New Orleans, Louisiana, T: Clare Davis-Wheeler

Ruston, USLA09, Louisiana Region II Science and Engineering Fair

ME004 **Strokes to Breath**

Chaning Elizabeth Dorr, 16, Sophomore, Ruston High School, Ruston, Louisiana, T: Missy Wooley

St. James Parish, USLA06, St. James Parish Science Fair

EV301T **Determination of Soil Leaching Using Chemical Analysis**

Lauren Elizabeth Luce, 15, Sophomore; Briley Brendon Bourgeois, 15, Sophomore Lutchter High School, Lutchter, Louisiana, T: Kermit Joseph Gauthreaux

MAINE

Bar Harbor, USME50, Maine State Science Fair

ME069 **Noise Exposure of Teenagers from MP3 Players**

Sam Quintrell Wood, 15, Sophomore, Mt. Ararat High School, Topsham, Maine, T: Glen Evans

PS042 **Oxygen Production of Green and Brown Seaweeds *Ascophyllum nodosum* and *Fucus vesiculosus* Under Different Colored Light**

Meagan Elizabeth Currie, 15, Freshman, Greely High School, Cumberland, Maine, T: Robert J. O'Neill

MARYLAND

Baltimore, USMD07, Morgan State University Science-Mathematics-Engineering Fair

EN045 Preventing Traumatic Brain Injuries from Helmet to Helmet Collision, by Using NASA Produced Memory Foam and Redirecting Energy Absorbed during Impact

Taylor-Alexandria Miracle Dorsey, 17, Junior, Paul Laurence Dunbar High School, Baltimore, Maryland, T: Mr. Marvin Todd Martin

ME087 A Bioinformatic Approach to HIV Sequence Diversity and Chemokine Co-Receptor Diversity in Global Populations

Leroy M. Daniels, 16, Sophomore, Paul Laurence Dunbar High School, Baltimore, Maryland, T: Khadijah Mitchell

College Park, USMD03, ScienceMontgomery

BI012 Determination of Binding Energy Hotspots on a Broadly Neutralizing Antibody Against HIV-1

Nina Jessica Lu, 17, Senior, Montgomery Blair High School, Silver Spring, Maryland, T: Elizabeth Duval

CS024 Quantitative Modeling of Processing Cost and Energy Consumption for Cryptographically Enhanced Secure Internet Routing Protocol

Vinay Kotikalapudi Sriram, 16, Sophomore, Poolesville High School, Poolesville, Maryland, T: Teresa Petralli-Mallow

CS025 Hierarchical Automatic Image Based Human Age Estimation Using Relevance Vector Machine Regression and Multi-Classifer Fusion

Pavleen Thukral, 17, Senior, Poolesville High School, Poolesville, Maryland, T: Teresa Petralli Mallow

PH028 Sodium Abundance of Sungrazing Comets from Multi-Spacecraft Photometric and Morphological Analysis

David Zhang, 16, Junior, Richard Montgomery High School, Rockville, Maryland, T: Jon Goetz

Glen Burnie, USMD01, Anne Arundel County Regional Science and Engineering Fair

CS015 Rootkit Detection via Kernel Monitoring

Gregory Shika Bekher, 16, Sophomore, Chesapeake Science Point Public Charter School, Hanover, Maryland, T: Bo Min

ME028 A Novel Paper Sensor for the Detection of Pancreatic Cancer

Jack Thomas Andraka, 15, Freshman, North County High School, Glen Burnie, Maryland, T: Beth Kennedy

Largo, USMD05, Prince George's Area Science Fair

AS020 What Stinks?

Terrence A. Price, 17, Senior, Eleanor Roosevelt High School, Greenbelt, Maryland, T: Jennifer Massagli

EE042 Direction Detection: A Novel Device for Detecting the Approach of Emergency Vehicles

Kelles Diane Gordge, 17, Senior, Great Mills High School, Great Mills, Maryland, T: Charles Allen Skinner

EN013 Get Your Head in the Game Again with ALARMS!

Sara Bea Moore, 15, Sophomore, Great Mills High School, Great Mills, Maryland, T: Tracey Heibel

PH030 Lichtenberg Lightning

Connor Allen Alsheimer, 15, Sophomore, Great Mills High School, Great Mills, Maryland, T: Charles Allen Skinner

Towson, USMD06, Baltimore Science Fair

CB057 The Effect of Codon Optimization on Ty1 Transposition: Understanding Mobile Genetic Elements that Exist in the Genome of Most Organisms

Elias Maximilian Weston-Farber, 18, Senior, Baltimore Polytechnic Institute, Baltimore, Maryland, T: David Nelson

CS071 Deep Belief Networks for Unsupervised Grammar Induction

Michael Antonov Tontchev, 17, Senior, Baltimore Polytechnic Institute, Baltimore, Maryland, T: David B. Nelson

Waldorf, USMD04, Charles County Science Fair

EE012 Autonomous Leaf Vacuum Shredder

Daniel Alfonso Diazdelcastillo, 17, Senior, North Point High School for Science, Technology, and Industr, Waldorf, Maryland, T: Garrett Raymond

ME014 Changes in the Signaling Significance of the Insulin-Like Growth Factor (IGF-1) and the Insulin Receptor (IR) in the Stages of Pre-Diabetes to Type II Diabetes in the Mouse Kidney

Tiana Woods, 17, Senior, North Point High School for Science, Technology, and Industry, Waldorf, Maryland, T: Emily Herron

Walkersville, USMD02, Frederick County Science and Engineering Fair

CS046 Geolocation of Photographs by Horizon Matching with Digital Elevation Models

Samuel Wye Pritt, 17, Junior, Pritt Home School, Walkersville, Maryland, T: Mark Davenport Pritt

MI035 Effects of Green and Black Tea on the Growth and Viability of *Bacillus anthracis*

Shane David Falcinelli, 18, Senior, Middletown High School, Middletown, Maryland, T: Jennifer Chua

MASSACHUSETTS

Boston, USMA06, Massachusetts Region VI Science Fair

CB029 Novel Recombinant Pioneer Oral Bacteria as an HIV Vaccine Vector

Emily C. Xie, 17, Junior, Boston Latin School, Boston, Massachusetts, T: Kathleen Bateman

CB030 Mast Cell Prevention of Life-threatening Blood Coagulation in Tissues: Trypsin-heparin Complexes Exocytosed from Activated Mast Cells Hinder Blood Coagulation Internally by Proteolytically Destroying Fibrinogen

Dominick Zheng, 17, Senior, Boston Latin School, Boston, Massachusetts, T: Kathleen Bateman

CS045 Autism Prescreening Tool for Mobile Devices

George Jefferson Lok, 17, Senior, Boston Latin School, Boston, Massachusetts, T: Kathleen Bateman

Bridgewater, USMA01, Massachusetts Region V Science Fair

EE058 Emergency Convulsive Seizure Detection and Notification System

Richard Robert Housley, 17, Senior, Boston University Academy, Boston, Massachusetts, T: Jeff Stout

EV034 Biomass Denitrification of Salt Water Estuaries

Steven Michael Spall, 17, Junior, Falmouth High School, Falmouth, Massachusetts, T: Cory Joseph Dubuque

MI306T Protist Abundance and Trophic Diversity in Areas of Varied Eutrophication

Lucas William Johns, 16, Sophomore; Carlo Adnan Bocconcini, 15, Sophomore Falmouth Academy, Falmouth, Massachusetts, T: Alison Ament

PH046 Effect of Water Temperature Change on Cavitation

James Vincent Roggeveen, 16, Sophomore, Nantucket High School, Nantucket, Massachusetts, T: Andrew McCandless

Cambridge, USMA50, Massachusetts State Science & Engineering Fair

AS305T Investigating the Spread of the Influenza A Virus: A Phylogenetic Analysis of the H1N1 Subtype

Surya Narayanaraju Bhupatiraju, 16, Junior; Hao Shen, 16, Junior Lexington High School, Lexington, Massachusetts, T: Parul Kumar, T: Susan Offner

CB027 Effect of Biological Compounds on Glycerinated Muscle Contractility

Nafisa Jerin Wara, 14, Freshman, Boston Latin School, Boston, Massachusetts, T: Kathleen Bateman

CS044 Medical Records to Go: A Mobile Application Capable of Storing and Accessing Student Medical Information

Ann Ming Samborski, 16, Junior, Massachusetts Academy of Math and Science at WPI, Worcester, Massachusetts, T: Karen Lang

EV033 Effects of Fertilization and Temperature on Greenhouse Gas and Nitrogen Oxide Emissions from Soils

Vincent Huang Lin, 17, Junior, Falmouth High School, Falmouth, Massachusetts, T: Christine Brothers

ME055 Diagnosing Premature Cancer Mathematically Utilizing Minkowski Dimension

Daniel David White, 16, Junior, Somerset Berkley Regional High School, Somerset, Massachusetts, T: Elaine Rezendes

- PS308T The Adverse Effects of Consumer and Pharmaceutical Goods on Plant Life**
Bridget Eileen Lewis, 17, Senior; # Addie Ray Anne Fleron, 18, Senior
Westfield High School, Westfield, Massachusetts, T: Renee Coombs Sweeney
Fall River, USMA03, Massachusetts Region III Science Fair
- CB028 The Effects of Spectral Variation on the Growth and Reproduction of *Synechocystis sp.* PCC 6803**
Daniel Joseph McCormack, 15, Freshman, Dartmouth High School, Dartmouth, Massachusetts, T: Scot Boudria
- PS027 Aeroponics vs. Soil-Based Growing**
Luke Henry Beaulieu, 14, Freshman, Taunton High School, Taunton, Massachusetts, T: Christina Spernulli
North Adams, USMA04, Massachusetts Region I Science Fair
- BE030 Effects of Intonation on Cognitive Learning**
Shannon Catherine Boley, 17, Junior, Westfield High School, Westfield, Massachusetts, T: Renee Coombs Sweeney
Somerville, USMA02, Massachusetts Region IV Science Fair
- BE031 The Effects of Mindful Decision Making on Post Decision Regret**
Emily Katherine Hu, 16, Junior, Lexington High School, Lexington, Massachusetts, T: James Wood
Worcester, USMA05, Massachusetts Region II State Science Fair
- EE055 Cooling without Electricity: Engineering a New Refrigerator**
Anish R. Athalye, 17, Junior, Massachusetts Academy of Math and Science at WPI, Worcester, Massachusetts, T: William Ellis
- EM037 Flushed Away with Gray: The Gray Water Recycling Toilet**
Julia Spicer Knowles, 16, Junior, Massachusetts Academy of Math and Science at WPI, Worcester, Massachusetts, T: William Ellis
- EN024 Engineering a Novel Hydrogel Matrix for Bone Cell Regeneration**
Sneha Subramaniam, 18, Senior, Westborough High School, Westborough, Massachusetts, T: Anuradha Deshpande
- ME306T The Effects of *Rhodiola crenulata* Root Extract on SKOV-3 Ovarian Carcinoma Cells**
Alexander Michael Aquila, 16, Sophomore; Gregory John Konar, 16, Sophomore; Charles Sumner Brooks, 16, Sophomore
Marlborough High School, Marlborough, Massachusetts, T: Kathy Richov, T: Linda Jean Ryan

MICHIGAN

- Ann Arbor, USMI01, Southeast Michigan Science Fair*
- BI014 A Diet Supplemented with Beta-Carotene Increases Cholesterol Level in Chicken Eggs**
Antonia Leigh Busch, 17, Senior, Hillsdale Academy, Hillsdale, Michigan, T: Christopher Heckel
- ET305T Pipe Dream? Exploring the Practicality of Energy Recovery from the Inertia of Wastewater**
Austin Cassius Bischoff, 18, Senior; Joel Douglas Crozier, 18, Senior
Whiteford High School, Ottawa Lake, Michigan, T: Janet Weygand
Berrien Springs, USMI08, Berrien County Regional Science Fair
- EE046 A Perfect Time for a Perfect Spin**
Mrinalini Sugosh, 14, Freshman, Lakeshore High School, Stevensville, Michigan, T: Lynda M. Smith
Big Rapids, USMI06, Mecosta-Osceola Science and Engineering Fair
- AS041 The Effect of Coprophagous Beetles (Coleoptera: *Scarabaeidae*, *Geotrupidae*, and *Hydrophilidae*) on Methane Emission Rates from Cattle Dung and a Six-month Species Composition Survey of Coprophagous Beetles in Lake City, Michigan**
Rachel Joy Rounds, 16, Sophomore, Mecosta-Osceola Math/Science/Technology Center, Big Rapids, Michigan, T: Laura J. Forbes
Detroit, USMI02, Science and Engineering Fair of Metropolitan Detroit
- BI017 The Role of Bradykinin on Breast Cancer Cells**
David Bai, 18, Senior, Troy High School, Troy, Michigan, T: Rebecca Brewer

- CH303T The Effect of Cow Urine and Its Components as a Fire Retardant on Cotton Fabric**
John Drabik, 17, Senior; Catherine Ann Buchanan, 18, Senior
Macomb Mathematics Science Technology Center, Warren, Michigan,
T: Jaime Hilliard
- CS033 Classification-Based Music Recognition Using Learned Feature Representations**
Hyunjoon Song, 17, Junior, Novi Senior High School, Novi, Michigan, T: James Didio
- MA022 Fractal Dimension Analysis to Predict Cancer**
Madhurima Das, 15, Sophomore, Plymouth High School, Canton, Michigan,
T: Michael Spitz
- ME040 Functional Studies of the PIK3CA Mutant H1047R and HER2 Genes with and without Inhibitors in Breast Cancer Cells**
Shirley Zhang Wu, 18, Senior, Detroit Country Day School, Beverly Hills, Michigan,
T: Gene Menton
- PH035 The Effect of Channel Geometry on Microfluidic Vortex Flow Inside of Droplets**
Vipul Anjan Nandigala, 14, Freshman, Walled Lake Western High School, Walled Lake, Michigan, T: Thomas Saloka
- PH036 Nano-Tesla Magnetic Field Sensors for an Early Warning System for Earthquakes**
Ananya Mukundan, 17, Senior, International Academy East, Troy, Michigan,
T: Jackie Toepel
- Flint, USM150, Michigan Science and Engineering Fair*
- EE061 From Spark to Lightning: Investigating the Efficiency of Hand-Built Spark Gaps in an Air-Core Resonating Transformer**
Alexander Martin Dutton, 15, Sophomore, Dutton Homeschool, Davison, Michigan,
T: Kathryn Lynne Dutton
- EV043 A Bioassay Method Using Bacterial Bioluminescence to Screen for Toxic Levels of Chemical Water Contaminants**
Chengzhen Li Dai, 18, Senior, Detroit Country Day School, Beverly Hills, Michigan,
T: Gene Wesley Menton
- PS032 Probing the Role of Nutrient Activity in Magnetically Induced Plant Growth**
Lilia Tchavdarova Popova, 16, Junior, Ann Arbor-Huron High School, Ann Arbor, Michigan, T: Cinda-Sue Davis
- Flint, USM103, Flint Area Science Fair*
- CB023 Elucidating Pathways in Cancer Pathogenesis**
Nithin Reddy Tumma, 17, Senior, Port Huron Northern High School, Port Huron, Michigan, T: Anna Jamison
- PH027 Detection of Radon Progeny in a Residential Environment Using a Homebuilt Geiger Counter**
Lois Therese Gagnon, 17, Senior, Gagnon Family Homeschool, Goodrich, Michigan,
T: Thomas Jeremiah Gagnon
- Kalamazoo, USM107, Southwest Michigan Science & Engineering Fair*
- CH305T An Analysis of Cis, Trans-Fat Content in Various Franchises' French Fries**
Hunter Nicole Ward, 16, Junior; Trisha Kaye Ramsdell, 16, Junior
Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan,
T: John Wm. Goudie
- EV054 Determining the Iron Concentration of Water Using Modern Technology: How iOS Devices Can Indicate Water Quality**
Brandon Joseph Bocklund, 18, Senior, Battle Creek Area Math and Science Center, Battle Creek, Michigan, T: Scott H Hanson
- Saginaw, USM104, Great Lakes Bay Region Science, Technology, and Engineering Fair*
- EE075 Budget Friendly Wind Tunnel**
Andrew J.Q. Threlkeld, 17, Senior, Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: John Barnes
- MA010 Integrals of Rational Functions**
Magda Lee Hlavacek, 17, Junior, Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: Stephen Tack

- PH054 Comparing FFTs of Different Genres to Find Relationships in Music**
Noah Davisson Kihatan, 17, Junior, Saginaw Arts and Sciences Academy, Saginaw,
T: John Barnes

MINNESOTA

Bemidji, USMN01, Northern Minnesota Regional Science Fair

EV008 Frosty Air: How Air Temperature Affects Soil Frost Depth

Alisha Ruth Mosloff, 17, Senior, Lincoln High School, Thief River Falls, Minnesota,
T: Cheryl Sill

Crookston, USMN05, Western Minnesota Regional Science Fair

EM001 Biodegradation: A Comparative Analysis of the Degradation of Hydrocarbons Using Acclimated Strains of *A. faecalis* and *B. cereus*

Haleigh Tianna Larson, 15, Sophomore, Park Christian School, Moorhead,
Minnesota, T: Krista Rankin

Duluth, USMN02, Northeast Minnesota Regional Science Fair

EE301T The Design and Fabrication of a Drop Test Apparatus to Evaluate Vector Force Dispersion in Materials, such as a Non-Newtonian Fluid Mixed with Recycled Paper and Plastic, Phase V

Preston McCord Jackson, 17, Junior; # Alec Joseph Lamirande, 16, Junior
Cloquet Senior High School, Cloquet, Minnesota, T: Cynthia Ann Welsh

EV001 Black Is the New Green, Phase II: A Field Trial of the Effects of Biochar on Soil Nutrients, Soil Microorganisms, Soil pH, and the Growth of *Glycine max*

Abby Fitzgerald Anderson, 16, Junior, Cloquet Senior High School, Cloquet,
Minnesota, T: Tim Jess Anderson

EV002 The Use of Fluorescein and Rhodamine Dyes to Look at Photodegradation in Streams and Photodegradation Rates of Caffeine, a Potential Wastewater Marker

Bethany Judith Rosemore, 18, Senior, Cloquet Senior High School, Cloquet,
Minnesota, T: Cynthia Ann Welsh

