

LET'S SEE WHAT YOU HAVE IN MIND



Intel International Science and Engineering Fair 2013 Program

May 12-17, 2013

Phoenix, Arizona





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 over 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 about \$3 million in prizes and scholarships annually.

Intel International Science and Engineering Fair 2013

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Intel Corporation

Shelly Esque
Vice President, Legal and
Corporate Affairs
Director, Corporate Affairs
President, Intel Foundation

Greetings Intel ISEF Finalists, Teachers, Fair Directors and Parents:

Intel welcomes you to the Intel International Science and Engineering Fair 2013 in Arizona, home to the second largest Intel facility, located just outside Phoenix. Our Intel employees, along with the staff of Society for Science & the Public, have spent the last year preparing for a wonderful Intel ISEF and I know you will enjoy the week.

Congratulations to all of you who have worked so hard to earn the opportunity to compete here this week. We are honored to bring together the world's brightest and most promising young scientists to recognize achievement in science, math and engineering and to simply celebrate science.

Teamwork is often the key to success and we know each of you have had your own team to help you reach your goals. Let me thank all of the teachers, mentors, fair directors and parents who have supported you in this effort. We know each of you has played a role on this journey to Intel ISEF.

Finalists, your journey doesn't end after Intel ISEF. I challenge you to do two things. First, keep pursuing your interest in science, math and engineering. Continue to explore the frontiers of knowledge by finding better ways to do things and relying on your spirit of curiosity and wonder. Second, help instill your enthusiasm for science in younger students. Encourage them to experience the excitement of discovery and the fun and sense of achievement in participating in science fair and perhaps even mentor them. You can help the next generation of young scientists follow in your footsteps.

Please enjoy your time in Arizona, and I wish you the best of luck this week.

Regards,

Shelly Esque
Vice President, Legal and Corporate Affairs
Director, Corporate Affairs
President, Intel Foundation

Society for Science & the Public

Elizabeth Marincola
SSP President and
Publisher, *Science News*
family of publications



Welcome to the Intel International Science and Engineering Fair 2013. Intel ISEF, a program of Society for Science & the Public (SSP), represents the world's best science from young researchers. As we applaud the accomplishments of these students, we trust they will acknowledge the support of the parents, teachers, and mentors who have supported their research.

By virtue of scientific curiosity and achievement, Intel ISEF finalists have the potential to help solve many of the world's most vexing problems. 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.

Finalists join more than 42,000 alumni who have competed since the fair began in 1950. SSP wants to stay in contact with our inspiring alumni and encourages you to fill out an alumni profile at www.societyforscience.org/alumnus_profile and follow SSP on social media.

We acknowledge gratefully the Intel Foundation and Intel Corporation for their continued partnership with SSP. Intel's global leadership and commitment to science, engineering, and math education is an inspiring example of corporate investment in the future. SSP also acknowledges with gratitude the many organizations that have provided support and awards for the Intel ISEF 2013.

Finally, SSP salutes the hard-working Intel ISEF volunteers in Phoenix 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 2013. I look forward to meeting many students and learning about their research.

Sincerely,

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



State of Arizona
Jan Brewer
Governor



Janice K. Brewer
Governor

State of Arizona
Office of the Governor
1700 West Washington, Phoenix, AZ 85007

Main Phone: 602-542-4331
Facsimile: 602-542-7601

GREETINGS:

As Governor of Arizona, it is my pleasure to welcome you to the Grand Canyon State for the Intel International Science and Engineering Fair 2013.

Whether in the public or private sector, economic development and prosperity simply would not be possible without innovation. You all are here because you have demonstrated an exceptional determination and passion for exploring new solutions to the world's complex problems. Indeed, you are the future of this country, and this country's future is brighter *because* of you. Thank you.

I also congratulate the many people—including parents, teachers, mentors and other supporters—who provide the encouragement, counsel, and guidance necessary to your success. We all celebrate your remarkable achievements.

During your visit, I hope you take the opportunity to explore everything our state has to offer. Our rich history, vibrant natural resources, hospitable people and unique southwestern culture are just a few of the treasures that make Arizona a premier place to travel and live.

On behalf of the State of Arizona, I wish you an exciting competition and unforgettable stay in the Grand Canyon State. Again, congratulations on this well-earned accomplishment. Keep up the good work.

Sincerely,

Janice K. Brewer
Governor

City of Phoenix
Greg Stanton
Mayor



City of Phoenix
OFFICE OF THE MAYOR

MAYOR GREG STANTON

April 18, 2013

Dear Friends:

It gives me great pleasure to welcome you to the Intel International Science and Engineering Fair 2013. The City of Phoenix is proud to extend a warm greeting to all guests and participants of this world-class event.

Phoenix had the privilege of hosting Intel ISEF in 2005 which was an extraordinary success. We couldn't be more pleased to have the more than 1,500 high-school students from over 70 countries share their research and celebrate their significant achievements. They are inspiring and represent the spirit of innovation and discovery at its best.

Phoenix is America's sixth largest city and still has real cowboys and rugged mountains and the kind of cactus most people see only in cartoons. Phoenix is the gateway to the Grand Canyon, and its history is a testament to the spirit of the Native Americans, ranchers, miners and visionaries who laid the foundation for one of this country's most unique and vibrant cities.

I hope that you enjoy your time in Phoenix. I encourage you to visit the many cultural, artistic and other amenities our city offers. Finally, I wish you the greatest success during Intel ISEF and congratulate you on your achievements.

Sincerely,

Greg Stanton



www.facebook.com/mayorstanton



www.twitter.com/mayorstanton

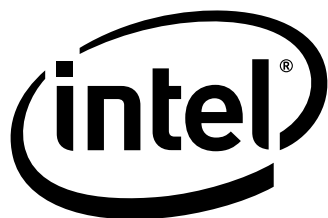
greg.stanton@phoenix.gov

www.phoenix.gov/mayor

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

Intel Corporation
and
Intel Foundation

for their support of the Intel ISEF 2013.



In the last decade, Intel has invested more than \$1 billion, and Intel employees have donated over four 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 2013 Public Day to be attended by more than 4,000 local middle and high school students and their teachers.

Agilent Technologies Foundation
Alcoa Foundation
Arizona Technology Council
Broadcom Foundation
Go Daddy
Helios Education Foundation
National Museum of Crime & Punishment
Lynn Peavey Company
Ricoh Americas Corporation
Shell
SRP
United Airlines Foundation
Dr. Nelson Ying

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



Education Outreach Day at Intel ISEF 2012 in Pittsburgh.



Visitors at the Exhibit Hall during Public Day.

This year, more than 1,500 students earned finalist status at the Intel ISEF in Phoenix as a result of their excellent performance at an Intel ISEF-affiliated fair at a local, regional, or national level. Finalists in 2013 will compete for more than \$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.

2013 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 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.siyss.org), which includes attendance at the Nobel Prize ceremonies, in Stockholm, Sweden. The Dudley R. Herschbach SIYSS Award enables attendance at 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—held in Prague, Czech Republic in 2013.

Philip V. Streich Memorial Award

The Philip V. Streich Memorial Award offers an opportunity for student participation in the London International Youth Science Forum, an international event that attracts science students from around the world.

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

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



Intel ISEF 2013 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
 Alcoa Foundation
 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
 Arizona State University
 Ashtavadhani Vidwan Ambati Subbaraya Chetty Foundation
 Association for Computing Machinery
 Astronomical Society of the Pacific and
 the American Astronomical Society
 ASU Rob and Melani Walton Sustainability Solutions Initiatives
 China Association for Science and Technology (CAST)
 Coalition for Plasma Science (CPS)
 Consortium for Ocean Leadership
 Drexel University
 Endocrine Society
 European Organization for Nuclear Research-CERN
 Florida Institute of Technology
 Fondazione Bruno Kessler

Go Daddy
 Google
 IEEE Foundation
 IEEE Computer Society
 Intel Foundation
 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
 London International Youth Science Forum -
 The Philip V. Streich Memorial Award
 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 Institutes of Health
 & the Friends of NIDA
 National Oceanic and Atmospheric Administration - NOAA
 Oregon Institute of Technology
 Patent and Trademark Office Society
 Psi Chi, The International Honor Society in Psychology
 Ricoh Americas Corporation
Science News magazine
 Sheikh Zayed Institute at Children's National Medical Center
 Sigma Xi, The Scientific Research Society
 Society for Experimental Mechanics, Inc.
 Society of Experimental Test Pilots
 Society of Exploration Geophysicists
 SPIE-The International Society for Optical Engineering
 United Airlines Foundation
 United States Environmental Protection Agency
 United Technologies Corporation
 West Virginia University
 Wolfram Research, Inc.

Visit societyforscience.org/isef/intel-isef-sao-listing-2013
 to learn more about each Special Award Organization.



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 2013 winner of the Gordon E. Moore Award, who will be recognized with an award in the amount of \$75,000.

Auditorium Safety

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

Event Security

Intel ISEF participants **MUST** wear their name badges to participate in fair activities and events. Those without badges will be turned away 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.
- Always use your hotel's main entrance especially 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.
- Do not needlessly display guest room keys or convention badges in public.
- Do not carry large amounts of cash or expensive jewelry. Store valuables in the hotel's safe deposit box.
- Do not invite strangers to your hotel room.
- Make sure sliding glass doors and any connecting room doors are locked.
- Report any suspicious activity to management.

Downtown Phoenix Partnership Ambassadors

Look for Ambassadors, who wear orange shirts and are stationed all around the downtown area, especially around the Convention Center, to help answer your questions about how to navigate Phoenix. They are on duty seven days a week from 8:00 a.m. until 11:00 p.m. and can help you find your way, give ideas about where to eat or where to find a drug store or a bank, and help you navigate public transportation.

About Phoenix

Phoenix is the capital of and largest city in Arizona, as well as the sixth most populous city in the United States.

Hotels	Address	Phone
Aloft Phoenix Airport	4450 E. Washington	(602) 275-6300
Fairfield Inn & Suites	2520 N. Central Avenue	(602) 716-9900
Hampton Inn Phoenix Midtown-Downtown	160 W. Catalina Drive	(602) 200-0990
Hilton Garden Inn Phoenix Midtown	4000 N. Central Avenue	(602) 279-9811
Hilton Phoenix Suites	10 E. Thomas Road	(602) 222-1111
Holiday Inn Downtown North	212 W. Osborn	(602) 595-4444
Holiday Inn Express Phoenix Downtown	620 N. 6th Street	(602) 452-2020
Hotel San Carlos	202 N. Central Avenue	(602) 253-4121
Hyatt Regency Phoenix	122 N. Second Street	(602) 252-1234
Palomar Phoenix Cityscape	2 E. Jefferson Street	(602) 253-6633
Phoenix Place Hotel & Suites	3600 N. Second Avenue	(602) 604-4900
Renaissance Phoenix Downtown	50 E. Adams Street	(602) 333-0000
Sheraton Phoenix Downtown	340 N. 3rd Street	(602) 262-2500
Westin Phoenix Downtown	333 N. Central Avenue	(602) 429-3500
Springhill Suites Phoenix Downtown	802 E. Van Buren Street	(602) 307-9929

About the Phoenix Convention Center

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

All Intel ISEF 2013 events take place at the
Phoenix Convention Center
unless otherwise noted.

Advisory Council Meeting	West 102 A/B	5/12-5/13, 5/15-16
AP Testing	North 127 A/B/C	5/14-5/15
Excellence in Science & Technology Panel	North Halls A/B/C	5/14
Finalist Resource Center	North 125 A/B	5/12-5/14
Grand Awards Ceremony	North Halls A/B/C	5/17
Housing Information	Registration Complex Lower Level (outside Hall 2)	5/11-5/16
HUB (Center of Exhibit Hall)	North Halls 4/5	5/12-5/17
IB Testing	North 126 A/B/C	5/13-5/17
Intel eLounge	West Hall 1	5/12-5/16
Intel ISEF Expo 2013	West Hall 2	5/13-5/14, 5/16
International/Volunteer Office	North 124 A/B	5/10-5/17
Locator Card Kiosk	Registration Complex	5/11-5/14
Lost and Found	HUB and Registration Complex Lower Level (outside Hall 2)	5/12-5/17
Medals and Certificates	Registration Complex	5/11-5/16
Official Party Registration	Registration Complex	5/11-5/17
Opening Ceremony	North Halls A/B/C	5/13
Opening Dinner	North Ballroom 120 A-D	5/13
Press Room	North 131 A/B	5/12-5/17
Project Exhibits	North Halls 4/5	5/12-5/17
Public Visitation	North Halls 4/5	5/16
Retail Store	North Exhibit Hall Concourse	5/11-5/17
Scientific Review Committee (SRC)	North 128 A/B	5/12-5/13
Special Award Ceremony	North Halls A/B/C	5/16
Student Observer Caucus	North Ballroom 120 D	5/15
Student Pin Exchange	Sheraton Hotel-Phoenix Ballroom (Finalists and Student Observers Only)	5/12
Symposia	West 101 A/B, West 101 C, West 105 C, West 106 A/B/C,	5/13-5/16
Tour Desk	Registration Complex	5/11-5/17
<i>Hosted by the Downtown Phoenix Partnership</i>		

By entering the Intel International Science and Engineering Fair 2013 (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

Sunday (Project Set-up and D&S Inspections)	8:00 a.m.-8:00 p.m.~OFP
Monday (Project Set-up and D&S Inspections)	8:00 a.m.-6:00 p.m.~OFP
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	7:45 a.m.-11:45 a.m., 1:00 p.m.-4:00 p.m., 4:00 p.m.-5:00 p.m.~Finalists & Judges only
Thursday	9:00 a.m.-9:00 p.m.~Public Visitation Day
Friday	11:30 a.m.-2:00 p.m.~OFP

Finalist Resource Center

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

Intel eLounge

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

Intel ISEF Expo 2013 Booths

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

International/Volunteer Office

Friday	7:30 a.m.-5:00 p.m.
Saturday	7:30 a.m.-6:00 p.m.
Sunday	7:30 a.m.-9:00 p.m.
Monday-Tuesday	7:30 a.m.-10:00 p.m.
Wednesday	6:30 a.m.-7:00 p.m.
Thursday	7:00 a.m.-7:00 p.m.
Friday	7:00 a.m.-11:00 a.m.

Local Information Desk

Saturday-Friday	Registration Complex 9:00 a.m.-5:00 p.m.
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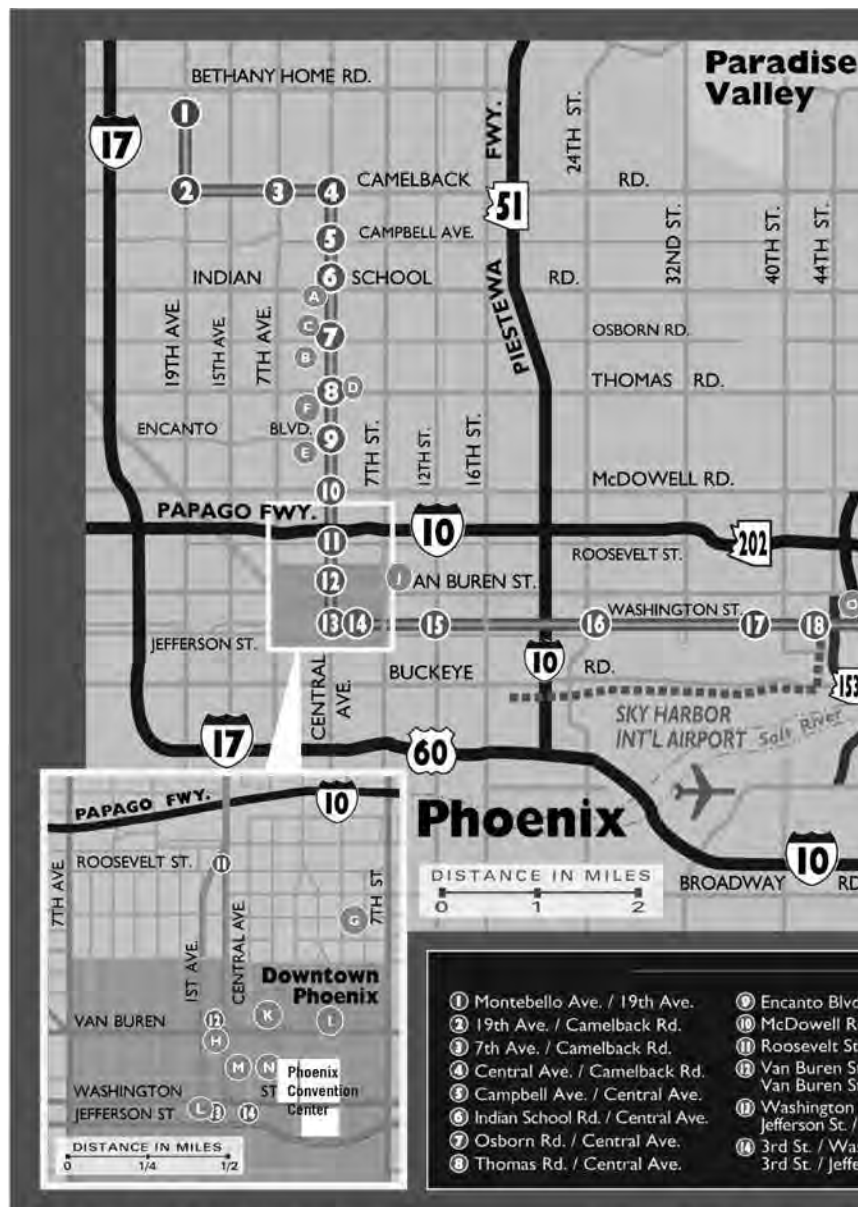
Official Party Registration

Saturday	Registration Complex Lower Level (outside Hall 2) 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.-9:00 a.m.

Retail Store

Saturday	Concourse outside of North Hall 5 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.

Visit societyforscience.org/intelisef2013 for schedule updates throughout the week.



6. Indian School Road/Central Avenue

- A Hilton Garden Inn Midtown – 3 blocks

7. Osborn Road/Central Avenue

- B Holiday Inn Phoenix Downtown North – 2 blocks
- C The Phoenix Place Hotel and Suites – 2 blocks

8. Thomas Road/Central Avenue

- D Hilton Suites Phoenix – ½ block

* Distance are approximates

9. Encanto Boulevard/Central Avenue

- E Fairfield Inn and Suites Phoenix
- F Hampton Inn Phoenix/Midtown

12. Van Buren/Central Avenue - Van Buren/1st Avenue - To

- G Holiday Inn Express Phoenix
- H Hotel San Carlos – 1 block
- I Sheraton Phoenix Downtown
- J Springhill Suites by Marriott
- K Westin Phoenix Downtown –



venue

- Phoenix – 1 block
- Phoenix – 1 block

- From the Airport the Airport

- Downtown – 7 blocks or .7 miles

- Hotel – 3 blocks
- 8 blocks or .8 miles
- ½ block

13. Washington Street/Central Avenue – From the Airport Washington Street/ 1st Avenue – To the Airport

- L Hotel Palomar Phoenix – 1 block
- M Renaissance Phoenix Downtown Hotel – ½ block

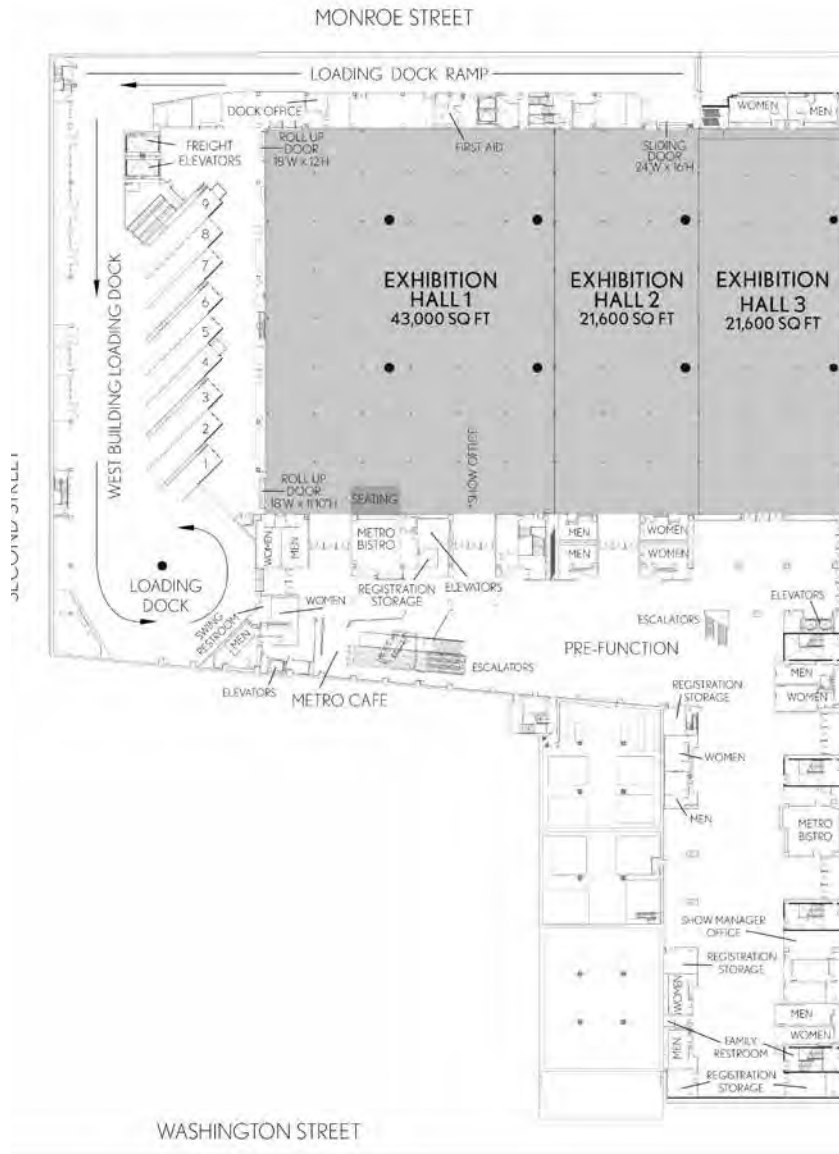
14. 3rd Street/ Washington Street – From the Airport 3rd Street/Jefferson Street – To the Airport

- N Phoenix Convention Center & Chase Field
- O Hyatt Regency Phoenix – 1 block

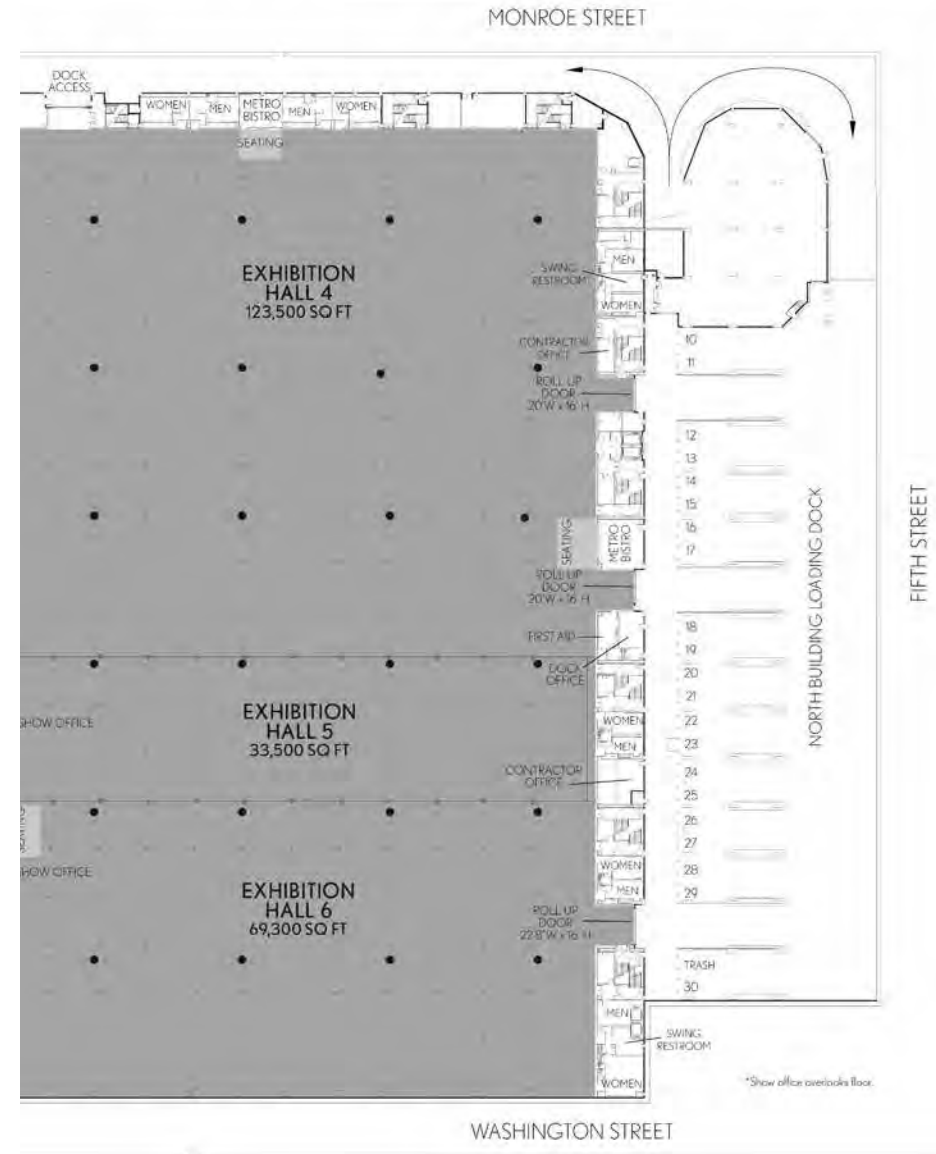
18. 44th Street/Washington Street

- P Aloft Phoenix Airport – ½ block

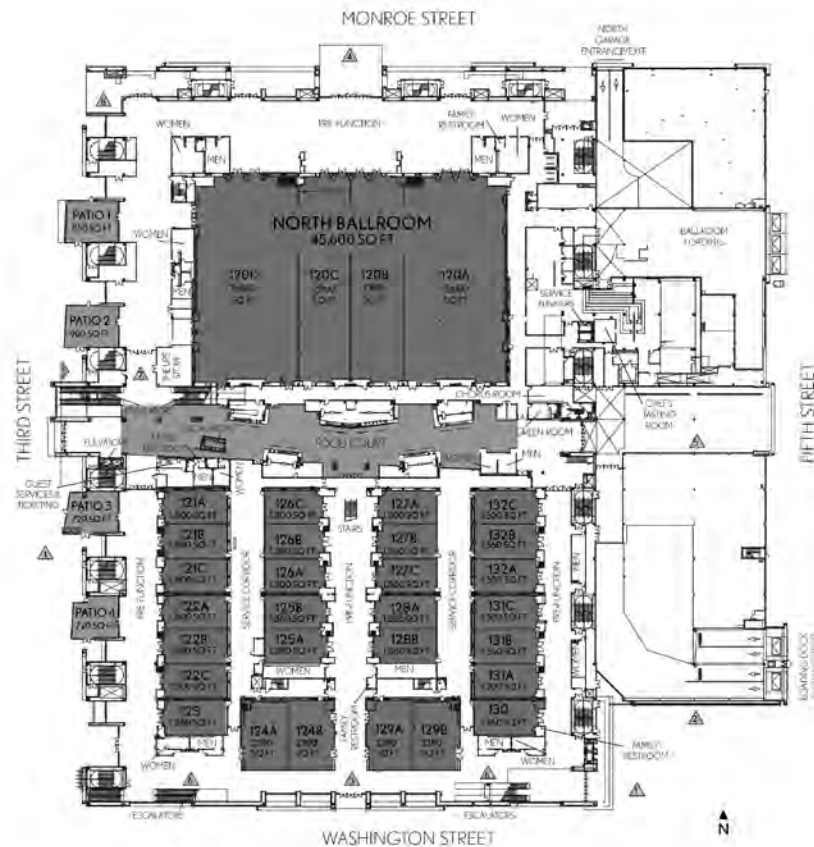
West Building Exhibition Hall Lower Level



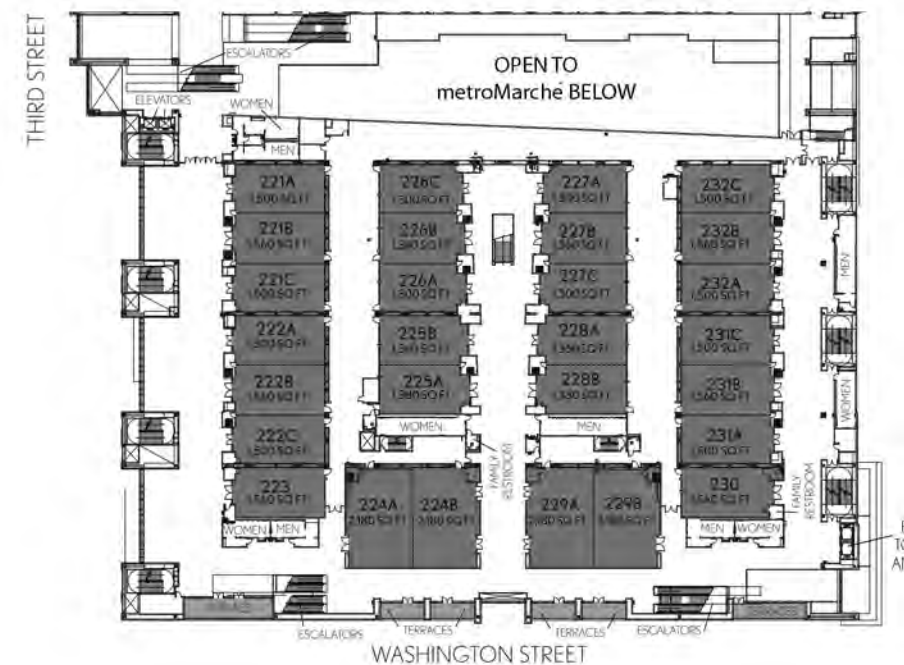
North Building Exhibition Hall Lower Level



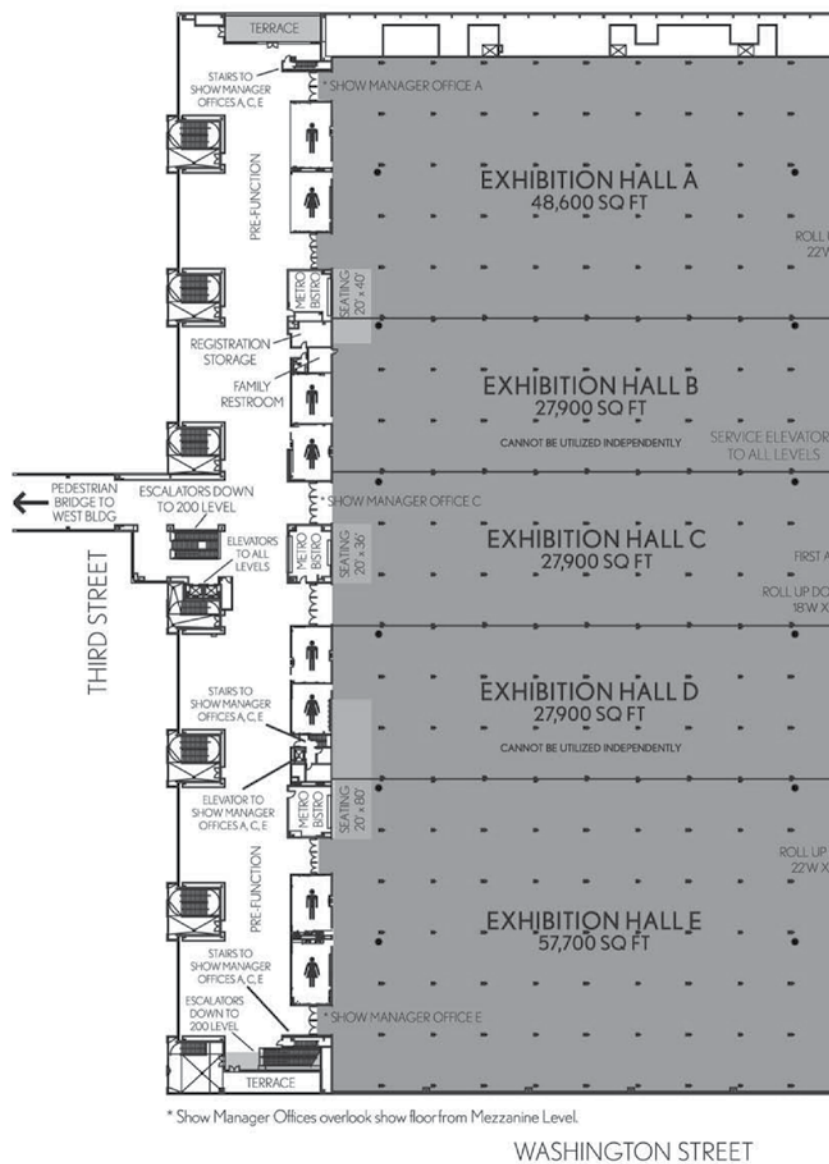
North Building Meeting Rooms 100 Level



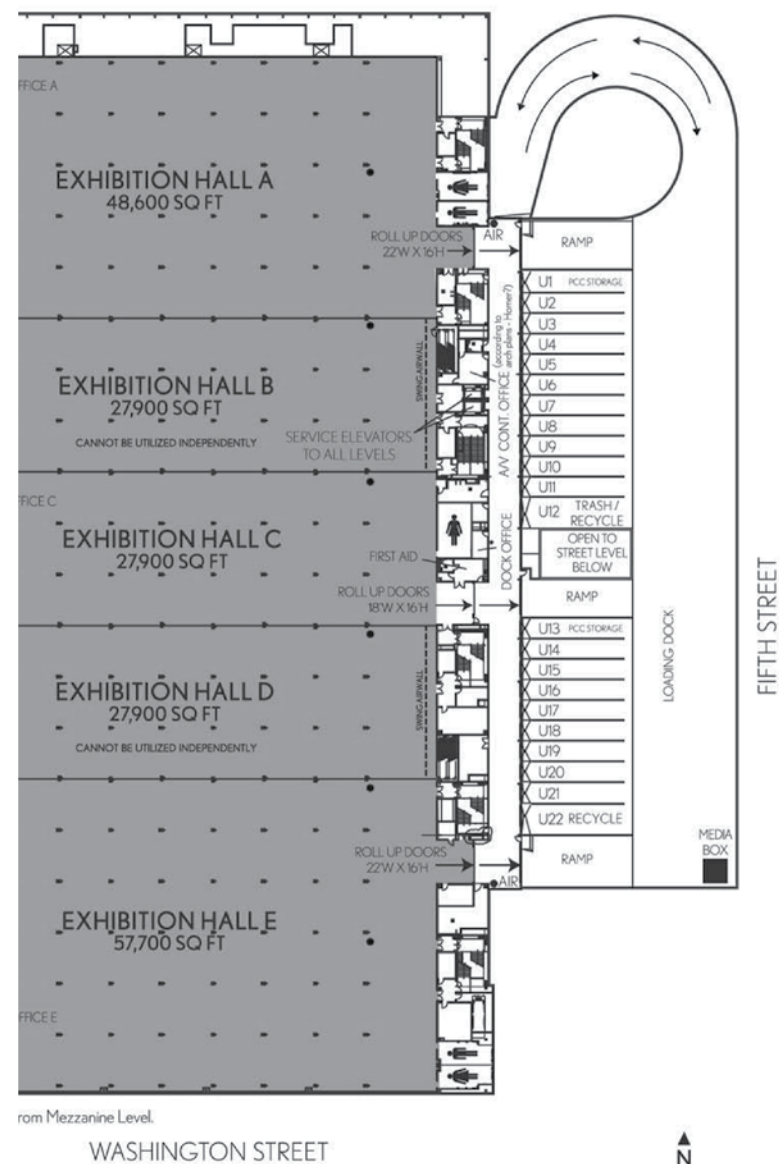
North Building Meeting Rooms 200 Level



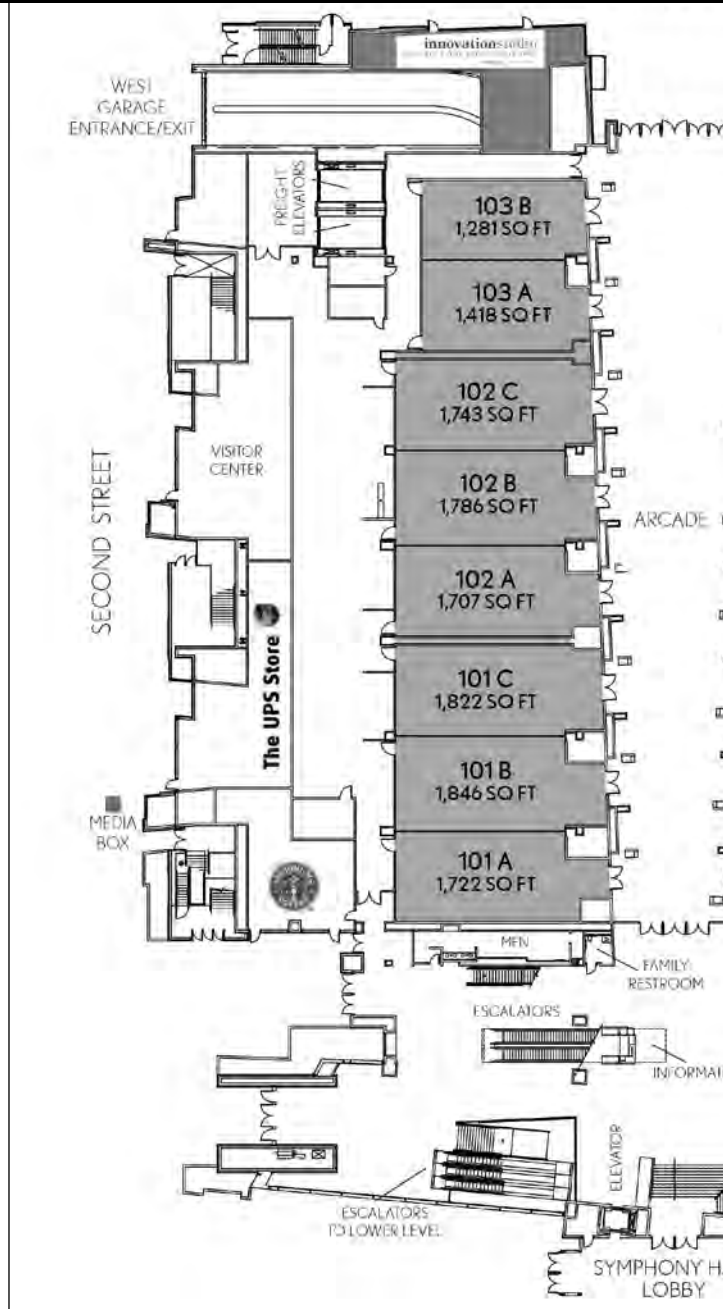
North Building Meeting Rooms 300 Level



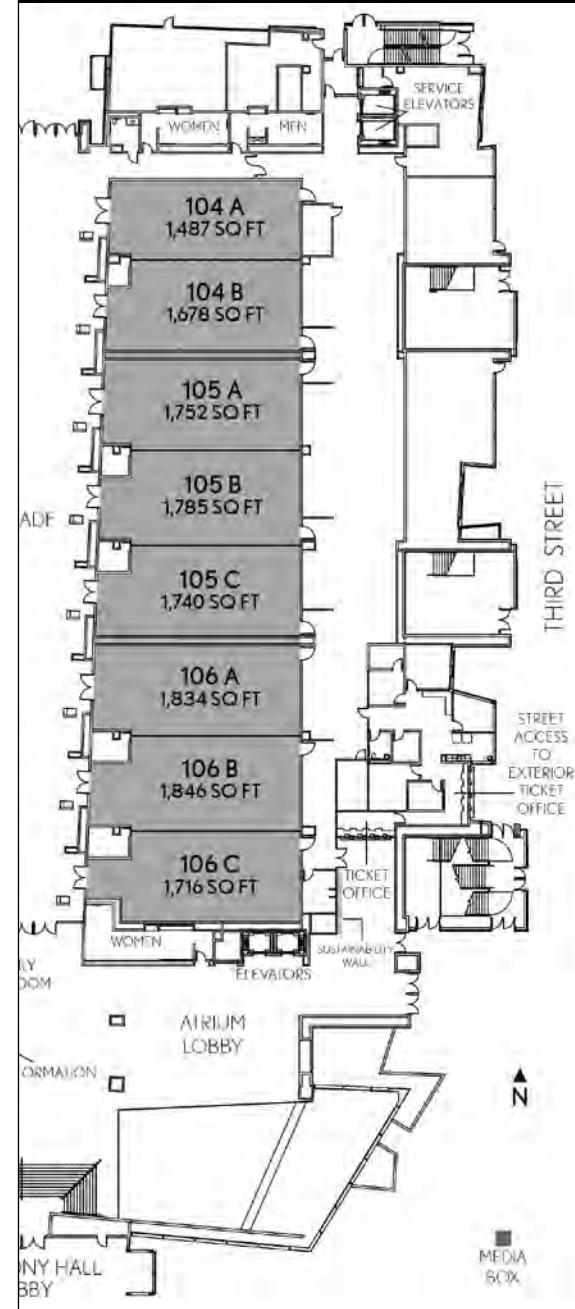
North Building Meeting Rooms 300 Level



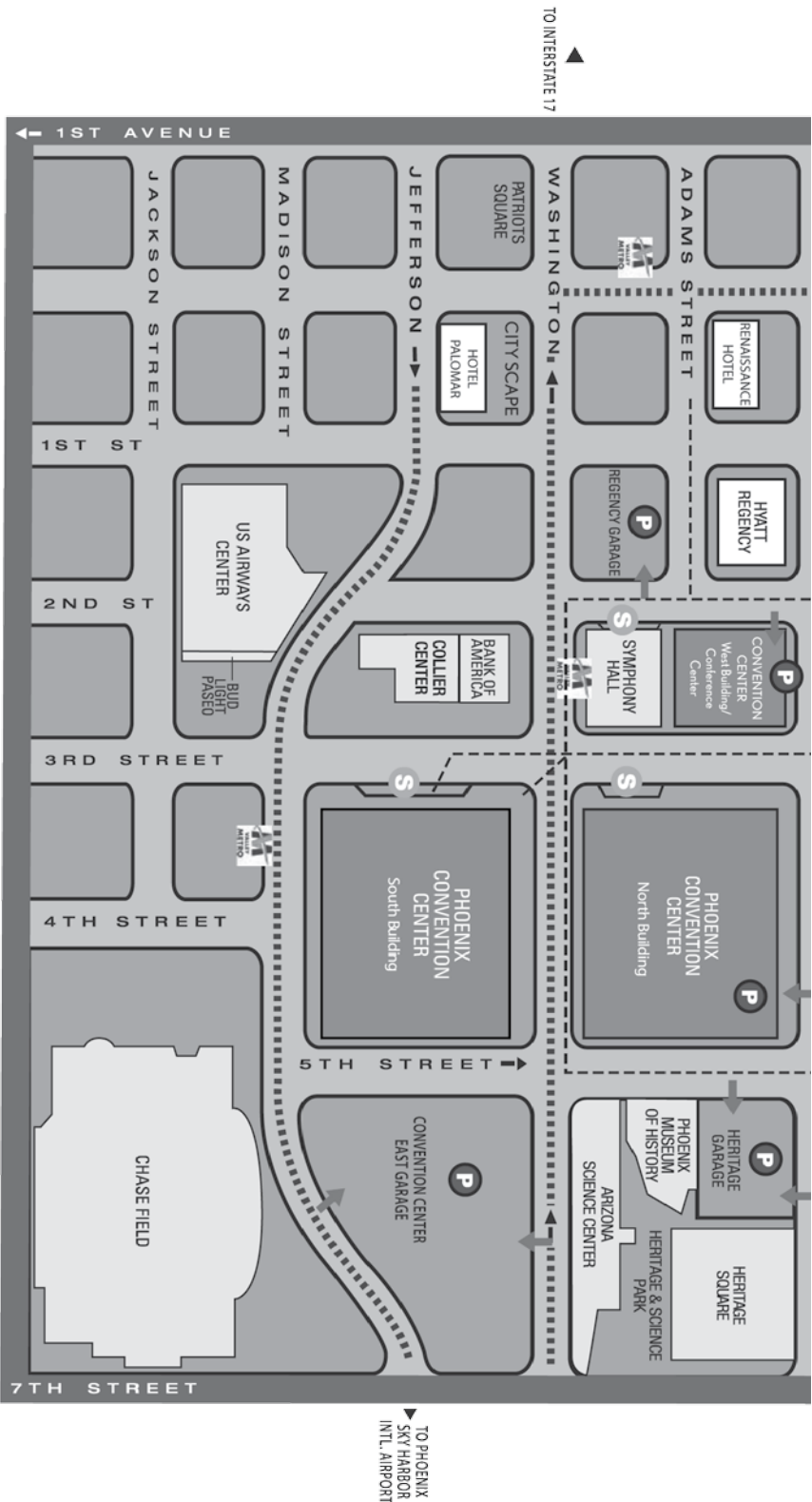
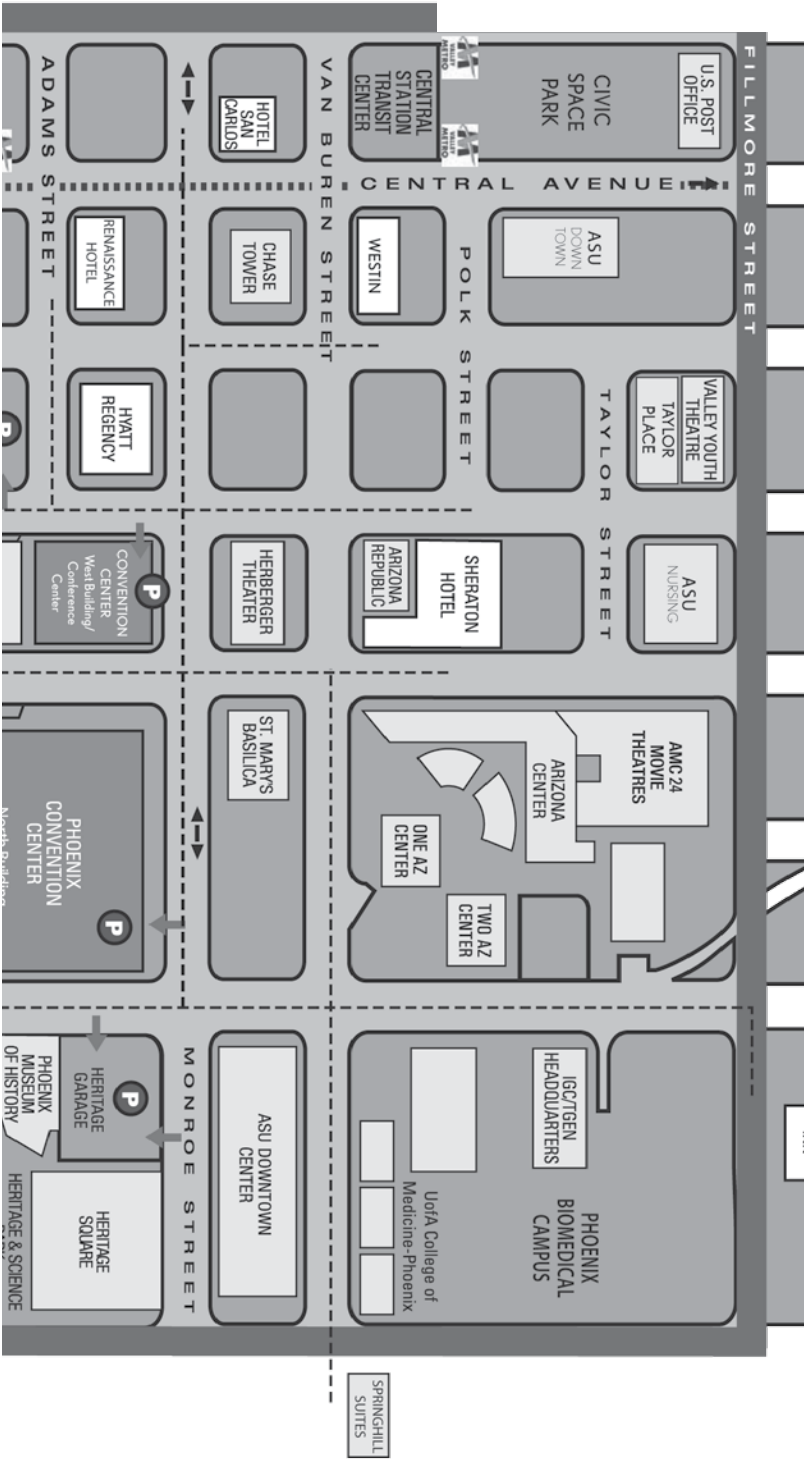
West Building Meeting Rooms 100 Level



West Building Meeting Rooms 100 Level



Map of Phoenix



Map of Phoenix

Visit the Intel ISEF Expo 2013 Phoenix Convention Center West Hall 2

Join us at the Intel ISEF Expo 2013 to interact and engage with industry, academic and community organizations.

Stop by West Hall 2

Monday, May 13 2:00 p.m.-6:00 p.m.
Tuesday, May 14 9:00 a.m.-5:00 p.m.
Refreshments 9:00 a.m.-11:00 a.m.
Thursday, May 16 8:00 a.m.-5:00 p.m.



ScienceNews for KIDS
PUBLICATION OF THE SOCIETY FOR SCIENCE & THE PUBLIC

ABOUT SNK
Who We Are
Our Sponsors
SSP News & Events

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Broadcom MASTERS
Intel ISEF
Intel STS

mySNK!
For Educators
For Parents
For Kids

EXPLORE ATOMS & FORCES EARTH & SKY HUMANS & HEALTH LIFE TECH & MATH EXTRA

SEARCH FOR:



Competing with math

Five high schoolers are the new faces of mathematics
Read Article.

Visit *Science News for Kids* to read about
Intel ISEF winners and other interesting stories...
www.sciencenewsforkids.org



Intel ISEF 2013 PHOENIX, ARIZONA

A P P A R E L

**Purchase your Intel ISEF mementos and
merchandise at the retail store**

STORE HOURS:

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:

GRAPHIC CONNECTION
custom apparel

1-888-821-2725
www.gcsportswear.com

Sunday, May 12

See page 14-15 for hours and locations of daily recurring events and resources. All events take place in the Phoenix Convention Center (PCC) unless otherwise noted.

- | | | |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| 8:00 a.m.-5:00 p.m.
(Afterwards by appt.) | Project Drop-Off
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. | PCC Loading Dock, North Halls 4/5 |
| 8:00 a.m.-8:00 p.m. | Setup of Projects/D&S Inspections | North Halls 4/5 |
| 8:00 a.m.-8:00 p.m. | Scientific Review Committee Interviews
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 11 at societyforscience.org/intelisef2013 . | North 128 A/B |
| 3:00 p.m.-8:00 p.m. | Intel eLounge
Come relax and unwind in the Intel eLounge! Grab a seat and access the wireless internet or connect on a sleek Ultrabook™, Inspired by Intel. Enjoy the open space for collaboration, take a snapshot in the photo booth, play video games, listen to the DJ spin and much more. | West Hall 1 |
| 5:00 p.m.-6:00 p.m. | Advisory Council Meeting | West 102 A/B |
| 7:00 p.m.-9:00 p.m. | Student Pin Exchange
Sheraton, Phoenix Ballroom (340 N 3rd St)
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 13

- | | | |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 8:00 a.m.-Noon | Scientific Review Committee Interviews
Only for finalists whose projects have not been cleared. | North 128 A/B |
| 8:00 a.m.-6:00 p.m. | Project Setup/Display & Safety Inspection
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. | North Halls 4/5 |
| 8:00 a.m.-6:00 p.m. | Intel eLounge | West Hall 1 |
| 9:00 a.m.-3:30 p.m. | Symposia
See full schedule on pages 34-45. | #2 West 101 A/B, #3 West 101 C, #4 West 105 C, #1 West 106 A/B |
| 2:00 p.m.-6:00 p.m. | Intel ISEF Expo 2013
All Intel ISEF 2013 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 to share what they do. | North Hall 2 |
| 1:00 p.m.-2:00 p.m. | Advisory Council Meeting | West 102 A/B |
| 3:30 p.m.-6:30 p.m. | Opening Ceremony Dinner
All registered attendees welcome. | North Ballroom 120 A-D |

Opening Ceremony Monday, May 13 Phoenix Convention Center North Halls A/B/C



Adam D. Steltzner
Planetary Entry, Descent and Landing,
and Small Body Access Office, Solar System and
Mars Exploration Directorates
NASA/Caltech Jet Propulsion Laboratory

The Intel ISEF Opening Ceremony kicks off the week of events for 2013. This high-energy event will be lead by masters of ceremonies, Colton Shone, award-winning multimedia journalist from CBS 5 Arizona. The keynote will be by Adam Diedrich Steltzner, Ph.D., Planetary Entry, Descent and Landing, and Small Body Access Office, Solar System and Mars Exploration Directorates, NASA/Caltech Jet Propulsion Laboratory.

Dr. Steltzner has worked on several flight projects including Galileo, Cassini, Mars Pathfinder and Mars Exploration Rovers. Students will have the opportunity to ask questions during the event through Twitter.

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 #IntellSEF when you tweet your questions.
Start tweeting now!

6:30 p.m.–7:00 p.m. **Opening Ceremony Pre-Show** North Halls A/B/C
Casual Attire—Doors open at 6:00 p.m.

7:00 p.m.–8:30 p.m. **Opening Ceremony** North Halls A/B/C
Sponsored by Intel Corporation
The Intel ISEF Opening Ceremony kicks off the week of events for 2013. This high-energy event will be led by master of ceremonies, Colton Shone, award-winning multimedia journalist from CBS 5 Arizona. The keynote will be by Adam Diedrich Steltzner, Ph.D., NASA engineer at the Jet Propulsion Laboratory. Dr. Steltzner has worked on several flight projects including Galileo, Cassini, Mars Pathfinder and Mars Exploration Rovers. Students 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.

8:30 p.m. **Final Project Infractions List**
Posted at Registration, outside of Exhibit Halls, and on societyforscience.org/intelisef2013.

Tuesday, May 14

8:00 a.m.–9:30 a.m. **Project Infraction Clearance** North Halls 4/5
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 13. 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 14.