MI001 Identification of Environmental Mycobacteria Isolates DL474, DL505A and DL592 Using PCR (Polymerase Chain Reaction) Amplification and DNA Sequencing of Genes

Kendra Anastasia Pallin, 17, Junior, Cloquet Senior High School, Cloquet, Minnesota,
T: Cynthia Ann Welsh

Mankato, USMN03, South Central/Southwest Minnesota Regional Science and Engineering Fair

CH004 The Stability of Metformin Hydrochloride in an Aqueous Solution

Lila Rose Johnson, 18, Senior, Austin High School, Austin, Minnesota,
T: Christine M. Seppanen

CS003 Browser Wars: The Performance of Internet Browsers and Their Compliance with Standards

Jacob Petersen, 17, Senior, Jackson Senior High School, Jackson, Minnesota,
T: Jordana Thompson

ET003 The Implications of Photo-Voltaic Arrays and the Effect on Global Temperature and Health

Jackson D. Egert, 15, Sophomore, Maple Grove Senior High School, Maple Grove,
Minnesota, T: James Egert

ET004 Exploring Pretreatment Options for Lignocellulosic Biomass to Facilitate Efficient Hydrolysis and Biofuel Production

Jonah Zachariah Butler, 14, Freshman, Sibley East, Arlington, Minnesota,
T: Ann Christine Butler

EV040 The Influences of Chemical Reactants on Eutrophication

Andrew John Steffl, 15, Sophomore, Sleepy Eye St. Mary's High School,
Sleepy Eye, Minnesota, T: Patricia Ann Braulick

MI301T Using Avian Antibodies in Aquaculture to Combat *Streptococcus iniae* and *Streptococcus agalactiae* in *Oreochromis*

Elijah Lloyd Welu, 15, Sophomore; ## Samantha Kay Welu, 17, Senior
Marshall High School, Marshall, Minnesota, T: Theresa Marie Welu

Minneapolis, USMN04, Twin Cities Regional Science Fair

BE304T The Development of Visual Self-Recognition in Toddlers through Mirror Reflections and Photographs

Margaret Mary Green, 18, Senior; Laura Syliva Landgraf, 17, Senior
Burnsville Senior High School, Burnsville, Minnesota, T: Jennifer Jo Hugstad-Vaa

MI004 Genetic Characteristics of Influenza A Viruses in Swine Populations

Keshav Kumar Mangalick, 17, Senior, Mounds View High School, Arden Hills, Minnesota, T: Princesa VanBuren Hansen

PH009 Predicting Electron-beam Knock-on Damage in Hexagonal Boron Nitride Monolayers

Andrew Samuel Ylitalo, 16, Junior, Stillwater Area High School, Stillwater, Minnesota, T: Andre Mkhoyan

Minneapolis, USMN09, St. Paul Science Fair

PH013 The Construction of a Cyclotron

Thomas James Vennemann, 17, Senior, John A. Johnson High School, Saint Paul, Minnesota, T: Colin Denis

Minneapolis, USMN10, Western Suburbs Science Fair

CS006 Designing and Validating a Neural Network to Diagnose Bladder Cancer

Caleb J. Kumar, 16, Junior, Breck School, Minneapolis, Minnesota, T: Lois Fruen

EE009 Engineering an Inexpensive Mobile Electric Field Mill to Measure Changes in the Global Electric Circuit with the Goal of Tracking Global Climate Change

Taylor Siobhan McCanna, 17, Senior, Breck School, Golden Valley, Minnesota, T: Lois Fruen

EN302T Engineering an Optical Cell to Improve Lithium-ion Battery Safety

Alejandro Jose Fenn, 17, Senior; William Andrew Engel, 18, Freshman
Breck School, Minneapolis, Minnesota, T: Lois Fruen

Minneapolis South, USMN50, Minnesota Academy of Science State Science & Engineering Fair

EN312T The Future of Lighting: Improving the Efficiency of Organic Light-emitting Diodes (OLEDs)

Saeed Hakim-Hashemi, 17, Senior; Robert Scott Dorn, 18, Senior
Breck School, Golden Valley, Minnesota, T: Lois Fruen

ET310T The Development and Maximization of a Novel Photosynthetic Microbial Fuel Cell Using *Rhodospirillum rubrum*

Gavin Mai, 16, Sophomore; Marcus Vincent Gomez, 16, Sophomore
Century High School, Rochester, Minnesota, T: Roger Larsen

EV041 Toxicity of Ag and Au Nanoparticles on *Shewanella oneidensis*

Anushua Bhattacharya, 17, Senior, East Ridge High School, Woodbury, Minnesota, T: Amanda Gavin

ME049 Early Studies on Interactions between Novel Proteins Found in a Macromolecular Metabolic Complex in Leukemia Cells

Mahati Pidaparti, 17, Senior, Wayzata High School, Plymouth, Minnesota, T: Princesa Hansen

Rochester, USMN07, Rochester Regional Science Fair

EE309T Ocular Computer Interface: Electrooculographic Eye Tracking with 6DOF Head Position Compensation

David Alexandre Joseph Campeau, 16, Junior;

Spencer August Berglund, 16, Junior

Mayo High School, Rochester, Minnesota, T: Deb DeYoung, T: Dan Devine

EM007 Feasibility Study of Utilizing Grass, Dandelions, and Leaves in Papermaking

Lisa X. Fu, 15, Freshman, John Marshall High School, Rochester, Minnesota,

T: Eric Stanslaski

ET020 Biodiesel Synthesis Using Waste Animal Adipose Tissue with Unconventional Catalysts and Small-dose Urea Cold Flow Improver

Ying Xiong, 16, Junior, Century High School, Rochester, Minnesota,

T: Cheryl Moertel

Saint Cloud, USMN08, David F. Grether Central Minnesota Regional Science Fair and Research Paper Program

BE006 A Spectrum of Triangulation: ADHD, Circadian Rhythmicity, and Bipolar Symptoms

- ### Travis Coleman Sigafoos, 18, Senior, Champlin Park High School, Champlin, Minnesota, T: Kevin Molohon
- MI005** **Combatting Methicillin-Resistant *Staphylococcus aureus* (MRSA) without the Use of Antibiotics**
Adeel Ahmad, 17, Junior, Champlin Park High School, Champlin, Minnesota, T: Kevin Molohon
- Winona, USMN06, Southeast Minnesota Regional Science Fair*
- CS008** **Three Dimensional Imaging for Noncontact Signature Input**
William Bell Flotte, 16, Sophomore, Shattuck-St. Mary's School, Faribault, Minnesota, T: Thomas James Flotte

MISSISSIPPI

- Biloxi, USMS01, Mississippi Region VI Science and Engineering Fair*
- EV060** **An Analysis of Aquatic Phytoremediation of Storm Water Contaminants Utilizing an Aquaponics System**
Morgan Alexis Hertz, 17, Senior, St. Patrick Catholic High School, Biloxi, Mississippi, T: Debbie Worrel
- PH068** **The Effect of Water Location on Salinity Based Upon Index of Refraction**
Jessica Lee Williams, 16, Sophomore, Ocean Springs High School, Ocean Springs, Mississippi, T: Bryan Butler
- Biloxi, USMS50, Mississippi Science and Engineering State Fair*
- EA014** **Developing a Parametric Model for Hurricane Wind and Storm Surge Prediction in the Gulf of Mexico**
- # Taide Ding, 17, Junior, Oxford High School, Oxford, Mississippi, T: Marni Herrington
- MA039** **Developing a Novel Test to Detect Cancer Genes from Microarray Data**
Shreya Mathur, 15, Sophomore, Oxford High School, Oxford, Mississippi, T: Marni Herrington
- Greenville, USMS03, Mississippi Region III Science and Engineering Fair*
- AS048** **Novel Bioassay to Evaluate Development Behavior of the Mosquito *Aedes aegypti* (Diptera: Culicidae) in the Mississippi Delta**
Manuela Jojoa-Portilla, 15, Freshman, Cleveland High School, Cleveland, Mississippi, T: Connie Sterling
- EE071** **Trebuchet vs. Catapult**
Anthony Ray DiBiase, 16, Sophomore, St. Joseph High School, Greenville, Mississippi, T: Eddie Dennis
- Hattiesburg, USMS04, University of Southern Mississippi Region I Science and Engineering Fair*
- CB002** **Expression of a Fusion Protein: CsoS1A-Green Fluorescent Protein**
Nickolas Tremain Whitehead, 17, Senior, Oak Grove High School, Hattiesburg, Mississippi, T: Jamie Morrison
- CH024** **Comparison of Traditional Thermally Cured Epoxy-Amine/Kevlar Composites vs. UV-Cured Thiol-Ene/Kevlar Composites**
DeAndre DeShaun Stafford May, 17, Senior, Hattiesburg High School, Hattiesburg, Mississippi, T: James Brownlow
- Jackson, USMS05, Mississippi Region II Science and Engineering Fair*
- AS029** **The Migration Pattern of Macrobrachium Ohione Shrimp in the Mississippi River**
Malika Vidya Shettar, 17, Senior, Saint Andrew's Episcopal School, Ridgeland, Mississippi, T: Sandra Hindsman
- ME060** **Does the Amount of Time a Single Unit of Blood Stored in a Blood Bank Affect the Potassium Content?**
Renira Michelle Rugnath, 16, Sophomore, Madison Central High School, Madison, Mississippi, T: Amy Bennett
- ME071** **Hypertension and Endothelin-1 Are Associated with Uterine Leiomyoma Proliferation**
Justin Deion Porter, 17, Senior, William B. Murrah High School, Jackson, Mississippi, T: Jeffrey Stokes
- MI033** **How Intraspecies and Interspecies Signaling Affect Bacterial Responses to Antibiotics**
- # Sajal Kumar Tiwary, 16, Junior, Clinton High School, Clinton, Mississippi, T: Lynda Collins

Mississippi State, USMS06, Mississippi Region V Science and Engineering Fair

BE003 Medication or Confection II

Sarah Kathryn Bowles, 17, Senior, Ackerman High School, Ackerman, Mississippi,
T: Christina Lyn McDaniel

BE012 Is There a Correlation between Absenteeism and RIT, Lexile, and GPA?

Victoria Lindsey Bruce, 16, Freshman, Ackerman High School, Ackerman,
Mississippi, T: Christina Lyn McDaniel

Oxford, USMS07, Mississippi Region VII Science and Engineering Fair

BIO22 Antigen-Binding Efficiency in Bovine CD1b3: Computational Ligand Docking of *Plasmodium falciparum* Glycosylphosphatidylinositol for Malarial Intervention

Rosalie Shinwei Doerksen, 16, Junior, Oxford High School, Oxford, Mississippi,
T: Marni Herrington

EE044 A Novel Notification and Interaction System for Caregivers of Individuals with Alzheimer's Disease

Dora Young Chen, 17, Junior, Oxford High School, Oxford, Mississippi,
T: Marni Herrington

MISSOURI

Cape Girardeau, USM001, Southeast Missouri Regional Science Fair

CH028 Trash to Cash, Powering Your Home With: Biogas

Destiney Danielle Hill, 16, Sophomore, A BEKA Academy, Pensacola, Florida,
T: Joanna Neomah Carter

ET013 Hot Water from Compost: Making Your Water Use Greener

Victoria Elizabeth Willcut, 18, Senior, Puxico R-8 High School, Puxico, Missouri,
T: Tiska Evonne Rodgers

Fayette, USM010, Central Methodist Eagles Science and Engineering Fair

ME070 You Say Tō-mā-to, I Say Tō-mā -to: The Effect of Dialect on Speech Disabilities

Emily Frances Venner, 17, Senior, Chillicothe High School, Chillicothe, Missouri,
T: Stacy Surber

Hillsboro, USM009, Mastodon Art/Science Regional Fair

BE010 Evaluating Short-Term Educational Programs and Their Ability to Change Perceptions of High School Students

Samantha Jaye Selby, 18, Senior, Saint Clair High School, St. Clair, Missouri,
T: Benjamin Joseph Martin

MI014 Virus vs. Bacteria: The Effects of Bacteriophages on *E. coli* Covered Eggs

Kelly Devyn Barns, 18, Senior, Saint Clair High School, St. Clair, Missouri,
T: Benjamin Joseph Martin

Jefferson City, USM002, Lincoln University Regional Science Fair

BE055 Investigating the Use of Holistic Computer Games and Hemispheric Dominance in Music Education: A Novel Approach to Pitch Instruction

Victoria Rose Robinson, 16, Junior, Camdenton High School, Camdenton, Missouri,
T: Christopher Reeves

MA026 A Convergence Criterion for a Variant of the Newton-Raphson Method, Chaotic Basin Boundaries, and Computer Graphics

Mingu Kim, 16, Sophomore, David H. Hickman High School, Columbia, Missouri,
T: Pamela Close

Joplin, USM003, Missouri Southern Regional Science Fair

EE054 Subterranean Autonomous Search and Rescue Robot

Ashley Micheala Painter, 18, Senior, Home School, Verona, Missouri,
T: Peggy Painter

MI034 Bacteriophages vs. Antibiotics: The Effects of Bacteriophage Therapy, Antibiotic Treatment, and Their Synergism on *Escherichia coli*

Matthew Colton Estes, 16, Sophomore, Seneca High School, Seneca, Missouri,
T: Kari Rene Binney

Kansas City, USM004, Greater Kansas City Science and Engineering Fair

BE014 The Effect of Coffee Extract & Caffeine on the Locomotory Rate and Basal Slowing Response of a LRRK2 Transgenic *Caenorhabditis elegans* (G2019S Mutation) Model of Parkinson's Disease

Megan Smith, 17, Senior, Shawnee Mission West High School, Overland Park, Kansas, T: Brenda Bott

BI024 A Comparison of the Endocrine Disrupting Potential Exhibited by Environmentally Relevant Doses of Bisphenol A and Bisphenol S *in vitro* in T-47D Breast Cancer Cells

Sarina Mikayla Farb, 18, Senior, Ahimsa Homeschool, LeCompton, Kansas, T: JoAnn Farb

PS017 The Effect of Differing Ratios of Vermicompost to Soil on the Nutrient Content of Lettuce (*L. sativa*)

Zachary Robert Nason, 15, Freshman, Briar Academy, Prairie Village, Kansas, T: Lisa Ann Nason

Saint Joseph, USM006, Mid-America Regional Science and Engineering Fair

BE013 Distraction by Convenient Technological Communication, Part II

Sara Voisard, 17, Junior, Mid-Buchanan High School, Faucett, Missouri, T: Lindsay Fritz

EV021 Big Business Environmental Impact: The Effects of Chlorinated Sugar in Water

Lauren D. Walker, 17, Senior, Mid Buchanan RV, Faucett, Missouri, T: Tereasa A. Freeman

Springfield, USM008, Ozarks Science and Engineering Fair

ME077 The Effects of Kefir

Savannah Cay Phifer, 17, Junior, Mansfield R-IV High School, Mansfield, Missouri, T: Pamela Probert

ME078 The Effect of the Chelator EDTA on the Enzymatic Decomposition of Hydrogen Peroxide: A Possible Treatment of Alzheimer's Disease

Lauren Elizabeth Hargus, 18, Senior, Thayer High School, Thayer, Missouri, T: Peggy Lynn Veatch

ME079 The Effect of Curcumin on the Mitotic Division of Cells: A Possible Treatment of Cancer

Meghan Retha Hedden, 17, Senior, Thayer High School, Thayer, Missouri, T: Peggy Lynn Veatch

St. Louis, USM007, Academy of Science - Greater St. Louis Science Fair

ET005 Proton Exchange Membrane Fuel Cell Stack Configuration Optimization Using a New Algorithm

Uttara Chakraborty, 16, Junior, Chakraborty Homeschool, Chesterfield, Missouri, T: Mandira Chakraborty

MI003 Utilizing the *dgt* Gene in *Escherichia coli* to Assess the Role of dGTP Pools in Mutagenesis: Possible Implications for Cancer and Virus Protection

Maheetha Chandramouli Bharadwaj, 16, Senior, Thomas Jefferson School, St. Louis, Missouri, T: Roel Schaaper

St. Peters, USM005, Missouri Tri-County Regional Science and Engineering Fair

ET010 Optimization of a Dye-Sensitized Solar Cell

Savannah Elizabeth Est, 16, Junior, Wentzville High School, Wentzville, Missouri, T: Jennifer Berendzen

MONTANA

Billings, USMT01, Billings Clinic Research Center Science Expo

EV311T The Exxon Mobil Oil Spill Effect on Macroinvertebrates in the Yellowstone River

Molley Michelle Porter, 18, Senior; Crystal Ann Scoles, 18, Senior Billings West High School, Billings, Montana, T: Joe Catron

Butte, USMT02, Montana Tech Regional Science and Engineering Fair

EV044 Auxin: Increasing Phytoremediation in Hyperaccumulating Plant Species

Anna Middleton, 16, Sophomore, Lone Peak High School, Gallatin Gateway, Montana, T: Paul Swenson