8:00 a.m.–6:00 p.m. **Intel eLounge** West Hall 1

9:00 a.m.–1:30 p.m. **Symposia** #1 West 106 A/B, #2 West 101 A/B, #3 West 101 C, #4 West 105 C
See full schedule on pages 34–45.

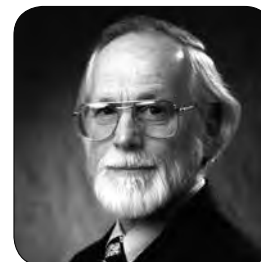
9:00 a.m.–5:00 p.m. **Expo 2013** Exhibit Hall North 2
Free refreshments will be served from 9:00 a.m.–11:00 a.m. inside the Intel ISEF Expo Ballroom B.

9:30 a.m.–11:30 a.m. **Press/Public Relations Time with Finalists** North Halls 4/5
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** North Halls A/B/C
Presented by Intel Corporation—Casual Attire
All attendees are invited to a conversation with Nobel Laureates. Panelists are: J. Michael Bishop, H. Robert Horvitz, Harold Kroto and Douglas Osheroff. The panel will be moderated by NPR Science Correspondent and SSP Trustee Joe Palca.

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

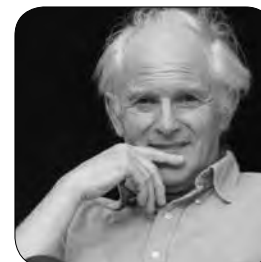
Tuesday, May 14, 2:00 p.m.
Phoenix Convention Center, North Halls A/B/C



J. Michael Bishop
Nobel Prize—Physiology or
Medicine
1989



H. Robert Horvitz
Nobel Prize—Chemistry
2002



Sir Harold Kroto
Nobel Prize—Chemistry
1996



Douglas Osheroff
Nobel Prize—Physics
1996



Joe Palca
Science Correspondent, NPR
Moderator

presented by
Intel Corporation

5:00 p.m.-9:00 p.m. Intel ISEF Night at Chase Field – Gates open at 5:00 p.m., Game time 6:40 p.m.-Rain or Shine
 All registered Intel ISEF attendees are invited to see a Major League Baseball game as the Arizona Diamondbacks take on the Atlanta Braves at Chase Field. This event will take place rain or shine (Chase Field has a retractable roof!). In addition to the baseball game, there will be a specially designated area of the ballpark where Intel ISEF attendees will be able to play games, take pictures and meet friends. Each attendee will get a special t-shirt upon arrival. Tickets to the game will be distributed at the ballpark. To get in, go to Gate J—toward the back of the ballpark—and show your Intel ISEF badge. Once through the gates, you will receive a ticket with your seat number; the ticket is “loaded” with \$25 in Diamondback Bucks to be used for dinner. Guests who need a special meal, such as Kosher, gluten free or healthy choice, need to sign up for their meal at Registration by noon on Tuesday, May 14. Chase Field is just a few short blocks from the Phoenix Convention Center and is also on the Lightrail. The stops are located near all block hotels and are noted on the Light Rail map on pages 16–17. You **MUST** wear your Intel ISEF badge in order to attend.

Wednesday, May 15

8:00 a.m.-6:00 p.m. Intel eLounge West Hall 1

8:00 a.m.-11:45 a.m. Exhibit Hall Open North Halls 4/5
 Finalists at Projects for Interviews—Professional Attire
 Finalists & Judges only

8:15 a.m.-3:30 p.m. Student Observer Caucus North Ballroom 120D
 For students registered as Student Observers with their Official Party and pre-registered for this event here:
societyforscience.org/isefstudentobservers

9:00 a.m.-3:30 p.m. Symposia #2 West 101 A/B, #3 West 101 C, #4 West 105C, #1 West 106 A/B
 See full schedule on pages 34–45.

11:45 a.m.-1:15 p.m. Finalist Lunch Break
 The Metro Marché food court area will be open. **No outside food may be brought into the Convention Center.** This rule is strictly enforced by the staff at the Phoenix Convention Center.

1:15 p.m.-5:00 p.m. Finalists at Projects for Interviews North Halls 4/5
 Finalists and Judges only—Professional Attire

7:00 p.m.-10:00 p.m. Student Mixer North Halls A/B/C
 After judging is over, the ceremony hall will transform into Club Intel ISEF. All students are invited to North Halls A/B for a dance party with DJ Quantum. Dinner will be served. Also available are games and other fun activities, as well as a coffee bar where you can chill with your friends. Your Intel ISEF badge is required.

7:00 p.m.-10:00 p.m. Adult Mixer North Ballroom 120
 Adults are invited for Blues and Bar-b-Que Night. Dance the night away with local blues band, The Sugar Thieves. Phoenix's finest bar-b-que will be served (vegetarians do not fret, there are many choices for you too). Your Intel ISEF badge is required.

Thursday, May 16

8:00 a.m.-6:00 p.m. Intel eLounge West Hall 1

8:00 a.m.-5:00 p.m. Intel ISEF Expo 2013 West Hall 2

9:00 a.m.-5:00 p.m. Symposia #2 West 101 A/B, #3 West 101 C, #4 West 105C, #1 West 106 A/B
 See full schedule on pages 34–45.

9:00 a.m.-9:00 p.m. Public Visitation Day North Halls 4/5

10:00 a.m.-2:00 p.m. All Finalists Required at Projects North Halls 4/5
 Meal vouchers for lunch at concession stands in North Halls 4 and 5 will be provided to finalists at their booths.

1:00 p.m.-3:00 p.m. Advisory Council Meeting West 102 A/B

7:00 p.m.-10:00 p.m. Special Award Ceremony North Halls A/B/C
 (Doors open at 6:30 p.m.)—Professional Attire
 Ceremony in which Special Award Organizations, academic institutions and government agencies give awards.

Friday, May 17

7:00 a.m.-3:00 p.m. Luggage Storage North Rooms 121 A-C
 For those who need to catch a flight after the Grand Awards Ceremony, feel free to leave your luggage in this secured bag check area. The service is free of charge. No luggage will be allowed inside the Ceremony Hall or otherwise unattended. All bags must be checked.

9:00 a.m. Grand Awards Ceremony North Halls A/B/C
 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 2013 are announced.

Close of Award Ceremony – 2:00 p.m. North Halls 4/5
Exhibit Hall Open for Project Teardown
 Finalists take down and pack projects for return home. Any stored packing material will be placed at project booths. 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 2013 nametags required at all times during dismantling. No exceptions.

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 13

9:00 a.m. - 10:30 a.m. West 106 A/C

1:00 p.m. - 2:30 p.m.

1—Talking Science

Jack Franchetti, Jack Franchetti Communications, Inc., New York

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

Type: Presentation

Audience: Fair Directors, Teachers & Students

9:00 a.m. - 10:00 a.m. West 101 C

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

Shirley Miranda and Melina Duarte, Greater San Diego Science & Engineering Fair, San Diego, CA

Come learn about the premiere California STEM residential summer program at the University of California (UC) Davis, UC Irvine, UC San Diego and UC Santa Cruz campuses.

Type: Presentation

Audience: Teachers & Students

9:00 a.m. - 10:00 a.m. West 105 C

3—Open Access: Accelerating Research by Making Scientific Journals Openly Available to All

Nick Shockey, The Right to Research Coalition, Washington, DC

Learn how you can help accelerate science by making all research articles freely available online. President Obama is in. Jack Andraka is in (Intel ISEF 2012 Gordon E. Moore award recipient). Are you?

Type: Presentation

Audience: Fair Directors, Teachers & Students

10:30 a.m. - 11:30 a.m. West 101 A/B

4—Writing the Future - Science Fiction Based on Science Fact

Brian David Johnson, Futurist, Intel Corporation

Are you into science fiction? Take the opportunity to write the future with Brian David Johnson, Intel Futurist and author of Science Fiction Prototyping: Designing the Future with Science Fiction. He will help you channel your scientific knowledge and creative skills into creating your own science fiction stories. You will also get a sneak peek into an upcoming competition for students to create science fiction to be included in the presenter's next anthology of science fiction.

Type: Presentation

Audience: Teachers & Students

10:30 a.m. - 11:30 a.m. West 105 C

5—The Effective Use of Statistics in Your Project

Christopher J. Malone, Winona State University, Winona, MN

A statistical analysis should help in telling your story - not distract from it. Appropriate statistical analyses and presentation of outcomes will be presented.

Type: Workshop

Audience: Teachers & Students

10:30 a.m. - 11:30 a.m. West 101 C

6—Broadcom MASTERS Middle School Program

Allie Hewlett, Program Manager, Broadcom MASTERS, SSP, Washington, DC

Learn more about Society for Science & the Public's (SSP) Broadcom MASTERS (Math, Applied Science, Technology and Engineering for Rising Stars). Brief presentation followed by Q&A session.

Type: Presentation

Audience: Fair Directors & Teachers



Talking Science

A Communications Symposium
for Intel ISEF 2013 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—Phoenix Convention Center

Monday, May 13	9:00 a.m.–10:30 a.m. 1:00 p.m.–2:30 p.m.	West 106 A/C West 106 A/C
Tuesday, May 14	10:30 a.m.–Noon	West 106 A/C

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.

1:00 p.m. - 2:00 p.m. West 101 A/B
7—Telling Your Story
 Lisa M. Smith, Intel Corporation, College Recruiting Manager
 Tiffany Peery, Intel Corporation, Marketing and Employer Branding Program Manager
 Our presenters will share, from a recruiters' perspective, how to prepare your resume, articulate your education and research, and provide key ways to best present yourself to future employers. It's never too early to get started building your career. Hear directly from Intel staffing representatives on how you can make your first impression a positive and memorable experience.

Type: Presentation Audience: Students

1:00 p.m. - 2:00 p.m. West 101 C
8—Mentoring Students in the Intel Science Talent Search
 Caitlin Sullivan, Program Manager, Intel Science Talent Search, SSP, Washington, DC
 An interactive session for teachers new to the Intel STS who want to increase participation, learn how to mentor students, and receive basic guidance on the application process.

Type: Presentation Audience: Teachers

2:15 p.m. - 2:45 p.m. West 101 C
9—A Slice of Raspberry Pi
 Eben Upton, Raspberry Pi Foundation, Cambridge, United Kingdom
 An overview of the Raspberry Pi small board computer, focusing on the motivations for the project and our early experiences in deploying it in an educational environment.

Type: Presentation Audience: Fair Directors, Teachers & Students

2:45 p.m. - 3:45 p.m. West 106 A/C
10—Judging at the Intel ISEF
 William and Lorna Glaunsinger, Judging Chairs, Intel ISEF 2013 Phoenix
 Join us for a question-and-answer session about judging at the 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 14

9:00 a.m. - 10:00 a.m. West 101 A/B
11—Superfluidity: Science News Interview with Nobelist Douglas Osheroff
 Eva Emerson, Editor-in-Chief, *Science News*, SSP, Washington, DC
 Douglas Osheroff, Nobel Laureate
Science News Editor-in-Chief speaks with Nobel Laureate Douglas Osheroff about the discovery of superfluidity in Helium-3 and his views on the most exciting areas of research in physics today.

Type: Panel Discussion Audience: Fair Directors, Teachers & Students

9:00 a.m. - 10:00 a.m. West 101 C
12—Patents 101
 Cindy Faatz, Director of Patents, Intel Corporation
 Come hear from Intel's Director of Patents on what you should know about protecting your work. We will cover a variety of options from patents, trademarks and copyright, plus some tips you may not know.

Type: Presentation Audience: Fair Directors, Teachers & Students

9:00 a.m. - 10:00 a.m. West 105 C
13—Workshop: Entrepreneurship, Business Models and the Scalable Startup
 Andre Marquis, Lester Center for Entrepreneurship, University of California, Berkeley, Berkeley, CA

Do you have a business idea or a technology you think could be a startup? This is a hands-on workshop to acquaint you with the tools Silicon Valley startups use to test their ideas and search for opportunities to create scalable companies. Learn how to build a business model, find customer segments, and test value propositions with customers - the core activities of successful entrepreneurs. This is an introduction to the Lean LaunchPad framework taught at UC Berkeley and in the National Science Foundation Innovation Corp.

Type: Workshop Audience: Students

9:00 a.m. - 11:00 a.m. Room 102 A/B
14—Science Fair Standards Development
 Scott Joftus, President, Cross & Joftus, Education Policy Consulting Firm, Bethesda, MD
 Janalee Jordan-Meldrum, Sr. Consultant, Cross & Joftus
 Society for Science & the Public invites anyone involved in fair management to attend a session that will discuss the development of science fair standards with the opportunity to provide feedback. (Session will be repeated Wednesday at 9 a.m.)

Type: Workshop Audience: Fair Directors

10:30 a.m. - Noon West 106 A/C
1—Talking Science
 Jack Franchetti, Jack Franchetti Communications, Inc., New York
 A communications specialist teachers guiding principles and techniques to convey the science of your project in lay terms. Students consider this program extremely helpful with the judging process, media interviews, and conversing with the public about their project.

Type: Presentation Audience: Fair Directors, Teachers & Students

10:30 a.m. - Noon West 101 A/B
15—Innovator to Entrepreneur
 Wendy Hawkins, Intel Foundation, moderator
 Panelists: Harry Singh, Director, Intel Capital, Intel Corporation
 Brian David Johnson, Futurist, Intel Corporation
 Andre Marquis, Executive Director, Lester Center for Entrepreneurship & Innovation, UC Berkeley
 Cindy Faatz - Director Patents, Intel Corporation

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. If time allows, we will have speed mentoring sessions at the end of the panel. Don't miss this opportunity to talk to a professional about your innovation.

Type: Panel Discussion Audience: Fair Directors, Teachers & Students

11:00 a.m. - Noon West 105 C
16—Addressing Scientific Literacy with Science News and Science News for Kids
 Janet Raloff, Senior Editor, *Science News for Kids*, SSP, Washington, DC
 Sid Perkins, former *Science News* Earth Sciences writer
 Caitlin Sullivan, Program Manager, Intel Science Talent Search, SSP, Washington, DC
 Join science journalists and fellow teachers for a workshop on integrating current events and research in your science instruction to address scientific literacy standards.

Type: Workshop Audience: Teachers

- 12:45 p.m. - 1:45 p.m. West 101 C
17—Integrating Year-long Student Projects with a Rigorous Computer Engineering Curriculum
 Jeremy N. Thomas, DigiPen Institute of Technology, Redmond, WA
 Learn about DigiPen's undergraduate Computer Engineering curriculum where year-long projects complement rigorous coursework in computer science, engineering, mathematics, and physics. Student projects will be demonstrated.
 Type: Presentation Audience: Fair Directors, Teachers & Students
- 1:00 p.m. - 1:30 p.m. West 105 C
18—Finding Brilliance Globally
 Sue Khim, Founder and CEO of Brilliant.org, Palo Alto, CA
 Smart people are born everywhere. Come hear how a tiny team from Chicago and a Facebook executive have built a massive open online problem-solving site for high aptitude students.
 Type: Presentation Audience: Teachers & Students
- 1:00 p.m. - 1:30 p.m. West 101 A/B
19—Arizona State University Knowledge Enterprise Development: Overview of Student Research and Spotlight on ASU's Quanta Program
 Kathryn Schenkel, Arizona State University, Tempe, AZ
 Learn about Quanta, an online program of the Office of Knowledge Enterprise Development that facilitates cross-disciplinary research opportunities for high school students anywhere to get involved in. Quanta is launching summer 2013. Also find out more about the broader research activities undergraduates engage in at Arizona State University.
 Type: Presentation Audience: Teachers & Students
- 4:15 p.m. - 4:45 p.m. West 105 C
20—High School STEM for Girls
 Kat Salthouse, Girl Scouts of Southern Arizona, Tucson, AZ
 Learn about a unique high school class for girls that combines mentors and hands-on learning to excite girls about STEM.
 Type: Presentation Audience: Teachers
- 4:15 p.m. - 5:15 p.m. West 101 A/B
21—Admit Me!
 Jamilla Jamison, Harvey Mudd College, Assistant Director of Admissions, Claremont, CA
 Dawn Wendell, MIT, Assistant Director of Admissions, Cambridge, MA
 How to use your research in the college admissions process.
 Type: Presentation Audience: Teachers & Students
- 4:15 p.m. - 5:15 p.m. West 101 C
22—Intel Science Talent Search Rules and Judging Overview
 Caitlin Sullivan, Program Manager, Intel Science Talent Search, SSP, Washington, DC
 Andy Yeager, former Chair, Intel Science Talent Search Judges Panel
 Nancy Aiello, Chair, Intel ISEF 2013 Scientific Review Committee
 A summary of the Intel Science Talent Search competition and a general overview of eligibility, rules and the judging process.
 Type: Presentation Audience: Teachers & Students

Be smart and social. Join the e-conversation!



Stay current and share your Intel ISEF experience with friends and family back home. We're so excited for you to join the conversation!

Join the conversation on Twitter: #intellSEF
 @intelinvolved
twitter.com/Intelinvolved
 @society4science
twitter.com/society4science

See what unveils on the floor via Instagram
 Upload your photos and tag them with #IntellSEF

Use Vine to capture your Intel ISEF experience and tag with #IntellSEF

Like us on Facebook
facebook.com/Intel
facebook.com/societyforscience
 Search for Official Intel ISEF

Upload your photos to Flickr
flickr.com/groups/isef2013

Watch us on YouTube
www.youtube.com/channelintel
youtube.com/societyforscience

Read interesting blogs
stsandisef.tumblr.com
blogs.intel.com/csr

Intel Presents Patents 101

Tuesday, May 14
9:00 a.m.-10:00 a.m., West 101 C

Cindy Faatz



Are you thinking about getting a patent on your work? What is the best way to protect your work? Have you started the patent process and found you have questions? Here is a great opportunity for you to come and hear from Intel's Director of Patents on what you should know about protecting your work. We will cover a variety of options from patents, trademarks and copyright plus

some tips you may not know.

Cindy Faatz is the Director of the Intel Patent Group in the Litigation, Licensing and Patents Group in Legal and Corporate Affairs. Cindy has been with Intel 28 years, starting as a product engineer and working in a variety of different technical roles including customer quality and reliability engineering, product marketing and as the liaison between Intel and Microsoft. She joined the legal department in 1993 as a patent engineer. Since that time, with the exception of three years as an IP attorney for the Intel Architecture Group, she has held various positions in the patent group, which is focused on developing and managing Intel's extensive patent portfolio. She received her BSEE from Stanford University and her JD from Santa Clara University School of Law.

Intel Presents Workshop: Entrepreneurship, Business Models and the Scalable Startup

Tuesday, May 14
9:00 a.m.-10:00 a.m., West 105 C

Andre Marquis



Participate in a hands-on workshop to acquaint you with the tools Silicon Valley startups use to test their ideas and search for opportunities to create scalable companies. Learn how to build a business model, find customer segments, and test value propositions with customers - the core activities of successful entrepreneurs.

This is an introduction to the Lean LaunchPad framework taught at UC Berkeley and in the National Science Foundation Innovation Corp.

Marquis is the Executive Director of the Lester Center for Entrepreneurship at the University of California, Berkeley. He is a serial entrepreneur with a long record of starting successful biotechnology and information technology ventures including Amplyx Pharmaceuticals, the Chorus Group at Eli Lilly, Internet Pictures Corp and Accept.com.

Intel Presents Innovator to Entrepreneur

Tuesday, May 14
10:30 a.m.–Noon, West 101 A/B

Harry Singh
Director, Intel
Capital, Intel
Corporation



Cindy Faatz
Director of the
Patent Group in the
Litigation, Licensing
and Patents Group,
Legal and Corporate
Affairs,
Intel Corporation



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.

Wednesday, May 15

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

West 105 C

23—Society for Science & the Public Membership: What's in it for Students, Teachers and Fair Directors

Mike Mills, Chief Content Officer, SSP, Washington, DC

SSP staff discuss new benefits available to students who compete at Intel ISEF-affiliated fairs, as well as new requirements for students to register as SSP members.

Type: Presentation

Audience: Fair Directors & Teachers

9:00 a.m. - 11:00 a.m.

Room 102 A/B

14—Science Fair Standards Development

Scott Joftus, President, Cross & Joftus, Education Policy Consulting Firm, Bethesda, MD
Janalee Jordan-Meldrum, Sr. Consultant, Cross & Joftus

Society for Science & the Public invites anyone involved in fair management to attend a session that will discuss the development of science fair standards with the opportunity to provide feedback. (Repeat of Tuesday's session)

Type: Workshop

Audience: Fair Directors

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

West 101 A/B

24—iPad Immersion in the High School Classroom

Stacey Kaufman, Franklin Academy, Wake Forest, NC

From the simple to the advanced, come see how the science classroom is transformed through full immersion in iPad technology for grades 9-12.

Type: Presentation

Audience: Teachers & Students

10:00 a.m. - 11:30 a.m.

West 106 A/C

25—Scientific Review Committee — 2014 Rules and Guidelines

Nancy Aiello, Intel ISEF SRC Chair

Meet with members of the Intel ISEF Scientific Review Committee to learn of changes in the Intel ISEF 2014 Rules and Guidelines. After the presentation, there will be a question and answer period.

Type: Presentation

Audience: Fair Directors & Teachers

11:00 a.m. - Noon

West 101 A/B

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

Jayme Burke and Kenneth L. Hess, Science Buddies, Carmel, CA

www.sciencibuddies.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

11:30 a.m. - Noon

West 101 C

27—Saint Paul Public Schools and 3M: A Winning Partnership

David W. Tweeten, St. Paul Harding High School, St. Paul, MN

Dr. Tweeten will present on the collaboration between St. Paul Public Schools and the 3M Corporation to establish science clubs.

Type: Presentation

Audience: Fair Directors & Teachers

1:15 p.m. - 1:45 p.m. West 101 C
28—Jump Starting Student Research: High School Students Serving as Mentors for Younger Students through Science Alliance Network
 Patti Carothers, Alameda County Science and Engineering Fair, Pleasanton, CA
 Science Alliance Network (SAN) is an innovative program pairing high school students as mentors for young students to help guide their science fair projects from ideas to fair! SAN offers turnkey resources to jump start a Science Alliance club.
 Visit www.sciencealliancenet.org.
 Type: Presentation Audience: Fair Directors, Teachers & Students

1:15 p.m. - 2:15 p.m. West 106 A/C
29—2014 D&S Rules and Revisions
 Henry Hartman, Intel ISEF Display & Safety Chair
 Come join the Display & Safety Committee to discuss infractions they have encountered this year as well as changes to the rules and guidelines for 2014. Bring your questions and concerns for the committee to answer.
 Type: Panel Discussion Audience: Fair Directors & Teachers

2:30 p.m. - 3:30 p.m. West 101 C
30—Protecting Your Ideas
 Mary Juetten, Founder and CEO, Traklight, Phoenix, AZ
 Learn strategies and a simple approach for identifying potential Intellectual Property associated with brilliant ideas for products and services.
 Type: Presentation Audience: Teachers & Students

2:30 p.m. - 4:00 p.m. West 105 C
31—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 SRCs. 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 or regional SRC

Thursday, May 16

9:00 a.m. - 10:00 a.m. West 105 C
32—Provided You Have the Right Ingredients Your Sugar Cookies Will Rise
 David Woll, Woll Enterprises, Inc., Carmel, IN
 Sift through traditional and non-traditional funding possibilities to find the best combination for start-up and early-stage companies, inventors, and entrepreneurial efforts.
 Type: Workshop Audience: Teachers & Students

9:00 a.m. - 10:00 a.m. West 101 C
33—Sustainability: Notes from the Field
 Sander van der Leeuw, Arizona State University, Tempe, AZ
 Dr. van der Leeuw will present how sustainability research works (or sometimes doesn't work) using his own large project in the Mediterranean. This was the complex interdisciplinary project that lead him into sustainability as a research topic. He will talk about how such projects can be organized and managed, as well as presenting other "lessons learned" in the field.
 Type: Presentation Audience: Fair Directors, Teachers & Students

10:00 a.m. - 11:00 a.m. West 101 A/B
34—Scientific Review Committee - PHBA's 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.
 Type: Panel Discussion Audience: Fair Directors & Teachers

11:00 a.m. - Noon West 101 C
35—How to Determine the Optimum Fuel Efficiency for a Vehicle
 David Zietlow, Professor of Mechanical Engineering, Bradley University, Peoria, IL
 This presentation will provide you with the tools to determine the best fuel efficiency for an application, but also how to solve open ended problems.
 Type: Presentation Audience: Teachers & Students

11:00 a.m. - Noon West 105 C
36—How'd I Do?: Student Metacognition through Standards-based Assessment
 Andrea Smith, Boulder Valley School District, Boulder, CO
 Students often struggle to connect their understanding of classroom activities to their assessment performance. Learn how to create standards-base processes that encourage metacognition around understanding of the standards.
 Type: Workshop Audience: Teachers

2:15 p.m. - 3:15 p.m. West 101 C
37—So You Want to be an Astronaut?
 Col. James Dutton, Society of Experimental Test Pilots, USAF Academy, CO
 Col. Dutton relates his experiences as a NASA Space Shuttle Astronaut and F-22 Experimental Test Pilot, and what it entails to become one. It's never too early to start!
 Type: Presentation Audience: Fair Directors, Teachers & Students



- Did you know that the U.S. Environmental Protection Agency (EPA) has world renowned scientists and engineers working to protect human health and the environment?
- Are you using science and engineering to solve environmental challenges?

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!



Give us a shout out, ask us your environmental science questions and follow us on Twitter @EPAresearch

Arizona Center Restaurants

1130 The Restaurant	455 N. 3rd Street	(602) 368-3046
Brick Pizzeria & Wine Bar	455 N. 3rd Street, #154	(602) 258-3665
Café Roma	455 N. 3rd Street, #1030	(602) 281-6121
Canyon Café	455 N. 3rd Street, #114	(602) 252-3545
Corner Bakery	455 N. 3rd Street, #1065	(602) 252-1346
KoKoRo Sushi	455 N. 3rd Street, #1120	(602) 254-3366
Mi Amigos Mexican Grill	455 N. 3rd Street, #110	(602) 256-7355
My Big Fat Greek Restaurant	455 N. 3rd Street, #108	(602) 254-5730
Starbucks	455 N. 3rd Street	(602) 258-8472
Subway	455 N. 3rd Street, #1015	(602) 258-7560

Downtown Phoenix

5 R Cha Thai	20 W. Adams Street	(602) 252-3813
Alice Cooper'stown Phoenix	101 E. Jackson Street	(602) 253-7337
Athenian Express Cafe	814 N. Central Avenue	(602) 712-0011
Bar Smith	130 E. Washington Street	(602) 229-1266
BKLYN's NYC Pizza	201 E. Washington Street	(602) 253-7499
Bliss/ReBAR	901 N. 4th Street	(602) 296-4689
Bowl of Greens	555 N. Central Avenue, #102	(602) 795-9710
The Breadfruit and Rum Bar	108 E. Pierce Street	(602) 267-1266
Burger King	1 N. 1st Street, #108	(602) 254-7088
Carly's Bistro	128 E. Roosevelt Street	(602) 262-2759
Change of Venue Café	101 W. Jefferson Street, #100	(602) 712-9474
Centurion	214 W. Roosevelt Street	(602) 687-8796
Cibo	603 N. Fifth Avenue	(602) 441-2697
Coach & Willie's	412 S. 3rd Street	(602) 254-5272
The Compass Restaurant	122 N. 2nd Street	(602) 440-3166
Coney Island Grill	16 W. Adams Street	(602) 253-0292
Crave Sandwich Cafe & Catering	541 E. Van Buren Street	(602) 257-1616
Crescent Ballroom	302 N. 2nd Avenue	(602) 716-2222
District American Kitchen/Wine Bar	320 N. 3rd Street	(602) 817-5400
Downtown Pizza Lounge	144 E. Washington Street	(602) 254-1522
Downtown Deli	130 N. Central Avenue	(602) 258-3069
Duck and Decanter	1 N. Central Avenue	(602) 266-6637
The Duce	525 S. Central	(602) 866-3823
Einstein Bros. Café	122 N. 2nd Street	(602) 440-3185
El Portal Mexican Grill	555 N. Central Avenue, #106	(602) 296-7029
Enjoy Sushi	2 N. Central Avenue, #160	(602) 595-2880
Fabulous Foods Café	600 E. Washington	(602) 253-9050
Focaccia Fiorentina	112 N. Central Avenue	(602) 252-0007
Frank Murray's Turf Restaurant	705 N. 1st Street	(602) 296-5043
Irish Pub		
Friday's Front Row Sports Grill	401 E. Jefferson Street	(602) 462-3506
Hanny's	40 N. 1st Street	(602) 252-2285
Hard Rock Café	3 S. 2nd Street, #117	(602) 261-7625
The Hero Factory	114 W. Adams Street, C102	(602) 254-6763
Hsin Café	120 E. Taylor Street, #150	(602) 254-6337
Icon Lounge	50 E. Adams Street	(602) 333-5111
Karim's Cobbler Shop & Deli	333 E. Jefferson Street, #102	(602) 257-1801
Kincaid's Fish, Chop & Steak House	2 S. 3rd Street	(602) 340-0000
Majerle's Sports Grill	24 N. 2nd Street	(602) 253-0118
Marston's Café	50 E. Adams Street	(602) 333-0000
Matt's Big Breakfast	801 N. 1st Street	(602) 254-1074

Moira Sushi	215 East McKinley, #102	(602) 254-5085
Network's Bar & Grill	122 N. 2nd Street	(602) 440-3198
Nobuo at Teeter House	622 E. Adams Street	(602) 254-0600
Paradise Bakery & Café	3 S. 2nd Street	(602) 256-0462
Papa Christo's	2 N. Central Avenue, #117	(602) 261-7780
Pita Jungle	1001 N. 3rd Avenue	(602) 258-7482
Pizza Hut/Wing Stop	702 N. 1st Street	(602) 229-1133
Pizzeria Bianco	623 E. Adams Street	(602) 258-8300
Portland's Restaurant and Wine Bar	105 W. Portland Street	(602) 795-7480
Province	333 N. Central Avenue	(602) 429-3600
Quizno's	610 E. Roosevelt Street, #102	(602) 252-0062
The Roosevelt	816 N. 3rd Street	(602) 254-2561
The Rose and Crown	628 E. Adams Street	(602) 256-0223
Seamus McCaffrey's Irish Pub & Restaurant	18 W. Monroe Street	(602) 253-6081
Sing High Chop Suey House	27 W. Madison Street	(602) 253-7848
Sliders American Grill	201 S. 4th Street	(602) 462-3800
Steve's Greenhouse Grill	139 E. Adams Street	(602) 252-2742
Subway on Central	144 N. Central Avenue	(602) 271-9866
Taylor Place Residential Restaurant	120 E. Taylor Street	(602) 496-6708
Thai Basil Signature Downtown	114 W. Adams Street, #C-104	(602) 759-8737
Thai'd Up Restaurant	110 N. Central Avenue	(602) 420-8424
Terrace Café	122 N. 2nd Street	(602) 440-3180
Tom's Tavern & 1929 Grill	2 N. Central Avenue	(602) 257-1688
Way Sushi	114 W. Adams Street, C-101	(602) 252-1144
Yasda Bento	18 W. Adams Street	(602) 254-7174
Z Pizza	111 W. Monroe, #130	(602) 254-4145
Zeez Grill	209 W. Jackson Street, #170	(602) 296-4661

Get Involved.

SSP and Intel are proud to announce that the Intel International Science and Engineering Fair will be held in Los Angeles, California in May 2014.



**Volunteer, judge,
or interpret.**

To learn more:
societyforscience.org/intelisef2014

Attractions, Services, Medical Care, Entertainment

For all attractions, go to www.visitphoenix.com/things-to-do/index.aspx

Banks

Bank of America	201 E. Washington Street	(602) 523-2371
Chase Bank	201 N. Central Avenue	(602) 221-4724
Midfirst Bank	2 N. Central Avenue	(602) 955-2306
US Bank	101 N. 1st Avenue, #110	(602) 257-5470
Wells Fargo	701 S. Central Avenue	(602) 528-7544

Copy and Mail Services

FedExOffice Print & Ship Center	201 E. Washington Street, #101	(602) 252-4055
FedEx (inside Sheraton Hotel)	340 N. 3rd Street	(602) 258-0266
O'Neil Printing	366 N. 2nd Avenue	(602) 258-7789
UPS	125 N. 2nd Street, #110	(602) 251-0135
UPS (inside Convention Center)	111 N. 3rd Street, A002	(602) 254-6900

Drugstores

CVS—CityScape Downtown	50 W. Jefferson Street, #140	(602) 296-7611
CVS	1525 N. Central Avenue	(602) 256-2124
Walgreens	705 E. McDowell Road	(602) 258-4865

Grocery Store

Outside food cannot be brought into the Phoenix Convention Center

Safeway	340 E. McDowell Road	(602) 252-4538
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Medical Hospitals

Banner Good Samaritan	1111 E. McDowell Road	(602) 239-2000
Phoenix Memorial Hospital	1201 S. 7th Avenue	(602) 258-5111
St. Joseph's Hospital	350 W. Thomas Road	(602) 406-3000
St. Luke's Medical Center	1800 E. Van Buren Street	(602) 251-8100

Urgent Care

ASU Health Center	500 N. 3rd Street, Suite 155	(602) 496-0721
CIGNA Care Today	102 S. Central Avenue	(602) 254-6007

Dental Care

Downtown Phoenix Dental	111 W. Monroe Street, #131	(602) 626-7952
Western Dental Center	530 E. McDowell Road, #101	(602) 258-2371

Shopping/Entertainment/Miscellaneous Stores

Arizona Center	400 E. Van Buren Street, #450	(602) 271-4000
AMC Theaters	565 N. 3rd Street	(602) 307-5371
City Scape	1 E. Washington Street	(602) 772-3900
Lucky Strike (at CityScape)	50 W. Jefferson Street, #240	(602) 732-5490

Society for Science & the Public and Intel thank the dedicated members of the Phoenix Local Arrangements Committee who have worked hard in preparation for Intel ISEF 2013:

Jennifer Gutierrez, Chair, Chandler Unified School District Prince Arthur, VIII, MicroMillennium USA Jeremy Babendure, Arizona Science and Technology Festival at Arizona State University Cathleen Barton, Intel Corporation Robin Baskin McNulty, Maricopa Community College District Mark Becker, Arizona State University Kathleen Bethel, SciEnTeK-12 Foundation Tyler Butler, GoDaddy.com Julie Coleman, Arizona Public Service Linda Coyle, The Center for Research in Engineering, Science and Technology Brandee Dysart, Greater Phoenix Convention & Visitors Bureau Allison Ewers, HP2, Inc. Kim Flack, Eight, Arizona PBS Stephanie Frimer, Science Foundation Arizona Bill Glaunsinger, Emeritus Professor, Arizona State University Lorna Glaunsinger Katia Goldmuntz, GFX at Intel Corporation Charles Griffith, Atkins North America Angie Harmon, Freeport McMoRan Copper & Gold Cynthia Hart, Phoenix Union High School District Michelle Huebner, Radisson Fort McDowell Resort Phillip Huebner, Arizona Technology Council Samantha Jackson, Downtown Phoenix Partnership Dawn Jones, Intel Corporation Guy Kezirian, SurgiVision Consultants, Inc.	Renee Levin, Intel Corporation Shoshana Leon, Honeywell Aerospace Tom Marshall, Retired, Honeywell Aerospace Vicki Massey, Mesa Public Schools Kelly McCullough, Eight, Arizona PBS Terry Medeksza, Downtown Phoenix Partnership Karen Merrill, Intel Corporation Georganna Meyer, Arizona Department of Revenue Holly Olson, Cox Media Monica Pastor, University of Arizona Cooperative Extension, Maricopa County Kristin Priscella, Arizona Science Center Karen Schedler, Arizona Foundation for Resource Education Alison Smith, Chevron Energy Solution Company Patty Smith, ASU Fulton School of Engineering Jan Stonebreaker, Arizona Science Center Rachel Sutherland, Intel Corporation Sara Torres, Arizona Science Teachers Association Caroline VanIngen-Dunn, Science Foundation Arizona Jo Anne Vasquez, Helios Education Foundation Brandy Wells, Translational Genomics Research Institute Lacey Wieser, Arizona Department of Education Steve Westwood, Salt River Project Steve Zylstra, Arizona Technology Council
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**Society for Science & the Public and Intel thank the dedicated
Committee members of Intel ISEF 2013:**

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Nancy Aiello, Chair
Henry Disston
Paula Johnson
Maria Lavooy
Chris Miller
Evelyn Montalvo
Jason Shuffitt

Intel ISEF SRC Readers

Susan Appel
Jennifer Green
Magan Lewis
Larry Sernyk
Jim Stevens

In Memorium — Marcus J. Friskop

In 2009, Marcus began serving on the Intel ISEF Scientific Review Committee, where he was serving his second term. In addition, Marcus established an International Science Fair Program in Hankinson, ND, advising hundreds of students during his tenure. Marcus guided a total of 68 students to present at 32 consecutive international competitions, at which his students garnered many awards. Marcus was a world-class educator, dear friend, mentor, father figure and visionary. He will be missed.

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Society for Science & the Public, Intel and the Phoenix 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
Mimi Alkire
Steve Alvarez
Buddy Bounds
Damira Burkan
Bill Chown
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In 1996, Intel became the title sponsor of the Intel ISEF. Since then, it has raised the program's visibility and made the Intel ISEF the world-renowned competition that it is, with true international participation and excellence. Society for Science & the Public thanks Intel for its many contributions to the Intel ISEF.

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Vice President, Corporate Affairs

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And the many Intel employees who support Intel ISEF and affiliated fairs around the world.



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Inform. Educate. Inspire.

Society for Science & the Public (SSP), a nonprofit membership organization based in Washington, D.C., owns and has administered the ISEF since its inception in 1950. Through the Intel ISEF, SSP encourages students to apply their imagination to excel in the sciences while exploring their unique and personal visions of the future.

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Please visit us at:
www.societyforscience.org
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Intel ISEF 2013 Survey

We want your feedback.



The survey solicits
feedback on Intel ISEF 2013.

After the fair, follow the link
societyforscience.org/isef2013AttendeeSurvey



**Countries, regions, and territories
participating in the Intel ISEF 2013**

Each # next to the finalist's name indicates previous Intel ISEF participation
T: precedes the name of the Teacher-Sponsor of the Finalist

AMERICAN SAMOA

Pago Pago, TEAS01, American Samoa Science Fair

- BI053** **Comparison of the Electrolytic Conductivity of Natural and Artificial Soft Drinks**
Ambika Murali, 14, Freshman, Leone High School, Pago Pago, American Samoa,
T: Murali Gopalan
- MA039** **Estimation of Population Size Using Sampling with and without Replacement**
Shikha Sreenivasan, 14, Freshman, Tafuna High School, Pago Pago, American Samoa, T: Sreenivasan Panickar
- PS029** **Survivorship & Reproduction of Melon Aphid, *Aphis gossypii* Glover, on Two Varieties of Cucumber, *Cucumis sativus*, Fed with Turmeric, *Curcuma longa*, Rhizome Extract**
Marcella Anne Fitosone, 18, Senior, Tafuna High School, Pago Pago, American Samoa, T: Joserose Jyothibhavan

ARGENTINA

Salta, ARG001, National Science Fair of Argentina

- EE307** **Blind People's Movement Electronic System**
Luciano Nahuel Ravainera, 19, Senior; Alejandro Bruno Salinas, 19, Senior
Escuela Tecnica No. 14 Libertad, Buenos Aires, Argentina, T: Pablo Hernan Schiavi
- EE308** **Automatic Multi-Sensory Rooms (A.M-S.R)**
Karen Ailen Villarroel, 18, Senior; Jonathan Bledlyn Nobile, 19, Senior
Industrial N 6 X Brigada Aerea, Rio Gallegos, Argentina, T: Liza Daniela Vera
- EN306** **Ecological Blocks with Pressure without Baking**
Martin Uranga Vega, 16, Senior; Delfina Frolik, 17, Senior
Colegio San Ignacio, Tandil, Argentina, T: Gregorio Alejandro Ciganda
- ME303** **S.O.S. *Escherichia coli*: An Indicator of Health Risk at School**
Lucas Ezequiel Guayan, 17, Junior; Gabriel Alberto David Gonzalez, 17, Junior
IPET NO 249 "Nicolas Copernico", Cordoba, Argentina,
T: Elena Maria Paula Lehner Rosales
- PS308** **Rolo... What Do You Do When You Tread?**
Micaela Soledad Lagos, 18, Senior; Maria Cristina Ulloa, 19, Senior
Pascual Laccarini, San Rafael, Argentina, T: Ivan Augusto Rosales

AUSTRALIA

Sydney, AUS002, Young Scientist

- EE070** **Optimising Operational Performance of a Thermoelectric Generator**
Kyle Francis Leong Willimott, 16, Junior, Barker College, Hornsby, Australia,
T: Dean Bunn
- EN060** **Save the Skin You're In! Prevention of Skin Cancer whilst Optimising Vitamin D Synthesis**
Ethan Thomas Butson, 17, Junior, The Illawarra Grammar School, Mangerton, Australia, T: Martin Butson
- Melbourne, AUS003, BHP Billiton Science and Engineering Awards
- EM014** **Dia-Situations**
Myles Mcelhinny Buckley, 15, Freshman, Lyneham High School, Canberra, Australia,
T: Steven Box
- EN025** **Investigation of Potential Assistive Methodologies for Complete Quadriplegics**
Yaya Chenyue Lu, 17, Junior, The Friends' School, Clemes, Hobart, Australia,
T: Graeme Faulkner

- ME027** **The Effect of Anti-Apoptotic Genes on Immune Mediated Cell Death in Cancer Cells**
Sarah Jane Gilbert McArthur, 18, Senior, Methodist Ladies' College, Melbourne, Australia, T: Thomas Curtis

AUSTRIA

Austria, AUT001, Vienna International Science and Engineering Fair

- CS310** **COPTICAID - The Global Emergency System of the Future**
Stefan Doberl, 19, Senior; Thomas Bohm, 19, Senior
Technical High School for Computer Science and Business Organization in Perg, Perg, Austria, T: Dietmar Wokatsch
- ET316** **DRT - Drag Reduction Technology**
Herbert Gerhardt, 19, Senior; David Josef Zefferer, 20, Senior
HTBLA Eisenstadt, Eisenstadt, Austria, T: Gerhard Probst
- MI307** **ICA-Method**
Robert Gautsch, 20, Senior; Lucas Noel Sulzberger, 20, Senior
Hohere technische Bundeslehr- und Versuchsanstalt Salzburg, Salzburg, Austria, T: Richard Podolan

AZERBAIJAN

Baku, AZR001, Azerbaijan Science and Engineering Fair

- CH301** **A Breakthrough in Ammonia Production**
Nuru Rauf Nurdil, 13, Freshman; Mustafa Polad Hajiyev, 16, Sophomore
"Young Talents" Lyceum, Baku, Azerbaijan, T: Gasim Huseynov
- EN303** **New Flux technology "Super Galvaniz": Cost Effective, High Corrosion Resistant, Formable and Greener Galvanized Steel**
Elnur Fakhraddin Aliyev, 16, Sophomore; Suad Bakhshiyev, 16, Junior
Lyceum Named After Academician Zarifa Aliyeva, Baku, Azerbaijan,
T: Aygun Alavsar Azizova
- MI001** **Synthesis of Silver Nanoparticles**
Vafa Agil Taghiyeva, 16, Sophomore, "Young Talents" Lyceum, Baku, Azerbaijan,
T: Eynulla Musayev

BELARUS

Minsk, BLR001, BellISEF

- EE048** **Acoustic Virtual Reality in Headphones**
Raman Andreevich Birulia, 17, Junior, Gymnasium 41, Minsk, Belarus,
T: Uladzimir Alexandrovich Kuznichenkau
- EN041** **AluGlass: New Thermostable Material for Electrical Engineering**
Tsimafei Malakhouski, 16, Sophomore, Public Educational Institution "Soligorsk Gymnasium #2", Soligorsk, Belarus, T: Anatolij Shubin
- MA305** **Percolation Games on Cayley Graphs of Groups**
Maksim Lvovich Bezukov, 18, Junior; Aliaksandr Olegovich Stadolnik, 17, Junior
Minsk Gymnasium #41 named after Serebriany V. H., Minsk, Belarus,
T: David Zmiaikou

BRASIL

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

- AS003** **Wasmannia auropunctata: Different Communications in Power Search!**
Joimarily de Morais Ferreira, 17, Senior, School Public Mineko Hayshida, Laranjal of Jari, Brasil, T: Elizabete Rodrigues Rodrigues
- BE001** **"Building Bridges": Expanding the Teachers' Horizon Regarding Mental Illnesses in Students, for the Development of a Better School Environment**
Bianca Spina Papaleo, 16, Senior, Colegio Dante Alighieri, Sao Paulo, Brasil,
T: Sandra Rudella Tonidandel
- BE004** **Search in the Web for Junior Scientific Initiation Students: An Analysis of the On-line Information Source Used**
Sandro Bertelli, 17, Junior, Instituto Federal Catarinense - Campus Camboriu, Camboriu, Brasil, T: Marouva Fallgatter Faqueti

- CS301 Can Game - A Proposal for Multidisciplinary Software for People with Autism**
Thiago Pedrosa Lins, 18, Senior; Luiz Reis Nogueira Neto, 16, Senior
Escola Estadual Professor Agamemnon Magalhaes, Recife, Brasil,
T: Eraldo Guerra Filho
- EE001 Semi-Metallic Fenders: Protection Under Guardrails for Motorcyclists with the Tread of the Tire**
Felipe Machado Ody Figueira, 18, Senior, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Brasil, T: Sandro Heleno Auler
- EE301 Home Automation Control for Visually Impaired**
Milena Friedrich, 18, Senior; Jaison Bittencourt Chamberlain, 18, Senior;
Fernanda Iara Blauth, 18, Senior
Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Brasil,
T: Luiz Fernando Guilhao Galbarino
- EN001 New Gypsum-Based Composite: A Sustainable Alternative to Polyurethane Wastes**
Douglas da Silva Vallada, 18, Senior, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Brasil, T: Tatiana Louise Avila de Campos Rocha
- ME001 Alternative Dermatological Treatment: A Research of Eggshell and Granola Properties for Natural Cosmetics Production**
Isabela Logrado de Moraes, 17, Senior, Centro Educacional Bezerra, Imperatriz, Brasil, T: Jaelbe Jose Sousa de Almeida
- PS302 Biological Activity and Phytochemical Approach of the Medicinal Plant *Arrabidaea chica***
Cristopher Mateus Carvalho, 15, Junior
Jaqueline Campos Costa, 16, Junior
Julia Maria Resende Ferreira, 15, Junior
Escola Estadual Manoel Antonio de Sousa, Mateus Leme, Brasil,
T: Fernanda Aires Guedes Ferreira
- Sao Paulo, BRA002, FEBRACE - Feira Brasileira de Ciencias e Engenharia*
- BE026 Physical Education at School: Pedagogical Solutions to the Main Difficulties Found by Brazilian Secondary School Teachers**
Tulio Vinicius Andrade Souza, 17, Senior, Grupo Genese de Ensino, Recife, Brasil,
T: Gilvani Alves Pile Torres
- BI024 Production of Tricalcium Phosphate Nanoparticles Doped with Iron for the Development of a New Sunscreen**
Vitoria Karen Raimundo, 17, Junior, Instituto Federal de Educacao, Ciencia e Tecnologia de Sergipe, Aracaju, Brasil, T: Tatiana Santos Batista
- BI025 A Novel Function of TstXK-beta Neurotoxin in the *Tityus serrulatus* Scorpion Venom**
Nayrob Pereira, 17, Senior, Escola Estadual Alberto Torres, Sao Paulo, Brasil,
T: Pedro Ismael da Silva Junior
- CB024 Modification of Human Mesenchymal Cells—Stem Capacity: The Relation between Beta-catenin Quantity and Cell Proliferation and Specialization — Phase II**
Laura Rudella Tonidandel, 16, Senior, Colegio Dante Alighieri, Sao Paulo, Brasil,
T: Carolina Lavini Ramos
- CH030 Preparation of Surfactants Mixture from Cashew Nut Shell Liquid and Castor Oil to Combat the Dengue Mosquito Larvae**
Gabriel Tiago Galdino, 17, Senior, Escola Estadual Jose Maria Hugo Rodrigues, Campo Grande, Brasil, T: Adilson Beatriz
- EM306 Use of *Pseudomonas stutzeri* to Reduce Seawater Chlorides**
Agatha Lottermann Selbach, 19, Senior; Desiree de Boer Velho, 19, Senior
Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Brasil,
T: Carla Kereski Ruschel
- ET311 Ethanol from Elephant-grass (*Pennisetum purpureum*) — Phase 3**
Ana Clara Rosa Stiehl, 18, Senior; Tiago Luis Herpich, 18, Senior
Luis Paulo Bernardi, 18, Senior
Escola Estadual Tecnica Sao Joao Batista, Montenegro, Brasil,
T: Michele Cristin Behrens

- ME307 Gel Based on *Bauhinia forficata* Leaf Extract: Stability and Effectiveness Evaluation in Diabetic Animals Skin Healing Wounds**
Walter von Sohten Xavier Lins, 17, Senior; Renata Colla Thosi, 16, Senior
Colegio Dante Alighieri, Sao Paulo, Brasil, T: Sandra Maria Rudella Tonidandel
- MI027 Bioactive Molecules in Diplopods (*Rhinocricus sp*): The Future of Drugs!**
Pedro Machado de Godoy, 17, Junior, Colegio Rainha da Paz, Sao Paulo, Brasil,
T: Pedro Ismael da Silva Junior
- Campinas, BRA003, Escola Americana De Campinas*
- CH307 Establishing the Optimum Amount of Polyelectrolyte Multilayers of Chitosan and Sodium Alginate for Drug Delivery**
Flavia Belotti Bedicks, 17, Senior
Josefina Dib, 18, Senior; Pilar Dib, 18, Senior
Escola Americana de Campinas, Campinas, Brasil, T: Mauricio Fernando Gozzi
- EM025 Replacing Super Absorbent Polymers in Disposable Diapers with Sugarcane Bagasse**
Salvador Alvarado, 16, Sophomore, Escola Americana De Campinas, Campinas, Brasil, T: Mauricio Fernando Gozzi
- PS021 Hybrids in the Brazilian Mangrove**
Alexandre Garcia Dias, 16, Junior, Escola Americana de Campinas, Campinas, Brasil,
T: Mauricio Fernando Gozzi

BULGARIA

Sofia, BGR001, Bulgarian Science and Innovation Fair

- CS001 Visualizing the Energy Landscape of a Regulatory Network of a Cell in the Presence of Noise**
Valeria Tsankova Staneva, 17, Junior, High School of Mathematics "Dr. Petar Beron" - Varna, Varna, Bulgaria, T: Erzsebet Ravasz Regan
- MA001 Rational Fixed Points of Polynomial Involutions**
Stanislav Ivanov Atanasov, 19, Senior, Model High School of Mathematics "Academician Kiril Popov", Plovdiv, Bulgaria, T: Evgenia Sendova
- MA002 On Weitzenboeck Derivations of Free Metabelian Associative and Lie Algebras**
Rumen Rumenov Dangovski, 17, Junior, Sofia High School of Mathematics, Sofia, Bulgaria, T: Irina Petrova Sharkova

CANADA

Hamilton, ON, CAN001, Bay Area Science and Engineering Fair

- CB065 Ara h Peanuts, Proteins, and Parasites**
Eisha Amina Ahmed, 17, Senior, Abbey Park High School, Oakville, Canada,
T: Tim OByrne
- ME088 Colorimetric Detection of *Plasmodium falciparum* via Aptasensor Technology**
Junyi (Sarah) Wu, 16, Junior, Assumption College School, Brantford, Canada,
T: Krista Karkut
- MI051 How Do Probiotic Bacteria Communicate with the Host?**
Sarah Joyce Flaherty, 16, Junior, Westdale Secondary School, Hamilton, Canada,
T: Sarah Attridge
- Canada, CAN002, Youth Science Canada —Team Canada*
- BE040 Neural Correlates of Visual Awareness during Perceptual Organization**
Danila Alferov, 15, Sophomore, A.B. Lucas Secondary School, London, Canada,
T: Colleen Fletcher
- BE041 Neural Plasticity: Novel Language Learning through Digital Technology**
Adelina Corina Cozma, 17, Senior, Bayview Secondary School, Richmond Hill, Canada, T: Mark Croswell
- BE042 Improving Long-term Compliance to Life Saving Medications**
Avinash Kumar Pandey, 15, Sophomore, Waterloo Collegiate Institute, Waterloo, Canada, T: Carlo Fusco
- CB050 Discovering and Defining the Role of Cilia in Dermal Stem Cell Communication.**
Sarthak Sinha, 17, Junior, Henry Wise Wood High School, Calgary, Canada,
T: Patricia Henderson

- CS053 Mobile Vision: An Efficient Algorithm and Its Applications**
Fan Zhang, 18, Senior, Lisgar Collegiate Institute, Ottawa, Canada,
T: Carolyn Odecki
- EE064 A Novel Modular Repulsive Type Hybrid Magnetic Bearing for FES Systems**
Zeyu Liu, 17, Senior, Sir Winston Churchill High School, Calgary, Canada,
T: Darlene Fitzner
- EN052 Functionalized Cellulose Nanocrystals: An Effective Antimicrobial Agent**
Janelle Tam, 17, Senior, Waterloo Collegiate Institute, Waterloo, Canada,
T: Michael Burns
- ET039 Enhancement of Biofuel Production through Novel Bioelectrosynthesis Characterization of *E. coli***
Sruti Arulmani, 15, Sophomore, Glenforest Secondary School, Mississauga, Canada,
T: Brad Marsh
- ET040 Fuels of the Future: An Optimized Fuel Blend for Lower Emissions**
Rajiv Jude Thamburaj, 17, Senior, Brampton Christian School, Caledon, Canada,
T: Benjamin Tan
- ME071 Cocoa Polyphenol Extract Inhibits Interferon-gamma Production in Murine Splenocytes**
Minuoja Chandramohan, 16, Junior, Ecole Marguerite-De Lajemmerais, Montreal, Canada, T: Valerie Bilodeau
- ME072 Mustard Oil as an Apicomplexan-targeting Drug Therapy for *Plasmodium falciparum***
Jessie Leanne Preston MacAlpine, 17, Senior, Huron Park Secondary School, Woodstock, Canada, T: Wendy Marshall
- ME073 Understanding the Role of Platelet Derived Growth Factor in the Function of Glioblastoma Brain Tumor Stem Cells**
Sujay Nagaraj, 16, Junior, Western Canada High School, Calgary, Canada,
T: Kim Hackman
- ME074 A Synergistic Approach in Treating Cancer via Photothermal Therapy and HSP90 Inhibition**
Arjun Koodali Nair, 16, Junior, Webber Academy, Calgary, Canada, T: Jennifer Parker
- ME075 Beta-Amyloid in Neurodegenerative Diseases**
Ankita Saxena, 16, Junior, Westmount Charter School, Calgary, Canada,
T: Allison Pinnock
- ME076 Effect of Ginseng on Beta-Amyloid in Alzheimer's Disease**
Xinyang Young Zhou, 18, Senior, London Central Secondary School, London, Canada, T: Jane Pincombe
- MI045 The Road to Novel Antibiotics**
Sarah Julia Hyslop, 17, Senior, Bishop Carroll High School, Calgary, Canada,
T: Joan Killick
- PH047 The First Validation of the Physical Nature of the Time Integral of Distance**
Maya Burhanpurkar, 14, Freshman, Barrie Dist North Collegiate, Barrie, Canada,
T: Lynn Beagen
- PH048 Creating PEAS: Portable Elemental Analysis System - Developing and Implementing a Novel Cold Cathode Source**
Jennifer Ann Csele, 17, Junior, Notre Dame College School, Welland, Canada,
T: Joanne Mastroianni
- Montreal, CAN004, Montreal Regional Science and Technology Fair*
- CB039 Shake Hands Over Cures, Not PD: Differentiation and Characterization of Dopaminergic Neurons Derived from Human-Induced Pluripotent Stem Cells**
Eunice Linh You, 17, Junior, Laval Liberty High School, Laval, Canada,
T: Heather McPherson
- EE049 Soap - O - Matic**
Sophie Isabelle Battat, 14, Freshman, The Study, Westmount, Canada,
T: AnnaMaria Palumbo
- EM029 Rain, Rain, Flush Away**
Julia London, 16, Sophomore, Queen of Angels Academy, Dorval, Canada,
T: Susan Pamboukian

CHILE*Copiapó, CHL001, EXPLORA National Youth Science Conference*

- ET302 Making a Dispositive that Takes Advantage of the Air Flux from a Car to Generate Electricity**
Felipe Ignacio Castillo Huerta, 17, Senior
Carolina Franchesca Diaz Araya, 17, Senior
Liceo Japon De Huasco, Huasco, Chile, T: Fresia Araya Olmos
- ET303 Hydraulic Wave System**
Jonatan Luis Hervoso Sardina, 16, Senior
Renzo Alessandro Lombardi Roberston, 17, Senior
Junior College, Arica, Chile, T: Victor Anselmo Pincheira Pizarro
- MI002 UV Radiation Resistance in Bacteria of Genus *Pseudomonas* Isolated from Antarctic Territory**
Dusan Marinkovic Henriquez, 16, Junior, The British School, Punta Arenas, Chile,
T: Daniela Paz Vargas

CHINA*Beijing, CHN001, Children Science Fair of Beijing*

- CH019 Investigation on the Separation and Recovery of Rare Earth Elements from the Waste Phosphor**
Jian Shen, 17, Senior, The Affiliated High School of Peking University, Beijing, China, T: Chunhua Yan
- EE022 The Preliminary Design of Arm-Swinging Moving Robot Applications Platform**
Han Xu, 17, Senior, The High School Affiliated to Renmin, University of China, Beijing, China, T: Meiling Wang
- PH019 Distribution of Supernovae in Their Host Galaxies and Implications for Their Progenitors**
Hanna Sai, 18, Senior, Beijing No.8 Middle School, Beijing, China, T: Ying Gao
- Shanghai, CHN002, CASTIC (China Adolescents Science and Technology Invention Contest), Shanghai*
- BI013 Mining Active Natural Products and Potential Medicinal Plants by Using Molecular Positioning System**
Yuxi Jiang, 17, Senior, No.2 High School Attached to East China Normal University, Shanghai, China, T: Weiyl Lou
- CS018 GLPoint: A 3D Presentation Software and 3D Development Platform**
Chenzhang Hu, 18, Senior, No.2 High School Attached to East China Normal University, Shanghai, China, T: Quan Zu
- EV010 Study on the Effect of the Combination of *Cratoneuron filicinim* and Algae to Purify Water**
Yun Zhu, 15, Freshman, Gaojing No.3 Junior High School, Shanghai, China,
T: Lifang Fan
- Wuhan, CHN003, CASTIC: (China Adolescent Science & Technology Invention Contest), Huadong*
- EE023 Invisible Key**
Jianing Liu, 17, Senior, Northeast Yucai School, Shenyang, China, T: Peng Gong
- EE305 Technology of DC Supply in Families**
Shuailin Lu, 16, Junior; Peiwen Liu, 16, Junior; Yutong Liu, 16, Junior
NorthEast Yucai School, Shenyang, China, T: Peng Gong
- MI012 The Research on Strain Isolation and Screening and Its Tissue Repair Effect of Fungus Puffball**
Shilin Gong, 18, Junior, Jilin Provincial Experimental High School, Changchun, China,
T: Yufeng Cao
- Beijing, CHN004, CASTIC-(China Adolescents and Technology Invention Contest), Beijing*
- CB014 Identify a New Regulator in Mitosis**
Chi Zhang, 17, Senior, High School Affiliated to Renmin University of China, Beijing, China, T: Tao Li
- MI013 Research Program on the Effect and Preliminary Mechanism of Earthworms (*Eisenia foetida*)-washed Solution on Prevention of Rose *Botrytis cinerea***
Yicen Yan, 17, Senior, Beijing No. 101 High School, Beijing, China, T: Lixia Ma

- PS015 Nip Invasive Plants in the Bud: A Case Study on *Euphorbia dentata* Michx. in China**
Lu Zhang, 18, Senior, Affiliated High School of Peking University, Beijing, China, T: Liqing Ma
Guangzhou, CHN005, CASTIC (China Adolescent Science & Technology Invention Contest), Xinan
- EE306 Super-thin Printing Device**
Yiou Fei, 18, Senior; Miaoxin Gong, 18, Senior; Yu Zuo, 18, Senior
High School No. 7 Chengdu, Sichuan, China, Chengdu, China, T: Yukun Zhang
- ET016 Green Oxide Solar Cells Assembled with Low-power Electrochemical Deposition Method and Their Photovoltaic Study**
Chang Liu, 17, Senior, Shandong Experimental Senior High School, Jinan, China, T: Bingqiang Cao
Fuzhou City, CHN006, CASTIC (China Adolescents Science & Technology Invention Contest), Huanan
- CS019 The Applied Research on the Processes' Right-Dropping Method Under Windows System**
Zhihao Yao, 18, Senior, Nanjing Jinling High School, Nanjing, China, T: Qijun Zhang
- EE028 Jellyfish-simulated Motion Detection**
Canzhao Li, 19, Senior, Quanzhou No.7 Middle School, Qunzhou, China, T: Li Yang
- PS012 Study on the Nematicidal Active Components from the Seeds of *Antiaris toxicaria***
Yong Chen, 18, Senior, Hainan Middle School, Haikou, China, T: Zhaohui Ye
Shanghai, CHN007, The Children Science Fair of Shanghai
- AS303 A Study about the Nest Related Social Behaviors of Ants**
Shiqi Chen, 18, Senior; Jingyi Wang, 17, Senior; Xiaotian Wang, 18, Senior
The High School Affiliated to Shanghai University, Shanghai, China, T: Weiqing Wang
- CS020 Interactive 3D CAPTCHA**
Jiahui Lu, 18, Senior, Shanghai High School, Shanghai, China, T: Yiming Wu
- EV011 Efficient Degradation of Common Herbicide Metolachlor by a Fungus**
Meng Xiao, 18, Senior, The High School Attached to Hunan Normal University, Changsha, China, T: Li Feng Wang
Chengdu, CHN008, Sichuan Science Fair
- CS311 Seeing Eye Pad: Navigation Assistance for the Visually Impaired**
Nathanael Graham Christenson, 17, Junior
Kevin Kaiyi Chow, 16, Junior
Luke Alexander Schuster, 16, Junior
Chengdu International School, Chengdu, China, T: Daniel Q. Wang
- EE054 Motion-Copy Robot**
Scott Si Jian Guan, 16, Sophomore, Chengdu International School, Chengdu, China, T: Glen Walenda
- EN310 Project S.U.N.**
Zachary West Guo, 17, Junior; Jeremy Jason Tan, 17, Junior; Bo Wen Chin, 17, Junior
Tianjin International School, Tianjin, China, T: Kathy Red

CHINESE TAIPEI

Taipei, TWN001, Middle Taiwan Regional Science Fair

- CH305 Organic Light-Emitting Nano Vesicles Self-Assembled from Bis-Urea Containing Fluorescent Molecules**
Fu Hsuan Liu, 17, Junior; Ting Hu, 16, Junior
Taipei First Girls High School, Taipei City, Chinese Taipei, T: Ming-Chih Hsu
- CS305 Fish-eye Like Spot Magnifier with Low Cognitive Load for Image Browsing**
Szu-Jung Wu, 18, Senior; Shiang-Wen Huang, 18, Senior
National Hsinchu Girls' Senior High School, Hsinchu City, Chinese Taipei, T: I-Chen Hsu
- EA303 Causes of Offshore Rain Bands along the Northeastern Coast of Taiwan**
Yu-Sy Lin, 17, Senior; I-Tzu Chen, 18, Senior
Taipei Municipal Chien-Kuo Senior High School, Taipei, Chinese Taipei, T: Jhao-Song Ye

- EM016 Novel Biodegradable Materials for Heavy Metal Removal: One-step Circulating System for Adsorption and Analysis**
Hsin-Pei Lee, 17, Junior, Kaohsiung Municipal Kaohsiung Girls' Senior High School, Kaohsiung, Chinese Taipei, T: Tsung-Ying Yu
- MA016 Resolving an Open Problem Related to Figurate Numbers by Pell Equations**
Yu-Fang Hsu, 16, Junior, National Nanke International Experimental High School, Tainan, Chinese Taipei, T: Ying-Hung Lin
- MA303 Scale Balanced Polynomial**
Yi-Hao Zhu, 16, Junior; Che-Yu Huang, 17, Junior
National Feng-Shan Senior High School, Kaohsiung, Chinese Taipei, T: Shu-Chuan Chang
- ME028 Protective Effects of Epigallocatechin-3-gallate against Hydrogen Peroxide-induced Apoptosis in *Spinocerebellar ataxia*, Type 3**
Tzu-Hung Ho, 17, Junior, National Taichung First Senior High School, Taichung, Chinese Taipei, T: Hui Fang Tsai
- ME029 Lung Tumor Associated Dendritic Cell-derived Resistin Promoted Cancer Progression by Increasing Wolf-Hirschhorn Syndrome Candidate 1/Twist Pathway**
Chih-Hsin Kuo, 16, Sophomore, The Affiliated Senior High School of National Kaohsiung Normal University, Kaohsiung, Chinese Taipei, T: Ming-Shyan Huang
- PH024 Superconductivity Enhanced by Chemical Disorder in BiS₂-Based Oxides**
Coco Ying, 17, Junior, Taipei Jingwen High School, Taipei City, Chinese Taipei, T: Maw-Kuen Wu

COLOMBIA

Medellin, COL001, Colombia Science & Engineering Fair

- BE046 Comparative Study about the Causes and Effects of Anxiety in Teens Between 14 and 18 Years Old from 3 Schools of Medellin, Colombia**
Ana Maria Botero, 17, Junior, Colegio San Jose de Las Vegas, Medellin, Colombia, T: Claudia Victoria Llano
- EE316 VIBRASOR: A Device that Emits a Vibration and a Light Signal to Alert People with Reduced Hearing**
Isamar Cartagena, 17, Freshman; Katherine Fernandez, 20, Freshman
IE Juan Nepomuceno Cadavid, Itagui, Colombia, T: Anderson Alet Clavijo
- EM311 Production of Compost Using Residual Grease from a Tannery in the Town of Copacabana, Colombia**
Oscar Danilo Catano, 18, Junior
Sara Gonzalez, 17, Junior
Jeferson Andrey Zapata, 17, Junior
IE Presbitero Bernardo Montoya Giraldo, Copacabana, Colombia, T: Mauricio Gomez
- ET046 Development of Natural Dye-Sensitized Solar Cells Using Low Cost Conductor**
Manuel Felipe Vasquez, 17, Junior, Instituto San Carlos de la Salle, Medellin, Colombia, T: Maria Yamile Galeano Ramirez
- ET317 Solar Eco - Kitchen: A Solar Cooker in Context. The Case of Guarne, Colombia**
Yeison Ferney Castano, 15, Junior
Juan Jose Londono, 16, Junior
Luis Carlos Escobar, 17, Junior
IE Rural Hojas Anchas, Guarne, Colombia, T: Hildebrando Vargas
- Bogotá, COL002, Feria Nacional de Ciencia, Tecnología e Innovación*
- EM316 Bottle Classrooms to Promote Recycling in the Municipality of "Campo de la Cruz"**
Adrian Jose Orozco Martinez, 15, Sophomore
Joel Hernandez Solano, 15, Sophomore
Juleidy Ruedas Becerra, 16, Sophomore
Institucion Educativa Panfilo Cantillo Mendoza, Campos de la Cruz, Colombia, T: Angelica Escorcia Ortiz

- EM317 Evaluation by Replacement of Coarse Aggregates in a Mixture of PET (Tereftalato de Polietileno) Concrete**
Paola Andrea Ramirez Giraldo, 16, Junior
Kelly Tatiana Arredondo Montoya, 16, Freshman
Sara Gonzalez Alzate, 16, Junior
Institucion Educativa Colegio Loyola para la Ciencia y la Innovacion, Medellin, Colombia, T: William Enrique Perez
- ET320 Obtaining Bioethanol from Rice Husks Cellulolytic Bacteria Help with Bowel of Termites and Yeast *Saccharomyces cerevisiae***
Saranyela Altamiranda Arregoces, 16, Junior
Wendis Loraine Pineda Escobar, 17, Junior
Juan Enrique Ricardo Trejo, 16, Junior
Institucion Educativa San Vicente de Paul, Sincelejo, Colombia, T: Roberto Carlos Acosta Pineda

COSTA RICA

San Jose, CRI001, Feria Nacional de Ciencia y Tecnologia

- BI301 Development of Hair Growth Inhibitor using Ant Pupae**
Kevin Jesus Chavarria-Esquivel, 18, Senior; Gabriela Alfaro-Valladares, 18, Senior
Colegio Tecnico Profesional Piedades Sur, San Ramon, Costa Rica, T: Arlette Orozco-Munoz
- EE302 Orientation and Safety System Device for Visually Impaired People**
Kevin Arnoldo Perez-Calvo, 17, Junior; Mariana Quesada-Morera, 17, Junior
Colegio Tecnico Don Bosco, San Jose, Costa Rica, T: Carlos Eduardo Acosta-Chacon
- EN002 Design of an Optimized Distiller for Production of Ethanol from Banana Waste**
Cristhian Andres Nunez-Vanegas, 17, Junior, Centro Educativo Maria Inmaculada, Limon, Costa Rica, T: Francisco Rojas-Rojas
- PS303 Inventory, Taxonomic Classification, and Georeferentiation of Macrofungi in La Argentina, Limon**
Derian Reinaldo Cespedes-Vega, 16, Sophomore
Brayan Delgado-Duran, 16, Sophomore
Diayner Baltodano-Zuniga, 16, Sophomore
Liceo de Cariari, Pococi, Costa Rica, T: Mauricio Perez-Gutierrez

San Jose, CRI002, National Engineering Expo

- EE004 Development of a New Communication Method and Mechanism for Deafblind People**
Isaac Christopher Portocarrero-Mora, 18, Senior, Colegio Vocacional Monsenor Sanabria, San Jose, Costa Rica, T: Julio Cesar Sanabria Solis
- EE303 Injury-free Bed for Bedridden Patients**
Brandon Antonio Segura-Torres, 20, Senior
Ulises Jesus Sanchez-Garcia, 18, Senior
Jean Carlo Fernandez Alfaro, 19, Senior
Colegio Tecnico Profesional Jesus Ocana Rojas, Alajuela, Costa Rica, T: Rafael Gerardo Molina-Juarez
- EN304 Modular Thoracic Strap for the Automated Monitoring of Vital Signs**
Jose David Somarribas-Escalante, 18, Senior
Jose Eduardo Vargas-Solis, 18, Senior
Jose Pablo Soto-Alvarado, 18, Senior
Colegio Tecnico Don Bosco, San Jose, Costa Rica, T: Alejandro Loria-Jimenez

CZECH REPUBLIC

Kutna Hora, CZE001, Students' Professional Activities (SPA)

- CH001 Luminescence Improvement of Lanthanide Complexes**
Michaela Krakorova, 18, Sophomore, Gymnasium Brno-Reckovice, Brno, Czech Republic, T: Michal Kunak
- CH002 New Spectral Properties of the Chelirubine and Its Possibility of the Use as the DNA Probe**
Martin Palkovsky, 17, Junior, Grammar School of Jakub Skoda, Prerov, Czech Republic, T: Marek Kuchler

- EE002 Modular Multifunction Sensor and Measurement Device Design and Implementation**
Marek Novak, 18, Junior, Gymnazium, Ceske Budejovice, Ceske Budejovice, Czech Republic, T: Jana Kalova
Prague, CZE002, AMAVET Czech Republic Science Fair
- AS001 New Facts from Experiments on Tardigrades in Anhydrobiotic State**
Marie Svarcova, 19, Senior, Veterinary High School, Hradec Kralove, Czech Republic, T: Miloslav Devetter, Ph.D.
- CH003 Rare-earth-doped Amorphous Chalcogenides in Photonics**
Jan Hrabovsky, 19, Senior, Gymnazium Josefa Ressel, Chrudim, Czech Republic, T: Lukas Strizik, MSc.
- PS002 DNA Barcode and Phylogeny of the Juncaceae Assessed using a New Set of Molecular Markers**
Do Hoang Diep, 19, Senior, Gymnazium pod Svatou Horou in Pribram, Pribram, Czech Republic, T: Lenka Zaveska Drabkova

DENMARK

Copenhagen, DNK001, Unge Forskere

- BI004 The Self-Assembly and Growth of Model Protocell Membranes**
Kirstine la Cour, 19, Senior, Munkensdam Gymnasium, Kolding, Denmark, T: Joern Peter Münch
- MA005 Applications of Dirichlet Series**
Asbjorn Christian Nordentoft, 19, Senior, Aurehoj Gymnasium, Gentofte, Denmark, T: Kirsten Rosenkilde

EGYPT

Cairo, EGY001, Cairo Science and Engineering Fair

- EE071 DAG (See the Sound): Innovative and Inexpensive, Riskless and Proper Device that Help Deaf People to Communicate with Normals**
Aly Abdelfatah Aly, 20, Senior, The British Intl. School in Cairo, Cairo, Egypt, T: Doaa Mohamed Kamal
- ET030 Doubling the Efficiency of Solar Cells by Reusing Lost Energy**
Nada Youssef Naser, 15, Sophomore, Sedfa Secondary Schools for Girls, Sedfa, Egypt, T: Youssef Mahmoud Naser

- ET031 Prevention of Aircraft Fall by Using Helium Gas**
Mohamed Alaaeldin Mohamed, 18, Senior, Information Technoogy High School, Ismailia, Egypt, T: Asmaa Taha Ali

Alexandria, EGY002, BA Science and Engineering Fair

- CS317 New Screening Method for Early Pediatric Cancer Detection through Automated Handwriting Analysis**

Abdelrahman Mohamed Elsayed Abdelmoneim, 17, Junior
Omar Khaled Obeya, 17, Senior
Sara Samir Hagras, 18, Senior
Hoda Sharawy Experimental Language School, Alexanderia, Egypt, T: Amina Mohamed El-Kassar

- EE072 Ships Rescue System**
Ahmed Atef Saber, 15, Freshman, Lycee la Liberte D'Alexandrie, Alexandria, Egypt, T: Mohamed Atef Saber

- ME089 Natural Wound Healing System**
Amira Ahmed Hassan Gabr, 16, Sophomore, Al-Mansura Al-Sanawya Al-Gadida For Girls, Mansura, Egypt, T: Abeer Mohamed Eraki

ESTONIA

Tartu, EST001, Estonian Young Scientist Contest

- BI026 Restricting Neurotransmitter Dopamine in Treatment of Schizophrenia: Identifying Antagonists for Dopamine D2 and D3 Receptors**
Olivia Luige, 20, Senior, Hugo Treffner Gymnasium, Tartu, Estonia, T: Reet Reinart-Okugbeni

FINLAND

Helsinki, FIN001, Finland National Science & Engineering Fair

CS315 Virtual Laboratory for Strategy Games

Tomi Pelttari, 17, Junior; Yuanqi Shan, 17, Junior
Paivola Upper Secondary School, Valkeakoski, Finland, T: Merikki Lappi

ME090 Anorexia nervosa Treatment Effectiveness: A Markov Model

Kerttu Katarina Uusimäki, 18, Junior, Paivola Upper Secondary School, Tarttila, Finland, T: Merikki Lappi

FRANCE

Paris, FRA001, Olympiades de Physique

PH301 Formation and Characterization of Homogeneous and Highly Stable Soap Bubbles

Quentin Phillippe Poussier, 17, Senior; Alexandre Barbin, 17, Senior
Ewen Queffelec, 17, Senior
Lycee Douanier Rousseau, Laval, France, T: Patrice Michel

GEORGIA REPUBLIC

Tbilisi, GE0001, Georgia Republic Regional Science Fair

ET065 The Effective Wheel Attaching System (WAS) to the Road

Guram Beraia, 16, Senior, Private Demirel College, Tbilisi, GEORGIA, T: Sinan Sahin

GERMANY

Erfurt, DEU001, Jugend Forscht

BI003 Effect of Heavy Metal Ions on the Sugar Metabolism in the Model Organism Baker's Yeast: Inhibition of Glycolytic Enzymes

Robert Alexander Leonard Stanley Salzmann, 17, Senior, Gymnasium Andreanum, Hildesheim, Germany, T: Britta Eickmann

BI302 Nanoscale VIP (Very Important Proteins) Transport

Fabian Ferdinand Oehler, 16, Senior; Simon Weisemann, 18, Senior
Gymnasium am Markt, Bunde, Germany, T: Thomas Michael Braun

CH009 Procedures for Separation of Volatile Oils

Michael Laue, 17, Senior, Europagymnasium Walther Rathenau Bitterfeld, Bitterfeld, Germany, T: Egbert Lange

CH010 Catalysis in Organic Chemistry: A New Compound as Possible Catalyst

Dominik Spors, 17, Junior, Gymnasium Martino-Katharineum, Braunschweig, Germany, T: Pascal Schindler

CS005 Development of a Relativistic Raytracer

Julius Kunze, 18, Senior, Johannes-Kepler-Gymnasium Chemnitz, Chemnitz, Germany, T: Thomas Scheunert

CS006 The Voice of Vocabulary – Learn English with Popular Songs!

Marvin Scherschel, 18, Senior, Arnold-Janssen-Gymnasium, St. Wendel, Germany, T: Michael Didas

ET304 Energy from Organic Waste: The Energy Source of the Future

Niklas Haerting, 17, Junior; Patricia Franziska Vogel, 16, Sophomore
Schulzentrum Carl von Ossietzky, Gymnasium- Oberstufe Bremerhaven, Bremerhaven, Germany, T: Doris Habich

MA004 Controlling a Flying Cam: Theory and Application

Laura Maehler, 17, Senior, Aldegrevorgymnasium Soest, Soest, Germany, T: Andreas Pallack

ME002 Like Father like Son: Genetics of Fingerprints

Fabian Hauf, 17, Junior, Sebastian Munster Gymnasium Ingelheim, Ingelheim, Germany, T: Stefanie Schneller

PH008 New and Improved Insights into the Microcosm: Multimodal Light Microscopy with Bright, Darkfield and Phase Contrast, Part 2: Axial Phase-Darkfield Contrast (APDC), Variable Phase-Brightfield Contrast (VPBC) and Universal Variable Bright-Darkfield Contrast (UVBDC)

Timm Piper, 17, Junior, Martin-von-Cochem-Gymnasium, Cochem, Germany, T: Jörg Piper

HONG KONG, SAR OF THE PEOPLE'S REPUBLIC OF CHINA

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

EE317 Smart Alert Washer

Mei Kam, 18, Junior; Jia Ying Zhong, 18, Junior; Mei Di Zhu, 17, Junior
Sheng Kung Hui Li Ping Secondary School, Hong Kong, Hong Kong, T: Kin Yip Ho

EE318 Maglev Spiral-vane Vertical Axis Wind Turbine

Chong Chung Chow, 18, Senior; Tsz Him Wong, 17, Senior;
Chung Shun Steven Yuen, 19, Senior
Ju Ching Chu Secondary School (Yuen Long), Hong Kong, Hong Kong, T: Alta Yuk Ning Choi

EM033 Using Spent Coffee Grounds in Purifying Drinking Water and Removing Odour in Air

Tsui Yee Naomi Ko, 17, Senior, St. Paul's Convent School, Hong Kong, Hong Kong, T: Siu Yan Tara Lam

EN045 Utilization of Starch for Production of Plastic Like Material

Wing Yi Kan, 14, Freshman, Maryknoll Fathers' School, Hong Kong, Hong Kong, T: Yuen Man To

EN046 Door Stopper Hinge

Chun Hei Lau, 14, Freshman, Tsuen Wan Government Secondary School, Hong Kong, Hong Kong, T: Sai Chong Lau

ET319 Thin Film Biopolymer-based Rechargeable Battery

Chun Sang Pun, 17, Junior; Chi Sum Wong, 16, Sophomore;
Chun Kit Jason Lo, 16, Sophomore
The Chinese Foundation Secondary School, Hong Kong SAR, Hong Kong, T: Chun Man Ho

HUNGARY

Budapest, HUN001, Innovation Contest for Young Scientists

EE024 New Coaxial Loudspeaker

Gergely Papp, 19, Senior, Szegedi Muszaki es Kornyezetvedelmi Kozepiskola es Szakkepzo Iskola Gabor Denes Tagintezmenye, Szeged, Hungary, T: Janos Vermes

INDIA

New Delhi, IND001, Initiative in Research and Innovation in Science

BI307 To Develop Prototype Testing Tool to Differentiate Between Artificially Ripened Fruits and Naturally Ripened Fruits

Khanak Bhargava, 15, Sophomore; Ishani Goomer, 16, Junior
Amity International School, Mayur Vihar, New Delhi, India, T: Shalu Pillai

CS043 Reverse Data Synthesis: Infinite System Learning from a Finitely Large Provided Data Set

Onkar Singh Gujral, 17, Sophomore, La Martiniere For Boys, Kolkata, Kolkata, India, T: Arvinder Kaur Gujral

CS044 Finding Best Speaker Position using New Algorithms to Determine Acoustic Properties of a Room

Akshat Boobna, 16, Freshman, Amity International School, Saket, New Delhi, India, T: Sunita Dash

EE093 EYERINATOR: A New Vision

Jyoti Ranjan Sahoo, 15, Sophomore, D.A.V Public School, Unit-8, Bhubaneswar, Bhubaneswar, India, T: Geeyanjali Padhie

MA306 Dissection of Square into 'N' Congruent Squares

Nayana Ravindranath Koravatti, 16, Sophomore
Aishwarya Chanchi Ashok, 16, Freshman

PS026 Comparative Anti-Bacterial Activity in the Leaves of Four Bauhinia Species

Yeshwanth Mahesh, 15, Sophomore, Citizens High School, Bangalore, India, T: Eswaraiah Eswaraiah Gaddan

INDONESIA

Jakarta, IDN001, Youth Science Competition

BE302 **Having Fun Learning about Coral**

Jovita Nathania, 18, Senior; Rosinta Handinata, 18, Senior;
Maria Christina Yolenta Lestari, 18, Senior
Tarsisius 1 High School, Jakarta, Indonesia, T: Ruswanto Hadi Sucipto

CH020 **Magic Test Paper: Formaldehyde Test Kit Derived from Natural Blue Pigment of *Clitoria ternatea* Flower Extract**

Hani Devinta Sari, 18, Senior, 63 Senior High School, Jakarta, Indonesia,
T: Eni Puspita Eka Putri

EN018 **Utilization of Eggshell Waste as Ant Repellent for Bio-plastic Food Packaging**

Muhammad Imadudin Siddiq, 18, Senior, Insantama Bogor Islamic Senior High School, Bogor, Indonesia, T: Uun Sundari

IRAQ REPUBLIC

Erbil, IRQ001, INPO (Iraq National Project Olympiad)

BI309 **The Effects of Leaf Aqueous Extract of *Eucalyptus globulus* and *Quercus persica* Plants on Some Pathogenic Bacteria**

Wlat Abdulaziz Ahmed, 17, Junior; Miran Shirwan Zyad, 17, Junior;
Ahmed Wahab Ahmed, 17, Junior
Private Ishik College, Erbil, Iraq Republic, T: Osman Gundas

CS312 **Exam Automation Pro**

Mahmood Saman Ismael, 17, Junior; Mohammed Yaseen Abu Baker, 17, Junior
Erbil Ishik Boys' High School, Erbil, Iraq Republic, T: Salih Ozsoy

EE315 **Smart Home**

Zhiran Taha Abdalla, 17, Junior; Shihab Soran Al-Barazanchi, 17, Junior
Salahaddin Ayyubi College, Sulaimaniyah, Iraq Republic, T: Nejdett Arslan

IRELAND

Dublin, IRL001, BT Young Scientist & Technology Exhibition

PH001 **The Effect of Static Magnetic Fields on Molecular and Macroscopic Properties of Water**

Shauna O'Neill, 17, Junior, Mean Scoil Muire gan Smal Roscommon, Roscommon,
Ireland, T: Padraig Harlow

Regional and Finals in Kildare, IRL002, SciFest

EE005 **Innovative, Easy to Use and Safe Circuit and Lighting Control for Every House**

Simon Kieran Bluett, 17, Junior, Meanscoil na mBraithre Chriostai, Cill Chainnigh,
Kilkenny, Ireland, T: Patrick McCormack

ISRAEL

Jerusalem, ISR001, The Israeli Young Scientists Contest

CH029 **Synthesis and Characterization of Nanometric Semiconductors**

Guy Avshalom Hofshi, 18, Senior, Leo Baeck Education Center, Haifa, Israel,
T: Ruth Ash

CS027 **"Attention!!!" A System for Helping Students with ADHD to Focus in Class**

Nadav Rubinstein, 15, Sophomore, Ort Givatayim, Givatayim, Israel, T: Dani Peretz

EE309 **ABCS: Automatic Buoyancy Control System**

Idan Hadar Sharon, 17, Senior; Omer Granek, 17, Senior
Hof HaCarmel Comprehensive School, Ma'agan Michael, Israel, T: Aharon Raznov

EN308 **Impedance Pump for Medical Applications**

Oz Rachmani, 17, Senior; Linda Ahdout, 16, Junior
Shapira High School, Netanya, Israel, T: Ofer Levinger

EV303 **Predicting Earthquakes by Monitoring the Electron Content of the Ionosphere**

Nicolas Javier Marone, 18, Senior, Ort Henri Ronson, Ashqelon, Israel,
T: Ofir Katsav
Aviv Rabinovich, 18, Senior, Mevoot Hanegev, Kibbutz Shoval, Negev, Israel,
T: Guy Israel Tamir

PH036 **Method for Mass Estimation of the Higgs Particle in the Decay Higgs**

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Noam Ottolenghi, 17, Senior, Yachad Modi'in High School, Modi'in, Israel,
T: Ohad Silbert

ITALY

Milano, ITA001, I Giovani e le Scienze

EM301 **Smart Crossroads**

Alessandro Petromilli, 19, Senior; Denise Sanfilippo, 19, Senior
Liceo Scientifico Statale Paolo Frisi, Monza, Italy

ET301 **Ecological Hypergolic Propellants**

Massimo Cappelletto, 19, Senior; Davide Zilli, 19, Senior
I.S.I.S. A. Malignani, Udine, Italy, T: Eliana Ginevra

MA301 **Tug-of-War: Physical-mathematical Analysis of the Forces Involved in Tug-of-War**

Claudio Freda, 19, Senior; Andrei Militaru, 20, Senior; Francesco Bray, 19, Senior
Liceo Scientifico Statale Paolo Frisi, Monza, Italy, T: Barbara Coppo

JAPAN

Tokyo, JPN001, Japan Students Science Awards

CH041 **Reaction Mechanism of Zn-Cu Galvanic Cells in NaCl Solution**

Sohma Takanari, 17, Junior, Hokkaido Asahikawa Higashi High School,
Asahikawa-City, Japan, T: Kazushige Tomita

EA013 **Ignored Micro Seashells Tell Ancient Marine Environment**

Gyou Tanaka, 16, Sophomore, Chiba High School, Chiba, Japan, T: Naoki Ohtsuka

PH308 **"V-shaped Wave" Generated by a Moving Object: Analyses and Experiments on Capillary Gravity Waves**

Tomohiko Sato, 17, Junior; Takahiro Yomono, 18, Senior
Hiroshima Prefectural Fuchu Senior High School, Fuchu-shi, Japan,
T: Junpei Okamoto

Tokyo, JPN002, Japan Science & Engineering Challenge

AS304 **Light, CO₂ Level and Food Limitation as Exogenous Factors Affecting Diel**

Vertical Migration in *Bosmina longirostris*

Daisuke Murakami, 17, Junior; Chisato Tanaka, 17, Junior
Nagasaki Prefectural Nagasaki Nishi High School, Nagasaki, Japan,
T: Tetsuya Nagashima

CS021 **A Novel Framework of Behavior-based Malware Detection Available for General Android Devices**

Hiromu Yakura, 16, Sophomore, Nada Senior High School, Kobe, Japan,
T: Keisuke Kawanishi

MA015 **Structure of the Set of Primitive Pythagorean Triples over Gaussian Integers**

Tomoko Tachibana, 18, Senior, Tsuyama National College of Technology, Tsuyama,
Japan, T: Osamu Matsuda

JORDAN

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

EA302 **Using Modified Natural Zeolite to Improve the Characteristics of Soil**

Amr Faisal Jarajreh, 16, Junior; Dana Diaaldeen Shalabi, 17, Junior
Jubilee School, Amman, Jordan, T: Khalil Ibrahim Asfour

EE065 **A Developed Traffic System to Help the Emergency Cars and to Reduce Road Traffic Accident by Using the the Technology of RFID and TDMF**

Mohammad Moath AL-Gsaemhe, 15, Freshman, King Abdullah II School for
Excellence, Irbed, Jordan, T: Mo'ath (M.A) AL-Gsaemhe

EM305 **The Environmental Innovational Uses of Endothermic Reactions**

Bisher Ghaleb Assamak, 17, Junior; Amer Mohammad Sawalha, 16, Junior
Modern Montessori School, Amman, Jordan, T: Iman Mohammed Asad

ET041 **Power Saving in Public Road Lighting**

Eslam Waleed Qrea, 17, Junior, Pioneer Center for Gifted and Talented Students,
Aqaba, Jordan, T: Najah Abedalfatah Ismael

- ET309 Efficiently Increasing Rate of Hydrogen Production in Water Electrolysis Driven by Solar Energy**
Omar Al-Majeed Imad Yared, 16, Junior; Ibrahim Zuhair Al Saidi, 16, Junior
Modern Montessori School, Amman, Jordan, T: Iman Mohammad Asad
- EV306 # The Environmental Refrigerator**
Fawzi Moh'd Metwalli, 16, Junior
Nour Abdel Hay Maraqa, 17, Junior
Al Raed Al Arabi, Amman, Jordan, T: Mohammed Younes Assaifi
- MA025 Closed-Form Volumes of a Wide Family of Astroidal Ellipsoids and the Hyperbolic Octahedron**
Salahaldeen Ibrahim Abu-Alshaikh, 16, Sophomore, Jubilee School, Amman, Jordan, T: Ma'in Abdelhadi Abumuhfouz
- ME078 Investigation of Antihepatotoxic and Antioxidant Activities of *Ocimum basilicum***
Shatha Ali Al-sabbah, 16, Junior, Jumana Secondary School, Ramtha, Jordan, T: Hela Fathi Al-Merie
- ME308 Using HPG (Honey, Propolis and Ginger Oil) to Treat Burns**
Thshreen Sultan Alfazzaa, 17, Junior; Hana Hussein Mustafa, 17, Junior
King Hussein Foundation, Jubilee School, Amman, Jordan, T: Khalil Ibrahim Asfour

KAZAKHSTAN

Astana, KAZ001, DARYN National Junior Science Projects Competition

- EE073 Electrotechnology Exchanger of Heat to Remove Soil at Shallow Depths**
Aiman Zhumakayeva Kanatovna, 17, Junior, Specialized School for Gifted Children
"Daryn", Karaganda, Kazakhstan, T: Kappas Kussainov Kussainovich
- MA049 The Existence of Computable Sequence that Cannot Be Described by Finite Automata**
Raushan Serikzhan Serikzhanovna, 17, Freshman, Republican Specialized Physics and Mathematics School after Zhautykov, Almaty, Kazakhstan, T: Bakibayev Timur Ibraikhanovich
- PH316 Study of Formation Aluminide: Layers on the Surface of Titanium by Ion Modification and Pulse-Plasma**
Zere Smailova Dulatovna, 17, Junior; Balzhan Bekenova, 16, Sophomore
School No. 148, Almaty, Kazakhstan, T: Shadiev Kairatbek Hamzatkhanyly

KENYA

Nairobi, KEN001, Kenya Science and Engineering Fair

- EM307 Grey Water Filter**
Yesha Sujal Desai, 15, Sophomore; Ulda Nereah Anyango, 15, Sophomore
Jalaram Academy, Kisumu, Kenya, T: Tobias Okeyo Nyiamo
- EV304 Think Green, Go Blue: Using Cactus Mucilage to Purify Water**
Manushi Nilesh Shah, 16, Sophomore; Misha Kamal Patel, 15, Sophomore
Oshwal Academy Nairobi Junior High School, Nairobi, Kenya, T: Susan Nyaguthii Karani

KUWAIT

Kuwait, KWT001, Kuwait Science and Engineering Fair

- EM057 # Flowers from Waste Paper by Simple Chemical Reactions**
Salman Fahd Al-Otaibi, 17, Freshman, Sabah AL-Salem High School, Kuwait, Kuwait, T: Osama Saud Omar
- ET064 # Plant Energy by Creative Way to Create Energy From Green Sources**
Ebraheem Ali Al-kandri, 17, Senior, Duaij Salman Al-Sabah School, St1, Kuwait, T: Attaf Abusari Alqadi

LEBANON

Beirut, LBN001, Lebanon Science Fair

- CS318 BR-EYE-LLE**
Rajaa Antar, 16, Sophomore; Nour Saeed, 17, Senior
Makasid Secondary School, Saïda, Lebanon, T: Noura Wehbe

- ET056 Hydro Fuel System**
Abdel Halim Mohamad El Sherkawi, 20, Senior, Jamil Rawas Secondary School, Beirut, Lebanon, T: Abir Arab
- EV052 A Better World**
David Jean Salem Abou Kors, 17, Freshman, Antonine Sisters School, Ghazir, Lebanon, T: Tony Abi Atmi
Beirut, LBN002, Lebanon Science Fair
- BE053 GREENECHO**
Claude Nailim Boueri, 16, Junior, Antonine Sisters School, Beirut, Lebanon, T: Tony Abi Atmi
- ME101 Inked**
Tracy Joseph Abi Hanna, 16, Junior, Antonine Sisters School, Beirut, Lebanon, T: Tony Abi Atmi
- ME313 Portable Nurse**
Serage Adnan Amatory, 16, Sophomore;
Nourhan Nasser Ghourani, 16, Sophomore; Celia Samer El Halabi, 15, Freshman
Canadian High School, Beirut, Lebanon, T: Nader El Sabeh

MACAU, SAR OF THE PEOPLE'S REPUBLIC OF CHINA

Macao, MAC001, Macao Region Science Fair

- BE303 Basic Health, Classic Truth! Behavior Adjustment Suggested by the Identification of Constitutions: A Novel Idea for Healthcare**
Cheng In Chao, 18, Senior; Hio Teng Wong, 18, Senior
Keang Peng School, Macao, Macau, T: Kai Heng Lam
- CS036 A Secure Distributed Storage System : Algebraic Analysis and Implementation**
Chih Wei Tan, 16, Junior, Pui Ching Middle School, Macau, Macau, T: Chan Lam Wong
- EE035 Efficient Smart Clothes Dryer**
Un Peng Tai, 18, Senior, Santa Rosa de Lima High School (Chinese Section), Macao, Macau, T: Guang Yue Li

LUXEMBOURG

Luxembourg, LUX001, Concours Jeunes Scientifiques Luxembourg

- CS320 OSTOCLLOUD**
Matthieu Leon Schon, 16, Freshman; Cecil Fabien Schon, 15, Freshman
LGL Luxembourg, Luxembourg, Luxembourg, T: Rodrigo Vergara
- EE324 Development of an Anthropomorphic Robot Hand**
Ben Weber, 17, Junior; Joe Aloyse Hoffmann, 18, Junior; Patrick Lux, 18, Junior
Athenee de Luxembourg, Luxembourg, Luxembourg, T: Claude Lagoda

MALAYSIA

Kuala Lumpur, MYS001, National Schools Science Innovation and Engineering Competition

- EM015 BIO-OIL: The Use of Specially Made Catalyst**
Nur Liyana Johari, 17, Junior, Tuanku Syed Putra Secondary Science School, Kangar, Malaysia, T: Noridah Yangman
- EV017 Use of Biosorbent for Removal of Colour and Heavy Metal from Dyed Waste Water**
Sarah Jia Xin Wong, 16, Junior, SMK Batu Lintang, Kuching, Malaysia, T: Yee Chuen Lim
- PS306 Botanical Pesticide from Indigenous Plant, Phase Two**
Florina Stephanie Richard, 17, Junior; Michelle Jane Babat, 18, Junior
Sekolah Menengah Kebangsaan Batu Lintang, Kuching, Malaysia, T: Yee Chuen Lim
Pontian, MYS002, MRSM Young Scientist
- CH302 Biodegradable Polymer from Banana Stem**
Muhamad Asyri Jamlus, 17, Junior; Wan Ezzeriq Wan Zalik, 17, Junior
Mara Junior Science College Pengkalan Chepa, Kota Bharu, Malaysia, T: Wan Zuraifah Wan Ishak

- EV025 Natural Algicide to Combat Eutrophication of Water Bodies**
Muhammad Ali Zuhazim Bin Rosli, 17, Freshman, Maktab Rendah Sains Mara Taiping, Taiping, Malaysia, T: Nur Suliana MD Zain
- MEXICO**
Los Mochis, MEX001, Mexico Science and Engineering Fair
- BE033 I Have Fun with the Physics: Didactic Method of Teaching and Learning**
Katia Aldhara Plaza Palacios, 17, Freshman, Escuela Preparatoria Regional de Jocotepec, Jocotepec, Mexico, T: Paulino Garcia Ramirez
- BE034 Effect of the Music Therapy on Inhibitory Control of Children Victims of Maltreatment**
Jose Carlos Consuelo Perez, 17, Senior, Preparatoria del Tecnológico de Monterrey, Campus Guadalajara, Zapopan, Mexico, T: Alma Delia Zamarrípa Flores
- BE035 Videogames, Create or Destroy Childhood?**
Arelly Ariadna Espejel Mendez, 17, Senior, Escuela Preparatoria Oficial Anexa a la Normal Numero 3 de Nezahualcoyotl, Nezahualcoyotl, Mexico, T: Martha Vazquez
- BE304 Magician or Scientists? Didactic Comic for Science Difussion**
Angel Roberto Ruiz, 16, Sophomore, Universidad del Valle de Mexico, Puebla, Mexico, T: Andrea Garcia Catzalco
Ricardo Marquez Catzalco, 16, Sophomore, Instituto Tecnológico de Estudios Superiores de Moterrey, Puebla, Mexico, T: Roberto Martinez
- BE305 The Effects of Migration in the Community Jaltepec, Axapusco, State of Mexico**
Sergio Saavedra, 17, Senior; Alfredo Gallegos, 16, Junior;
Israel Antonio Delgadillo, 16, Junior
Escuela Preparatoria Oficial No. 144, Jaltepec, Mexico, T: Rosalia Garcia
- EM030 Trap Sunlight and Solar Radiation Reducer**
Ana Laura Barrales Walt, 17, Freshman, Escuela Preparatoria Oficial No. 144, Jaltepec, Mexico, T: Emmanuel Hernandez Perez
- EM031 Natural Fungicides, an Alternative for Agriculture**
Adrian Alberto Contreras Gonzalez, 15, Sophomore, Instituto America, Culiacan, Mexico, T: Clara Lamarque Ramirez
- EM309 # Lombricachaza: Organic Alternative to Soil Fertilization**
Cesar Landeros Lopez, 18, Freshman; Samantha Sandoval Toledo, 17, Freshman
Unidad Academica Preparatoria Vladimir Ilich Lenin, Eldorado, Mexico, T: Rogelio Sosa Perez
- ET047 Aerodynamic Principles of Golf Balls: An Alternative to the Exterior Design of Heavy Vehicles**
Daniela Alejandra Plascencia Jimenez, 17, Senior, Preparatoria del Tecnológico de Monterrey, Campus Guadalajara, Zapopan, Mexico, T: Marco Antonio Rangel Bocardo
- ET314 Bioethanol Production by Fermentation of Rejection Banana**
Dulce Alajandra Franco, 18, Senior; Mario Alberto Martinez, 18, Senior
Centro de Bachillerato Tecnológico Industrial y de Servicios NO 172, Cortazar, Mexico, T: Pedro Gonzalez
- ME046 FARMAGOMAS**
Guadalupe Cristina Medina Medina, 17, Junior, Colegio de Estudios Científicos y Tecnológicos del Estado de Puebla, Tecamachalco, Mexico, T: Adriana Reyes Castro
- MI031 Bacillus in Defense of the Chickpea Plants against *Fusarium oxysporum ciceris***
Diana Laura Barraza Villarreal, 14, Freshman, Centro de Ciencias de Sinaloa- Apoyo a Sobresalientes en el Estado de Sinaloa, Culiacan, Mexico, T: Rogelio Sosa Perez
- MOLDOVA**
Chisinau, MDA001, Moldova Science and Engineering Fair
- CS058 Multilingual Integrated Development Environment for Educational Process**
Ahmed Umbatov, 19, Senior, Lyceum "Vasile Lupu", Chisinau, Moldova, T: Mariana Ursu

- EV310 Winter EcoLab at Your Home**
Anastasia Maslighin, 18, Senior; Vladislav Sincari, 18, Senior
Lyceum "Nicolae Milescu Spataru", Chisinau, Moldova, T: Liudmila Baranciuc
- PS312 Influence of Environmental Factors on Plant Development**
Eugeniu Dimitriu, 14, Freshman; Alexandru Smolenschi, 17, Junior
Lyceum "Orizont", Chisinau, Moldova, T: Igor Evtodiev

MOROCCO*Rabat, MAR001, Morocco Science Fair*

- EE084 Smart Helmet**
Ahmed Lamrani, 16, Junior, Flowers High School, Meknes, Morocco, T: Belhaj Mohammed Ali
- EE089 # Light for Reading**
Mouhcine Berrida, 17, Junior, Allal El Fassi, Rabat, Morocco, T: Belhaj Mohammed Belhaj
- ET321 The Electric Lever**
Haytam Belhaj, 14, Freshman, Preference, Meknes, Morocco, T: Belhaj Mohammed Ali
Omar Hassani, 16, Junior, Konouz, Meknes, Morocco, T: Belhaj Mohammed Ali

NETHERLANDS*Utrecht, NLD001, INESPO: International Environmental and Sustainability Project Olympiad*

- ET305 WavEnergy**
Bart Fluit, 15, Freshman; Wouter Boot, 14, Freshman
Robert de Bruijne, 15, Freshman
Calvijn College, Goes, Netherlands, T: Jan-Ary Baaijens

NEW ZEALAND*Wellington, NZL001, Genesis Energy Realise the Dream*

- EE055 Robotic Glass Cleaner**
Sohail Arif Abdulla, 17, Senior, Mount Roskill Grammar School, Auckland, New Zealand, T: Bill Collis

NIGERIA*Lagos, NGA003, Genius National Science Expo*

- CS303 I Can Do It Myself: A Software for the Blind**
Precious Chidiebube Ebenezer, 15, Junior; Ozioma Uche Anigbogu, 14, Junior;
James Nenshi, 17, Junior
Calvary Arrows College, Gboko, Nigeria, T: Seun Olufolaji
- ET306 URINE: Metabolic Waste or Energy Source?**
Adebola Florish Duro-Aina, 14, Junior; Oluwatoyin Eunice Faleke, 15, Junior;
Zainab Eniola Bello, 15, Junior
Doregos Private Academy, Lagos, Nigeria, T: Olaide Oluwaseyi Lawal
- MI304 Man vs. Microbes & Insects: The War Ends Now! *Moringer oleifera* to the Rescue**
Osasogie Anthonette Ezama, 16, Senior; Eseoghene Agbadudu, 16, Freshman
Goodnews Eronmonsele Amieghemen, 17, Freshman
University Preparatory Secondary School, Benin City, Nigeria, T: Osasemwinhia Ryan-Kelvin Aghatise

NORTHERN IRELAND*Belfast, NFK001, Sentinus Young Innovators*

- PH002 Misbehaving Waves: The SurReal Thing**
Myles Withay Mitchell, 18, Senior, Limavady Grammar School, Limavady, Northern Ireland, T: Brian McKenna

NORTHERN MARIANA ISLANDS*Saipan, NMIO01, Northern Mariana Islands Science & Engineering Fair*

- MA050 Spidrons**
Yun Ha Seo, 16, Junior, Tinian High School, Tinian, Northern Mariana Islands, T: Kia Okiwe

PAKISTAN

Islamabad, PAK001, Intel Science Fair

- CH031 CESDEF (Cost Efficient, Self Dis-integrating, Eco Friendly) Plastic Bags**
Haris Bin Ashraf, 15, Sophomore, Defence Authority Sheikh Khalifa Bin Zayed College, Karachi, Pakistan, T: Masroor Ahmed Kamali
- EE036 Control of Devices by Mobile Phone**
Muhammad Ahsan Nawaz, 17, Sophomore, Government Model High School, Harihara Mails, District Vehari, Pakistan, T: Muhammad Faheem
- ET024 Is Chlorophyll as Beneficial as Solar Cells / Silicon Wafers?**
Essa Bin Qasim, 14, Freshman, Pak Turk International School and College, Peshawar, Pakistan, T: Huseyin Gursoy
- ET315 Heat Retention Box**
Qaisar Ali Shah, 17, Junior; Sajid Khan, 15, Senior; Ali Yazdan, 15, Junior
Aga Khan Higher Secondary School, Gilgit, Pakistan, T: Dawar Khan
- EV305 Removal of Heavy Metal Ions Using Fruit Waste**
Fatima Moin Veera, 14, Freshman; Hania Hasan, 16, Junior;
Umme Salma Shabbir Gadriwala, 17, Junior
The Mama Parsi Girls' Secondary School, Karachi, Pakistan, T: Saman Ali Jafri
- ME047 Euphorbia Helioscopia in the Treatment of Scabies and Psoriasis**
Jawaria Nisar, 15, Freshman, Government Girls Higher Secondary School, Singhpora, Lahore, Pakistan, T: Rehana Riaz

PALESTINE

Ramallah, PSE001, Palestine Science and Technology Fair

- EE050 Using Sunlight to Control Window Shutter with Self Power Saving**
Shurouq R. A. Ayyad, 16, Sophomore, Alawda Basic School for Girls, Bethlehem, Palestine, T: Shatha K.I. Darwish
- EV026 Electronic Drainage Manhole (EDM)**
Hadeel S.A Yassin, 15, Sophomore, Talae Al-Amal, Nablus, Palestine,
T: Laila G.Y. Omar
- EV027 Silent Protection**
Raghda O.J. Eshtayeh, 15, Sophomore, Salem Secondary Girls School, Nablus, Palestine, T: Haneen N.A. Samaana

PANAMA

Panama City, PAN001, Feria Cientifica del Ingenio Juvenil

- EN301 Periolas as Substitute of Fiberglass**
Ricardo Allan De Levante, 18, Senior; Miguel Angel Vergara, 18, Senior;
Mario Ho, 19, Senior
Instituto Panamericano, Panama, Panama, T: Nancy Mendoza
- EN302 Improvement of the Efficiency of Photovoltaic Cells through the Covering of Silk of Nephila Clavipes**
Lorena Itzel Gomez, 16, Junior; Dania Evelyn Lyew, 16, Junior;
Sandra Itzel Gomez, 18, Senior
Instituto Sun Yat Sen- Centro Cultural Chino Panameno, Panama, Panama,
T: Jose Concepcion

PERU

Lima, PER001, Peru Science and Engineering Fair

- EM302 Qualitative Study of the Use of Porcellio laevis Fertilizer in the Improvement of Soil and Plant Growth in the Biogarden and Plant Nursery of "CALLAO" School**
Ingrid Celeste Meza Fernandez, 15, Senior; Karla Jesus Mendoza Molina, 15, Junior;
Callao, Callao, Peru, T: Ana Cecilia Abregu Tinco
- ET307 Comparative Study of a Traditional Solar Distiller and a Solar Distiller with a Collector**
Alfonso Ivan Ramos Ibanez, 17, Senior; Brajan Esteban Nieto Espinoza, 16, Junior
President of Perú, Lima, Peru, T: David Travezanos Blas