- ME068** **An *in vitro* Study of the Use of Curcumin to Inhibit the Proliferation of Malignant Brain Tumor Cells**
 Julia Marie Michels, 17, Junior, Big Sky High School, Missoula, Montana,
 T: Brandon Honzel
- MI046** **The Utility of *Ustilago bullata* to Control Cheatgrass Invasions**
 # Stacia Lynn Hill, 17, Junior, Big Sky High School, Missoula, Montana,
 T: Brandon Honzel
- Great Falls, USMT04, Montana Region II Science and Engineering Fair*
- ET019** **Flax Seed Biodiesel**
 Taylor John Schroeder, 16, Sophomore, Fairfield Public School District Number 21,
 Fairfield, Montana, T: Raimund Hahn
- MI011** **Eradicating *Staphylococcus aureus* Catheter Infections**
 Cory L. Cummings, 15, Sophomore, Cascade High School, Cascade, Montana,
 T: Ashley Cathryn McGrath
- MI305T** **An Analysis of Snake Venom Protein Fractionation on Bacterial Inhibition**
 Alex Nicole Watterud, 17, Senior; # Scott Eldon Bye, 18, Senior
 North Toole County High School, Sunburst, Montana, T: Amanda Becker
- Havre, USMT03, Hi-Line Regional Science and Engineering Fair – MSU-Northern*
- ET016** **The Impact of Commercial Anti-Gel Additives on Biodiesel Cold Flow Properties**
 Jonni Rose Bacon, 16, Junior, Box Elder High School, Box Elder, Montana,
 T: Melanie Ann Schwarzbach
- EV014** **Point Source of Pollution for Sundance Creek**
 # Antonio Joseph Morsette, 17, Senior, Box Elder High School, Box Elder, Montana,
 T: Melanie Ann Schwarzbach
- Missoula, USMT50, Montana Science Fair*
- AS053** **Stress Affects on Swine**
 # Neela Ann Andres, 16, Sophomore, Big Sky High School, Missoula, Montana,
 T: Tom John Andres
- EM040** **The Effect of *Pseudomonas fluorescens* and *Bacillus megaterium*, in Conjunction with *Medicago sativa*, on Crude Oil Degradation and Toxicity Reduction**
 Alissa Anne Wolenetz, 16, Sophomore, Carter County High School, Ekalaka,
 Montana, T: Linda Christina Rost
- PS034** **Effect of Primary Light on Photosynthetic Pigments, Absorption, and Reproduction of Anabaena, After Being Returned to White Light for Multiple Generations**
 Jacob Norman Pardee, 18, Senior, Carter County High School, Ekalaka, Montana,
 T: Linda Christina Rost
- NEBRASKA**
- Franklin, USNE01, Central Nebraska Science and Engineering Fair*
- AS005** **Myostatin Marker: Effects on Cattle Performance**
 # Bailey Lynne McKay, 16, Sophomore, Franklin Public Schools, Franklin, Nebraska,
 T: Randal Gerald Lienemann
- PH010** **Do More Layer of a Golf Ball Equate to Improved Performance?**
 Seth John McKay, 15, Freshman, Franklin Public School, Franklin, Nebraska,
 T: Randal Gerald Lienemann
- Nebraska City, USNE02, Greater Nebraska Science and Engineering Fair*
- BE049** **Human or Doll?: Animacy's Role in Human Recognition**
 Patricia Hanus, 17, Sophomore, Hanus Home School, Fremont, Nebraska,
 T: Cathy Hanus
- CB049** **Safety of Lipoxin A4 (LXA4) as a Potential Treatment for Lung Inflammation**
 Akansha Jain, 16, Junior, Millard North High School, Omaha, Nebraska,
 T: Tara Nordgren
- ME084** **CCL2 Deficiency, BETA-amyloidosis and Progressive Neurocognitive Dysfunction in a Mouse Model of Alzheimer's Disease**
 Mohit Jain, 17, Senior, Millard North High School, Omaha, Nebraska,
 T: Tomomi Kiyota

NEVADA

Elko, USNV01, Elko County Science Fair

EE037 Efficiency of Silicon Carbide Transistors

Kayla SueAnn Carpenter, 16, Junior, Elko High School, Elko, Nevada,
T: Dave Meisner

EM021 An Evaluation of Tannins and Their Metal Adsorption Properties for the Remediation of Wastewater

Kirsten Rae Perry, 18, Senior, Elko High School, Elko, Nevada, T: Paul Hughes
Las Vegas, USNV02, Southern Nevada Regional Science and Engineering Fair

CB034 Exploring Growth Patterns and Intelligence in an Amoeboid Organism

Clara L. Buck, 14, Freshman, Coral Academy of Science of Las Vegas, Henderson,
Nevada, T: Recai Yilmaz

PH049 Which Has the Greatest Amount of Data Track Spacing: CDs or DVDs?

Sarah Eva DiSalvo, 14, Freshman, Coral Academy of Science of Las Vegas,
Henderson, Nevada, T: Recai Yilmaz

Reno, USNV03, Western Nevada Regional Science and Engineering Fair

AS039 Natural Springs vs. Man-made Guzzlers

Cole Dee Crim, 14, Freshman, Pershing County High School, Lovelock, Nevada,
T: Valdiine Mclean

ET043 The Power of Mud: An Analysis of Possible Bacterial Alternative Energy Derived from Humboldt River Mud

Claudia Nicole Dennler, 17, Senior, Pershing County High School, Lovelock, Nevada,
T: Valdine McLean

PH055 A Novel Process for the Production of Medically Relevant Radioisotopes

Taylor Ramon Wilson, 17, Senior, Davidson Academy of Nevada, Reno, Nevada,
T: Elizabeth Walenta

NEW JERSEY

Jersey City, USNJ02, Hudson County Science Fair

CB035 *In vitro* Inhibition of EcoRI Methyltransferase by Epigallocatechin-gallate

Jan-Alfred S. Aquino, 17, Junior, Bayonne High School, Bayonne, New Jersey,
T: Marie Aloia

EV032 The Removal of Harmful Contaminants in Water Using Low Temperature Microplasma

Mervy Atif Michael, 18, Senior, Union City High School/ Academy For Enrichment
and Advancement, Union City, New Jersey, T: Nadia Makar

Lawrenceville, USNJ03, Mercer Science and Engineering Fair

CH048 Creating and Optimizing Porous MOFs for the Capture of Carbon Dioxide from Flue Gas Mixtures

William Weili Xu, 17, Junior, Princeton High School, Princeton, New Jersey,
T: Carol Lee

New Brunswick, USNJ01, North Jersey Regional Science Fair

AS306T The Effect of Natural Beta Blockers on *Drosophila melanogaster* and *Daphnia magna* Exposed to Caffeine

Jessica Gabrielle Smith, 18, Senior; Madeline Rebecca Weinfeld, 18, Senior
Pascack Hills High School, Montvale, New Jersey, T: Martin Edelberg

CB016 The Missing Genome: Mitochondrial DNA Deletions in Stem Cells

Joshua Abraham Meier, 16, Sophomore, Academy for the Advancement of Science
and Technology, Hackensack, New Jersey, T: Robert G. Pergolizzi

EN017 Design and Evaluation of a Cell-Phone Compatible Wireless Electrocardiograph

Catherine Wong, 16, Junior, Morristown High School, Morristown, New Jersey,
T: Erin Colfax

ME039 A Novel Use of AMD3100 as a Treatment for Metastatic Lung Cancer

Brianna Pereira, 15, Sophomore, Bergen County Academies, Hackensack,
New Jersey, T: Donna Leonardi

ME047 Spicing Up the Caspase Pathways: Novel Targeted Curcumin-Loaded Nanoparticles in Alzheimer's Treatment

Aishwarya Raja, 17, Senior, Academy for Medical Science Technology, Hackensack,
New Jersey, T: Robert Pergolizzi

NEW MEXICO

Albuquerque, USNM01, Central New Mexico Regional Science and Engineering Challenge

BE047 A Big Fat Deal, Phase III: Attributions of Body Talk, Risk Assessments of Steroid/Dietary Supplement Use, Perceptions of Media Images, and Self-Esteem

L. Elisabeth Burton, 16, Sophomore, Rio Rancho High School, Rio Rancho, New Mexico, T: Don Cram

CS059 Hands-Free Mouse Control Using Accelerometer Tilt

Joseph Michael Malone, 18, Senior, Malone Homeschool, Edgewood, New Mexico, T: Anne Marie Malone

EM318T Mycoremediation of Polyethylene Utilizing *P. ostreatus*

Kira Mikailyn Pelowitz, 16, Junior; Holly Ann Caulder, 17, Junior
Albuquerque Institute of Math and Science, Albuquerque, New Mexico,
T: Michael J. Harris

PH034 Inferring Shape and/or Attitude from Non-resolved Photometric Measurements of Geosynchronous Satellites

Travis Crockett, 18, Senior, V. Sue Cleveland High School, Rio Rancho, New Mexico, T: Eileen Romano

Albuquerque, USAI50, National American Indian Science and Engineering Fair

BE037 Factors Contributing to Success of Native American Teen Mothers

Juana Maria Espinoza, 18, Senior, South Senior High School, Minneapolis, Minnesota, T: Cindy Ward

EA011 Thermal Convection in a Fractured Rock: Experiment, Theory, and Real-world Applications

Ivan Vikram Rajen, 16, Sophomore, Eldorado High School, Albuquerque, New Mexico, T: Jennifer Coughlin

EV042 St. Louis River Estuary: The Effect of Location on Water Quality for Different Bodies of Water within the Lake Superior/St. Louis River Watershed

Madison Marie Pallin, 15, Freshman, Cloquet Senior High School, Cloquet, Minnesota, T: Cynthia Ann Welsh

EV314T Production of "Densified" Logs from the Invasive Tumbleweed Species *Salsola iberica* (Russian Thistle) and Other Species Found in the Four Corners Area

Lawrence William Redhorse, 17, Freshman
Newcomb High School, Newcomb, New Mexico, T: Geizi Espiritu Llanes

PS030 Testing the Effectiveness of Eight Different Botanical Extracts as Repellents against *Amblyomma americanum*, the Lone Star Tick

Sara Lynn Nix, 17, Senior, Grove High School, Grove, Oklahoma, T: Kelianna D. Steen

PS311T Paper Production from the Leaf Fibers of *Yucca angustissima* (Navajo Name – Tsá'áshí'ts'óóz English Translation – Narrowleaf Yucca)

Kimberly Ann Begay, 16, Sophomore
Newcomb High School, Newcomb, New Mexico, T: Geizi Espiritu Llanes

Farmington, USNM02, San Juan New Mexico Regional Science and Engineering Fair

ET303T The Mediator-Less Microbial Fuel Cell: Used in Remediation of Oil and Gas Well Waste-Water

Matthew Joseph Detmer, 17, Senior; Kachina Moriah Ganz, 18, Senior
Piedra Vista High School, Farmington, New Mexico, T: Gail Silva

Grants, USNM03, Four Corners Regional Science and Engineering Fair

EM013 Atmospheric CO₂ Scrubbing, Phase Two

Tyler Miguel Knapton, 18, Senior, Grants High School, Grants, New Mexico, T: Shelby Alexander

PH058 Bloody Laser

Danny Wing Mun Lin, 18, Senior, Grants High School, Grants, New Mexico, T: Shelby Alexander

Las Cruces, USNM04, Southwestern New Mexico Regional Science and Engineering Fair

CS018 Digital Mat: A Novel System with Brain-Computer Interface Integration to Engage Elementary Special Education Students in Learning Mathematical Concepts through Multimodal Interaction

Noor Rejah Muhyi, 17, Senior, Las Cruces High School, Las Cruces, New Mexico, T: Sally Walton

- EV019 What Will Grow: Mining Reclamation-Establishing Plant Life on Abandoned Mine Site Waste Fields, II**
Serina Lee Pack, 17, Senior, Cliff High School, Cliff, New Mexico, T: Katie Skaggs
Las Vegas, USNM05, Northeastern New Mexico Regional Science and Engineering Fair
- EE033 Intelligent Self-Assembling Systems Using Robotic Cells**
Holly Catherine Erickson, 16, Junior, Los Alamos High School, Los Alamos, New Mexico, T: Andrew Erickson
- ME030 KillCaps IV: Capsaicin as a Deactivator of Cancer Cell Activity**
Randy Lee Baca, 17, Senior, Taos High School, Taos, New Mexico, T: Laura Julie Tenorio
Portales, USNM06, Southeastern New Mexico Regional Science and Engineering Fair
- EA017 Sinkholes**
Chase Logan Kicker, 15, Sophomore, Carlsbad High School, Carlsbad, New Mexico, T: Deborah Haggerton
- PS008 The Distribution of Glucose and Invertase Enzyme Activity in Yellow Pear Tomato Plants**
Lilly Felicia Chiou, 14, Freshman, Carlsbad High School, Carlsbad, New Mexico, T: Robert Cope
Socorro, USNM50, New Mexico Science and Engineering Fair
- CH011 Silver Superconductors: Is It Possible?**
Michael P. Dugas, 16, Junior, Carlsbad High School, Carlsbad, New Mexico, T: Deborah Haggerton
- MA015 Completing Graphs**
Katherine Leigh Cordwell, 16, Junior, Manzano High School, Albuquerque, New Mexico, T: Janet Vassilev
- ME026 Diabetes: A Rising Epidemic? Or Can It Be Controlled? To Study the Hypoglycemic, Hypotensive, and Hypcholesterolemic Effects of Gymnema Sylvestre Capsules on Non-Insulin Dependent Diabetic Human Subjects and Its Role in the Prevention of Cardiovascular Disease**
Soiba Khalid Mansoor, 15, Junior, Albuquerque Institute of Math and Science, Albuquerque, New Mexico, T: Mike Harris
- MI314T Exploring the Antimicrobial Properties of the PPE (poly-phenylene ethynylene) and the OPE (oligo- phenylene ethynylene) and the Two Antibiotics Ampicillin and Vancomycin on *E.coli* and *S.aureus***
Serene Akkad, 17, Junior; Jenene Akkad, 14, Freshman
Keystone National home school, Albuquerque, New Mexico, T: Sandra Akkad
Albuquerque School of Excellence, Albuquerque, New Mexico, T: Fahri Arik
- PH026 Characterizing the Effects of Asteroid Belt Perturbations on the Orbits of the Inner Planets**
Nikita Michael Bogdanov, 18, Senior, Albuquerque Academy, Albuquerque, New Mexico, T: Jim Mims
- PS013 Electric Algae Proliferation**
Wayne Walter Vigil Jr, 17, Senior, Grants High School, Grants, New Mexico, T: Shelby L Alexander

NEW YORK

- Long Island, USNY02, Long Island Science and Engineering Fair*
- AS025 A Behavioral Comparison of Laboratory Reared Stock and Recently Captured Fruit Flies (*Drosophila melanogaster*) Using Upward Movement, Phototaxis, and Starvation Assays**
Trinity Russell, 16, Junior, Commack High School, Commack, New York, T: Richard Kurtz
- BE020 Are Some Disabilities More Handicapping than Others? A Comparison of Teacher Grading of Children with Medical, Physical and Behavioral Disabilities**
Brett Evan Gossett, 18, Senior, John F. Kennedy High School, Bellmore, New York, T: Barbara Franklin
- BE021 OMG: Look Who Joined Facebook! The Relationship between Parenting and Adolescent Risk Behaviors**
Benjamin Jake Kornick, 17, Senior, Roslyn High School, Roslyn Heights, New York, T: Allyson J. Weseley

- BI019 DNA Repair Mechanisms: Investigations of Base Excision Repair Pathway in Differentiated and Proliferative Neuronal CAD Cells**
April Pun, 17, Senior, Jericho High School, Jericho, New York, T: Serena McCalla
- BI020 The Membrane Mutational Effect Classifier (MMEC): A Novel Structure-Based Approach to Predicting the Functional Effects of Mutations in Membrane Proteins**
Rebecca Faye Alford, 18, Senior, Commack High School, Commack, New York, T: Richard Kurtz
- CB020 Mitigating the Effects of the Morphine Signaling System: A Novel Treatment for Diabetes**
Cheng Yu, 18, Senior, The Wheatley School, Old westbury, New York, T: Doreen DeAngelo
- CH025 Synthesis and Analysis of Novel Phototriggers for Drug Delivery Systems**
Sukjin Jang, 18, Senior, Commack High School, Commack, New York, T: Daniel Kramer
- CS302T Effective Prevention of Memory Error Exploitations through the Use of Memory Address Randomization**
Bailey Liao, 16, Sophomore; Azaria Lev Zornberg, 16, Junior
Half Hollow Hills High School West, Dix Hills, New York, T: Michael Lake
- EA009 Hurricane Signatures within Tree Ring Records, Fire Island, New York**
Nickolas Boroda, 17, Senior, Massapequa High School, Massapequa, New York, T: Starlyn O'Shea
- EE317T The Synthesis of a Compound Device to Maximize Solar and Wind Energy**
Andrew David Hurst, 17, Senior; Zachary Adam Klein, 18, Senior
Long Beach Senior High School, Lido Beach, New York, T: Veronica Ade
- EM033 Improving Reverse Osmosis Membranes for Desalination: The Modification of Cellulose Nanofibers**
Rajkumar Shivraj Pammal, 16, Junior, Commack High School, Commack, New York, T: Richard Mark Kurtz
- EN020 The Ultimate Delivery Package: Implementing Composite Hydrogels for Use in Cell and Drug Delivery Applications**
Japbani Nanda, 17, Senior, Walter Tresper Clarke High School, Westbury, New York, T: Terry Renna
- ET309T Evaluation of the CuZnO Catalyst in Water Gas Shift Reaction for Enhanced Hydrogen Production**
Nicholas Alexander DiPreta, 17, Senior; Kevin Li, 18, Senior
Manhasset High School, Manhasset, New York, T: Peter Guastella
- EV306T Mussels, a Natural Approach to Water Quality Improvement: Assessing the Impact of Environmental Factors on *P. americanus* and *G. demissa* Status in Long Island Bays and Applying *G. demissa* as Biofilters**
Arienne Elizabeth Papa, 18, Senior; ## Jane Elizabeth Smyth, 18, Senior
Long Beach Senior High School, Lido Beach, New York, T: Veronica Ade
- MA023 Classifying Generic Smooth Curves in the Projective Plane Related to Algebraic Curves of Degree 5**
Kevin Sherwin, 17, Senior, Roslyn High School, Roslyn Heights, New York, T: Allyson J. Weseley
- ME045 Beta-catenin and E-cadherin: Novel Protein Biomarkers for Improved Diagnosis of Precancerous Lesions of the Cervix**
Ruchi Jayesh Shah, 17, Senior, Sachem High School North, Lake Ronkonkoma, New York, T: John O'Neill
- ME046 Dietary Alcohol Exposure Enhances Overgrowth Phenotypes Resulting from Disruption of the Hippo Pathway in *Drosophila melanogaster***
Anoj Ilanges, 18, Senior, Oceanside High School, Oceanside, New York, T: Heather Lee Hall
- MI026 Engineering RCAS-TVA Vectors for Generating a Novel Transgenic Mouse Model of Melanoma**
Bilal Ahmed Siddiqui, 18, Senior, Wellington C. Mepham High School, Bellmore, New York, T: David Kommor