PHILIPPINES

Pasig City, PHL001, Philippines Science Fair

- AS302 Effect of Ascorbic Acid Supplementation on Mulberry (Morus alba L.) Leaves Fed to Silkworm Hybrid DMMMSU 346**
Carla Diana Ancheta Guiner, 16, Sophomore;
Marizol Marie Cargo Bautista, 16, Sophomore;
Fatima Jane Buen Clemente, 16, Sophomore
Bacnotan National High School, Bacnotan, La Union, Philippines,
T: Melba Neflas Paz
- CH018 Electrocatalytic Activity of Pd-Ni Nanoparticles Dispersed on Graphene Electrochemically Exfoliated from Graphite of Used Battery**
Emmanuel Joseph Macuha Magnaye, 16, Sophomore, Taguig Science High School, Taguig, Philippines, T: Oliver Araneta Lahorra
- CS013 REAVIS (Revolutionary Antivirus) - A Personal Computer System Ultimate Virus Prevention Program**
Abien Fred Maranan Agarap, 15, Sophomore, Nabuslot National High School, Pinamalayan, Philippines, T: Ludivinia Maderazo Janda
- ME012 The Synergistic Effect of Roasted Vigna radiata, Coffee arabica and Oryza sativa on Blood Coagulation in vitro**
Bradley Tobillo Saunders, 14, Freshman, Holy Infant Academy, Calapan City, Philippines, T: Charmagne Maramot Samala
- PS009 Impatiens balsamina Leaf Extract as Potential Fungicide Against Fusarium oxysporum f. sp. cubense Tropical Race 4 Causing Fusarium Wilt of Banana**
Judel Jay Angelia Tabsing, 16, Sophomore, Panabo National High School, Panabo City, Philippines, T: Mervin Giapo Salmon

POLAND

Gdynia, PLD001, Festiwal Mlodych Naukowcow Explory

- CS065 Developing Computer Programs Based on Organic Structures and Neuro-Cellular Evolution**
Lukasz Wysocki, 17, Junior, The Frst High School in the Name of Stanislaw Staszic in Lublin, Lublin, Poland, T: Miroslaw Pietrzycki
- ME100 Influence of Hemispheric Synchronization on Functioning of the Brain**
Kinga Panaszewicz, 17, Junior, High School in the Name of Stanislaw Staszic, Hrubieszow, Poland, T: Marta Agata Krupa
- PH318 Interactive Space Map Simulation: Solving n-body Problem**
Mikolaj Ryszard Nalecz, 18, Senior; Piotr Wojciech Morawiecki, 19, Senior
Meridian International School, Warsaw, Poland, T: Justyna Sidoruk

PORTUGAL

Lisboa, PRT001, Portuguese Contest for Young Scientists

- EE030 Automatic Feeder Dogs**
Christophe Filipe Pereira, 18, Senior, Escola Tecnologica e Profissional de Sico, Ansiao, Portugal, T: Vítor Mendes
- ME301 Drinking and Smoking: Development of a Bbiomonitoring Program of the Cytotoxic and Genotoxic Effects**
Maria Joana Frazao, 18, Senior; Alexandra Botelho Rocha, 18, Senior;
Carolina Ponte Rocha, 19, Senior
Escola Secundaria de Lagoa, Lagoa - Azores, Portugal,
T: Maria Alexandra Medeiros

PUERTO RICO

San Juan, TEPR01, Regional Mathematics Fair

- MA042 Exploring the Real Functions using Newton-Raphson Method**
Javier Diaz, 17, Senior, University Gardens High School, San Juan, Puerto Rico,
T: Eric Figueroa
- MA043 Trinomial Powers and the Number of Their Terms**
Jose Miguel Rodriguez-Lozano, 16, Senior, Centro Recidencial de Oportunidades Educativas de Mayaguez, Mayaguez, Puerto Rico, T: Elba Margarita Sepulveda

- MA044 Relationship between Hamiltonian Cycles and Determinants of Tessellations and Platonic Solids' Graphs**
Edsel Gabriel Torres Morales, 17, Senior, Brigida Alvarez Rodriguez, Vega Baja, Puerto Rico, T: Hector Otano Vega
- MA309 Study of Integrals of Parametric Functions for Fermat' s Curve of Third Degree**
Andres Josue Arroyo Colon, 17, Senior; Edwin Sebastian Torres-Cuevas, 17, Senior Centro Residencial de Oportunidades Educativas de Mayaguez, Mayaguez, Puerto Rico, T: Edwin Benvenuti
- Arecibo, TEPR02, Arecibo Regional Science Fair*
- AS309 Reproduction of Mutated *Drosophila melanogaster* with Non-mutated Ones (Second Phase)**
Joshua Abel Rivera, 16, Junior; Darlene Gonzalez, 17, Junior
Brigida Alvarez Rodriguez, Vega Baja, Puerto Rico, T: Elsie Garcia
- BE309 The Power of Music in the Human Mind**
Belmary Figueroa, 18, Senior; Marlene D. Rivera-Martinez, 17, Senior
Jose Rojas Cortes High School, Orocovis, Puerto Rico, T: Carol Judith Morales
- ET048 Effect of Conversion of the Sunlight into Electricity of the *Kyllinga brevifolia***
Andrea Marie Albaladejo Quiles, 14, Freshman, Brigida Alvarez Rodriguez, Vega Baja, Puerto Rico, T: Abigail Rivera Rivera
- PH052 Measurements of the Sun's Rotation Period Using Sunspots**
Amanda Zoe Mercado, 17, Junior, Manuel Ramos Hernandez High School, Quebradillas, Puerto Rico, T: Damaris Mendez
- Bayamon, TEPR03, Bayamon Regional Science Fair I*
- EM042 Phytoremediation of a Lead-contaminated Medium**
Ted Kenner Berrios, 17, Senior, Jose Rojas Cortes High School, Orocovis, Puerto Rico, T: Carol Judith Morales
- Mi052 Bactericidal Effects of the Extracts of Each Aloe Vera, Cucumber (*Cucumis Sativus*), Honey and Milk on *Staphylococcus aureus* Bacterium**
Angel R. Rodriguez, 15, Sophomore, Ruben Rodriguez Figueroa, Naranjito, Puerto Rico, T: Virginia Robles
- Caguas, TEPR04, Caguas Regional Science Fair*
- EE075 EASYLIFT**
Anielys Marie Matos - Rodriguez, 17, Senior, Bonifacio Sanchez Jimenez, Aibonito, Puerto Rico, T: Lenis Collazo - Aponte
- EM314 Determination of the Allelopathic Potential of *Spathodea campanulata* and *Eucalyptus robusta* as Phytoremediative Agents in the Invasive Species *Lemna aequinoctialis* in Lakes**
Angelo Louis Vazquez, 16, Junior; Jose Javier Colon-Rodriguez, 16, Junior
Benjamin Harrison Vocational High School, Cayey, Puerto Rico, T: Carmen Joannie Del Toro
- ET049 Solar Dryer**
Laura Patricia Justiniano, 15, Freshman, Guamani Private School, Guayama, Puerto Rico, T: Jorge Luis Rodriguez
- Humacao, TEPR05, Humacao Regional Science Fair*
- CH310 The Effect of Surface Area of Steel in the Size of ADP Crystals**
Janaleen Ayala- Maldonado, 18, Senior; Marangelis Lopez-Correa, 17, Senior
Casiano Cepeda High School, Rio Grande, Puerto Rico, T: Helnery A. De Jesus
- ME092 Analysis of Heavy Metal Concentrations in Canned Tuna Fish**
Genesis Ayala-De Leon, 16, Junior, Petra Mercado Bougart, Humacao, Puerto Rico, T: Gilda Jimenez
- PH053 Comparative Study of the Electromagnetic Radiation Emitted by Different Cell Phone Models**
Bradlee David Velez, 14, Freshman, Escuela Intermedia Nueva, Ceiba, Puerto Rico, T: Ana G. Velilla
- Ponce, TEPR06, Ponce Regional Science Fair*
- CH059 Comparative Study of Acetogenins Concentration in the Seed and Leaf of *Annona muricata* L.**
Shannie Annjulisha Castilloveitia, 16, Junior, Specialized High School in Science and Math Thomas Armstrong Toro, Ponce, Puerto Rico, T: Melissa Ivette Ortiz

- CS059 Optimal Camera Parameters for Dual-Coding Visual Objects Classification**
Andres Ricardo Hernandez, 16, Junior, University of Puerto Rico Secondary School, San Juan, Puerto Rico, T: Keyla Teresa Soto
- EV046 The Presence of the Metals in Drinking Water and Its Effect in the *Codiaeum variegatum* Leaves**
Karlen Marie Aleno, 16, Junior, Specialized High School in Science and Math
Thomas Armstrong Toro, Ponce, Puerto Rico, T: Ana I. Homs
- PS313 Characterization of Marine Flora in the Punta Las Cucharas Natural Reserve in Ponce of Puerto Rico**
Steven Dekony, 17, Senior; Michael Guf Plaza, 18, Senior
Bernardino Cordero Bernard, Ponce, Puerto Rico, T: Edna Ivette Martinez
- San Juan, TEPR07, San Juan Archdiocesan Region Science Fair*
- BE308 An Extensive Effectiveness Comparison of the Traditional and the Inquiry-based Teaching Methods**
Daniel Miguel Cruz-Rosso, 16, Junior; Diego Enrique Negron-Reichard, 16, Junior
Colegio San Ignacio de Loyola, San Juan, Puerto Rico, T: Wilma M. Giol-Ruiz
- BI043 Determining the Effects of Citral and Diethylaminobenzaldehyde (DEAB) in Cell Division During Gut Regeneration in the Sea Cucumber, *Holothuria glaberrima***
Sofia Carolina Olivera-Rodriguez, 16, Sophomore, Academia del Perpetuo Socorro, San Juan, Puerto Rico, T: Maribel Garcia
- PS314 Self Watering Potted Home Garden**
Luis A Chanlatte, 16, Sophomore; Fabiola Marie Fontanet-Jaime, 16, Sophomore
Colegio Nuestra Señora de la Piedad, Isla Verde, Carolina, Puerto Rico, T: Janice Arroyo
- Mayaguez, TEPR08, Mayaguez Regional Science Fair*
- AS310 Effect of Salinity Levels on the Reproduction Processes of *Artemia franciscana***
Denzel Gabriel Torres, 16, Junior; Karla Michelle Perez, 16, Junior
Luis Negron Lopez, Sabana Grande, Puerto Rico, T: Edison Ortiz
- CB060 Natural Selection Test for the FOXP2 Gene in *Amazona vittata***
Cristal Imar Hernandez Hernandez, 17, Senior, Centro Residencial de Oportunidades Educativas de Mayaguez, Mayaguez, Puerto Rico, T: Mary C. Padilla-Cruhigger
- PH054 Cosmic Ray Muons: Zenith Angle Related Flux Intensity Equation and Energy Radiation Comparison**
- #**
Joel Eduardo Fuentes, 18, Senior, Centro Residencial de Oportunidades Educativas de Mayaguez, Mayaguez, Puerto Rico, T: Elba M Sepulveda
- San Juan, TEPR09, San Juan Regional Science Fair*
- CH060 The Stability of Gold and Silver Nanoparticle in Base and Acid Environments**
Ricardo Javier Santana, 17, Junior, University of Puerto Rico Secondary School, San Juan, Puerto Rico, T: Keyla Teresa Soto
- ME310 Evaluation of Larvicidal and Pupicidal Activity of Extracts from the Sour sop Tree (*Annona muricata*) on *Aedes aegypti*, the Mosquito that Causes Dengue**
Dinoshka Enid Baez, 16, Junior; Kathleen Marie Jackson, 16, Junior
University Gardens High School, San Juan, Puerto Rico, T: Nelson Ruiz
- Mayaguez, TEPR10, SESO Regional Science Fair*
- ME003 Correlation of Allergic Rhinitis and Eustachian Tube Dysfunction**
Madeline Adriana Velazquez, 15, Sophomore, Southwestern Educational Society, Mayaguez, Puerto Rico, T: Evelyn Montalvo
- Cayey, TEPR11, Radians Science & Engineering Fair*
- ET028 Large Scale Renewable Energy Uninterruptable Power System (UPS)**
Cristian Omar Rivera, 16, Sophomore, Colegio Radians, Inc., Cayey, Puerto Rico, T: Luz Deliz Burgos-Berrios
- San Juan, TEPR12, Puerto Rico Metropolitan Science Fair*
- EM310 Use of Rhizophora Mangle Propagules as Bioremediators of Soils and Water Bodies Infected by *Staphylococcus aureus*: Sustainable Approach to Reduce Human Exposure to the Bacteria**
Mario Oscar Font-Martin, 18, Senior; Kiara Cristina Camareno-Vargas, 17, Senior; Viviana Hebe Gratacos, 17, Senior
Robinson School, San Juan, Puerto Rico, T: Dorimar Morales-Torres

EV028 Study of the Use of Human Hair as a Natural Tool to Clean Polluted Water
Xuewei Ni, 19, Senior, Robinson School, San Juan, Puerto Rico,
T: Dorimar Morales-Torres

ROMANIA

Suceava, ROM001, Romania Science and Engineering Fair

CS054 Using Artificial Intelligence to Create a Low Cost Self-driving Car

Ionut Alexandru Budisteanu, 19, Senior, Liceul Tehnologic Oltschim, Ramnicu Valcea, Romania, T: Adelina Adalciza Avram

EV309 The Effect of Pollution and the Greenhouse Effect Over the Solar Constant at Ground Level

Ciprian Constantin Suiu, 17, Sophomore; Cristina Mihaela Nedelcu, 18, Senior; Constantin Popa, 19, Senior
"Nicu Gane" National College, Falticeni, jud. Suceava, Romania, T: Petru Craciun

MI309 We Managed to Isolate the First Strain of West Nile Virus from Our Country and We Applied a Bio-Ecological Control, Suitable for the Main Vector *Culex pipiens*

Alexandra Elisabeta Matea-Moldovan, 17, Junior; Stefan Florin Neaga, 17, Junior
"Dimitrie Bolintineanu" High School, Bucharest, Romania,
T: Valeria Purcarea Ciulacu and Stefan Lungulete

RUSSIA

Nizhny Novgorod, RUS001, ROST

BI001 Super-antimycotic: Nanoparticles of Biophilic Metals + Hyperbranched Polymer

Ekaterina Igorevna Zimakova, 17, Junior, Municipal School 'Gymnasium # 7', Kazan, Russia, T: Galina Anatolievna Shevtsova

CS003 Battle for Speed: Ternary against Binary

Alexander Mikhailovich Makarychev, 17, Junior, Lyceum #3, Sarov, Russia,
T: Igor Vasilievich Stolyarov

PH005 Needle in a Haystack: Sensing Neuron Potential

Roman Lvovich Lapin, 16, Junior, Lyceum # 40, Nizhny Novgorod, Russia,
T: Vladimir Yurievich Kovalev

Moscow, RUS002, Junior — I

CH058 New Structure of the O-specific Polysaccharide of *Escherichia coli* O36

Evgeniya Aleksandrovna Levina, 17, Junior, Moscow Chemical Lyceum, Moscow, Russia, T: Olga Ovchinnikova

CS316 Modeling of Acoustic Waves with Lattice Boltzmann Method

Sergey Dukanov, 17, Junior; Arkadiy Prigojin, 18, Junior
Lyceum of Information Technologies No.1533, Moscow, Russia, T: Nikolai Zavriev

MA051 A Counterexample to Lando's Conjecture: On Intersection of Spheres in 3-space

Vladislav Alexandrovich Belousov, 18, Junior, Advanced Educational Scientific Center of Lomonosov Moscow State University A.N.Kolmogorov School, Moscow, Russia, T: Arkadiy Skopenkov

PH051 Discovery of New Variable Star in Cassiopeia

Ilkham Irekovich Galiullin, 17, Junior, Grammar School 139, Kazan, Russia,
T: George Victorovich Zhukov

PH313 Silicon Coating Deposition in Magnetron Discharge on Various Surfaces

Ilya Aleksandrovich Evseev, 18, Junior; Sergei Andreevich Kurochkin, 17, Junior
State Educational Budget Institution Lyceum 1511 at 'National Research Nuclear University 'MEPhI', Moscow, Russia, T: Stepan Andreevich Krat

Moscow, RUS003, Russian Youth Program "Step Into the Future"

EE081 Robot-Minesweeper

Pavel Baranov, 18, Junior, Mou Dod "Center of Youth Creativity", Nadym, Russia,
T: Valeriy Dolinskiy

EM047 «Smart Gate» Module as an Alternative to In-Road Sensors Used in ITS

Gleb Semyannikov, 15, Sophomore, Lyceum #11, Chelyabinsk, Russia,
T: Alexander Cheban 'ko

ET057 Hydrogenous Combined Heat and Power Plant

Vladimir Osipov, 17, Sophomore, MAO Lyceum #97, Chelyabinsk, Russia,
T: Eduard Krasavin

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

CS313 Open Source Voice Control Interface for Disabled

Artem Fedotov, 16, Sophomore; Evgenii Popov, 16, Sophomore
The Municipal General Education Institution Litseum #2, Volgograd, Russia,
T: Alexey Gusev

MA028 Another Solution of the Thue Problem of Non-repeating Words

Boris Zolotov, 15, Freshman, School #564, Saint-Petersburg, Russia,
T: Stanislav Kublanovsky

MA029 Yoneda Algebra on a Special Biserial Algebra

Andrey Semenov, 16, Junior, School #564, Saint-Petersburg, Russia,
T: Alexander Ivanov

Chernogolovka, RUS005, Avangard

CB030 N-terminal Domain of gp36 Protein of Bacteriophage LKA1 Modulates Its Inhibitory Effect on Host RNAP

Matvey Vladimirovich Kolesnik, 18, Junior, "Intellectual" Boarding School, Moscow, Russia, T: Alexander Eugenievich Dobdochaev

CH308 Studies on the Boekelheide Rearrangement of Cyclic Nitronates

Ekaterina Kutsenok, 16, Sophomore;
Maxim Ruslanovich Radzhabov, 15, Sophomore

Moscow Chemical Lyceum No. 1303, Moscow, Russia, T: Andrey Alexandrovich Tabolin

MI032 Characterization of Bacterial and Viral Diversity of the Deep Hypersaline Anoxic Basins of the Mediterranean Sea

Danila Andreevich Doronin, 16, Junior, Moscow Chemical Lyceum, Moscow, Russia,
T: Anna Vasilievna Lopatina

Moscow, RUS006, Scientists of the Future Fair

CH309 Nanoarcheology of Structure Domains in Liquid and Crystalline Metals Fe(67) Co₁₀Cr₃B₁₅Si₅

Ekaterina Vasilievna Kholodilova, 18, Junior;
Mariia Vyacheslavovna Maliutina, 17, Junior
Municipal Budgetary Educational Institution of Irkutsk Town Lyceum N2, Irkutsk, Russia, T: Irina Gennagievna Prosekina

EE074 Multipurpose Cane-guide for Blind People

Pavel Igorevich Kurbatskiy, 17, Junior, MOU Gimnazia N1, Armavir, Russia,
T: Evgeniy Malenovich Shishkin

MA052 Configuration Spaces of 4-bar Linkages

Ilya Viktorovich Kirillov, 17, Junior, Lyceum 1303, Moscow, Russia,
T: Anton Mikhailovich Izosimov

SAUDI ARABIA

Riyadh, SAU001, Mawhiba Science & Engineering Fair

AS045 Validation of the Mitochondrial Cytochrome C Oxidase Subunit 1 Gene Sequence as a Genetic Marker in the Red Sea

Ammar Yasser Alkhoul, 16, Senior, Dar Althiker School, Jeddah, Saudi Arabia,
T: Laura Casas

AS046 Identification of New Species of Blue Pigmented Copepods in the Red Sea

Hanan Adel Wali, 17, Senior, Dar Alfikr School, Jeddah, Saudi Arabia,
T: Rola Ghandour

BE043 Testing and Improving ICT-Enhanced Skills for Middle School Students in the Kingdom of Saudi Arabia Using Robotics, Modular Construction and PSR

Osama Khalid Hassan, 17, Senior, Asrary School, Riyadh, Saudi Arabia,
T: Nabeel Salah Addin Ayoub

BE307 Improving the Cognitive Abilities of Secondary Students in the Kingdom of Saudi Arabia Through Reading Specific Text Colors

Othman Abdullah Alodan, 17, Senior; Abdulmalik Mohammed Aloufi, 17, Junior
Deffi High School, AlJubail, Saudi Arabia, T: Ahmed Ali Al-Matawaa

- BI310 The Effects of Applying a Novel Silica Nanoparticle Compound Medication to Effectively Eradicate Malaria**
Hassan Nezar Khdary, 16, Junior; Khaled Manahi Alkozman, 17, Senior
Manarat Al-Riyadh School, Riyadh, Saudi Arabia, T: Nezar Hassan Khodary
- CB051 A Novel Purification Method to Improve the Efficiency of Fluorescent Proteins Applications**
Nawaf Fawzan Fawzan Alfawzan, 17, Senior, Riyadh Schools, Riyadh, Saudi Arabia, T: Sherif Fawzi
- CB052 Novel Gene Identification Using the Transpose Elements in *Rhodococcus aetherivorans* Plasmid pRA3**
Anas Mohamed AlFadda, 17, Senior, Riyadh Schools, Riyadh, Saudi Arabia, T: Adli Fakhri Migdadi
- CH053 Green Chemistry: A Novel Approach to Improve the Recoverability, Activity, & Performance of Nano-structured Catalysts**
Nawaf Abdulwahab Alhowaish, 17, Senior, Dharan Ahliyya Schools, Dammam, Saudi Arabia, T: Ah Abuqaddom
- EN053 A Study of the Capture Rate Quantification on Magnetic Nano Particles for Biomedical Applications**
Shikah Duwihi A Alshuwaish, 17, Senior, Altarbia Alislamia Schools, Riyadh, Saudi Arabia, T: Hana Sahion
- EN054 The Study of the Effectiveness of Novel Optimization of Digital Image Correlation to Obtain Accurate Full-field Displacement Measurements**
Alma Amad Alhussaini, 17, Senior, Dhahran Schools, Khobar, Saudi Arabia, T: Arwa Mohammed Eid
- EN314 The Use of Nanoparticles to Decrease the Coefficient of Refraction in Oil Reservoirs for Improving 4D Seismic Surveys**
Rund Essam Tawfiq, 17, Senior
Sarah Hasan Al Abdullatif, 16, Junior
Dhahran Ahliyya schools, Dhahran, Saudi Arabia, T: Arwa Mohammad Eid
- EV042 Effects of Ecological Differences on Biofilm Composition in the Red Sea**
Reem Ahmed AlRabiah, 17, Senior, Altarbia Alislamia Schools, Riyadh, Saudi Arabia, T: Hana Sahion
- ME079 Establishing a Novel Pathophysiology of Autism and Cryptogenic Epilepsy induced by Toxoplasma Gondii Metabolomic Pathways to Originate Unprecedented Diagnostic Biomarkers**
Mohammed Abdulfattah Aldajani, 16, Junior, Dhahran Ahliyya School, Dhahran, Saudi Arabia, T: Ahmed Aabugadume
- ME309 Dramatic Reduction of IFN-Beta Expression by P38 MAPK Inhibition in Human Cells**
Abdulmajeed Abdulkarim Alzakari, 18, Senior;
Sulaiman Mohammed Al Twijri, 18, Senior
Manarat Al-Riyadh School, Riyadh, Saudi Arabia, T: Haroun Mohammed Al-Zouraiqi
- MI046 The Expression, Purification, and Characterization of the OmcE Protein to Determine Its Role in the Membrane Electron Transfer**
Bader Abdalameed Almubarak, 17, Senior, Dhahran Ahliyya School, Dammam, Saudi Arabia, T: Ahmed Abogadoom
- PH049 Diluted Magnetic Semiconductor (Gd Doped ZnO)**
Ahmed Nabil Halawani, 17, Senior, Dar Althiker School, Jeddah, Saudi Arabia, T: Iman Roqan
- PS034 Meeting the Future Demands of World Crop Consumption: A Novel Construction Method for the Generation of dTALE Constructs for Genome Engineering Applications**
Abdullah Hassan Bu Khamsin, 17, Senior, Dhahran Ahliyya School, Dammam, Saudi Arabia, T: Ahmed Abogadoom
- PS035 Effect of Cyclic Guanosine-Monophosphate on Stomatal Movements**
Yara Mohammad Anwar Jan, 17, Senior, Manarat Al-Riyadh School, Al-Riyadh, Saudi Arabia, T: Maha Saad Al-Ghamadi

SINGAPORE

Singapore, SGP001, Singapore Science and Engineering Fair

- CH032 Nanostructured Co304, CoO and CoN as High Capacity and Long Life Anodes for Li-ion Batteries**
Prithvi Gundlapalli, 17, Senior, Saint Andrew's Junior College, Singapore, Singapore, T: Jia Tian Yeo
- EM308 Green Synthesis of Silver Nanoparticles using Lalang Extract**
Joel Wei Hao Lee, 17, Junior; Yue Jun Phua, 17, Junior;
Kwan Wei, Kevin Tan, 17, Junior
Hwa Chong Junior College, Singapore, Singapore, T: Yoke Keow Sow-Peh
- ME041 Investigating the Tubulin-mediated Anti-proliferative and Cytotoxic Effects of 6-shogaol Extracted from Ginger (*Zingiber officinale*) Rhizomes to Determine Its Potential as an Anti-cancer Agent**
Darren Yong Sheng Wong, 17, Senior, Anglo-Chinese School (Independent), Singapore, Singapore, T: Lee Har Yong

SLOVAKIA

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

- EE323 CNC Milling Machine**
Michele Simoncelli, 20, Senior; Luca Passerini, 20, Senior
I.T.I. G. Marconi, Rovereto, Italy, T: Giulio Briani
- Bratislava, SVK001, Scientia pro Futuro
- CB002 2-Deoxyglucose Decreases Sorafenib Effect by Pro-Survival Pathway in Malignant Melanoma**
Emilia Petrikova, 18, Senior, The Secondary School of Jozef Gregor Tajovský, Banská Bystrica, Slovakia, T: Helena Majerova
- PH302 Experimental Study of the Shape of Plasma Discharge in the Air**
Michal Dorko, 19, Senior; Sasa Havrilova, 19, Senior
Gymnázium sväteho Tomasa Akvinského, Kosice, Slovakia, T: Maria Svikova
- Bratislava, SVK002, AMAVET-Slovak Association for Youth, Science & Technology
- MI301 Acaricidal Effect of Selected Herbal Extracts on Allergenic Dust Mites**
Katarina Orsaghova, 17, Junior; Maria Benova, 17, Junior
Milan Rufus' Secondary Grammar School, Ziar nad Hronom, Slovakia, T: Adela Stajnikova
- PH003 Farnsworth Fusor**
Michal Racko, 18, Senior, Jozef Lettrich Secondary Grammar School, Martin, Slovakia, T: Michal Stano
- PH004 X-ray Measurements of Tycho Supernova Remnant's Dynamics**
Michaela Brchnelova, 16, Junior, Gymnázium Hubeneho 23, Bratislava, Slovakia, T: Lucia Bartozelova

SOUTH AFRICA

Boksburg, ZAF001, Expo for Young Scientists —South Africa

- CH011 Comparative Analysis of Different Accelerants that Can Increase the Specific Impulse Generated by Solid Rocket Propellants**
Benjamin Michael Langer, 16, Junior, Herzlia High School, Cape Town, South Africa, T: Lance Job
- CS007 An Interactive, Tablet-based Application to Improve Reading Speed**
Ulrik Reinhardt de Muelenaere, 16, Sophomore, Hoerskool Waterkloof, Pretoria, South Africa, T: Helena Coetzee
- EE007 Modification in Aeroplane Wheels to Reduce Wear on the Tyre**
Phillipe Robert Josef Renee Lothaller, 17, Senior, Rondebosch Boys' High School, Cape Town, South Africa, T: Shaikat Ebrahim
- EN003 Using Exothermic Reactants to Improve the Efficacy of Life Jackets in Decreasing the Chances of Hypothermia**
Danielle Theresa Mallabone, 17, Junior, St Teresa's High School, Johannesburg, South Africa, T: Tracy Adams
- EN004 Optimizing Electrical Current Output of Microbial Fuel Cells through Bacterial Mutagenesis and the Fabrication of Nanofiber-based Electrodes**
Danielle Hua Jacobson, 16, Senior, Camps Bay High School, Cape Town, South Africa, T: Hayley Conway

- EV002 An Investigation on the Effects of Air-pollutants on Plant Growth**
Jayde Caroline Bromwich, 16, Junior, Creston College, Port Shepstone, South Africa,
T: Nan Watson
- MA006 An Alternative Proof of the Pappus Chain Theorem using the Method of Circle Inversion**
Retselisitsoe Elias Monyake, 17, Senior, Harmony High School, Virginia, South Africa, T: Eben Engelbrecht
- PS003 The Role of Euphorbia Species in the Cause of Barren Patches in Namibia**
Marlene Anchen Meyer, 15, Sophomore, Waterkloof High School, Pretoria, South Africa, T: Helena Coetzee
- PS004 An Investigation into the Self-burying Action of Geraniaceae Seed**
Christine Popich, 15, Sophomore, Waterkloof High School, Pretoria, South Africa, T: Marinda Behr

SOUTH KOREA

Seoul, KOR001, Korea Olympiad in Informatics

- CS028 Code Maniacs - Innovative Web Development through Web Expandability**
BaHwan Han, 18, Senior, Korea Digital Media High School, Ansan, South Korea, T: Inu Song
- CS029 Versatile Visual Programming Software for Beginners**
Hyunjun Kim, 16, Junior, Sunduck High School, Seoul, South Korea, T: SungYong Shin
- PH306 The Visible Identification of the Electric Resonance: The Research about Visualization of Resonance using the Dual Coil**
Dohyeon Kim, 17, Senior; MyungHwan Jang, 17, Senior; Jeayoun Kim, 17, Senior
Busan High School, Busan, South Korea, T: Hyangsun Gam

Seoul, KOR002, YSC (National Science Research Competition)

- AS306 Research Analysis on the Features of Families of Korean Butterflies Based on Their Veins**
Soo Kyeong Ju, 17, Senior; Su-min Bang, 18, Junior
Dongducheon High School, Dongducheon-si, South Korea, T: Nam Mo Kang
- AS307 The Unique Mouthparts of Dragonfly Larvae**
Hye Seong Jang, 15, Freshman; So Hi Lee, 15, Freshman;
Chae Eun Park, 15, Freshman
Hongseong Girls' Middle School, Hongseong, South Korea, T: Eul Jin Jang
- AS308 A Study on the Retro-Principle of the Mosquito Larva**
Hye-Bin Park, 16, Freshman; Jee-Yoon Kim, 15, Freshman;
Ha-Lim Kim, 15, Freshman
Boyoung Girl's Middle School, Dongducheon, South Korea, T: Seongho Song

- EM312 Fuel Brick**
Seon Kyu Kim, 16, Freshman; Eojin Kong, 16, Freshman
Na Young Song, 16, Freshman
Jinjudong Middle School, Jinju, South Korea, T: Yunhyeong Lee
- EN307 Eco-friendly Synthesis and Utilization Research of Au/Fe Nano-Complex**
Gibae Kim, 17, Senior; Jaeseong Bae, 17, Senior
Daegu Science High School, Daegu, South Korea, T: Chulsu Kim
- EV302 Researching Nam River and Making a Tutorial of Ecological Activities**
Chae Young Moon, 16, Freshman; Ju Eun Sim, 17, Sophomore
Gyeongnam Science High School, Jinju, South Korea, T: Yeonga Ah Kim
- PH032 New Method to Measure Sphere Rolling Friction Coefficient**
Hyeonsu Kim, 17, Senior, Chungnam Science High School, Gong-ju, South Korea, T: Seongyoung Lee
- PH304 Research on Optimal Vortex Rings and Its Applications**
Woo Heon Ha, 18, Senior; Ah Hyeon Kim, 17, Senior; Jin Ju Choi, 18, Senior
Jin Ju Jeil Girl's High School, Jinju, South Korea, T: Heok Sik Gwon
- PH305 The Study on the Effective Chipping Shape of Handaxe by Analyzing Physical Fracture Characteristics**
Mi Rim Choi, 15, Sophomore; Ha Young Yun, 16, Freshman;
Oh Reum Cha, 17, Sophomore
Boyoung Girl's High School, Dongducheon, South Korea, T: Seongho Song

SPAIN

Barcelona, SPN001, Exporecerca Jove

- BI055 Communication Pathway between Neuron via Optogenetics**
Victoria Eugenia Englert, 17, Senior, Institut Menendez y Pelayo, Barcelona, Spain, T: Roser Pinyol

SRI LANKA

Colombo, LKA001, Sri Lanka Science & Engineering Fair

- CS025 Kinecto - A Motion Controlled Computing System for Handicapped People**
Pasindu Chathuranga Wijesena, 16, Junior, Ananda College, Colombo, Sri Lanka, T: Nandalal Gajanayaka Weerasinghe
- EE029 Ridge Cutting Machine**
Pubudu Dinesh Anuruddha Chithrananda Kapuge Kapurubandage, 19, Senior, Mihinthale Central College, Anuradhapura, Sri Lanka, T: Kapila Senavirathna Senavirathna Mudiyansele
- ME302 Effect of Plant Extracts to Increase Platelet Count in Wistar Rats with Chemically Induced Low Platelet Count**
Rananjaya Subash Gamage, 17, Senior; Rakitha Dilshan Malewana, 17, Senior
Nalanda College, Colombo, Sri Lanka, T: Upeksha Darshani Abeyseakara

SWEDEN

Stockholm, SWE001, Utställningen Unga Forskare

- ME091 Using High Throughput Sequencing to Find Torque Teno Viruses in Serum Samples from Mothers of Leukemic Children**
Josefine Erika Wahlstrom, 18, Senior, Bladins Gymnasium, Malmo, Sweden, T: Charlotte Bosson Magnusson
- PH314 Stellar Spectroscopy**
Andreas Lars Persson, 18, Senior; Mans Lars Holmberg, 18, Senior
Leksands Gymnasium, Leksand, Sweden, T: Kjell Olof Leander

SWITZERLAND

Bern, CHE001, Swiss Youth in Science

- BE002 Episodic and Semantic Memory: Is There a Difference between Young Adults and Seniors?**
Luzia Stalder, 19, Senior, Gymnasium Neufeld, Bern, Switzerland, T: Ursula Jenelten
- CS002 Building and Programming of a 3D-Scanner**
Fabian David Tschopp, 18, Senior, Kantonsschule Limmattal, Urdorf, Switzerland, T: Christoph Zuercher

THAILAND

Bangkok, THA001, National Science Projects Competition

- EM303 Stirling Engine Utilizing Biogas as Fuel**
Switt Kongdachalart, 17, Senior; Tawatwong Tunchavanich, 18, Senior;
Pakawat Panuwatsuk, 18, Senior
Triamudom Suksa School, Bangkok, Thailand, T: Nipon Srinarumol
- PH309 A Simple Equipment for Accurate Determination of Dry Rubber Mass of Freshly Collected Latex**
Thanwarat Deesiripornchai, 18, Freshman; Sutatip Satapornarnon, 18, Senior
Siyanuson School, Chanthaburi, Chanthaburi, Thailand, T: Chan Thawanee
- Bangkok, THA002, Young Scientists Competition
- CS060 Genetic Algorithm and Neural Network for Online Personal Handwritten Character Recognition**
Perut Boribalburephan, 18, Senior, Mahidol Wittayanusorn School, Nakhon Pathom, Thailand, T: Boonnate Sakboonyarat
- EM043 Removal of Copper from Aqueous Solutions through Spent Bleaching Earth**
Apisada Chulakadabba, 17, Junior, Mahidol Wittayanusorn School, Nakhon Pathom, Thailand, T: Usa Jeenjenkit

- PS315 Factors Affecting the Response of Venus Flytrap**
Sahakrit Tanikawong, 16, Sophomore; Pornpawit Jenjirawong, 16, Sophomore;
Nadtanon Pongdee, 16, Sophomore
Bangkok Christian College, Bangkok, Thailand, T: Chanan Keatsirisart

TUNISIA

Tunis, TUN001, Tunisia Science and Engineering Fair

- EE083 Electro-Cool: The New and Enhanced Electric Machines Cooling System!**
Ahmed Dhia Eddine Zitouni, 16, Junior, Lycee Pilote de Gabes, Gabes, Tunisia,
T: Mohamed Ali Daymi
- EM054 Air PolluMeter**
Nebras Djemel, 16, Junior, Lycee Pilote De Gabes, Gabes, Tunisia,
T: Mohamed Ali Daymi
- EM319 Fish Safety: Save Fish from the Danger of Water Pollution**
Alaa Amri, 17, Sophomore; Salah Amri, 17, Junior
Pilot High School Gabes, Gabes, Tunisia, T: Mohamed Ali Daymi

TURKEY

Istanbul, TUR001, 12th National Environmental Project Olympiad

- CH312 Industrial Metals on the Electrochemical Behavior of the Natural Protective Effect of *Rosmarinus Officinalis* L.**
Gokce Pisiren, 15, Sophomore; Ipek Efe, 17, Junior
Mat Fkb Ozel Gelisim Fen Lisesi, Eskisehir, Turkey, T: Arzu Harzadin
- MI313 Influenza: A DNA Targeting DNA Biosensor Investigation and Drug-DNA Interaction Examination with Developed Biosensor**
Feyza Ozel, 16, Sophomore; Umut Onbasilar, 16, Sophomore
Izmir Atatürk High School, Izmir, Turkey, T: Nilufer Ulcay
- Ankara, TUR002, Tubitak Fair*
- CH311 Oceans Are More Significant than Petroleum**
Abdullah Koca, 17, Junior; Omer Faruk Altun, 17, Junior
Private Merve Buyukoyuncu Science High School, Konya, Turkey, T: Mutlu Dogan

- EM318 Urban Heat Island in Izmir**
Melis Cirpici, 19, Senior; Tanyel Asya Rauner, 19, Senior
Izmir Ozel Takev Anadolu Ve Fen lisesi, izmir, Turkey, T: Taner Bicki
- EN319 How Much Energy Have You Spent Today?**
Destina Buyukgenc, 17, Senior; Isil Purali, 18, Senior
Ankara Ayranci Anadolu Lisesi, Ankara, Turkey, T: Sinan Dag
- MA058 Mixing Variables in Extremum Problems**
Muhammed Zahid Ozturk, 17, Senior, Private Istanbul Anafen Science High School,
Istanbul, Turkey, T: Ihsan Yucel

- ME312 A Novel Therapeutic Agent for Prostate Cancer: The Synergistic Effects of Ficin and Doxorubicin on Proliferative, Apoptotic and Metastatic Potential of Prostate Cancer Cells**
Muhammed Kocabas, 18, Senior; Umut Sahin, 19, Senior
Isiklar Air Force High School, Bursa, Turkey, T: Mustafa Sevik

Istanbul, TUR003, 11th International Environmental Project Olympiad

- CH313 Penetration of Aluminum Foil into Food**
Dilara Marasli, 16, Sophomore; Suheyra Nur Yildirim, 16, Sophomore
Ozel Beylikduzu Fatih Koleji, Istanbul, Turkey, T: Yasemin Celikturk
- EV055 Removal of Dyes from Textile Waste Water by Using Nanoferrites**
Hilmi Oguzhan Ayan, 16, Sophomore, Ozel Istanbul Fatih Anadolu Lisesi, Istanbul,
Turkey, T: Turan Tekin

UKRAINE

Kyiv, UKR001, Intel-TechnoUkraine

- CS037 iSurface4U: Your Own Interactive Surface**
Andrii Konovalenko, 16, Sophomore, Multidisciplinary Gymnasium 15,
Stakhanov, Ukraine, T: Ludmila Bulygina

- EE037 An "EXTRA" Sense: Ultrasound Glove Assisting Spatial Orientation of the Visually Impaired**
Ivan Seleznov, 17, Junior, Specialized School No. 22, Mykolaiv, Ukraine,
T: Olga Yaremchuk

- PH037 Shadow System: Size Distribution Express Analyzer**
Leonid Olifer, 16, Junior, Specialized School N. 17, Cherkassy, Ukraine,
T: Tetyana Zaporozhets

Kyiv, UKR002, Intel - EcoUkraine

- EE016 Household Renewable Power Cells and Their Energetic and Informational Integration into the Power Grid**
Dmytro Voitek, 17, Junior, Kyivskiy Pryrodnycho-Naukovyi Litsey #145,
Kyiv, Ukraine, T: Olexiy Rozenvain
- EM007 Renewable Energy Driven Under Ice Fish Smother Prevention Device**
Zenoviia Shvaika, 16, Sophomore, Lvivskiy Tekhnolohichniy litsey, Lviv, Ukraine,
T: Viktor Koldun
- EV009 New Sorbent for Water Purification from Oil and Petroleum**
Bogdana Bandurko, 17, Junior, Donetskyy Oblastnyi Sanatornyi litsey-internat
"Erudit", Donetsk, Ukraine, T: Valentina Basenkova

UNITED KINGDOM

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

- CH028 The Future of Hydrogen Fuel Cells: Comparison of the Alkali Stability of Radiation-grafted Anion-Exchange Membranes Containing Different Pendant Head-groups**
Oliver Mathias Micoh Page, 17, Senior, The Royal Grammar School, Guildford,
United Kingdom, T: Wai-Shun Lau

London, GBR003, Young Engineers for Britain

- EE085 Man Overboard!**
Samuel Wheelhouse, 19, Senior, Nottingham High School, Nottingham, United
Kingdom, T: Paul Gray
- EN064 One Step at a Time: A Device to Help Crutches and Walking Aids on Sand & Mud**
Erin Alison Nolan, 19, Senior, Wirral Grammar School For Girls, Bebington, United
Kingdom, T: B. Sprague

UNITED STATES

ALABAMA

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

- MI014 Anti-bacterial Lemonade**
Mason David Corbett, 16, Sophomore, Lakeview Christian School,
Auburn, Alabama, T: Terry Jean Corbett
- MI017 Testing Disinfectants for Killing Bacteria on Computer Keyboards**
Megan Abigail Lange, 14, Freshman, Auburn High School, Auburn, Alabama,
T: Mark Thomas Jones

Birmingham, USAL02, Central Alabama Regional Science and Engineering Fair

- CS030 Stay Kinected: A Home Monitoring System Combining Safety and Comfort**
Payton Ross Walker, 18, Senior, Alabama School of Fine Arts, Birmingham,
Alabama, T: Carol Yarbrough
- ET022 Exploring Magnetohydrodynamic Propulsion: Using Magnetohydrodynamic Propulsion to Propel a Vessel**
William Allan Pannell, 16, Sophomore, The Altamont School, Birmingham, Alabama,
T: Devon Husar
- ME036 The Use of Metabolomic Profiling to Diagnose Obesity in Mice**
Jessica Maya, 17, Senior, Alabama School of Fine Arts, Birmingham, Alabama,
T: Tessa Magnuson
- PH033 A Novel Pulsed LED Excitation Device for Optical Mapping of Transmembrane Potential in Cardiac Muscle**
Lakshmi Raghavanpillai Raju, 17, Senior, Alabama School of Fine Arts,
Birmingham, Alabama, T: Manson Wade

Huntsville, *USAL03, North Alabama Regional Science and Engineering Fair*

- CB011 Synthetic Biology Approach for Development of a Monosodium Glutamate Detector**
Jodie Leigh Tinker, 16, Junior, Covenant Christian Academy, Huntsville, Alabama, T: Rhonda Lisauckis
- MA032 A Novel Mathematical Model of Cellular Apoptosis under the Influence of Hsp70**
Ashwin Pavan Ramachandran, 17, Junior, Randolph School, Huntsville, Alabama, T: Ruth McMichens
- PH022 The Development of a Long Life Solid State Dye Laser**
Joseph Patrick Lee, 16, Sophomore, Saint Peter's Academy, New Market, Alabama, T: Kevin Nishimuta

Mobile, *USAL04, Mobile Regional Science Fair*

- CH064 My "Doping" Problem: Synthesizing N-Spiked TiO₂ Nanoparticles for Visible-Light Photocatalysis**
Zehrgio Mercado Mones, 16, Junior, Murphy High School, Mobile, Alabama, T: Lisa McClure Sudeiha
- CS056 Kinect It: A Telepresence Surveyor Robot Using a Microsoft Kinect**
Sean Alexander Benson, 16, Sophomore, Satsuma High School, Satsuma, Alabama, T: Jamie Young

Livingston, *USAL05, West Alabama Regional Science Fair*

- EE015 Solar Funnel Cooler: Potential Source of Refrigeration/Cooling for Undeveloped Areas**
Galen Daniel Lee, 15, Freshman, Holy Spirit Catholic Regional High School, Tuscaloosa, Alabama, T: Deborah Samaniego

Huntsville, *USAL50, Alabama Science and Engineering Fair*

- CH055 K.I.S.S. for Kinetics: Simplifying the Development of Kinetic Rate Equations by Using Multivariate Regression Techniques**
Rebecca Grace Johnson, 16, Sophomore, Life Christian Academy, Harvest, Alabama, T: Lynne H. Johnson
- EN056 Piezoelectric Energy Harvesting from Human Breath for Biomedical Applications**
Rohan Palanki, 16, Sophomore, W.P. Davidson High School, Mobile, Alabama, T: Srinivas Palanki
- EV053 The Effect of Bisphenol A (BPA) on Artemia Salina Survival**
Quinn K McCormick, 15, Freshman, Jefferson County International Baccalaureate, Birmingham, Alabama, T: Catherine Shields
- MA056 Numerical Studies of Existence for a Boundary Value Problem of Ordinary Differential Equations**
Jefferson Zhiping Zou, 17, Senior, Alabama School of Fine Arts, Birmingham, Alabama, T: Vincy Lugemwa

ALASKA

Juneau, *USAK01, Southeast Alaska Regional Science Fair*

- AS305 How Cold Exposure Affects the Expression of Trehalose Phosphate Synthase in Lyre Crabs (*Hyas lyratus*)**
Erin Gaffaney, 17, Senior; Anna Thompson, 18, Senior
Juneau-Douglas High School, Juneau, Alaska, T: Jonathan Smith
- BE017 How Exposure to Human Pheromones Affects Attraction Ratings for Strangers**
Samantha Heidersdorf, 15, Sophomore, Juneau-Douglas High School, Juneau, Alaska, T: Jonathan Smith

Anchorage, *USAK50, Alaska Science and Engineering Fair*

- BE048 Assessing the Magnocellular Theories of the Flash-Lag Effect and Dyslexia**
Stephen Thomas Kranich, 16, Junior, West Anchorage High School, Anchorage, Alaska, T: Gwen Lupfer
- EN315 Potential Lateral Flow Test Design for the Detection of Paralytic Shellfish Poisoning**
Chelsea Marie Tolentino Parrocha, 18, Senior; Taylor Jade Seitz, 15, Sophomore
Polaris K-12 School, Anchorage, Alaska, T: Aaron Kallas

ARIZONA

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

- EM026 Eroding Erosion**
Elizabeth Daley, 15, Freshman, Saint David High School, Saint David, Arizona, T: Larry Chandler
- PS023 Stem Growth and Reproduction in Mint Plants**
Hannah Marie Dahl, 16, Sophomore, Saint David High School, Saint David, Arizona, T: Larry Chandler

Tucson, *USAZ03, Southern Arizona Regional Science and Engineering Fair*

- AS028 Analysis of Critical Habitat for the Sonoran Ocelot (*Leopardus pardalis sonoriensis*) in the Sky Island Region**
Meagan Alanna Bethel, 15, Sophomore, Tucson High Magnet School, Tucson, Arizona, T: Margaret Helen Wilch
- AS029 Olfactory Discrimination Between Regular and Deuterated Compounds in European Honeybees (*Apis mellifera*)**
Eric Samuel Epstein, 17, Senior, Tucson High Magnet School, Tucson, Arizona, T: Margaret Helen Wilch
- BE031 Motivational Interviewing as a Form of Stress Relief in Adolescents**
Allison Michelle Kath, 17, Freshman, Tucson High Magnet School, Tucson, Arizona, T: Margaret Helen Wilch
- BE032 A Model of Medial Entorhinal Cortex Grid Cell Remapping**
Ryan Diego Silva, 17, Senior, University High School, Tucson, Arizona, T: Pamela Tautz
- EE044 Improved Viability of Photovoltaic Solar Cells**
Ostin David Zarse, 17, Senior, Tucson Magnet High School, Tucson, Arizona, T: Margaret Wilch
- EE311 Total Solar Strategy for the Tohono O'odham Nation**
Jacquell Caron Rivers, 16, Senior
Arne Joi Saguni Nipales, 17, Senior
Baboquivari High School, Sells, Arizona, T: Nerissa Nipales Birdsell

Phoenix, *USAZ50, Arizona Science and Engineering Fair*

- AS049 Maximizing the Efficiency of Aminoglycoside Antibiotics in Chickens**
Nitish Peela, 17, Senior, Hamilton High School, Chandler, Arizona, T: Debbie Nipar
- BI042 Targeting Survivin as a Potential Cancer Therapeutic**
Kelsey Mackenzie Barter, 17, Junior, University High School, Tucson, Arizona, T: Pamela Tautz
- BI312 The Effect of Growth Factors on the Proliferation of Beta Cells**
Jacob Michael Cabrejas, 17, Junior
Paula Nicole Beatty, 16, Junior, Hamilton High School, Chandler, Arizona, T: Debbie Anne Nipar
- CB058 Optimization of the *Xenopus laevis* Oocyte Expression System**
Aakash Jain, 17, Junior, Brophy College Preparatory, Phoenix, Arizona, T: Patricia Mazier
- CB309 Indicting Alzheimer's: Novel Methods of Preventing Glial Scarring through the Downregulation of Cerebral Vimentin and Glial Fibrillary Acidic Protein**
Tejas Dharmaraj, 15, Junior; Manav Ajay Sevak, 16, Junior
Chandler High School, Chandler, Arizona, T: Donna Bond
- EN051 Preparation of Magnetic Nanovesicles for Biomedical Applications**
Shelby Chi Yuan, 16, Sophomore, University High School, Tucson, Arizona, T: Pamela Tautz
- EN058 Investigation of the Electrical Properties of Metal/Pyrite (FeS₂) Junctions (II)**
Ivy Y. Chang, 17, Junior, Hamilton High School, Chandler, Arizona, T: Debbie Nipar
- ME085 Characterization of CNS-Specific Interleukin 15 Transgenic Mice**
Aditya Khurana, 17, Senior, North Canyon High School, Phoenix, Arizona, T: Fu-Dong Shi
- ME311 Pancreatic Adenocarcinoma: An Analysis of Drug Therapy Options**
Anvita Gupta, 15, Sophomore; Sejal Aggarwal, 16, Sophomore
BASIS Scottsdale, Scottsdale, Arizona, T: Paul McClernon

- MI048 A Shelf-Life Study of 3 Popular Rice Recipes with Natural Antimicrobial Compounds as Alternative Emergency Food Products**
 # Sarah Ariyan Sakha, 17, Junior, Xavier College Preparatory School, Phoenix, Arizona, T: Jennifer Weiland

ARKANSAS

Fayetteville, USAR03, Northwest Arkansas Regional Science and Engineering Fair

- CB302 The Expression of Thioredoxin in *Methanosarcina acetivorans***
 # Blake Killion Bradberry, 16, Sophomore
 Kate Campbell Woolverton, 15, Sophomore
 Haas Hall Academy, Fayetteville, Arkansas, T: Kelly Pomajevich Magoulick

- EE042 Winglets for Wind Turbines**
 Elizabeth Ann Spicer, 14, Freshman, Fayetteville Senior High School, Fayetteville, Arkansas, T: Jodye Marie Pool

- ME024 The Aspartame and Health**
 JinZhen Huang, 16, Junior, Alpena High School, Alpena, Arkansas, T: Mark Bond Welch

Jonesboro, USAR04, Northeast Arkansas Regional Science Fair

- AS010 Fiddles and Phalanges, 2: Do String Players Have Longer Left Fingers?**
 Eleanor Nell Stafford, 14, Freshman, MacArthur Junior High School, Jonesboro, Arkansas, T: Jan Annaratone

- EM010 Pharm Pollution**
 Tabitha Lynn Hudspeth, 16, Sophomore, Nettleton High School, Jonesboro, Arkansas, T: Jana Karen Hudspeth

Little Rock, USAR05, Central Arkansas Regional Science Fair

- EE014 Minimizing Drag Coefficients by Augmenting a Neoteric Computational Algorithm with Computerized Optimization**
 Kwuang Tang, 15, Freshman, Little Rock Central High School, Little Rock, Arkansas, T: Patrick Foley

- ET053 The Effect of Microfullerenes on Organic Photovoltaics**
 Trisha Bhattacharyya, 15, Sophomore, Little Rock Central High School, Little Rock, Arkansas, T: Lee Felker

- ME053 Berberine: A Potential Natural Drug to Combat Oxidative Stress**
 # Sarthak Garg, 16, Sophomore, Little Rock Central High School, Little Rock, Arkansas, T: Patrick Foley

Monticello, USAR06, Southeast Arkansas Regional Science Fair

- EM055 What's Really in the Water? Environmental Analysis of the Ouachita River**
 Noel Cary Phillely, 18, Senior, Crossett High School, Crossett, Arkansas, T: Fred G. Buzen

Hot Springs, USAR07, West Central Regional Science fair

- CS051 Online Integrated Development Environment with Real-Time Input/Output**
 Blaise Bryan Koch, 18, Senior, Arkansas School for Mathematics, Sciences, and the Arts, Hot Springs, Arkansas, T: Brian Monson

- PH009 An Experimental Study of the Route to Chaos in Chua's Circuit**
 Clayton William Davis, 17, Senior, Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas, T: Brian Monson

Conway, USAR50, Arkansas State Science Fair

- BI051 The Effect of Bioenhancers on the Rate of Biodegradation of Crude Oil**
 Osvaldo Andres Cossio, 19, Senior, Parkview Arts and Science Magnet High School, Little Rock, Arkansas, T: Leslie Alonzo Williams

- CS057 MEye: An Affordable Eye-Tracking System**
 Ayush Saraswat, 17, Junior, Little Rock Central High School, Little Rock, Arkansas, T: Patrick Foley

- EN057 Surgical Spinal Instrumentation: Assessment of Cross-Link Design Based on Shear Strength**
 Hanya Mariam Qureshi, 14, Sophomore, Pulaski Academy, Little Rock, Arkansas, T: Rebecca McAfee

- EN316 Nano-texture Based Transparent Superhydrophobic Coating for Anti-Icing Applications and for the Welfare of the Military and Aeronautics Industry**
 Dana Abulez, 16, Sophomore; Devyani Shekhawat, 15, Sophomore
 Little Rock Central High School, Little Rock, Arkansas, T: Patrick Foley

- ET043 The Effect of CdSe Quantum Dots on Organic Photovoltaic Devices**
 Dhruba Dasgupta, 16, Sophomore, Little Rock Central High School, Little Rock, Arkansas, T: Patrick Foley

CALIFORNIA

Costa Mesa, USCA01, Orange County Science and Engineering Fair

- EA011 Surviving Seismically-Induced Liquefaction: Dynamic Centrifugal Modeling of a Novel Hybrid Floating Foundation System**
 Alex L. Chang, 16, Sophomore, University High School, Irvine, California, T: Katherine Levensailor

- MA033 Electromechanical Modeling of the Heart in Moving Domains using the Phase-Field Method**
 # Kevin K. Lee, 16, Junior, University High School, Irvine, California, T: Shannon Bunch

Los Angeles, USCA02, Los Angeles County Science and Engineering Fair

- ME056 Examination of Quorum Sensing Mechanisms in Glioblastoma Multiforme**
 Easun Piraichoody Arunachalam, 16, Senior, Crescenta Valley High School, La Crescenta, California, T: Orenda Tuason

- MI039 Site-directed Mutagenesis of the Metal-reducing Bacterium *S. oneidensis* MR-1: A Novel Strategy for Genetic Engineering in Recalcitrant Microorganisms**
 David Masao Zimmerman, 18, Senior, Brentwood School, Los Angeles, California, T: Aimee Palmitessa

Fresno, USCA03, Central California Regional Science, Mathematics and Engineering Fair

- CS033 Operating System Design and Development**
 # George David Morgan, 15, Sophomore, Clovis North High School, Fresno, California, T: Jonathan Thorp Bowns

- EA012 Rehabilitating Hydrophobic Soil to Allow Indigenous Bunch Grass Growth**
 Hannah Jeanine Washburn, 17, Junior, Sanger High School, Sanger, California, T: Carl Gong

- EV020 Simple and Cost-Effective Detection of Cadmium Using an Electrochemical Sensor Made with Gold Nanoparticles**
 Seung Hye Choi, 14, Freshman, University High School, Fresno, California, T: Brenda Royce

Sacramento, USCA04, Sacramento Regional Science and Engineering Fair

- CH024 Towards Next-Generation Nanomaterials: Atomistic, First-Principles Analysis of N-Doped Reduced Graphene Oxide**
 ### Shyamal Buch, 17, Senior, Vista del Lago High School, Folsom, California, T: Suekyung Baker

- EN026 Prediction of Tyrosine Sulfation in Viral GPCRs; Subversion of Host Response by Viruses**
 Nikhil Venkata Ragha Kotha, 16, Senior, Mira Loma High School, Sacramento, California, T: Dean Karagianes

- EN027 A Robust Human Fall Detection Wireless System**
 Nathaniel G. Varghese, 15, Sophomore, Folsom High School, Folsom, California, T: Jeanine Robb

San Diego, USCA05, Greater San Diego Science and Engineering Fair

- CS047 IlluminaMed: Developing New Artificial Intelligence Techniques for the Use In a Biomedical Image Analysis Toolkit**
 Yousuf Mounir Soliman, 16, Junior, Canyon Crest Academy, San Diego, California, T: Wendy Slijk

- EE053 FPGA-Based Controller for High Frequency Induction Heating**
 Weston Daniel Braun, 17, Senior, San Dieguito Academy, Encinitas, California, T: George Stimson

- MI033 Autism and Gut Microbiome: Is There a Link?**
 Kamran Jamil, 16, Junior, The Bishop's School, La Jolla, California, T: Julie Zedalis

- MI034 Discovery of Novel Influenza Endonuclease Inhibitors to Combat Flu Pandemic**
 Eric Shu Chen, 16, Junior, Canyon Crest Academy, San Diego, California, T: Wendy Slijk

San Francisco, USCA06, San Francisco Bay Area Science Fair, Inc.