- PH038 The Novel Determination of the Stopping Power and Other Characteristics of Quark Gluon Plasma Based on Several Jet Modification Measurements**
Shannon Phelan Wetzler, 18, Senior, Kings Park High School, Kings Park, New York,
T: Mary Ellen Fay
- PS305T Unraveling the Gibberellin Signaling Pathway in *Panicum virgatum***
Kathryn Elsa Hochberg, 17, Junior; Daphne A. Superville, 17, Junior
George W. Hewlett High School, Hewlett, New York, T: Terrence Bissoondial
New York City, USNY03, New York City Science and Engineering Fair
- BE046 Characterizing the Behavior and Genetics of Headplugging in *C. elegans***
Mimi Yen, 17, Senior, Stuyvesant High School, New York, New York,
T: Jonathan Gastel
- BI035 Stabilizing Phosphotriesterase Using PyRosetta for Neurotoxin Degradation**
Michelle Zhang, 18, Senior, Stuyvesant High School, New York, New York,
T: Jonathan Gastel
- CB045 The Insufficiency of Biomarkers in the Identification of Breast Cancer Stem Cells: Hybrid Spheroids as an Alternative Assay**
Talal Syed, 17, Senior, The Bronx High School of Science, Bronx, New York,
T: Richard Lee
- CH035 Predicting Bandgap of Semiconductors to Synthesize the Most Efficient Solar Cell**
Jennifer Lam, 18, Senior, Stuyvesant High School, New York, New York,
T: Jonathan Gastel
- CS306T Dynamic Pathfinding: Chasing Enemies on Random Graphs**
David Lu, 16, Junior; Andre Asher Arslan, 16, Junior
Stuyvesant High School, New York, New York, T: Ashvin Jaishankar
Hunter College High School, New York, New York
- EA013 Let There Be No Light! ESR Dating of the Quartz from the Bytham River Palaeochannel**
Edward Cho, 17, Senior, Stuyvesant High School, New York, New York,
T: Jonathan Gastel
- EN033 Design of a Nozzle Beam Chemical Vapor Deposition Reactor and Synthesis of Titanium Dioxide Nanoparticles**
Nicholas Hugo Rivera, 17, Senior, Stuyvesant High School, New York, New York,
T: Jonathan Gastel
- EN038 Calculations of Optimized Graphene Electrodes in High Performance Organic Transistors**
Yuebi Hu, 17, Senior, Stuyvesant High School, New York, New York,
T: Jonathan Gastel
- EN040 Control of Blinking in Colloidal Quantum Dots Using a Non-Magnetic Metamaterial**
- #** Indroneil Roy, 17, Senior, Francis Lewis High School, Fresh Meadows, New York,
T: Francine Weissman
- EV048 Mineral Accretion Powered by Solar Energy Accelerates *Crassostrea virginica* Growth**
Jia Wen Lin, 17, Senior, Francis Lewis High School, Fresh Meadows, New York,
T: Francine Weissman
- MA034 A Relationship between Quadratic Character and Repeating Decimals**
Junda Huang, 17, Senior, James Madison High School, Brooklyn, New York,
T: Steven Kaye
- ME073 JAK Inhibition Increases erbB Signaling, Enhancing Sensitivity to Combination Therapy of JAK/erbB Blockade in Breast Cancer Cells**
Shu Hui Liu, 18, Senior, Bronx High School of Science, Bronx, New York,
T: Richard Lee
- ME311T Investigating the Correlation between Body Mass Index and Bacteroidetes and Firmicutes Frequencies in the Gut**
Shanawaj Khair, 18, Freshman; Daniel Alexander Arango, 17, Senior
John Bowne High School, Flushing, New York, T: Faye Melas
- MI053 Re-Evaluation of Fuzeon, the First Peptide Anti-HIV Drug, Reveals a Novel Mechanism of Action**
Tongzhu Xu, 18, Senior, The Bronx High School of Science, Bronx, T: Shibo Jiang

- PS038 Root Nutrient Foraging: A Morphometric Approach to Quantifying the Developmental Plasticity Space of Arabidopsis Ecotypes in Laboratory and Natural Environments**
 Huihui Fan, 17, Senior, Stuyvesant High School, New York, New York,
 T: Jonathan Gastel
Poughkeepsie, USNY01, Dutchess County Regional Science Fair
- BI037 Use of Titanium Dioxide Nanoparticles as a Novel, Inexpensive Alternative to Current Therapies for Leishmania Infection**
 Brian Patrick Lei, 17, Senior, Arlington High School, LaGrangeville, New York,
 T: Miriam Rafailovich
Queens, USNY50, New York State Science and Engineering Fair
- AS038 Identification of *Drosophila melanogaster* Gustatory Receptor 23a (gr23a) Response in Olfaction and Gustation for Potential Insect Repellent Synthesis**
 Anirudh Chandrashekar, 16, Senior, Jericho High School, Jericho, New York,
 T: Serena McCalla
- BI032 Understanding the Pathogenesis of Acid-Resistant *E. coli*: Computational Modeling of pH-Dependent Conformational Changes in GadB**
 Hannah Schaefer Kenagy, 18, Senior, Half Hollow Hills High School East, Dix Hills, New York, T: Michael Lake
- CH032 Computer-Aided Drug Discovery: Structure-Based Design and Evaluation of Small Molecule Botulinum Neurotoxin Inhibitors**
 Sarah Rebecca Chapin, 17, Senior, Herricks High School, New Hyde Park, New York, T: Renee Barcia
- CH033 Spectroscopic Characterization of the Reactivity of Substrate Water Molecules in Bio-inspired Catalysts for Water Oxidation**
 Aneesh Shah, 17, Senior, Half Hollow Hills High School East, Dix Hills, New York, T: Michael Lake
- CS051 Modeling the Adaptive Venation Network of *Physarum polycephalum***
 Hannah Louise Blumberg, 17, Senior, Paul D. Schreiber High School, Port Washington, New York, T: Tina Gallagher
- EM315T Utility of a Transgenic *C. elegans* Matrix System as a Bioassay for Heavy Metal Pollution**
 Christopher DiPreta, 16, Junior; Sai Saravana Senthilkumar, 16, Freshman Manhasset High School, Manhasset, New York, T: Peter Guastella
- ET036 Optimization of Nanoscale Morphology of Electron Donor-Acceptor Channels in Organic Photovoltaic Cells**
 Eric Mario Metodiev, 17, Senior, West Islip High School, West Islip, New York, T: Robert Purdy
- ME065 Extracellular Histones Enhance LPS-Induced Cytokine Production**
 Peter Zhou, 17, Junior, Jericho High School, Jericho, New York, T: Serena McCalla
- ME066 Rethinking Digital Weapons: A Comprehensive Fluid-Structure Interaction Simulation Concept to Combat Cardiovascular Disease**
- # Sagar Hitendra Rambhia, 17, Senior, Jericho High School, Jericho, New York, T: Serena McCalla**
- PH308T Searching for Exomoons Orbiting Kepler Mission Exoplanets Using Transit Timing and Transit Duration Variation Signals**
 William Chan, 16, Junior; Hunter Dong, 16, Junior
 Syosset High School, Syosset, New York, T: Angela Lukaszewski
 Manhasset High School, Manhasset, New York, T: Peter Guastella
Rochester, USNY09, Central Western Section-Science Teachers Association of New York State Science Congress
- ET028 Biological Hydrogen and Ethanol Production from Common Yard Grass**
 Emily Catherine Wallmann, 18, Senior, Greece Athena High School, Rochester, New York, T: Tyler Beach
Syracuse, USNY06, Greater Syracuse Scholastic Science Fair
- EM046 Modeling and Environmental Analysis of Hydraulic Fracturing in Upstate New York**
- # Kunal Ashok Sangani, 17, Senior, Fayetteville-Manlius High School, Manlius, New York, T: Sally Mitchell**

- ET050 Improvement in Crosswind Landing by the Use of Holonomic Landing Gear**
Walter Emerson Czerwinski Burkard, 15, Freshman, Manlius Pebble Hill School, Dewitt, New York, T: Susan Foster
Syracuse, USNY10, Dr. Nelson Ying Tri Region Science and Engineering Fair
- CB017 Effect of Over-Expression of SSRP1 on Tumor Cell Growth and Survival, and Regulation of Suppressor of Ty16 Levels**
Seamus Emmett Degan, 16, Junior, City Honors School, Buffalo, New York, T: Kelly Ann Hyla
- CS037 Analysis of Ribosomal Protein S2 Based off of a Two-Year Study**
Rasheen Powell, 17, Senior, City Honors School, Buffalo, New York, T: Kelly Ann Hyla
- ME059 The Differential Regulation of Autophagy vs. Apoptosis as a Potentially Unique Mechanism for Cancer Cell Specific Radiosensitization with Fluoxetine**
Nicci Patricia Moran-Guiati, 17, Senior, City Honors School, Buffalo, New York, T: Kelly Ann Hyla
Troy, USNY07, Greater Capital Region Science and Engineering Fair
- CB024 Inflammatory Impact of p38 Inhibition in Human Monocytes Infected with *Borrelia burgdorferi*, the Causative Agent of Lyme Disease**
Kathleen Rose Bashant, 18, Senior, Burnt Hills - Ballston Lake High School, Burnt Hills, New York, T: Regina Reals
- ET035 Design of a Home-Scale Biogas Digester/Microbial Fuel Cell System: Combining Alternative Energy Sources for Energy Independence**
Katherine Rose Picchione, 17, Senior, Academy of the Holy Names, Albany, New York, T: Donna M. Mooney
- PH044 Exoplanets and Sun-like Stars among Binary Star Systems**
Craig Maughan, 17, Senior, Burnt Hills - Ballston Lake High School, Burnt Hills, New York, T: Regina Reals
Utica, USNY08, Utica College Regional Science Fair
- PS025 Optimizing Algae Growth**
MaryAnn Gloria Bulawa, 16, Sophomore, Rome Free Academy, Rome, New York, T: Beth Ann Bulawa
Westchester, USNY05, Progenics Westchester Science and Engineering Fair
- AS308T Investigating the Decline of the Juvenile *Anguilla rostrata* Populations in the Hudson River**
Pamela Hope Brigleb, 16, Junior; Amanda Harris Bernstein, 16, Junior Ossining High School, Ossining, New York, T: Valerie Holmes
- BE028 An Investigation of the Economic, Social, and Consequential Factors that Affect Moral Decision-Making: A Behavioral and fMRI Study**
Katherine Michelle Mangialardi, 18, Senior, Ossining High School, Ossining, New York, T: Valerie Holmes
- BE029 The Effect of Group Therapy on Communication in Aphasia**
Laura Marie Anderson, 18, Senior, Yorktown High School, Yorktown Heights, New York, T: Michael Blueglass
- BE034 Examining the Social Cognizance of Rett Syndrome Patients Using Eye-Gaze Technology**
Kathleen Margaret Mavrommatis, 17, Senior, Yorktown High School, Yorktown Heights, New York, T: Michael Blueglass
- BE314T The Relationship between Impact Force, Neck Strength and Neurocognitive Performance in Soccer Heading**
Catherine Marie Conte, 17, Junior; Adam Zachary Illowsky, 15, Sophomore Ossining High School, Ossining, New York, T: Valerie Holmes
- BI026 The Role of VEGF-R2 Regulation in VEGF's Vascular Effects in the Status Epilepticus Model**
Maite Angela Antola, 18, Senior, Ossining High School, Ossining, New York, T: Valerie Holmes
- BI027 Novel Strategies for the PET Imaging of Colorectal Cancer Using the A33 Antibody**
Priya Mohindra, 17, Senior, Yorktown High School, Yorktown Heights, New York, T: Michael Blueglass

- BI305T** **Effect of an *E. coli* topA66 Mutation on SOS and Antibiotic Response**
 Jenny Han Yang, 17, Senior; Jessica Quan Li, 17, Senior
 Briarcliff Manor High School, Briarcliff Manor, New York, T: Michael Inglis
 Scarsdale High School, Scarsdale, New York
- CB050** **Inhibiting Class A Scavenger Receptor in Antigen Facilitated Activation for the Development of a Novel Autoimmune Therapy**
 Matthew Joseph Bruck, 18, Senior, Fox Lane High School, Bedford, New York,
 T: Erin Rent
- EE053** **The Effects of Dimpling on the Lift, Drag, and Reynolds Number of Airfoils due to Early Transition of the Boundary Layer from Laminar to Turbulent**
 Bayley Meichner, 18, Senior, Somers High School, Lincolnale, New York,
 T: Gregory Horrace
- ME058** **Targeted MDA2 Iron Oxide Particles for *in vivo* MnCl₂ Enhanced Magnetic Resonance Detection of Oxidative Epitopes in the Retina**
 Hannah Zoe Street, 17, Senior, Hastings High School, Hastings on Hudson,
 New York, T: Melissa Shandroff
- ME305T** **Paracellular Transport of Various Solutes through an *in vitro* Blood-Brain Barrier**
 Frank Yijiang Cao, 16, Junior; Lily Qingyang Cao, 16, Junior
 Yorktown High School, Yorktown Heights, New York, T: Michael Blueglass
- PS024** **Understanding the Evolutionary Consequences of Genetic Duplication and Divergence: A Functional Characterization of the APETALA1/FRUITFULL Homologs in *Papaveraceae***
 Amelia Lyn Clements, 17, Senior, Ossining High School, Ossining, New York,
 T: Valerie Holmes

NORTH CAROLINA

Charlotte, USNC01, Charlotte-Mecklenburg Regional Science Fair

- ET002** **The Synthesis and Analysis of Various Sugar-Based Potassium Nitrate Rocket Propellants**
 Parth Chetan Thakker, 15, Sophomore, South Mecklenburg High School,
 Charlotte, North Carolina, T: Mike Arim
- PH003** **Determining a Habitable Zone around a Star: An Integrated Approach Using Physics, Mathematics, Computer Science, Astronomy, and Biology**
 Yeonsoo Sara Lee, 16, Junior, Myers Park High School, Charlotte, North Carolina,
 T: Loren Winters

Durham, USNC02, North Carolina Central Region III Science Fair

- AS057** **The Identification of Sepsis Biomarkers Using High Throughput Real Time PCR Analysis**
 Danielle Pleshette Tyson, 17, Senior, William G. Enloe High School, Raleigh,
 North Carolina, T: Tyjuanna LaBennett
- EV064** **The Effects of Photodynamic Inactivation and UV Light in Water Disinfection Treatments**
 Asha Marie Bethea, 16, Junior, Hillside High School, Durham, North Carolina,
 T: Barrington Ross

Raleigh, USNC50, North Carolina State Science Fair

- CB021** **Human Mutations Associated with Heart and Pancreatic Disease Cause Adipogenesis Defects in Mice and in a Cell Culture Model**
 Edgar Ferrer-Lorenzo, 17, Senior, East Chapel Hill High School, Chapel Hill,
 North Carolina, T: Robert Purdy
- EN027** **Use of Spray Adhesives for the Manufacture of 3-D Capillary Origami Microstructures**
 Mithi Alexa de los Reyes, 17, Senior, North Carolina School of Science and
 Mathematics, Durham, North Carolina, T: Jonathan Bennett
- EV312T** **Purification of Water through Mirrordistillation**
 Kelly Taylor Roddick, 18, Senior; Andrea Millarary Cuevas, 18, Senior;
 Lauren Ashley Huffstetler, 17, Senior
 Ashbrook High School, Gastonia, North Carolina, T: Bianca Yavelak

- MI027** **Anti-Batrachochytrium dendrobatidis Bacterial Symbionts on *Aneides aeneus* Epidermal Tissue**
Sarah Katherine Johnson, 17, Senior, Brevard High School, Brevard, North Carolina, T: Jennifer Strickland Williams
- MI039** **The Effect of Ammonia Signaling on the Colony Morphology of Yeast through Dextrose Starvation**
Mark Alan Kirolos, 18, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Amy Sheck
- MI308T** **Isolation, Identification and Characterization of Endophytes from Cherokee Medicinal Plants: Yellowroot (*Xanthorhiza simplicissima*), Downy Rattlesnake Plantain (*Goodyera pubescens*), and Indian Tobacco (*Lobelia inflata*)**
Meredith Grace Tooley, 14, Freshman; # Erika Kate Williams, 17, Junior; Jenna Kristine Petterson, 17, Junior
Brevard High School, Brevard, North Carolina, T: Jennifer Strickland Williams
- PH039** **Stellar Evolution of a Pulsating Subdwarf B Star CS 1246: Is the Helium Core Burning Out?**
Arjun Raghavan, 16, Junior, Chapel Hill High School, Chapel Hill, North Carolina, T: Narasimhan Raghavan
- PH040** **Carbon Nanostructures via Dry Ice Exposed to High Temperature**
Kevin Murray Frink, 17, Junior, Isaac Bear Early College High School, Wilmington, North Carolina, T: Michael Kelly

NORTH DAKOTA

Fargo, USND03, Southeast North Dakota Regional Science and Engineering Fair

- EV051** **The Chemical and Microbial Analysis of Well Water**
Kelsey Rae Gaukler, 17, Junior, Hankinson High School, Hankinson, North Dakota, T: Marcus John Friskop
- PS045** **The Effects of the Aster Family on Sugar Beet Production**
Grady Adam Mauch, 15, Freshman, Hankinson High School, Hankinson, North Dakota, T: Marcus John Friskop

Grand Forks, USND05, Northeast North Dakota Regional Science and Engineering Fair

- MA042** **Swap to Sort: Analysis of the Winnability of a Function-Based Game**
Vahid Fazel-Rezai, 15, Sophomore, Red River High School, Grand Forks, North Dakota, T: Laurie Crummy

Grand Forks, USND50, North Dakota State Science and Engineering Fair

- ET055** **The Impact of Fungicides on Corn Growth and Ethanol Production**
Dre Erik Howard Steinwehr, 16, Junior, Hankinson High School, Hankinson, North Dakota, T: Marcus John Friskop
- ET058** **Wind: A New Spin on Things**
Caleb Kyle Meyer, 17, Junior, Hope-Page Public School, Hope, North Dakota, T: Jeffrey Ryan Hovde
- PS043** **An Inquisition of Natural and Commercial Insecticides on Wheat**
Tanner John Coppin, 18, Senior, Hankinson High School, Hankinson, North Dakota, T: Marcus John Friskop

Jamestown, USND04, Southeast Central North Dakota Science and Engineering Fair

- ET047** **It's All in the Fuel**
Tyler Gordon Toepke-Floyd, 16, Sophomore, Wishek Public School, Wishek, North Dakota, T: Joshua Jacob Wiest

- PH061** **Light Speed III**
Benjamin Luke Schuler, 16, Sophomore, Wishek Public School, Wishek, North Dakota, T: Joshua Wiest

Mandan, USND01, Southwest Central North Dakota Regional Science and Engineering Fair

- AS040** **Colors that Fly**
Kristi LaRae Goldade, 17, Senior, Strasburg Public School, Strasburg, North Dakota, T: Bill A. Malaski

Mandan, USND02, North Central North Dakota Science and Engineering Fair

- EE072** **Does PVC Size Limit Geyser Height?**
Preston Arlan Miller, 14, Freshman, Sawyer Public School, Sawyer, North Dakota, T: Vicki Mae Olson

Williston, USND06, Northwest North Dakota Regional Science Fair

ET051 Unlocking the Potential

Jasmine LouAnn Kreft, 17, Junior, Trinity Christian School, Williston, North Dakota,
T: Annette Marie Kreft

EV053 Eco System Solution

Blaine Kyle Durward, 17, Junior, Trenton High School, Trenton, North Dakota,
T: Bob J. Turcotte

OHIO

Alliance, USOH08, Ohio Region XIII Science and Engineering Fair

CS060 Computer Sleuth, Year Three: The Effectiveness of the Use of N-Grams in Authorship Attribution

Daniel William Moran, 18, Senior, Minerva High School, Minerva, Ohio,
T: Mike Waller

MI310T Phage Therapy: Identification of Viruses in *Staphylococcus aureus* during the Exponential Growth Phase

Jackson Lee Frazier, 17, Senior; # Angela Jean Smith, 18, Senior
Louisville High School, Louisville, Ohio, T: Robert Sudomir

Archbold, USOH06, Northwest Ohio Science and Engineering Fair

AS008 Prostaglandin F2a Inducing Luteolysis for Reproductive Enhancements in the *Capra hircus*

Kaitlyn Margaret Wiley, 15, Sophomore, Hicksville High School, Hicksville, Ohio,
T: Kathy Laney

ET017 Environmental Effects on Photovoltaic Cells

Collin Andrew Stipe, 17, Junior, Millcreek West Unity, West Unity, Ohio,
T: Cirstin D. Hagans

Athens, USOH01, Southeastern Ohio Regional Science and Engineering Fair

BIO23 Analysis of Phytochemicals in African Nightshade

Sarah Marie Cox, 17, Senior, Zane Trace High School, Chillicothe, Ohio,
T: Jason Allan Clark

Cleveland, USOH02, Northeastern Ohio Science and Engineering Fair

CS023 Evolutionary Computation: Adaptive Processing

Graham Stanley Gobieski, 17, Junior, Beachwood High School, Beachwood, Ohio,
T: Carol Katz

EN011 The Use of an Inertial Electrostatic Confinement Fusion Reactor in Medical Treatment and Imaging

William Wellborn Jack, 17, Junior, Hudson High School, Hudson, Ohio,
T: Kathy Sfiligoj

EN012 The Effect of Carbohydrate Base on a Polymer Wound/Burn Applicant with Various Levels of Polyethyleneglycol Diacrylate

Nicholas Joseph Neill, 16, Junior, Saint Vincent-Saint Mary High School, Akron, Ohio,
T: MaryJo Chionchio

ME029 Mustard Seeds: A Potential Solution to Colon Cancer

Shivani Bafna, 16, Sophomore, Solon High School, Solon, Ohio, T: John Pink

PH029 PT-Symmetric Boundary Conditions in Quantum Mechanics

Anirudh Dasarathy, 17, Senior, Hawken School, Gates Mills, Ohio, T: Robert Shurtz

Dayton, USOH04, Montgomery County Science and Engineering Fair

CS009 PEDIACENTER

William Barbaro, 17, Junior, Carroll High School, Dayton, Ohio, T: Laurie Fuhr

ME016 M1 Activation: Direct Comparison of Neurofeedback Generated Real-Time fMRI to Standard fMRI

Shannon Marie Bidwell, 17, Junior, Dayton Christian High School, Miamisburg, Ohio,
T: Sarah Poelstra Wilson

MI009 An Evaluation of Compound Media and the Antimicrobial Effects on MRSA

Emily Allison Wells, 17, Senior, Carroll High School, Dayton, Ohio, T: Suz Levy

Marion, USOH07, Marion Area Science and Engineering Fair

CS035 Using Object-Oriented Math to Find the Center of a Random Data Set

Sophia Halter, 15, Freshman, Olentangy High School, Lewis Center, Ohio,
T: Kim Randall

- EV027 A Study on the Use of Lipid Producing Algae in Wastewater Treatment**
Kathleen Marie Seeley, 17, Senior, Benjamin Logan High School, Bellefontaine, Ohio, T: Spencer Reames
Shaker Heights, USOH05, Hathaway Brown Upper School Fair
- EE315T Design and Construction of an Autonomous Robotic Recyclables Transporter (ARRT)**
Samantha Blair Santoscoy, 18, Senior; Ketki Lele, 17, Senior
Hathaway Brown, Shaker Heights, Ohio, T: Patricia Kelly Hunt
- EN014 The Synthesis and Characterization of Uniformly-Shaped Gold Nanoparticles**
Samantha Rose Reeves, 18, Senior, Hathaway Brown, Shaker Heights, Ohio, T: Patricia Kelly Hunt
- ME027 A Screen for Genes that May Play a Role in Motor Axon Guidance in *Drosophila melanogaster***
Sarah Christine Forcier, 17, Senior, Hathaway Brown, Shaker Heights, Ohio, T: Patricia Kelly Hunt
Upper Arlington, USOH09, Central Ohio Regional Science and Engineering Fair
- EV309T Utilization of Various Grades of Waste Paper for the Production of Ethanol and Bio-Products through Fermentation**
Vishal Reddy Nallanagulagari, 14, Freshman; Spandan Shah, 15, Sophomore
Upper Arlington High School, Upper Arlington, Ohio, T: Laura A. Brennan
- ME053 Survival Motor Neuron Protein Restoration in Motor Neurons and during Postsymptomatic Stages in a Zebrafish Model of Spinal Muscular Atrophy**
Duy Quoc Phan, 15, Sophomore, Upper Arlington High School, Columbus, Ohio, T: Laura A. Brennan
- MI031 Virulence Associated Traits of Uropathogenic *E. coli* Causing Pyelonephritis in Children**
Jingwen Zhang, 15, Sophomore, Thomas Worthington High School, Worthington, Ohio, T: Jodi Bacon
Wilberforce, USOH03, Miami Valley Science and Engineering Fair
- ME048 Effect of Antioxidants on Metal Ion Inhibited Catalase: Significance in Alzheimer's Disease**
Karthik Balaji Chakravarthy, 15, Freshman, Beavercreek High School, Beavercreek, Ohio, T: Tim Campbell
- MI028 Cell Jamming: The Hydrolyzation of Dental Sealants during Biofilm Development and Inhibition of Quorum Sensing by Esculent Spices**
Azad Sunil Dhingra, 17, Senior, Springfield High School, Springfield, Ohio, T: Pamela Joe Clark
- OKLAHOMA**
Ada, USOK50, Oklahoma State Science and Engineering Fair
- CH022 Investigating the Factors that Influence the Liesegang Ring Phenomenon**
Hayden Joseph Allen, 16, Sophomore, Cascia Hall Preparatory School, Tulsa, Oklahoma, T: Sally Ann Fenska
- PS012 An Examination of Oklahoma Plant Stomatal Response to Changing Atmospheric Conditions**
Mishana Rachelle Ellison, 16, Sophomore, Latta High School, Ada, Oklahoma, T: Susie Edens
Ada, USOK07, East Central Oklahoma Regional Science and Engineering Fair
- EV026 Enhanced Adsorption of Arsenic on Aquifer Solids and Soil, Phase II: Oxidative Treatment and Feasibility Assessment**
Jenna Reed Huling, 18, Senior, Ada High School, Ada, Oklahoma, T: Scott G. Huling
Alva, USOK01, Northwestern Oklahoma State University Regional Science Fair
- PH302T The "Bat" Man**
Dakota Austin Everett Key, 16, Sophomore; Jake Morgan Evans, 17, Sophomore
Vici High School, Vici, Oklahoma, T: Trisha Ann Salisbury
Bartlesville, USOK02, Bartlesville District Science Fair
- CS001 Efficient Automated Generation and Dissemination of Meteorological Data Representations**
Joseph Christopher Woodson, 18, Senior, Home School, Tulsa, Oklahoma, T: Pamela Kay Woodson

- EV003 "Leaf" Particle Board Behind**
Chandler David Holliman, 14, Freshman, Bartlesville High School — East Campus, Bartlesville, Oklahoma, T: Cheryl Fentress
Edmond, USOK03, Central Oklahoma Regional Science and Engineering Fair
- AS030 Cockroache Armageddon: Natural Repellants in the Roach Wars**
Sheldon Nikole Strang, 18, Senior, Southmoore High School, Moore, Oklahoma, T: Darla Kay Wyatt
- CB026 Sweet Poison: A Second Year Study**
Samantha Elizabeth Grace Curran, 17, Senior, Southmoore High School, Moore, Oklahoma, T: Darla Kay Wyatt
Miami, USOK04, Northeastern Oklahoma A&M Science and Engineering Fair
- AS007 The Conundrum Continues: A Second Year Study on the Teratogenic and Reproductive Effects of Synthetic Hormones on *Drosophila melanogaster***
Hannah Claire Pagels, 15, Sophomore, Grove High School, Grove, Oklahoma, T: Keliana D. Steen
Muskogee, USOK05, Muskogee Regional Science and Engineering Fair
- BE054 Face Off: A Comparison of the Perception of Neuro-Typical and Autistic Individual When Determining Facial Emotion**
Mattlyn Reed Dragoo, 16, Junior, Muskogee High School, Muskogee, Oklahoma, T: Terri Lee Brossett
Oklahoma City, USOK06, Oklahoma City Regional Science and Engineering Fair
- CH003 Unpressurized Hydraulic Fracturing: Do Detergent and Water at Different Temperatures Help to Decrease the Viscosity of Oil?**
Husayn Faridali Ramji, 16, Sophomore, Classen School of Advanced Studies, Oklahoma City, Oklahoma, T: Carolyn Bish
Wilburton, USOK09, Eastern Oklahoma Regional Science and Engineering Fair
- MI025 Evaluating the Synergistic Effect of Polyphenol Extracts on Antibiotic Resistance in Selected Bacteria**
Jeffrey Gage Holleman, 16, Sophomore, Cascia Hall Preparatory School, Tulsa, Oklahoma, T: Sally A. Fenska
- OREGON**
Albany, USOR07, Central Western Oregon Science Expo
- BE015 Compilation of Social Media Political Conversations, Linguistic Twitter Profile Analysis, and Media Bias to Accurately Reflect Regional Political Climates**
Shawn David Meacham, 18, Senior, West Salem High School, Salem, Oregon, T: Michael Stephen Lampert
- CS029 Improvements to Automatic Translation of Legal Text**
Terrance Xuelin Sun, 17, Junior, Catlin Gabel School, Portland, Oregon, T: Andrew Merrill
Bend, USOR08, High Desert Science Expo
- BE050 Mental Activity and Time Perception**
Maxwell Dunbar DeKock, 17, Senior, Summit High School, Bend, Oregon, T: David Bermudez
Gresham, USOR01, Gresham-Barlow Science Expo
- EN004 Alumina Nanoparticle Mediated Pathways in Cancer Cells**
Amber Tang, 15, Sophomore, Lakeridge High School, Lake Oswego, Oregon, T: Haiyan Li
- MA011 Small Geometric Progressions Modulo N for Deterministic Polynomial Selection**
Aishwarya A. Vardhana, 17, Senior, Jesuit High School, Portland, Oregon, T: John High Gorman
- MI008 The Effect of UV-C Light on *E. coli***
Emily Lynn Schnepf, 15, Freshman, Gresham High School, Gresham, Oregon, T: Kathy Childress
Hillsboro, USOR04, Beaverton-Hillsboro Science Expo
- AS002 The Effects of Chemosensory on the Nutritional Behavior of *Caenorhabditis elegans***
Tori Erica Graf, 17, Senior, Hillsboro High School, Hillsboro, Oregon, T: Brian Nauert

- CB001 Towards the Cure: Abnormal Protein Interactions between Amyloid Beta and Tau as a Therapeutic Target for Alzheimer's Disease**
Raghav Tripathi, 16, Junior, Westview High School, Portland, Oregon,
T: Debbie Cooper
- EE002 A Novel Design for the Enhancement of Anti-Reflection in Crystalline Photovoltaic Cells**
William Yuan, 16, Sophomore, Westview High School, Portland, Oregon,
T: Debbie Cooper
- EV006 An Experimental Study of the Impact of Target Volatile Organic Compound (VOC) Emissions on Lung Health PLUS a Novel Risk Assessment Model to Predict Their Effect on the Peak Expiratory Flow Rate (PEFR); and the Development of a New VOC Adsorption Filter**
- ## Naomi Chetan Shah, 16, Junior, Sunset High School, Portland, Oregon,
T: Chetan Prtatap Shah**
- Portland, USOR50, Intel Northwest Science Expo*
- BE313T The Relationship between Sleep Hygiene and Attention Deficit Disorder**
Anne Kathryn Gilbert, 17, Junior; Kara Louise Gilbert, 15, Freshman
Wilsonville High School, Wilsonville, Oregon, T: Jennifer Tinker
- CS040 Improving 3D Virtualization and Object Recognition in Real-Time Using Kinect Sensors**
- ## Akash Krishnan, 17, Senior, Oregon Episcopal School, Portland, Oregon,
T: Steve Decker**
- EV030 Effect of Magnetic Fields on Viability of Cellular Structures**
Andrew Wei Chen, 14, Freshman, Beaverton High School, Beaverton, Oregon,
T: Mike Blok
- MA027 Complexity of Interlocking Polyominoes**
Sidharth Dhawan, 18, Senior, Westview High School, Portland, Oregon,
T: Debbie Cooper
- PH045 Shining Like the Sun: A Novel Quantum Mechanical Approach to Property Analysis and Energy Efficiency Algorithm for White-Light LEDs**
Valerie S. Ding, 15, Freshman, The Catlin Gabel School, Portland, Oregon,
T: Andrew Merrill
- PS029 Feasibility of Creating Quality Silage in Small Quantities**
Ruth Hazel Johnston, 17, Senior, Tillamook High School, Tillamook, Oregon,
T: Clair Thomas
- Portland, USOR02, Portland Public Schools Science Expo*
- EN310T MyInsul.in: Decision Support for Inpatient Physicians Managing Hyperglycemia**
Alexander Eskil Harding, 17, Senior; ## Annelise Cummings, 16, Junior
Cleveland High School, Portland, Oregon, T: Ronda M. Royal
- ME035 The Effect of Chemotherapy on Mouse Oligodendrocytes**
Douglas N. Goldstein, 18, Senior, Lincoln High School, Portland, Oregon,
T: Larry S. Sherman
- Portland, USOR05, Aardvark Science Exposition*
- CB019 Generation of Monkey Induced Pluripotent Stem Cells in the Absence of SOX2 and C-MYC**
Mina Guo, 16, Junior, Oregon Episcopal School, Portland, Oregon,
T: Bevin Colleen Daglen
- EN021 The Fabrication and Characterization of a High Permeability Iron- Nickel Thin Film Alloy for Giant Magneto Impedance Applications**
Harsha Sudarsan Uppili, 15, Freshman, Oregon Episcopal School, Portland, Oregon,
T: Bevin Colleen Daglen
- PH307T Differential Photometry of V1191 CYGNUS**
James Edward Lavery, 17, Senior; Manav Singh Kohli, 18, Senior
Oregon Episcopal School, Portland, Oregon, T: Bevin Colleen Daglen
- West Linn, USOR06, CREST-Jane Goodall Science Symposium*
- BE307T The Effect of Age on the "Hasty Glance" Method of Eliciting Deja Vu**
Duncan Joseph Prince, 15, Sophomore; Caleb Jeffrey Archuleta, 16, Sophomore
West Linn High School, West Linn, Oregon, T: Monica Emerick

- MA012** **Graph Theory and Locality Sensitive Hashing for DICOM Image Analysis**
 # Markus Robert Woltjer, 17, Junior, Wilsonville High School, Wilsonville, Oregon,
 T: James Ronald O'Connell
- MI012** **Characterization of the Relationship between *Pseudomonas aeruginosa* Acyl-homoserine Lactone Based Quorum Sensing and Innate Macrophage Function *in vitro***
 # Spencer Michael Chang, 17, Senior, West Linn High School, West Linn, Oregon,
 T: Jonathan Davies

PENNSYLVANIA

Harrisburg, USPA01, Capital Area Science and Engineering Fair

- CB006** **A Potential Anticancer Compound against Cancer Stem Cells**
 Anke Wang, 16, Junior, Hershey High School, Hershey, Pennsylvania,
 T: Jason Ambler
- ET014** **Wind Energy and Its Future Potential**
 Bradley Derek Sloop, 17, Junior, Susquenita High School, Duncannon, Pennsylvania,
 T: Kathleen Becker

Lancaster, USPA02, North Museum Science and Engineering Fair

- EE066** **High-Power, Frictionless Gear Reduction Using Magnetic Repulsion**
 Jesse Samuel Martin, 18, Senior, Elizabethtown Area High School, Elizabethtown,
 Pennsylvania, T: Theresa Swenson
- EM043** **Converting Municipal Paper Waste into Ethanol through Acid and Enzymatic Hydrolysis**
 Zachery Thomas Custer, 17, Junior, Conestoga Valley High School, Lancaster,
 Pennsylvania, T: William David Lauris