- AS033 Quantification of Zoo Enclosure Space Use and Back Hair Standing-Up Behavioral Response by Captive Chacoan Peccary (*Catagonus wagneri*)**
Conner Randolph Bennett, 15, Sophomore, Sacred Heart Preparatory School, Atherton, California
- CS055 Developing High-Performance Hybrid iOS Apps**
Andrew Clinton Haden, 16, Junior, Redwood High School, Larkspur, California, T: Millie Hackworth

San Jose, USCA07, Synopsys Silicon Valley Science and Technology Championship presented by the Santa Clara Valley Science and Engineering Fair Association

- CB308 Hedgehog-Gli Signaling Promotes Cell Proliferation and Epithelial-to-Mesenchymal Transition in Lung Cancer**
Joy Qiu Jin, 15, Sophomore; Thomas Michael Luh, 17, Junior
Leland High School, San Jose, California, T: Hui Li
- CH051 Design and Synthesis of Hydrogenated TiO₂-Polyaniline Nanorods for Flexible High-Performance Supercapacitors**
Eesha Khare, 18, Senior, Lynbrook High School, San Jose, California, T: Amanda Alonzo
- CH067 A Computational Investigation of the Structures, Energies, and Formation Pathways of Interstellar Anions**
Nikhil Buduma, 18, Senior, Bellarmine College Preparatory School, San Jose, California, T: Debjani Roy
- EE056 Turbopulse: A Resilient Hybrid Pulsating Turbine Jet Engine**
David Andrew Zarrin, 18, Senior, Saratoga High School, Saratoga, California, T: Jill McCrystal
- MA045 Dots and Lines: A Combinatorial Interpretation of the Homotopy Groups of Finite Topologies**
Colin Campbell Aitken, 17, Senior, Leland High School, San Jose, California, T: Anu Sarkar
- ME059 Advancing Precision Medicine: MicroRNA Prognostic Signatures and Prediction Models for Distant Metastasis-Free Survival in Breast Cancer**
Natalie Ng, 17, Junior, Monta Vista High School, Cupertino, California, T: Joe Kim
- ME060 A Novel Multi-Dimensional Genomic Data Analysis of Hidradenitis Suppurativa and Associated Comorbidities**
Swetha Revanur, 14, Freshman, Evergreen Valley High School, San Jose, California, T: Barjinder Sabherwal
- ME067 Breast Cancer Prognosis through Gene Expression Profiling and Tumor Morphology**
Andrew Cheng Jin, 16, Sophomore, The Harker School, San Jose, California, T: Chris Spenner
- ME070 Regenerative Potential of Healthy versus Diabetic Adipose-derived Stem Cells in the Setting of a Biomimetic Hydrogel Scaffold**
Anika Radiya-Dixit, 17, Senior, The Harker School, San Jose, California, T: Michael Sorkin

Contra Costa County, USCA08, Contra Costa County Science and Engineering Fair

- ET036 Utilizing Novel Graphene Oxide Langmuir-Blodgett Film Catalysts to Enhance the Cost Efficiency of a PEM Fuel Cell**
Andrew M. Chen, 17, Senior, Dougherty Valley High School, San Ramon, California, T: Katherine Huang
- ME068 Designing a Novel Freeze-Stable Tetanus Vaccine**
Aryo Sorayya, 18, Senior, Monte Vista High School, Danville, California, T: Rajiv Nayar
- ME069 Investigating the Role of Extracellular Calcium on the Proliferation and Insulin Secretion of Pancreatic Beta Cells in Insulin Dependent Diabetes Mellitus**
Rohan Anand Savoor, 16, Sophomore, Monte Vista High School, Danville, California, T: Meghan Faerber

Alameda County, USCA09, Lawrence Livermore National Laboratory ~ Alameda County Science and Engineering Fair

- CB029 Halting Colorectal Cancer Progression through Chemokine G Protein-Coupled Receptor Signaling**
Priyanka Mahapatra, 17, Junior, Mission San Jose High School, Fremont, California, T: Jack Fendell
- CH039 From Waste Heat to Electricity: Synthesis and Analysis of a New Zintl Phase Compound for Thermoelectric Power Generation**
George Douglas Geng, 15, Junior, Irvington High School, Fremont, California, T: Cecil Benitez
- MI030 A Novel Pentameric Model of the T4 Bacteriophage Genome Packaging Motor and a Means of Disrupting Its Mechanism**
Raghu Vamsi Dhara, 17, Junior, Mission San Jose High School, Fremont, California, T: Jack Fendell

Palos Verdes Peninsula, USCA10, Palos Verdes Peninsula Unified School District Science and Engineering Fair

- CS024 Improving Algorithms for the Optimal Allocation of Security Resources**
Arjun Milind Tambe, 15, Sophomore, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Peter Starodub
- EE027 A Foldable Solar Panel with an Improved Hill Climbing MPPT Circuit**
Alexander Lee Chen, 17, Senior, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Peter Starodub

Santa Cruz, USCA11, Santa Cruz Science Fair

- CH037 An Investigation of Cellulosic Ethanol: Oxidation of Hemicellulose and Lignin to Achieve High Conversion Yields of Cellulose to Glucose**
Hailey C. Loehde-Woolard, 15, Sophomore, Pacific Collegiate School, Santa Cruz, California, T: Chris Nestlerode
- EA301 The Secret's of San Lorenzo Valley's Atmosphere**
Natalie Rose Gallagher, 15, Sophomore; Connor Burke Lydon, 16, Sophomore
San Lorenzo Valley High School, Felton, California, T: Jane Orbuch

Seaside, USCA12, Monterey County Science and Engineering Fair

- BI020 Targeting Lung Mutagenesis: Mycosporine-like Amino Acids as Scavengers of PAH o-Quinone Derived ROS for the Reduction of p53 Strand Scission and Mutation in Human Lung Cancer**
Ailis Clare Dooner, 16, Sophomore, Carmel High School, Carmel, California, T: Jeffrey M. Field
- PS309 Evaluating the Presence of Peronospora in the Salinas Valley and Analyzing the DNA Sequence Similarity in Downy Mildew Pathogens Affecting Spinach and Beet in California**
Aradhana Sinha, 16, Senior; Kapil Sinha, 13, Freshman
Salinas High School, Salinas, California, T: Kacee Fujinami

San Bernardino, USCA13, Riverside, Inyo, Mono, San Bernardino (RIMS) Science and Engineering Fair

- BI059 Elucidating the Biochemical Mechanisms of Synthesis of Anthocyanins in Citrus Fruits**
Saumya Ramadugu Keremane, 15, Sophomore, Martin Luther King High School, Riverside, California, T: Michele Hampton
- EN065 Assembly of Magnetic Particles and Magnetic Holes into 1D, 2D, and 3D Photonic Crystals**
Michael Leonard Janner, 17, Junior, Redlands East Valley High School, Redlands, California, T: Colleen Sumner
- MA061 Determining Combinatorial Sums using Roots of Unity**
Liang Zhou, 16, Junior, John W. North High School, Riverside, California, T: Michele Lieux
- PH059 Time-Resolved Optical Study of the Surface States of Topological Insulator Bi₂Se₃**
Connor Everett Tom, 16, Sophomore, John W. North High School, Riverside, California, T: Michele Lieux

COLORADO

Alamosa, *USC001, San Luis Valley Regional Science Fair, Inc.*

- EA006 The Minnie Lynch: A Comparative Study in the Affects of Parent Material on Water Quality in Ephemeral Streams**

Brisha Nicole Wakasugi, 18, Senior, Alamosa High School, Alamosa, Colorado,
T: Judy Elizabeth Lopez

- EM024 Successional Sequence of Water Quality and Macroinvertebrates in a Playa Wetland System**

Tayler Ann Rocha, 17, Junior, Monte Vista High School, Monte Vista, Colorado,
T: Loree Ann Harvey

Durango, *USC002, San Juan Basin Regional Science Fair*

- EM056 Endocrine Disrupter Remediation in Fresh Water: Exploration of Mycoremediation Capabilities of Fungi**

Rachel Louise Rossi, 17, Junior, Durango High School, Durango, Colorado,
T: Robert Milofsky

Brush, *USC003, Morgan-Washington Bi-County Science Fair*

- EA004 A Two-Dimensional Investigation of Hydraulic Fracturing Principles**

Jacob Floyd Nichols, 17, Freshman, Brush High School, Brush, Colorado,
T: David L. Miner

- EE021 Friction-Reducing Ferromagnetic Fluid**

Timothy Joel Lyne, 17, Senior, Brush High School, Brush, Colorado, T: David Miner

Colorado Springs, *USC004, Pikes Peak Regional Science Fair*

- CS023 Seeing The Big Picture: A Target-Oriented Approach to Optimization for Data Association Models**

Stephen Laird Parish, 17, Sophomore, Home School, Colorado Springs, Colorado,
T: Maureen Y. Parish

- EE025 Ion Propulsion: Electrostatic Thruster Design and Optimization for Space Applications**

Matthew Garrett Hileman, 15, Freshman, The Classical Academy College Pathways, Colorado Springs, Colorado, T: Candice Muir

- ME023 *Pseudomonas a.* Infections in the Cystic Fibrosis Lung: The Inhibition of Bio-encapsulated Pathogens within Simulated Cystic Fibrosis Conditions**

Jenna Pauline Hartley, 15, Sophomore, Palmer High School, Colorado Springs, Colorado, T: Katherine Bates

Grand Junction, *USC005, Western Colorado Regional Science Fair*

- EM006 Riparian Area Multiple Indicator Monitoring**

Sarah Elizabeth Stalcup, 16, Junior, Delta High School, Delta, Colorado,
T: Robin Liston

Greeley, *USC006, Longs Peak Science and Engineering Fair*

- MI004 Optimizing Energy Production through Waste Water Treatment: The Utilization of a Mediator-Less, Single Celled Microbial Fuel Cell**

Nurul MohdReza, 17, Junior, Union Colony Charter School, Greeley, Colorado,
T: Cathy Marie Hoyt

La Junta, *USC007, Arkansas Valley Regional Science Fair*

- EM038 Mycoremediation: A Solution to Runoff Pollution?**

Devon M Enke, 17, Junior, La Veta High School, La Veta, Colorado,
T: Patricia Keeling

Sterling, *USC008, Northeast Colorado Regional Science Fair*

- PS028 Studying the Effects of Gliadin Protein Levels in Hybrid Wheats on the Segment Regeneration in *Lumbriculus***

Emma Kay Scholz, 16, Sophomore, Sterling High School, Sterling, Colorado,
T: Carlye Jo Armstrong

Boulder, *USC009, Corden Pharma Colorado Regional Science Fair*

- CB031 miRNA and Cancer, Phase II: Constructing a Bidirectional Cassette to Identify miRNA Regulators**

Lawrence Zhang, 17, Junior, Fairview High School, Boulder, Colorado,
T: Paul Strode

- CH042 The Effects of Operating Conditions on Gas Transport Mechanisms through SAPO-34 Zeolite Membranes**

Michael Zhu Chen, 16, Junior, Fairview High School, Boulder, Colorado,
T: Paul Strode

- EE091 Biometric Electromechanical Firearm Safety**

Kai Thorin Kloepper, 16, Sophomore, Fairview High School, Boulder, Colorado,
T: Paul Strode

Denver, *USC010, Denver Metropolitan Regional Science and Engineering Fair*

- EE017 iPad Cases for Autism**

Connor Lawson Sendel, 15, Sophomore, Cherry Creek High School, Greenwood Village, Colorado, T: Ethan Dusto

- PS033 The Effect of Low Power Microwaves on Plant Growth**

Jonathan Rui Xu, 14, Freshman, Cherry Creek High School, Greenwood Village, Colorado, T: Kevin Burns

Fort Collins, *USC050, Colorado Science and Engineering Fair*

- EE088 Fine Motor Skills Using Neural Activated Biomechanical Prosthesis**

Easton J. LaChappelle, 17, Junior, Mancos High School, Mancos, Colorado,
T: Kelly Finlay

- MA036 Discretization of Infinite Dimensional Geodesics**

Cole Wilkening Hugelmeyer, 17, Senior, Boulder High School, Boulder, Colorado,
T: Laura L. Duncan

- MI056 Testing Artificial Genes Designed to Inhibit the Growth of *E. coli* as an Alternative to Traditional Antibiotics**

Logan Thrasher Collins, 16, Sophomore, Fairview High School, Boulder, Colorado,
T: Paul Strode

CONNECTICUT

Hamden, *USCT50, Connecticut Science & Engineering Fair*

- EM022 A Model-Based Approach to Predicting Species' Responses to Climate Change by Characterizing Community Dynamics**

Emily Elizabeth Baczyk, 17, Senior, Choate Rosemary Hall, Wallingford, Connecticut, T: Deron Chang

- EN030 Promotion of Wound Healing via a Novel Hydrophilic Dressing**

Mallory Claire Madfes, 17, Senior, Greenwich High School, Greenwich, Connecticut,
T: Andrew Bramante

- EN033 Optimization of the Cellulose Algae Sodium Chloride Battery**

Karim Kharbouch, 17, Senior, Bridgeport Regional Aquaculture Science and Technology Education Center, Bridgeport, Connecticut, T: Kirk Shadle

- ET023 Optimization of a Dye Co-Sensitized Solar Cell to Assist Photo-Electrochemical Water-Splitting with a Nanostructured C-PC**

Enhanced Fe₂O₃ Photo-Anode
Maxmillian Cooper Minichetti, 15, Sophomore, Greenwich High School, Greenwich, Connecticut, T: Andrew Bramante

- MI021 Morphogenesis of and Chromosome Segregation in *Escherichia coli* Branching Mutants**

Kaitavjeet Chowdhary, 17, Senior, Glastonbury High School, Glastonbury, Connecticut, T: Diane Pintavalle

- PH035 Laser-induced Propulsion of Anticancer-Doxorubicin Using Low-Power Laser Optical Tweezing**

Rebecca Michelle Murray, 16, Junior, Greenwich High School, Greenwich, Connecticut, T: Andrew Bramante

DISTRICT OF COLUMBIA

Washington, *USDC01, District of Columbia STEM Fair*

- BI032 Development of Lipophilic Inhibitors of 1-Deoxy-D-xylulose-5-phosphate Reducto-isomerase (Dxr) from Mycobacterium Tuberculosis (Mtb)**

Camille Merit Titzell, 17, Senior, School Without Walls Senior High School, Washington, District of Columbia, T: Sydney Bergman

- EV035 The Effects of Pesticides on Indicator Species in Aquatic Environments**

Emma Rachelle Johnson, 18, Senior, School Without Walls Senior High School, Washington, District of Columbia, T: Sydney Bergman

FLORIDA

Avon Park, USFL01, Heartland Regional Science and Engineering Fair

- AS035** **How Does Oil Contaminate Affect the Regeneration Process of *Protoreaster nodosus*?**
Kristen Michelle Burkett, 14, Freshman, Hardee Senior High School, Wauchula, Florida, T: Kristen Michelle Burkett
- MI022** **The Phylogeny of Antibacterial Traits in Cacti and Related Succulents, Year Two**
Brandon David Beatty, 17, Junior, Hardee Senior High School, Wauchula, Florida, T: Robert D. Beatty
- Palmetto, USFL02, Manatee Lockheed Regional Science and Engineering Fair
- CB047** **Primer Design around Tobacco Mosaic Resistance Gene in *Phaseolus vulgaris***
Johnna Jane Glover, 17, Senior, Manatee High School, Bradenton, Florida, T: Patricia Zalo
- EE043** **Water for the World (Year Three): A High Efficiency Combined Evaporator and Condenser for Solar Water Purification**
Katherine Lee Zimmerman, 17, Junior, Braden River High School, Bradenton, Florida, T: Marybeth Witham
- Fort Myers, USFL05, Thomas Alva Edison Kiwanis Science and Engineering Fair
- CB055** **Sodium Is Essential for Na⁺/K⁺-ATPase Blockade and Electrical Stimulation Induced Cancer Cell Lysis**
Jack Duan-Xie Norleans, 16, Junior, Fort Myers High School, Fort Myers, Florida, T: Catherine P. Tucker
- EM037** **Using Hydroponics to Phytoremediate Copper from Water using *Brassica juncea* and *Eruca sativa***
Katie Elizabeth Thorp, 16, Sophomore, Fort Myers High School, Fort Myers, Florida, T: Paul Eichbauer
- MI311** **The Prevalence of Bacteria Leading to Nosocomial Infections on Data Entry Peripherals and the Efficacy of the Cleaning Methods Used in Hospitals**
Varun Prakash Varshney, 15, Sophomore; Ahmed Ali Ahad, 16, Sophomore, Canterbury School, Fort Myers, Florida, T: Kelly Etcheverry
- PS036** **A Third Year Study of Audiotropism: Using Descriptive and Inferential Statistical Analysis in Data Quantifying the Physiological Changes in *Phaseolus vulgaris* Exposed to Audio Frequencies**
Angelique Nichole Noles, 17, Junior, Port Charlotte High School, Port Charlotte, Florida, T: Jason Wikman
- Fort Pierce, USFL06, St. Lucie County Regional Science and Engineering Fair
- BI048** **CancAARS: A Novel Therapeutic Target for Melanoma Tumorigenesis**
Robert Mohamed Bacchus, Jr., 16, Junior, Lincoln Park Academy, Fort Pierce, Florida, T: Nancy Hosie
- EM039** **Sustaining Ecological Biodiversity with Highly Specific RNA Interference (RNAi)**
Neha Kambam Reddy, 16, Junior, Lincoln Park Academy, Fort Pierce, Florida, T: Nancy Hosie
- Fort Walton Beach, USFL07, Panhandle Regional Science and Engineering Fair
- EE003** **Applied Triangulation Using Innovative Signal Processing and Radio Frequency Capturing (iSparc[®])**
Alexis Rose Hopkins, 14, Freshman, Fort Walton Beach High School, Fort Walton Beach, Florida, T: Elizabeth Ann Russell
- ET004** **A Current Event: Using Renewable Electrical Tidal Energy in the Production of Hydrogen Gas for Fuel Cells and Other Applications, Year Four of an Ongoing Study**
Kyle Scott Saleeby, 18, Senior, Niceville High School, Niceville, Florida, T: Gina Emery
- ET012** **The Adaption of a Gorlov Helical Turbine into a Water Main**
Michael Anthony Sementilli, 16, Sophomore, Niceville High School, Niceville, Florida, T: Gina Emery
- PS005** **The Effects of Iron, Manganese, and Boron on the Rhizobia Inoculation of *Glycine max* and *Vigna unguiculata* Growth, a Third Year Study**
Sarah Elizabeth Craig, 15, Freshman, Crestview High School, Crestview, Florida, T: Melissa Brown

Gainesville, USFL08, Alachua Region Science and Engineering Fair

- BE009** **Students' Life Satisfaction between Chinese-Immigrants and Their Counterparts**
Jessica Jiamei Lee, 14, Freshman, Eastside High School, Gainesville, Florida, T: Virginia Christensen
- ME013** **Year Three: The Role of Various Heat Shock Proteins and Amyloid β in Alzheimer's Disease**
Meenakshi Bose, 15, Sophomore, Eastside High School, Gainesville, Florida, T: Virginia Christensen
- PH014** **Foot Strike Patterns during Running**
Lucinda M. Peng, 17, Junior, Eastside High School, Gainesville, Florida, T: Chris Hass
- Ft. Lauderdale, USFL09, Broward County Science Fair
- CH043** **Adaptations to the Common Car Battery: Concentration Cell and Alloyed Electrode Manipulation**
Mikala Paula Cohen, 17, Junior, Cypress Bay High School, Weston, Florida, T: Jay M. Rosenberg
- EV024** **Examining the Global Carbon Crisis: The Impact of Increased Carbon Dioxide on the Biological Processes and Carbon Sequestration of the Diatom *Licmophora flabellata***
Rachel Elizabeth Sereix, 15, Sophomore, University School of Nova Southeastern University, Fort Lauderdale, Florida, T: Arnold I. Miller
- EV033** **A Molecular and Morphological Study of '*Candidatus Pasteuria aldrichii*' to Various Nematode Species as a Biological Control**
Kiona Rajene Elliott, 18, Senior, Northeast High School, Oakland Park, Florida, T: Randa Flinn
- EV034** **Differential Gene Expression in Lead-exposed *Saccharomyces cerevisiae***
Preksha Bhagchandani, 17, Junior, Pine Crest School, Ft. Lauderdale, Florida, T: Jennifer Gordinier
- Jacksonville, USFL10, Northeast Florida Regional Science and Engineering Fair
- BE301** **The Square Based Paradigm: A Newly Invented Method for Faster Spelling with Brain Waves (Year III)**
Ryan Matthew Shih, 17, Junior
Kevin Daniel Shih, 17, Junior
Stanton College Preparatory School, Jacksonville, Florida, T: Rajasekhar Narisetty
- MA007** **Mathematical Expression of CPGs in Leech Heart Interneurons, Year II**
Siddharth Varlagadda, 16, Junior, Episcopal High School of Jacksonville, Jacksonville, Florida, T: Marion Zeiner
- ME005** **Identifying Novel DNA Methyltransferase 1 (DNMT1) Small Molecule Inhibitors for Cancer Treatment Year Two: Hybrid Structure and Ligand-Based Virtual Screening**
Alexander William Forsyth, 18, Senior, Episcopal High School of Jacksonville, Jacksonville, Florida, T: Marion Zeiner
- ME006** **Developing a Ligand-specific High Dielectric Strength Drug Model for Demyelination Disorders using *Lutjanus buccanella in situ*, Year III**
Mohan Sai Ravi, 17, Senior, Stanton College Preparatory School, Jacksonville, Florida, T: Rajasekhar Narisetty
- Lake City, USFL11, Suwannee Valley Regional Science and Engineering Fair
- CH049** **Infrared Multi-Photon Dissociation Spectroscopy of Mass-Selected Peptide-Crown Complexes**
Santos Antonio Cedric Ruiz Rodriguez, 17, Senior, Union County High School, Lake Butler, Florida, T: Renae Allen
- PS011** **The Correlation of Energy Output of Pine Species and Their Resin Content, Year Four**
Holly Linn Tucker, 17, Junior, Union County High School, Lake Butler, Florida, T: Carolyn Renae Allen
- Lakeland, USFL12, Polk Region Science and Engineering Fair
- BI054** **Screening of Novel Drugs for the Treatment of Alzheimer's Disease**
Annika Mulaney, 15, Sophomore, International Baccalaureate School at Bartow High School, Bartow, Florida, T: Debbie Kennon

- MI007 Advanced Design Field Combat and Burn Bandage using Antimicrobial Copper and Bio Inhibitor Film**
Summer Anne Monroe, 18, Senior, Polk State College Lakeland Collegiate High School, Lakeland, Florida, T: Kim Rex
Melbourne, USFL13, South Brevard Science and Engineering Fair
- BI014 Effects of Vitamin C on *Helianthus annuus*: A Possible Treatment for Crown Gall Disease**
Naiya Patel, 17, Senior, Melbourne High School, Melbourne, Florida, T: Sean Fisk
- EA005 The Effects of Increased Aluminum Phosphate on the Sequestering of CO₂ Done by Phytoplankton**
Daniella Deanna Bernadel, 15, Freshman, Palm Bay High School, Melbourne, Florida, T: Micheal O'Donnell
- MA013 On the Fine Classification of Periodic Orbits of Continuous Endomorphisms on the Real Line with Application in Chaos Theory, Year II**
Rashad Abdulla, 16, Senior, West Shore Junior/Senior High School, Melbourne, Florida, T: Paula Ladd
Merritt Island, USFL14, Brevard Intracoastal Regional Science and Engineering Fair
- EE018 Design and Analysis of a Fractal Antenna for OTA TV**
Sarah Van Sickle, 17, Senior, Satellite High School, Satellite Beach, Florida, T: Joseph Scott
- ME107 Inhibition of Myeloperoxidase (MPO)-Mediated Oxidation of Low-density Lipoprotein and High-density Lipoprotein (HDL) by Extract of *Ocimum tenuiflorum* and its Chemical Component, Eugenol: Potential Mechanism for Anti-Atherosclerotic Effects**
Sangamithra Vardhan, 17, Senior, West Shore Junior/Senior High School, Melbourne, Florida, T: Mary Anderson
Miami, USFL15, South Florida Science and Engineering Fair
- EE008 Vertical Axis Wind Turbine Farm Configuration Efficiency Based on Schools of Fish in Nature**
Yenny Dieguez, 15, Freshman, Jose Marti MAST 6-12 Academy, Hialeah, Florida, T: Andrew Kearns
- EM001 The Effect of Fire on the Community Structure of Macro-Invertebrates in a Compartmentalized Wetlands Ecosystem: Will Wetlands Restoration Efforts Reduce the Anthropogenic Intensification of Environmental Damage from Natural Disturbances?**
Jamie Rachel Odzer, 16, Junior, Dr. Michael M. Krop Senior High School, Miami, Florida, T: David Buncher
- ME004 Thrombogenic Assessment of Nitinol Alloys and Their Hemocompatibility**
Ashwin Mahadev Bhat, 16, Junior, John A. Ferguson Senior High School, Miami, Florida, T: Michael Weiss
- MI003 Finding Novel Alginate Genes for the Better Management of *Pseudomonas aeruginosa* Infection in Cystic Fibrosis Patients**
Shiva Kangeyan, 16, Junior, Archimedean Upper Conservatory, Miami, Florida, T: Demetrios Demopoulos
Ocala, USFL16, Big Springs Regional Science Fair
- AS006 A Comparison in *Haemonchus contortus* Fecal Egg Counts Between Three Different Organic Parasite Prevention Strategies in Genetically Selected Adult Boer Goats**
Case Coleman Erwin, 15, Freshman, St John Lutheran School, Ocala, Florida, T: Jennifer Fontaine
- MA008 Olympic Host-Country Advantage**
Brandon Michael Williams, 15, Sophomore, Belleview High School, Belleview, Florida, T: Holly Denton
- ME007 Genetic Analysis of Oral Periodontal Pathogens in the Development of Atherosclerotic Vascular Disease**
Niyanthesh A. Reddy, 15, Sophomore, Vanguard High School, Ocala, Florida, T: Robert J. Hoki
Orlando, USFL17, Dr. Nelson Ying-Orange County Science Exposition
- AS301 The Eyes Behind an Ophiuroidea**
Cathleen Teresa Mestre, 14, Freshman; Ana Camille Carlsen, 14, Freshman

- Lake Highland Preparatory School, Orlando, Florida, T: Nicole Justice*
- BI002 Characterization of Cyclin Dependent-Like Kinases in *Plasmodium falciparum***
Preethi Raghavan, 16, Junior, Lake Highland Preparatory School, Orlando, Florida, T: Nicole Justice
- CH007 Fluorescent Detection of Antibiotic Resistant Mycobacterium Tuberculosis**
Neha Bhaskar, 17, Junior, Lake Highland Preparatory School, Orlando, Florida, T: Nicole Justice
- EV001 Fluorescent Quantum Dots as a Solid-Phase Detection Medium for Heavy-Metal Contaminates in Drinking Water**
Rikhav Shah, 15, Sophomore, Lake Highland Preparatory School, Orlando, Florida, T: Nicole Justice
Bushnell, USFL18, Sumter County Regional Science Fair
- CB301 The Investigation of the Antimicrobial Effect of Lentinus Edodes on Methicillin Resistant *Staphylococcus aureus* and Its Antineoplastic Effect on Breast Cancer Cell Line MDA-MB-231**
Lachonda Marie Lacey, 17, Senior; Sydney Kaye Mann, 17, Junior; Elijah Denzel English, 17, Junior, South Sumter High School, Bushnell, Florida, T: Emily Keeler
- EA001 Subtropical Study of Mine Drilled Lakes and Their Effects on Evaporation and Evapotranspiration**
Breanne Mattea Williams, 18, Senior, South Sumter High School, Bushnell, Florida, T: Emily Keeler
- ET002 Wind Turbine Optimization, Year II: Can a Novel Permanent Magnet Axial Flux Three Phase AC Generator Design Be Used to Increase Future Wind Turbine Efficiency?**
Hunter David Stafford, 16, Junior, The Villages Charter School, The Villages, Florida, T: Monica Vinas Cole
Panama City, USFL19, Florida Three Rivers Regional Science and Engineering Fair
- EM040 Use of Co-Solvents to Enhance Astaxanthin Extraction from *L. setiferus* Shells with Vegetable Oils**
Shixuan Justin Li, 15, Freshman, Rutherford High School, Panama City, Florida, T: Shixuan Justin Li
Pensacola, USFL20, West Panhandle Regional Science and Engineering Fair
- CS009 Predicting Global Trends Using Social Media**
Connor L. Peet, 16, Junior, Pensacola High School, Pensacola, Florida, T: Cherie Chrisco
- EE009 Analysis of Hypersonic Waverider Designs and Determining the Most Aerodynamically Effective Design**
Thomas Sterling Walsh, 15, Sophomore, Pensacola High School, Pensacola, Florida, T: Cherie Chrisco
Saint Augustine, USFL21, River Region East Science Fair
- CB019 Epigenetic Differences in Fetal Murine Liver Associated with Transgenerational Inheritance of Metabolic Disease**
Caroline Knight Snowden, 17, Senior, Ponte Vedra High School, Ponte Vedra, Florida, T: Steve Lyons
Sanford, USFL23, Seminole County Regional Science, Mathematics & Engineering Fair
- BE013 Polar Bears, Penguins, and Cognitive Processing... Oh My!, Year Three**
Caitlyn Mary Ralph, 16, Junior, Lake Howell High School, Winter Park, Florida, T: Vanessa Moosavifazel
- BI005 I Got C: A Study of Epigallocatechin Gallate and Sonication on the Stability of Vitamin C in Deaerated Fresh Orange Juice using Titration**
Nirva Vassa, 15, Freshman, Seminole High School, Sanford, Florida, T: Heather Clayton
- MA014 Retrospective Study to Analyze Patients: Risk Factors to Predict the Likelihood of Developing Multiple Sclerosis**
Madison Nicole Greco, 18, Senior, Oviedo High School, Oviedo, Florida, T: PJ Krehling
Brooksville, USFL24, Hernando County Regional Science and Engineering Fair
- AS011 Strongyle Conundrum, Year Three**
Addison Thomas Hilyard, 17, Junior, Central High School, Brooksville, Florida, T: J.B Dill

- ME083** **The Effects of *Lactobacillus acidophilus* and *Bifidobacterium infantis* on $C_9H_{13}NO_2HCl$ in Relation to Availability Over Time**
Delaney Rose Ahrens, 18, Senior, Hernando High School, Brooksville, Florida,
T: Noreen Shaikat
Jensen Beach, USFL25, Martin County Regional Science and Engineering Fair
- CB034** **Bondar's: Is It Cryptic or Not?**
Laurie Jean Scott, 18, Senior, South Fork High School, Stuart, Florida,
T: Paula M. Hall
- ME008** **Killer Produce! Year Two Study of the Effects of Garlic on Glioblastoma Multiforme**
McKenzie Mayo Cameron, 15, Freshman, Martin County High School, Stuart,
Florida, T: Linda Stitely
Tampa, USFL27, Hillsborough Regional Science Fair
- BI033** **Four Cardiac Hormones Are Novel Potent Inhibitors of the Canonical Wnt/
Beta-Catenin Signal Transduction Pathway in Human Pancreatic, Colorectal,
and Renal Cancers**
Michelle Nadine Skelton, 17, Junior, C. Leon King Senior High School, Tampa,
Florida, T: Nicole Richards
- CS049** **Home Brewed Physics Super Computing**
Alejandro Jose Robles, 18, Senior, Middleton High School, Tampa, Florida,
T: Elaine Gibbs
Merritt Island, USFL28, Brevard Mainland Regional Science and Engineering Fair
- PH017** **Peristaltic Pumping of a Multi-phase Fluid and Immersed Solid
Particles System**
Varun Bansal, 17, Senior, West Shore Junior/Senior High School, Melbourne,
Florida, T: Mary Anderson
- PS013** **Genetic Engineering: Improving Drought Resistance by Identifying the
Underlying Mechanisms of Mitogen-Activated Protein Kinase 4 and Its
Interaction with Substrate MKS1 in *Brassica napus***
- # Michelle Man-si Chin, 17, Senior, West Shore Junior/Senior High School, Melbourne,
Florida, T: Paula Ladd
West Palm Beach, USFL29, Palm Beach Regional Science and Engineering Fair
- BE039** **Can Parsing Google and Twitter Reliably Reflect Political Trends?**
Zachary Matthew Solloway, 17, Junior, Park Vista Community High School,
Lake Worth, Florida, T: Charlsa Ann Henderson
- BI041** **Developing a Purification Strategy to Aid Structural Characterization of the
S1P1 Receptor**
Ryan Christopher Meingasner, 17, Senior, Seminole Ridge Community High School,
Loxahatchee, Florida, T: Carolyn Slygh
- CB057** **Wear and Tear or Genes in Gear? Single Neuron Age-Dependent Gene
Expression in *Aplysia californica***
Alexandra Saraleah Kaye, 17, Senior, Palm Beach Lakes Community High School,
West Palm Beach, Florida, T: Chrissilee Williams
- CH052** **Synthesis of Monodisperse Superparamagnetic FePt Nanoparticles**
Savannah Rae Flak, 17, Senior, Alexander W. Dreyfoos School of the Arts,
West Palm Beach, Florida, T: Stephen Anand
- EE063** **Infrared Energy**
Andrew Joseph O'Neill, 17, Junior, Suncoast Community High School, Riviera Beach,
Florida, T: Scott Howard
- EV041** **H2O_h No: Pharmaceuticals Are in My Groundwater! Removal of
Sulfamethazine by Hypercrosslinked Adsorbent MN250 in Simulated
Groundwater**
Maria Elena Grimmer, 14, Freshman, Oxbridge Academy of the Palm Beaches,
West Palm Beach, Florida, T: Teresa Thornton, PhD
New Port Richey, USFL30, Pasco Regional Science and Engineering Fair
- ET001** **Alternate Sources of Cellulosic Ethanol**
Alfred Jennett, 17, Senior, Genesis Preparatory School, New Port Richey, Florida,
T: Paula Sparks

- MA009** **How Does Changing the Real and Imaginary Perturbation Affect the
Mandelbrot Fractal?**
Pranav Ishaan Warman, 14, Freshman, Academy at the Lakes, Land O' Lakes,
Florida, T: Amy Jordan
Vero Beach, USFL31, Indian River Regional Science and Engineering Fair
- AS013** **The Chemical Ecology of the Diaprepes Root Weevil: Olfactory Responses to
Conspecific and Plant Odors**
Evan Cliff MacKay, 16, Sophomore, Vero Beach High School, Vero Beach, Florida,
T: Heather Holden
- ME102** **Identification of Single Nucleotide Polymorphisms in Genes Associated with
Alzheimer's Disease**
Harshonnati Jain, 17, Senior, Vero Beach High School, Vero Beach, Florida,
T: Heather Holden
Sarasota, USFL32, Sarasota Regional Science, Engineering and Technology Fair
- BE027** **Expressive Language Skills Outcomes in Children with Autism while
Implementing Proloquo2go**
Courtney Alexandra Astore, 16, Sophomore, Cardinal Mooney Catholic High School,
Sarasota, Florida, T: Dana Holloran
- CS031** **Cloud4Cancer Tackles Genetic Expression Profiles to Diagnose Leukemia**
Brittany Michelle Wenger, 18, Senior, The Out-of-Door Academy, Sarasota, Florida,
T: Mike Newhams
Green Cove Springs, USFL35, Clay Rotary Regional Science and Engineering Fair
- BI308** **Can Allelochemicals Be Extracted from Black Walnut Seeds through Boiling
and Distillation?**
Nabila Rahim, 16, Sophomore; Kaetlynd Anne Vance, 16, Sophomore
Oakleaf High School, Orange Park, Florida, T: Jennifer Butler
- ME032** **Pumper's Paradise: Which Fast-Acting Insulin Analog Is the Most Efficient?**
James Nathan Hilt, 15, Junior, Middleburg High School, Middleburg, Florida,
T: Craig Martin
Lakeland, USFL50, State Science and Engineering Fair of Florida - Ying Scholars
- BE036** **HuD as a Variant-Specific Regulator of Neuronal Differentiation in the Adult
Hippocampus: Implications in Alzheimer's Dementia**
Miguel Ignacio Paredes, 18, Senior, American Heritage School, Plantation, Florida,
T: Brian Ramos
- CB004** **Turning Off the Transporter SLC35F2**
Yasmine Sapphire Zubi, 17, Junior, Satellite High School, Satellite Beach, Florida,
T: Joseph Scott
- ET032** **Algae to Oil via Photoautotrophic Cultivation and Osmotic Sonication**
Evie Sobczak, 16, Junior, Shorecrest Preparatory School, St. Petersburg, Florida,
T: David Hyink
- EV036** **Modeling Estuarine Salinity using Artificial Neural Networks**
Christopher Wan, 17, Senior, Alexander W. Dreyfoos School of the Arts,
West Palm Beach, Florida, T: Stephen Anand
- GEORGIA**
Albany, USGA01, Darton College/Merck Regional Science Fair
- ET042** **The Creation of a Feasible Wave-Powered Piezoelectric Generator**
Dian Alexander Globberman, 18, Senior, Colquitt County High School, Moultrie,
Georgia, T: Vance Alan Hurst
Athens, USGA02, Northeast Georgia Regional Science and Engineering Fair
- CS050** **Utilizing Head Motion to Control the Computer**
Chuanbo Pan, 15, Sophomore, North Oconee High School, Bogart, Georgia,
T: Marie Cooper Saxon
Atlanta, USGA03, Atlanta City Science & Engineering Fair
- BI039** **A Faster Rubisco for Carbon Sequestration**
Justin Krish Williams, 18, Senior, Henry W Grady High School, Atlanta, Georgia,
T: Andrew Nichols
- CB048** **Can Fruits Containing Proteases Ruin Your Gelatin Dessert?**
Lydia Frances Zemmali, 15, Freshman, North Atlanta High School, Atlanta, Georgia,
T: Ramon Reeves

McDonough, USGA06, Henry County Science and Engineering Fair

ET006 Rotor Tip Components for Residential Wind Turbines

Daniel James Dorminy, 18, Senior, Sola Fide Home School, McDonough, Georgia, T: Ann W. Dorminy

ME035 Carv-A-Cure: A Cell Viability Analysis of the Apoptotic Effects of Carvacrol on Pancreatic and Colorectal Cancer

Tushar Mittal, 16, Junior, Dutchtown High School, Hampton, Georgia, T: Rabieh Hafza

MI011 Steam vs. UV-C: Which Is More Effective in Eradicating Bacteria?

Rosa Scarlett Reece, 15, Freshman, Woodland High School, Stockbridge, Georgia, T: Suzanne Scudder

Milledgeville, USGA07, Georgia College & State University Regional Science and Engineering Fair

AS004 Response of Soil Invertebrates to Electromagnetic Stimuli

Teva Paul Ilan, 17, Junior, Howard High School, Macon, Georgia, T: Jamie Akin

Griffin, USGA09, Griffin RESA Regional Science Fair

BI006 The Effects of *Synsepalum dulcificum* on the Taste of Foods at Different pH Levels

Hope Louise Didier, 15, Freshman, McIntosh High School, Peachtree City, Georgia, T: Stephanie Sisk

EM003 Cascading Mixed-Media Denitrifying Bioreactor

Jed Matthew Mercado Paz, 17, Senior, Griffin High School, Griffin, Georgia, T: Jessica Devoursney

Warner Robins, USGA10, Houston Regional Science and Engineering Fair

BI021 The Efficiency of Biodiesel and Biomethane from Oil and Sugar Sources

Navin Haresh Buxani, 16, Sophomore, Houston County High School, Warner Robins, Georgia, T: Stacy McLean

BI022 Which Kind of Yogurt, Commercial Cow Yogurt, Commercial Goat Yogurt, Homemade Cow Milk Yogurt, Homemade Goat Milk Yogurt, or Goat Milk Yogurt Consumed from Goats Directly Has the Best Shelf Life and Stability According to Proteolysis and Lipolysis?

Namrata Sabrina Buxani, 15, Sophomore, Houston County High School, Warner Robins, Georgia, T: Stacy McClean

Duluth, USGA11, Gwinnett Regional Fair

EN005 LunarCrete

Sergio Alexander Parra, 17, Junior, Mill Creek High School, Hoschton, Georgia, T: Jennifer Maloney

ME009 Hemodynamic Interactions in Arterial Networks with Atherosclerosis

Aprotim Cory Bhowmik, 16, Junior, Parkview High School, Lilburn, Georgia, T: Cary Sell

MI008 Investigating the Role of Heme Pocket Residues in a Globin Coupled Sensor

William Huang Jin, 17, Junior, Gwinnett School of Mathematics, Science, and Technology, Lawrenceville, Georgia, T: Susan Kramer

Conyers, USGA12, Rockdale Regional Science & Engineering Fair

BE003 Applying Matrix Theory to Model Global Social Dynamics

Heeyoon Kim, 18, Senior, Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Scott Bolen

CS004 Computational Models of Stochastic Recurrent Artificial Neural Networks (ANN's)

Aqib Javid Momin, 17, Junior, Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Scott Bolen

MI302 Establishing the Sensitivity & Reliability of Microbial Forensics

Alexis Eleanor Nesbitt, 18, Senior; Ashley Danielle Driver, 18, Senior Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Amanda Dyann Baskett

Atlanta, USGA13, Fulton County Regional Science & Engineering Fair

ET007 Looking Past Petroleum: Growing Biofuel Using Brine from Abandoned Oil Wells

Trisha Dalapati, 15, Sophomore, Centennial High School, Roswell, Georgia, T: Bob Kuhn

Athens, USGA50, Georgia State Science and Engineering Fair

CB041 Hypoxia Induced Effects on Chondrocyte Phenotype

Sonam Alka Brahmabhatt, 16, Junior, Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Amanda Dyann Baskett

CS052 SKYNET: Modeling Spatiotemporal Systems with Recurrent Neural Nets

Anand Srinivasan, 16, Junior, Roswell High School, Roswell, Georgia, T: Megan Nettuno

EN040 Invisibility Two Steps Closer: An Analysis of Cylindrically Confined Diblock Copolymers and Gold Nanocomposites for Metamaterials

Julia Beth Abelsky, 18, Senior, North Springs Charter High School, Sandy Springs, Georgia, T: Patti Lawrimore

PS030 Can Native Bees Replace Honeybees in Commercial Apple Production?

Catherine Grace Schlueter, 17, Senior, Mountain View High School, Lawrenceville, Georgia, T: Dianne Akin

HAWAII

Honolulu, USHI01, Hawaii Association of Independent Schools Science and Engineering Fair

AS009 Identification of Vanadium-Binding Proteins and Genetic Analysis of Hawaii Sea Cucumber Populations

Nalani Sachiko Kaku, 17, Junior, Kamehameha Schools Kapalama High School, Honolulu, Hawaii, T: Gail Ishimoto

PS008 Isolation of Leukemia-Specific Cytotoxic Compounds from Lemon Balm (*Melissa officinalis*)

Reid Toshio Kealii Akana, 16, Junior, Kamehameha Schools Kapalama High School, Hawaii, Hawaii, T: Gail Ishimoto

Pearl City, USHI02, Leeward District Science and Engineering Fair

CH046 Deposition of Novel Catalysts on Photovoltaic Materials for Artificial Photosynthesis: The Case of Ruthenium and Tungsten Nanoparticles on Hydrogen Evolution Reaction Efficiency

Jennifer Manyu Wong, 18, Senior, Kapolei High School, Kapolei, Hawaii, T: Stacie Inouye

PH312 The Effects of Temperature on the Index of Refraction of Water

Charlyn Castro Manuyag, 17, Junior; Fely Marie Gregorio Magaoay, 18, Junior Waipahu High School, Waipahu, Hawaii, T: Lucille Imamura

Wailuku, USHI03, Maui Schools Science and Engineering Fair

AS022 Floating Nests/Platforms for Improved Reproductive Success of the Hawaiian Coot (*Fulica alai*) at Pipi'o Pond, Mapulehu, Molokai, Hawaii

Sarah 'Alohilani Jenkins, 15, Sophomore, Molokai High School, Ho'olehua, Hawaii, T: Malia Lee

PH013 Spectral Analysis of Time Dilation in Quasar Microvariability

Steven Kaichi Okada, 17, Senior, Maui High School, Kahului, Hawaii, T: Keith Imada

Lihue, USHI04, Kauai Regional Science & Engineering Fair

ET037 HHO Energy: A Study of Oxyhydrogen Production as an Application for a Fuel Supplement in an Internal Combustion Engine

Julia Mariko Hirano, 14, Freshman, Waimea High School, Waimea, Hawaii, T: Kristal Ann Daligon

PH030 Solar Tsunami: A Study of the Correlation between Coronal Mass Ejections and Extreme Ultraviolet Waves

Kayla Lokelani Ishida, 15, Sophomore, Waimea High School, Waimea, Hawaii, T: Victoria Gordon

Hilo, USHI05, Hawaii District Science and Engineering Fair

PS043 It's Tea Time: Light-induced Antioxidant Production in Tea (*Camellia sinensis*)

Matthew Ken Sueda, 17, Senior, Waiakea High School, Hilo, Hawaii, T: Whitney Aragaki

Kaneohe, USHI06, Windward District Science and Engineering Fair

ME096 Examining the Drug Metabolizing Enzyme NQO1 in the Geriatric Liver

Lorna-Leigh Haruko Kaneshiro, 18, Senior, James Bicknell Castle High School, Kaneohe, Hawaii, T: Karen Kimura

Mililani, *USHI07, Central Oahu District Science and Engineering Fair*

EM020 Effects of Different Growing Media in Aquaponics

Abraham Kwan, 17, Senior, Moanalua High School, Honolulu, Hawaii, T: Kathy Lin

MI303 Metagenomic Analysis to Identify and Characterize Antibiotic Producing Microbes

Marc Siler, 17, Senior

Danielle Erin Terukina, 17, Senior

Mililani High School, Mililani, Hawaii, T: Tyson Kikugawa

PH034 Helicotoroidal Topology of Leptons, Quarks, and Hadrons

Viola Mocz, 17, Junior, Mililani High School, Mililani, Hawaii, T: Tyson Kikugawa

Honolulu, *USHI50, Hawaii State Science and Engineering Fair*

CB066 Identifying the Mechanisms of AFP and GPC3 Internalization by Hepatocellular Carcinoma (HCC) Cell

Aaron Angelo Kamuela Ponce, 17, Senior, Kamehameha Schools Kapalama High School, Honolulu, Hawaii, T: Gail Ishimoto

EE086 Engineering a Low-Cost Alternative Navigational Aid for the Visually Impaired

Brandon Deonte Alfonso Kinard, 15, Freshman, Mililani High School, Mililani, Hawaii, T: Nel Venzon

ET060 Frictionless Floating Train, Part Three

Matthew Thomas Sturm, 16, Sophomore, Henry Perine Baldwin High School, Wailuku, Hawaii, T: Michael Holley

ME108 The Intersection of the HGF/c-Met and COX-2 Pathways in Lung Cancer
Nathan Keli'ionalani Kennedy Lee, 16, Junior, Kamehameha Schools Kapalama High School, Honolulu, Hawaii, T: Gail Ishimoto

MI055 Microwire Biosensor: Novel Detection of *Escherichia coli*

Ariana Hyo Jin Kim, 15, Freshman, Saint Andrew's Priory School, Honolulu, Hawaii, T: Michael Grech

ILLINOIS

Chicago, *USIL01, Chicago Public Schools Student Science Fair*

BI046 Tributyltin Disrupts Adipocyte Metabolism

Emily Taylor Hayes, 18, Senior, Walter Payton College Preparatory High School, Chicago, Illinois, T: Walt Kinderman

BI047 The Effect of Colloidal Silver and Bromelain on Viability of PC12 Cells

Marcelina Puc, 15, Sophomore, Lane Technical College Preparatory High School, Chicago, Illinois, T: Kathryn Beck

CB056 Discovering the Impact of Aging on Whole Tumor Vaccine Effectiveness Role of Dendritic Cells

Keven Joshua Stonewall, 18, Senior, Chicago High School for Agricultural Sciences, Chicago, Illinois, T: LaShayne Collins

EV044 Contaminated Water Disinfection Using Zero-Valent Iron Filtration as an Alternative to Chlorination

Alexander Roberto Gasca, 18, Senior, Walter Payton College Preparatory High School, Chicago, Illinois, T: Walter Kinderman

Edwardsville, *USIL02, Illinois Junior Academy of Science Region XII Science Fair*

CH047 Fingerprints: Can They Handle the Heat?

Martina Marie Hukel, 16, Junior, Governor French Academy, Belleville, Illinois, T: Jeffrey Scott Redman

CS319 A New Algorithm for the Triangulation of Polygons Using Recursive Diagonal Creation

Conner Thomas Ruhl, 16, Junior

Forrest Channing Hunter, 17, Senior

Governor French Academy, Belleville, Illinois, T: Christine Hallberg Stewart

Macomb, *USIL03, Heart of Illinois Science and Engineering Fair*

CB068 Sustainable Agriculture: A Survey of Fungal Diversity in Soybean Nodules Under Drought Conditions

Abraham Munro Matlak, 18, Senior, Macomb High School, Macomb, Illinois, T: Thomas Johnson

CS062 Sorting Algorithms

Nathaniel David Zietlow, 15, Freshman, Quest Charter Academy High School, Peoria, Illinois, T: Mary Ward

Springfield, *USIL04, Illinois Junior Academy of Science Region X Science Fair*

BI034 Kastle-Meyer Test: Crime Scene Cleanup

Kassie Jean Henry, 16, Junior, Southeastern High School, Augusta, Illinois, T: Sue Ellen Henry

EV037 Microbial Fuel Cells: Electricity and Water Quality

Alexander James Thompson, 18, Senior, Southeastern High School, Augusta, Illinois, T: Sue Henry

Skokie, *USIL05, Illinois Junior Academy of Science North Suburban Region 6 Science and Engineering Fair*

CB012 Controlling Protein Degradation in *E. coli* through pBAD Promoter Engineering

Lindsay Marie Pietz, 18, Senior, Niles North High School, Skokie, Illinois, T: Richard Thielsen

CB016 The Effect of Trichostatin A on Calcium Homeostasis in A549 Lung Carcinoma

Felicia Aileng Phan, 18, Senior, Niles Township West High School, Skokie, Illinois, T: Ruth Gleicher

EM017 Remediating Radioactive Contamination: Investigating the Effects of Chelating Agents and Growth-Promoting Bacteria on Strontium Phytoremediation in *Lycopersicon esculentum*

Haley Roman Sproull, 18, Senior, Niles North High School, Skokie, Illinois, T: Christine Camel

MA020 A Marginal Utility-Based Iterative Algorithm for Establishing Cardinal Preferences

Patrick Hirsch Liscio, 17, Senior, Niles Township West High School, Skokie, Illinois, T: Timothy Jay Miller

PH025 The Ability of Magnetotactic Bacteria to Create an Electromotive Force in Accordance with Faraday's Law

Mason Paul Rubin, 16, Junior, Niles North High School, Skokie, Illinois, T: Christine Camel

DeKalb, *USIL06, Illinois Junior Academy of Science Region V Science and Engineering Fair*

CB042 Analysis of Critical PKC-delta Sites on Sarcomeric Protein Phosphorylation and Function

Srisha R. Kotlo, 16, Junior, Illinois Mathematics and Science Academy, Aurora, Illinois, T: Judith Scheppler

CB043 Regulation of Type II Natural Killer T Cell Cytokine Production by Signaling Lymphocytic Activation Molecule-Associated Protein

Luke Wen Zhan, 17, Junior, Illinois Mathematics and Science Academy, Aurora, Illinois, T: Judith Scheppler

CB044 Effects of NF-kappa B Activation on E6 Expression in Head and Neck Cancer Cells

Shelly Vivian Li, 18, Senior, Illinois Mathematics and Science Academy, Aurora, Illinois, T: Judith Scheppler

INDIANA

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

ME109 Are Niche Cells Critical for Bone Marrow Failure?: A Novel Approach to Tracing a Defective Bone Marrow as the Root Cause of Life-Threatening Blood Diseases

Roshni Bag, 17, Senior, University High School of Indiana, Carmel, Indiana, T: Carolyn Bradley

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

PS044 Reprocessing Components of Milk from Foliar Application to Augment Protein Synthesis in *Triticum aestivum*

Jordan Ray Cadle, 18, Junior, Paoli Junior/Senior High School, Paoli, Indiana, T: Laurie Jo Andry

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

CS068 Design and Evaluation of UAV Swarm Command and Control Strategies
Alexander Gregory Madey, 17, Junior, Trinity School at Greenlawn, South Bend, Indiana, T: Lynda Seasily

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

CS069 Where and When: Hometown Incident Analysis and Situational Awareness
Sang Jun Park, 15, Sophomore, Homestead High School, Fort Wayne, Indiana, T: Mark Lenfestey

MA054 A Maximum Principle and Its Applications

David L Pan, 17, Senior, Canterbury School, Fort Wayne, Indiana, T: Bob Brothers

Gary, USIN05, Calumet Regional Science Fair

ET058 The Improved Efficiency and Enhanced Lifetime of a Solar Cell Based on Modified Photosynthetic Pigments

Nathan Sai Kondamuri, 18, Senior, Munster High School, Munster, Indiana, T: Shaun Kondamuri

Indianapolis, USIN06, Central Indiana Regional Science and Engineering Fair

CB063 The Use of Antioxidants to Combat in vitro Lipid Peroxidation of *Saccharomyces cerevisiae*

Iman Mahoui, 15, Sophomore, Eman Schools, Fishers, Indiana, T: Kimberly Vogt

CS070 Neural Networks: Raising the Storage Capacity

Vaibhav Siva Vavilala, 17, Senior, Carmel High School, Carmel, Indiana, T: Yogesh N. Joglekar

EN320 Synthesis of Nano-structured Graphene Composites with High-surface-area at Solid State

Charles Haohan Liang, 16, Junior; Katie Xin Gao, 17, Junior

Carmel High School, Carmel, Indiana, T: Jennifer Marlow

ME104 Elimination of Positional Discontinuity in Regenerating Limbs

Kamna Gupta, 15, Freshman, Carmel High School, Carmel, Indiana, T: David Stocum

Muncie, USIN07, East Central Indiana Regional Science Fair

CH063 Efficient and Recyclable Cellulose-Supported Pd-Nanocatalysts for Suzuki Coupling Reactions

Claudia Huang, 16, Junior, Carmel High School, Carmel, Indiana, T: Jennifer Marlow

EV050 The Role of Juglone on Soil Organism Survival

Rachel Naomi Johns, 16, Sophomore, Northwestern High School, Kokomo, Indiana, T: Patricia Zeck

South Bend, USIN09, Northern Indiana Regional Science and Engineering Fair

EE079 Human-like Bipedal Robotic System Utilizing Dynamic Balance and Adaptive Walking Gaits

Edward Joseph Hunckler, 18, Senior, Marian High School, Mishawaka, Indiana, T: Ken Andrzejewski

PH057 Making a Matching Layer for Acoustic Sensors

Justin P. Skycak, 16, Junior, Marian High School, Mishawaka, Indiana, T: Ken Andrzejewski

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

BI060 Use of Alpha and Beta Crystallin in Error Prone PCR Mutagenesis Testing

Galen Isadore Lieberman Brown, 17, Junior, John Adams High School, South Bend, Indiana, T: Nevin Longenecker

CS063 OrniLogicApp: A Study of Classifier Designs in Real-time Aviary Mapping Using Audio and GPS Data in Mobile Devices

Ryan Kyong-Doc Chung, 16, Junior, Terre Haute South Vigo High School, Terre Haute, Indiana, T: Melanie Beth Huber

West Lafayette, USIN11, Lafayette Regional Science and Engineering Fair

AS056 Nematode Trophic Group Distributions in Different Habitats

Sang-A Yun, 18, Senior, West Lafayette Junior/Senior High School, West Lafayette, Indiana, T: Marshall Overley

ET061 Boosting Current of Quantum Dot Sensitized Solar Cells with CdS/PbS Heterostructures

Alexander Darien Mobashery, 18, Senior, Penn High School, Mishawaka, Indiana, T: Lynda Rose

Valparaiso, USIN12, Northwestern Indiana Science and Engineering Fair

CB067 Optimizing Immunity: Engineering T Cells to Target Cancer through Structure-Based Design

Sarah Catherine Briann Baker, 17, Junior, Penn High School, Mishawaka, Indiana, T: Lance Hellman

Indianapolis, USIN50, Hoosier Science and Engineering Fair

EM048 Invasive Barge In: Is a Voltage Void Produced by Barges Crossing Electronic Fish Barriers?

Brandon Brady Benninger, 18, Senior, Boone Grove Senior High School, Valparaiso, Indiana, T: Kenneth Snow

PH317 Optimizing Optical Signal Quality for High Energy Particle Detection

Michael Tripepi, 18, Senior; Samuel Thomas Sharkey, 18, Senior
Elkhart Memorial High School, Elkhart, Indiana, T: John Taylor

IOWA

Cedar Rapids, USIA01, Eastern Iowa Science and Engineering Fair

EE310 An In-Depth Analysis of Surface Dimpling Effects on Polara's Golf Ball Trajectory

Brice Nelson Plein, 17, Junior

Nicholas Howard Whitcomb, 17, Freshman

Burlington Community High School, Burlington, Iowa, T: Elizabeth Louise Sanning

EV021 The Effects of Acid Precipitation on *Lemna minor* and Local Invertebrates

Lydia Ann Marie Heald, 17, Junior, Van Buren Community School District, Keosauqua, Iowa, T: Amanda Rae Kite

Sheldon, USIA02, Western Iowa Science and Engineering Fair

EV043 Using Natural Materials to Build a Water Filtering System: Making Potable Water from Grey Water

Quinn Taylor Groff, 17, Senior, Sheldon High School, Sheldon, Iowa, T: Kris Groff

Ames, USIA50, State Science and Technology Fair of Iowa

BE047 Comparative Study on Cell Phone Addiction Among Adolescents in the United States and South Korea: Factors Predicting Cell Phone Addiction

Rachel Hyojin Kim, 15, Sophomore, Ames High School, Ames, Iowa, T: De Anna Tibben

MI049 Significantly Increasing the Concentration of Cellulosic Ethanol using *Cedecea davisae*

Abigail Lyn Walling, 16, Sophomore, Iowa City West High School, Iowa City, Iowa, T: Carolyn Anne Walling

PS037 From the Potato Belt in Peru to the Corn and Soybean Fields of Iowa:

Analyzing and Using Organic Matter and Carbon Content as a Tool for Evaluating Farming Practices and Their Effects on Global Warming

Sarah Ann Kunch, 18, Senior, Holy Trinity Catholic High School, Fort Madison, Iowa, T: Gail Marie Kunch

KANSAS

Wichita, USKS50, Kansas State Science and Engineering Fair

AS311 Speed Boost: The Effect of Energy Drinks on *Drosophila*

Joseph G. Cotto, 18, Senior; Elizabeth Cheyenne Maxwell, 17, Senior
Liberal High School, Liberal, Kansas, T: Melisa A Westerman

PS316 Effects of Drought on Kansas Turf Grasses

Hayley Lynn Disney, 18, Senior; Steven Callahan Aker, 18, Senior
Northeast Magnet High School, Bel Aire, Kansas, T: Brian Maricle

KENTUCKY

Bowling Green, USKY01, Southern Kentucky Regional Science Fair

EE092 Rocket Assisted Conservation Using Near-Infrared

Draven Ray Sims, 15, Freshman, Hart County High School, Munfordville, Kentucky, T: Amanda Shirley

Louisville, USKY02, Louisville Regional Science and Engineering Fair

- BI028 Leads for Drug Discovery Using Chinese Traditional Medicine and a Yeast Cell Based Bioassay**

Kinsey Taylor Morrison, 16, Junior, Saint Francis School, Louisville, Kentucky, T: Sarah Andres

- EA007 Eating Mars**

Lianna Joy Spurrier, 15, Sophomore, Ballard High School, Louisville, Kentucky, T: Myra Collins

- EV018 A Four Year Mathematical Analysis as a Predictor of Dams Impact on Biodiversity and Stream Recovery**

Aimee Michelle Turner, 18, Senior, Ballard High School, Louisville, Kentucky, T: Ronda Kay Fields

Louisville, USKY03, Dupont Manual High School Regional Fair

- CB038 What Are Mechanisms Underlying Nicotine Induced Neutrophil Apoptosis?**

Jay Kumar, 17, Junior, duPont Manual Magnet High School, Louisville, Kentucky, T: Robert Baar

- EN020 Optimization of Carbon Nanotube-based CFx Primary Battery Performance: Role of Fluorination**

Richard Nipun Gunasena, 14, Freshman, duPont Manual Magnet High School, Louisville, Kentucky, T: Bobby Murphy

- EN021 Studying Bone Matrix Formation via Bioengineering Approach**

Karan Babbarwal, 16, Junior, duPont Manual Magnet High School, Louisville, Kentucky, T: Glenn Zwanzig

- EV014 An Inquiry into the Effect of the Environmental Pollutant Acrylic Aldehyde on Neutrophil Activation**

Sanjana Jagdish Rane, 15, Freshman, duPont Manual Magnet High School, Louisville, Kentucky, T: Robert Baar

Highland Heights, USKY04, Science and Engineering Fair of Northern Kentucky

- EM005 Further Studies in Biofilm Removal of Wastewater Contaminants**

Monica Elizabeth McFadden, 18, Senior, Notre Dame Academy, Park Hills, Kentucky, T: Mary Ethel Parrott

Lexington, USKY05, Central Kentucky Regional Science and Engineering Fair

- BE014 The Effects of the Media on Gender Stereotypes and the Furthering of Sexual Harassment**

Petra Katherine Ronald, 17, Senior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Heidi Anderson

- EE087 Non-tactile Maze Navigation**

Matthew Brodie Russell, 16, Junior, River Ridge Academy Home School, Lexington, Kentucky, T: Gina Beth Russell

- PH012 Superconductivity Emerging from Diamagnetism and Non-Fermi Liquid Behavior in a New Class of Chalcogenides**

Vincent Shian Cao, 17, Junior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Heidi Anderson

Richmond, USKY50, Kentucky Science and Engineering Fair

- BI008 A Novel Mechanism Leading to Genome Instability and Cancer Development**

Jessie Y. Li, 17, Senior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Heidi M Anderson

- CB059 Analysis of Changes Regarding Insulin Signaling in Response to High Fat Diet and Aging**

Trevor James Krolak, 18, Senior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Heidi Anderson

- CH056 Aromatic Heterocycles for Overcharge Protection in Lithium-ion Batteries**

Corrine Faye Elliott, 18, Senior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Heidi Anderson

- EE067 MedTracker: A System to Track and Control Access to Medication**

Nivedita Khandkar, 15, Sophomore, duPont Manual Magnet High School, Louisville, Kentucky, T: Glenn Zwanzig

- EN059 Enhancement of Desalination with Titanium and Zinc Oxide Nanoparticles**

Emily Anne Walter, 14, Freshman, Notre Dame Academy, Park Hills, Kentucky, T: Mary Ethel Parrott

- ET044 Novel Materials for Organic Solar Cells**

Valerie Youngmi Sarge, 15, Junior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Heidi Melcher Anderson

LOUISIANA

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

- CH008 Molecular Hydrogen and Far-Ultraviolet Extinction Due to Dust:**

A Two-Year Study

Marianne Virginia Konikoff, 17, Junior, Saint Joseph's Academy, Baton Rouge, Louisiana, T: Linda Messina

- PS301 The Acclimation of *Spartina alterniflora* to Various Saline Concentrations: A Continuation**

Grace Marie Ragland, 17, Junior; Anna Claire Maxwell, 16, Junior Saint Joseph's Academy, Baton Rouge, Louisiana, T: Linda Messina

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

- CB003 Heparan Sulfate Glycosaminoglycan Expression Affects Nephron Expression and Exosome Release in Podocytes**

Ryan Ashley Browning, 17, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements

- EV012 Prospective Study of Logarithmic Spirals and Hurricanes**

Neil Ferdinand Nathan, 15, Sophomore, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements

- PH011 Cool Core Bias in Sunyaev-Zel'dovich Galaxy Cluster Surveys**

Henry WanJune Lin, 17, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements

Houma, USLA03, Terrebonne Parish Science Fair

- AS015 Oh, How You Affect My Heart!**

Samantha Rose Theriot, 14, Freshman, Houma Junior High School, Houma, Louisiana, T: Anne Buquet Barrios

- PS017 How "Mulch" Does It Matter?**

Mariah Ann Walker, 14, Freshman, South Terrebonne High School, Bourg, Louisiana, T: Francis Labat

Lafayette, USLA04, Louisiana Region VI Science and Engineering Fair

- AS002 Gender Determination of Lovebirds**

Nicholas Michael Badeaux, 15, Freshman, Catholic High School, New Iberia, Louisiana, T: Alix Stelly

- MA003 Angles and Bridges: The Effects of Various Arcs on the Strength of Bridges**

Reece Matthew Leleux, 17, Junior, Ovey Comeaux High School, Lafayette, Louisiana, T: Lisa B. Ranney

- PH007 Sound Absorption Around You**

Tyler Michael Abshire, 16, Junior, Ovey Comeaux High School, Lafayette, Louisiana, T: Lisa B. Ranney

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

- PH006 The Effect of the Force of Gravity Creating Blueshift Galaxies in a Redshift Universe**

Allison Noel LeBleu, 17, Sophomore, Agape Christian Academy, Lake Charles, Louisiana, T: Lorraine Adele LeBleu

- PS001 Potting Soil Trial Study for the Nursery Production of *Capsicum annuum* Transplants**

John Austin Ham, 15, Sophomore, DeRidder High School, DeRidder, Louisiana, T: Bob McLamore

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

- CH012 Combustion Property of Wood**

Colby Paul Kraemer, 16, Freshman, St. James High School, St. James, Louisiana, T: Byron Joseph Keller

Alexandria, USLA07, Louisiana Region IV Science Fair

CH017 A Novel, Facile Two-Step Organocatalytic Asymmetric Synthesis of the Myristinin Core

Louis Tao, 17, Senior, Louisiana School for Math, Science, and the Arts, Natchitoches, Louisiana, T: Mark Ward

EE013 Diaphragms of Speakers

Victoria JoDyon Doctolero, 15, Sophomore, Leesville High School, Leesville, Louisiana, T: Lori Leigh

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

BI029 The Effects of Zinc Toxicity on Zn Concentrations, Growth, and Photosynthesis of *Brassica oleracea*

Leah Ruth Samuels, 16, Junior, Benjamin Franklin High School, New Orleans, Louisiana, T: Clare Davis-Wheeler

CH054 The Effects of Different Lightings on Oil and Acrylic Paint

Madeline Ann Landry, 16, Sophomore, Benjamin Franklin High School, New Orleans, Louisiana, T: Natalie Praetorius

ME084 RNA Binding Ability of FUS Mediates Toxicity in a *Drosophila* Model of ALS

Senthil Srivatsan Natarajan, 18, Senior, Haynes Academy for Advanced Studies, Metairie, Louisiana, T: Arnold Little II

Ruston, USLA09, Louisiana Region II Science and Engineering Fair

PS318 What Are the Effects of Fertilizer on Algal Growth in Diverse Marine Habitats?

Victoria Cheyanne Anderson, 14, Freshman; Katelynn Ann Cullins, 15, Freshman; Lillian Louise Merritt, 15, Freshman, Simsboro High School, Simsboro, Louisiana, T: Chris Campbell

Baton Rouge, USLA50, Louisiana Science and Engineering Fair

AS037 Factors Influencing Canine Mammary Neoplasia

Morni Ashish Modi, 15, Sophomore, Caddo Magnet High School, Shreveport, Louisiana, T: Kris Clements

EN313 Predicting Corrosion on Steel Found in Hostile Marine Conditions with the Use of Potential Difference

Anthony Pascual Jr., 16, Junior; Connor James Romero, 16, Junior; Ovey Comeaux High School, Lafayette, Louisiana, T: Lisa B. Ranney

MA046 Mystery Patterns Behind the Euclidean Algorithm

David Chang Luo, 15, Freshman, Baton Rouge Magnet High School, Baton Rouge, Louisiana, T: Lai Cao

MI312 Does Iron Affect the Efficiency of the Antibiotics Amoxicillin and Doxycycline?

Lauren Raye Dartez, 16, Sophomore; Addison Rhea Hollis, 16, Sophomore; Saint Joseph's Academy, Baton Rouge, Louisiana, T: Linda Messina

MAINE

Bar Harbor, USME50, Maine State Science Fair

AS038 Effects of Environmental Stressors on the Filtration Rates of the Blue Mussel *Mytilus edulis*

Meagan Elizabeth Currie, 16, Sophomore, Greely High School, Cumberland, Maine, T: Robert O'Neill

EV038 Cellulose Nanofibers as a Component of a Low-cost Water Filtration System for Implementation in Developing Countries

Mary Ashleigh Butler, 16, Sophomore, Bangor High School, Bangor, Maine, T: Cary Edward James

PH043 Geometric Bore Variations and Their Harmonic Nuances in Musical Instruments

Harrison Robert Pershing, 15, Freshman, Greely High School, Cumberland, Maine, T: Robert J. O'Neill

MARYLAND

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

CH022 The Tricorder: A Novel Raman Spectrometer for Real World Applications

Jack Thomas Andraka, 16, Sophomore, North County High School, Glen Burnie, Maryland, T: Beth Kennedy

EV016 Got Male? Does Triclosan Cause Endocrine Disrupting Effects in *Daphnia magna*?

Anna Elizabeth Sappington, 16, Sophomore, South River High School, Edgewater, Maryland, T: Heather Peckman

Walkersville, USMD02, Frederick County Science and Engineering Fair

BI035 Rationally Designed Beta-Catenin Inhibitors as Anti-Tumor Agents

Samuel Wye Pritt, 18, Senior, Home School, Walkersville, Maryland, T: Nadya Tarasova

EE057 Roof Mounted Horizontal Axis Wind Turbine

Alexander William Beall, 16, Sophomore, Brunswick High School, Brunswick, Maryland, T: James Kelly

Silver Spring, USMD03, ScienceMontgomery

CS039 Implementation and Analysis of Shape from Shading Techniques and Enhanced Make3D Software for the Creation of Morphable 3D Facial and Terrain Models

Anirudh Somendra Gubba, 16, Junior, Poolesville High School, Poolesville, Maryland, T: Teresa Petralli Mallow

EN037 Targeted Thermal Ablation of Cancer Cells Using Biosurfactant Coated Carbon Nanotubes

Joy Shuang Zeng, 17, Senior, Poolesville High School, Poolesville, Maryland, T: Teresa Petralli-Mallow

MI305 Deletion of Endonuclease G Disrupts Mitochondrial Homeostasis and Leads to Reduced Virulence in the Human Protozoan Parasite *Leishmania mexicana*

Katie Anne Barufka, 18, Senior; Langley High School, McLean Virginia, T: Sreenivas Gannavaram

Neil Shivraj Davey, 17, Junior, Montgomery Blair High School, Silver Spring, Maryland, T: Angelique Bosse

PH038 Analysis of Jovian Decametric Emission using the Long Wavelength Array Station 1

Jinhie Lee Skarda, 18, Senior, Montgomery Blair High School, Silver Spring, Maryland, T: Angelique Bosse

Waldorf, USMD04, Charles County Science Fair

EM011 Impervious Surfaces

Taylor Anne Stark, 17, Junior, Thomas Stone High School, Waldorf, Maryland, T: Ms. Scruggs

ET013 The Effect of Materials Type on Biogas Generation

Christain Gentry Barnes, 15, Sophomore, North Point High School, Waldorf, Maryland, T: Cheryl Lee Swartzwelder

Largo, USMD05, Prince George's Area Science Fair

CB015 Removal of c-IAP2 E3 Activity Alters Regulatory T-Cell Function and Differentiation

Neelanjan Lakshman, 18, Senior, Eleanor Roosevelt High School, Greenbelt, Maryland, T: Alexis Donoghue

CS306 Testing Texas Hold'em Personalities

Gunnar Christian Arnesen, 16, Junior; Vincent Thomas Kubala, 16, Junior; Joseph Glenn Watts, 16, Junior; Huntingtown High School, Huntingtown, Maryland, T: Rolf Peter Arnesen

EE026 iControl

Mina Fahmi Fahmi, 15, Sophomore, Great Mills High School, Great Mills, Maryland, T: Allen Skinner

EM012 The Effect of Polymer-Coated Nitrogen Fertilizers on Nitrous Oxide Emissions

Aaron Chu Solomon, 18, Senior, Eleanor Roosevelt High School, Greenbelt, Maryland, T: Alexis Donoghue

Towson, USMD06, Baltimore Science Fair

EN047 PLGA Nanoparticles Encapsulating Anti-vascular Small Molecules for the Treatment of Breast Cancer

Evan C. Smith, 16, Junior, Baltimore Polytechnic Institute, Baltimore, Maryland, T: David B. Nelson

ET033 A Study of Zero-Crossings in Fractal-Generated Turbulence

Nathan Vincent Greene, 17, Senior, Baltimore Polytechnic Institute, Ingenuity Project, Baltimore, Maryland, T: David Nelson

- ME061 The Role of P-Glycoprotein in Cancer Cell Multidrug Resistance: A Mechanistic Approach**
Lavanya Rajendra Garnepudi, 17, Senior, Centennial High School, Ellicott City, Maryland, T: Michelle Bagley
Baltimore, USMD07, Morgan State University Science-Mathematics-Engineering Fair
- AS061 Early Detection of G-forces using Sensory Helmets to Assimilate Force Data Like a Real Helmet to Helmet Collision**
Taylor-Alexandria Miracle Dorsey, 18, Senior, Paul Laurence Dunbar High School, Baltimore, Maryland, T: Lawrence Totty
- EE094 Creating a Design Process for a Remotely Operated Vehicle (R.O.V. Underwater Robot) with Speed and Maneuverability as the Key Factors for Performance**
Zachariah I. Spencer, 16, Sophomore, WEB Dubois Environmental High School, Baltimore, Maryland, T: Julita L. Belches

MASSACHUSETTS

- Bridgewater, USMA01, Massachusetts Region V Science Fair*
- CH023 Phosphorus Analysis of Falmouth's Coastal Waters**
Lucas Daniel Repeta, 16, Junior, Falmouth High School, Falmouth, Massachusetts, T: Cory Dubuque
- PH026 Effect of Wing Aspect Ratio on Underwater Glider Flight**
James Vincent Roggeveen, 17, Junior, Nantucket High School, Nantucket, Massachusetts, T: Andrew McCandless
Somerville, USMA02, Massachusetts Region IV Science Fair
- CH026 Investigating Methods for Measuring Phosphorus Concentrations in Water**
Benjamin David Brown, 18, Senior, Lexington High School, Lexington, Massachusetts, T: Sarah Lewis
Fall River, USMA03, Massachusetts Region III Science Fair
- ME030 Automating Cancer Diagnosis: Utilizing Minkowski-Bouligand Dimension to Efficiently Grade Cells**
Daniel David White, 17, Senior, Somerset Berkley Regional High School, Somerset, Massachusetts, T: Matthew Croft
- PH023 To Squat or Not to Squat?**
Amy Elizabeth Santos, 15, Freshman, Taunton High School, Taunton, Massachusetts, T: Elizabeth Pawlowski
North Adams, USMA04, Massachusetts Region I Science Fair
- PS310 Examining Vitamin-Enriched Tagetes Tenuifolia Development**
Dillon Gregory Sienko, 18, Senior; Patrick James Monette, 18, Senior
Westfield High School, Westfield, Massachusetts, T: Renee Coombs Sweeney
Worcester, USMA05, Massachusetts Region II State Science Fair
- BI305 A Novel Approach to Attenuate Asthma Drug Albuterol's Side Effects: A Study Using Zebrafish Model**
Ayush Kumar, 16, Sophomore; Raasehd Raziuddin, 15, Sophomore
Advanced Math and Science Academy Charter School, Marlboro, Massachusetts, T: Christina Jagielski
- CB305 The Effect of Ethanol on Beta Cell Development in Zebrafish**
Emory Morris Payne, 17, Junior; Zohaib Majaz Moonis, 17, Senior
Bancroft School, Worcester, Massachusetts, T: MaryAnn DeMaria
- CS022 The BodyMusic Composition Platform: Augmenting Conventional Music Production with Natural Body Articulation**
Douglas Adam Smith, 17, Junior, Massachusetts Academy of Mathematics and Science, Worcester, Massachusetts, T: Karen Lang
- ME021 Linking Cataracts to Cancer: The Diagnosis of a Novel Oncoprotein to Signal Breast Cancer, with Suppression using Rhodiola crenulata Root Extract**
Gregory John Konar, 17, Junior, Massachusetts Academy of Mathematics and Science, Worcester, Massachusetts, T: Shari Weaver
Boston, USMA06, Massachusetts Region VI Science Fair
- CB008 The Effect of Stress on Reproductive System**
Shirley See Yan Fang, 17, Junior, Boston Latin School, Boston, Massachusetts, T: Kathleen Bateman

- ET308 Comparing Efficiency of Different Biofuel Sources**
Omar Janoudi, 18, Senior; Adriana Beatriz Flores, 18, Senior;
Abeer Khader Sharari, 17, Senior, East Boston High School, Boston, Massachusetts, T: Kristen L. Cacciatore
- ME022 Testing the Effectiveness of Liposomal Nanoparticle Delivery of Oxybutynin to Reduce Bladder Spasms**
Adrian Erik Haber, 16, Sophomore, Boston Latin School, Boston, Massachusetts, T: Kathleen Bateman
Cambridge, USMA50, Massachusetts State Science & Engineering Fair
- BE024 The Effects of an Administrator's Prosody on Autistic Children**
Shannon Catherine Boley, 18, Senior, Westfield High School, Westfield, Massachusetts, T: Renee Sweeney
- CB013 Purification of Mycobacterium Tuberculosis Antigen and Antibody by Affinity Chromatography**
Nafisa Wara, 15, Sophomore, Boston Latin School, Boston, Massachusetts, T: Kathleen Bateman
- EN028 The Effect of Chemical Crosslinking on the Structural and Mechanical Properties of Extracellular Matrix-Fibrin Hydrogel Scaffolds**
Erica Budina, 17, Junior, Medford High School, Medford, Massachusetts, T: Rocco Cieri
- EN029 Protection Begins with Detection: Shielding Radiation with Alternative Materials**
Andrew Charles Doherty, 17, Junior, Taunton High School, Taunton, Massachusetts, T: Elizabeth Pawlowski
- MI016 Engineering a Novel Fusion Protein Therapy for Meningococcal Infection**
Rahi Dilip Punjabi, 16, Junior, Advanced Math and Science Academy Charter School, Marlborough, Massachusetts, T: Christina Jagielski
- PH028 Antibubbles**
Jessica Marie Morgan, 18, Senior, Plymouth North High School, Plymouth, Massachusetts, T: Maryellen Stephen

MICHIGAN

- Ann Arbor, USMI01, Southeast Michigan Science Fair*
- CS066 Independence for All: A Safe and Low-Cost Wheelchair Navigation System for Users with Disabilities**
Kathryn Grace Hite, 16, Junior, Home School, Temperance, Michigan, T: Angela M. Hite
- MA059 Proofs for a Class of Original Grid-Based Pattern Realization Problems**
Alan C. Xu, 16, Junior, Ann Arbor Huron High School, Ann Arbor, Michigan, T: Peter Collins
Detroit, USMI02, Science and Engineering Fair of Metropolitan Detroit
- BI306 MiR17-92 Cluster in Axons Promotes Axonal Outgrowth**
Guangning An, 16, Junior; Yu Tang, 17, Senior
International Academy, Troy, Michigan, T: David Lyons
- CB027 The Effect of Granulocyte-Macrophage Colony Stimulating Factor on Classical and Alternative Activation of Bone Marrow Derived Macrophages**
Mackenzie Stephanie-Ann Zierau, 15, Sophomore, Mercy High School, Farmington Hills, Michigan, T: Kathy Kitzmann
- CH035 Sweet Silver**
Dean Raymond Jarois, 16, Sophomore, Divine Child High School, Dearborn, Michigan, T: Kathy Higgins-Luthman
- EE041 Providing a Way to Help Visually Impaired People using Auditory Signals**
Robert Arthur Pakko, 16, Sophomore, Dearborn High School (Dearborn Center for Math, Science, and Technology), Dearborn, Michigan, T: Jeff Whittaker
- EV023 The Toxin in Rice — Arsenic in Our Food**
Anuush Krishna Vejalla, 14, Freshman, Detroit Country Day Upper School, Beverly Hills, Michigan, T: John Dougherty
- MA031 Matching Preclusion and Conditional Matching Preclusion for Dual-Cubes**
Akhil Nistala, 17, Senior, Novi High School, Novi, Michigan, T: James Didio

- MA063 Early Detection of Disease Through Fractal Dimension Analysis**
Madhurima Das, 16, Junior, Plymouth High School, Canton, Michigan,
T: Karen Ludema
Flint, USMI03, Flint Area Science Fair
- EN032 Harnessing the Meissner Effect of Superconductors to Build an Antigravity Electricity Generator**
Alexander Martin Dutton, 15, Junior, Dutton Homeschool, Davison, Michigan,
T: Kathryn Lynne Dutton
- ME042 A Novel Cancer-Tailored Targeted Drug Delivery System**
Jay Harshad Mehta, 17, Junior, Port Huron Northern High School, Port Huron,
Michigan, T: Anna Christi Jamison
Saginaw, USMI04, Great Lakes Bay Region Science, Technology, and Engineering Fair
- MA034 Integrals of Rational Functions**
Magda Lee Hlavacek, 18, Senior, Saginaw Arts and Sciences Academy, Saginaw,
Michigan, T: Stephen Tack
- PH041 Improving a Basic Procedure to Compare Music Using FFTs**
Noah Davisson Kihata, 18, Senior, Saginaw Arts and Sciences Academy, Saginaw,
Michigan, T: David Allan
Big Rapids, USMI06, Mecosta-Osceola Science and Engineering Fair
- EA017 Analysis of Standard Geomagnetic Indexes and Development of the Geomagnetic Variational Intensity Scale**
Kevin James Beach, 18, Senior, Mecosta Osceola Intermediate School District
Math/Science/Technology Center, Big Rapids, Michigan, T: Cris DeWolf
Kalamazoo, USMI07, Southwest Michigan Science & Engineering Fair
- CH061 Folding and Unfolding of Serum Albumin Proteins with Two-Photon Fluorescence Spectroscopy**
Gagan Ajay Gupta, 17, Senior, Kalamazoo Area Mathematics and Science Center,
Kalamazoo, Michigan, T: John Goudie
- EE319 Detection of Heavy Metals through the Use of Electrochemical Sensors**
Samuel Eugene Wachowski, 18, Senior; Grey Groulx Braybrooks, 17, Senior
Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan,
T: John Goudie
Berrien Springs, USMI08, Berrien County Regional Science Fair
- ME110 Is Ovarian Cancer Linked to Obesity?**
Brianna Marie Flanagan, 15, Freshman, Edwardsburg High School, Edwardsburg,
Michigan, T: Denise Smith
Flint, USMI50, Michigan Science and Engineering Fair
- AS057 Toward Understanding the Neural Circuitry Regulating Cold Sensitivity in *C. elegans***
Michael Shao, 16, Sophomore, Detroit Country Day Upper School, Beverly Hills,
Michigan, T: Gene Menton
- PH039 The Manipulation of Micro-Fluidic Properties for Biological Assays**
Vipul Anjan Nandigala, 15, Sophomore, Walled Lake Western High School,
Walled Lake, Michigan, T: Thomas Saloka
- MINNESOTA**
Bemidji, USMN01, Northern Minnesota Regional Science Fair
- EE012 Powering the World: The Design and Development of a Green Energy Technology**
Marcus James Langevin, 18, Senior, Lincoln Senior High School, Thief River Falls,
Minnesota, T: Cheryl Marie Winkler-Miller
Duluth, USMN02, Northeast Minnesota Regional Science Fair
- BE006 The Effects of a Multi-Factor Hand Hygiene Intervention with Motivational Interviewing on Hand Washing Effectiveness, Behavior, Attitudes, and Absences of High School Students**
Timothy James Fossum Renier, 15, Sophomore, East High School, Duluth,
Minnesota, T: Robin Churchill

- CH013 The Effect of the Photodegradation of Ibuprofen and Dissolved Organic Matter (Lake Superior and St. Louis River Water) on a Lake Superior Microbial Isolate: Phase V**
Angela Brooks Moynan, 17, Senior, Cloquet Senior High School, Cloquet,
Minnesota, T: Cynthia Ann Welsh
- EV005 Mining Mystery: The Effect of Acid Mining (Sulfur Compounds) on *Bacillus Mycoides* Found on the Stalk of Wild Rice (*Zizania palustris*)**
Cassandra Lynn Roy, 18, Senior, Cloquet Senior High School, Cloquet, Minnesota,
T: Cynthia Ann Welsh
- MI006 Contrary to the Text Book: Possible Sporulation and Identification of Mycobacteria Isolates from Pitcher Plants, Phase II**
Kendra Anastasia Pallin, 18, Senior, Cloquet Senior High School, Cloquet,
Minnesota, T: Cynthia Ann Welsh
Mankato, USMN03, South Central/Southwest Minnesota Regional Science and Engineering Fair
- EE010 Using Mathematical Models to Simulate Off-Road Vehicle Performance and Designing Options for Changing Dynamic Weighting to Increase Draft**
Elijah Lloyd Welu, 16, Junior, Marshall High School, Marshall, Minnesota,
T: Jason Kaare
- EE304 Car Seat Sensor Battling Child Neglect**
Ariel Morisa Keller, 18, Senior; Karina Ann Skov, 17, Junior
Alden-Conger High School, Alden, Minnesota, T: David Duane Bosma
- ET003 Investigating the Use of Anaerobic Fermentation on Pretreated Biomass to Streamline Bio-fuel Production**
Jonah Z. Butler, 15, Sophomore, Sibley East High School, Arlington, Minnesota,
T: Ann Christine Butler
- EV003 Impacts of Biochar on Soil Greenhouse Gas Emissions, Soil Moisture, and Crop Polycyclic Aromatic Hydrocarbon (PAH) Concentrations**
Rena Dorothy Weis, 18, Senior, New Prague Senior High School, New Prague,
Minnesota, T: Jodi Prchal
- EV006 The Effects of *Pluerotus ostreatus* on the Deterioration of Petroleum**
Andrew John Steffl, 16, Junior, St. Mary's Cathloic High School, Sleepy Eye,
Minnesota, T: Patricia Ann Braulick
- MI005 The Effect of Heat Shock Protein 33 on the Development of Sodium Hypochlorite Resistance in *Escherichia Coli***
Kathryn Elise Morris, 18, Senior, New Prague Senior High School, New Prague,
Minnesota, T: Jodi Prchal
Minneapolis, USMN04, Twin Cities Regional Science Fair
- EN006 Enhanced Drug Delivery via PEG-crosslinked Mucin Hydrogels**
Connor Vo Duffy, 16, Senior, Mounds View High School, Arden Hills, Minnesota,
T: Katharina Ribbeck
- EN007 Substrate Modification of Hexagonal Boron Nitride Monolayers and Analysis with Transmission Electron Microscopy**
Andrew Samuel Ylitalo, 17, Senior, Stillwater Area High School, Stillwater,
Minnesota, T: Andre Mkhoyan
- PS006 Building New Agrobacterium Strains for High Efficiency Transformation of Plants**
Aditi Das, 16, Junior, Roseville Area High School, Roseville, Minnesota,
T: Princesa VanBuren Hansen
Moorhead, USMN05, Western Minnesota Regional Science Fair
- PS010 Sugarbeet Immunizations: Does It Work with Rhizoctonia? Phase Two: Proof in the Field**
Amy Kaitlyn Anfinrud, 16, Junior, Park Christian School, Moorhead, Minnesota,
T: Krista Marie Rankin
Winona, USMN06, Southeast Minnesota Regional Science Fair
- EM004 The Effect of pH Level on the Strength of Polylactic Acid Over Time**
Jackson Sewall Bryant, 17, Junior, Winona Senior High School, Winona, Minnesota,
T: Kenneth James Mann

Rochester, USMN07, Rochester Regional Science Fair

- ME037 Overcoming Apoptotic Resistance to IAP Inhibition in Multiple Myeloma using a Novel Combination of a SMAC Mimetic (LCL161) with a pan-Bcl-2 Family Inhibitor (Obatoclax)**

Marcus Vincent Gomez, 17, Junior, Century High School, Rochester, Minnesota, T: Cheryl Moertel

- MI019 Effect of Manuka Honey on Bacterial Biofilms: Mechanism of Action and Effects in Combination with Antibiotics**

Michelle Elisabeth Marie Campeau, 15, Sophomore, Mayo High School, Rochester, Minnesota, T: Art Trimble

- PS018 Inhibitory Effects of ELF Electromagnetic Fields on Germination and Growth of *Glycine max***

Alanna Megan Bram, 15, Sophomore, John Marshall High School, Rochester, Minnesota, T: Maren Goss

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

- CB032 The Effects of Microtubule Dynamics on Glioma Cell Motility**

Lucas Ray Kramer, 13, Freshman, Home School, Oak Grove, Minnesota, T: David Odde

- EM035 The Ecological Development of Turfgrass Mixtures to Reduce Irrigated Water Consumption**

Connor John Klemenhausen, 17, Senior, Champlin Park High School, Champlin, Minnesota, T: Kevin Molohon

Minneapolis, USMN09, St. Paul Science Fair

- CH016 Fingerprinting: Which Technique Used to Find Latent Fingerprints Is the Most Efficient?**

Mai See Moua, 18, Senior, Harding High School, Saint Paul, Minnesota, T: David Wallace Tweeten

- PH020 The Effect of Molar Mass of a Gas on the Speed of a Sound Wave**

Graham Lewis Gabrielson, 18, Senior, Saint Paul Harding Senior High School, Saint Paul, Minnesota, T: David Wallace Tweeten

Minneapolis, USMN10, Western Suburbs Science Fair

- CS012 A Topographic Pressure Equalization Approach to Facility Assignment with Capacity Constraints for Disaster and Emergency Response**

Apurv Hirsh Shekhar, 16, Junior, The Blake School, Minneapolis, Minnesota, T: Princessa VanBuren Hansen

- EN011 Bioengineering the Lung: Determining Ideal Oxygen Concentrations to Stimulate Stem-Cell Growth on a Transplantable Lung Matrix**

Jessica Ryvlin, 17, Senior, Breck School, Golden Valley, Minnesota, T: Lois Fruen

- EN012 A New Innovation in Food Preservation**

Carolyn Kay Jons, 14, Freshman, Eden Prairie High School, Eden Prairie, Minnesota, T: Katharine Foley

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

- BE310 Birth of a Revolution: A Global Model for Forecasting Political Instability**

Abhishek Nayar, 16, Junior; Stephen Hanjun Kim, 18, Junior Edina High School, Edina, Minnesota, T: Jodi Ramirez

- BI056 Improving the Oral Absorption of Chemotherapeutic Drugs Through the Use of Novel Nanoparticles**

Priyanka Rajasree Narayan, 17, Junior, Wayzata High School, Plymouth, Minnesota, T: Princessa VanBuren Hansen

- CS067 A Telemedicine Tool for Monitoring Parkinson's: Using Microsoft Kinect to Engineer the Parkinsons ProtoTracker**

Darius Witold Bieganski, 17, Senior, Breck School, Golden Valley, Minnesota, T: Lois Fruen

- ME103 Phytochemical and Pharmacological Effects of *Taraxacum officinale* on Hepatocellular Carcinoma**

Lisa Fu, 16, Sophomore, John Marshall High School, Rochester, Minnesota, T: Eric Stanslaski

MISSISSIPPI

Biloxi, USMS01, Mississippi Region VI Science and Engineering Fair

- MA041 Toothpick Probability**

Cecilia Louise Dean, 17, Junior, Tishomingo County High School, Iuka, Mississippi, T: Malcolm Brown

Booneville, USMS02, Mississippi Region IV Science Fair

- AS030 Can You "Tail" Left or Right?**

Michaela Lynne Cooper, 17, Junior, Mantachie High School, Mantachie, Mississippi, T: Greg Smith

Greenville, USMS03, Mississippi Region III Science and Engineering Fair

- AS312 The Development of Low Cost Sustainable Diets for the Culture of Freshwater Prawns**

Kevin Charles Wise, 17, Senior; Eric Lynden Gardiner, 17, Junior St. Joseph Catholic School, Greenville, Mississippi, T: Eddie Dennis

- PS031 Does Overcrowding Affect Plant Growth?**

Latravian Kentral Hayes, 17, Junior, Humphreys County High School, Belzoni, Mississippi, T: Charlene Anderson

Hattiesburg, USMS04, University of Southern Mississippi Region I Science and Engineering Fair

- CH066 An Eco-Friendly Way to Make Gas Separation Membranes to Purify Natural Gas**

Chris Cornell Jenkins, 18, Senior, Hattiesburg High School, Hattiesburg, Mississippi, T: James Brownlow

- ME111 The Identification of a New Gene that Regulates the Locomotor Behavior of *Drosophila melanogaster***

Wisam Muhamad Buti, 18, Senior, Oak Grove High School, Hattiesburg, Mississippi, T: Megan Fortenberry

Jackson, USMS05, Mississippi Region II Science and Engineering Fair

- AS032 Protective Effects of Plant Extracts on Ultraviolet Radiation-exposed Blackworms (*Lumbriculus variegatus*)**

Raveena Aggarwal, 15, Freshman, Saint Andrew's Episcopal School, Ridgeland, Mississippi, T: Sandra Hindsman

- CS045 A Cost-effective Alternative to Expensive Computers and Mobile Devices**

Jarian Rochell Cottingham, 18, Senior, St. Andrew's Episcopal School, Ridgeland, Mississippi, T: Price Chadwick

- EE051 Using a Dynamo Rotor to Retrieve Energy Lost through Friction Brakes in Vehicles**

Aritra Biswas, 17, Senior, St. Andrew's Episcopal School, Ridgeland, Mississippi, T: Sandra Hindsman

- PH042 The Synthesis of Less Expensive, Less Toxic Color-emitting Quantum Dots**

Marina Ali, 17, Junior, Saint Andrew's Episcopal School, Ridgeland, Mississippi, T: Sandra Hindsman

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

- BE007 The Effects of Phenotype Characteristics Preference on Mate Selection**

Jennifer Alice Bigley, 16, Freshman, Ackerman High School, Ackerman, Mississippi, T: Jo Anne A. Reid

- CH014 Carbon Encapsulated Iron Nanoparticles for Catalytic Conversion of Biomass Derived Syngas to Liquid Fuels**

Wenhao Yan, 15, Junior, The Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Donald Bratton

Oxford, USMS07, Mississippi Region VII Science and Engineering Fair

- BI049 Examining Inhibition of Vitamin Absorption to Analyze Differing Rates of Nutrient Transport**

Cynthia Rita Torma, 16, Junior, Oxford High School, Oxford, Mississippi, T: Marni Herrington

- EA015 Impact Assessment of Sea Level Rise on Hurricane-Induced Flooding and Inundation in the Northern Gulf Coast**

Taide Ding, 18, Senior, Oxford High School, Oxford, Mississippi, T: Marni Herrington

Jackson, USMS50, Mississippi Science and Engineering State Fair

AS051 Evolutionary Effects on the Demographic Parameters of Fall Army Worm, *Spodoptera frugiperda* (Lepidoptera:Noctuidae) on Artificial Diet Compared with Traditional and Transgenic Corn

Manuela Joja-Portilla, 16, Sophomore, Cleveland High School, Cleveland, Mississippi, T: Jody Wright

MA048 Identification of Biomarkers for the Early Detection of Lung Cancer using a Novel Statistical Test

Shreya Mathur, 16, Junior, Oxford High School, Oxford, Mississippi, T: Marni Herrington

MISSOURI

Cape Girardeau, USM001, Southeast Missouri Regional Science Fair

AS008 S.T.E.P. (Summer Transition Easement Program)

Corvin John Schoen, 18, Senior, Oak Ridge High School, Oak Ridge, Missouri, T: Mark E. Gihring

ET008 Hydrogen Production in *Chlamydomonas reinhardtii*: Asexual vs. Sexual Reproduction

Sierra Dawn Woods, 18, Senior, Puxico R-8 High School, Puxico, Missouri, T: Tiska Evonne Rodgers

Jefferson City, USM002, Lincoln University Regional Science Fair

AS036 Jellyfish Phototaxis: Developing an Infrared Net for Application in Marine Systems for the Prevention of Jellyfish Fouling and Beach Infestations
Connor William Burton, 18, Senior, Camdenton R-III High School, Camdenton, Missouri, T: Christopher Dean Reeves

ME057 Determining the Behavioral and Physiological Effects of Pentedrone-Based "Bath Salts" on *Drosophila melanogaster*

Alaina Nicole Sonksen, 17, Junior, Camdenton High School, Camdenton, Missouri, T: Christopher Dean Reeves

Joplin, USM003, Missouri Southern Regional Science Fair

MA040 Fractal Dimension and Space Filling Curves

Christian Lee Smith, 15, Freshman, Seneca High School, Seneca, Missouri, T: Jerry Mac Day

MI040 Determining Antimicrobial and Synergistic Properties of Select Plant Essential Oils against Clinical Isolates of Gram-positive *Staphylococcus aureus* and Gram-negative *Escherichia coli*: Phase II

Bryant Jo Heckart, 17, Junior, Seneca High School, Seneca, Missouri, T: Jerry Mac Day

Kansas City, USM004, Greater Kansas City Science and Engineering Fair

AS034 Developing a PCR Technique to Determine the Distribution of Lyme Disease in Johnson County, Kansas

Nathan Alan Witters, 17, Senior, Shawnee Mission West High School, Overland Park, Kansas, T: Brenda Bott

CB025 Finding the Role of Aggregation, Hyperphosphorylation, and Mutation of Tau Protein in Causing Alzheimer's Disease Using *C. elegans* Worms

Disha Dasgupta, 14, Freshman, Olathe North High School, Olathe, Kansas, T: Elizabeth Esco

ME052 A Novel Approach for Cancer Prevention: The Use of Lycopene to Stimulate Apoptosis in UV-Damaged Sf9 Cells

Christon Alexis Petersen, 17, Senior, Shawnee Mission West High School, Overland Park, Kansas, T: Brenda Bott

St. Peters, USM005, Missouri Tri-County Regional Science and Engineering Fair

PS007 Circadian and Photomorphogenic Response in *Arabidopsis thaliana*

Savannah Elizabeth Est, 17, Senior, Emil E. Holt Senior High School, Wentzville, Missouri, T: Jennifer Berendzen

Saint Joseph, USM006, Mid-America Regional Science and Engineering Fair

EN043 Replication of *Danaus plexippus* Scales for Use in Dye-Sensitized Solar Cells
Elsa Rachel Kunz, 17, Junior, Saint Joseph Central High School, Saint Joseph, Missouri, T: Jay Meyers

EV030 The Role of Heavy Metal Resistant Bacteria (*Bacillus megaterium*, *Bacillus licheniformis*) on the Bioaccumulation of Lead in *Helianthus annuus*

Cindy Y. Jiang, 17, Senior, Central High School, St. Joseph, Missouri, T: Jay Meyers
St. Louis, USM007, Academy of Science - Greater St. Louis Science Fair

BE008 Sibs of the Spectrum: Evaluating Support Groups for Those Who Have a Sibling with Autism

Katherine Emily Hufker, 16, Junior, Lindbergh High School, St. Louis, Missouri, T: Megan Roegner

CS008 A New Stochastic Optimization Algorithm with Adaptive Penalty and Its Markov Chain Analysis

Uttara Chakraborty, 17, Senior, Chakraborty Homeschool, Chesterfield, Missouri, T: Mandira Chakraborty

Springfield, USM008, Ozarks Science and Engineering Fair

EE068 Cheating Sight: The Effects of Electronic Glasses on Obstacle Navigation

Vincent Glen Marco, 17, Junior, Hartville R-II Schools, Hartville, Missouri, T: Tabitha Michele Shaver

EV045 Accumulation of Calcium Contamination

Shay McKinzie Jackson, 18, Senior, Mansfield High School, Mansfield, Missouri, T: Pam Probert

ME086 The Effect of R-Alpha Lipoic Acid on Edelfosine's Ability to Eradicate *Saccharomyces cerevisiae*

Samantha Marie Huckabee, 18, Senior, Thayer R-II High School, Thayer, Missouri, T: Peggy Lynn Veatch

Hillsboro, USM009, Mastodon Art/Science Regional Fair

AS043 ANTSTRONAUTS

Kameron Alexander McClinton, 14, Freshman, Seckman Senior High School, Imperial, Missouri, T: Kelly Steinbrueck

EE058 Creating a Reliable and Cost Effective Airsoft Gun

Nathan Turner Wamsley, 14, Freshman, Home School, Pacific, Missouri, T: Pamela Lynn Wamsley

EE061 A Comparison of Wind Turbine Efficiency

Andrew Garrett Nichols, 16, Sophomore, Saint Clair High School, Saint Clair, Missouri, T: Ben Martin

ET034 Repurposed Materials Solar Air Heater with Mirror Addition

Jamielee Rose Buenemann, 16, Sophomore, Washington High School, Washington, Missouri, T: Elizabeth Hobbs

Fayette, USM010, Central Methodist Eagles Science and Engineering Fair

ET062 Fueling the Future: A Study of the Effects of Alternative Feedstocks on Ethanol Production

Quinten Lee Austin Lewis, 17, Junior, Chillicothe High School, Chillicothe, Missouri, T: Stacy A. Surber

MI057 How Does the SPF of Sunscreen Effect Bacterial Growth?