Philadelphia, USPA03, Delaware Valley Science Fairs

- AS045** **Transcriptional Changes in *Borrelia burgdorferi* that Cross the Blood Brain Barrier in Neurological Tick-Borne Lyme Disease**
 # Lucy Michelle Hritz, 16, Sophomore, Villa Joseph Marie High School, Holland,
 Pennsylvania, T: J. Stephen Dumler
- CB046** **Bisphenol A (BPA) Promotes Adipogenesis in 3T3-L1 Cells**
 Bansri Manesh Patel, 15, Sophomore, Sussex Technical High School, Georgetown,
 Delaware, T: Michele Thomas
- CH040** **Polyoxovanadate-based Surfactants: The Search for an Effective Heterogeneous Catalyst**
 Joy Yiran Wang, 16, Junior, Parkland High School, Allentown, Pennsylvania,
 T: Loretta Igo
- EE069** **Designing and Building an Aquatic Glider for Educational Purposes**
 Nathaniel Anderson Hoffman, 14, Freshman, Hoffman Homeschool, Wenonah,
 New Jersey, T: Beth Anderson Hoffman
- EE070** **Thinking Robotics**
 Christopher Xavier Miller, 18, Senior, Methacton High School, Eagleville,
 Pennsylvania, T: Robert Helm
- EN041** **Optimization of Graphene Sheets as Electrode Materials for Dye-Sensitized Solar Cells**
 Rahul Kumar, 17, Senior, Germantown Academy, Fort Washington, Pennsylvania,
 T: Susanne Johnston
- MA037** **Novel Graph Theory Algorithms for Protein Structure Prediction and Design**
 # Jonah Milton Kallenbach, 17, Junior, Germantown Academy, Fort Washington,
 Pennsylvania, T: Susanne Johnston
- MA038** **Patterns Among Carousel Primes and Cyclic Integers in Base b**
 # Alan Ziyuan Yang, 15, Sophomore, Upper Dublin High School, Fort Washington,
 Pennsylvania, T: Michael Fogle
- ME080** **The Effects of Preventive Measures in Malaria Control and the Impacts of Insecticide Resistant Vectors**
 Shashwat Kishore, 15, Freshman, Unionville High School, Kennett Square,
 Pennsylvania, T: Sandra Litvin
- ME081** **Optimization of Growth and Harvesting of *Bacillus sphaericus* and *Bacillus thuringiensis* for the Eradication of Culex genus Mosquito Larvae**
 Shombit Roy Chaudhuri, 18, Senior, Unionville High School, Kennett Square,
 Pennsylvania, T: Sandra Litvin

- ME310T Evaluation of Gene Expression Patterns in the Cell-Death Pathway for Chemosensitive vs. Chemoresistant Cell Lines**
Radhika Angeles Chunduru, 16, Junior; Andrew Van Friedman, 16, Junior
B Reed Henderson High School, West Chester, Pennsylvania, T: Elizabeth Linton
- MI050 Investigating the Role of Human Papillomavirus in Lung Cancer**
Justin Yat-Fung Wong, 15, Freshman, Germantown Academy, Fort Washington, Pennsylvania, T: Susanne Johnston
- MI051 The Effect of *Lactobacillus acidophilus* on the Survival and Motility of *Caenorhabditis elegans* against Pathogenic *Serratia marcescens***
Ananya Sureshkumar, 16, Junior, Biotechnology High School, Freehold, New Jersey, T: Ann MacLean
- Pittsburgh, USPA04, Pittsburgh Regional Science and Engineering Fair*
- CB037 Combined Antitumor Effect of Cetuximab and Docosahexaenoic Acid in Squamous Cell Carcinoma of the Head and Neck**
Chareeni Eesha Kurukulasuriya, 17, Senior, Pittsburgh Allderdice High School, Pittsburgh, Pennsylvania, T: Catherina Didomenico
- CB038 Over Expression of MiRNA in Fibroblast Cell Line Modifies Their Fibrotic Properties**
Alicia Nicole Grabiec, 17, Junior, Freeport Area Senior High School, Sarver, Pennsylvania, T: Donald Orlowski
- CS052 Navigation for the Visually Impaired**
Natalie Janet Nash, 17, Senior, Vincentian High School, Pittsburgh, Pennsylvania, T: Thomas Adams
- CS053 Using Software to Aid Memory**
Calvin James Beideman, 15, Sophomore, Beideman Homeschool, Pittsburgh, Pennsylvania, T: Barbara Jean Beideman
- EE062 Designing a Low Cost Versatile Military Robot**
Andrew Thor Lingenfelter, 14, Freshman, Seneca Valley Intermediate High School, Harmony, Pennsylvania, T: Patricia Catherine Griest
- ET042 A Zero Fuel Car**
Robert Eugene Vaerewyck, 16, Sophomore, Saint Joseph High School, Natrona Heights, Pennsylvania, T: Catherine Greco
- PH053 The Effects of Rotational and Impact Forces on the Knee Ligaments**
Elizabeth Bernadette Posney, 17, Junior, Freeport Area Senior High School, Sarver, Pennsylvania, T: Donald Orlowski
- Reading, USPA05, Reading and Berks Science and Engineering Fair*
- CS026 HAL HOL: A Human-style-thinking Automated Theorem Prover for Higher Order Logic**
Matthew Adam Weidner, 16, Sophomore, Brandywine Heights High School, Mertztown, Pennsylvania, T: Kevin Dolan
- EE032 Automatic CPAP Hose & Mask Washer**
Andrew Gregory Przyjemski, 15, Freshman, Governor Mifflin Senior High School, Shillington, Pennsylvania, T: Jennifer Stinson
- York, USPA06, York County Science and Engineering Fair*
- ET029 Algal Biofuels, Phase Three: A Quantitative Analysis of Algal Lipid Extraction Techniques and an Investigation into the Effect of Nitrogen Starvation on Lipid Yields and Acetyl Coenzyme A Carboxylase Levels in *Scenedesmus* sp.**
Yanqi Chen, 17, Junior, Central York High School, York, Pennsylvania, T: Dianna Guise
- PH020 Deuterium Fusion Using Inertial Electrostatic Confinement**
Michael Joseph Kovalchick, 17, Junior, Dallastown Area High School, Dallastown, Pennsylvania, T: Mark A. Ilyes

RHODE ISLAND

Warwick, USRI50, Amgen Rhode Island Science and Engineering Fair

- CS034 FastTrack Evolution: Speeding Up Computer-Based Evolution with a New Algorithm**
Cassidy Meier Laidlaw, 15, Sophomore, Barrington High School, Barrington, Rhode Island, T: Diana Siliezar-Shields

- ME093 Cellular Pathways of Oxidation and Insulin Production in Type I Diabetic Beta Cells: What Mechanisms Does Rb2 Act through to Enhance Beta Cell Function?**
Wyatt Brody Horan, 17, Junior, The Wheeler School, Providence, Rhode Island,
T: John Wemple

SOUTH CAROLINA

Aiken, USSC01, Central Savannah River Area Science and Engineering Fair

- EE018 Medieval Maechanical Marvel: The Trebuchet**
Nathan Andrew Schmitz, 14, Freshman, Home School, Martinez, Georgia,
T: Mark Andrew Schmitz

Charleston, USSC03, Low Country Science Fair

- EV052 Using Main Group Elements to Diminish Ozone Depletion**
Johnathon Ross Long, 15, Sophomore, Timberland High School, St. Stephen,
South Carolina, T: Maja M. Fickett
- ME083 Modulation of ERK1/2 Activity in Trabecular Meshwork Cells: A Signaling Pathway that Regulates Intraocular Pressure in Glaucoma**
Mahvash Husain, 18, Senior, Academic Magnet High School, North Charleston,
South Carolina, T: Mini Narayanan

Columbia, USSC04, USC Central South Carolina Region II Science and Engineering Fair

- EE321T DRL Innovations**
Luke William Finkernagel, 17, Senior; Andrew Michael McCall, 17, Senior;
Ryan Brynn Staub, 17, Senior
Chapin High School, Chapin, South Carolina, T: Lisa Maylath

- EN043 Layer-by-Layer Self Assembly to Develop DNA Based Biomaterial for Fuel Cell Application**

Kimberly Renee McRae, 17, Junior, Spring Valley High School, Columbia,
South Carolina, T: Dale Charles Soblo

- PH062 Unidirectionalization of Particulate Distributions in Isotropic D+D -> He3+n Reactions Utilizing Differential Ion Velocities**

Benjamin Craig Bartlett, 17, Junior, Lexington High School, Lexington,
South Carolina, T: Steven E. Eisele

Florence, USSC05, Sand Hills Regional Science Fair

- ET062 The Effect of Various Oils on the Energy Content of Biodiesel**
Louise Giesey White, 16, Sophomore, Wilson High School, Florence, South Carolina,
T: Joy Goodsell

Hilton Head Island, USSC02, Sea Island Regional Science Fair

- EM045 The Effect of Feeding *Pleurotus ostratus* Meal or *Grifola frondosa* Meal on the Growth of *Litopenaeus vannamei***
Olivia Kaye Joslin, 16, Sophomore, Hilton Head Island High School, Hilton Head
Island, South Carolina, T: Nora Kathryn Weatherhead

- MI309T The Effects of Visible Light-induced Photodynamic Therapy in Conjunction with a Photoinitiator on Bacterium**

Mark Ryan Oppenheimer, 16, Junior;
Adam Brandon Oppenheimer, 18, Senior
Hilton Head Preparatory School, Hilton Head Island, South Carolina,
T: Tina Webb-Browning

Spartanburg, USSC07, Piedmont South Carolina Region III Science Fair

- BE016 Physiology of Self-Control: Does Blood Glucose Level Have an Effect on Self-Control?**
Chad Deniz Erturk, 17, Sophomore, Spartanburg Day School, Spartanburg,
South Carolina, T: Rich Keen

SOUTH DAKOTA

Aberdeen, USSD01, Northern South Dakota Science and Math Fair

- BE041 The Stroop Effect: To What Extent Will the Stroop Effect be Negated through Word Distortion among Different Gender, Age, and Brain Dominance Demographics?**
Ka Yan Lee, 17, Junior, Central High School, Aberdeen, South Dakota, T: Jan Palmer

- CB025** **The Effects of Chitosan on the Regeneration on Planarian Flatworms**
Logan Andrew Tye, 17, Senior, Aberdeen Central High School, Aberdeen, South Dakota, T: Jan Palmer
- ET312T** **Do Forward Placed Fins Affect the Stability of Unguided Rockets?**
Justen Taylor Gelling, 17, Junior; Mitchell Jon Pence, 17, Junior
Aberdeen Central High School, Aberdeen, South Dakota, T: Jan Palmer
- Brookings, USSD02, Eastern South Dakota Science and Engineering Fair*
- BE032** **Boosting the ADHD Brain: Effects of Gum Chewing and Caffeine on Cognition and Memory in Adolescents with ADHD**
Zarin Ibnat Rahman, 15, Sophomore, Brookings High School, Brookings, South Dakota, T: Julie Steen
- EE057** **Navibot: Phase V O.R.C.A.**
Matthew Joseph Hummel, 18, Senior, Florence High School, Florence, South Dakota, T: Jim Chilson
- ET038** **Salt Power Crystals**
Seth Stephen Petra, 16, Junior, Elk Point-Jefferson High School, Elk Point, South Dakota, T: Melanie Norris
- ME056** **Lifestyle and Food Consumption Differences of Adolescents in the U.S. and China and Their Impact on the Teenage Obesity Rates**
Yixuan He, 15, Junior, Brookings High School, Brookings, South Dakota, T: Julie Steen
- Mitchell, USSD04, South Central South Dakota Science and Engineering Fair*
- EE039** **Safe Scan**
Taylor Frances Kinyon, 18, Senior, Plankinton High School, Plankinton, South Dakota, T: Bob Sprang
- EM024** **Cutting Down Crude: An Ingenious Concept**
Justin Nicholas Krell, 15, Freshman, Plankinton High School, Plankinton, South Dakota, T: Bob Melvin Sprang
- EM309T** **Using Colorimetry to Monitor Nickel Contamination of Water**
Alyson Lorraine Roth, 17, Junior; Emily Elizabeth Mudder, 17, Junior
Avon High School, Avon, South Dakota, T: Paul Robert Kuhlman
- Rapid City, USSD03, High Plains Regional Science and Engineering Fair*
- BE026** **The Effects of the Placebo Effect and Caffeine on Concentration**
Bruce B. Biegler, 16, Junior, Timber Lake High School, Timber Lake, South Dakota, T: LuAnn Lindskov

TENNESSEE

- Chattanooga, USTN01, Chattanooga Regional Science and Engineering Fair*
- MA021** **Aerial Navigation: A Mathematical System of Equations Capable of Navigating an Aerial Device without the Use of Satellites**
Gerald Paul Lawlor, 16, Junior, Notre Dame High School, Chattanooga, Tennessee, T: Michelle Marie Lawlor
- ME075** **Teratogenicity of Aluminum Compounds on *Artemia franciscana***
Anjali Chandra, 14, Freshman, Girls Preparatory School, Chattanooga, Tennessee, T: Linda A. Dizer
- Clarksville, USTN06, Middle Tennessee Science and Engineering Fair*
- MI045** **Human Hemoglobin Polymorphisms Affect Recognition by *S. aureus* Receptor IsdB**
Jiahe Gu, 18, Senior, Martin Luther King, Jr. Magnet High School, Nashville, Tennessee, T: Chand Desai
- PH037** **The Development of Low Voltage, Solid-State Plasma Focus Devices for Portable Radiation Sources**
Adam Joseph Bowman, 16, Junior, Montgomery Bell Academy, Nashville, Tennessee, T: James E. Dickens
- Cookeville, USTN02, Cumberland Plateau Regional Science and Engineering Fair*
- ET056** **Animal Power: Which Type of Animal Manure Will Produce the Most Methane?**
Erin McKenna Cantrell-Pryor, 17, Junior, DeKalb County High School, Smithville, Tennessee, T: Lori Ann Pryor

- MI047** *In vitro* Study of the Effect of *Armoracia rusticana* as a Bacteriostatic Agent against *Staphylococcus aureus* and Various Unknown Bacteria Found on Sushi
Thomas Xavier Brown, 17, Senior, Cookeville High School, Cookeville, Tennessee, T: Sarah Harris
Jackson, USTN03, West Tennessee Regional Science and Engineering Fair
- AS037** Climate Effects on Juvenile and Adult Salamander Population Densities, a Four-Year Study
Nathaniel Wade Hubbs, 17, Senior, Camden Central High School, Camden, Tennessee, T: Karen Gauthier
Knoxville, USTN04, Southern Appalachian Science and Engineering Fair
- CB303T** Mysteries of the Protein Universe: Predicting Functional Roles of Proteins
Kenneth Timothy Shiao, 18, Senior; Tina Quynh-Huong Doan, 17, Senior; Jerry Feng, 17, Senior
Oak Ridge High School, Oak Ridge, Tennessee, T: Jessica Williams
- EA303T** Characterizing the Elements of Earth's Radiative Budget: Applying Uncertainty Quantification to Climate Models
Madison Ann Chakoumakos, 17, Senior; Zibo Zhuang, 17, Senior
Oak Ridge High School, Oak Ridge, Tennessee, T: Jessica Williams
- EE322T** Reinventing the Wheel: The Omnidirectional Track System
Andrew Kenneth Messing, 17, Senior; Philip Christian Keller, 17, Senior
Hardin Valley Academy, Knoxville, Tennessee, T: John Tilson
Memphis, USTN05, Memphis-Shelby County Science and Engineering Fair
- BIO36** Role of Cytochrome P450 1B1 in the Renin-Angiotensin System
Jonathan Louie Lin, 17, Senior, Germantown High School, Germantown, Tennessee, T: Jenny Kiesel
- TEXAS**
Austin, USTX13, Austin Energy Regional Science Festival
- CH008** A Novel Microscale Spectrophotometric Assay to Monitor Hydrogen Evolution for the Characterization of Catalysts
Matthew Jay Goodman, 16, Junior, Liberal Arts & Science Academy, Austin, Texas, T: Amy Moore
- EV009** Determination of Rayleigh Scattering Measurements for Global Warming Counteracting Atmospheric Aerosols R-14, HFC-125, HFC-216, HFC-227ea and Halocarbon C-318
Serena Zadoo, 18, Senior, L.C. Anderson High School, Austin, Texas, T: Jonathan E. Thompson
- ME302T** Carbonic Anhydrase IX Inhibitors: Discovery of Novel Therapeutic Cancer Agents
Vanna Nga Hovanky, 16, Sophomore; Keyur Mayur Mehta, 17, Junior
James Bowie High School, Austin, Texas, T: Hope Lozano
Westlake High School, Austin, Texas, T: Denise Demartino
- PH005** Photometric and Spectroscopic Analysis for the Determination of Physical Parameters of an Eclipsing Binary Star System
Piper Michelle Reid, 15, Sophomore, Dripping Springs High School, Dripping Springs, Texas, T: Kimberly Gay Reid
- PS007** Interactions between *Piriformospora indica* and *Glomus intraradices* on Maize
Michael Allen Mann, 18, Senior, Westwood High School, Austin, Texas, T: Michele Acker
Brownsville, USTX04, Rio Grande Valley Regional Science and Engineering Fair
- CS054** Algorithmic Prediction of Particle Size Distribution
Richard Kim, 16, Junior, The Science Academy of South Texas, Mercedes, TX, Texas, T: David Wood
- EN316T** C.S.I.: Construction Safety Innovation
Edwin Aziz Hurtado, 17, Senior; Oscar Garcia, 18, Senior
James Pace High School, Brownsville, Texas, T: Dora Lopez
- PS018** How Do Drought and Salinity Affect Lemon Trees in South Texas?
Elizabeth Sigala, 17, Junior, Weslaco High School, Weslaco, Texas, T: Juan Carlos Melgar

Dallas, USTX01, Beal Bank Dallas Regional Science and Engineering Fair

BE004 The Effect of the Human Learning Algorithm on Test Performance
Sagar Deepak Parikh, 18, Senior, Plano Senior High School, Plano, Texas,
T: Karen Shepherd

CH301T The Development of Novel Sutures that Store and Deliver Nitric Oxide for Wound Healing

Kevin Anh Nguyen, 17, Junior; Punya Chittajallu, 16, Junior
Plano East Senior High School, Plano, Texas, T: Julie Baker

CS005 Programming for the Rest of Us

Elisabeth Anne Ashmore, 16, Sophomore, R.C. Clark High School, Plano, Texas,
T: Cathy Ann Bambenek

EA003 Using Resonance Frequency to Predict and Prevent Structural Failure

Rohan Thakur, 17, Junior, Plano East Senior High School, Plano, Texas,
T: Julie Baker

EE008 Don't Fear - It's Secure II: Integration of NFC Devices into Secured RFID Networks

Shayan Jayant Mohanty, 18, Senior, Plano Senior High School, Plano, Texas,
T: Karen Shepherd

EM005 Year Three: Determining the Most Effective Radon-Resistant Home Features

Rachel Ann Hodge, 17, Junior, Plano Senior High School, Plano, Texas, T: Kim Wolff

ME006 Mitochondria & Alzheimer's: Modulating the GCLC Gene to Mitigate Redox Stress and ETC Complex Dysfunction

Lisa P. Michaels, 16, Sophomore, Shepton High School, Plano, Texas,
T: Deanna Shea

ME007 All Clear of Nuclear? The Use of Antioxidants in Combating the Biological Effects of Nuclear Radiation

Ahneesh Jayant Mohanty, 15, Freshman, R.C. Clark High School, Plano, Texas,
T: Cathy Ann Bambenek

El Paso, USTX02, Sun Country Science Fair

BE039 Differential Effects of Caffeine in Working and Reference Memory on an Alzheimer's Model

Leanna Lorraine Rivera, 15, Sophomore, Clint High School, Clint, Texas,
T: Kimberly Williams

EN309T Dye Sensitized Solar Cell: A Comparison of Different Dyes

Abraham Galindo, 18, Senior; Yunfei Liu, 16, Sophomore
Americas High School, El Paso, Texas, T: Sandra Blough

Fort Worth, USTX03, Fort Worth Regional Science and Engineering Fair

BI013 Novel Polymeric Nanoparticles as Carrier for Curcumin in Chemotherapy of Neuroblastoma

Sulabh S. Singhal, 14, Freshman, Arlington High School, Arlington, Texas,
T: Jamboor K. Vishwanatha

EM023 BAILEY: Improving BTEX Detection Using Membrane-Introduction Mass Spectrometry (MIMS)

Jianing Jenny He, 17, Junior, Texas Academy of Mathematics and Science, Denton,
Texas, T: Guido Fridolin Verbeck, IV

EV024 "Ironing" Out Global Warming

Mariah Suzanne Rendeiro, 16, Junior, Granbury High School, Granbury, Texas,
T: Tanner Fain

MA016 Attainability Analysis on the Chromatic Numbers of Functigraphs

George Qi, 17, Junior, Texas Academy of Mathematics and Science, Denton, Texas,
T: Richard Sinclair

Houston, USTX05, Science Engineering Fair of Houston

BE017 Utilization of Audio and Visual Prompting to Aid Dementia Patients with Daily Tasks

Divya Koyyalagunta, 16, Sophomore, Clear Lake High School, Houston, Texas,
T: Brenda Pinchbeck

CH010 Carbon Nanotube Synthesis & Characterization, II

Neerja Aggarwal, 18, Senior, L.V. Hightower High School, Missouri City, Texas,
T: John Ramon

- EE015 An Alternative Optical Analyzer II**
 # Nicholas Andrew McCoy, 17, Junior, Academy of Science and Technology, The Woodlands, Texas, T: Susan M. Caffery
- EM025 Plastic Recycling: Sink or Swim?**
 Nicholas Carl Treuil, 16, Junior, Clear Brook High School, Friendswood, Texas, T: Tina Harrell
- ET304T A Study of Solar Paint**
 Allison Rose Martin, 16, Junior; Toluwani Temiloluwa Soares, 16, Junior; Shyamsunder Raghavan, 15, Junior
 Academy of Science and Technology, The Woodlands, Texas, T: Larry A. Walker
 The Academy of Science and Technology, The Woodlands, Texas
- ME015 How Inflammation Is Linked to Prostate Cancer (II): Novel Mechanism and Solution Targeting Cancer Stem Cells**
 Diana T. Ruan, 15, Junior, Bellaire High School, Bellaire, Texas, T: Anna Loonam
- PH012 Orbit Analysis of Asteroid 68348**
 Ellen Zhou, 17, Senior, Clear Brook High School, Friendswood, Texas, T: Tina Harrell
- Kilgore, USTX06, East Texas Regional Science Fair*
- AS042 The Great Hog Bait**
 Jalen Kiraly Henson, 17, Senior, Gilmer High School, Gilmer, Texas, T: Nedra Lynn Henson
- Laredo, USTX07, United Independent School District Regional Science Fair*
- MI018 Determination of Biological Activities in *Acacia rigidula***
 # Marcus Amiel Agno Ynalvez, 18, Senior, J.B. Alexander High School, Laredo, Texas, T: Rebecca Lopez
- Laredo, USTX14, Laredo Independent School District Science Fair*
- ME033 The Biological Effect of Mobile Phone Radiation on the Reproductive Capacity of *Drosophila melanogaster***
 Alyssa Benavides, 17, Junior, J.W. Nixon High School, Laredo, Texas, T: Eduardo Ernesto Lopez
- Lubbock, USTX08, South Plains Regional Science and Engineering Fair*
- EV038 Persistent Bioaccumulative and Toxic Contaminants**
 Nickolas Aubrey Hines, 16, Sophomore, Shallowater High School, Shallowater, Texas, T: Lynne Brown
- MI040 Comparison of the Transformation Efficiency of Common Strains vs. Environmental Wild Strains of *E. coli* Using Heat Shock and Electroporation**
 Jordan Lynn Putman, 17, Senior, Lubbock-Cooper High School, Lubbock, Texas, T: Kim Lynn Putman
- Odessa, USTX09, Permian Basin Regional Science Fair*
- CS068 Creating a Computer Interface Using Electroencephalography**
 Damon Shane Myers, 16, Junior, Odessa Senior High School, Odessa, Texas, T: Cheri Whalen
- EM321T Shark Infected Waters: The Effect of Sharkskin Riblets and Juliflorine on Biofilm in Water Pipes**
 Keely Shaylyn White, 18, Senior; Mahaily Elizabeth Rogers, 17, Senior
 Andrews High School, Andrews, Texas, T: Vickie J. Gardner
- San Antonio, USTX50, ExxonMobil Texas Science and Engineering Fair*
- BE045 The Effects of Organic Labeling on Taste Perception**
 Sydney Grace Hutton, 14, Freshman, James Bowie High School, Austin, Texas, Texas, T: Lorrie Ayers
- BI034 Inhibition of Xanthine Oxidase Activity by Xanthine Analogue Caffeine**
 Alan Flores, 18, Junior, Weslaco East High School, Weslaco, Texas, T: Arnulfo Cruz
- CH039 Determining the Quantum Limit of Palladium and Gold Nanometallic Supercatalyst by Kinetic Method**
 # Mai-Anh Nguyen Vu, 16, Senior, McNeil High School, Austin, Texas, T: Trista Fussner
- EN318T Fabrication of Hollow Polymer Nanofiber Membranes via Co-axial Electrospinning for Water Purification**
 Aileen Yee-Ru Huang, 17, Junior; Renee Beach, 17, Junior
 Plano Senior High School, Plano, Texas, T: Karen Shepherd

- EV050 Home-Based Arsenic Bio-sand Water Filter Using Nanotechnology**
Thabit Farrukh Pulak, 16, Sophomore, Richardson High School, Richardson, Texas,
T: Amy Hammer
- MA036 Lorenz & Modular Flows Are Knot Similar**
Anita Kummamuri Rao, 15, Sophomore, Glenda Dawson High School, Pearland,
Texas, T: Nathan Lyson
- ME076 Mixing Drinks with Medications**
Tristan Lee Lim, 15, Sophomore, DeBaKey High School for Health Professions,
Houston, Texas, T: Dina Adam
- PH059 The Aerodynamics of Ping Pong: The Magnus Effect**
Aly A. Ashraf, 15, Freshman, Coppell High School, Coppell, Texas,
T: Sunny Richardson
- San Antonio, USTX11, Alamo Regional Science and Engineering Fair*
- CH013 The Effectiveness of HSCAS to Bind Aflatoxin in DDGS in a Simulated Corn-to-Ethanol Process**
Valerie Christen Briell, 18, Senior, Seguin High School, Seguin, Texas,
T: Kimberly Shupe
- CS011 High-Speed Cryptography: FPGAs versus CPUs**
William Yager, 16, Junior, Keystone School, San Antonio, Texas, T: Jason Nydegger
- EM010 Duckweed's Salty: A Third Year Study of Duckweed and a Novel Approach to Desalination**
Sharjeel Ahmed Syed, 17, Senior, The National Society of Black Engineers,
Converse, Texas, T: Karl Thompson
- EM011 Pop Goes the Diesel: A Linoleic Acid/R. rhodochrous Mixture as a Bioremediation Agent of Diesel Contaminants in Contaminants in Saltwater and Freshwater Environments**
Morgan Walker Sinko, 17, Senior, John Jay Science and Engineering Academy,
San Antonio, Texas, T: Sunni Dickerson
- ME020 Curcumin as a Candidate Therapy for HIV-1 Infection, Year II**
Anand Shahi Ahuja, 15, Freshman, Keystone School, San Antonio, Texas,
T: Jason Nydegger
- ME021 Targeting PELP1 Signaling in Glioblastomas**
Peyton Elizabeth Bluhm, 17, Senior, Northside Health Careers High School,
San Antonio, Texas, T: Daniel Bump
- PS302T The Three Sisters**
Jenna Lee Lobisser, 16, Sophomore; Kali Nicole Perez, 17, Sophomore
John Jay Science and Engineering Academy, San Antonio, Texas,
T: Mike James Scully
- Waco, USTX12, Central Texas Science and Engineering Fair*
- BE033 A Study of the Emerging Trends in Admissions to Rural Hospitals in Texas**
Iyan Younus, 17, Senior, C.H. Yoe High School, Cameron, Texas, T: Toni Lafferty
- MI006 The Effects of Mycoremediation on Inorganic Materials**
Devin Cole Buchanan, 17, Senior, C.H. Yoe High School, Cameron, Texas,
T: Toni Lafferty
- UTAH**
- Cedar City, USUT02, Southern Utah Science and Engineering Fair*
- CB022 Analysis of Thermal Pool Bacterial Mat Communities**
Ethan Knight Brown, 17, Junior, Success Academy, Cedar City, Utah,
T: Ben Kaufman
- EE045 Micro-Turbine Angle Controller**
Taylor James Boardman, 15, Freshman, Delta High School, Delta, Utah,
T: Austin Day
- EV039 SODIS Efficacy in a Cold-Weather Climate**
Kaitlyn Child, 18, Senior, Canyon View High School, Cedar City, Utah,
T: Ben Kaufman
- ME057 Mind Over Muscle**
Jessica Danielle Tobin, 17, Junior, Success Academy, Cedar City, Utah,
T: Charmain Brammer

- Layton, USUT01, North Davis Area Science and Engineering Fair*
- EE049 Determining the Effects of Conformal Anodes**
Skyler Douglas Wisner, 18, Senior, Viewmont High School, Bountiful, Utah,
T: Nancee Mcgarry Ott
- ET033 Hygiene Energy Rocket Optimized III (HERO-III)**
Erika Nicole Mueller, 14, Freshman, Syracuse Junior High, Syracuse, Utah,
T: Khurshid Zaidi
- ET311T The Passive Acquisition of a Viable Source of Bio-Electricity from the Electrical Reservoir Contained in Wastewater**
Jed Donald Grow, 17, Junior;
Andrew Quinn Ross, 17, Junior
Clearfield High School, Clearfield, Utah, T: Bruce Staley
- Logan, USUT06, Cache County Science Fair*
- AS006 Investigation *Rhacodactylus gecko* Adhesion Using Computer Image Analysis**
Holly Jeanne Flann, 17, Junior, InTech Collegiate High School, North Logan, Utah,
T: Stephanie Kawamura
- MI303T The Effects of Zinc Oxide Nanoparticles on Phenazine Production in *Pseudomonas chlororaphis* O6**
Jean-Luc Watson, 16, Junior; Tommy Fang, 16, Junior
Logan High School, Logan, Utah, T: Brent McMillan
- Ogden, USUT50, Harold W. & Helen M. Ritchey Science and Engineering Fair of Utah*
- CS042 Graphical Sentence Modeling for Computerized Interpretation of Natural Language**
Sheyne Tyler Anderson, 17, Junior, DaVinci Academy of Science and the Arts,
Ogden, Utah, T: Deborah Neal
- EE047 Quaternary Computing**
William Randall Shipley, 18, Senior, Bear River High School, Garland, Utah,
T: Sanford MacSparren
- PH042 N-Body Computational Simulations of Planetesimal Agglomeration in Early System Gas Giant Formation**
Ian A Sohl, 17, Senior, DaVinci Academy of Science and the Arts, Ogden, Utah,
T: Deborah Neal
- Ogden, USUT03, Weber Area Science and Engineering Fair*
- BE024 What Are the Correlational Effects between Teaching Style, Hemispheric Dominance and Students Academic Performance?**
Tessa Ray Carver, 16, Sophomore, Weber High School, Pleasant View, Utah,
T: Darin Ray Carver
- BE025 The Effects of the Majority's Opinion on Minority's Decision in Relation to Grade Level**
Elias Bradley Johnson, 16, Junior, Weber High School, Pleasant View, Utah,
T: Steven Thorpe
- CH026 Arsenic in Apple Juice**
Joshua Louis Hernandez, 18, Senior, Weber High School, Pleasant View, Utah,
T: Lareen Renae Radle
- EE048 Hiking Boot Battery Charger: Using Faraday Inductor to Generate Green Energy While Walking**
Braxton Jacob Harris, 16, Junior, Weber High School, Pleasant View, Utah,
T: Andrea Guffey Harris
- ET031 An Investigation of Photovoltaic Enhancement Methods, Phase III**
Lindsey Johnson, 16, Junior, Weber High School, Pleasant View, Utah,
T: Lareen Radle
- Provo, USUT04, Central Utah Science and Engineering Fair*
- CS070 Multitouch Table Interface**
Jason Douglas Crandall, 14, Freshman, Summit Academy High School, Bluffdale, Utah, T: Tyler Jensen
- EM050 Applications of Multiwalled Carbon Nanotubes in Filtering Benzene**
Kayson Levi Conlin, 18, Senior, Wasatch High School, Heber, Utah, T: Lance Gritton
- ET059 Wind Lens Innovation: Maximizing Wind Turbine Efficiency**
Justin Ngo, 17, Senior, Copper Hills High School, West Jordan, Utah,

- T: Matthew Lund
- MA041 The Art of Crafting Functions: Diagramming Math through Crochet**
Elise Gabriel Wright, 18, Senior, Wasatch High School, Heber City, Utah,
T: Lance Gritton
- ME090 Anchors Away, Part Two: A Continuation Study of Metallic vs. Biodegradable Suture Anchors**
Connor Lewis Hines, 15, Sophomore, Wasatch High School, Heber City, Utah,
T: Lance Gritton
- Salt Lake City, USUT05, Salt Lake Valley Science and Engineering Fair*
- AS309T An Isotopic Analysis of Anthropogenic Food Sources in Raptor Diets Using Stable Carbon Isotope Ratios and Stable Nitrogen Isotope Ratios**
Christian Lawrence Seipp, 17, Junior; Hannah Harper Hanson, 17, Junior
Salt Lake Center for Science Education, Salt Lake City, Utah, T: Shea Wickleson
- BE052 Quantifying Implicit Stereotypes through the Cognition of Ambiguous Speech Associated with Visual Meanings**
Nicholas Joseph Corpuz, 17, Senior, Academy for Math Engineering and Science, Murray, Utah, T: Ashley Budd
- CB051 A Novel Assay to Screen for Anti-Cancer Agents Targeting Receptor Tyrosine Kinase RON**
Andrea Maren Evans, 17, Junior, Hillcrest High School, Midvale, Utah,
T: Jeffrey Salter
- ET315T Microfluidic Biodiesel Effectuator**
Andy Law, 18, Senior; David McKay Larkin, 18, Senior
West High School, Salt Lake City, Utah, T: Colby J. Wilson
- PS035 Algae Biodiesel**
Zerina Ocanovic, 14, Freshman, Salt Lake Center for Science Education,
Salt Lake City, Utah, T: Shea Wickleson

VERMONT

Northfield, USVT50, Vermont State Science and Mathematics Fair

- EM041 The Effectiveness and Viability of Arsenic Bioaccumulation**
Raihan Kabir, 15, Sophomore, South Burlington High School, South Burlington, Vermont, T: Curtis Belton
- ET046 Airfoil Surface Textures**
Winthrop Irving Townsend, 18, Senior, Windsor High School, Windsor, Vermont,
T: Jennifer Sarah Townsend
- MI052 Third World Methods of Filtering *E. coli* Bacteria from Drinking Water**
Kellie Elizabeth French, 18, Senior, Windsor High School, Windsor, Vermont,
T: Jennifer Sarah Townsend

VIRGINIA

Arlington, USVA01, Northern Virginia Science and Engineering Fair

- AS009 The Effects of High Fructose Corn Syrup and Monosodium Glutamate on the Heart Rate of *Daphnia magna***
Margaret Donovan Doyle, 15, Freshman, Yorktown High School, Arlington, Virginia,
T: Curt Dorman
- EV303T Assessing Oil Spill Cleanup: The Ecological Ramifications of Chemical Treatments**
Andrea Elise Green, 16, Junior;
Catherine Rose Mitchell, 17, Junior
H-B Woodlawn Secondary Program, Arlington, Virginia, T: William Van Evera
- Charlottesville, USVA02, Virginia Piedmont Regional Science Fair*
- EN305T Validating the SmartBandage: Computer Modeling the Diagnostic Potential of an Oxygen-Sensing Nanoparticle-Embedded Polymer**
Emily Jane Keeley, 17, Junior; Charlotte Nina Keeley, 17, Junior
Charlottesville High School, Charlottesville, Virginia, T: Sherry Hodges
- EV302T The Effects of Silver Nitrate and Silver Nanoparticle Impregnated Ceramic Disks on Water Purification**