Morgan Briann Kimmel, 17, Junior, LaPlata R-II High School, LaPlata, Missouri, T: Mary Margaret Feldkamp

MONTANA

Billings, USMT01, Billings Clinic Research Center Science Expo

AS042 Influence of the Number of Estrous Cycles of Heifers Before Exposure to Breeding on Pregnancy Rate and Breed Back Rate in *Bos taurus*

Jaclyn Nicole Ketchum, 16, Junior, Carter County High School, Ekalaka, Montana, T: Linda Christina Rost

Butte, USMT02, Montana Tech Regional Science and Engineering Fair

AS031 The Effects of Essential Oils on Viral Load in *Apis mellifera*

Michaela Jean Fiore, 18, Senior, Big Sky High School, Missoula, Montana, T: Trevor Laboski

MI047 The Utility of *Ustilago bullata* to Control Cheatgrass Invasions, Phase II

Stacia Lynn Hill, 18, Senior, Big Sky High School, Missoula, Montana, T: Brandon Honzel

PS019 Growing More Wheat and Conserving Water in Arid Lands

Muhammad Khan Nizamani, 17, Sophomore, Ennis High School, Ennis, Montana, T: Mellissa A. Newman

Havre, USMT03, Hi-Line Regional Science and Engineering Fair - MSU-Northern

- ET014 Selected Algae Strains Biodiesel Properties**
Thomas Parisian, 17, Junior, Box Elder High School, Box Elder, Montana,
T: Melanie Ann Schwarzbach
- ET015 The Effects of Fuel Additives on Power in Diesel Engines**
Troy Milton Manoukian, 17, Freshman, Malta High School, Malta, Montana,
T: Marida Jean Demarais

Great Falls, USMT04, Montana Region II Science and Engineering Fair

- EM028 Using *Chlamydomonas reinhardtii* as a Bioremediation Agent in Arsenic Contaminated Water**
Rachel Suzanne Ehlers, 17, Senior, North Toole County High School, Sunburst, Montana, T: Amanda Joan Becker
- EV022 Will Anthropogenic Pressures Affect the Osprey and Fish via Sediments of the Missouri River? Is Arsenic (As), Cadmium (Cd), Copper (Cu), Lead (Pb), Zinc (Zn), Mercury (Hg) and Selenium (Se) Contaminating the Missouri River Watershed? Phase II**
Whitney Ashton Clinger, 18, Senior, Cascade Public High School, Cascade, Montana,
T: Kevin Mark Lanier
- ME306 The Effect of Black Tea on Regeneration Rates of *Dugesia tigrina***
Stephanie Carolyn Gliko, 18, Senior
Brooke Danielle Lindskog, 18, Senior
North Toole County High School, Sunburst, Montana, T: Amanda Joan Becker and
Brook Danielle Lindskog

Missoula, USMT50, Montana Science Fair

- BI027 Are Red Drinks Safe for Children? Determination of Allura Red (FD&C Red 40) in Beverages and Preliminary Assessment of Cytotoxicity**
Delaney Leigh Thompson, 18, Senior, Hellgate High School, Missoula, Montana,
T: Robert Jensen
- CS309 RoboSketch II**
Tucker James Downs, 18, Sophomore; Kobi Leith Hudson, 18, Senior
Billings Senior High School, Billings, Montana, T: Dan Bartsch
- PS025 Flax Seed Biodiesel, Phase III: Preliminary Economic Evaluation**
Taylor John Schroeder, 17, Junior, Fairfield Public School District #21, Fairfield, Montana, T: Raimund Hahn

NEBRASKA

Nebraska City, USNE02, Greater Nebraska Science and Engineering Fair

- EV039 The Effect of Lemnaceae on Nitrate Levels in the Shell Creek Watershed**
Brooke Elizabeth Pieke, 17, Junior, Newman Grove High School, Newman Grove, Nebraska, T: Karen Malmkar
- ME062 Regulatory Motifs That Control the Trafficking and Assembly of Gap Junctions Formed of Connexin32**
Nimansha Jain, 17, Senior, Millard North High School, Omaha, Nebraska,
T: Parmender Mehta

NEVADA

Elko, USNV01, Elko County Science Fair

- CH027 The Effect of Alpha Particles from Americium 241 on the Self-Detonation Temperature of Nitrogen Trioxide**
Hannah Kurka Margolis, 15, Freshman, Elko High School, Elko, Nevada,
T: Paul Hughes
- PH031 Sunspots: Solar Flare Prediction through Utilization of the Maunder Butterfly Pattern**
Kelly Eilish Schmidt, 17, Junior, Elko High School, Elko, Nevada, T: Paul Hughes

Las Vegas, USNV02, Southern Nevada Regional Science and Engineering Fair

- BE021 The Physiological and Psychological Effects of Infrasound on Humans**
Sarah Eva DiSalvo, 15, Sophomore, Coral Academy of Science Las Vegas, Nevada,
Henderson, Nevada, T: Zekeriya Gogebakan
- EE033 On the Accuracy of Optical Data**
Patrick Nelson Prochaska, 16, Sophomore, Coral Academy of Science, Las Vegas,
Henderson, Nevada, T: Zekeriya Gogebakan

Reno, USNV03, Western Nevada Regional Science and Engineering Fair

- CH048 Dunali Lives**
Allyse Ann Lusby-Angvick, 16, Freshman, Pershing County High School, Lovelock, Nevada, T: Valdine Mclean
- EM034 Guzzler Elevations**
Cole Dee Crim, 15, Sophomore, Pershing County High School, Lovelock, Nevada,
T: Valdine Mclean

NEW JERSEY

New Brunswick, USNJ01, North Jersey Regional Science Fair

- CB033 An Empirical Method for Haplotype Phasing Using Nanodroplets in Digital Emulsion PCR**
Catherine Wong, 17, Senior, Morristown High School, Morristown, New Jersey,
T: Erin Colfax
- MA037 Zeta Function-like Sums Over Lucas Numbers**
William Kang, 15, Sophomore, Bergen County Academics, Hackensack, New Jersey,
T: Krassimir Penev
- ME051 Lifeguard Inhibition of Fas-Mediated Apoptosis as a Mechanism of Chemotherapeutic Resistance**
Daniel Pierce Radin, 18, Senior, Academy for Medical Science and Technology, Hackensack, New Jersey, T: Donna Leonardi
- ME058 Targeting Interactions in the Tumor Microenvironment as a Novel Treatment for Metastatic Lung Cancer**
Brianna Pereira, 16, Junior, Academy for Medical Science Technology, Hackensack, New Jersey, T: Donna Leonardi
- PH310 The Sortation of Granular Materials through Forced Convection: Comparing Simulation and Experiment**
Seneca Jackson Velling, 17, Junior; Zachary White Collins, 16, Junior
Watchung Hills Regional High School, Warren, New Jersey, T: Sophia Gershan

Jersey City, USNJ02, Hudson County Science Fair

- EE019 Web-Enabled Programmable Water Heater Controller**
David Prilutsky, 16, Junior, Dr. Ronald E. McNair Academic High School, Jersey City, New Jersey, T: Jeremy Stanton
- ET054 Year Two of Developing Robotic Technology to Make a Handicap Independent**
Precious Naomi Martinez, 16, Sophomore, Union City High School- AEA, Union City, New Jersey, T: Nadia E. Makar

Lawrenceville, USNJ03, Mercer Science and Engineering Fair

- CH050 Small Molecule Grafted Quantum Dot White Light Emitting Diodes**
Jong Ho Lee, 17, Junior, The Lawrenceville School, Lawrenceville, New Jersey,
T: Elizabeth Fox

NEW MEXICO

Albuquerque, USAI50, National American Indian Science and Engineering Fair

- EM049 Roots Run Deep: A Comparative Study of *Panicum virgatum* and *Cynodon dactylon* in the Phytoremediation of Heavy Metals and Uptake of Phosphates Using Rhizofiltration**
McKalee Suzanne Steen, 15, Freshman, Grove High School, Grove, Oklahoma,
T: Keliana Don Steen
- EM050 No Mo Mine: MgSO₄, Mo and Plant Remediation of Mine Residual Contamination**
Hayden Allan Randall, 14, Freshman, Taos High School, Taos, New Mexico,
T: Laura J. Tenorio
- EM051 The Citrus Solution, Phase III: Effects of Using Citrus Peels with Sand and Charcoal Filters on the Remediation of Heavy Metal Pollutants in Sediment and Water Samples, Comparing Volume Efficiency of Filters and Effects of Contaminated Sediment on Filtered Water**
Wyatt Vann Dunham, 18, Senior, Grove High School, Grove, Oklahoma,
T: Keli V Dunham

- EV312 Wochekiye Beats Radiation Levels on the Pine Ridge Reservation**
Savannah Leigh Jensen, 16, Junior; Robert Eugene Pourier, 15, Freshman
Red Cloud Indian High School, Pine Ridge, South Dakota, T: Wendell Irvan Gehman
- ME055 Trimethylxanthine Attack**
Sonya Nicole John, 16, Junior, Navajo Preparatory School, Farmington, New Mexico,
T: Yolanda Flores
- ME105 Cota the Tumors: *Thelesperma megapotamicum* vs. Epidermal Irritation of *Lumbriscus terrestris***
Priscilla Raeann Martinez, 15, Freshman, Taos High School, Taos, New Mexico,
T: Laura J. Tenorio
- Albuquerque, USNM01, Central New Mexico Regional Science and Engineering Challenge*
- BI058 Stimulating Quorum Sensing in Marine Dinoflagellates**
Sarah Rose Dallo, 14, Freshman, Albuquerque School of Excellence, Albuquerque,
New Mexico, T: Fahri Arik
- CS034 Simulation of Approximate Computing Applied to Numerical Methods**
Alexandra Marie Porter, 17, Senior, La Cueva High School, Albuquerque, New
Mexico, T: Samuel Smith
- EE034 Third World Power: Using a Joule Thief to Extend Battery Life**
Andrew Jerald Miller, 17, Senior, Rio Grande Enrichment Studies, Albuquerque,
New Mexico, T: Kenneth Lloyd Miller
- MA060 A Mathematical Analysis of Set Variants**
Evan Zheran Liu, 17, Senior, Albuquerque Academy, Albuquerque, New Mexico,
T: Jim Mims
- Farmington, USNM02, San Juan New Mexico Regional Science and Engineering Fair*
- MI050 Probiotics: The Stool Solution?**
Madelyn Faith Lucas, 14, Freshman, Farmington High School, Farmington, New
Mexico, T: Robert Watson
- Grants, USNM03, Four Corners Regional Science and Engineering Fair*
- EV015 Spread No More Ill**
Suchinkumar Sunil Patel, 16, Sophomore, Grants High School, Grants, New Mexico,
T: Shelby L. Alexander
- PS027 Comparing Protein Content of Maize by Electrophoresis & Chromatography to
I.D. Amino Acids within**
Brandon Joseph Martinez, 18, Senior, Grants High School, Grants, New Mexico,
T: Shelby L. Alexander
- Las Cruces, USNM04, Southwestern New Mexico Regional Science and Engineering Fair*
- EE076 Self-diagnosing Smart Bolts to Save Your Life**
Vladislav Sevostianov, 15, Sophomore, Las Cruces High School, Las Cruces,
New Mexico, T: Igor Sevostianov
- PS041 Drought Rings**
Sherlauna Lee Ann Hancock, 17, Senior, Silver High School, Silver City,
New Mexico, T: Todd Pugmire
- Las Vegas, USNM05, Northeastern New Mexico Regional Science and Engineering Fair*
- EA014 The Effects of Vorticity on Vortex Formation and Morphology**
David Patrick Murphy, 15, Sophomore, Los Alamos High School, Los Alamos,
New Mexico, T: Thomas Joseph Murphy
- ET063 Portable Solar Powered Water Distillery Plant**
Raul Galvan-DeLaCruz, 17, Senior, McCurdy Charter School, Espanola, New Mexico,
T: Sophie Swingle
- Portales, USNM06, Southeastern New Mexico Regional Science and Engineering Fair*
- EA002 Sinkholes**
Chase Logan Kicker, 16, Junior, Carlsbad High School, Carlsbad, New Mexico,
T: Deborah Haggerton
- Socorro, USNM50, New Mexico Science and Engineering Fair*
- BE049 Digitizing Manipulatives with Radio Frequency Identification (RFID) for the
Blind and Visually Impaired Users**
Sara Manshad, 14, Freshman, Arrowhead Park Early College High School,
Las Cruces, New Mexico, T: Muhanad Manshad
- EN022 An Advanced Biomimetic Hand Using Additive Manufacturing**
Holly Catherine Erickson, 17, Senior, Los Alamos High School, Los Alamos,
New Mexico, T: George Andrew Erickson

- MA026 Lower Central Series Quotients of Finitely Generated Algebras
over the Integers**
Katherine Cordwell, 17, Senior, Manzano High School, Albuquerque, New Mexico,
T: Amanda Briggs
- ME039 Controlling Diabetes and Its Complications by Dietary Supplementation of
Trigonella foenum gracem (Fenugreek Seed), a Potent Antidiabetic Herb**
Soiba K. Mansoor, 16, Senior, Albuquerque Institute of Math and Science,
Albuquerque, New Mexico, T: Shamsa Khalid Mansoor
- PH056 N-Body Simulation of Saturn's Ring Structure**
Coleman J. Kendrick, 14, Freshman, Los Alamos High School, Los Alamos,
New Mexico, T: Brian K. Kendrick

NEW YORK

Poughkeepsie, USNY01, Dutchess County Regional Science Fair

- EN061 Use of Polymer Substrates to Regulate the Differentiation of Mouse
Embryonic Stem Cells**
Benjamin Thomas Lei, 17, Junior, Arlington High School, LaGrangeville, New York,
T: Miriam Rafailovich

Long Island, USNY02, Long Island Science and Engineering Fair

- AS018 A Study of Transposition Events of the Gypsy Retrotransposon in the Neural
Cells of *Drosophila melanogaster* and Its Relation to Neuronal Decline**
Trinity Russell, 17, Senior, Commack High School, Commack, New York,
T: Richard Kurtz

- BE022 Concomitant Administration of Protease Inhibitors: Saquinavir and Ritonavir
Reduce Septic Complications Minus Cognition**
Sonia Mukund Joshi, 17, Senior, Jericho High School, Jericho, New York,
T: Serena McCalla

- BE023 My Project Is Fantastic! Gender Differences in Self-Promotion and Their
Effects on Perceptions of a College Essay**
Arshia Aalami Harandi, 17, Senior, Roslyn High School, Roslyn Heights, New York,
T: Allyson J. Weseley

- BI017 Inhibition of the FabI enoyl-ACP Reductase from *Burkholderia pseudomallei***
Minah Kim, 17, Senior, Paul D. Schreiber High School, Port Washington, New York,
T: John Schineller

- CB021 Hyperglycemia and HIV: A Correlation- Hyperglycemia Increases HIV Entry in
T Cells via ROS Generation**
Aakash Viren Jhaveri, 16, Junior, The Wheatley School, Old Westbury, New York,
T: Thomas Van Bell

- CB303 A Study of the Role of the ROCK Kinase Pathway in Dental Pulp Stem Cell
Differentiation and Mineralization**
Aneri Kinariwalla, 17, Junior, Sayville High School, West Sayville, New York,
T: Maria Kathleen Brown

- CH306 Hydrogen Production using Ultra Low-Cost Soybean-Molybdenum Catalysts**
Shilpa Iyer, 17, Senior; Shweta Iyer, 17, Senior
Comsewogue High School, Port Jefferson Station, New York,
T: Elizabeth Crane Casey

- CS026 Wireless Coordination of a Multi-Robot System via Fuzzy Logic Control**
Joshua M. Zweig, 16, Junior, Commack High School, Commack, New York,
T: Lorraine Solomon

- EA009 A Novel Approach to Locating Geothermal Systems in Relation to Geodetic
Crustal Deformation and Strain Rate Tensors**
Benjamin Isaac Pleat, 17, Senior, Herricks High School, New Hyde Park, New York,
T: Renee Barcia

- EE032 A Practical Notification System to Identify Incoming Sudden
Ionospheric Disturbances**
Anthony Robert Bisulco, 16, Junior, Commack High School, Commack, New York,
T: Lorraine Solomon

- EM304 The Effect of Single-Walled Carbon Nanotubes on Regeneration and Activity of *Dugesia dorotocephala*, Growth of *Chlorella vulgaris*, and Embryonic Development of *Lytechinus variegatus***
Archie Chakming Kong, 16, Junior; Randy Tung, 16, Junior; Arthur Wang, 16, Junior
Manhasset High School, Manhasset, New York, T: Peter Guastella
- EN305 The Rate of Lead (II) Hydroxide Deposition in a Concrete Water Holding Tank: An Investigation of Water Distribution Systems in Third World Countries**
Shujat Ali Khan, 17, Senior; Shamoon Syed Rizvi, 17, Senior
East Meadow High School, East Meadow, New York, T: Ginna Gabalski
- ET019 Enhancing the Efficiency of a PEM Hydrogen Fuel Cell with Synthesized Metal-Nanoparticle/Graphene Composites Synergy**
Benjamin Akhavan, 18, Senior, Rambam Mesivta High School, Lawrence, New York,
T: Rebecca Isseroff
- EV301 A Novel Model for Inflammatory Bowel Disease: Using U937 and COLO320DM Cell Lines, to Propose a Pathway by which Environmental Toxin, 4-Nonylphenol, May Promote an Inflammatory Response**
Albert Kim, 17, Junior, Manhasset Secondary School, Manhasset, New York,
T: Peter Guastella
Byeong Ho Jung, 15, Sophomore, Herricks High School, New Hyde Park, New York,
T: Renee Barcia
- MA021 Kaprekar's Constant: A Journey to New Bases**
Daniel Matan Hanover, 15, Sophomore, John L. Miller Great Neck North High School, Great Neck, New York, T: Marie van Nieuwenhuizen
- ME033 Resistance to the MEK Inhibitor Selumetinib (AZD6244) in Uveal Melanoma Is Mediated by the Activation of AKT through KRAS: Implications for Clinical Trial Development**
Natalie Ann Giovino, 17, Senior, John F. Kennedy High School, Bellmore, New York,
T: Barbara Franklin
- ME034 LPS/BSA Contamination: Rethinking Fatty Acid Dietary Supplementation's Role in Oxidative Stress Production**
Olivia Frances Novick, 17, Senior, Jericho High School, Jericho, New York,
T: Serena McCalla
- MI020 Evolutionary and Ligand-binding Dynamics of ClfB and IsdA in *Staphylococcal* Species**
Amy Xu, 16, Junior, Jericho High School, Jericho, New York, T: Serena McCalla
- PH029 Close Companions to Kepler Objects of Interest: Results from a Large Adaptive Optics Survey**
Ganesh Ravichandran, 16, Junior, Walter Tresser Clarke High School, Westbury, New York, T: Terry Renna
- PS307 The Characterization of the LPS-Induced Hypersensitive Response in *Ceratopteris richardii***
Ryan M. Kenny, 16, Junior; Samantha Hayley DiSalvo, 16, Junior;
Amy Jaclyn Vitha, 16, Junior
George W. Hewlett High School, Hewlett, New York, T: Terrence Bissoondial
New York City, USNY03, New York City Science and Engineering Fair
- AS039 Avian Mimicry in Color Space**
Uri Rosenshine, 17, Senior, The Bronx High School of Science, Bronx, New York,
T: Vladimir Shapovalov
- AS040 InSPECT: Identifying Memory Encoding Neurons through Spectral Analysis**
Amanpreet Singh Kandola, 17, Senior, Stuyvesant High School, New York, New York, T: Jonathan Gastel
- AS041 Developmental Gene *Lis1* in the Adult Brain Is Necessary for Spatial But Not for Novelty Memory**
Leighton Anne Braunstein, 16, Junior, The Dalton School, New York, New York,
T: Lisa Brizzolara
- BE037 The Effect of Sleep on Cognition and Motor Development in Infants**
Fatmira Curovic, 14, Junior, Staten Island Technical High School, Staten Island, New York, T: John Davis

- BI036 Tracing the Mistakes of Nature: Model Study for the Development of a Strategy to Prohibit Beta-Amyloid Aggregation**
Yarim Lee, 15, Sophomore, Townsend Harris High School, Flushing, New York,
T: Philip Porzio
- CB045 The Identification of Pathways that Govern Heart Development in the 22q11.2 Deletion Syndrome**
Aminah Abrar Sallam, 18, Senior, Stuyvesant High School, New York, New York,
T: Jonathan Gastel
- CB046 Measuring Conformational Features of the Splicesomal U2-U6 snRNA complex by FRET**
Mikaela Devorah Gerwin, 17, Junior, The Abraham Joshua Heschel School, New York, New York, T: Ruth Himelstein
- EN311 Developing Soft Micro-Stencil Lithography for the Fabrication of Electrodes on Nano-Materials**
Waqarul Islam, 16, Junior; Youbin Kim, 16, Junior
Stuyvesant High School, New York, New York, T: Jonathan Gastel
- EV308 Detrimental Concentrations of Airborne Fungal Spores**
Patrick James Colossi, 17, Senior; Nicole Marie Simineri, 18, Senior
Staten Island Technical High School, Staten Island, New York, T: John Davis
- MA308 Computerized Game Theory Analysis of the Popular Word Game, GHOST**
Axel Stephan Feldmann, 16, Sophomore; Stefan Luka Colton, 15, Sophomore
Hunter College High School, New York, New York, T: Stephen Young
- ME063 The Brink of Life and Death: Survival Analysis of Intensive Care Unit Variables and Their Effects on Mortality**
Jingwei (Jason) Tu, 18, Senior, Stuyvesant High School, New York, New York,
T: Jonathan Gastel
- ME066 MUC16/CA125 and Galectin-3 Relationship in Ovarian Cancer**
Sahityasri Thapi, 18, Senior, Townsend Harris High School, Flushing, New York,
T: Susan Brustein
- MI308 Reinventing Antibiotics: A Study to Determine if the Addition of a Gram-Positive Lysin Can Prevent the Development of Resistance to Vancomycin and Daptomycin in MRSA**
Anna Elizabeth Blech, 16, Junior; Alexander Elias Epstein, 17, Junior
Hunter College High School, New York, New York, T: Gilana Reiss
- PH045 Let There Be Light!... Fully Solution-Processed Polymer Based- Aluminum Substrate Photovoltaic Cells Fabricated in Ambient Air**
Faizullah Mashriqi, 17, Senior, Francis Lewis High School, Fresh Meadows, New York, T: Francine Weissman
- PS032 The Role of Fatty Acid and Retinol Binding Proteins (FARs) During Host Parasitism by RKN *Meloidogyne javanica***
Kalia Deborah Firester, 15, Sophomore, Hunter College High School, New York, New York, T: Gilana Reiss
- Westchester, USNY05, Progenics Westchester Science and Engineering Fair*
- BE044 Quantifying the Impact of Nighttime Light Exposure and Sleep Duration on Melatonin Levels in Adolescents**
Caleb Hersh, 17, Senior, Ossining High School, Ossining, New York,
T: Valerie May Holmes
- BE050 The Effect of Emoticon Stimuli on Human Facial Muscle Activation and Social Evaluation using Electromyographic Technology: A Novel Determination**
Abigail Claire Orlando, 18, Senior, Eastchester High School, Eastchester, New York,
T: Christian Gorycki
- BE051 The Effects of Equine-Assisted Therapy on the Social Functioning of Autistic Adults**
Sarah Rebecca Ruthen, 17, Senior, Briarcliff High School, Briarcliff Manor, New York, T: Michael Inglis
- BI044 Intranasal Administration of Neuropeptide-Y Influences Development of PTSD-like Symptoms**
Sheida Takmil, 17, Senior, Ossining High School, Ossining, New York,
T: Valerie May Holmes

- BI045 Histological Evidence of Toll-Like Receptor Nine Amelioration of Amyloid Pathology in a TgSwDI Mouse Model**
Charlotte Sophia Herber, 16, Junior, Fox Lane High School, Bedford, New York, T: Erin Rent
- BI311 Roles of Semaphorin7A and Cadherin8 in Synaptic Guidance Influencing Autism Spectrum Disorders**
Sania Khalid, 18, Senior; Amrita Ramesh, 18, Senior
Ossining High School, Ossining, New York, T: Valerie May Holmes
- CB053 A Potential Treatment for Cirrhosis: Retinol-Palmitic Acid Treatments and Knockdown of the miR-23b Cluster Reverts Cirrhotic Hepatic Stellate Cells to the Quiescent State**
Daniel Jeremy Fulop, 17, Senior, John Jay High School, Cross River, New York, T: AnnMarie Lipinsky
- CB054 Directed Differentiation of Mouse Embryonic Stem Cells into Dorsal Root Ganglia**
Ryan Malpass, 18, Senior, Dobbs Ferry High School, Dobbs Ferry, New York, T: Thomas Callahan
- ET318 Construction, Characteristics and Mathematical Modeling of an *E. coli*-based Fuel Cell**
Samantha Jasoda Prashad, 17, Senior; Haris Nair, 17, Senior
Hastings High School, Hastings-on-Hudson, New York, T: Melissa Shandroff
- ME080 Looking within the Lesion: Transcriptome of Psoriatic Skin Reveals Changes in Apoptosis Signaling and Genes Associated with Atherosclerosis**
Claudia Abrantes Mimoso, 18, Senior, Ossining High School, Ossining, New York, T: Valerie May Holmes
- ME081 Angiopoietin-1 and R-Spondin1 Mitigate Radiation Induced Gastrointestinal Syndrome**
Brett Ingram Bell, 16, Freshman, Pelham Memorial High School, Pelham, New York, T: Steven Beltecas
- ME097 Menin Controlled Cell Differentiation, Renewal, and Transformation of Normal and Neoplastic Stem Cells**
Haoxuan Yuan, 18, Senior, Pelham Memorial High School, Pelham, New York, T: Steven Beltecas
- MI310 Combating Mycobacterium Tuberculosis by Induction of Self-Poisoning**
Julia Burns Kavanagh, 16, Junior; Zhun Che, 16, Junior
Pelham Memorial High School, Pelham, New York, T: Steven Beltecas
- Syracuse, USNY06, Central New York Science and Engineering Fair*
- CH057 Alternative Energy: Using Nanotechnology to Transfer Energy between Bioluminescent Firefly Proteins & Fluorescent Quantum Rods**
Olivia Helen Sheppard, 15, Sophomore, Manlius Pebble Hill School, Dewitt, New York, T: Susan Foster
- ME087 CT-based Evaluation of Ultra-Porous Beta-Tricalcium Phosphate in Extremity Bone Defects at One Year**
Jay K. Khurana, 16, Sophomore, Fayetteville-Manlius High School, Manlius, New York, T: Timothy Damron, MD
- Troy, USNY07, Greater Capital Region Science and Engineering Fair, Inc.*
- CS046 Properties of Twitter Network Communications among Teenagers**
Gili Rusak, 16, Sophomore, Shaker High School, Latham, New York, T: Nathaniel Covert
- EE052 Creating a Portable Version of a Nintendo 64 Gaming System**
John Lars Dean, 15, Sophomore, Scotia-Glenville High School, Scotia, New York, T: Christopher Judd
- ME049 Can Pomegranate Prevent Human Pancreatic and Colon Adenocarcinoma?**
Deena S. Mousa, 13, Freshman, Emma Willard School, Troy, New York, T: Robert Buckley
- Utica, USNY08, Utica College Regional Science Fair*
- PS016 The Effects of Hypergravity on Plant Growth and Development**
Lillith Chun Yue Bulawa, 15, Freshman, Rome Free Academy, Rome, New York, T: Nancy Neiley

Rochester, USNY09, Central Western Section-Science Teachers Association of New York State Science Congress

- CB007 Regulation of the Turnover of Tau**
Sarah Lieou Sotack, 16, Junior, Greece Athena High School, Rochester, New York, T: Jessica Grace Evershed
- Syracuse, USNY10, Dr. Nelson Ying Tri Region Science and Engineering Fair*
- BI023 A Bioinformatic Analysis of the Ribosome through Perl Programming**
Jordan Robert Tick, 17, Junior, City Honors School, Buffalo, New York, T: Kelly Ann Hyla
- CB022 Depletion of Circulatory ST6Gal-1 Alters B-Cell Development**
Yankang Yang, 17, Junior, City Honors School, Buffalo, New York, T: Kelly Ann Hyla
- ET020 Improving Car Aerodynamics: Testing CAD Models in a Self-Engineered Wind Tunnel**
Scott Alexander Bolit, 15, Freshman, Potsdam High School, Potsdam, New York, T: Nick Mark Leuthauser
- Queens, USNY50, New York State Science and Engineering Fair*
- BE025 The Impact of Parenting Styles on Adolescent Emotional Intelligence: A Cross-Cultural Study**
Ye Rin Koh, 17, Senior, Plainview-Old Bethpage John F. Kennedy High School, Plainview, New York, T: Raymond Tesar
- CB023 Adhesion Receptor Dystroglycan as a Regulator of Oligodendrocyte Progenitor Cell Differentiation**
Amelia Susan Ricketts, 17, Senior, Plainview-Old Bethpage John F. Kennedy High School, Plainview, New York, T: MaryLou O'Donnell
- CS307 A Heuristic Method for Determining Distance-Optimal Supercomputer Interconnection Networks**
Kevin Li Huang, 16, Junior, Jericho High School, Jericho, New York, T: Serena McCalla
- Mustafa Abid Ansari, 16, Junior, Plainview-Old Bethpage John F. Kennedy High School, Plainview, NY, T: Mary Lou O'Donnell
- EM023 Revolutionizing Oil Spill Remediation via Modified *Luffa cylindrica***
Kristin Nicole Wong, 17, Senior, Jericho High School, Jericho, New York, T: Serena McCalla
- EN034 Stoichiometric Laser-Induced Breakdown Spectroscopy (LIBS) Analysis for Simple and Cost Effective Production of Optical Quality Ceramic Yttrium Aluminum Garnet (YAG)**
Matthew Leong Chun, 16, Junior, Jericho High School, Jericho, New York, T: Serena McCalla
- ET310 Novel Methods of Incorporating Graphene into Organic Polymer Solar Cells**
Sneha Chittabathini, 17, Senior; Andrew Chen, 17, Senior; Alexandra Leigh Tse, 17, Senior
Lawrence High School, Cedarhurst, New York, T: Rebecca Isseroff
- MA027 Implementing Graph Theory in a Novel Program for Predicting Carbon Nanostructures**
Bailey Liao, 17, Junior, Half Hollow Hills High School West, Dix Hills, New York, T: Michael Lake
- ME040 A Novel Methodology to Define the Structural Characterization of AR-MDV3100 Antagonism**
Jasper Liangyu Du, 17, Senior, Jericho High School, Jericho, New York, T: Serena McCalla
- ME304 The Effects of Riluzole and Superoxide Dismutase on ALS *C. elegans* Model Strain AM725**
Karalyn Nicole Pappas, 16, Junior; Stephanie Ying, 16, Junior
Manhasset High School, Manhasset, New York, T: Peter Guastella
- MI024 Preventing Tooth Plaque: Use of Tea Tree Oil and Other Natural Substance to Inhibit *Streptococcus mutans* Biofilm**
Stephanie Gavin, 16, Junior, Sachem High School East, Farmingville, New York, T: Michael Vaccariello

NORTH CAROLINA

Charlotte, USNC01, Charlotte-Mecklenburg Regional Science Fair

- AS007 **The Bisphenol Blowfly Blitz: An Assessment of the Plastic Monomer Bisphenol-A on the Metamorphic Activity in *Sarcophaga bullata*, a Forensics Study**

Andrew Clark Hopkins, 17, Junior, Phillip O. Berry High School, Charlotte, North Carolina, T: Tamica Antoinette Stubbs

- CH065 **Effect of a Methylene Spacer on the Coordination Chemistry of a New Pyridine/Thione Ligand**

Christopher Chien-Liang Yu, 17, Junior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Daniel Rabinovich

Durham, USNC02, North Carolina Central Region III Science Fair

- CH025 **Elucidating the Light-Harvesting Mechanism of Highly Efficient Porphyrin-Sensitized Solar Cells**

Jonathan Chan, 17, Senior, William G. Enloe High School, Raleigh, North Carolina, T: Elena Jakubikova

- CS014 **LAT (Location Aware Thermostat): Designing an Intelligent, Energy-Saving Thermostat**

Jarrod Darren Dunne, 15, Sophomore, Franklin Academy High School, Wake Forest, North Carolina, T: Stacey Thomas Kaufman

Raleigh, USNC50, North Carolina State Science Fair

- AS027 **Lepidoptera Spiracle Variation**

Alina Isabella Suedbeck, 17, Junior, Green Acres Academy, Greenville, North Carolina, T: Dorothy Suedbeck

- BE028 **Capture Your EEG - Developing Reliable Bio-Indicators and Corresponding Android App for Safe Driving**

Jenny Wang, 15, Sophomore, William G. Enloe High School, Raleigh, North Carolina, T: Brian Wood

- CH034 **Design and Synthesis of Novel Tetraphenylporphyrin-based Metal-Organic Frameworks for Photodynamic Therapy and Drug Delivery**

Landon Yates Carter, 16, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Myra Halpin

- CH038 **An Optimal Design of Electrode Surface Morphology to Improve Water Electrolysis Efficiency**

Jaehyeong Lee, 18, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Myra Halpin

- EN038 **Evaluation of Polyvinyl-Alcohol Polymers as an Effective Shielding Mechanism Against Ionizing Radiation Induced Degradation in COTS Microcontroller Devices**

Christopher Louis Panuski, 18, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Jonathan Bennett

- ET027 **Novel Fe₂O₃ and Sulfur Catalyzed Rocket Propellants: A Synergistic Approach to the Sorbital "Flushing" Phenomenon**

- # Parth Chetan Thakker, 16, Junior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Myra Halpin

- MI029 **Common Targeting of Epstein-Barr Virus microRNA BART1-3p and Human microRNA miR-29a: Implications in EBV-linked Lymphoma**

Tejas Govind Sundaresan, 18, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Myra Halpin

- PH040 **Photometric Evidence of Changes in Pulsation Characteristics of Hot Subdwarf B Stars**

- # Arjun Raghavan, 17, Senior, Chapel Hill High School, Chapel Hill, North Carolina, T: Brad Barlow

- PH307 **A Quantum Mechanical Model for the Molecular Dynamics Simulation of Protein Folding Behavior**

Prithvi Potharaju, 15, Sophomore; Justin Yang, 15, Sophomore
Ardrey Kell High School, Charlotte, North Carolina, T: Stuart Rosse

NORTH DAKOTA

Mandan, USND01, Southwest Central North Dakota Regional Science and Engineering Fair

- CH062 **Forensics: Testing for Lead**

Kellie Marie Tougas, 18, Senior, Strasburg Public School, Strasburg, North Dakota, T: William A. Malaski

- CS064 **Programming for Students**

- ## Matthew Joseph Schaeffbauer, 17, Senior, Strasburg Public School, Strasburg, North Dakota, T: William A. Malaski

- EM044 **Study of TENORM Deposits in Oil Field Equipment**

Alexander James Spilman, 17, Senior, Mandan High School, Mandan, North Dakota, T: Julie Fleck

Mandan, USND02, North Central North Dakota Science and Engineering Fair

- ME098 **The Effects of Caffeine on Reaction Time**

Wyatt Luke Limke, 17, Junior, Berthold High School, Berthold, North Dakota, T: Sarah Kimball

Fargo, USND03, Southeast North Dakota Regional Science and Engineering Fair

- EV047 **The Effects of Noxious Weeds on Navy Beans**

Carter Joseph Mauch, 15, Sophomore, Hankinson High School, Hankinson, North Dakota, T: Wendy Lynn Friskop

- MI053 **The Antimicrobial Effects of Deciduous Tree Bark**

Tayson Wade O'Hara, 16, Junior, Hankinson High School, Hankinson, North Dakota, T: Wendy Lynn Friskop

Jamestown, USND04, Southeast Central North Dakota Science and Engineering Fair

- EE078 **Solar Engine Applications**

Sean Michael Loken, 15, Freshman, Wishek High School, Wishek, North Dakota, T: Joshua Wiest

- EV051 **Emission Reduction through Solvent Polarity**

- ## Tyler Gordon Toepke-Floyd, 17, Junior, Wishek Public School, Wishek, North Dakota, T: Joshua Jacob Wiest

Grand Forks, USND05, Northeast North Dakota Regional Science and Engineering Fair

- CB061 **The Effects of Radiation on DNA**

Shelby Brooke Cyr, 15, Freshman, Valley-Edinburg High School, Edinburg, North Dakota, T: Loretta Gail Monson

- EV048 **Protective Role of *Selenium* against Methylmercury Poisoning in House Crickets (*Acheta domesticus*)**

Devarshi Nikhil Patel, 16, Junior, Red River Senior High School, Grand Forks, North Dakota, T: Laurie Crummy

Williston, USND06, Northwest North Dakota Regional Science Fair

- EM045 **The Trouble with *Typha latifolia***

- # Sarah Nicole Telehey, 17, Junior, Trinity Christian School, Williston, North Dakota, T: Annette Marie Kreft

- ET050 **The Evolution of Alternative Fuel Production Derived from Invasive Eurasian Milfoil**

- ## Jasmine LouAnn Kreft, 18, Senior, Trinity Christian School, Williston, North Dakota, T: Annette Marie Kreft

Grand Forks, USND50, North Dakota State Science and Engineering Fair

- EV049 **Aquatic Plants: Today's Solution to River Pollution**

Gage Connor Metzen, 17, Junior, Hankinson High School, Hankinson, North Dakota, T: Wendy Lynn Friskop

- PS039 **The Fungicidal Attributes of Invasive Plants on Soybeans**

- # Grady Adam Mauch, 16, Sophomore, Hankinson High School, Hankinson, North Dakota, T: Wendy Lynn Friskop

- PS040 **The Usage of Polyphenol and Spinosad Compounds as Biopesticides**

- ## Dre Erik Howard Steinwehr, 17, Senior, Hankinson High School, Hankinson, North Dakota, T: Wendy Lynn Friskop

OHIO

Cleveland, USOH02, Northeastern Ohio Science and Engineering Fair

- BE010** "Engineer to Become, Star Wars Must You Watch": The Effects of Early Exposure of Science Themed Movies and TV Shows, Games and Toys, Books and Magazines on an Individual's Future Career Choice
Rachel T. Anand, 16, Junior, Anands Homeschool Academy, Akron, Ohio,
T: Ammu A. Anand

- BE016** Effect of Texting and Changing the Radio Station on High School Students Motor Functions while Playing Pong
Liam E. Shamir, 16, Junior, Fuchs Mizrahi School, Beachwood, Ohio, T: Caryn Mills

- CH021** Synthesis of Size- and Phase-Controlled Iron Oxide Nanoparticles via Continuous, Atmospheric Pressure Microplasma: An Efficient Source for Innovative Biomedical and Technological Applications
Aric Generette Floyd, 17, Junior, Hawken Upper School, Gates Mills, Ohio,
T: Robert H. Shurtz

- EN013** Antimicrobial Silver Nanoparticle Coating for Touch Screen Devices
Isabella Flynn Sparhawk, 18, Senior, St. Vincent- St. Mary High School, Akron, Ohio,
T: Hakima Boukhrissi

- ME038** Analysis of the Antagonistic Characteristics of the Extract of *Centella asiatica*, a South Asian Herb on the Growth of Cancer Cell Lines: MDA-231 and MCF-7
Kanithra Chandra Sekaran, 16, Junior, Solon High School, Solon, Ohio,
T: Anthony Sanson

Wilberforce, USOH03, Miami Valley Science and Engineering Fair

- EV040** Does Salicylic Acid and Calcium Carbonate Safely Inhibit Algae Growth in Buck Creek Water?
Humza Shahid Bashir, 17, Senior, Springfield High School, Springfield, Ohio,
T: Pamela Clark

- MI036** Malathion as a Model Compound for the Degradation of the Nerve Agent VX
Karthik Balaji Chakravarthy, 16, Sophomore, Beavercreek High School, Beavercreek, Ohio, T: Dave Yoder

Dayton, USOH04, Montgomery County Science and Engineering Fair

- CB005** *In vitro* Macromolecular Crowding Affects Cellular Behavior
Karan Rajesh Naik, 16, Senior, Centerville High School, Centerville, Ohio,
T: Penny Valentini

- ME011** Autism in Fruit Flies: Behavior of *Drosophila* with a Mutated Homer Gene
Elise Nicole Paietta, 14, Freshman, Carroll High School, Dayton, Ohio, T: L. K. Levy

- PH021** Using Holographic Interferometry for Measuring Magnetic Field Strength
Ethan Michael Salisbury, 16, Sophomore, Centerville High School, Centerville, Ohio,
T: Penny Valentini

Shaker Heights, USOH05, Hathaway Brown Upper School Fair

- EN023** Optimization of Platelet-Targeted Multifunctional Nanovehicles for Vascular Disease Detection and Therapy
Gurbani Kaur, 18, Senior, Hathaway Brown School, Shaker Heights, Ohio,
T: Patricia Hunt

- ME025** Microglial Reaction in AD: Friend or Foe? A Study of TBI in AD
Lena Jane Ransohoff, 18, Senior, Hathaway Brown School, Shaker Heights, Ohio,
T: Patricia Hunt

- ME026** Selective Oligodendrocyte Apoptosis as a Model for Multiple Sclerosis
Ingrid Nieves Zippe, 18, Senior, Hathaway Brown School, Shaker Heights, Ohio,
T: Patricia Hunt

Archbold, USOH06, Northwest Ohio Science and Engineering Fair

- AS016** A Comparative Study of Different Strains of *Gallus domesticus*
Chrysta Noelle Beck, 17, Junior, Pettisville High School, Pettisville, Ohio,
T: Donna Jean Meller

- ET009** Temperature and Power Output: A Study of Crystalline Solar Cells
Travis B. Lysaght, 15, Freshman, Hicksville High School, Hicksville, Ohio,
T: Nichole Bostelman

Marion, USOH07, Marion Area Science and Engineering Fair

- AS019** Analysis of *C. elegans* Lifespan on Resveratrol and Spermidine
Rohan Mabbu Prasad, 17, Senior, Bellefontaine High School, Bellefontaine, Ohio,
T: Spencer Reames

- BI018** Using Laser Refraction to Determine Sugar Consumption by Yeast
Achal James Fernando-Peiris, 15, Sophomore, Mount Vernon High School, Mount Vernon, Ohio, T: Benjamin Lloyd

Alliance, USOH08, Ohio Region XIII Science and Engineering Fair

- BI030** Comparing Circular and Linear DNA in Cellular Transfection Efficiency
Savannah May Bowman, 16, Junior, McKinley Senior High School, Canton, Ohio,
T: Rita Mcmillen

- EN039** Improving Cellular Transfection Efficiency for Non-Viral Gene Therapy
Mary Rose DAgostine, 17, Junior, McKinley Senior High School, Canton, Ohio,
T: Amy Miller

Upper Arlington, USOH09, Central Ohio Regional Science and Engineering Fair

- CS048** Crash Avoidance in Autonomous Vehicles
Kanaad Vinayak Parvate, 15, Sophomore, Dublin Jerome High School, Dublin, Ohio,
T: Laura Brennan

- EM021** A Sustainable and Low Cost Approach for Cleaning Metal Contaminated Water Using Pyrolyzed Banana Peels
Bluye B. DeMessie, 16, Sophomore, William Mason High School, Mason, Ohio,
T: Karen Young

- ME050** Abnormal Development of the Motor-Sensory Circuit in a Zebrafish Model of Spinal Muscular Atrophy
Duy Quoc Phan, 16, Junior, Upper Arlington High School, Columbus, Ohio,
T: Laura Brennan

OKLAHOMA

Alva, USOK01, Northwestern Oklahoma State University Regional Science Fair

- CS010** Wi-Fight Your Network?
Connor Joshua Cunningham, 14, Freshman, Vici High School, Vici, Oklahoma,
T: Trisha Ann Salisbury

- EV007** Would You Like Salt with That?
Madison Chyanne Evans, 14, Freshman, Vici High School, Vici, Oklahoma,
T: Trisha Ann Salisbury

Bartlesville, USOK02, Bartlesville District Science Fair

- AS005** Daphnia Development: A Comparative Temperature and Phosphorus Tolerance Experiment Using Resurrection Ecology of *Daphnia pulex*
Nicole Marie Biddinger, 17, Senior, Bartlesville High School, Bartlesville, Oklahoma,
T: Betty A. Henderson

- EN044** H.E.R.E. Human Endangerment Recognition Equipment: A Possible Method to Reduce Fatalities Caused by Children Being Left Inside of Vehicles
Kelly Maria Shelts, 16, Junior, Bartlesville High School, Bartlesville, Oklahoma,
T: Betty Henderson

Edmond, USOK03, Central Oklahoma Regional Science and Engineering Fair

- PS305** Counteracting the Coniferous Catastrophe: Investigating Preventative Therapies for Pine Wilt Disease
Megan Michele Rolke, 18, Senior; Elizabeth Le, 18, Senior
Soutmoore High School, Moore, Oklahoma, T: Darla Kay Wyatt

Miami, USOK04, Northeastern Oklahoma A&M Science and Engineering Fair

- MI015** Therapeutic Potential: Utilizing Oligosaccharide Compounds to Enhance the Growth of Normal Intestinal Flora
Taylor Diahann Gaines, 17, Senior, Miami High School, Miami, Oklahoma,
T: Shannon Diahann Sample

Muskogee, USOK05, Muskogee Regional Science and Engineering Fair

- ME017** The Sweaty Canal
Destin Samuel Stratton, 18, Senior, Muskogee High School, Muskogee, Oklahoma,
T: Terri Lee Brossett

- Ada, USOK07, East Central Oklahoma Regional Science and Engineering Fair
- EV004 Titanium Dioxide Nano- and Microparticles: Transport and Fate in Wastewater Treatment Systems**
Leah Gage Huling, 17, Senior, Ada Senior High School, Ada, Oklahoma,
T: Scott G. Huling
- Wilburton, USOK09, Eastern Oklahoma Regional Science and Engineering Fair
- MI041 Comparative *in vitro* Antimicrobial Efficacies of Polyphenol Extracts on Non-Pathogenic Bacteria and MRSA and MSSA**
Jeffrey Gage Holleman, 17, Junior, Cascia Hall Preparatory School, Tulsa, Oklahoma,
T: Sally Ann Fenska
- Ada, USOK50, Oklahoma State Science and Engineering Fair
- AS017 The Effects of Ethinyl Estradiol on Larval Foraging Behavior and Pupation Site Preferences in *Drosophila melanogaster***
Hannah Claire Pagels, 16, Junior, Grove High School, Grove, Oklahoma,
T: Keliana Steen
- EE031 A Concept Refrigerator for a Growing World: A Second Year Study**
Micah Laura Dunkleberger, 18, Senior, Alpha Omega Academy Distant Learning, Rock Rapids, Oklahoma, T: Willis Michael Dunkleberger
- OREGON**
- Gresham, USOR01, Gresham-Barlow Science Expo
- CS015 Artificial Neural Networks for Simulated Control Systems**
Sarah Christine Walker, 17, Junior, Gresham Union High School, Gresham, Oregon,
T: Stephen Scannell
- ME014 Defining the Mechanisms of Aspirin in Cancer Prevention**
Andrew Liu, 16, Junior, Lakeridge High School, Lake Oswego, Oregon,
T: Jesse Elizondo
- ME015 Alpha-Alumina Nanoparticles Activate the Nalp3 Inflammasome and IL-1b Production for Development of a Novel Therapeutic Cancer Vaccination**
Amber Tang, 16, Junior, Lakeridge High School, Lake Oswego, Oregon,
T: Jennifer Brazier
- Portland, USOR02, Portland Public Schools Science Expo
- CB035 An Investigation on the Effects of Electrophoresis and Sodium Dodecyl Sulfate on the Semi-permeable Properties of the Cell Membrane**
Jinsong Yan, 16, Freshman, Cleveland High School, Portland, Oregon,
T: Matthew Staab
- CS035 MyInsul.in 2.0: Integrating Glucomander and Improving the User Interface for the Hospital**
Annelise Cummings, 17, Freshman, Cleveland High School, Portland, Oregon,
T: Patrick Gonzales
- Hillsboro, USOR04, Beaverton-Hillsboro Science Expo
- BI007 Towards the Painless Painkiller: Design and Synthesis of Novel Fatty Acid Binding Protein Inhibitors for Anti-Inflammatory and Analgesic Effects**
Raghav Tripathi, 17, Senior, Westview High School, Portland, Oregon,
T: Debbie Cooper
- EE090 Continuous Real-Time Monitoring, Detection, Alert of Transient Cardiac Abnormalities Utilizing Electrocardiograph Circuit and Android-Based Analysis with Communication Through Wireless Networks**
Andrew Wei Chen, 15, Sophomore, Beaverton High School, Beaverton, Oregon,
T: Mike Blok
- EV008 Development and Optimization of a Novel VOC Biofilter to Remediate Indoor Air Pollution (IAP) Sustainably PLUS an Analysis of Its Impact on Human Lung Health after Integration**
Naomi Chetan Shah, 17, Senior, Sunset High School, Portland, Oregon,
T: Sonal Shah
- MA010 Transcription of Cetacean Song using a Frequency and Time-Domain Analysis**
Alice Ning-Xue Yan, 17, Junior, Liberty High School, Hillsboro, Oregon,
T: Milton Scholl

- Portland, USOR05, Aardvark Science Exposition
- CB009 Generation of Induced Pluripotent Stem Cells (iPSCs) in the Absence of SOX2 and CMYC**
Mina Guo, 17, Senior, Oregon Episcopal School, Portland, Oregon, T: Peter Langley
- EN015 The Fabrication and Characterization of Top and Bottom Gated Carbon Nanotube Field Effect Transistors using Printed Electronics**
Harsha Sudarsan Uppili, 16, Junior, Oregon Episcopal School, Portland, Oregon,
T: Peter Langley
- MA011 Efficient Characteristic 3 Galois Field Operations for Elliptic Curve Cryptographic Applications**
Vinay Sridhar Iyengar, 17, Junior, Oregon Episcopal School, Portland, Oregon,
T: Peter Langley
- West Linn, USOR06, CREST-Jane Goodall Science Symposium
- CS038 Optimized Teacher Websites**
Milo McSherry Webster, 17, Junior, West Linn High School, West Linn, Oregon,
T: Wind Lothamer
- MA307 Analysis of the Erdős Distance Problem in Modular Elliptic Space**
Richard Rene Sala, 18, Senior
Markus Robert Woltjer, 18, Senior
Wilsonville High School, Wilsonville, Oregon, T: Jay Schauer
- PS020 I'm Lichen' It: Antibacterial Properties of Lichen Metabolite (+)-usnic Acid Towards the Plant Pathogen *Rhodococcus fascians***
Camille Cassidy Collier, 15, Sophomore, West Linn High School, West Linn, Oregon,
T: Jon Isensee
- Albany, USOR07, Central Western Oregon Science Expo
- BI011 Analysis of Fel d 1 Allergen Transcripts in *Felis catus* Saliva using Reverse Transcription Quantitative Polymerase Chain Reaction (RT-qPCR)**
Savannah Joy Tobin, 18, Senior, West Salem High School, Salem, Oregon,
T: Michael Lampert
- MA012 Classification of Some Fusion Categories of Rank 4**
Hannah Kerner Larson, 18, Senior, South Eugene High School, Eugene, Oregon,
T: Victor Ostrik
- Portland, USOR50, Intel Northwest Science Expo
- AS048 The Effects of Caffeine of Culex Mosquito Survivorship**
Nicolas Quinn Wolnick, 16, Sophomore, Summit High School, Bend, Oregon,
T: David Walton Bermudez
- BI052 Synergistic Cytotoxic Efficiency of Novel and Traditional Anti-Cancer Drugs in a Parallel/Crossover Model**
Mukund Raguram, 15, Sophomore, Oregon Episcopal School, Portland, Oregon,
T: Ryan Holland
- CS314 The Introduction of Higher-Order Encoding for Synthesizing Quantum Automata and an Analysis of Novel Encoding Mechanisms**
Ankit Gupta, 17, Senior; Kevin Wang, 18, Senior
Westview High School, Portland, Oregon, T: Debbie Cooper
- EM041 The Novel Implementation of Biochar Cathodes in Microbial Fuel Cells (Phase I)**
Meghana Vijay Rao, 17, Junior, Jesuit High School, Portland, Oregon,
T: Jennifer Cournia
- ET045 An Investigation of Gas Diffusion Layers and Their Effects on the Performance of PEM Fuel Cells**
Vijay S. Edupuganti, 16, Junior, Oregon Episcopal School, Portland, Oregon,
T: Peter Langley
- PH050 Rapid Optimization of Quantum Dot Solar Cells Using a Novel Rating System Integrating Quantum Mechanical Modeling and Solar Absorption Algorithm**
Valerie S Ding, 16, Sophomore, Catlin Gabel School, Portland, Oregon,
T: Andrew Merrill

PENNSYLVANIA

Harrisburg, USPA01, Capital Area Science and Engineering Fair

- BI016 Waste to Watts: Examining the Efficiencies of Mediator and Mediator-less Microbial Fuel Cells**

Patrick Austin Myers, 17, Junior, Carlisle High School, Carlisle, Pennsylvania,
T: Robert Lee Barrick

- CB017 Discovering a Metabolic Weakness in Melanoma through Targeted Gene Inhibition**

Hannah Constance Wastyk, 17, Senior, Palmyra Area High School, Palmyra,
Pennsylvania, T: Amy Mateer

- ET017 Wind Energy: An Economical Alternative**

Bradley Derek Sloop, 18, Senior, Susquenita High School, Duncannon,
Pennsylvania, T: Kathy Becker

Lancaster, USPA02, North Museum Science and Engineering Fair

- EE066 A Helping Hand: Engineering and Programming of a Robotic Hand**

Matthew Anthony Campagna, 16, Sophomore, Lancaster Catholic High School,
Lancaster, Pennsylvania, T: Vasantha Kittappa

- EN055 Rapid Production of Environmentally Sustainable Material from Local Waste and Mushroom Mycelia**

Divya Gourish Sirdeshpande, 17, Junior, Hempfield High School, Landisville,
Pennsylvania, T: Neal Kuhn

Philadelphia, USPA03, Delaware Valley Science Fairs

- AS050 Evaluating the Behavioral and Developmental Effects of Bisphenol A (BPA) and Bisphenol S (BPS) on the Model Invertebrate *C. elegans***

Bansri Manesh Patel, 16, Junior, Sussex Technical High School, Georgetown,
Delaware, T: Michele Thomas

- AS054 Do Chickens Have a Preference on the Color of Food They Eat?**

Lauren Ashley Harper, 15, Freshman, Marine Academy of Technology and
Environmental Science, Manahawkin, New Jersey, T: John Wnek

- CS061 The Virtual Swarm: Which Insect's Food-finding Method Is Most Effective?**

Kerri Diane Diamond, 14, Freshman, Souderton Area High School, Souderton,
Pennsylvania, T: Karen Frazier

- EM053 "Black Gold" Manure to Methane**

Mikayla Marie Ockels, 14, Freshman, Sussex Central High School, Georgetown,
Delaware, T: Ryan Revel

- EN062 Enhancing Quantum Dot Solar Cells with Metal Nanoparticles**

Alexander Jordan McBride, 18, Senior, McBride Homeschool, Medford, New Jersey,
T: Carolyn McBride

- ET051 Capturing the Spectrum: A Novel Method for the Engineering of the Light Harvesting within the Nanostructured Electrodes of a Dye Sensitized Solar Cell**

Devin Paul Cody, 18, Senior, Germantown Academy, Fort Washington,
Pennsylvania, T: Sue Johnston

- ET052 Maximizing the Energy Efficiency of Biodiesel Processing: The Effect of the Angular Velocity of Agitation of Methoxide and Biodiesel on the Energy Consumption of a Biodiesel Processor, and an Original Method of Zero-Energy Dry Washing on the Purity of the Product**

Meredith Rose Barr, 17, Junior, Cheltenham High School, Wyncote, Pennsylvania,
T: Rebecca Sheridan

- MA053 Analysis of Novel Clustering Algorithms for Gene Expression Patterns**

Shashwat Kishore, 16, Sophomore, Unionville High School, Kennett Square,
Pennsylvania, T: Sandra Litvin

- ME093 Aberrant Methylation of the RASSF1A Gene as a Biomarker for the Detection of Hepatocellular Carcinoma**

Lijia Xie, 17, Senior, North Penn High School, Lansdale, Pennsylvania,
T: Melody Leithold

- ME094 Machine Learning Using Genomic Features Improves Gleason-Based Prostate Cancer Prognosis**

Joshua Ruohua Li, 15, Sophomore, Upper Dublin High School, Fort Washington,
Pennsylvania, T: Dawn Pav

- PH058 Analysis of Drag Reduction from Air Ionization due to the Corona Discharge Effect**

Matthew A. Ho, 16, Junior, High Technology High School, Lincroft, New Jersey,
T: Michael Roche

- PH315 Applying Fundamental Properties of Electrodynamics to Develop a Simulation Model for Vibrating Sample Magnetometers (VSM)**

Martin Kurian, 16, Junior; Edward Quan Bao, 16, Junior
Charter School of Wilmington, Wilmington, Delaware, T: Rose Lounsbury

- PS038 Responses of *Triticum aestivum* (Winter Wheat) to Elevated CO₂ Concentrations**

Jessica Chen Xu, 15, Sophomore, High Technology High School, Lincroft,
New Jersey, T: Michael Roche

Pittsburgh, USPA04, Pittsburgh Regional Science and Engineering Fair

- EE080 Rocket Motor Test System 7000**

Ryan Russell Maurer, 18, Senior, Frazier High School, Perryopolis, Pennsylvania,
T: Yolanda Pato