- Charles Jacob Perry, 17, Freshman; Matthew Yukio Smith, 16, Junior
 Albemarle High School, Charlottesville, Virginia, T: Jeff Prillaman
Fairfax, USVA03, Fairfax County Regional Science and Engineering Fair
- CB018 Stem Cell Characterization of Cancerous and Non-Cancerous *Mus musculus* Liver Cells at 50% and 100% Confluency**
 Cynthia Li, 17, Senior, Thomas Jefferson High School for Science and Technology,
 Alexandria, Virginia, T: Andrea Cobb
- CB301T Discovery of a Mechanism for the Glucocorticoid Chemotherapy Resistance in Cancer**
 # Benjamin Tyler Cobb, 18, Senior;
 # John Conor Moran, 18, Senior
 Chantilly High School, Chantilly, Virginia, T: Andrea Karen Cobb
- EE316T Research and Development of Super Conducting Magnetic Energy Storage (SMES) Systems**
 # Steven Donald Gillen, 18, Senior; Devon Mitchel Papanicolas, 16, Sophomore
 Fairfax High School, Fairfax, Virginia, T: Jeremy Owens
- EM031 A Novel Apparatus for Catalytic Oxidation of Glycerol Produced during Biodiesel Synthesis**
 Yohan Alexander Sumathipala, 17, Senior, Thomas Jefferson High School for
 Science and Technology, Alexandria, Virginia, T: James Jarvis
- EM032 Fairfax County Land Use Classification System Using High Resolution Aerial Imagery**
 Gina Liqi Li, 16, Junior, Langley High School, McLean, Virginia, T: Robert Culbertson
- ET027 A Novel Method to Increase the Lipid Yield of *Chlorella vulgaris*: An Exploration of the Role of Cofactors on the Inhibition of Starch Synthase (E.C. 2.4.1.21)**
 # Arrush Choudhary, 16, Junior, Chantilly High School, Chantilly, Virginia,
 T: Ina Koppel
- ET308T Au- and Pd-Nanoparticle Catalysts in Novel Nafion Composites for PEM Fuel Cell Power Enhancement**
 Matthew Rudin, 17, Senior; Hansen Qian, 17, Senior; Yon Kyu Jang, 19, Senior
 Half Hollow Hills High School West, Dix Hills, New York, T: Brian Kennedy
 Saratoga High School, Saratoga, California
 Thomas Jefferson High School for Science and Technology, Alexandria, Virginia
- ME043 Improving Cancer Therapy: A Novel Therapeutic Treatment Utilizing Cordycepin Synergy to Decrease Adverse Treatment Effects**
 # Jason Shao Cui, 16, Sophomore, Langley High School, McLean, Virginia,
 T: Michele D'Allesandro
- ME044 The Effect of *Asafoetida* and *Salvia hispanica* with Carbon Nanotube on the Growth of MCF-7, MDA-MB 231, and HT29 Human Cancer Cell Lines**
 Soniya Pateriya, 15, Freshman, Chantilly High School, Chantilly, Virginia,
 T: Christine Gamache
- ME304T Using Zinc to Diagnose and Treat Pancreatic Cancer**
 Kelvin Niu, 16, Junior; Daniel Park, 17, Senior
 Langley High School, McLean, Virginia, T: Claudia Lemus
 Annandale High School, Annandale, Virginia
- Harrisonburg, USVA04, Shenandoah Valley Regional Science Fair*
- AS036 The Effect of Pesticides on the Learning Capabilities of Planaria**
 ## Christina Yah-yun Lee, 16, Junior, Sherando High School, Stephens City, Virginia,
 T: Susan Saylor
- MI007 The Efficacy of Mouthwash on the Bacteria *Staphylococcus epidermidis* and *Streptococcus pyogenes***
 Kasey Montgomery Johnson, 16, Junior, Sherando High School, Stephens City,
 Virginia, T: Tracy Sawyer
- Lynchburg, USVA05, Central Virginia Regional Science Fair*
- EE036 The Effect of Fractal Design on Antenna Capability**
 Stuart James Robertson, 18, Senior, Staunton River High School/Roanoke Valley
 Governor's School, Moneta, Virginia, T: Douglas Glenn Divers
- MI016 The Effect of Saline Solutions on Evidence of *Pseudomonas aeruginosa* and**

- Pseudomonas fluorescens* Biofilms on Glass Slides and Stainless Steel**
Jeffery Reaves Seals, 16, Junior, Central Virginia Governor's School for Science and Technology, Lynchburg, Virginia, T: Cheryl Lindeman
Manassas, USVA06, Prince William-Manassas Regional Science Fair
- MI043 Can Haloarchaea Replace Potassium for Cesium?**
Ha Young Shin, 18, Senior, Governor's School at Innovation Park, Manassas, Virginia, T: Karen Elizabeth Dalfrey
Norfolk, USVA09, Tidewater Science and Engineering Fair
- CS031 IP Security: Improving the Border Gateway Protocol**
Andrew Luo, 15, Sophomore, York High School, Yorktown, Virginia, T: Lisa Field
- ME036 Identification of IKB Kinase Beta Inhibitors through Structure Based Virtual Screening**
Radha Madhuri Venkatesan, 15, Sophomore, Grafton High School, Yorktown, Virginia, T: Gary Long
Norfolk, USVA50, Virginia State Science and Engineering Fair
- AS049 The Ability of Trained Bees to Detect Volatile Substances**
Nicolena Teal Stiles, 16, Junior, Roanoke Valley Governor's School, Roanoke, Virginia, T: Steve Smith
- PH063 Universal Photon and Radioactive Beta Particle Detection: Multifunctionality Enabled by Wavefunction Engineering, Photomodulated Electron Tunneling, and Quantum Confinement of Charge Carrier Motion in Nanowires**

Saumil Bandyopadhyay, 17, Junior, Maggie L. Walker Governor's School for Government and International Studies, Richmond, Virginia, T: Jeremy Clark
Purcellville, USVA07, Loudoun County Science and Engineering Fair
- BI015 The Effect of Tyramine on Amyloid-Beta Plaque Levels in *Caenorhabditis elegans***
Katherine Rita Kamis, 18, Senior, Loudoun County Academy of Science, Sterling, Virginia, T: Julie Sohl
- EM027 Investigating the Potential for *Cupriavidus metallidurans* and *Delftia acidovorans* as Tools for Heavy Metal Bioremediation**
Zachary Christopher Ballinger, 17, Senior, Loudoun County Academy of Science, Sterling, Virginia, T: Julie Sohl
- ME037 The Combined Effect of Curcumin and Paclitaxel on a Model of Idiopathic Pulmonary Fibrosis**
Erin Lynn Fischer, 18, Senior, Loudoun County Academy of Science, Sterling, Virginia, T: Jackie Curley
- PH033 Analysis of Photon-Mediated Entanglement between Distinguishable Matter Qubits**
Ari Misha Dyckovsky, 18, Senior, Loudoun County Academy of Science, Sterling, Virginia, T: Jackie Curley
Radford, USVA10, Blue Ridge Highlands Regional Science Fair
- CS010 Early Detection of Skin Cancer: Autonomous Detection of Melanoma through Computer Vision**
Kevin Kabaria, 17, Junior, Richlands High School, Richlands, Virginia, T: Melissa Addison
- EE302T Alternative Kayaks: Design, Development, and Documentation**
Jeremy Michael Kuhn, 18, Senior; Jiyun Nancy Chang, 18, Senior
Southwest Virginia Governor's School, Pulaski, Virginia, T: Kenneth Abel
Richmond, USVA11, Metro Richmond Science Fair
- EN022 A New Frontier in Biomedical Engineering: *Ex-situ* Bioengineering of Hepato- & Neuro- Celloidosomes®**

Samantha Marie Marquez, 16, Sophomore, Maggie L. Walker Governor's School for Government and International Studies, Richmond, Virginia, T: Jeremy Clark
- MA032 On Convexity-Preserving Set Structures**

Jeffery Brunson Holste, 17, Senior, Mills E. Godwin High School, Henrico, Virginia, T: Daniel Wallace
Roanoke, USVA08, Western Virginia Regional Science Fair
- EM020 Tomato Induced DDT Disappearance**
William John O'Brochta, 18, Senior, Roanoke Valley Governor's School, Roanoke, Virginia, T: Sherry A. Otruba

- ME032 Do Novel Protein Kinase C Isoforms Mediate Lipid-Induced Beta Cell Dysfunction?**
Sachith Gullapalli, 15, Junior, Roanoke Valley Governor's School, Roanoke, Virginia,
T: Cindy Bohland
- WASHINGTON**
Bellevue, USWA03, Central Sound Regional Science & Engineering Fair
- BE019 Working Memory Capacity and Its Correlation to Social Deficits Found in the Autism Spectrum**
Colton Michael Green, 16, Sophomore, Cedarcrest High School, Duvall, Washington,
T: Kellie Halverson
- Bremerton, USWA50, Washington State Science and Engineering Fair*
- EE067 Can You Hear Me Now?**
Sampath Sai Duddu, 15, Sophomore, Capital High School, Olympia, Washington,
T: Suresh Chunduru
- ET049 Effect of Chemical Induction on the Direct Conversion of Cellulose to Aviation Biofuels by Fungi *Gliocladium* Species**
Sathvik Ramanar, 15, Sophomore, Hanford High School, Richland, Washington,
T: Brian Palmer
- MA312T Optimal Allocation of Global Constrained Resources Using the Hyperbolic Voronoi Diagram**
Caroline Jacqueline Shouraboura, 15, Sophomore; Shanthi Shanmugam, 17, Senior
Forest Ridge School of the Sacred Heart, Bellevue, Washington, T: John Fenoli
- Kennewick, USWA01, Mid-Columbia Regional Science and Engineering Fair*
- MI021 The Antimicrobial Effectiveness of Silane Based Nanoparticle Antimicrobials on Treated Surfaces**
Katherine Ann Marsh, 16, Sophomore, Richland High School, Richland, Washington,
T: Brent Potter
- PS019 The Development of a Novel Sodium Polyacrylate Seed Treatment #**
Kira Elizabeth Powell, 17, Senior, Odessa High School, Odessa, Washington,
T: Jeff Wehr
- Tacoma, USWA02, South Sound Regional Science Fair*
- AS035 Identifying Mutations within a Candidate Gene on Chromosome 6 and Evaluating Their Associations with the Entropion Phenotype in Sheep**
Ashwin Ram Prakash, 16, Junior, Curtis Senior High School, University Place, Washington
- EN023 Construction and Utilization of a Two-Space Mechanical Lung Model for the Estimation of Airway Resistance in Infants with Pulmonary Diseases**
Veena Iyengar, 16, Junior, Bellarmine Preparatory School, Tacoma, Washington,
T: Ron Nilsen
- ET037 The Revolution of Supersonic Technology: Implementing Dihedral Winglets for Performance Optimization in Supersonic Flow**
Sumukh S. Bharadwaj, 16, Junior, Capital High School, Olympia, Washington,
T: Shannon Strozzyk
- Vancouver, USWA04, Southwest Washington Science and Engineering Fair*
- ME017 The Effect of Estrogen and Progesterone on Female Knee Laxity**
Grace Elizabeth Mammarella, 17, Senior, Columbia River High School, Vancouver, Washington, T: Kelly Cameron
- WEST VIRGINIA**
Fairmont, USWV50, West Virginia State Science and Engineering Fair
- EV062 Identification, Interpretation and Analysis of Particulate-Mediated Manganese in Mid-Ohio Valley Soils**
Peter Scott Welcker, 15, Sophomore, Parkersburg South High School, Parkersburg, West Virginia, T: Michael Lutz
- Keyser, USWV01, West Virginia Eastern Panhandle Regional High School Science Fair*
- BE018 Shaping Your Thoughts**
Hana Kim Ulman, 15, Freshman, Hedgesville High School, Hedgesville, West Virginia, T: Andrew Ferber

- CB007** **Kombucha Tea: The Effects of a Cure-All Tea on Transcriptional Slippage**
Dahyana Arias, 18, Senior, Musselman High School, Inwood, West Virginia,
T: Pete Padula
- EA005** **Analysis of the Components of the Swirl Ratio and Their Impact
on the Structure of a Tornadoic Vortex**
Casey Richard Densmore, 15, Sophomore, Musselman High School, Inwood,
West Virginia, T: Brenda G. Waterworth
*West Liberty, USWV03, West Liberty State University Regional Science and
Engineering Fair*
- AS022** **We Come in Peace! *Orconectes rusticus* Displays Minimally Aggressive
Behaviors When Competing with Appalachian Crayfish in Mesocosms**
Vincent Jacob OLeary, 16, Junior, Wheeling Central Catholic High School, Wheeling,
West Virginia, T: Theresa Fultz
- WISCONSIN**
Glendale, USWI02, Nicolet Science and Engineering Fair
- CS030** **Prisoner's Dilemma in Dynamic Networks**
Angela Chen, 16, Sophomore, Nicolet High School, Glendale, Wisconsin,
T: Eliot Scheuer
- MI020** **Antibiotic Discovery through Selective Cultivation
of Subtropical Environmental Samples**
Nancy Gao, 16, Junior, Nicolet High School, Glendale, Wisconsin, T: Eliot Scheuer
- MI029** **Determining the Antibacterial Active Ingredient of the Oregano Essential Oil**
Emily Galan Murphy, 16, Sophomore, Nicolet High School, Glendale, Wisconsin,
T: Gary Stresman
Madison, USWI04, Capital Science and Engineering Fair
- EN032** **Heterologous Expression of Olefin Synthase Gene in *Escherichia coli***
Suman Gunasekaran, 17, Freshman, James Madison Memorial Senior High School,
Madison, Wisconsin, T: Brian F. Pflieger
- MI019** **Quantitative Polymerase Chain Reaction of Temporal Expression of Glucose
Oxidase in *Apis mellifera***
Corinne Marie Demler, 17, Junior, Pecatonica Area High School, Blanchardville,
Wisconsin
Milwaukee, USWI50, Badger State Science and Engineering Fair
- BE022** **The Effects of Multi-Talker Background Noise on
Overt Spontaneous Speech Production**
Josh Feng, 16, Junior, Sheboygan North High School, Sheboygan, Wisconsin,
T: Mary Searing
- EN002** **Designing and Creating a Modular Concussion Detection and Alert System**
Ashton Rhys Wackym, 18, Senior, University School of Milwaukee, Milwaukee,
Wisconsin, T: Robert Juranitch
- MA020** **Deriving Rapidly-Converging Formulas for the GAMMA Function**
Bertrand Andrew Stone, 14, Sophomore, Nicolet High School, Glendale, Wisconsin,
T: Eliot Scheuer
Milwaukee, USWI03, University School of Milwaukee — Science Fair
- BE002** **Can Wii Teach Surgery? Do Videogames and Surgery Skills Correlate?**
Megan V. Waples, 15, Sophomore, University School of Milwaukee, Milwaukee,
Wisconsin, T: Robert Juranitch
- EM002** **Increasing the Efficiency of Petrophilic Microbes**
Kern Khanna, 16, Junior, University School of Milwaukee, Milwaukee, Wisconsin,
T: Robert Juranitch
- ME072** **Identification of the Best Method for Storing Autopsy Blood
for DNA Forensic Investigation**
Dominique Helen Tlomak, 15, Sophomore, University School of Milwaukee,
Milwaukee, Wisconsin, T: Marja Konkol
Sheboygan, USWI01, Lakeland Science and Engineering Fair
- CS055** **Optimization of Information Logging Systems**
Dhaivat Nitin Pandya, 14, Freshman, Appleton North High School, Appleton,
Wisconsin

WYOMING

Greybull, USWY01, Northern Wyoming District Science Fair

EM003 Improving Mine Reclamation through Continuing Innovation

Travis Cole Sylvester, 18, Senior, Greybull High School, Greybull, Wyoming,
T: Joel Kuper

EV005 Bioremediation of Oil-Contaminated Water: Improved Delivery Mechanisms, Saline Impacts and Soil Interactions

Jessica Fay Hunt, 18, Senior, Greybull High School, Greybull, Wyoming,
T: Joel Kuper

Laramie, USWY50, Wyoming State Science Fair

CH012 Effects of Proteins on Dye Sensitized Solar Cells

Pooja Ajay Warriar, 15, Sophomore, Laramie Senior High School, Laramie, Wyoming, T: Erin Klauk

CS027 A Novel Approach to Integer Factorization: The Odd Power Factoring Method

Maurice Olympic Shih, 15, Sophomore, Laramie Senior High School, Laramie, Wyoming, T: Erin Klauk

ET015 An Analysis of the Cost Effectiveness of Improved Residential Heat Production from Sustainable Biomass Resources

Ceirra Danielle Carlson, 16, Sophomore, Greybull High School, Greybull, Wyoming,
T: Joel Kuper

URUGUAY

Salto, URY001, Feria Nacional de Clubes de Ciencia

BE303T Sexism in Publicity. Are We Aware of That?

Maria Dominzain, 18, Junior; Alejandro Ginares, 17, Junior
Instituto Habilitado Galileo Galilei, Piriapolis, Maldonado, Uruguay,
T: Maria Ines Tejeria

CS014 Programme to Calligraphy Teaching Children in Initial Level

Maximiliano Sellanes, 20, Senior, Instituto Tecnológico Superior Paysandu,
Paysandu, Uruguay, T: Oscar Ledesma

EE007 Wheelchair Controlled by Voice (CHAIRTEC)

Richard Garre, 18, Senior, Instituto Tecnológico Superior Paysandu, Paysandu,
Uruguay, T: Sergio Capillera

VIETNAM

Ha Noi City, VNM001, Ha Noi Science Fair 2012

EE326T Desalination by Using Solar Power and Vacuum Technique for Daily Use

Trung Bach Tran, 17, Junior; Vinh Anh Vu, 17, Junior;
Trang Thi Quynh Bui, 17, Junior
Hanoi-Amsterdam High School, Hanoi, Hanoi, Vietnam, T: Phuong Dinh Tran

VIRGIN ISLANDS

St. Croix, TEVI02, The Good Hope School Science Fair

EV063 An Organic Oil Spill Clean-Up 2

Bryanna Isela-Inez Canales, 14, Freshman, The Good Hope School, Frederiksted,
St. Croix, Virgin Islands, T: Peter Dunlap

MI059 Increasing Anti-Fungal Effectiveness through Gene Disruption and Mutant Selection Studies

Natasha Dawn Ceballos, 16, Junior, The Good Hope School, Frederiksted, St. Croix,
Virgin Islands, T: Pete Dunlap

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Award Winners:

Matthew Feddersen, Age 17
Lafayette, CA, USA *(Left)*

Blake Marggraff, Age 18
Lafayette, CA, USA *(Right)*



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