- MA057 Superadditivity and Subadditivity in Fair Division**

Rishi Suvir Mirchandani, 16, Sophomore, Fox Chapel Area High School, Pittsburgh,
Pennsylvania, T: Gregory Schubert

- ME099 Dictyostelium Discoideum- Novel Diagnostic Tool for Lung Cancer using VOCs**

Anishaa Sivakumar, 14, Freshman, Franklin Regional Senior High School,
Murrysville, Pennsylvania, T: Richard Sunny

Reading, USPA05, Reading and Berks Science and Engineering Fair

- EN035 What Is the Best Way to Slow Down the Effects of a Collapsing Building?**

Catharine Rose Scoboria, 17, Junior, Berks Catholic High School, Reading,
Pennsylvania, T: Debra Hannahoe

- MI025 Comparing Antibiotic Resistance in Traditional and Organic Dairy Cattle Using Disc Diffusion Susceptibility Testing**

Stephanie Theresa Keller, 18, Senior, Conrad Weiser Area High School, Robesonia,
Pennsylvania, T: John Siefert

- MI026 Finding the Quorum in *P. fluorescens* that Alters Gene Expression**

Megan Elizabeth Campbell, 18, Senior, Conrad Weiser Area High School, Robesonia,
Pennsylvania, T: John Siefert

York, USPA06, York County Science and Engineering Fair

- CB020 Effect of Akt 1/2 Inhibitor and Ex-527 on Transcription of Bim and Catalase in Human Breast Cancer Cells**

Viktor Christian Polites, 18, Senior, Central York High School, York, Pennsylvania,
T: Dianna Guise

- ET018 Algal Biofuels, Phase Four: Engineering a Microbial Fuel Cell for Simultaneous Production of Electricity, Algal Oil, and Ethanol as well as Analyzing the Effectiveness of a Solvent Recovery Process for Optimum Lipid Extraction**

Yanqi Chen, 18, Senior, Central York High School, York, Pennsylvania,
T: Dianna Guise

- ME031 Determining the Anticoagulant Effect of *Zingiber officinale***

Nicole Taylor Daniell, 18, Senior, Dallastown Area High School, Dallastown,
Pennsylvania, T: Mark Ilyes

RHODE ISLAND

Warwick, USRI50, Rhode Island Science and Engineering Fair

- CB028 Intercellular Signaling Molecules Involved in the Human Neutrophilic Response to Fungal Beta-Glucan**

Wei Li, 15, Sophomore, East Greenwich High School, East Greenwich, Rhode Island,
T: Nicholas Rath

- CS041 What's Your Problem? Revealing Open Problems in Scientific Research with Machine Learning**

Cassidy Meier Laidlaw, 16, Junior, Barrington High School, Barrington,
Rhode Island, T: Diana Siliezar-Shields

SOUTH CAROLINA

Aiken, USSC01, *Central Savannah River Area Science and Engineering Fair*

- ME054 Which Substance Is the Most Effective at Inhibiting the Growth of *Escherichia coli*: An Antibiotic Magazine or an Organic Compound?**

Rebecca Hope Caughman, 17, Senior, Batesburg-Leesville High School, Batesburg-Leesville, South Carolina, T: Catherine W. Watson

Beaufort, USSC02, *Sea Island Regional Science Fair*

- AS055 The Effects of Simulated Microgravity on *Pogonomyrmex occidentalis* Activity**

Ashley Maye Hamlin, 15, Freshman, Hilton Head Island High School, Hilton Head Island, South Carolina, T: Ryan Stantz

- EE082 Using Resonant Inductive Coupling to Transfer Electrical Power Wirelessly for Midrange Applications**

Christian James Steinmetz, 17, Junior, Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: Tina Webb-Browning

- EM052 The Replacement of Fishmeal with Formulated Sustainable Meals and Its Effect on the Growth of *Litopenaeus vannamei***

Olivia Kaye Joslin, 17, Junior, Hilton Head Island High School, Hilton Head Island, South Carolina, T: Nora Kathryn Weatherhead

- ET059 Designing a New Type of Sail**

William Lowell Monts, 15, Freshman, Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: Tina Webb-Browning

- EV054 Negative Impact of Stormwater Runoff on Osmoregulation in Adult *Palaemonetes vulgaris* and Adult and Juvenile *Litopenaeus setiferus***

Bridgette Nicole Noonan, 18, Senior, Hilton Head Island High School, Hilton Head Island, South Carolina, T: Kathy Weatherhead

- ME106 Preventing the Growth of *Aeromonas sobria* with Ciprofloxacin, Bacitracin, and Over-the-Counter Antiseptics**

Julia Carol Nahman, 17, Junior, Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: Tina Webb-Browning

Charleston, USSC03, *Low Country Science Fair*

- BE045 An Examination of Neuropsychological Evaluations for Selective Attention Impairment Detection in Mild Traumatic Brain Injury Patients**

Rachel Catherine Polcyn, 17, Senior, Academic Magnet High School, North Charleston, South Carolina, T: Mini Narayanan

- ME082 The Effects of FCCP on Calcium Channels in the Heart**

Ana Nicole Lanier, 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*

- AS052 The Correlation Between Resource Usage and Regeneration and Population Size Using Computational Modeling**

Gregory Vitalyevich Rassolov, 16, Junior, Spring Valley High School, Columbia, South Carolina, T: Michelle Spigner

- EE322 Advantages of a Bent Arm Trebuchet vs. a Straight Arm Trebuchet**

Elishua P. Lo, 17, Senior; Sean Christopher Kruzner, 16, Sophomore
Eric Steven Johnson, 18, Senior

Chapin High School, Chapin, South Carolina, T: Martin Cwiakala

- ET038 The Efficiency of Biodiesel from Different Sources of Oil**

Irraj Iftikhar, 17, Senior, Dutch Fork High School, Irmo, South Carolina, T: Langdon Warner

Spartanburg, USSC07, *Piedmont South Carolina Region III Science Fair*

- MI306 Examining the Antibacterial Properties of Garlic Oil, Oregano Oil, and Grapefruit Seed Oil Extracts on Microorganisms Significant to Women's Health**

Abigail Tillman, 18, Senior; Jesseca Morgan Kusher, 16, Sophomore
Spartanburg Day School, Spartanburg, South Carolina, T: Hatice Neval Erturk

SOUTH DAKOTA

Aberdeen, USSD01, *Northern South Dakota Science and Math Fair*

- AS024 How Different Pesticides Affect the Growth and Development of Mealworms?**

Elizabeth Ann Maack, 17, Junior, Central High School, Aberdeen, South Dakota, T: Jan Palmer

- CB306 The Viability of Culturing Cervical Cancer Cells**

Kalen Nicole Frericks, 16, Junior; Kristie Nicole Bade, 17, Junior
Northwestern School, Mellette, South Dakota, T: Denise Mary Clemens

- CH036 The Heating and Rapid Cooling of Triboluminescent Zinc Sulfide**

Briston James Bruce, 18, Senior, Aberdeen Central High School, Aberdeen, South Dakota, T: Charles Hermansen

Brookings, USSD02, *Eastern South Dakota Science and Engineering Fair*

- AS020 The Science of Anxiety: The Effects of Light/Dark Preference on Simulated Predatory Evasion in *Danio rerio***

Benjamin Michael Hummel, 16, Sophomore, Florence High School #14-1, Florence, South Dakota, T: James Leonard Chilson

- BE019 The At-Risk Maturing Brain: Effects of Stress Paradigms on Mood, Memory and Cognition in Adolescents and the Role of the Prefrontal Cortex**

Zarin Ibnat Rahman, 16, Junior, Brookings High School, Brookings, South Dakota, T: Julie Steen

- ET026 The Effects of Crystal Molding on Piezoelectric Power Generation**

Seth Stephen Petra, 17, Senior, Elk Point-Jefferson High School, Elk Point, South Dakota, T: Melanie Norris

- MA022 15 Pennies**

Mikaela Ann Fischer, 16, Junior, Waverly/South Shore High School, Waverly, South Dakota, T: Rodney Palo

Rapid City, USSD03, *High Plains Regional Science and Engineering Fair*

- EE069 The Effect of an Einzelnelectron Gun on Maximum Neutron Rates**

Conrad Jackson Farnsworth, 18, Senior, Newcastle High School, Newcastle, Wyoming, T: Doug Scribner

Mitchell, USSD04, *South Central South Dakota Science and Engineering Fair*

- EE062 HardHit: A Motor Vehicle Concussion Force Impact Detection System**

Justin Nicholas Krell, 16, Sophomore, Plankinton High School, Plankinton, South Dakota, T: Bob Melvin Sprang

- EE314 Developing a Heat Exchanger between a Dryer and a Geothermal System**

Jacob Kyle Reeves, 16, Junior; Brant Joseph Blaha, 17, Junior
Avon High School, Avon, South Dakota, T: Paul Robert Kuhlman

- EM313 Improving the Efficiency of a Hand Pump Bottle**

Ariana Laine Oorlog, 17, Junior; Chesney De Nagel, 17, Junior
Avon High School, Avon, South Dakota, T: Paul Robert Kuhlman

TENNESSEE

Chattanooga, USTN01, *Chattanooga Regional Science and Engineering Fair*

- EM027 A Filter Today Keeps Pollutants Away: A Study of Nanofiber Based Stormwater Filtration**

Darby Kathryn Schumacher, 17, Junior, Baylor School, Chattanooga, Tennessee, T: Dawn Richards

- MI035 Grapefruit Seed Extract vs. Protozoa: Stentor and Paramecium Multimicronucleatum**

Nicole Lynn Sims, 18, Senior, Sale Creek High School, Sale Creek, Tennessee, T: Thomas Allan Gardner

Cookeville, USTN02, *Cumberland Plateau Regional Science and Engineering Fair*

- EE059 Wind Power**

Kinsey Brooke Potter, 14, Freshman, Jackson County High School, Gainesboro, Tennessee, T: Sally Rodgers

- EN048 Fantastic Corn Plastic: The Effect of Various Additive Materials on the Tensile Strength of Corn Starch Bioplastic**

Kurt Robert Dunham, 17, Junior, Cookeville High School, Cookeville, Tennessee, T: Jennifer Williams

Jackson, *USTN03, West Tennessee Regional Science and Engineering Fair*

- EE029 The Influence of Wing Design and Aspect Ratio on the Lift and Drag of an Aircraft**
Charles William Freeman, 17, Freshman, Gleason High School, Gleason, Tennessee,
T: Albert Glen Collins

Knoxville, *USTN04, Southern Appalachian Science and Engineering Fair*

- EM315 Filamentous Fungi Cultivation on "Moonshine" Distillate Residues and Thin Stillage to Produce Reusable Water and a High-Value Fish Food Co-Product**
John Edward Hale, 17, Senior; Sydney Veronica Burchell, 16, Sophomore
Morristown Hamblen High School East, Morristown, Tennessee,
T: Robert Edward Gant

- EN312 Next Generation Nuclear Fuel Constituent Reliability Assessment: Applying Analytical Stress Modeling to TRISO Particles**
Sirui Ma, 17, Senior; Jason Jiawei Xiong, 17, Senior
Oak Ridge High School, Oak Ridge, Tennessee, T: Jessica Ann Kile Williams

Memphis, *USTN05, Memphis-Shelby County Science and Engineering Fair*

- EM036 Purifying Bath Water for Iterative Use**
Vijaya Raval Dasari, 15, Sophomore, White Station High School, Memphis, Tennessee, T: Crystal Davis

Clarksville, *USTN06, Middle Tennessee Science and Engineering Fair*

- EE060 Apparatus and Analysis Techniques for Miniature Pulsed Plasma Sources**
Adam Joseph Bowman, 17, Senior, Montgomery Bell Academy, Nashville, Tennessee, T: James E. Dickens
- MI042 The Effect of Benzoquinone on the Growth of *Bacillus subtilis***
Jacob McKinney Smith, 15, Sophomore, Cascade High School, Wartrace, Tennessee,
T: Elizabeth Buchanan

TEXAS

Dallas, *USTX01, Beal Bank Dallas Regional Science and Engineering Fair*

- BE015 Developing an Android Tablet Application for the Diagnosis of Alzheimer's Disease**
Nazia Ejaz Ahmed, 15, Sophomore, Williams High School, Plano, Texas,
T: Vashka Desai
- BI010 Immobilization of Enzymes via Concentric Nafion/Cellulase Electrospun Fibers for Bioethanol Production**
Alicia Danielle D'Souza, 15, Sophomore, Clark High School, Plano, Texas,
T: Cathy Bambenek
- CB006 Identifying Therapeutic Targets for Frontotemporal Dementia**
Phillip Yu, 15, Sophomore, Shepton High School, Plano, Texas, T: Deanna Shea
- CH303 Preparation of a Self-Propelled Nanomotor**
Michael Nguyen Trinh, 17, Junior, Plano East Senior High School, Plano, Texas,
T: Julie Baker
- CS017 Breaking the Silence**
Elisabeth Anne Ashmore, 17, Junior, Plano East Senior High School, Plano, Texas,
T: Julie Baker
- EN017 Little Needles! The Fabrication of Gold Biocompatible Microneedles with Dissolvable Nano-Scale Tips for the Treatment and Diagnosis of Malignant Cells**
Michelle Songin Park, 16, Sophomore, R.L. Turner High School, Carrollton, Texas,
T: Cliff Moran
- EV031 Home-Based Rapid Arsenic Water Test using Nanotechnology**
Thabit Farrukh Pulak, 17, Junior, Richardson High School, Richardson, Texas,
T: Amy Hammer
- MA302 Simulation of Protein Folding using Monte Carlo Methods in a Triangular Lattice**
Niranjan Balachandar, 16, Sophomore; Nirali Kunjan Thakor, 15, Freshman
Shepton High School, Plano, Texas, T: Deanna Shea

El Paso, *USTX02, Sun Country Science Fair*

- EE011 High Tech, Low Cost: Cell Culture Incubator**
Amelia Nicole Hidalgo, 18, Senior, Loretto Academy, El Paso, Texas,
T: Hector Sanchez
- EM018 The Future of CH₃CH₂OH: The Re-Engineering of E85's Chemical Composition**
Vidal Castaneda, 17, Senior, Americas High School, El Paso, Texas,
T: Liliana Ramirez
- PH010 The Vertical vs. Horizontal Wind Turbine**
Joshua Ray Eudave, 15, Freshman, Eastlake High School, El Paso, Texas,
T: Frenda Serda
- PS311 Electromagnetic Seed Germination**
Carolina Vanessa Solis, 18, Senior; Victor Andres Solis, 17, Junior
Americas High School, El Paso, Texas, T: Craig Peters and Elizabeth Espinosa
- Fort Worth, *USTX03, Fort Worth Regional Science and Engineering Fair*
- BI019 The Effects of Familial Hypertrophic Cardiomyopathy Mutations on the Potential Binding Sites between Myosin and Myosin Binding Protein-C: A Computational Method**
Jennifer Julia Zhang, 18, Senior, Texas Academy of Mathematics and Science, Denton, Texas, T: Douglas D. Root
- CH015 Synthesizing Light Harvesting Complexes for Hydrogen Fuel Production**
Stacy M. Ho, 17, Junior, Texas Academy of Mathematics and Science, Denton, Texas, T: Randolph Thummel
- CS011 EyeTrack: Improving the Lives of Paralysis Victims by Using Webcam Eye Tracking**
Noah David Simpson, 15, Freshman, Harmony School of Innovation-Fort Worth, Fort Worth, Texas, T: Nicole Turner
- EN016 Creating a Radiating Structure for Breast Cancer Self-Detection Using Microwaves**
Sheila S. Chandahas, 18, Senior, Texas Academy of Mathematics and Science, Denton, Texas, T: Kamran Kiasaleh
- ME018 Somatostatin Type 3 Receptors Mediate Protective Effects Against Seizures**
Ari Shi Gao, 18, Senior, Texas Academy of Mathematics and Science, Denton, Texas, T: Jannon L. Fuchs
- MI010 Mutant of *E. coli* vs. Wild Type *E. coli* in Transformation**
Jennifer Amarachukwu Metu, 15, Sophomore, Harmony Science Academy, Euless, Texas, T: Valerie Miller
- Brownsville, *USTX04, Rio Grande Valley Regional Science and Engineering Fair*
- BI009 Copper Chelation as a Possible Atherosclerosis Treatment**
Mashad Arora, 15, Sophomore, Science Academy of South Texas, Mercedes, Texas,
T: Saraswathy Nair
- EM320 Cost Efficient Deep Well Pump**
Amanda Marie Zuniga, 17, Senior; Mario Santiago Vilanova, 18, Senior
Weslaco East High School, Weslaco, Texas, T: Thomas James Padilla
- EN008 Monitoring Axonal Growth through *Lymnaea stagnalis* in the Presence of an Electrostatic Field**
Marissa Leeann Gorena, 16, Junior, Weslaco East High School, Weslaco, Texas,
T: Arnulfo Cruz
- Houston, *USTX05, Science Engineering Fair of Houston*
- BE011 Aiding Dementia Patients with Daily Tasks using RFID**
Divya Koyyalagunta, 17, Junior, Clear Lake High School, Houston, Texas,
T: Beth Marshall
- BE012 Investigating the Universality of Irlen Method**
Jheri' Ginae Richards, 14, Freshman, The Academy of Science and Technology, The Woodlands, Texas, T: Debra Pai
- BI303 Entropies of Antioxidants**
Amber Chen, 16, Junior; Nikhil Akshay Balasubramanyam, 16, Junior
The Kinkaid School, Houston, Texas, T: Clay Anderson
- CS016 Train the Artificial Brain: Diagnosis of Brain Tumors using Neural Networks**
Roma Vivek Pradhan, 16, Junior, Friendswood High School, Friendswood, Texas,
T: Rebecca Clark

- EM008 Antimicrobial and Heavy Metal Sequestration Capacities of Graphene Polymer Nanocomposite Films**
Manvitha Venkatasai Katta, 17, Senior, Michael E. DeBaKey High School for Health Professions, Houston, Texas, T: Barbara Williams
- EN014 Feeling Fuzzy? II**
Samantha Nicole Coday, 18, Senior, The Academy of Science and Technology, The Woodlands, Texas, T: Debra Pai
- ET010 Fuel for Thought: The Lubricity of Ultra Low Sulphur Diesel Fuel**
Karan Jerath, 16, Sophomore, Friendswood High School, Friendswood, Texas, T: Rebecca Clark
- ET011 Efficiencies of Sun Ray Capture**
Christine M. Castagna, 14, Freshman, Academy of Science and Technology, The Woodlands, Texas, T: Debra Pai
- ME016 Programmable Multiplexed Immunosensor for Rapid Cardiac Diagnostics**
Andy Tran, 18, Senior, Michael E. DeBaKey High School for Health Professions, Houston, Texas, T: Barbara Williams
- MI054 Bridging the Gap between *in vitro* and *in vivo***
Kevin James Cyr, 18, Senior, Clear Lake High School, Houston, Texas, T: Ammon Pickett
- PH015 Accessing Real World Data for Rendering**
Roberto G. Dailey, 17, Junior, The Woodlands College Park High School, The Woodlands, Texas, T: Larry Walker
Kilgore, USTX06, East Texas Regional Science Fair
- AS025 Cryoprotection: A 4 Year Study**
Kyle Davis Ramsey, 15, Sophomore, Navasota High School, Navasota, Texas, T: Kristi Marie Ramsey
Laredo, USTX07, United Independent School District Regional Science Fair
- EM019 The Effects of Carbon Dioxide on Aeroponics Plants**
Julian Benjamin Quesada, 17, Junior, John B. Alexander High School, Laredo, Texas, T: Maria Esther Rodriguez
Lubbock, USTX08, South Plains Regional Science and Engineering Fair
- EV019 Investigation of Estrogenic Endocrine Disruptors**
Nickolas Aubrey Hines, 17, Junior, Christ the King Cathedral School, Lubbock, Texas, T: Alicea Chaloupka
- MA024 Moving at the Speed of Light, Part 3: Partial Molar Volumes**
Patrick Pachiano, 17, Senior, Christ The King Cathedral School, Lubbock, Texas, T: Alicea Chaloupka
Odessa, USTX09, Permian Basin Regional Science Fair
- BI050 Coffee: The Cream and Sugar of Old Age?**
Jeannette Sanchez, 17, Senior, Andrews High School, Andrews, Texas, T: Cindy Tochtermann
- ME065 Cold Comfort: No Pain No Gain**
Robert Allen Morgette, 17, Junior, Andrews High School, Andrews, Texas, T: Vickie Gardner
San Antonio, USTX11, Alamo Regional Science and Engineering Fair
- AS012 The Effect of Differing Amounts of Caffeine on the Metamorphosis Rate of Darkling Beetle Larvae**
Sarah Ana Henriquez, 14, Freshman, Atonement Academy, San Antonio, Texas, T: Michael James Vallor
- BI012 Investigation of Aromatic Endoperoxides for O₂ Delivery to Promote Wound Healing**
William Gregory Lawler, 17, Senior, Northside Health Careers High School, San Antonio, Texas, T: Daniel Bump
- EA003 Increasing Casket Decomposition Rates, Year Two**
Lauren Rymer Mandaville, 17, Senior, Seguin High School, Seguin, Texas, T: Kimberly Shupe
- EM009 Reduce, Reuse, Recycle: The Effects of Nitrate Phytoremediation in Contaminated Freshwater Aquaculture Wastewater Using *Triticum aestivum*, Year Two**
Valerie Rochel Gamayot Gamao, 18, Senior, James Madison High School, San Antonio, Texas, T: Joshua Ian Anderson

- ME020 Seeking a Cure: Natural Estrogen Receptor Beta in the Treatment of Therapy Resistant Breast Cancer Cells**
Jocelyn Elizabeth Hernandez, 16, Sophomore, Robert E. Lee High School, San Antonio, Texas, T: Lane Smiley
- PH018 Marimba a la Mode**
Sara Elise Dibrell, 17, Junior, Seguin High School, Seguin, Texas, T: Kimberly Shupe
- PH303 A Biophysical Characterization of DNA: Can Salt Change the Shape of DNA?**
Aysha Kinjo Demeler, 17, Junior; Blanca Isabella Hernandez Uribe, 16, Sophomore Health Careers High School, San Antonio, Texas, T: Daniel Bump
Waco, USTX12, Central Texas Science and Engineering Fair
- EE020 A More Energy Efficient Crutch Design**
Benjamin Thomas Tow, 18, Senior, C.H. Yoe High School, Cameron, Texas, T: Toni Lafferty
- ME019 Click It and Save It: Colorimetric Analysis of Retinoblastoma-Linked Leukocoria in Digital Photographs**
Linda Ren, 17, Junior, Midway High School, Hewitt, Texas, T: Kathy McMillan
Austin, USTX13, Austin Energy Regional Science Festival
- BI304 Application of T4 Bacteriophages in Real-Life Scenarios**
Casey Estelle Hicks, 18, Senior; Leah Grace Powers, 18, Senior Vista Ridge High School, Cedar Park, Texas, T: Rhonda Lynn Christman
- CB304 On the Connectivity of Sequential Formal Languages with Applications to Genomic Sequences**
Jessica Minya Wang, 16, Junior; Lily Xu, 15, Sophomore, Liberal Arts and Science Academy, Austin, Texas, T: Amy Moore
Susan Qi Xu, 15, Sophomore, Kingwood High School, Kingwood, Texas, T: David Snyder
- CS032 3D Scanner**
London Reeve Bolsius, 15, Freshman, Round Rock High School, Round Rock, Texas, T: LaWanda Len London
- EN031 Natural Gas Separation using Thermally Rearranged Polymers: Characterizing Morphological Changes of HAB-6FDA Polyimide Structures**
Advaith Anand, 15, Junior, Liberal Arts and Science Academy, Austin, Texas, T: Amy Moore
- MI037 Bacterial Beta-galactosidase Enzyme-Prodrug Therapy: A New Approach Against Colon Cancer**
Vanna Nga Hovanky, 17, Junior, James Bowie High School, Austin, Texas, T: Ann Marie Hutcheson
Laredo, USTX14, Laredo Independent School District Science Fair
- BE306 Mouse Release: A Fundamental Analysis of *Mus musculus* as a Model for Advanced Mammalian Altruistic Capacity**
Ricardo Alejandro Perez, 18, Senior;
Alyssa Benavides, 18, Senior
David Richard Barrera, 18, Senior
Joseph W. Nixon High School, Laredo, Texas, T: Eduardo Ernesto Lopez
San Antonio, USTX50, ExxonMobil Texas Science and Engineering Fair
- CB062 Altered microRNA Expression in Colon Cancer Progression**
Pooja N. Prasad, 16, Junior, Bellaire High School, Bellaire, Texas, T: Anna Loonam
- EM046 Tea for a Clean Sea: The Use of Common Porous Materials to Filter Polluted Water**
Sugirtha Panneerselvam, 17, Junior, Plano East Senior High School, Plano, Texas, T: Julie Baker
- EN317 Efficient Algae-Based Life Support for Long Duration Spaceflight**
Alexander Raymond Crisara, 18, Senior
Alexander Jahan Rabii, 16, Junior
L.C. Anderson High School, Austin, Texas, T: Marry Eastberg
- ET055 A Novel Single-Compartment Concentration Cell Driven by Natural Evaporation for Green Energy Harvesting**
Andrew Yang, 16, Junior, Northside Health Careers High School, San Antonio, Texas, T: Daniel Bump

- MA055 Q-Distribution Normality on Bounded Bases**
Dylan Richard Airey, 17, Senior, Texas Academy of Mathematics and Science, Denton, Texas, T: William Mance
- ME095 Novel Nanoparticles for Drug Delivery**
Kishore Balasubramanian, 16, Junior, Klein Oak High School, Spring, Texas, T: Allan Parent
- PH055 Problem Solving with Chaos**
Dominic Yurk, 16, Senior, Robert L. Paschal High School, Fort Worth, Texas, T: Wendy Yanney
- PS042 Analysis of CRT1 Protein Family Dimerization in Plant Immune Responses**
Chamath Sameera Dharmasiri, 15, Junior, Wimberley High School, Wimberley, Texas, T: Sunethra Dharmasiri
- UTAH**
Layton, USUT01, North Davis Area Science and Engineering Fair
- AS026 Optimal Equine Balance: Application of Biophysics to Assess and Reduce Equine Injury**
Erika Nicole Mueller, 15, Sophomore, Clearfield High School, Clearfield, Utah, T: Bruce Staley
- BE030 Eyewitness Testimony**
Victoria Rose Phillips, 15, Sophomore, Davis High School, Kaysville, Utah, T: Pamela Coburn
- CS308 Household Remedies to Wi-fi Signal Problems**
Parker Logan Murray, 15, Sophomore; Davis Robert Johnson, 16, Sophomore Woods Cross High School, Wood Cross, Utah, T: Janette Duffin
- ET313 The Passive Acquisition of a Viable Source of Bio-Electricity from Wastewater with Applications for Hydrogen Generation: Phase II**
Jed Donald Grow, 17, Senior
Andrew Quinn Ross, 18, Senior
Clearfield Highschool, Clearfield, Utah, T: Bruce Staley
- Cedar City, USUT02, Utah Science and Engineering Fair*
- AS059 The Protein Pro**
Logan Chase Carter, 17, Junior, SUU Success Academy, Cedar City, Utah, T: Ben Kaufman
- CH044 Batteries ARE Included**
Samantha Olsen, 15, Sophomore, Manti High School, Manti, Utah, T: Jared Eliason
- EE045 Multi-Dimensional Touchless Computer Interface**
Taylor James Boardman, 16, Sophomore, Delta High School, Delta, Utah, T: Austin Day
- EN066 Anthocyanins and Their Effects on Dye-Sensitized Solar Cells**
Taylor Aaron Hobbs, 17, Junior, Success Academy, Cedar City, Utah, T: Charmain Walker Brammer
- Ogden, USUT03, Weber Area Science and Engineering Fair*
- AS021 The Profitability of BMR Corn Silage vs. Conventional Corn Silage**
Bennett Lee Gibson, 15, Freshman, Fremont High School, Ogden, Utah, T: Bonnie Meaders
- BE020 The Impact of Online Pedagogical Strategies on Student Achievement**
Krissa Rose Woodring, 15, Freshman, Snowcrest Junior High School, Eden, Utah, T: Carolyn Robertson
- EA010 Effects of Increased CO₂ and Pollution Based Particles on Glacier Ice Melt**
Kayla Jane Thompson, 14, Freshman, Bonneville High School, Washington Terrace, Utah, T: Matt Patterson
- ET021 Effects of an Outer Grid on Inertial Electrostatic Confinement Fusion**
Jonathan Troy Morrell, 17, Senior, Fremont High School, Plain City, Utah, T: Joel Rhoades
- MA023 The Study and Experimentation of Cryptanalysis, Cryptography in Finding the Most Effective Means of Transmitting Encrypted Messages**
Joseph Daniel Wells, 18, Senior, Weber High School, Pleasant View, Utah, T: Lareen Radle

- MI018 Cu Later Bacteria**
Brandon Healey, 16, Sophomore, Weber High School, Pleasant View, Utah, T: Lareen Randle
- Provo, USUT04, Central Utah Science and Engineering Fair*
- BE052 Dynamic Face Processing in Autism Spectrum Disorders**
Aspen Kennedy Hopkins, 17, Senior, Utah County Academy of Sciences, Orem, Utah, T: Angel Busath
- CB036 Mutagenic Effects of Inorganic Particulate Matter on Raji and HepG2 Cell Lines Exposed to Ultraviolet Radiation**
Michael Xiao, 15, Freshman, Karl G. Maeser Preparatory Academy, Lindon, Utah, T: Nathan Marshall
- CH045 Lead Leachability from the Matrix of Crystal Glass**
Brigham Louis Pope, 18, Senior, Provo High School, Provo, Utah, T: Christie Nozawa
- EE313 Counter IED Communication Using Near Field Magnetic Induction**
Hayden Douglas Dobyns, 18, Senior; Brennan Kevin Burnett, 18, Senior Pleasant Grove High School, Pleasant Grove, Utah, T: David Van Dijk
- ME112 Topical Acidified Nitrite: Potential Treatment for Peripheral Artery Disease**
Christian Spencer Minton, 16, Junior, Timpview High School, Provo, Utah, T: Alan Myrup
- Salt Lake City, USUT05, Salt Lake Valley Science and Engineering Fair*
- BI031 Investigation of Different Pretreatments for Bioethanol from Grass Clippings**
Bovey Yang Rao, 16, Sophomore, Hillcrest High School, Midvale, Utah, T: Jami Smith
- CB037 Genetic Cause of Partial Albinism in Southern Right Whales (*Eubalaena australis*)**
Guy Darrell Eroh, 15, Sophomore, Academy for Math, Engineering and Science, Salt Lake City, Utah, T: Holliann McDougal
- CH040 Novel Screening of Biosorbent for Preconcentration and Analysis of Heavy Metals in Water**
Brandon B. Cui, 15, Sophomore, Hillcrest High School, Midvale, Utah, T: Jami Smith
- EE046 Germitron: Robotic Assessment of Seed Vitality**
Ema Linnea Parker, 15, Freshman, West High School, Salt Lake City, Utah, T: Maren Hansen
- MA035 Recovering the Effective Thermal Conductivity of SIMBA Sea Ice with a Composite Material Model**
Daniel Wenchu Liu, 17, Junior, West High School, Salt Lake City, Utah, T: Maren Hansen
- Logan, USUT06, Bridgerland Science and Engineering Fair*
- PH016 Electromagnetic Induction Sensor**
Harshit Singh, 17, Junior, InTech Collegiate High School, North Logan, Utah, T: Stephanie Michiko Kawamura
- PS304 Growth of *Triticum aestivum* in Response to ZnO Nanoparticles in Soil**
Jean-Luc Christopher Watson, 17, Senior
Tommy Fang, 17, Senior
Logan High School, Logan, Utah, T: Brent McMillan
- Ogden, USUT50, Harold W. & Helen M. Ritchey Science and Engineering Fair of Utah*
- BE029 When One Cup of Water Is Less than One Cup of Water: At What Age a Child's Cognitive Development Includes the Ability to Conserve Volume and Numbers**
Bridget Forsha Dorsey, 15, Freshman, Mount Ogden Junior High School, Ogden, Utah, T: Macie Kathleen Wolfe
- EN042 Endocytosis of Orthopedic Wear Debris by Osteoblasts: Particle Size-, Treatment Time-, and Uptake Pathway-Dependencies**
Ian A. Hardy, 18, Senior, Northern Utah Academy for Math, Engineering & Science, Layton, Utah, T: Karl Medinger
- EV029 Percolation vs. Homogenization: The Effects of Phosphate Amendment on Lead Contaminated Soil**
Annika Daniels, 15, Freshman, Ogden Senior High School, Ogden, Utah, T: Macie Kathleen Wolfe

- ME048 Isolating the Huntingtin Protein**
Emma Fine, 15, Freshman, DaVinci Academy, South Ogden, Utah, T: Deb Neal

VERMONT

Northfield, USVT50, Vermont State Science and Mathematics Fair

- AS313 Are Fingerprints Inherited?**
Rachel Erin Meagher, 17, Senior; Jaime Elizabeth Nolan, 17, Senior
Windsor High School, Windsor, Vermont, T: Jennifer Townsend
- BE054 Learning Comprehension through Auditory and Visual Presentation**
Jane Irene Merrick, 15, Sophomore, South Burlington High School,
South Burlington, Vermont, T: Curtis Belton
- EV056 In Search of Fresh Water: Exploring Various Methods of Desalination for Emergency Use**
Abigail H. Millard, 15, Sophomore, Windsor High School, Windsor, Vermont,
T: Jennifer Townsend

VIRGINIA

Arlington, USVA01, Northern Virginia Science and Engineering Fair

- EE312 High Frequency Resonant Transformer**
Henry William Love, 17, Junior; Julian Czernia Thomassie, 16, Junior
Yorktown High School, Arlington, Virginia, T: Aaron Schuetz
- MI043 Mapping Phosphorylation Sites Necessary for Large T-antigen Protein Expression**
Biruktawit Mesfin Assefa, 17, Junior, H-B Woodlawn Secondary Program,
Arlington, Virginia, T: Mark Dodge

Charlottesville, USVA02, Virginia Piedmont Regional Science Fair

- MA038 A Novel Approach to the Spherical Codes Problem**
Simanta Gautam, 17, Senior, Albemarle High School, Charlottesville, Virginia,
T: Jeff Prillaman
- PS024 Testing for GMO Markers in Processed Foods and Locally-Farmed Produce: Can You Trust the Label? A Look into the Reality of Our Food Labeling System and Its Implications for the American Consumer**
Sydney Moriah Giacalone, 18, Senior, Albemarle High School, Charlottesville,
Virginia, T: Jeff Prillaman

Fairfax, USVA03, Fairfax County Regional Science and Engineering Fair

- AS023 The Effect of Turmeric on the Memory Curves of Planarians**
Supraja Shivakumar Chittari, 17, Junior, George C. Marshall High School,
Falls Church, Virginia, T: Jean A Hayhurst
- CB026 Investigating MicroRNA-mediated Regulation of Class Specific Dendrite Morphogenesis**
Suhas Gondi, 17, Senior, Thomas Jefferson High School for Science and
Technology, Alexandria, Virginia, T: Mark Hannum
- EE038 A Novel, Cost Effective Exoskeleton that Amplifies One's Strength**
Conor James Maddry, 16, Sophomore, Langley High School, McLean, Virginia,
T: Ian Guch
- EE039 Electromagnetic Wheel Propulsion**
Theresa Marie Neubig, 15, Sophomore, Paul VI Catholic High School, Fairfax,
Virginia, T: Thomas Andrewes
- EE040 The Effect of Fractal Antenna Design on FM Transmission**
Aaron Andrew Aguhob, 16, Junior, George C. Marshall High School, Falls Church,
Virginia, T: Nimel Theodore
- EE321 Ablation Resistance and Performance of Metals in Magnetoplasma-dynamic Applications**
Michael Douglas Sherburne, 18, Senior; Andres Christian Artze, 18, Senior
James W. Robinson Junior Secondary School, Fairfax, Virginia, T: Jill Deibler Mahoney
- ME044 A Novel Quantification of Fat and Fibrosis in Chronic Liver Disease by Computer Assisted Morphometry**
Zacharia Hosseinipour, 17, Senior, Thomas Jefferson High School for Science and
Technology, Alexandria, Virginia, T: Andrea Cobb

- ME045 A Novel microRNA-based System for Cancer Management and Monitoring**
Jason Shao Cui, 17, Junior, Langley High School, McLean, Virginia,
T: Robert Culbertson
- ME305 Increasing the Anti-Cancerous Properties of Crocus sativus Extract through the Utilization of Liposomal Nanoparticles**
John Divine Han, 14, Freshman, James Madison High School, Vienna, Virginia,
T: Marty Romeo
Jake Cui, 14, Freshman, Thomas Jefferson High School for Science and Technology,
Alexandria, Virginia, T: Jennifer Rosenblum
- MI028 A Novel Non-Invasive Detection for Colon Cancer using Bacterial Biomarker *F. nucleatum***
Syed Shadman Hossain, 17, Senior, Herndon High School, Herndon, Virginia,
T: Erin Sikes-Thurston
- Harrisonburg, USVA04, Shenandoah Valley Regional Science Fair*
- EN019 The Effect of the Partial Substitution of Cement with a Recycled Pozzolan on Concrete Compression Strength**
Jon Andrew Gustafson, 16, Sophomore, Sherando High School, Stephens City,
Virginia, T: Susan Saylor
- ET005 The Effect of Organic Matter on Generating Electricity Using a Mediator-Less Microbial Fuel Cell**
Catherine C. Pollack, 17, Junior, Sherando High School, Stephens City, Virginia,
T: Susan Saylor
- Lynchburg, USVA05, Central Virginia Regional Science Fair*
- ET025 The Effect of Different Variations of an Impeller Type Vertical Axis Wind Turbine on Its Efficiency**
Richard Scott Middaugh, 16, Junior, Central Virginia Governor's School/Brookville
High School, Lynchburg, Virginia, T: Cheryl Ann Lindeman
- PS022 The Effects of Temperatures Above 29.5 Degrees Celsius on Three Different *Brassica rapa* Species**
Brittany Michelle Gallahan, 17, Junior, Central Virginia Governor's School/ Rustburg
High School, Lynchburg, Virginia, T: Cheryl Ann Lindeman
- Manassas, USVA06, Prince William-Manassas Regional Science Fair*
- EV307 Algae: A Blooming Fuel Source**
Mitchell Thomas Gillin, 17, Junior; Madeleine Claire Guyant, 17, Junior
Governor's School at Innovation Park, Manassas, Virginia, T: Elizabeth Romano
- Leesburg, USVA07, Loudoun County Science and Engineering Fair*
- CB307 Investigating the Roles of A2A and TrkB Receptor Proteins in Response to Cholesterol and Brain-derived Neurotrophic Factor in an Alzheimer's Disease Model**
Heidi Marie Smith, 17, Senior; Jessica Leigh Joyce, 18, Senior
Loudoun County Academy of Science, Sterling, Virginia, T: Jackie Curley
- EM032 Making Drinkable Water from Thin Air: The Optimization of a Hydrophobic Surface to Efficiently Harvest Fog Providing a Sustainable Secondary Water Source**
Michael Fernandez Vermeland, 18, Senior, Loudoun County Academy of Science,
Sterling, Virginia, T: Jennifer Flynn
- EN036 Biofuel Cells Made with Nanoparticles and Enzymes for Bioimplants and Biosensors**
Adriel Sumathipala, 14, Freshman, Broad Run High School, Ashburn, Virginia,
T: Karen Swanchara
- MA030 Mathematically Modeling the Efficacy of Pertuzumab and Trastuzumab-dm1 when used in Conjunction against HER2-Positive Breast Cancer**
Rachel Elizabeth Burns, 17, Junior, Loudoun County Academy of Science, Sterling,
Virginia, T: Diana Louise Virgo
- Roanoke, USVA08, Western Virginia Regional Science Fair*
- CS042 The Feasibility of Data Transfer using the Visible Light Spectrum**
Joseph Charles Johnson, 18, Senior, Roanoke Valley Governor's School for Science
and Technology, Roanoke, Virginia, T: Linda Hanks

- EN309 Targeted Delivery of Iron Oxide Nanoparticles for Use in Magnetic Hyperthermia Cancer Treatment**
Samip Dharmendra Patel, 17, Senior; William Thomas Hairfield, 17, Senior
Roanoke Valley Governor's School for Science and Technology, Roanoke, Virginia,
T: Cindy Bohland
Norfolk, USVA09, Tidewater Science and Engineering Fair
- EA016 A Revised Estimate of the Effect of Human Carbon Dioxide (CO₂) Emissions on Global Temperature**
Katherine Marie Webb, 16, Junior, Tabb High School, Yorktown, Virginia,
T: Joyce Kuberek
- EE047 Investigation of the Vertical Vibration Isolation during Turbulence**
Shilja Wang, 16, Junior, York High School, Yorktown, Virginia, T: Lisa Field
Radford, USVA10, Blue Ridge Highlands Regional Science Fair
- CH033 Electrostatic Layer-by-layer Self-assembly of Antimicrobial Films**
Thomas Grey Quesenberry, 16, Junior, Southwest Virginia Governor's School,
Pulaski, Virginia, T: Jared Reid Brown
- ET312 Designing, Prototyping, and Testing Agricultural Drones**
Eric Gene Chang, 15, Sophomore; Jordan Taylor Kuhn, 16, Junior
Christiansburg High School, Christiansburg, Virginia, T: Kenneth Abel
Richmond, USVA11, Metro Richmond STEM Fair
- AS058 Testing the Cephalic Adhesive Organ Hypothesis in Cyprinid Protolavvae**
George Eugene Maurakis, 16, Junior, Mathematics and Science High School at
Clover Hill, Midlothian, Virginia, T: Dana Johnson
- BI037 The Effect of Soy Isoflavones on Human Drug Metabolizing Enzymes**
Priyadarshani Sarkar, 16, Junior, Henrico High School, Henrico, Virginia,
T: Vonita Giddings
- EN049 Advances in the Bottom-Up Assembly of Multicellular Architectures: From Neuroengineering to Biodefense**
Samantha Marie Marquez, 17, Junior, Maggie L. Walker Governor's School,
Richmond, Virginia, T: Anna Shore
- PH044 Qubit Rotator: A Nanowire Device for Rotation and Readout of Flying Electron Spin Qubits at Room Temperature for Quantum Computing**
Saumil Bandyopadhyay, 18, Senior, Maggie L. Walker Governor's School for
Government and International Studies, Richmond, Virginia, T: Jennifer Todd
Lexington, USVA50, Virginia State Science and Engineering Fair
- BI057 Interferon-alpha 2b: Targeting the STAT1 Pathway and Minimizing Breast Cancer and Leukemia Cell Proliferation**
Andrea Shao-yin Li, 16, Junior, Thomas Jefferson High School for Science and
Technology, Alexandria, Virginia, T: Andrea Cobb
- CB064 The Effect of GYY4137 on the Differentiation of Dental Pulp Stem Cells into Hepatic Cells**
Manotri Chaubal, 16, Junior, Thomas Jefferson High School for Science and
Technology, Alexandria, Virginia, T: Andrea Cobb
- MA304 On the Stability of Lung Parenchymal Lesions with Applications to Early Pneumothorax Diagnosis**
Rohan Bandopadhyay Banerjee, 16, Junior;
Archis Ramkrishna Bhandarkar, 17, Junior
Thomas Jefferson High School for Science and Technology, Alexandria, Virginia,
T: Barbara Wood
- WASHINGTON**
Kennewick, USWA01, Mid-Columbia Regional Science and Engineering Fair
- EN024 Green Energy: Synthesis, Characterization and Solar Cell Application of Zinc-Oxide Nano-Structures**
Swetha Vanathy Shutthanandan, 15, Freshman, Richland High School, Richland,
Washington, T: Brent Potter
- MI023 Bactericidal Behavior and the Effects of Nanoparticles in the Environment**
Sarah Maria Berumen, 18, Senior, Sunnyside High School, Sunnyside, Washington,
T: Joyce Stark

- Tacoma, USWA02, South Sound Regional Science and Engineering Fair*
- ET035 Configuring a Biplane Airfoil for Practical Application and Sonic Boom Reduction in Subsonic to Supersonic Flow through Performance Optimization**
Sumukh S. Bharadwaj, 17, Senior, Capital High School, Olympia, Washington,
T: Shannon Strozyk
- ME064 Identifying Biomarkers that Predict the Onset of Gestational Diabetes Mellitus**
Alexis Joy Harroun, 18, Senior, Bellarmine Preparatory School, Tacoma, Washington,
T: Dave DeGroot
- PH311 Investigation of Anisotropic Neutron Radiation from a Farnsworth IEC Fusion Reactor**
Jake Jordan Hecla, 18, Senior, Aviation High School, Des Moines, Washington,
T: Nik Joshi
Raymond Aung Maung, 17, Senior, Kentwood Senior High School, Covington,
Washington, T: Carrie Wattles
Rian Naveen Chandra, 18, Senior, Capital High School, Olympia, Washington,
T: Steve Bove
- Bellevue, USWA03, Central Sound Regional Science & Engineering Fair*
- CB018 Enhancing Maturation of Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes by Triiodothyronine Treatment and Nanopatterned Substrates**
Isaac Stephen Harper, 14, Freshman, Cedarcrest High School, Duvall, Washington,
T: Jeffery Robert Wehr
- PH027 Focusing Sound Waves Using a Two-Dimensional Non-Linear System, Phase II**
Thorsen Michael Wehr, 16, Sophomore, Cedarcrest High School, Duvall,
Washington, T: Jeffery Robert Wehr
- Vancouver, USWA04, Southwest Washington Science and Engineering Fair*
- ME043 Biomarkers of Vasodilation in Decidual Tissue Associated with Obesity in Non-Human Primates**
Sophie Rose Shoemaker, 15, Sophomore, Camas High School, Camas, Washington,
T: Ronald Mack Wright
- Bremerton, USWA50, Washington State Science and Engineering Fair*
- BI040 Using Zebrafish as a Model to Identify the Causes of Mechanosensory Hair Cell Death and Hearing Loss in Humans**
Meghal Sheth, 15, Sophomore, Camas High School, Camas, Washington,
T: Ronald Mack Wright
- EE077 A Microprocessor Controlled Device with Cloud Connected Sensors for Improving Cardiovascular Health and Workout Efficacy**
Alisha Saxena, 16, Junior, Interlake Senior High School, Bellevue, Washington,
T: James Cooney
- MI044 Rett Syndrome: Determining the Optimal Viral System for Gene Therapy**
Meera Radha Srinivasan, 15, Sophomore, Interlake High School, Bellevue,
Washington, T: Tia Thiel

WEST VIRGINIA

- Keyser, USWV01, West Virginia Eastern Panhandle Regional High School Science Fair*
- BE018 The Analysis of the Stroop Effect & Shapes Test on the Different Stages of Brain Development**
Hana Kim Ulman, 16, Sophomore, Hedgesville High School, Hedgesville,
West Virginia, T: Shane Price
- CH304 The Effect of Catalysts on the Electrolysis of Water**
Jordan Michael Hallow, 17, Senior; David-Michael Andrew Buckman, 18, Senior
Musselman High School, Inwood, West Virginia, T: Theresa Deters
- EA008 Analysis of the Impacts of Straight-Line Winds on the Structure and Stability of a Tornado Vortex**
Casey Richard Densmore, 16, Junior, Musselman High School, Inwood,
West Virginia, T: Theresa Deters

West Liberty, USWV03, West Liberty State University Regional Science and Engineering Fair

- AS014 Effects of Meteorological Conditions on the Avian Paratympanic Organ: An Ethological Analysis**
Zoe Pierce Buccella, 17, Senior, Home School, Barnesville, Ohio, T: John R. Buccella
- Fairmont, USWV50, West Virginia State Science and Engineering Fair
- EV032 Oxidative Attack and Elimination of Bisphenol A by Manganese Dioxide**
Peter Scott Welcker III, 16, Junior, Parkersburg South High School, Parkersburg, West Virginia, T: Michael Lutz

WISCONSIN

- Sheboygan, USWI01, Lakeland Science and Engineering Fair
- CS040 A Statistical Approach to Predictive Prefetching in Cloud-Backed Filesystems**
Dhaivat Nitin Pandya, 15, Sophomore, Appleton North High School, Appleton, Wisconsin, T: Nitin Pandya
- Glendale, USWI02, Nicolet Science and Engineering Fair
- BE038 Determining the Origin of Clustering and Switching Abilities during Verbal Fluency Tasks: A Lesion Study**
Hope Eliana Merens, 17, Junior, Nicolet High School, Glendale, Wisconsin, T: Eliot Scheuer
- CB049 Linking Myeloid Derived Suppressor Cells and T Cell Migration through Cleavage of L-Selectin**
Nancy Gao, 17, Senior, Nicolet High School, Glendale, Wisconsin, T: Eliot Scheuer
- MA017 Series Involving the Reciprocal of Pochhammer's Symbol**
Bertrand Andrew Stone, 15, Junior, Nicolet High School, Glendale, Wisconsin, T: Eliot Scheuer
- Milwaukee, USWI03, University School of Milwaukee —Science Fair
- EN010 Creating an Inexpensive Homemade Laparoscopic Simulator**
Megan Virginia Waples, 16, Junior, University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch
- ME010 Combinations of Immune Checkpoint Blockade Inhibitors and Lymphodepletion to Induce Myeloma Rejection**
Dominique Helen Tlomak, 16, Junior, University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch
- Madison, USWI04, Capital Science and Engineering Fair
- EN050 Wound Geometry Plays Role in Wound Closure for Human Keratinocytes**
Isaiah Paul Mitchell, 18, Senior, James Madison Memorial High School, Madison, Wisconsin, T: Cindy Kellor
- Milwaukee, USWI50, Badger State Science and Engineering Fair
- EM002 Determining the Reliability of the Dead Quagga Mussel (*Dreissena bugensis*) Population as a Predictor for the Community Structure of Live Quagga Mussel Population in Lake Michigan**
Clarise Evelyn White, 17, Junior, Divine Savior Holy Angels High School, Milwaukee, Wisconsin, T: Betty Joan Azpell
- MA062 Mathematical Modeling of Language's Affect on Population Flow and Community Structure**
Gabriel Alexander Ferns, 18, Senior, Nicolet High School, Glendale, Wisconsin, T: Eliot Scheuer

WYOMING

- Greybull, USWY01, Northern Wyoming District Science Fair
- EM013 Reducing Contaminants in Mineral Production Effluents: Utilization of Mycoremediation Techniques to Improve Water Quality**
Sarah Ann Bockman, 18, Senior, Greybull High School, Greybull, Wyoming, T: Joel M. Kuper
- EV013 Reduction of Nanoparticle Contaminates from Wastewater Using Ion Exchange Capabilities of Aluminosilicate Minerals**
Michaela Zae Denniston, 17, Senior, Greybull High School, Greybull, Wyoming, T: Joel M. Kuper

Laramie, USWY50, Wyoming State Science Fair

- MA018 On the Splitting of $MO(2)$ over the Steenrod Algebra**
Maurice Olympic Shih, 16, Senior, Laramie Senior High School, Laramie, Wyoming, T: Erin Klauk
- MA019 Intercalates Galore**
Sarah Lee Shader, 17, Junior, Laramie High School, Laramie, Wyoming, T: Erin Klauk

URUGUAY

- Minas, URY001, Feria Nacional de Clubes de Ciencia
- BE005 Order vs. Chaos in the Town**
Natalia Ines McAlister, 17, Junior, Liceo de Tarariras, Tarariras, Uruguay, T: Jackeline Kelland
- CS302 BYZEN: Knowing the Uruguayan History**
Schubert Emiliano Galmarini, 18, Senior; Mauro Andres Rocca, 17, Junior
Juan Jose Macchi, 17, Junior
Instituto Tecnológico Superior Paysandu, Paysandu, Uruguay, T: Gonzalo Monllor
- EE006 Interpreter Glove for Deaf People**
Luciano Gini Thoma, 18, Senior, Instituto Tecnológico Superior Paysandu, Paysandu, Uruguay, T: Bruno Rodriguez Techera

VIETNAM

- Ha Noi City, VNM001, Ha Noi Science Fair 2012
- EE320 Automatic Aquaponics System for Home-Grown Food**
Cuong Nhut Truong, 17, Junior; Duy Phuong Nguyen, 17, Junior
Chau Ngoc Tran, 17, Junior
Le Hong Phong High School for the Gifted, Ho Chi Minh, Vietnam, T: Duc Phu Nguyen
- EN063 Research on Production of Isoflavones aglycones from Soybean by Microbiotechnology**
Anh Thao Nguyen, 16, Junior, Chu Van An National High School, Hanoi, Vietnam, T: Thanh Phuong Nguyen
- EN318 Microfiltration Property of Chicken Eggshell Membrane and Its Application in Portable Water Processor**
Huong Mai Vu, 18, Senior; Anh Trong Nam Hoang, 17, Junior
Linh Thuy Do, 17, Junior
Hanoi-Amsterdam High School, Hanoi, Vietnam, T: Huong Thi Thu Tran
- EV311 A Novel Method for Laboratory Wastewater Treatment Using Limestone and Sawdust**
Hoang Quoc Pham, 16, Sophomore; Dat Huu Pham, 16, Sophomore
Hiep Hoang Nguyen, 16, Sophomore
Chu Van An Highschool, Hanoi, Vietnam, T: Thu Thi Kim Trinh
- PS317 Research on the Insect-Repelling Properties of the Oil and Extract of *Baeckea frutescens* L.**
Duc Thanh Nguyen, 16, Junior; Hoang Viet Tran, 16, Junior
Nguyen Hue High School, Hanoi, Vietnam, T: Quyen Thi Nguyen

VIRGIN ISLANDS

- St. Croix, TEVI02, The Good Hope School Science Fair
- CB040 Cocaine Hijacks Sigma-1 Receptors from the ER into the Nucleus to Regulate Gene Expression by Interacting with Lamin-Associated Emerin**
Natasha Dawn Ceballos, 17, Senior, The Good Hope School, Frederiksted, Virgin Islands, T: Jane Coles
- MI038 The Power of Moringa Flowers**
Aliyah Alexa Allick, 13, Freshman, The Good Hope School, Frederiksted, Virgin Islands, T: Mary Jane Coles



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202.785.1243 fax
www.societyforscience.org/isef

